Liddell Battery and Bayswater Ancillary Works Project

Appendix D – Contamination Assessment

Liddell Battery and Bayswater Ancillary Works: Contamination Assessment

Liddell and Bayswater Power Stations, NSW

20192251.001A

18 March 2021

KLEINFELDER
Bright People. Right Solutions.

Suite 3, 240-244 Pacific Highway,
Charlestown, NSW 2290

Phone: +61 2 4949 5200

Liddell Battery and Bayswater Ancillary Works: Contamination Assessment

Liddell and Bayswater Power Stations, NSW

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Prepared for:

AGL Macquarie Pty Ltd
Level 24, 200 George Street
Sydney NSW 2000

Prepared by:

Kleinfelder Australia Pty Ltd
Suite 3, 240-244 Pacific Highway, Charlestown, NSW 2290
Phone: +61 2 4949 5200

ABN: 23 146 082 500

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	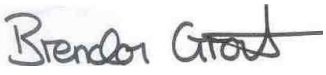	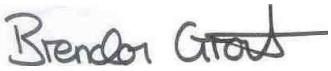
Tom Overton	Brendan Grant	Brendan Grant

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EXECUTIVE SUMMARY

Introduction

AGL Macquarie Pty Limited (AGLM) are planning to carry out a State significant development (SSD) known as the Liddell Battery and Bayswater Ancillary Works (Project) under the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). Secretary's Environmental Assessment Requirements (SEARs) have been issued for the Project. As part of the work to address the SEARs a broad Project area has been defined which includes all aspects of the Project and areas that may be indirectly impacted by the Project. The key concepts relevant to the Project are as follows:

- 'The Project' – refers to all aspects of the Project as described in the Environmental Impact Statement to which this report forms an Annexure
- 'Project components' – refers to the separate works proposed that collectively form the Project
- 'The development site' – for the purpose of the contamination assessment, the 'development site' includes all aspects of the Project and areas that may be indirectly impacted by the Project
- 'The locality' – encompasses an area of approximately 10 km radius of the development site.

The Project consists of:

- Liddell Battery: A grid connected Battery Energy Storage System (the Battery) with capacity of up to 500 megawatts (MW) and 2-gigawatt hour (GWh). As part of the proposed Project, 3 distinct areas have been identified for the Battery:
  - Area 1: the existing solar array area
  - Area 2: the area known as the non-processing development land (DL01 and DL02)
  - Area 3: the existing coal storage yards
- Decoupling works: Alternative network connection arrangements for the Liddell 33kV switching station that provides electricity to infrastructure required for the ongoing operation of Bayswater Power Station (Bayswater) and associated ancillary infrastructure, including potential third-party industrial energy users
- Bayswater Ancillary Works (BAW): Works associated with Bayswater which may include upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets to enable maintenance, repairs, replacement, expansion or demolition.

'The Project' also includes the voluntary surrender and consolidation of various existing development approvals required for the ongoing operation of AGLM assets. As these existing activities have already been assessed and approved under the EP&A Act, the area where these existing activities are conducted has not been included in the study area.

This report has been prepared to address the contamination aspects of these SEARs and to assess the Project in accordance with the requirements of *State Environmental Planning Policy No 55 - Remediation of Land* (SEPP 55). The Project is development for the purpose of "electricity generating works", being a type of industrial use. This is consistent with the current approved use of Bayswater and the Liddell Power Station (Liddell). Accordingly, the Project will not result in any change in the current approved use of the Bayswater and Liddell sites.

Targeted contamination assessments have previously been conducted across "areas of environmental concern" (AEC) of the Bayswater and Liddell sites. These areas were identified as having the potential to be impacted from power station activities conducted since Bayswater and Liddell were initially constructed. This report has considered the results presented in the previous contamination investigation reports in relation to the Project site.

Bayswater and Liddell have previously been notified to the Environment Protection Authority (EPA) in accordance with the *Contaminated Land Management Act 1997 (NSW)* and determined not to require regulation under that Act. Rather environmental issues at Bayswater and Liddell continue to be regulated via environment protection licences issues by the EPA under the *Protection of the Environment Operations Act 1997 (NSW)*. Potential remediation requirements for the pre-existing contamination present at Bayswater and Liddell will be assessed

and determined as part of the ultimate closure and rehabilitation of the sites in accordance with all relevant regulatory requirements at that time.

The objective of this report is to:

- Identify potential contamination issues associated with the Project based on the previous contamination investigation reports
- Assess human health and environmental risks associated with the potential contamination identified, and
- Recommend potential mitigation measures that may be adopted into the construction phase of the Project to avoid or mitigate impacts and ensure that the Project site remains suitable for ongoing industrial "electricity generating works" use, in accordance with SEPP 55.

To assist in this, a conceptual site model (CSM) was developed, and consideration was given to potential source pathway receptor (S-P-R) linkages associated with the Project site.

Liddell Battery

Area 1: The existing solar array area

This area is located to the south of the main power generating infrastructure and to the east of the existing coal storage yards. A review of existing data confirms that, while some AECs have previously been identified in this area, analytical results from six targeted sample locations did not identify concentrations of Contaminants of Potential Concern (COPC) above the commercial / industrial health investigation levels which provide conservative screening criteria (commercial / industrial screening criteria). These results, together with our understanding of the historical use of this area, provides a line of evidence that widespread contamination is unlikely to be present notwithstanding the potential for unknown filling in this area. Therefore, if elevated COPC are present in the existing solar array area, it is likely to be limited in extent and unlikely to constrain the Project provided industry standard construction controls are applied during construction of the Battery.

Area 2: Non-processing development land (DL01 and DL02)

DL01 is located directly to the north of the TransGrid switchyard and is not known to have been used other than as a construction laydown area (previously identified as an AEC) when Liddell was first constructed. Analytical results from two representative sampling locations were reviewed and, with the exception of the following, did not identify any concentrations of COPC above the commercial / industrial screening criteria. Results from one of the sampling locations in the vicinity of the ash pipeline, which is located adjacent to, and outside, the DL01 area, was found to contain asbestos. Therefore, potential receptors that may come into contact with asbestos in soils, are unlikely to be repeatedly exposed to soil in this area over a prolonged period, especially since AGLM have occupational hygiene controls in place to mitigate exposure to asbestos. The potential asbestos related exposure to construction / maintenance workers associated with the Project can be managed via suitable controls, including unexpected finds protocols, construction environmental management plans (CEMP), the industry standard practice of wetting the work area down, the use of binding polymers, wearing personal protective equipment (PPE) and adopting good hygiene practices.

DL02 is located directly to the north of the existing coal storage yards and to the south of the TransGrid switchyard. A review of existing data confirms that, while some AECs have previously been identified in this area, analytical results from eight targeted sampling locations did not identify concentrations of COPC above the commercial / industrial screening criteria.

Accordingly, DL01 and DL02 are considered unlikely to constrain the Project provided industry standard construction controls are utilised.

Area 3: Existing coal storage yards

The coal yards are located to the south of the main Liddell operational area and to the south of the main TransGrid switchyard. The previous investigations targeted nine sampling locations in this area, with the majority of these restricted to the edge of the existing coal storage yards, for operational reasons, which limits delineation of fill / coal depth across the coal yards area (coal fines were identified to be present at depths up to 3m). Results from

each of these sampling locations confirmed that COPC (Specifically metal and sulphur concentrations) were below the adopted commercial / industrial screening criteria. It is reasonable to expect that these boundary concentrations are likely to be similar across the wider coal yards area. Based on the foregoing, the existing coal yards are considered unlikely to constrain the Project.

Decoupling area

The decoupling works will be undertaken in an area (decoupling area) located centrally at Liddell, on the western side of the main power generating infrastructure.

The previous investigations identified a number of AEC across the decoupling area. 54 targeted sampling locations from previous investigations were identified to be relevant to the decoupling area. From the 54 sampling locations, only four samples (two for hydrocarbons and two for asbestos) were found to have concentrations of COPC elevated above the commercial / industrial screening criteria. The two asbestos samples were associated with the ash pipeline and AGLM have confirmed that the decoupling works will have minimal interaction with the ash pipeline. Therefore, the identified asbestos is considered unlikely to impact on the Project. However, occupational hygiene controls will be implemented as a precaution to mitigate potential construction worker exposure to asbestos.

Elevated hydrocarbon concentrations were identified in the transformer corridor. As this area is covered by concrete hardstand and AGLM have confirmed that the decoupling works undertaken along the transformer corridor will be limited to disconnecting and moving the existing transformers to the proposed 33kV transition area and will not interact with sub-surface infrastructure, the Project work would not interact with impacted soil.

It is understood that as part of the decoupling works there is likely to be a requirement for sub-surface cable trenching, as follows:

- Linking the relocated transformers to the TransGrid switchyard
- Linking the Battery to the transformers.

Defined cable trenching routes have not yet been finalised. However, the longest cable route would be between the existing solar array area and the 33kV transition area, noting the trenching routes are not currently planned to interact with areas identified to have elevated hydrocarbon concentrations. A number of targeted sampling locations are present along this corridor. The results from these sample locations indicate concentrations of COPC below the commercial / industrial screening criteria.

Should localised elevated COPC be present in areas disturbed as part of the decoupling works, it is likely they would be limited in extent and unlikely to require significant remedial works (if any). AGLM have confirmed that industry standard construction controls would be implemented as part of the Project construction.

In light of the above, the elevated hydrocarbon concentrations present in the decoupling area are considered unlikely to constrain the Project.

Bayswater ancillary works area (BAW)

The BAW constitutes ancillary works associated with the ongoing operation of Bayswater including upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets. Based on a review of previous reports, a number of AECs have been identified across the operational areas that identified concentrations of COPC above the commercial / industrial screening criteria.

The remaining areas across Bayswater were not identified as AECs due to their low contamination potential. Previous sampling undertaken across the AECs did not detect widespread gross contamination. However, localised concentrations of COPC were detected above the screening criteria. Should localised elevated COPC be present in areas where BAW are carried out, it is likely they would be limited in extent and unlikely to require significant remedial works. AGLM have confirmed that industry standard construction controls (including unexpected finds protocols within a CEMP) that will be implemented as part of the Projects construction. Further,

this report recognises that the BAW works are aimed at making environmental improvements across Bayswater and are unlikely to therefore impact upon the receiving environment.

Suitability for use

The Project does not propose any change in land use from to the ongoing "electricity generating works", being a type of industrial use. Bayswater and Liddell, and the potential for elevated COPC present at the sites will continue to be managed in accordance with the environment protection licences issued by the EPA.

This report has been developed to assess the potential contamination related aspects of the Project site in accordance with the SEARs and confirm that potential contamination arising from the power stations uses conducted since Bayswater and Liddell were initially constructed does not present an impediment to the proposed Project, in accordance with SEPP 55. This report has encompassed a comprehensive review of available information to identify the historical development of the Project site, including the detailed contamination assessments previously conducted across Bayswater and Liddell.

This CSM developed for the Project site has identified that some potential S-P-R linkages are potentially complete. However, based on our assessment of the analytical dataset and knowledge of the historical development of the Project site, it is considered that widespread gross contamination is unlikely to be present in the Project site.

Significant remedial works to support the Project are considered unlikely to be required (if required at all). Contamination risks associated with the Project can readily be managed by the inclusion of the following components into the Project CEMP:

- An unexpected finds protocol for the appropriate assessment and management of encountered contamination to mitigate impacts to the Project
- Procedures to ensure that all material excavated during the construction of the Project is appropriately assessed and classified before being disposed of in accordance with environmental laws, and
- Specific control measures to mitigate impacts to soil, water, air, noise, traffic, structures and clear protocols for measurement of affected media and validation of results during construction of the Project.

In summary, the Project is unlikely to cause large-scale soil disturbance at depth and is not proposed to interface with groundwater. Where the Project may interact with surface water bodies specific construction environmental controls (sediment erosion controls as part of the CEMP) will be implemented. The final layout of the Battery facility is likely to comprise large areas of hardstand that will minimise the potential for any direct contact with subsurface soil during operations. Similar scenarios are envisaged for BAW. Construction / maintenance workers are considered to be the receptor groups that would most likely be exposed to contamination (if present). This would occur infrequently and easily be managed by the CEMP and the current occupational hygiene practices implemented by AGLM at Bayswater and Liddell to manage risks associated with contact with potentially pre-existing contamination during construction and operations.

Overall, it is considered that potential contamination risks present in the Project site is not an impediment to the implementation of the Project. It is considered that the Project will not give rise to any new contamination related risks to human health or the receiving environment during construction, provided that appropriate controls are implemented in the CEMP as outlined above.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Acronyms and Abbreviations	Description
AEC	Areas of environmental concern
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AGLM	AGL Macquarie Pty Limited
AIC	Areas of identified contamination
ALS	Australian Laboratory Services Pty Ltd
ANZECC	Australian and New Zealand Environment and Conservation Council
APECS	Additional pre-existing contamination study
AST	Aboveground storage tanks
BAW	Bayswater Ancillary Works
Bayswater	Bayswater power station
BTEX (N)	Benzene, toluene, ethylbenzene and xylene (Naphthalene)
CEC	Cation Exchange Capacity
CEMP	Construction Environmental Management Plan

Acronyms and Abbreviations	Description
COPC	Contaminants of potential concern
CSM	Conceptual site model
DL	Development land
EC	Electrical Conductivity
EIL	Ecological investigation levels
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act.	Environmental Planning and Assessment Act 1979 (NSW)
EPL	Environmental Protection License
ERM	Environmental Resources Management Pty Ltd
ES	Environmental Strategies Pty Ltd
ESA	Environmental Site Assessment
ESL	Ecological screening levels
$FeCl_3$	Ferric chloride
GWh	Gigawatt hour
ha	hectares
HEPA NEMP	Heads of EPA, National Environmental Management Plan
HIL	Health Investigation Levels
HSL	Health Screening Levels
IL	Investigation levels
kL	kilolitre
kV	kiloVolts
LEP	Local Environmental Plan
Liddell	Liddell power station
LOR	Laboratory limit of reporting
mbgl	Meters below ground level
mg/L	Milligrams per litre
MW	Megawatts
NDD	Non-Destructive Digging
NH_3	Ammonia
NO_3	Nitrate
NO_2	Nitrite
OEH	Office of Environment and Heritage (now Department of Planning, Industry and Environment)
PAHs	Polycyclic Aromatic hydrocarbons

Acronyms and Abbreviations	Description
PCB	Polychlorinated biphenyls
PFAS	Per- and polyfluoroalkyl substances
PFHxS	Perfluoroalky sulfonates
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanoic sulfonate
PSD	Particle Size Distribution
RCU	Rail Coal Unloader
SAQP	Sampling, analysis and quality plan
SEARs	Secretary's Environmental Assessment Requirements
SEPP 55	State Environmental Planning Policy No 55 - Remediation of Land
S-P-R	Source – Pathway - Receptor
SSD	State significant development
TDS	Total dissolved solids
The Battery	Battery Energy Storage System
TOC	Total Organic Carbon
TRH	Total recoverable hydrocarbons
UGOH	Underground to overhead
VOCs	Volatile Organic Compounds
WTP	Water Treatment Plant

1 INTRODUCTION

1.1 BACKGROUND

AGL Macquarie Pty Limited (AGLM) owns and operates the Bayswater power station (Bayswater) and Liddell power station (Liddell) (**Figure A, Appendix A**), the Hunter Valley Gas Turbines and associated ancillary infrastructure including a range of supporting water management, coal supply, power supply, environmental management and control system infrastructure. AGLM acquired these assets from Macquarie Generation in September 2014.

AGLM are planning to carry out a State significant development (SSD) known as the Liddell Battery and Bayswater Ancillary Works (Project) under the *Environmental Planning and Assessment Act 1979* (NSW). Secretary's Environmental Assessment Requirements (SEARs) have been issued for the Project. As part of the work to address the SEARs a broad Project area has been defined which includes all aspects of the Project and areas that may be indirectly impacted by the Project (**Figure B, Appendix A**): The key concepts relevant to the Project are as follows:

- 'The Project' – refers to all aspects of the Project as described in the Environmental Impact Statement to which this report forms an Annexure
- 'Project components' – refers to the separate works proposed that collectively form the Project
- 'The development site' – for the purpose of the contamination assessment, the 'development site' includes all aspects of the Project and areas that may be indirectly impacted by the Project
- 'The locality' – encompasses an area of approximately 10 km radius of the development site.

The Project consists of:

- Liddell Battery: A grid connected Battery Energy Storage System (the Battery) with capacity of up to 500 megawatts (MW) and 2-gigawatt hour (GWh). As part of the proposed Project, 3 distinct areas have been identified for the Battery (**Figure C, Appendix A**):
  - Area 1: the existing solar array area
  - Area 2: the area known as the non-processing development land (DL01 and DL02)
  - Area 3: the existing coal storage yards
- Decoupling works: Alternative network connection arrangements for the Liddell 33kV switching station that provides electricity to infrastructure required for the ongoing operation of Bayswater and associated ancillary infrastructure, including potential third-party industrial energy users (**Figure C, Appendix A**)
- Bayswater Ancillary Works (BAW): Works associated with Bayswater which may include upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets to enable maintenance, repairs, replacement, expansion or demolition (**Figure D, Appendix A**).

'The Project' also includes the voluntary surrender and consolidation of various existing development approvals required for the ongoing operation of AGLM assets. As these existing activities have already been assessed and approved under the EP&A Act, the area where these existing activities are conducted has not been included in the Project site.

This report has been prepared to address the contamination aspects of these SEARs and to assess the Project in accordance with the requirements of *State Environmental Planning Policy No 55 - Remediation of Land* (SEPP 55). The Project is a development for the purpose of "electricity generating works", being a type of industrial use. This is consistent with the current approved use of Bayswater and Liddell. Accordingly, the Project will not result in any change in the current approved use of the Bayswater and Liddell sites. Further, Bayswater and Liddell have previously been notified to the Environment Protection Authority (EPA) in accordance with the *Contaminated Land Management Act 1997 (NSW)* and determined not to require regulation under that Act. Rather environmental issues at Bayswater and Liddell continue to be regulated via environment protection licences issues by the EPA under the *Protection of the Environment Operations Act 1997 (NSW)*. Potential remediation requirements that may exist for the pre-existing contamination present at Bayswater and Liddell will be assessed

and determined as part of the ultimate closure and rehabilitation of the sites in accordance with all relevant regulatory requirements at that time.

Where significant remedial works to support the Project are considered unlikely (if required at all), such mitigation measures may include the implementation of a Construction Environmental Management Plan (CEMP) that includes (but not limited to):

- An unexpected finds protocol for the appropriate assessment and management of encountered contamination to mitigate impacts to the Project
- Procedures to ensure that all material excavated during the construction of the Project is appropriately assessed and classified before being disposed of in accordance with environmental laws and
- Specific control measures to mitigate impacts to soil, water, air, noise, traffic, structures and clear protocols for measurement of affected media and validation of results during construction of the Project.

1.2 PREVIOUS ASSESSMENTS

Detailed contamination assessments have previously been conducted across all "areas of environmental concern" (AEC) of the Bayswater and Liddell sites which have been identified as having the potential to be affected by contamination arising from the power stations uses conducted since Bayswater and Liddell were initially constructed. These relevantly include:

- Project Symphony; Liddell Power Station, Preliminary Environmental Site Assessment (all parts), 0213879RP02 – Environmental Resources Management October 2013 (ERM 2013a)
- Project Symphony, Liddell Power Station, Stage 2 Environmental Site Assessment (all parts), 0224198RP02 – Environmental Resources Management January 2014 (ERM 2014a)
- Project Symphony; Bayswater Power Station, Preliminary Environmental Site Assessment (all parts), 0213879RP01 – Environmental Resources Management October 2013 (ERM 2013b)
- Project Symphony, Bayswater Power Station, Stage 2 Environmental Site Assessment (all parts), 0224193RP01 – Environmental Resources Management January 2014 (ERM 2014b)
- Volume 2 of 7: Bayswater Power Station NSW, Additional Pre-existing Contamination Study, 1510RP01 BPS APECS – Final, Environmental Strategies (ES) (February 2018a)
- Volume 3 of 7: Liddell Power Station NSW, Additional Pre-existing Contamination Study, 15105RP01 LPS APECS – Final, Environmental Strategies (February 2018b)
- Volume 4 of 7: Lake Liddell NSW, Additional Pre-existing Contamination Study, 15106RP01 LL APECS – Final, Environmental Strategies (February 2018c)
- Stage 2 PFAS investigation Liddell and Bayswater power stations, 60588837 Rev 0 Final, AECOM Australia Pty Ltd (AECOM) (June 2019.

The original laboratory data was also provided in database format by the primary testing laboratory, Australian Laboratory Services Pty Ltd (ALS), which was approved for release by both ERM and Arcadis (formerly trading as Environmental Strategies). In addition, Per- and polyfluoroalkyl substances (PFAS) sampling data (obtained by AECOM) was provided to Kleinfelder and has been used for inclusion into this report.

This report has considered the results of these previous detailed contamination assessment in relation to ‘Project site’.

1.3 THE PROJECT

1.3.1 The Battery

AGLM proposes to construct and operate a grid connected utility scale Battery. The Battery would have storage capacity to facilitate a maximum discharge of up to 500 MW for a four-hour period or up to 2 GWh.

The location of the Battery is yet to be finalised, accordingly a number of distinct areas for the location of the Battery have been identified and assessed. These are (see **Figure C, Appendix A**):

- The existing solar array area (Area 1)
- The area known as the non-process development land (DL01 and DL02) (Area 2) or
- The existing coal storage yards (Area 3).

Kleinfelder understands that while the Battery technology provider is yet to be determined, the Battery is likely to consist of containerised or stacked Lithium-Ion type batteries with associated control systems, inverters, heating, ventilation and air conditioning units, transformers, and control rooms.

The construction works to establish the Battery has been confirmed by AGLM to involve:

- Installation and maintenance of environmental controls
- Upgraded construction access track from existing internal access road to Battery location
- Demolition or deconstruction of existing equipment as required
- Establishment of a hardstand pad and construction laydown areas
- Trenching and installation of cable from Battery to Switchyard or 330 / 33 kiloVolts (kV) transformer compound
- Structural works to support Battery facilities
- Delivery, installation and electrical fit-out of the Battery
- Testing and commissioning activities
- Minor works to connect Battery to 330 / 33kV transformer compound or TransGrid switchyard
- Removal of construction equipment and rehabilitation of construction areas.

The maximum footprint for the Battery compounds, which may be established as smaller parcels within the overall Project footprint, including temporary construction areas and permanent footprint, is approximately 20 hectares (ha). The total land area under consideration (all three combined areas) for siting of the Battery is approximately 40 ha. **Photo 1** presents an indicative layout and the construction of the battery pads.

Photo 1: Indicative layout of battery (provided by AGLM)

The Battery is intended to have an operational life of up to 30 years and, depending on the selected technology components, may be replaced and or upgraded to extend this timeframe. Following the end of economic life,

above-ground components would be removed and re-purposed where possible and land rehabilitated to facilitate future use.

1.3.2 Decoupling works

A new connection between the TransGrid 330kV switchyard and Liddell 33kV Switching Station is required prior to the demolition of Liddell, to facilitate ongoing power supply to the Bayswater assets. The works necessary to achieve this is described as the Decoupling works.

The Decoupling works are currently expected to include and not be limited to the following:

- Establishment of a new 330 / 33kV transformer compound adjacent to the existing TransGrid 330kV switchyard (switchyard)
- Installation of new switch / control room building's, and equipment located near existing Liddell Transition Point (33kV feeders 730 and 731 underground to overhead (UGOH)) inclusive of auxiliary supplies
- Installation of two 330 / 33kV station transformers adjacent to the switchyard
- Installation of new 33kV cables to connect the 330 / 33kV station transformers to the existing 730 and 731 33kV feeders to the new 33kV switch room
- Connection to the TransGrid switchyard.

AGLM are exploring the opportunity to re-use Liddell 330 / 33kV Transformers and other infrastructure in these works (see **Figure C, Appendix A**).

1.3.3 BAW

The BAW aspects of the Project are intended to make provision for the upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets to enable maintenance, repairs, replacement, upgrades, expansion and / or removal and covers currently anticipated capital works at Bayswater until its planned retirement. The BAW includes the following works packages (see **Figure D, Appendix A**):

- MA1B Conveyor Shortening: The MA1B conveyor is largely redundant due to coal no longer being sourced from Mt Arthur Coal Mine and is only operated to transfer coal from the Antiene conveyor over the last 500 metres to the coal stockpile area. The Conveyor shortening would involve the relocation of the drive house and associated infrastructure from its current location at its north-west end, to adjacent to the junction with the Antiene conveyor. Construction works would generally involve earthworks and the relocation of current structures including but not limited to power supply, buildings and motor / drive house and demolition of redundant conveyor infrastructure
- Environmental uplift program: Various environmental improvement projects are proposed associated with existing infrastructure at identified high risk areas such as the lime softening plant, water treatment plant and demineralisation plant including the installation, replacement or relocation of environmental controls such as bunding, diversions, drainage, pipes, pits and waste management structures
- Brine Concentrator Return Water Pipe: Construction and operation of a new pipeline to return brine from the Brine Concentrator Decant Basin to the Brine Concentrator for reprocessing and treatment through the salt cake plant for disposal at the proposed Salt Cake Landfill if approved under the Water and Other Associated Operational Works project application
- Ammonia plant upgrade: Works necessary to replacing existing ammonia plant
- Chemical storage tanks upgrades: Works to replace the existing two 26 kilolitre (kL) rubber lined ferric chloride steel tanks with two 30 kL polyethylene tanks
- Installation of auxiliary infrastructure such as maintenance storage areas, laydown, car parks, security gatehouse upgrades, washdown facilities, car wash, equipment wash
- Establishment of a formalised waste storage area for hydrocarbons, oils, greases and inclusion of environmental controls such as bunding, runoff management and roofing
- Establishment of a cultural heritage storage area for salvaged heritage items associated with future earthworks at Bayswater in consultation with Registered Aboriginal Parties
- Upgrades and formalisation of the contractor area between the power station and coal stockpile area including electrical works, formalisation, earthworks, drainage, carparks, offices used during maintenance shutdowns

- Bayswater administration building and social club refurbishment and / or upgrade works including redesign and upgrade of workspaces, kitchens and amenities
- Antiene coal unloader drainage / water management improvement works
- River road refurbishment / reconstruction: Works to reconstruct the river road from the junction of the Main entry road to the tank farm
- Emergency Power System redesign: Works to provide redundancy within the emergency power system for Bayswater including removal of any redundant equipment from within the Diesel Generator building and repurposing to allow installation of three diesel generators (with two expected to be connected outside the existing building to the 6.6kV network via step up transformers) and / or the third to remain connected to the diesel generator switchboard.

1.4 OBJECTIVE

The objective of this report is to:

- Identify potential contamination issues associated with the 'Project site' based on the previous (**Figure B, Appendix A**) contamination investigation reports
- Assess human health and environmental risks associated with the potential contamination identified and
- Recommend potential mitigation measures that may be adopted into the construction phase of the Project site to avoid or mitigate impacts and ensure that the Project site area remains suitable for ongoing industrial "electricity generating works" use, in accordance with SEPP 55.

1.5 SCOPE OF WORK

Kleinfelder's scope to deliver the objective in **Section 1.4** included:

- Undertake a detailed review of the currently available data for the Project site
- Assess the reviewed data against the construction and development requirements to understand potential impacts of the Project on human health and the environment
- Understand the limitations of the data including understanding gaps in the current data set
- Provide a conceptual description of mitigation measures that could be applied in areas where contamination is identified with the potential to impact on the proposed Project site
- Provide an assessment of the Project site suitability for its intended use
- Provision of a site assessment report including:
    - A description of the proposed project in relation to addressing the SEARs requirements
    - The findings of the historical data review including screening available results against adopted screening criteria for a commercial / industrial land use scenario
    - Development of a preliminary conceptual site model (CSM) to identify potential source pathway receptor (S-P-R) linkages
    - A brief discussion on the outcome of the CSM
    - Provide a conceptual description of mitigation measures considered appropriate to address S-P-R linkages identified in the CSM
    - Provide a concluding statement on the Project site suitability for its intended use addressing the requirements of SEPP 55.

1.6 SEARS REQUIREMENTS

The SEARs issued for the Project set out the matters required to be assessed in the Environmental Impact Statement (EIS) for the Project and relevantly include:

Land and Contamination – including:

- An assessment of impacts of the project on soils, land capability and geotechnical stability of the site and surrounds
- An assessment of the extent and nature of any contaminated materials or acid sulphate soils on site
- An assessment of potential risks to human health and the receiving environment, and
- A description of the measures that would be implemented to avoid or mitigate impacts.

…

Water – including:

- An assessment of the likely impacts of the Project (including flooding) on the quantity and quality of the region's surface and groundwater resources, related infrastructure, adjacent licensed water users and basic landholder rights, and measures proposed to monitor, reduce and mitigate these impacts
- A description of the proposed water management system, water monitoring program and all other proposed measures to mitigate surface water and groundwater impacts.

…

The SEARs list the following contamination related guidelines as relevant to the assessment of the above:

- Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (EPA)
- State Environmental Planning Policy No. 55 – Remediation of Land
- Guidelines for Consultants Reporting on Contaminated Sites (EPA)
- Contaminated Sites Sampling Design Guidelines 1995 (EPA)
- Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (with amendment April 2013)
- Acid Sulfate Soils Manual (OEH).

2 SITE CHARACTERISTICS

2.1 SITE IDENTIFICATION DETAILS

Table 2.1 presents site specific identification details.

Table 2.1: Site identification

Site location (Figure A, Appendix A)	New England Highway, Muswellbrook		
Site name	Liddell Power Station and Bayswater Power Station		
Site owner	AGL Macquarie		
Battery areas **Current title identification details**	Lot 1 DP1022827 Lot 2 DP1022827 Lot 601 DP10193 Lot 19 DP752486		
BAW **Current title identification details**	Lot 1 DP616024 Lot 910 DP11235 Lot 107 DP54786 Lot 110 DP62597 Lot 1 DP234545 Lot 3 DP774706 Lot 112 DP10590 Lot 150 DP75246 Lot 151 DP75246 Lot 1 DP574168 Lot 10 DP700554 Lot 1 DP1193248	Lot 1 DP1175303 Lot 2 DP574168 Lot 1 DP574168 Lot 152 DP75246 Lot 2 DP1095515 Lot 1 DP574168 Lot 2 DP327372 Lot 6 DP966589 Lot 4 DP247943 Lot 6 DP247943 Lot 5 DP966589	Lot 5 DP113655 Lot 601 DP10193 Lot 2012 DP1151 Lot 13 DP247945 Lot 15 DP247945 Lot 1000 DP1132 Lot 2 DP628645 Lot 5 DP808670 Lot 6 DP808670 Lot 1 DP986496 Lot 2 DP986496
Current land use	Operational Power Station		
Development site area	The Project is approximately 353 ha consisting of: • Battery footprint of approximately 56 ha of which approximately 20 ha would be selected • Decoupling works areas of approximately 23 ha with a limited proportion of which would ultimately be disturbed • BAW works areas of approximately 274 ha with a limited proportion impacted within this application.		
Current zoning	SP2 Infrastructure Zone (Muswellbrook Local Environmental Plan (LEP) 2009) RU1 Rural Primary Production (Muswellbrook LEP 2009)		
Local council	Muswellbrook Shire Council and Singleton Council		

2.2 SITE DESCRIPTION

2.2.1 Liddell (Figure C, Appendix A)

Liddell includes the 2000 MW Liddell power station, the 50 MW Hunter Valley gas turbines and the Liddell solar thermal project. Liddell was the first major power station to be located inland away from abundant saltwater supplies traditionally used for cooling purposes. As a result, the man-made Lake Liddell was constructed to supply cooling and water storage. Lake Liddell also supplies Bayswater.

The total area of Liddell is approx. 1500 hectares. The operational area occupies 700 hectares and includes the following key features:

- Coal stockpiles & conveyors

- Liddell' main power block, which includes:
  - Electricity generating units (coal hoppers, bowl mills, feed systems, coal fired boilers, steam turbines, hydrogen cooled generators & transformers)
  - Air emission controls (fabric filters, chimney stacks)
  - Bulk fuel storage & transfer infrastructure
  - Cooling water processes (intakes, pre-treatment facilities, cooling towers & returns)
  - Wastewater holding ponds and treatment facilities
  - Maintenance facilities and administration offices
- Liddell Ash Dam with associated pipelines for ash slurry and return water
- Landfills
- 33 kV Switching Station
- Hunter Valley Gas Turbines
- Buffer lands surrounding the infrastructure.

2.2.2 Bayswater (Figure D, Appendix A)

The total power station area is approximately 8,300ha (including the Ravensworth Rehabilitation Area, Lake Liddell and the surrounding buffer lands). The power station operational area occupies approximately 300ha (including Pikes Gully Ash Dam).

Bayswater comprises of the following features:

- Bayswater Power Station main operations
- Pikes Gully Ash Dam
- Ravensworth Rehabilitation Area (including the former Ravensworth No.2 and Ravensworth South final voids)
- Coal conveyors transporting from Antiene Rail Coal Unloader (RCU) and nearby mines and between Liddell and Bayswater
- Buffer lands surrounding the Bayswater infrastructure
- 330kV and 500kV switching station located to the south-west of the power block.

2.3 SITE SURROUNDING AREA

2.3.1 Liddell

Liddell is surrounded by areas mainly used for electricity generation, coal mining purposes (Drayton, Liddell Colliery, Ravensworth Rehabilitation Area), with some grazing, bushland, viticulture and thoroughbred horse stud farms. The Bayswater operational area is located approximately 3 km to the south-west of Liddell.

The closest residential areas to the Site include:

- Muswellbrook approximately 10 km to the north-west (population 11,042 according to 2011 Census QuickStats)
- Owners residence at Lake Liddell Recreation Area
- Antiene Row residents and
- Singleton approximately 25 km to the south-east (population 16,135 according to 2011 Census QuickStats).

2.3.2 Bayswater

The Site is surrounded by areas used mainly for mining purposes with some grazing, bushland, viticulture and thoroughbred horse stud farms in the region.

Key industrial uses in the area include:

- Liddell Power Station located approximately 4 km to the north-east of Bayswater and
- Existing and former coal mines surrounding the Site and within the Site footprint at the Ravensworth Rehabilitation Site.

The closest residential areas to the Site include:

- Rural residencies that do not form part of residential centres
- Jerrys Plains Village, located approximately 11 km to the south and
- Singleton approximately 25 km to the south-east.

2.4 HISTORICAL REPORT REVIEW

As outlined in **Section 1.2** above, the contamination status of Bayswater and Liddell have been assessed by previous investigation reports. It is noted that these contamination reports have been subject to several stages of external peer review by industry specialists. They were therefore inherently deemed to be of a high standard and were considered sufficiently reliable for use in this study. A comprehensive review of assessment methodologies and analytical laboratory data (including quality control) has not undertaken as part of this report. Notwithstanding, a gap analysis was undertaken with a specific focus on this project to ascertain if substantial data gaps existed that impede the purpose or objectives of this study.

A summary of the historical reports has been provided in **Appendix B**

2.5 SITE HISTORY

2.5.1 Liddell

Construction of Liddell commenced in the late 1960's and Liddell was commissioned in 1971. The first generator unit at the site was completed in 1971, two more were completed in 1972 and a fourth and final generator unit was completed in 1973. The Power Station was constructed as a base load facility and for many years has formed part of the backbone of the NSW electricity system.

AGLM has announced plans to cease coal fired generation from Liddell when the asset has reached the end of its current design and economic life. The generation unit retirement schedule has been set as one unit in April 2022 and the remaining three units in April 2023. **Table 2.2** provides a summary of the historical aerial review completed by ERM in 2013. An additional review of the most recent online aerial photography has been undertaken by Kleinfelder. Historical aerial photos have been provided in **Appendix C.**

Table 2.2: Summary of historical aerial photographs (ERM 2013)

Year	Site	Surrounding area
1974	The Liddell Power station appears to be well established on the western foreshore of Lake Liddell. Features within the Power Station appear consistent with the current infrastructure. Well established roadways connect the Power station with the New England Highway and the Liddell Ash Dam and Ash Skimmer Dam. Ash slurry appears to fill the mouth of the dam only. The Antiene Rail Coal unloader passes immediately north of Lake Liddell towards the Ravensworth township. A coal conveyor runs south of Lake Liddell, between the Liddell PO\Ver Station and Ravensworth Coal Unloader facility. Remaining buffer lands are sparsely vegetated.	The Freshwater Dam is situated south of the Liddell Ash Dam. Open cut coal mines including the Howick Mine, Ravensworth Mine, Swamp Pit Mine, and Liddell Coal Mine have commenced operations in the area. Several apparent dams occupy an area along the south—eastern foreshore of Lake Liddell, and immediately north of Macquarie Generation owned land.
1982	The Liddell Power Station remains unchanged. The Liddell Ash Dam has expanded towards the south—east by approximately 30%.	Construction has commenced at the Bayswater Power station, south of the Liddell Ash Dam. Where apparent dams were previously identified south-east of Lake Liddell, several of these dams appear to have been backfilled, with only the footprint now evident. A major coal stockpile is noted, and a rectangular clearing (inferred to be the Hunter Valley Load Point) has been established.

Year	Site	Surrounding area
		Surrounding coal mines expand operations, and dams — likely associated with the Hunter Valley Load Point, and Liddell coal mining operations have been built within this area, east of Lake Liddell.
1993	The layout of the power station and extent of the Ash Dam remains unchanged. Ash slurry comprises approximately half of the Ash Dam. Several large roadways have been built within area, including a roadway through the western portion of the Liddell Ash Dam.	Several large coal stockpiles, buildings, and other infrastructure are located where the apparent dams were present south—east of Lake Liddell. The dams appear to have been backfilled and re—vegetated. A small open cut mine has been established within this area, north of the Howick mine. A significant open—cut mine — Liddell Mine is in operation north of the area, immediately east of Lake Liddell. The Drayton Mine appears well established, immediately north and west of the Liddell Ash Dam.
2003	The layout of the power station remains unchanged. Liddell Ash Dam has significantly changed shape. A north-west dam wall has been constructed on the western portion of the Ash Dam where the roadway was identified in the 1993 aerial photography. The Ash Dam has extended in a south-westerly direction, a net the central portions of the dam have now been segmented into lagoon like configurations. A portion within the centre of the Dam appears to be revegetated.	The Drayton Mine appears to have significantly expanded operations immediately west of the Ash Dam. An open cut mine identified in the 1993 aerial immediately north of the Ash Dam has been backfilled and revegetated. Several large coal stockpiles, buildings, and other infrastructure are located where the apparent dams were present south-east of Lake Liddell. The dams appear to have been back filled and re-vegetated. A small open cut mine has been established within this area, north of the Howick mine. A significant open-cut mine — Liddell Mine is in operation north of the area, immediately east of Lake Liddell. Howick Mine remains in operation, and the Hunter Valley Coal Preparation Plant has been established between Howick and Ravensworth mines.
2009 (review of google maps)	The layout of the power station remains unchanged, with the exception of the installation of a series of solar panels to the south of the electricity generating units. Liddell Ash Dam continues to change shape, expanding to the extent of the roadway built west of the Dam. Portions of the Dam apparently filled with ash and back filled have been revegetated.	Mining remains active in the surrounding area; significant operations are evident immediately west of the Site and appear to utilise the Ash Dam facility. Liddell Mine also remains a large operation immediately east of Lake Liddell.
2020 (review of nearmaps)	The layout of the power station remains unchanged. Parts of the coal storage area appear to no longer be used with the growth of vegetation in some of these areas. Portions of the Dam apparently filled with ash and back filled have been revegetated.	Mining remains active in the surrounding area; significant operations are evident immediately west of the Site and appear to utilise the Ash Dam facility. Liddell Mine also remains a large operation immediately east of Lake Liddell.

2.5.2 Bayswater

Construction of Bayswater commenced in 1980, and full commissioning completed in 1986. Two large areas outside the current power station operational area were used as staging areas during construction. The layout of the power station and surrounding buffer lands has remained largely unchanged since 1986.

Table 2.3 provides a summary of the historical aerial review completed by ERM in 2013. An additional review of the most recent online aerial photography has been undertaken by Kleinfelder. Historical aerial photos have been provided in **Appendix C.**

Table 2.3: Summary of historical aerial photographs (ERM 2013)

Year	Site	Surrounding area
1974	The Bayswater Site is undeveloped with the exception of Freshwater Dam. The area surrounding the dam is vegetated, and the remainder of the site is clear with unsealed tracks and roadways. East of the primary Bayswater Site, within the Ravensworth Rehabilitation Area, the Ravensworth open-cut mine is in operation. Site infrastructure including office buildings, roadways, and surface water bodies (located immediately north of the cutting, and on the eastern site boundary) are established. This area is sparsely vegetated.	The Liddell Power Station is located on the western foreshore of Lake Liddell, located north-east of the Site. The Liddell Ash Dam and Ash Skimmer Dam north of the Bayswater Site supports the Liddell Power Station. A coal conveyor runs south of the Lake, between the Liddell Power Station and Ravensworth Coal Unloader facility. Several apparent dams occupy an area along the south—eastern foreshore of Lake Liddell. The Howick open-cut mine is located immediately east of the Site, and the Swamp Pit mine is situated north—east of the Ravensworth mine. A third open cut mine is situated east of Lake Liddell and adjacent to Swamp Pit mine. Generally, the surrounding area is sparsely vegetated, and no other significant features noted in the area.
1982	The Bayswater Power Station appears to be under construction. The site footprint and roadways have been established adjacent to the Freshwater Dam. The Dry Surface Area, and Switch Yard area has been is cleared, construction has commenced on the power station, and one of the four cooling towers has been erected. The Pikes Gully Ash Dam has yet to be built, however the lime softening plant sludge lagoons have been constructed. Plashett Dam is also yet to be constructed. Construction of Plashett Dam has commenced to the south west of the sludge lagoons, and west of the apparent southern extent of the Howick open cut mine.	Where apparent dams were previously identified south-east of Lake Liddell, several of these dams appear to have been backfilled, with only the footprint now evident. A major coal stockpile is noted, and a rectangular clearing (inferred to be the Hunter Valley Load Point) has been established. The Howick open-cut mine has expanded towards the east, and older portions of the mine appear to have been rehabilitated. Swamp Pit mine appears to remain in operation.
1993	The Bayswater Power Station has been completed and is operational. In addition to the sludge lagoons identified in 1982 aerial photographs, key features on the Site in the vicinity of the power station include the cooling water reservoir, brine concentrator contaminated water ponds, waste water decanting basin, the Plashett Dam, and the Pikes Gully Ash Dam. Ash slurry occupies half of the area of the Ash Dam. Coal appears to be stockpiled in the Dry Surface Area. The Ravensworth Mine has expanded operations.	The surrounding mines appear to have expanded operations.
2003	The site layout and infrastructure appear to be the same as previously identified, and consistent with the current site layout. The northern portion of the Ravensworth Mine has been rehabilitated. Except two open cut areas filled with surface water, the Site is typically covered with grass. Open cut mining is still active south of this area, however outside the site boundaries.	Several large coal stockpiles, buildings, and other infrastructure are located where the apparent dams were present south-east of Lake Liddell. The dams appear to have been backfilled and re- vegetated. A small open cut mine has been established within this area, north of the Howick mine. A significant open-cut mine — Liddell Mine in in operation north of the area, immediately east of Lake Liddell. The Drayton Mine is evident north—west of the Bayswater Power Station.

Year	Site	Surrounding area
		Howick Mine remains in operation, and the Hunter Valley Coal Preparation Plant has been established between Howick and Ravensworth mines.
2009 (review of google maps)	No changes to site features within the Bayswater or Ravensworth rehabilitation areas are apparent.	A large area north east of the blunter Valley Coal Preparation Plant has been cleared. Whilst it appears to be associated with mining operations the purpose of this area is not known. The Ashton opencut mine is evident east of the Ravensworth mine.
2020 (review of nearmaps)	No changes to site features within the Bayswater site. The Ravensworth rehabilitation has continued with a larger proportion of the void now filled.	There appears to be very little change within the surrounding area, other than the operation and progression of coal mining.

2.6 TOPOGRAPHY

The power stations lie within a broad river valley created by the Hunter River and its tributaries. Whilst the general slope is towards the Hunter River in the south, the topography is characterised by undulating hills that leads to high variability in slope direction across the lands.

2.6.1 Liddell

The Liddell operational area falls gently to the east. The main power block is cut into the side of a hill, the section of which exposes natural bedrock. The 33 kV switching station at the higher end of the slope lies at an elevation of approximately 176 m above sea level. It falls to the main power block at an elevation of approximately 145 m above sea level and reaches approximately 133 m above sea level at Lake Liddell. Evidence suggests that the site level at the boundary with the man-made Lake Liddell has been raised over time through in-filling.

2.6.2 Bayswater

The Bayswater operational area gently slopes to the north with the main power block cut into the slope of a hill. The power block lies at an elevation of approximately 200 m above sea level, dropping to an elevation of approximately 170 m above sea level at the northern edge of the coal storage facility. The Pikes Gully Ash Dam lies at an elevation of approximately 170m above sea level, with the down-gradient Pikes Gully valley sloping towards the east. The Ravensworth Rehabilitation Site lies at an elevation of 120 m above sea level, with the local topography highly disturbed by former mining operations.

2.7 HYDROLOGY

The major local hydrological feature is the Hunter River, located approximately 10 km and 11 km to the south of the Bayswater and Liddell, respectively.

Liddell is immediately bounded on three sides (north, east and south) by the man-made Lake Liddell. The land immediately to the west of Liddell is elevated. Cooling water for Liddell is pumped directly from Lake Liddell via a pump station on the northern side of Liddell and discharged back into Lake Liddell via a channel on the southern side. Lake Liddell is replenished with piped water from the Hunter River via a series of pump stations. These feed into Lake Liddell from the southern end. Excess cooling water from Bayswater and Liddell are also directed into Lake Liddell.

Bayswater and Liddell receive domestic, but not potable, water from the Freshwater Dam located on the western side of Bayswater. The Freshwater Dam is replenished with piped water from the Hunter River via a series of pump stations and from runoff generated on the surrounding land on the north, west and southern sides. The land immediately surrounding the Freshwater Dam on these sides is largely undeveloped.

In addition, several local waterways are found in the vicinity of the Site and the main hydrological features can be summarised as follows:

- Tinkers Creek, running along the western boundary of Bayswater and draining into Lake Liddell in the north
- Bayswater Creek, draining from Lake Liddell. Bayswater Creek runs along the western boundary of the Ravensworth Rehabilitation Site, ultimately draining into the Hunter River
- Bowmans Creek, running along the eastern boundary of the Ravensworth Rehabilitation Site, ultimately draining into the Hunter River
- Saltwater Creek and Wisemans Creek, draining to the south into the Plashett Dam
- the Plashett Dam (also known as Plashett Reservoir), located approximately 4 km to the south west of Bayswater
- the Freshwater Dam, located adjacent and directly to the west of Bayswater
- the Bayswater Cooling Water Makeup Dam, located directly to the south of Bayswater
- Chilcotts Creek drains land to the north—east of Bayswater and flows into Lake Liddell in the south-west; and
- The Bayswater Ash Dam located to the east of Bayswater
- the Brine Concentrator Holding Pond, located approximately 740m to the south east of Bayswater
- the Brine Concentrator Decant Basin, located approximately 1.3 km to the south west of Bayswater and
- void 4 at the Ravensworth Rehabilitation Site, which acts as a water management storage system.

2.8 GEOLOGY AND SOILS

2.8.1 Regional geology

A range of regional geological conditions make-up the entire site, as summarised below, (ERM 2013):

- The Muswellbrook 1:25,000 Geological Sheet 9033-II-N (NSW Department of Mineral Resources) indicated Liddell and the areas adjacent to Lake Liddell to the north to be underlain by Permian Age, Maitland Group, Mulbring Siltstone consisting of dark-grey shale and siltstone
- The Jerry Plains Geological Series Sheet 9033-11-S (edition 1) 1987 indicates the geology around the area adjacent to the south of Lake Liddell to be the Saltwater Creek Formation of the Whittingham Coal Measures. This formation which is Permian Age and part of the Singleton Super Group, and comprises sandstone and siltstone with thin lenticular coaly bands and marine siltstone intercalated towards the base
- The 1:100 000 Hunter Coalfield geological map further indicates that Quaternary age alluvial sediments (consisting of silt, sand and gravel) are associated with the Bayswater Creek, Foy Creek and the Hunter River.

While the majority of the Pikes Gully Ash Dam is located on the Mulbring Siltstone of the Maitland Group, the easternmost extent of the Pikes Gully Ash Dam is located on the sandstone, siltstone and minor coal bands of the Saltwater Creek Formation of the Wittingham Coal Measures, Singleton Supergroup.

The Ravensworth Rehabilitation Site (in the location of the former Ravensworth No.2 Mine and a section of the Ravensworth South Mine) is underlain by the Jerrys Plain Subgroup, Archfield Sandstone and the Foybrook Formation within the Wittingham Coal Measures. Together these sedimentary deposits consist of a sequence of sandstones, shales, mudstone, minor conglomerate and coal seams (Pacific Power, 1993).

2.8.2 Soil types

The soil in the area is categorised as ‘sodosol’ (Atlas of Australian Soils 1:2,000,000 Map). Characteristics of these soils are high sodium contents, abrupt increases in clay content at depth, prone to crusting, unstable soil structure prone to erosion, with seasonally perched water tables.

2.8.3 Field lithology Bayswater (ERM 2014)

Table 2.4 provides a summarised description of the field lithology observed by ERM at Bayswater (ERM 2014)

Table 2.4: Generalised field lithology descriptions (ERM 2014)

Lithological unit	Description	Depth (mbgl)[1]
Hardstand (present for operational locations)	Concrete generally in good condition	0 - 0.2
Fill	Reworked silty clay, clay and / or gravel, brown or brown with orange or grey mottling, dry to moist, non-plastic, no odours or staining	Up to 5 (extending to 3.5m within the main operational area)
Silty Clay	Orange-brown with grey mottling and light brown with grey mottling, moist, shale or siltstone gravel inclusions (completely weathered)	0.5 – 1.0
Bedrock	Siltstone, shale or sandstone bedrock, brown becoming grey with depth, generally dry, fine grained.	1.0 – 30.0

1. Given the variation in topography across the Site, depths and lithologies may vary.

2.8.4 *Field lithology Liddell (ERM 2014)*

Table 2.5 provides a summarised description of the field lithology observed by ERM at Liddell (ERM 2014)

Table 2.5: Generalised field lithology descriptions (ERM 2014)

Lithological unit	Description	Depth (mbgl)[1]
Hardstand (present for operational locations)	Concrete or bitumen, generally in good condition	0 – 0.4
Fill	Reworked silty clay, clay and / or gravel, brown or brown with orange or grey mottling, dry to moist, non-plastic	Up to 2.5
Silty Clay	Orange-brown with grey mottling and light brown with grey mottling, moist, shale or siltstone gravel inclusions (weathered)	0.5 – 1.0
Bedrock	Siltstone, shale or sandstone bedrock, brown grading to grey with depth, generally dry, fine grained.	1.0 - 20

1. Given the variation in topography across the Site, depths and lithologies varied.

2.9 HYDROGEOLOGY

The sedimentary rocks of the region are categorised as follows (ERM 2013):

1. Low permeability conglomerate, sandstone, siltstone and mudstone that comprise the majority of the Permian sediments
2. Low to moderately permeable coal seams, typically ranging in thickness from 2.5 m to 10 m, which are the prime water bearing strata within the Permian sequence.

Medium to highly permeable Quaternary alluvial sediments are associated with the Bayswater Creek, Foy Creek and the Hunter River.

Regional groundwater flow is expected to be towards the Hunter River located to the south. Due to the undulating nature of the topography, variation in localised groundwater flow directions are however probable with groundwater flow expected to follow topography. Groundwater flow at the Ravensworth Rehabilitation Site is predominantly towards the Hunter River (along the southerly dip of the Bayswater Syncline) with a minor component of lateral discharge to the Bayswater Creek and Foy Brook.

As part of the PFAS investigation report (AECOM 2019), AECOM developed some local groundwater contour maps (**Appendix D**). The AECOM groundwater contour maps indicate that across the Liddell site, groundwater generally flows in an easterly direction towards Lake Liddell. At Bayswater, the AECOM groundwater contour maps indicates generally groundwater flows in a north – north-westerly direction locally to the main power generating operational area. However, in the area around the fuel oil installation and Flyash return water bund groundwater appears domed with groundwater moving to the south east or south west. This is an indication that groundwater generally follows the local topography.

The sediments of marine origin are responsible for the naturally highly saline groundwater in the area. Groundwater in the Permian coal measures is reportedly moderately to highly saline with total dissolved solids (TDS) levels that can be higher than 6,000 mg/L (Pacific Power, 1993). There is currently no recorded beneficial use of groundwater since the target geological formations are generally of low permeability and of high salinity.

Groundwater monitoring wells installed as part of the previous contamination assessments were, in general, drilled to a maximum depth of 6 meters below ground level (mbgl).

No bores on the Liddell site are used for beneficial extraction of groundwater.

A groundwater bore search was conducted by ES (ES 2018), as part of the Liddell additional pre-existing contamination study, using the NSW Office of Water Groundwater Map. The study revealed that a total of eight registered bores are located within approximately 5 km from the proposed Battery. Summarised details of the registered bores are provided below in **Table 2.6**.

Table 2.6: Summary details of registered groundwater bores within 5 km of the proposed Battery

Bore identification	Distance from Liddell (km)	Direction from Liddell	Water bearing zone (m)	Registered use
GW024022	1.67	West	3.0-3.05	Industrial (abandoned)
GW201061	4.0	South-east	12.0-15.1	Monitoring bore
GW201062	3.9	South-east	14.5-17.4	Monitoring bore
GW080212	4.27	East	Not recorded	Monitoring bore
GW200743	4.93	West	Not recorded	Test bore
GW200744	4.93	West	Not recorded	Test bore
GW200745	4.93	West	Not recorded	Test bore
GW200746	5.07	West	Not recorded	Test bore

A summary of groundwater conditions across the site provided in the historical report review (**Section 2.4**) has identified that:

- Natural groundwater is moderately to highly saline with TDS levels that can be higher than 6,000 mg/L
- There is an acidic groundwater plume across both the Liddell and Bayswater sites where pH concentrations are <6.5
- Ammonia plumes have been identified on each of the Liddell and Bayswater sites
- Areas of high salinity have also been identified associated with specific operational areas such as the sludge lagoon
- The AECOM investigation identified the presence of PFAS in groundwater at concentrations exceeding investigation levels (ILs) in 21 of 74 monitoring well locations. However, AECOM identified that nearby downgradient sediment and surface water results were all less than the LOR and/or ILs, indicating no complete exposure linkages were present. This indicates whilst PFAS is present in the groundwater it is not impacting the off-site environment.

3 INVESTIGATION RESULTS

3.1 SAMPLE RESULTS

As part of the review referenced in **Section 2.4** and **Appendix E** relevant soil and sediment sampling results have been collated and included as part of this assessment. The results have been screened against updated criteria as described in **Section 3.2**.

3.2 LAND USE CLASSIFICATION

NEPM 2013 describes the following human health generic land use scenarios:

- Residential A – low rise (access to gardens, <10% consumption of homegrown fruit / veg). Also, childcare centres, preschool and primary school
- Residential B – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments
- Recreational C – Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate and
- Commercial / Industrial D – Commercial / industrial, includes premises such as shops, offices, factories and industrial sites (noting significant areas of hardstand are envisaged at such sites).

Human health criteria for metals and organic substances has been provided in NEPM 2013 as Health Investigation Levels (HIL) and for selected petroleum compounds and fractions via the inhalation (NEPM 2013) and direct contact pathways (CRC-Care 2011) as Health Screening Levels (HSL). HILs and HSLs have been selected for commercial / industrial, which are considered appropriate land-use scenarios for both the ongoing use Power Station use of the site and the proposed Project.

Terrestrial ecological investigation levels and ecological screening levels (EIL and ESL) have also been selected for commercial / industrial land use considered where relevant as a conservative measure. However, these are conservative criteria and are generally not applicable to industrial sites such as the power stations, where substantial filling and modification of the land and has occurred. Nor are they relevant to the Project which is classified as development for the purpose of "electricity generating works", being a type of industrial use. As part of ERM site investigation concentrations of pH and CEC as well as PSD were assessed by their laboratory. This data has been used in the calculation of site-specific derived criteria.

Areas of ecological significance have not been identified by the previous investigations used in this study. Site-specific EILs calculated by previous studies were adopted, and additional generic criteria sourced, where it was missing.

The current published version of the Heads of EPA, National Environmental Management Plan for PFAS (January 2020, HEPA NEMP 2.0) has also been adopted for preliminary data screening purposes.

The following Land use exposure scenarios were used:

- HIL D-CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP
- HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m
- ESL - Commercial / Industrial - Coarse (NEPM 2013) - CRC Care (2017)
- EIL - Commercial / Industrial (NEPM 2013) and
- EIL - Commercial / Industrial - HEPA NEMP 2.0.

Table 3.1 provides a summary of criteria selected for screening laboratory results.

Table 3.1: Summary of selected investigation criteria used

Land use exposure scenario				HIL D/CRC CARE direct contact	HSL (vapour intrusion) D - commercial / industrial - sand - 0 - <1m	ESL - commercial / industrial - coarse	EIL - commercial / industrial indirect exposure
TRH / TPH	TRH C37-C40	mg/kg	100	--	--	--	--
	C10-C16	mg/kg	25	--	--	--	--
	>C10-C16 less Naphthalene (F2)	mg/kg	25	20,000	NL	170	--
	C16-C34	mg/kg	90	27,000	--	1,700	--
	C34-C40	mg/kg	120	38,000	--	3,300	--
	>C10 - C40 (Sum of total)	mg/kg	210	--	--	--	--
Metals	Arsenic	mg/kg	1	3,000	--	--	160
	Boron	mg/kg	5	300,000	--	--	--
	Cadmium	mg/kg	0.3	900	--	--	--
	Chromium (III+VI)	mg/kg	0.3	3,600	--	--	550
	Copper	mg/kg	0.5	240,000	--	--	320
	Lead	mg/kg	1	1,500	--	--	1,800
	Nickel	mg/kg	0.5	6,000	--	--	450
	Selenium	mg/kg	3	10,000	--	--	--
	Zinc	mg/kg	0.5	400,000	--	--	1,100
	Mercury	mg/kg	0.01	730	--	--	--
PCBs	PCBs (Sum of total)	mg/kg	1	7.0	--	--	--
PAH	Benzo(a) pyrene	mg/kg	0.1	--	--	172	--
	Carcinogenic PAHs (as B(a)P TPE)	mg/kg		40	--	--	--
	Carcinogenic PAHs (as B(a)P TPE, PEFx3)	mg/kg		--	--	--	--
	Naphthalene	mg/kg	0.1	11,000	NL	--	370
	PAHs (Sum of total)	mg/kg	0.8	4,000	--	--	--
TRH / BTEX	Benzene	mg/kg	0.1	430	3.0	75	--
	Naphthalene	mg/kg	0.1	11,000	NL	370	370
	Toluene	mg/kg	0.1	99,000	NL	135	--
	Ethylbenzene	mg/kg	0.1	27,000	NL	165	--
	Xylene (m & p)	mg/kg	0.2	--	--	--	--
	Xylene (o)	mg/kg	0.1	--	--	--	--

Land use exposure scenario				HIL D/CRC CARE direct contact	HSL (vapour intrusion) D - commercial / industrial - sand - 0 - <1m	ESL - commercial / industrial - coarse	EIL - commercial / industrial indirect exposure
	Xylene Total	mg/kg	0.3	81,000	230	180	--
	Total BTEX	mg/kg	0.6	--	--	--	--
	C6-C10	mg/kg	25	--	--	--	--
	>C6-C10 less BTEX (F1)	mg/kg	25	26,000	260	215	--
	C6-C9	mg/kg	20	--	--	--	--
	Benzene	mg/kg	0.1	430	3.0	50	--
SVOCs	Aldrin	µg/kg	100	45,000	--	--	--
	Dieldrin	µg/kg	200	45,000	--	--	--
	Benzo(a) pyrene	mg/kg	0.1	--	--	172	--
	gamma-Chlordane	mg/kg	0.1	530	--	--	--
	Chlordane (cis)	µg/kg	100	530,000	--	--	--
	Chlorpyrifos	mg/kg	0.2	2,000	--	--	--
	DDD	µg/kg	100	3,600,000	--	--	--
	4,4-DDE	µg/kg	100	3,600,000	--	--	--
	DDT	µg/kg	100	3,600,000	--	--	--
	Endosulfan I	µg/kg	200	2,000,000	--	--	--
	Endosulfan II	µg/kg	200	2,000,000	--	--	--
	Endrin	µg/kg	200	100,000	--	--	--
	Heptachlor	µg/kg	100	50,000	--	--	--
	Hexachlorobenzene	µg/kg	100	80,000	--	--	--
	Methoxychlor	µg/kg	100	2,500,000	--	--	--
	Mirex	mg/kg	0.1	100	--	--	--
	Naphthalene	mg/kg	0.1	11,000	NL	--	370
	Pentachlorophenol	mg/kg	0.5	660	--	--	--
	Phenol	mg/kg	0.5	240,000	--	--	--
Historical	PFOS*	mg/kg		20	--	1.0	0.01
	PFOA	mg/kg		50	--	10	--

Notes:
-- No criteria available
NL – No Limit

It should be noted that an exceedance of screening criteria does not necessarily mean that there is a significant risk of harm. Rather, any such exceedance is a trigger for further consideration. The commercial / industrial criteria

adopted in this report has been selected to provide an initial understanding of likely soil conditions across the various parts of the Project site that may be impacted during construction and operation of the Project.

3.3 BATTERY SITE AREAS

3.3.1 *Area 1 - the existing solar array area*

A review of the available data for this area identified six relevant sampling locations to be present in the Area1 area with 13 samples being analysed.

- LS_SB01
- LS_SB02
- LS_SB03
- LP_SB11
- LP_SB12
- LP_MW02.

The sampling locations are presented in **Figure E, Appendix A**. **Table 3.2** provides a summary of the soil sampling results selected from the previous investigation data set. Samples selected were from within the Area 1 location, or immediately outside the area, but considered relevant to this assessment. Full analytical screening tables are provided in **Appendix E**.

Table 3.2: Summary of soil analytical results from Area 1 area

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
Metals				
13	Arsenic (As)	7	25	None
13	Cadmium (Cd)	<0.1	<0.1	
13	Chromium (Cr)	8	28	
13	Copper (Cu)	<0.5	23	
13	Nickel (Ni)	2	20	
13	Lead (Pb)	8	26	
13	Zinc (Zn)	14	120	
13	Mercury (Hg)	<0.1	0.8	
BTEXN, TRH				
13	Benzene	<0.2	<0.2	None
13	Toluene	<0.5	<0.5	
13	Ethylbenzene	<0.5	<0.5	
13	Total Xylene	<0.5	<0.5	
13	C_6-C_{10}	<10	<10	
13	C_6-C_{10} minus BTEX (F1)	<10	<10	
13	>C_{10}-C_{16}	<50	<50	
13	>C_{10}-C_{16} minus Naphthalene (F2)	<50	<50	

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
13	>C_{16}-C_{34}	<100	<100	
13	>C_{34}-C_{40}	<100	<100	
13	Total >C_{10}-C_{40}	<50	<50	
PAHs				
13	Total PAH	<0.5	<0.5	None
13	BaP	<0.5	<0.5	
13	PAH as BaP TEQ	<0.5	<0.5	
13	Naphthalene	<1.0	<1.0	
Asbestos				
5	Asbestos	<0.1	<0.1	No asbestos identified

3.3.2 Area 2 - DL01 and DL02

A review of the available data for these two areas identified ten relevant sampling locations to be present in this area with 16 samples being analysed.

- LM_MW01
- LM_MW02
- LM_MW03
- LA_MW01
- LA_SB01
- LM_SB01
- LR_MW01
- LB_SV46
- L_124_ESMW01
- L_124_ESMW02.

The sampling locations are presented in **Figure F1** and **Figure F2, Appendix A**. **Table 3.3** provides a summary of the soil sampling results selected from the previous investigation data set. Samples selected were from within the area, or immediately outside the area, but considered relevant to this assessment. Full analytical screening tables are provided in **Appendix E**.

Table 3.3: Summary of soil analytical results from Area 2 area

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
Metals				
16	Arsenic (As)	2	17	None
4	Boron (B)	<5	<5	
16	Cadmium (Cd)	<0.3	<1.0	
16	Chromium (Cr)	3	19	
16	Copper (Cu)	<5.0	14	

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
16	Nickel (Ni)	<2.0	12	
16	Lead (Pb)	5	26	
4	Selenium (Se)	<3	<3	
16	Zinc (Zn)	<5	209	
16	Mercury (Hg)	<0.01	<0.1	
BTEXN, TRH				
16	Benzene	<0.1	<0.2	None
16	Toluene	<0.1	<0.5	
16	Ethylbenzene	<0.1	<0.5	
16	Total Xylene	<0.3	<0.5	
16	C_6-C_{10}	<10	<25	
16	C_6-C_{10} minus BTEX (F1)	<10	<25	
16	>C_{10}-C_{16}	<25	<50	
16	>C_{10}-C_{16} minus Naphthalene (F2)	<25	<50	
16	>C_{16}-C_{34}	<90	150	
16	>C_{34}-C_{40}	<100	<120	
16	Total >C_{10}-C_{40}	<50	<210	
PAHs				
16	Total PAH	<0.5	<0.8	None
16	BaP	<0.1	<0.5	
16	PAH as BaP TEQ	<0.5	<0.5	
16	Naphthalene	<0.1	<1	
Asbestos				
1	Asbestos	<0.1	16g	Present

3.3.3 *Area 3 the existing coal storage yards*

A review of the available data for this area identified nine relevant sampling locations to be present in this area with ten samples being analysed.

- L_87_ESTP02
- L_87_ESTP03
- L_87_ESTP04
- L_87_ESSB01
- L_138_ESMW01
- LAW_138_ESSD03
- LAW_138_ESSD04
- LAW_138_ESTP01

- LAW_138_ESTP02.

The sampling locations are presented in **Figure G, Appendix A**. **Table 3.4** provides a summary of the soil sampling results selected from the previous investigation dataset. Samples selected were from within the area, or immediately outside the area, but considered relevant to this assessment. Full analytical screening tables are provided in **Appendix E**.

Table 3.4: Summary of soil analytical results from Area 3 area

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
Metals				
10	Arsenic (As)	1	16	None
10	Boron (B)	<5	6	
10	Cadmium (Cd)	<0.3	0.6	
10	Chromium (Cr)	1.1	24	
10	Copper (Cu)	4.9	25	
10	Nickel (Ni)	2.7	17	
10	Lead (Pb)	6	22	
10	Selenium (Se)	<3	<3	
10	Zinc (Zn)	15	240	
10	Mercury (Hg)	<0.01	0.04	
BTEXN, TRH				
10	Benzene	<0.1	<0.1	None
10	Toluene	<0.1	<0.1	
10	Ethylbenzene	<0.1	<0.1	
10	Total Xylene	<0.3	<0.3	
10	C_6-C_{10}	<25	<25	
10	C_6-C_{10} minus BTEX (F1)	<25	<25	
10	>C_{10}-C_{16}	<25	81	
10	>C_{10}-C_{16} minus Naphthalene (F2)	<25	81	
10	>C_{16}-C_{34}	<90	390	
10	>C_{34}-C_{40}	<120	<120	
10	Total >C_{10}-C_{40}	<210	480	
PAHs				
10	Total PAH	<0.8	8.1	None
10	BaP	<0.1	0.3	
10	PAH as BaP TEQ	<0.2	0.5	
10	Naphthalene	<0.1	0.1	

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
PCBs				
4	PCB total	<1.0	<1.0	None

3.4 DECOUPLING WORKS

A review of the available data for this area identified 53 relevant sampling locations to be present in this area with 76 samples being analysed.

- L_142_ESSD01
- L_142_ESSD02
- L_142_ESMW01
- L_106_ESSD01
- L_106_ESSD02
- L_106_ESMW01
- L_106_ESMW01b
- L_86_ESMW01b
- L_89_ESMW01
- L_89_ESMW02
- L_91_ESMW01
- LB_SV38
- LB_SV39
- LB_SV40
- LB_SV41
- LB_SV42
- LB_SV46
- LF_MW01
- LF_SB01
- LF_SB02
- LF_SB03
- LH_MW02
- LH_MW03
- LH_SB01
- LI_MW01
- LJ_SB11
- LO_MW01
- LO_MW14
- LO_MW15
- LO_MW16
- LO_SB03
- LO_SB04
- LO_SB05
- LQ_MW03
- LQ_MW05
- LQ_MW06
- LQ_MW07
- LQ_SB01
- LQ_SB02
- LQ_SB03
- LQ_SB04
- LQ_SB05
- LQ_SB06
- LQ_SB07
- LQ_SB08
- LQ_SB11
- LR_MW03
- LR_MW04
- LU_MW01
- LU_MW02
- LU_MW03
- LU_SB01
- LU_SB02.

The sampling locations are presented in **Figure H, Appendix A**. **Table 3.5** provides a summary of the soil sampling results selected from the previous investigation data set. Samples selected were from within the area, or immediately outside the area, but considered relevant to this assessment. Full analytical screening tables are provided in **Appendix E**.

Table 3.5: Summary of soil analytical results from the decoupling area

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
Metals				
76	Arsenic (As)	3	28	None
14	Boron (B)	<5	<5	
76	Cadmium (Cd)	<0.3	1	
76	Chromium (Cr)	2	81	
76	Copper (Cu)	2.5	110	
76	Nickel (Ni)	<2	288	
76	Lead (Pb)	3	29	
14	Selenium (Se)	<3	3	
76	Zinc (Zn)	<5.0	200	

Number of samples analysed	Analyte	Min conc. (mg/kg)	Max conc. (mg/kg)	Samples exceeding SAC
76	Mercury (Hg)	<0.01	<0.1	
BTEXN, TRH				
76	Benzene	<0.1	<0.2	None
76	Toluene	<0.1	<0.5	
76	Ethylbenzene	<0.1	<0.5	
76	Total Xylene	<0.3	<0.5	
76	C_6-C_{10}	<10	<25	
76	C_6-C_{10} minus BTEX (F1)	<10	<25	
76	>C_{10}-C_{16}	<25	620	
60	>C_{10}-C_{16} minus Naphthalene (F2)	<25	80	
76	>C_{16}-C_{34}	<90	9,420	LF_SB01 at 0.1m >ESL LQ_SB07 at 1.0m >ESL
76	>C_{34}-C_{40}	<100	<120	None
76	Total >C_{10}-C_{40}	<50	10,000	
PAHs				
76	Total PAH	<0.5	<0.8	None
76	BaP	<0.1	<0.5	
62	PAH as BaP TEQ	<0.5	<0.5	
76	Naphthalene	<0.1	<5	
PCBs				
35	PCB total	<0.1	<1.0	None
PFAS				
10	PFOS	<0.0005	<0.0005	None
10	6:2 FtS	<0.005	<0.005	
10	PFOA	<0.0005	<0.0005	
Asbestos				
21	Asbestos	<0.1	16g	LB_SV41 LB_SV46

3.5 BAYSWATER ANCILLARY WORKS

As part of the previous investigation works across the Bayswater site, more than 930 samples were collected and analysed. A review of the analytical results has identified that out of the samples taken only 20 samples were found to have elevated concentration of COPC above adopted Commercial / Industrial screening criteria. AEC identified in the previous investigations where samples were found to be elevated above the adopted commercial / industrial screening criteria are presented in **Figures I1** and **I2, Appendix A,** and include:

- Bayswater ash dam (B_18)
- Fire training area (B_11)
- Coal Conveyor (B_40)
- H1 and H2 Howick Coal Conveyor (B_46)
- Bayswater Landfill (B_55)
- Ravensworth Void (B59)
- Antiene Rail coal unloader (B_67)
- Oil water separator and fuel storage (B_69)
- Coal drying area (B_72)
- Sludge Lagoon (B_38)
- Demineraliser plant (BI)
- Former Contractor Staging area (BJ)
- Lime Softening plant (BN)
- Mobile Plant workshop and refuelling (BP).

On reviewing the sampling data in relation to the BAW, seven of the 14 AEC identified above are present in the BAW area (B_11, B_40, B_46, B_38, BI, BN and BP). **Table 3.6** provides a summary of the samples found to exceed the Commercial / Industrial screening criteria in the BAW area along with details of the exceeded results. The full analytical data set for these samples is provided in **Appendix E**. The full sampling data set for Bayswater has not been provided in this report for clarity.

Table 3.6: Summary of exceedances in the Bayswater area

Location Code	Sample Depth Range (m)	Benzene	>C6-C10 less BTEX (F1)	>C10-C16 less Naphthalene (F2)	C16-C34	C34-C40	Copper	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.1	25	25	90	120	0.5	0.5
HIL D / HSL D (direct contact)		430	26,000	20,000	27,000	38,000	240,000	400,000
HSL (VI) D - SAND - 0 - <1m		3.0	260	NL	--	--	--	--
ESL - Coarse		75	215	170	1,700	3,300	--	--
EIL - Indirect Exposure		--	--	--	--	--	320	1,100
B_11_ESSD01		<0.1	<25	**11,000**	**160,000**	**12,000**	**1600**	**1300**
B_11_ESSD02		<0.1	<25	**3300**	**96,000**	**12,000**	**300**	**210**
B_40_ESTP01	0.1-0.1	<0.1	<25	**200**	**780**	<120	**16**	**130**
B_46_ESTP04	0.01-0.01	<0.1	<25	**420**	**2000**	**140**	**16**	**600**
B_38_ESSD05	0.5-0.5	<0.1	<25	<25	<90	<120	**1000**	**47**
B_38_ESSD06	0.5-0.5	<0.1	<25	<25	<90	<120	**680**	**47**
BI_MW02	0.2	< 0.2	< 10	< 50	< 100	< 100	**21**	**3680**
BN_MW01	10	< 0.2	**156**	**540**	**1,670**	**160**	**20**	**60**
BN_MW02	10	< 0.2	**49**	**420**	**1,390**	**120**	**21**	**60**
BP_MW05	0.1	< 0.2	**10**	**260**	**2,410**	**400**	**22**	**164**

4 CONCEPTUAL SITE MODEL FOR THE PROJECT SITE

4.1 CSM INTRODUCTION

This section describes the preliminary CSM relevant to the Project site, which has been developed based on information gathered and presented in the preceding sections (including previous sampling data). The information obtained identifies:

- The Project site being assessed and which COPC pertain to the nature of the sources present within that area
- The potential release and transport mechanisms in which COPC may be released to environmental media
- The potential human and environmental receptors that may be impacted by the COPC identified in each of the AEC
- An exposure route (e.g. ingestion, inhalation) in which the receptor may be exposed to COPC within the AEC.

The CSM is accompanied by text that considers the findings of the investigation (field observations, laboratory results etc) and provides a classification of qualitative risk based on sound professional judgement considering the investigation findings.

The following is noted pertaining to all project areas and the development of the CSM:

- Kleinfelder understands that it is considered unlikely that groundwater will be encountered during any construction activities associated with the Project site. Should groundwater be encountered as part of the Project it is considered this would be managed as part of the CEMP
- Further, there are currently no abstraction bores for domestic potable or non-potable uses in the surrounding area, therefore, potential groundwater issues are not considered to represent a significant risk to human health or the environment. Therefore, groundwater has not been included as part of the CSM
- Based on the sites ongoing operation as a power station site and the current environmental protection licenses that are in place, it is considered that:
    - surface water across the site is being adequately controlled and monitored. Surface water issues that may arise from the construction of the Project should be dealt with as part of the CEMP
    - off-site receptors have not been included as part of this assessment but would be managed as part of the ongoing operation of the site

  Therefore, surface water and off-site receptors have not been included as part of the CSM development
- As the site is an operational power station, it is considered that in relation to this contamination assessment the Project site would have minimal impact to the on-site ecology as the areas are already significantly developed (for example the Battery areas (which will cause the largest surface disturbance footprint) will have current vegetation removed and large concrete pads constructed (**Photo 1**) across large parts of the areas with access tracks between the concrete pads). Where the Project may interact with surface water bodies specific construction environmental controls (i.e. sediment erosion controls as part of the CEMP) will be implemented. Therefore, fauna and flora ecology have not been considered to be a receptor as part the CSM development.

Source- pathway receptor linkages have been considered for each area being assessed on the following rationale:

- Potentially complete – where the receptor could be exposed to COPC over a prolonged and repeated period
- Potentially incomplete – where the receptor could be exposed to COPC, however prolonged and repeated exposure is considered unlikely due to site layout and / or occupational controls
- Incomplete – where the receptor is unlikely to be exposed to COPC since the exposure pathway is missing or negligible.

4.2 BATTERY SITE AREAS

4.2.1 Potential sources of contamination and release and transport mechanisms

Following a review of previous reports, **Table 4.1** summaries the areas being considered as part of this assessment and presents details on the potential contaminant release mechanisms present in the Project site .

Table 4.1: Summary of areas, potential release and transport mechanisms and CoPCs

Area	Area 1	Area 2	Area 3
Name	Existing solar array area	Non-process development land (DL01 and DL02)	Existing coal storage yards
Lot and DP	Lot 2 DP1022827	Lot 2 DP1022827	Lot 2 DP1022827 Lot 601 DP0193 Lot 19 DP752486
Area footprint	12.1 ha	9.7 ha	21.2 ha
COPCs	TRH, BTEX, PAH, OCP / OPP, heavy metals and asbestos	TRH, BTEX, PAH, OCP / OPP, heavy metals, ammonia, PFAS and asbestos	TRH, BTEX, PAH, heavy metals, sulphur and Asbestos
Soil profile	From the 6 investigation locations fill was not identified to be present.	Fill was found to be present to 1.5m in two locations in DL01 and was found between depths of 0.8 to 1.9m in DL02.	In some investigation locations coal fines were identified to be present at depths up to 3m.
Summary	This area is located to the south of the main power generating infrastructure and to the east of the coal storage area. AECs have previously been identified in this area and include: • Solar array 01 • Solar array 02 • Solar array ancillary infrastructure • Solar array construction and laydown area • Stormwater pond. In addition, and to the south of the Project site, it is noted there is an historical asbestos landfill and another small landfill area. Potential for other areas of historical fill material in this area, aerial photographs show ground disturbance activities.	The majority of this area was used as buffer land and the only potential contamination source identified was: • A historical laydown area used for the construction of the power station • Old machinery laydown area • Laydown yards. However, the remainder of the area has generally remained undeveloped. An ammonia plant adjacent to DL02 was identified to be present. No AECs were identified in this area.	Located to the south of the main operational area and to the south of the main switchyards. The majority of the samples were taken from the edge of the existing coal storage yards which does not identify the depth of coal fines in the centre of the storage areas. AGLM have confirmed all coal will be removed and used in the power station prior to any construction works being carried out in this area.

Potential release and transport mechanisms	Potential leaks and spills from plant and machinery operating in this area to on-Site soils. Volatilisation of contaminants from soil / fill. Leaching / runoff / airborne transport	Potential leaks and spills from plant and machinery operating in this area to on-Site soils. Volatilisation of contaminants from soil / fill. Leaching / runoff / airborne transport. Application of potentially PFAS contaminated fire-fighting foam during training, testing and emergency events.	Potential leaks and spills from plant and machinery operating in this area to soil / fill. Volatilisation of contaminants from soil / fill. Leaching / runoff / airborne transport.

4.2.2 Human health receptors and exposure pathways

Based on the continued land use of the Project site for the purpose of the Project, being a commercial / industrial land use, the following human receptors have been considered:

- On-Site future construction workers i.e. earthworks for the preparation of the Project site for construction, including the excavation of cable trenches
- On-Site future intrusive maintenance workers who may complete maintenance to above ground and underground infrastructure (e.g. services). It is considered that shallow intrusive works will be conducted to a maximum depth of 2 mbgl
- On-Site future commercial / industrial workers (e.g. operators for the Battery).

The following human exposure pathways may apply:

- Dermal contact with and incidental ingestion of soils
- Inhalation of soil-derived dust in indoor and / or outdoor air
- Inhalation of soil-derived vapour in indoor and outdoor air
- Inhalation of soil-derived vapour in a trench
- Inhalation of groundwater-derived vapour in indoor and outdoor air
- Inhalation of groundwater-derived vapour in a trench.

An assessment of identified source-pathway-receptor (S-P-R) linkages for the Area 1 battery storage (existing solar array area) area has been presented in **Table 4.2**.

Table 4.2: Human health S-P-R assessment for Area 1

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Dermal contact and incidental ingestion of soil	On-Site future construction workers	Potentially complete	Whilst some data is available which did not identify results to have concentrations of COPCs above the adopted screening criteria, this data is considered to be generally limited to the periphery of the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have prolonged and repeated access to soils within the area. The majority of the area will be covered with hardstand.

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Inhalation of soil-derived dust in indoor and / or outdoor air	On-Site future construction workers	Potentially complete	Whilst some data is available which did not identify results to have concentrations of COPCs above the adopted screening criteria, this data is considered to be generally limited to the periphery of the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have prolonged and repeated access to soil dust within the area. The majority will of the area will be covered with hardstand.
Inhalation of soil-derived vapour in indoor and / or outdoor air	On-Site future construction workers	Potentially complete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Potentially complete	
Inhalation of soil-derived vapour within a trench	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area. Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
Inhalation of groundwater-derived vapour in indoor and outdoor air.	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	
Inhalation of groundwater-derived vapour in a trench.	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area. Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
	On-Site future intrusive maintenance workers	Potentially incomplete	

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
	On-Site future commercial / industrial workers	Potentially incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.

An assessment of identified S-P-R linkages for the Area 2 battery storage (non-process development land) area has been presented in **Table 4.3.**

Table 4.3: Human health S-P-R assessment for Area 2

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Dermal contact and incidental ingestion of soil	On-Site future construction workers	Potentially complete	DL2: Sampling locations have targeted potential contamination sources within this area. All sampling results were found to be below the adopted screening criteria. DL1: Only two sampling points are available for this area. However historically this area has only been used as a temporary lay-down area for construction works (primarily the construction of the power station).
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have prolonged and repeated access to soils within the area. The majority will of the area will be covered with hardstand.
Inhalation of soil-derived dust in indoor and / or outdoor air Inhalation of asbestos fibres	On-Site future construction workers	Potentially complete	DL2: Sampling locations have targeted potential contamination sources within this area. All sampling results were found to be below the adopted screening criteria. The offsite ammonia plant also has the potential for the migration of ammonia into this area and ammonia analytical results are limited. DL1: Only two sampling points are available for this area. one of the samples was identified to contain asbestos associated with the ash pipeline that passes through this area. Historically this area has been used as a temporary lay-down area for construction works (primarily the construction of the power station). It is considered that future on-site workers will not have prolonged and repeated access to soil dust within the area. The majority will of the area will be covered with hardstand.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	
Inhalation of soil-derived vapour in indoor and / or outdoor air	On-Site future construction workers	Potentially incomplete	DL2: Sampling locations have targeted potential contamination sources with this area (especially sources with the potential to generate vapours). All sampling results were found to be below the adopted screening criteria. DL1: Only two sampling points are available
	On-Site future intrusive maintenance workers	Potentially incomplete	

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
	On-Site future commercial / industrial workers	Potentially incomplete	for this area. However historically this area has only been used as a temporary lay-down area for construction works (primarily the construction of the power station) and substantial vapour sources are considered unlikely.
Inhalation of soil-derived vapour within a trench	On-Site future construction workers	Potentially incomplete	DL2: Sampling locations have targeted potential contamination sources within this area (especially sources with the potential to generate vapours). All sampling results were found to be below the adopted screening criteria. DL1: Only two sampling points are available for this area. However historically this area has only been used as a temporary lay-down area for construction works (primarily the construction of the power station).
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
Inhalation of groundwater-derived vapour in indoor and outdoor air.	On-Site future construction workers	Potentially incomplete	DL2: Sampling locations have targeted potential contamination sources within this area (especially sources with the potential to generate vapours). All sampling results were found to be below the adopted screening criteria. DL1: Only two sampling points are available for this area. However historically this area has only been used as a temporary lay-down area for construction works (primarily the construction of the power station).
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	
Inhalation of groundwater-derived vapour in a trench.	On-Site future construction workers	Potentially incomplete	DL2: Sampling locations have targeted potential contamination sources within this area (especially sources with the potential to generate vapours). All sampling results were found to be below the adopted screening criteria. DL1: Only two sampling points are available for this area. However historically this area has only been used as a temporary lay-down area for construction works (primarily the construction of the power station).
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.

An assessment of identified S-P-R linkages for the Area 3 battery storage (the existing coal storage yards) area has been presented in **Table 4.4**.

Table 4.4: Human health S-P-R assessment for Area 3

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Dermal contact and incidental ingestion of soil	On-Site future construction workers	Potentially complete	Whilst some data is available which did not identify results to have concentrations of COPCs above the adopted screening criteria, this data is considered to be limited to the periphery of the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have prolonged and repeated access to soils within the area. The majority will of the area will be covered with hardstand.
Inhalation of soil-derived dust in indoor and / or outdoor air	On-Site future construction workers	Potentially complete	Whilst some data is available which did not identify results to have concentrations of COPCs above the adopted screening criteria, this data is considered to be limited to the edges of the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have access to soil dust within the area. The majority will of the area will be covered with hardstand.
Inhalation of soil-derived vapour in indoor and / or outdoor air	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area. Substantial vapour sources are considered unlikely.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	
Inhalation of soil-derived vapour within a trench	On-Site future construction workers	Potentially complete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
Inhalation of groundwater-derived vapour in indoor and outdoor air.	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area. Substantial vapour sources are considered unlikely.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Inhalation of groundwater-derived vapour in a trench.	On-Site future construction workers	Potentially incomplete	The currently available data is understood to have targeted potential contamination sources (especially sources with the potential to generate vapours). The sampling data obtained did not identify COPC above the selected screening criteria. However, the sampling locations were limited across the area.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Incomplete	Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.

4.3 DECOUPLING AREA

4.3.1 Potential sources of contamination and release and transport mechanisms

Following a review of the previous reports, **Table 4.5** summaries the identified decoupling area considered as part of this assessment and presents details on the potential contaminant release mechanisms present in the Decoupling Works Project area.

Table 4.5: Summary of areas, potential release and transport mechanisms and COPCs

Name	Proposed Decoupling Area
Lot and DP	Lot 1 DP1022827 Lot 2 DP1022827
Decoupling area	22 ha (0.3 ha for the proposed 33kV transition area)
No. of relevant investigation locations	54
COPCs	TRH, BTEX, PAH, VOCs, heavy metals, PCBs, Phenols and cresols, Chlorinated hydrocarbons, PFAS and Asbestos
Soil profile	Fill material was identified to be present across this area ranging in depth from 0.2 to 1.5m
Summary	Located centrally on site, on the western side of the main power generating infrastructure. The following previous areas of concern were identified in this area including: • ES142 – Liddell Ash Pipe • ES106 – Transformers • ES89 – Water storage and treatment (potential fire main) • ES91 – Maintenance shed • LB – Liddell Ash Pipe • LF – Bulk Fuel Storage (Waste oil AST (Transformer road) and Former transformer oil AST • LH – Bulk Fuel Storage (Waste oil AST (Liquid alternative fuels) and Emergency Generator AST • LI – Current and former coal storage area • LJ – Dangerous goods, flammable liquids and stores • LO – Former and current maintenance stores, workshops foam generator and unofficial lay-down areas • LQ – Transformer operations / Transformer road • LR – Transgrid Switchyard

	• LU – Water treatment plant. The samples taken in this area are generally targeting areas of concern. Some COPC have been identified to exceed selected screening criteria.
Potential release and transport mechanisms	Potential leaks and spills from plant and machinery operating in this area to on-Site soils. Vertical migration of contaminants in coal to soils. Volatilisation of contaminants from soils and groundwater. Historical fill material in this area. Application of potentially PFAS contaminated fire-fighting water during training, testing and emergency events. Release of asbestos from the ash pipelines.

4.3.2 Human health receptors and exposure pathways

Based on the continued land use of the Project site for the purpose of the Project, being a commercial / industrial land use, the following human receptors have been considered:

- On-Site future construction workers i.e. earthworks for the preparation of the Project site for construction, including the excavation of cable trenches
- On-Site future intrusive maintenance workers who may complete maintenance to above ground and underground infrastructure (e.g. services). It is considered that shallow intrusive works will be conducted to a maximum depth of 2 mbgl
- On-Site future commercial / industrial workers (e.g. operators for the battery).

The following human exposure pathways may apply:

- Dermal contact and incidental ingestion of soils
- Inhalation of soil-derived dust in indoor and / or outdoor air
- Inhalation of soil-derived vapour in indoor and outdoor air
- Inhalation of soil-derived vapour in a trench
- Inhalation of groundwater-derived vapour in indoor and outdoor air
- Inhalation of groundwater-derived vapour in a trench.

An assessment of identified S-P-R linkages for the decoupling area has been presented in **Table 4.6**.

Table 4.6: Human health S-P-R assessment for decoupling area

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Dermal contact and incidental ingestion of soil	On-Site future construction workers	Potentially complete	Four samples (two for hydrocarbons and two for asbestos) were identified to be elevated above the adopted screening criteria. Whilst a large number of samples were taken within the area, specific sampling was not undertaken within the proposed 33kV switch area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	It is considered that future on-site workers will not have prolonged and repeated access to soils within the area.

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Inhalation of soil-derived dust in indoor and / or outdoor air Inhalation of asbestos fibres	On-Site future construction workers	Potentially complete	Four samples (two for hydrocarbons associated with the transformer area and two for asbestos associated with the ash pipe that passes through this area) were identified to be elevated above the adopted screening criteria. Whilst a large number of samples were taken within the area, specific sampling was not undertaken within the proposed 33kV switch area. It is considered that future on-site workers will not have prolonged and repeated access to soil dust within the area.
	On-Site future intrusive maintenance workers	Potentially complete	
	On-Site future commercial / industrial workers	Incomplete	
Inhalation of soil-derived vapour in indoor and / or outdoor air	On-Site future construction workers	Potentially incomplete	Two samples associated with the transformer were identified to have concentrations of hydrocarbons elevated above the adopted screening criteria. Where elevated hydrocarbons have been identified there is a potential for vapours to be generated. The current data suggests this may be limited to the transformer area and less likely to be present around the proposed 33kV switch area. Whilst a large number of samples were taken within the area specific sampling was not undertaken within the proposed 33kV switch area.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	
Inhalation of soil-derived vapour within a trench	On-Site future construction workers	Potentially incomplete	Two samples associated with the transformer were identified to have concentrations of hydrocarbons elevated above the adopted screening criteria. Where elevated hydrocarbons have been identified there is a potential for vapours to be generated. Whilst a large number of samples were taken within the area specific sampling was not undertaken within the proposed 33kV switch area. Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Incomplete	
Inhalation of groundwater-derived vapour in indoor and outdoor air.	On-Site future construction workers	Potentially incomplete	Two samples associated with the transformer were identified to have concentrations of hydrocarbons elevated above the adopted screening criteria. Where elevated hydrocarbons have been identified there is a potential for vapours to be generated. Whilst a large number of samples were taken within the area specific sampling was not undertaken within the proposed 33kV switch area. Substantial vapour sources are considered unlikely.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Potentially incomplete	

Relevant exposure pathway	Relevant receptor	S-P-R linkage	Justification /comment
Inhalation of groundwater-derived vapour in a trench.	On-Site future construction workers	Potentially incomplete	Two samples associated with the transformer were identified to have concentrations of hydrocarbons elevated above the adopted screening criteria. Where elevated hydrocarbons have been identified there is a potential for vapours to be generated. Whilst a large number of samples were taken within the area, specific sampling was not undertaken within the proposed 33kV switch area. Trench works will be controlled by occupational hygiene practices under a standard health and safety plans for sub-surface works.
	On-Site future intrusive maintenance workers	Potentially incomplete	
	On-Site future commercial / industrial workers	Incomplete	

4.4 BAW – Various areas across the Bayswater site

4.4.1 Potential sources of contamination and release and transport mechanisms

Following a review of previous reports, the following AEC have been identified across the Bayswater site that identified concentrations of COPC elevated above the adopted commercial / industrial screening criteria (these have the potential to interact with BAW):

- Bayswater ash dam (B_18)
- Fire training area (B_11)
- Coal Conveyor (B_40)
- H1 and H2 Howick Coal Conveyor (B_46)
- Bayswater Landfill (B_55)
- Ravensworth Void (B59)
- Antiene Rail coal unloader (B_67)
- Oil water separator and fuel storage (B_69)
- Coal drying area (B_72)
- Sludge Lagoon (B_38)
- Demineraliser plant (BI)
- Former Contractor Staging area (BJ)
- Lime Softening plant (BN)
- Mobile Plant workshop and refuelling (BP).

COPC of concern were identified to be:

- TRH
- BTEX
- PAH
- OCP / OPP
- heavy metals
- PCB
- VOC
- SVOCs
- Phenolics
- PFAS and

- Asbestos.

The potential release and transport mechanisms considered to be present across the Bayswater site include:

- Potential leaks and spills from on-site infrastructure to on-site soils
- Application of potentially PFAS contaminated fire-fighting foam during training, testing and emergency events
- Vertical migration of contaminants in soils to groundwater via surface water infiltration and percolation, subsequent lateral groundwater migration
- Volatilisation of contaminants from soils and groundwater
- Migration of contaminants in the on-site surface water drainage network
- Deposition of contaminants into the sediments of the sediment dams.

4.4.2 Human health and ecological receptors and exposure pathways

Based on the purpose of the Project, being a continuation of the current commercial / industrial land use**,** the following human receptors have been considered:

- On-Site future construction workers i.e. earthworks for the preparation of the Project site for construction, including the excavation of foundations
- On-Site future intrusive maintenance workers who may complete maintenance to above ground and underground infrastructure (e.g. services). It is considered that shallow intrusive works will be conducted to a maximum depth of 2 mbgl
- On-Site future commercial / industrial workers (e.g. operators for BAW).

The following human exposure pathways may apply:

- Dermal contact and incidental ingestion of soils
- Inhalation of soil-derived dust in indoor and / or outdoor air
- Inhalation of soil-derived vapour in indoor and outdoor air
- Inhalation of soil-derived vapour in a trench
- Dermal contact and incidental ingestion of groundwater / surface water
- Inhalation of groundwater-derived vapour in indoor and outdoor air
- Inhalation of groundwater-derived vapour in a trench.

4.4.3 Summary of Bayswater S-P-R relationships

A number of S-P-R pathways are considered to be present and potentially complete across the Bayswater site that may interact with the BAW. A review of these relationships is as follows:

- More than 930 samples were collected and analysed and only 20 samples spread across the 14 different AEC were found to have elevated concentration of COPC (Benzene, F1 (C_6 – C_{10} less BTEX), F2 (C_{10} – C_{16} less naphthalene, C_{16} – C_{34}, C_{34} – C_{40}, Copper and / or Zinc) above the adopted Commercial / Industrial screening criteria. This is an indication that the potential for widespread gross contamination across the Bayswater site is unlikely
- Whilst localised point sources of some elevated COPCs have been identified, these are restricted in extent and currently being managed under the current Bayswater operations. This includes complying with the current EPL for the power station
- Receptors are unlikely to be repeatedly exposed to soil contaminants over a prolonged period given that AGLM have occupational hygiene controls in place to mitigate exposure. It is considered that potential exposure to construction / maintenance workers would be managed via similar controls, including industry standard practice of wearing PPE and adopting good hygiene practices. This can also be managed via communications such as site-specific induction and / or permits for ground penetrations
- Given the industrial nature of the site significant impacts to flora and fauna in relation to the Project are considered unlikely. Current infrastructure across Bayswater has not been reported to be suffering from severe damage due to the deleterious effects of COPCs.

5 CONCLUSIONS

AGLM are planning to carry out an SSD known as the Project. Key aspects of the Project consist of:

- The Battery (as part of the proposed Project 3 areas have been identified):
  - Area 1: The existing solar array area
  - Area 2: The area known as DL01 and DL02
  - Area 3: the existing coal storage yards
- Decoupling works and
- BAW.

The objective of this report is to identify potential contamination issues associated with the 'Project site' (if existing) from previous detailed investigations and recommend potential mitigation measures that may be adopted into the construction phase to avoid or mitigate impacts and ensure that the Project site remains suitable for ongoing industrial "electricity generating works" use, in accordance with SEPP 55.

5.1 AREA 1: THE EXISTING SOLAR ARRAY AREA

This area is located to the south of the main power generating infrastructure and to the east of the existing coal storage area. A review of existing data confirms that, while some AECs have previously been identified in this area, analysis of analytical results from six targeted sample locations did not identify any concentrations of COPC above the commercial / industrial health investigation levels which provide conservative screening criteria (commercial / industrial screening criteria). These results, together with our understanding of the historical use of this area, provides a line of evidence that widespread contamination is unlikely to be present notwithstanding the potential for unknown filling in this area. Therefore, if any elevated COPC are present in the existing solar array area, it is likely to be limited in extent and unlikely to not constrain the Project provided industry standard construction controls are applied during construction of the Battery.

5.2 AREA 2: DL 02 AND DL 01

DL01 is located directly to the north of the TransGrid switchyard and is not known to have been used other than as a construction laydown area (previously identified as an AEC) when Liddell was first constructed. Review of existing data confirms that there are no AECs in this area. Analytical results from two representative sampling locations were reviewed and, with the exception of the following, did not identify any concentrations of COPC above the conservative commercial / industrial screening criteria. Results from one of the sampling locations in the vicinity of the ash pipeline, which is located adjacent to (but outside) the DL01 area, was found to contain asbestos. Therefore, potential receptors that may come into contact with asbestos in soils, are unlikely to be repeatedly exposed to soil in this location is outside the DL01 area and over a prolonged period, especially since AGLM have occupational hygiene controls in place to mitigate exposure to asbestos. The potential asbestos related exposure to construction / maintenance workers associated with the Project can be managed via suitable controls, including unexpected finds protocols, CEMP, the industry standard practice of wetting the work area down, the use of binding polymers, wearing PPE and adopting good hygiene practices.

DL02 is located directly to the north of the existing coal storage yards and to the south of the TransGrid switchyard. A review of existing data confirms that, while some AECs have previously been identified in this area, analytical results from eight targeted sampling locations did not identify concentrations of COPC above the commercial / industrial screening criteria.

Accordingly, DL01 and DL02 are considered unlikely to constrain the Project provided industry standard construction controls are utilised.

5.3 AREA 3: THE EXISTING COAL STORAGE YARDS

The coal yards are located to the south of the main Liddell operational area of Liddell and to the south of the main TransGrid switchyard. The previous investigations targeted nine sampling locations in this area, with the majority of these restricted to the edge of the existing coal storage yards, for operational reasons, which limits delineation of fill / coal depth across the coal yards area (coal fines were identified to be present at depths up to 3m). Results from sampling of each of these sampling locations confirmed that metal and / or sulphur concentrations were below the adopted commercial / industrial screening criteria. It is reasonable to expect that these boundary concentrations are likely to be similar across the wider coal yards area. Based on the foregoing, any contamination present in the existing coal yards are considered unlikely to constrain the Project.

5.4 DECOUPLING AREA

The decoupling works will be undertaken in an area (decoupling area) located centrally at Liddell, on the western side of the main power generating infrastructure.

The previous investigations identified a number of AEC across the decoupling area. 54 targeted sampling locations from previous investigations were identified to be relevant to the decoupling area. From the 54 sampling locations, only four samples (two for hydrocarbons and two for asbestos) were found to have concentrations of COPC elevated above the conservative commercial / industrial screening criteria. The two asbestos samples were associated with the ash pipeline and AGLM have confirmed that the decoupling works will have minimal interaction with the ash pipeline. Therefore, the identified asbestos is considered unlikely to impact on the Project. However, occupational hygiene controls will be implemented as a precaution to mitigate potential construction worker exposure to asbestos.

The elevated hydrocarbon concentrations were identified in the transformer corridor. As this area is covered by concrete hardstand and AGLM have confirmed that the decoupling works undertaken along the transformer corridor will be limited to disconnecting and moving the existing transformers to the proposed 33kV transition area and will not interact with any sub-surface infrastructure, the Project work would not interact with impacted soil.

It is understood that as part of the decoupling works there is likely to be a requirement for sub-surface cable trenching, as follows:

- Linking the relocated transformers to the TransGrid switchyard
- Linking the Battery to the transformers.

Defined cable trenching routes have not yet been finalised. However, the longest cable route would be between the existing solar array area and the 33kV transition area, noting the trenching routes are not currently planned to interact with areas identified to have elevated hydrocarbon concentrations. A number of targeted sampling locations are present along this corridor. The results from these sample locations indicate concentrations of COPC below the conservative commercial / industrial screening criteria.

Should localised elevated COPC be present in areas disturbed as part of the decoupling works, it is likely they would be limited in extent and unlikely to require significant remedial works (if any). AGLM have confirmed that industry standard construction controls will be implemented as part of the projects construction.

In light of the above, the elevated hydrocarbon concentrations present in the decoupling area are considered unlikely to constrain the Project.

5.5 BAYSWATER ANCILLARY WORKS AREA

The BAW constitute ancillary works associated with the ongoing operation of Bayswater including upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets. Based on a review of previous reports, a number of AECs have been identified across the operational areas that identified concentrations of COPC above the commercial / industrial screening criteria.

The remaining areas across Bayswater were not identified as AECs due to their low contamination potential. Previous sampling undertaken across the AECs did not detect widespread gross contamination. However, localised concentrations of COPC were detected above the screening criteria. Should localised elevated COPC be present in areas where BAW are carried out, it is likely they would be limited in extent and unlikely to require significant remedial works. AGLM have confirmed that industry standard construction controls (including unexpected finds protocols and CEMP) that will be implemented as part of the Projects construction. Further, this report recognises that the BAW works are aimed at making environmental improvements across Bayswater and are unlikely to therefore impact upon the receiving environment.

5.6 SUITABILITY FOR USE

The Project does not propose a change in land use from the ongoing "electricity generating works", being a type of industrial use. Bayswater and Liddell, and the potential for elevated COPC present at the sites will continue to be managed in accordance with the EPLs issued by the EPA.

This report has been developed to assess the potential contamination related aspects of the Project site in accordance with the SEARs and confirm that potential contamination arising from the power stations uses conducted since Bayswater and Liddell were initially constructed does not present an impediment to the proposed Project, in accordance with SEPP 55. This report has encompassed a comprehensive review of available information to identify the historical development of the Project site, including the detailed contamination assessments previously conducted across Bayswater and Liddell.

This CSM developed for the Project site has identified that some potential S-P-R linkages are potentially complete. However, based on our assessment of the analytical dataset and knowledge of the historical development of the Project site, it is considered that widespread gross contamination is unlikely to be present in the Project site.

Significant remedial works to support the Project are considered unlikely to be required (if required at all). Contamination risks associated with the Project can readily be managed by the inclusion of the following components into the Project CEMP:

- An unexpected finds protocol for the appropriate assessment and management of encountered contamination to mitigate impacts to the Project
- Procedures to ensure that all material excavated during the construction of the Project is appropriately assessed and classified before being disposed of in accordance with environmental laws and
- Specific control measures to mitigate impacts to soil, water, air, noise, traffic, structures and clear protocols for measurement of affected media and validation of results during construction of the Project.

In summary, the Project is unlikely to cause large-scale soil disturbance at depth and is not proposed to interface with groundwater. Where the Project may interact with surface water bodies specific construction environmental controls (sediment erosion controls as part of the CEMP) will be implemented. The final layout of the Battery facility is likely to comprise large areas of hardstand that will minimise the potential for any direct contact with subsurface soil during operations. Similar scenarios are envisaged for BAW. Construction / maintenance workers are considered to be the receptor groups that would most likely be exposed to contamination (if present). This would occur infrequently and easily be managed by the CEMP and the current occupational hygiene practices implemented by AGLM at Bayswater and Liddell to manage risks associated with contact with potentially pre-existing contamination during construction and operations.

Overall, it is considered that potential contamination risks present in the Project site is not an impediment to the implementation of the Project. It is considered that the Project will not give rise to any new contamination related risks to human health or the receiving environment during construction, provided that appropriate controls are implemented in the CEMP as outlined above.

6 LIMITATIONS

This document has been prepared by Kleinfelder based on the scope of service agreed with and may be used only by AGL Macquarie Pty Ltd and its designated representatives or relevant statutory authorities and only for the purposes stated for this specific engagement within a reasonable time from its issuance.

This document has been prepared by Kleinfelder in a manner consistent with that level of skill, care and diligence ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided.

Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

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The findings and conclusions contained within this report are relevant to the conditions of the site and the state of legislation currently enacted in the relevant jurisdiction in which the site is located as at the date of this report.

Additionally, the findings and conclusions contained within this report are made following a review of certain information, reports, correspondence and data noted by methods described in this report including information supplied by the client or its assigns. Kleinfelder has designed and managed the program for this report in good faith and in a manner that seeks to confirm the information provided and test its accuracy and completeness. However, Kleinfelder does not provide guarantees or assurances regarding the accuracy, completeness and validity of information and data obtained from these sources and accepts no responsibility for errors or omissions arising from relying on data or conclusions obtained from these sources.

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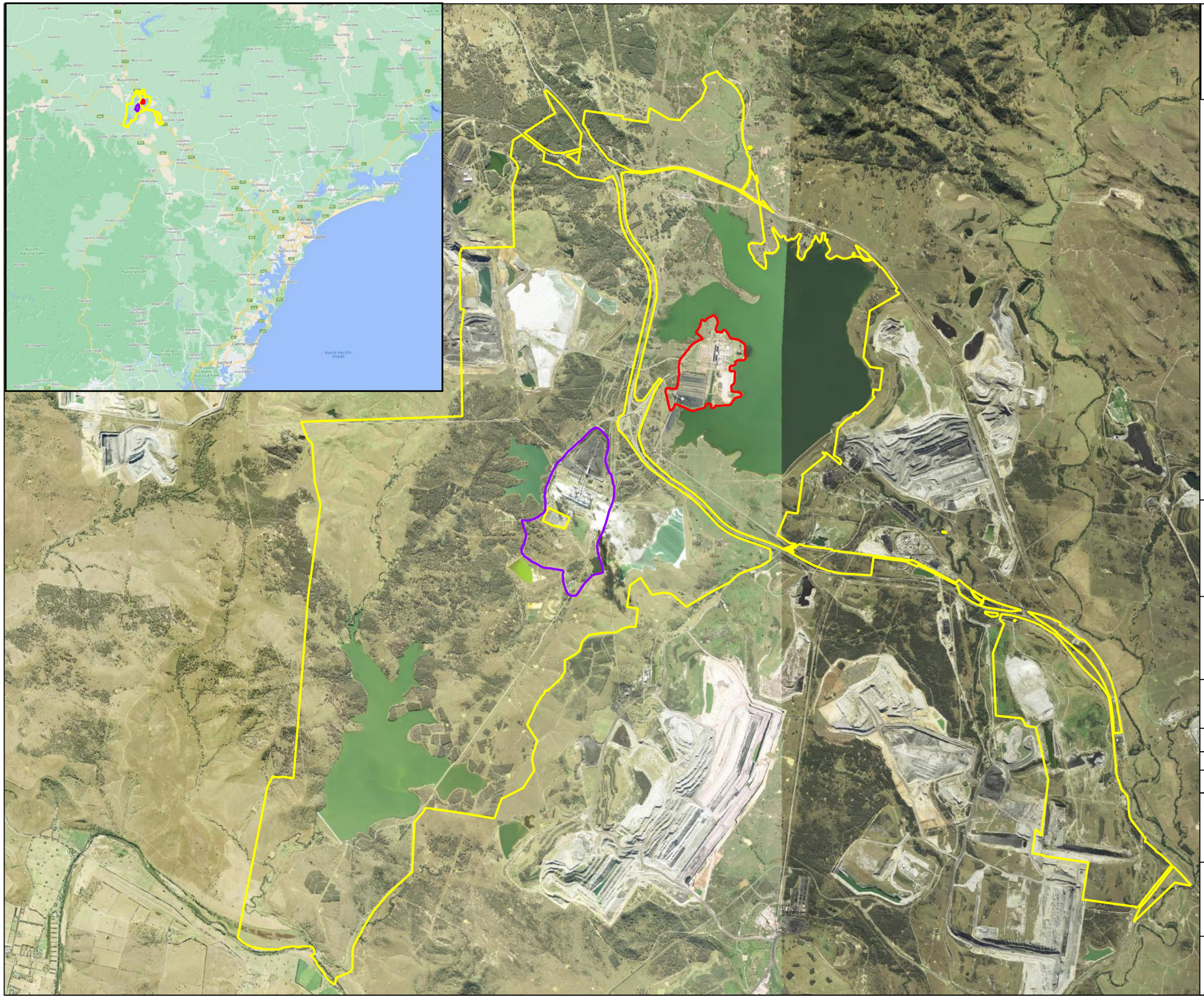
APPENDIX A FIGURES



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Legend

- Bayswater site location
- Liddelle Site location
- AGLM Owned Land

0 1 2 km

Site Location

Report:
Liddell Battery and
Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

Drawn by: TO

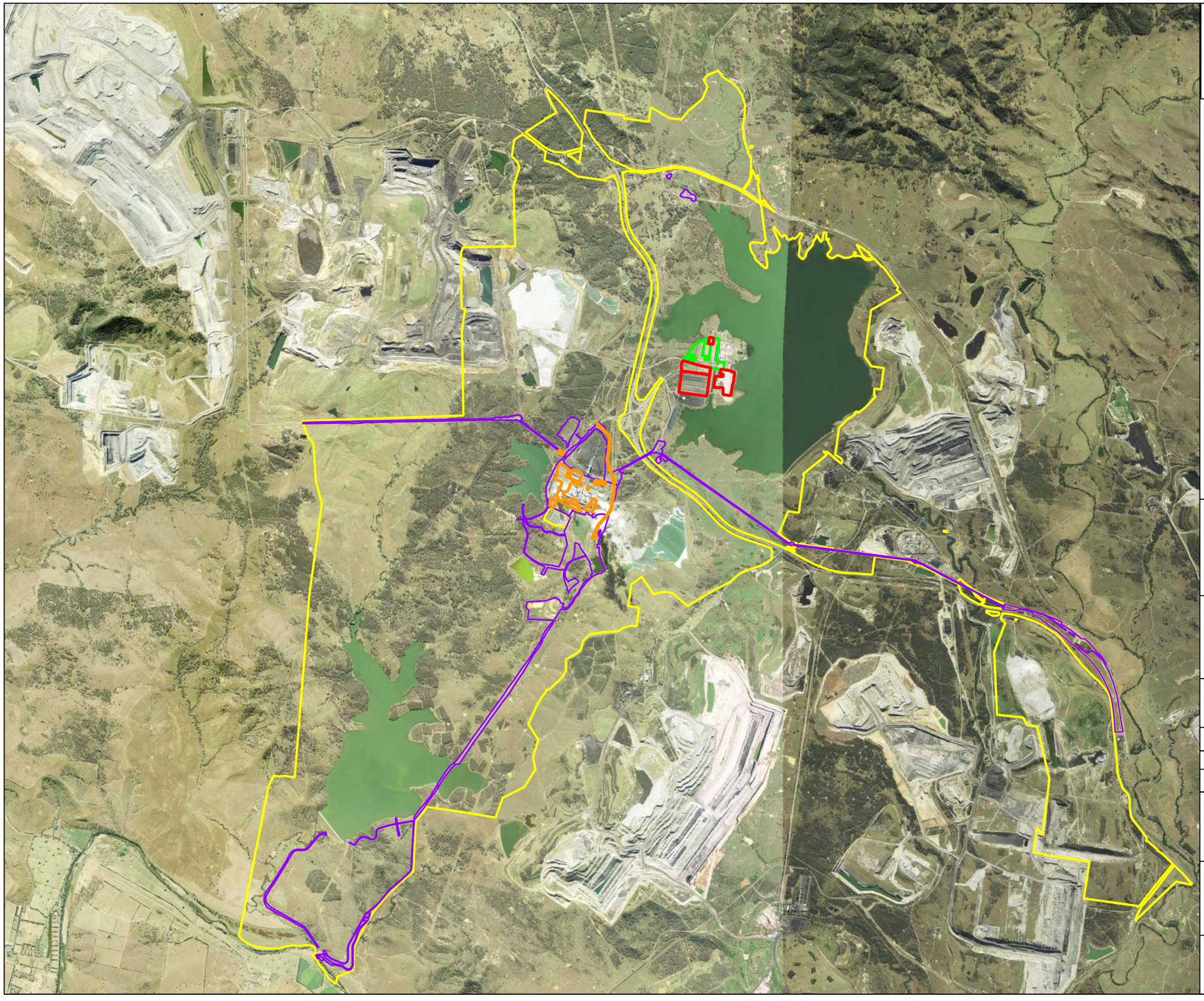
Figure:

A

KLEINFELDER
Bright People. Right Solutions.

Suite 3, 240-244 Pacific Highway
Charlestown, NSW 2290

Phone: +61 2 4949 5200



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Legend

- AGLM Owned Land
- Project area

Development site

- Liddell Battery
- Decoupling area
- BAW

0 1 2 km

Development site

Report:
Liddell Battery and
Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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Figure:

B

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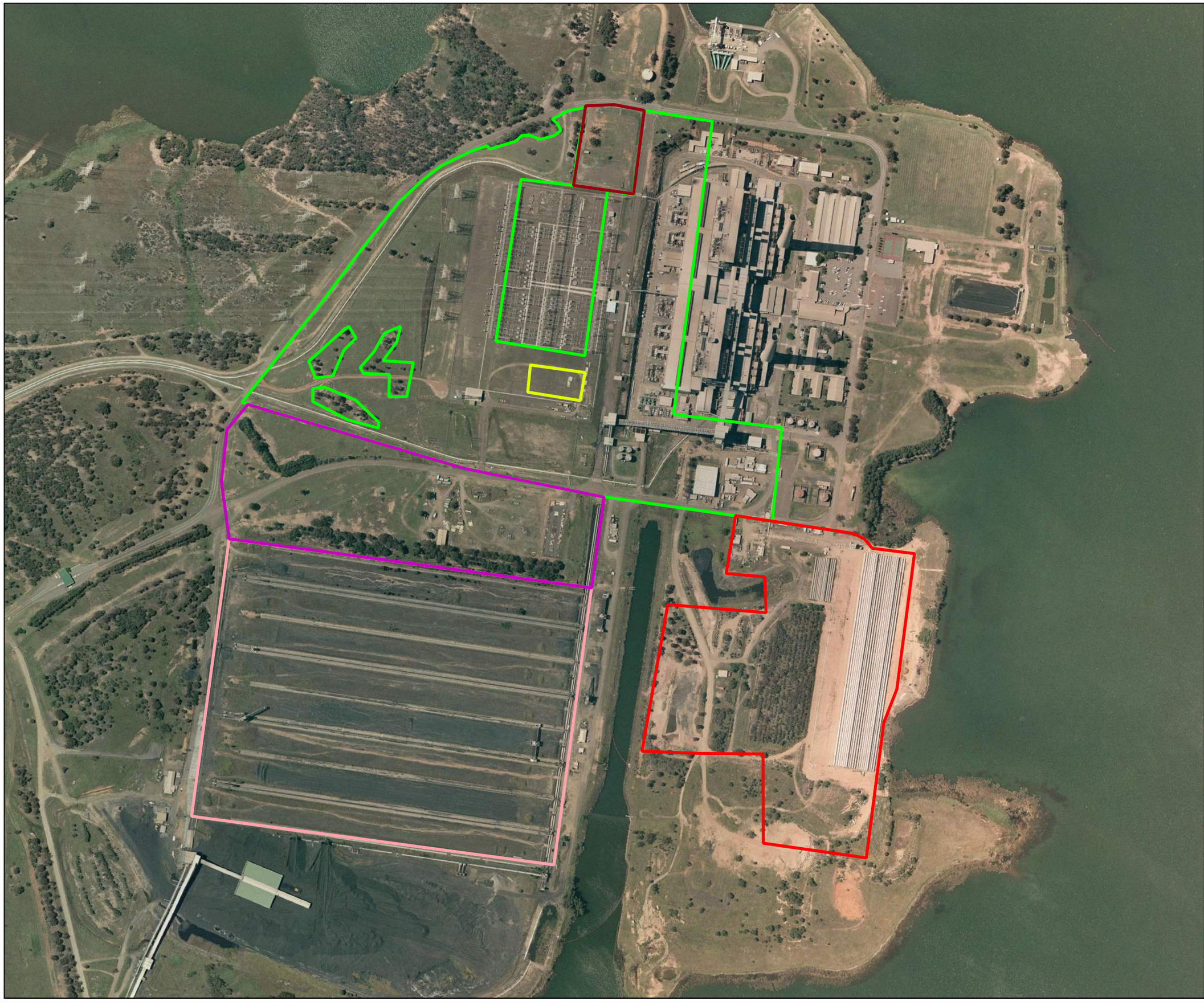

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Legend

- Area 1 Existing Solar Array Area
- Area 2 DL01
- Area 2 DL02
- Area 3 Existing Coal Storage Yards
- Decoupling area
- AGL 33kv Transition

0 100 200 m

Liddell Battery and Decouplping Area

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

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Legend

- BAW project area

Bayswater Ancillary Works

- Axiliary infrastructure
- BW Admin Refurb
- Contractor Area
- Diesel Generator EPS
- Flyash Return Water Bund
- MA1B Belt Shortening
- River Road Reconstruction
- Wash Down Facilities
- Waste Storage Area
- AGLM Owned Land

0 150 300 m

Bayswater Ancillary Works

Report:
Liddell Battery and
Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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Legend

- Area 1 Existing Solar Array Area
- Area 2 DL02
- Area 3 Existing Coal Storage Yards
- Sample Locations

0 25 50 75 m

Area 1 Existing solar array area
Historical sampling location

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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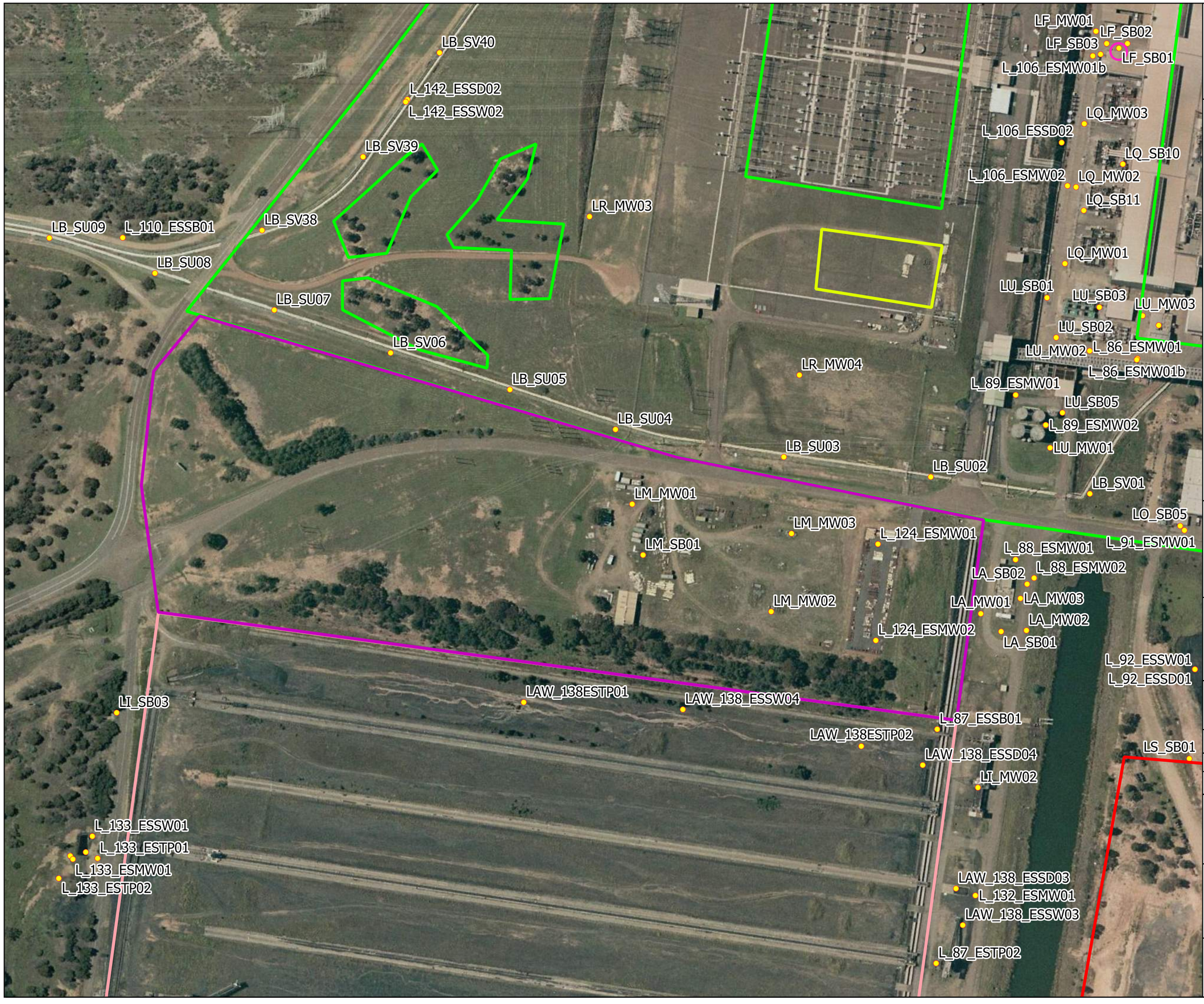

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Legend

- Exceeded samples
- Area 1 Existing Solar Array Area
- Area 2 DL02
- Area 3 Existing Coal Storage Yards
- Decoupling area
- AGL 33kv Transition
- Sample Locations

0 25 50 75 m

Area 2 DL02
Historical sampling location

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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Figure:

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Legend

- Exceeded samples
- Area 2 DL01
- Decoupling area
- Sample Locations

0 25 50 m

Area 2 DL01
Historical sampling location

Report:
Liddell Battery and
Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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Figure:

F2

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Legend

- Area 1 Existing Solar Array Area
- Area 2 DL02
- Area 3 Existing Coal Storage Yards
- Decoupling area
- Sample Locations

0 50 100 m

Area 3 Existing coal storage yards
Historical sampling location

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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Figure:

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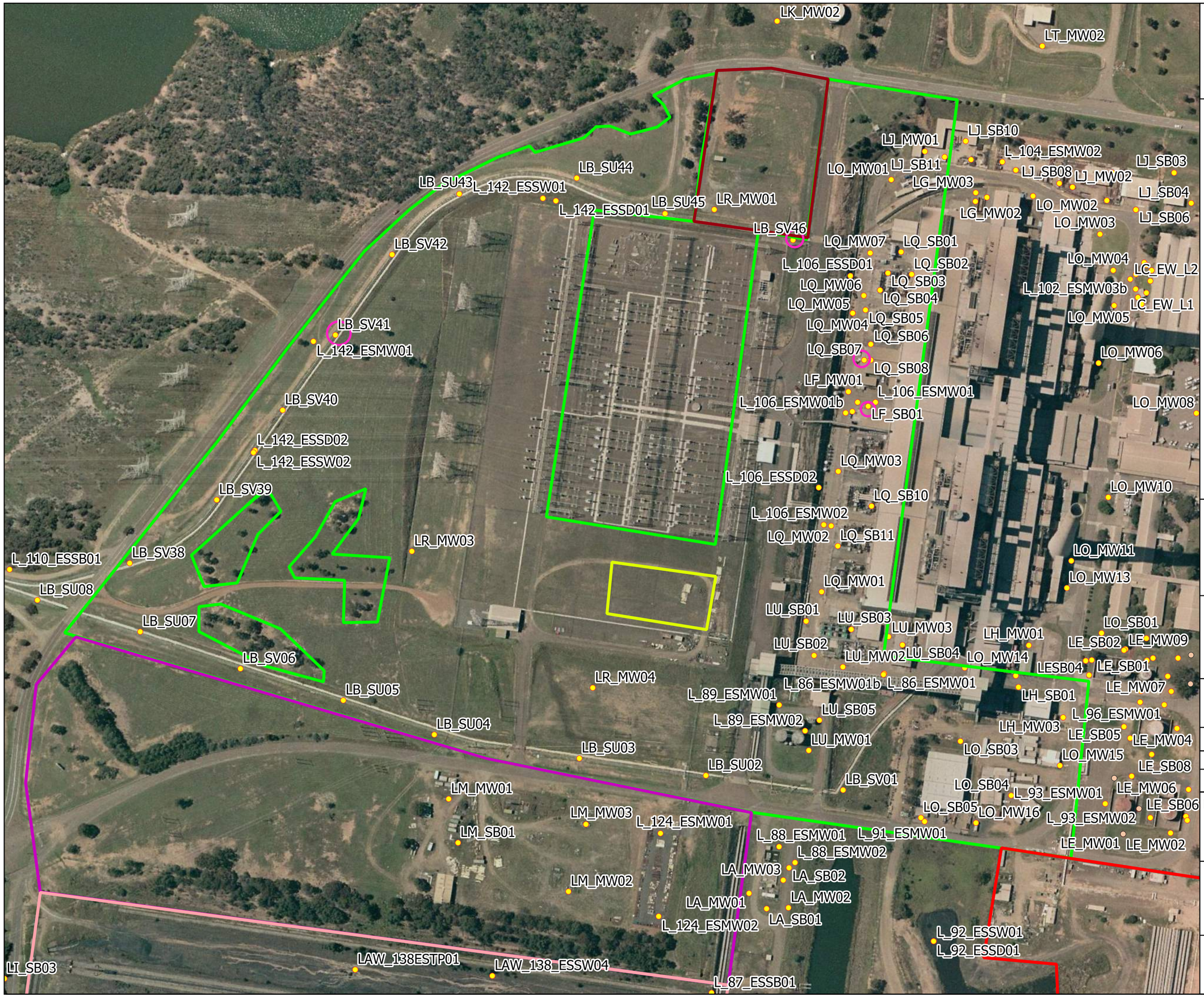

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Legend

- Area 1 Existing Solar Array Area
- Area 2 DL01
- Area 2 DL02
- Area 3 Existing Coal Storage Yards
- Decoupling area
- AGL 33kv Transition
- Sample Locations
- Exceeded samples

0 50 100 m

Decoupling area
Historical sampling location

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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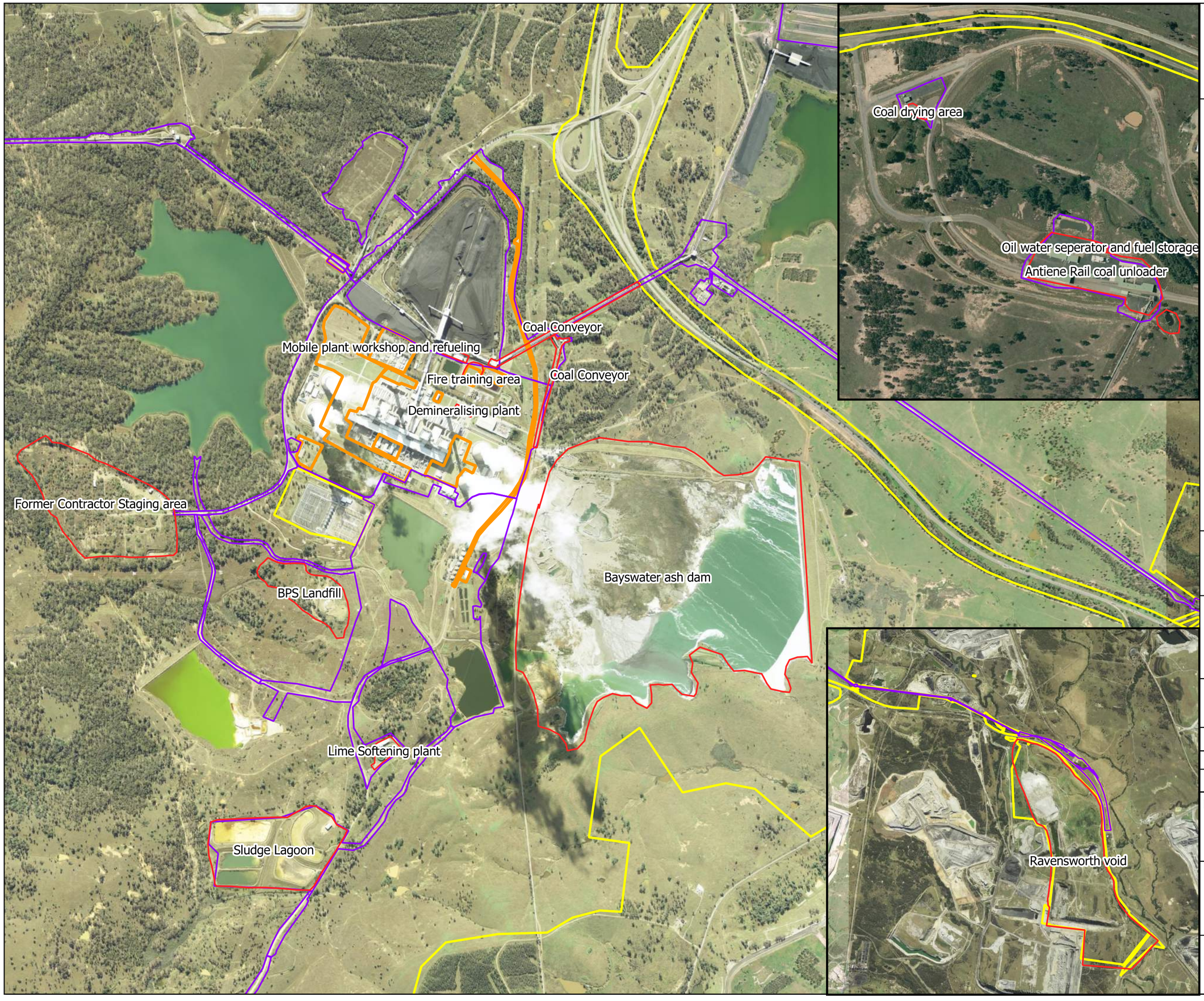

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Legend

- AIC

Bayswater Ancillary Works

- Axiliary infrastructure
- BW Admin Refurb
- Contractor Area
- Diesel Generator EPS
- Flyash Return Water Bund
- MA1B Belt Shortening
- River Road Reconstruction
- Wash Down Facilities
- Waste Storage Area
- Sample Locations
- AGLM Owned Land
- BAW project area

0 0.25 0.5 km

Bayswater AIC

Report:
Liddell Battery and
Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

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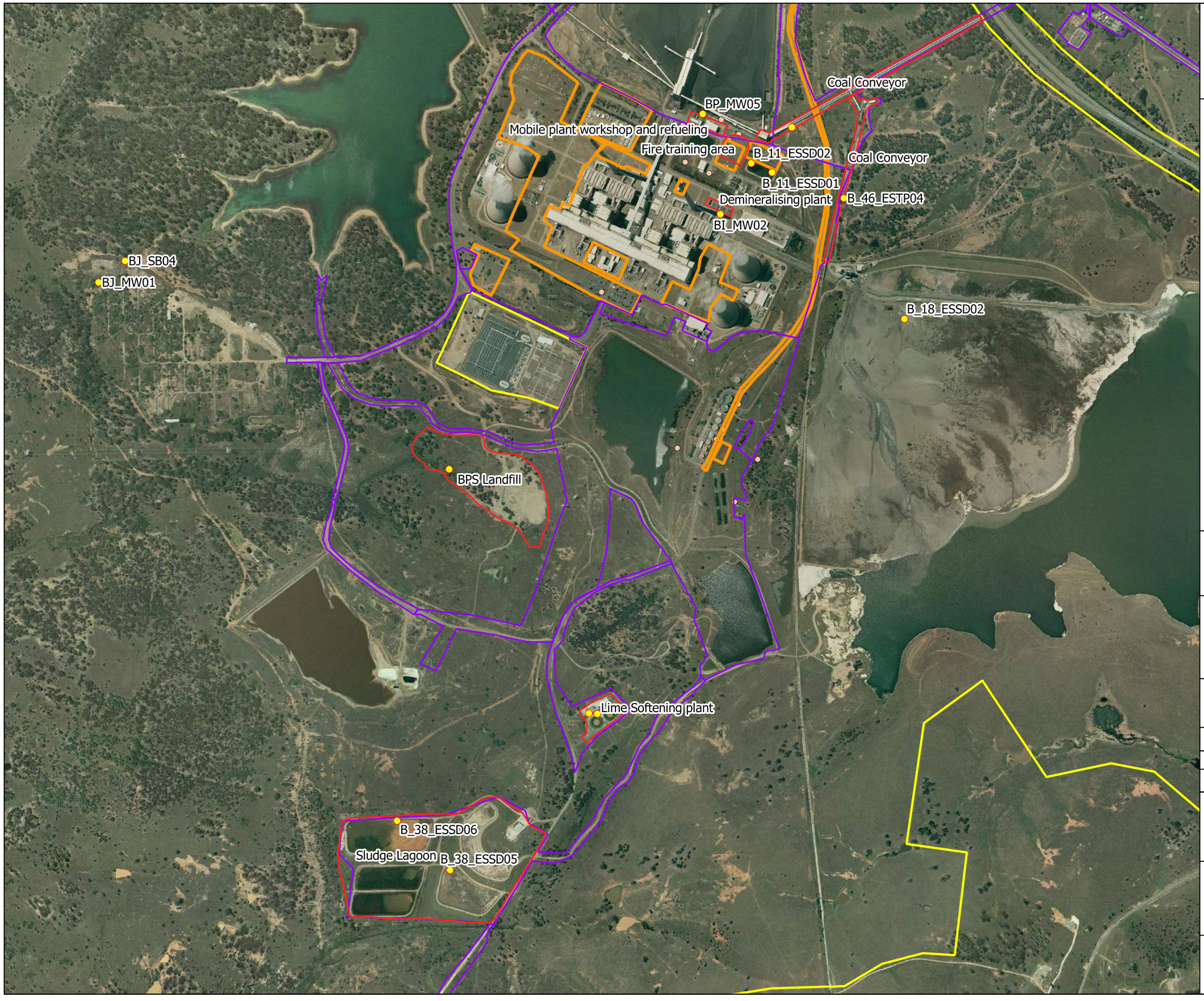

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Legend

- BPS Sample exceedances
- PFAS Sample locations
- BAW
- AIC
- AGLM Owned Land
- BAW project area

0 0.25 0.5 km

Bayswater sampling location exceeding criteria

Report:
Liddell Battery and Bayswater Ancillary Works:
CLM Assessment for EIS

AGL Macquarie

Project No: 20192251.001A

Date: January 2021

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APPENDIX B HISTORICAL REPORT REVIEW

ERM 2013 Bayswater preliminary environmental site assessment

In order to support the sale of certain electricity generation assets owned and operated by Macquarie Generation, ERM were engaged as the Site Contamination Environmental Adviser to provide advice in relation to potential soil and groundwater contamination issues which may be relevant to the transaction. **Table B.1Error! Reference source not found.** provides a summary of key elements within the report.

Table B.1: Summary of the ERM Bayswater ESA report

Project objectives	The specific objectives for ERM's scope of works were to: • Assess the nature and extent of potential soil, sediment and groundwater contamination issues which may be present at the Site[1] and relevant receiving environments and • Identify what additional works may be required to establish a baseline of soil, sediment and groundwater conditions present at the Site to support the potential sale of the asset.

Scope of work	The scope of this Preliminary Environmental Ste Assessment (ESA) included the following key elements:
	• Development of a site history via interviews with employees and review of information such as:
	  ○ relevant documents
	  ○ notices issued by the NSW EPA
	  ○ aerial photographs and
	  ○ civil engineering works records
	• Review of existing soil and groundwater reports
	• Desktop assessment of the environment in which the Site is set such as site drainage, geology, hydrogeology and soil conditions at the Site and surrounding areas
	• Inspection of the Site
	• Identification of actual and/ or potential soil and groundwater AECs via:
	  ○ identification of past and present potentially contaminating activities at, and adjacent to, the Site
	  ○ identification of potentially impacted areas
	  ○ identification and assessment of the contaminants of potential concern (COPCs) that may have been associated with historical and current use of the Site
	  ○ evaluation of the possible migration pathways of the COPCs
	  ○ assessment of the sensitivity of surrounding areas and/ or property and
	  ○ compiling a preliminary CSM
	• Identifying where Stage 2 intrusive investigations are necessary on each site and, more specifically:
	  ○ where it may be necessary to undertake a preliminary sampling and analysis program at each site to assess the need for detailed investigation and
	  ○ a detailed scope-of-works for Stage 2 investigations at each site.

Identified AECs	The following AECs were identified by ERM:
	• Main generating plant area, including (historical and potential leaks of various chemicals):
	  ○ power block
	  ○ Workshops and minor dangerous goods storage areas
	  ○ Power block drainage network
	• Main store – dangerous goods storage area (potential leaks / spills and release through sump / dam)
	• Landfill (unknown waste disposal, potential for leaching to occur)
	• Low pressure pumping station (potential leaks / spills of transformer oil)

[1] ERM has defined their 'site' as the Bayswater Power Station and covers an area of approximately 8,300ha and includes Lake Liddell.

	• High pressure pumping station (potential leaks / spills of transformer oil)
	• Lime softening plant (storage of chemicals, potential for leaks)
	• Contaminated water treatment system (potential leaks)
	• Coal Storage area (historical and potential leaks)
	• Coal unloaders, rail infrastructure and coal transfer lines (historical and potential leaks)
	  ○ Antiene RCU
	  ○ Ravensworth RCU
	  ○ Coal transfer lines
	• Lime softening plant sludge lagoons (disposal of spent softening plant sludge and potential for leaching)
	• Transformer area (large volumes of transformer oil used and stored)
	• Fuel oil installation and associated pipework / Aboveground storage tanks (ASTs) (potential leaks)
	• Vehicle refuelling depot (potential leaks)
	• Mobile plant maintenance and refuelling (historical leaks and spills of diesel fuel and lubricants, potential leak of waste oil)
	• Cooling water treatment plants (historical and potential leaks, releases to ground)
	• Demineraliser plant (historical and potential leaks)
	• Former large items assembly area and former contractor staging area (potential spills, leaks and undocumented fill material)
	• Brine concentrator holding pond (potential seepage of brine)
	• Brine concentrator decant basin (historical seepage of brine)
	• Pikes Gully Ash dam (seepage to groundwater and surface water receptors)
	• Ravensworth rehabilitation site (seepage to groundwater and surface water receptors)
	• Lake Liddell Sediments (sediments may have accumulated contaminants from site drainage and discharges over lifetime of station operations and precipitation of calcium carbonate)
	• TransGrid switchyard.

Recommendations	Based on their findings, ERM recommended undertaking a program of intrusive assessment of potential soil, groundwater, sediment and surface water contamination issues. The proposed investigation included: • 93 Soil bores • 165 Monitoring wells (4 were existing) • 54 Sediment samples • 10 surfaces water samples. ERM identified the following COPC that were recommended for analysis: • Metals and metalloids (arsenic, boron, cadmium, chromium, copper, molybdenum, nickel, lead, mercury, selenium, thallium and zinc) • Major cations and anions (including sulfate and chloride) • Total recoverable hydrocarbons (TRH) • Benzene, toluene, ethylbenzene and xylene (BTEX) • Polycyclic Aromatic hydrocarbons (PAHs) and Phenols • Polychlorinated biphenyls (PCBs) • Perfluorooctanoic sulfonate (PFOS) and perfluorooctanoic acid (PFOA) • Asbestos (presence / absence).

ERM 2013 Liddell preliminary environmental site assessment

In order to support the sale of certain electricity generation assets owned and operated by Macquarie Generation, ERM were engaged as the Site Contamination Environmental Adviser to provide advice in relation to potential

soil and groundwater contamination issues which may be relevant to the transaction. **Table B.2** provides a summary of key elements within the report.

Table B.2: Summary of the ERM Liddell ESA report

Project objectives	The specific objectives for ERM's scope of works were to: • Assess the nature and extent of potential soil, sediment and groundwater contamination issues which may be present at the Site[2] and relevant receiving environments and • Identify what additional works may be required to establish a baseline of soil, sediment and groundwater conditions present at the Site to support the potential sale of the asset.

Scope of work	The scope of this Preliminary ESA included the following key elements:
	• Development of a site history via interviews with employees and review of information such as:
	  ○ relevant documents
	  ○ information on notices issued by the NSW EPA
	  ○ aerial photographs and
	  ○ civil engineering works records
	• Review of existing soil and groundwater reports
	• Desktop assessment of the environment in which the Site is set such as site drainage, geology, hydrogeology and soil conditions at the Site and surrounding areas
	• Inspection of the Site
	• Identification of actual and/ or potential soil and groundwater AECs via:
	  ○ identification of past and present potentially contaminating activities at, and adjacent to, the Site
	  ○ identification of potentially impacted areas
	  ○ identification and assessment of the COPCs that may have been associated with historical and current use of the Site
	  ○ evaluation of the possible migration pathways of the COPCs
	  ○ assessment of the sensitivity of surrounding areas and/ or property and
	  ○ compiling a preliminary CSM
	• Identifying where Stage 2 intrusive investigations are necessary on each site and, more specifically:
	  ○ where it may be necessary to undertake a preliminary sampling and analysis program at each site to assess the need for detailed investigation and
	  ○ a detailed scope-of-works for Stage 2 investigations at each site.

[2] ERM have defined their 'site' as the Liddell Power Station covering an area of approximately 1500ha.

Identified AECs	• Hunter valley gas turbines
	• Bulk fuel storage and transfer
	  ○ Fuel oil installations ASTs
	  ○ Waste oil ASTs – liquid alternative fuels
	  ○ Waste oil AST – transformer road
	  ○ Light vehicle refuelling area – main store
	  ○ Former transformer oil AST
	  ○ Emergency Generator AST
	  ○ Turbine Oil AST
	• Power generating units
	• Transformer road
	• Ammonia plant
	• Oil and grit trap
	• Site drainage network
	• Dangerous goods, flammable liquids and northern stores compound No. 1 – No. 3
	• Asbestos
	• Water treatment / demineralisation plant area
	• Landfills
	• TransGrid switchyard
	• Fill material – Site levelling / Shoreline Expansion
	• Maintenance workshops, foam generator and unofficial laydown area
	• Ash placement
	• Current and former coal storage areas
	• Machinery graveyard
	• Water intake and pump station (disused chlorination plant)
	• Former construction workshop and storage area.

Recommendations	Based on their findings, ERM recommended undertaking a program of intrusive assessment of potential soil, groundwater, sediment and surface water contamination issues. The proposed investigation included: • 144 Soil bores • 128 Monitoring wells. ERM identified the following COPC that were recommended for analysis: • Metals and metalloids (arsenic, boron, cadmium, chromium, copper, molybdenum, nickel, lead, mercury, selenium, thallium and zinc) • Major cations and anions (including sulfate and chloride) • TRH • BTEX • PAHs and Phenols • PCBs • PFOS and PFOA • Asbestos (presence / absence).

ERM 2014 Bayswater Stage 2 environmental site assessment

Following the development of the Bayswater preliminary ESA, ERM were engaged to undertake a Stage 2 ESA in accordance with the recommendations made in the preliminary ESA. **Table B.3** provides a summary of key elements within the report.

Table B.3: Summary of the ERM Bayswater Stage 2 ESA report

Project objectives	The primary objective of the Stage 2 ESA was to gather soil, sediment, surface water and groundwater data in order to develop a baseline assessment of environmental conditions at the site[3] and immediate surrounding receiving environments.
Scope of work	• Ground-truthing of proposed sampling locations • Intrusive drilling works and environmental sampling, including soil, groundwater, sediment and surface water sampling, in accordance with the (sampling, analysis and quality plan (SAQP)) • Laboratory analysis of samples collected for COPC • Visual inspection of exposed pipework known or suspected to contain asbestos • Preparation and submission of a Stage 2 ESA report.

Investigation program

AEC description	ID	No. monitoring wells	No soil bores	No. sediment / surface water samples
Brine concentrator holding pond	BA	3	1	
Brine concentrator decant basin	BB	5		
Fuel oil installation	BC	2	8	
Vehicle refuelling depot	BD	4		
Coal Storage area	BE	8	1	
Coal unloaders, rail infrastructure and coal transfer lines	BF	5	13	
Contaminated water treatment system	BG	7		
Cooling water treatment plants	BH	8	8	
Demineraliser plant	BI	3		
Former contractor staging area	BJ		24	
Former large items assembly area	BK	1	10	
Transformer area	BL	6	7	
Landfill	BM	5	13	
Lime softening plant	BN	2	1	
Lime softening plant sludge lagoons	BO	5		
Mobile plant maintenance and refuelling	BP	6		
Pikes Gully Ash dam	BQ	11	3	32
Ravensworth rehabilitation site	BR	3	2	
Low pressure pumping station	BS		3	
High pressure pumping station	BT	1	2	
Main store – dangerous goods storage area	BU	3	2	
Main generating plant area	BV	10	12	
Lake Liddell Sediments and waterways	BW	1		50

	TransGrid switchyard	BX	2	2	
	Buffer lands	BY	7	8	
	Totals		**107**	**120**	**82**

Sample analysis

Soil, sediment, groundwater and surface water samples were analysed for the following COPC:

- Metals and metalloids (arsenic, cadmium, chromium, copper, nickel, lead, mercury, selenium, and zinc)
- TRH
- BTEX
- PAHs
- Asbestos (presence / absence).

A sub-section of samples were also analysed for the following additional analytes:

- PCBs
- Volatile Organic Compounds (VOC)
- PFOS and PFOA.

Selected samples were sampled for:

- Total Organic Carbon (TOC)
- Particle Size Distribution (PSD)
- Electrical Conductivity (EC) and
- pH and Cation Exchange Capacity (CEC).

Sample results

Sample results relevant to this project have been presented in **Section 3**.

Report conclusions

The following conclusions were made by ERM based on the data collected during the investigation:

- The impacts identified in soil and groundwater at the sites are unlikely to represent a risk to human health and / or the environment given appropriate ongoing management based on the current and continued use of the site as a power station
- The key impacts identified include asbestos in soils at specific locations, metals in groundwater as well as surface water and metals and hydrocarbons in sediments in lake Liddell
- Asbestos was identified beneath the pipelines linking Bayswater to Pikes Gully Ash Dam and in one location within the coal storage area
- Various metals were identified at concentrations in excess of screening levels designed for the protection of freshwater environmental across the Site. Potential health and environmental risks associated with these exceedances have been interpreted in four broad groups, based upon the location of the samples:
  - Exceedances identified in groundwater discharging to Pikes Gully Ash Dam are likely to be minor contributors to any overall potential health or environmental risks associated with the Ash Dam, given the volume and nature of the ash and water stored within this area
  - Exceedances identified in groundwater discharging to Plashett Reservoir, are not considered to represent a significant risk to human health or the environment on the basis that this reservoir was created as part of the Power Station water management system, no public access to the reservoir is allowed and water discharging from the reservoir flow back into the Power Station within a closed system design
  - Exceedances identified in groundwater discharging directly to offsite receptors including Bowmans Creek and the Hunter River were generally consistent with background

[3] ERM has defined their 'site' as the Bayswater Power Station and covers an area of approximately 8,300ha and includes Lake Liddell.

	concentrations and are not therefore considered to represent a significant risk to human health or the environment in the context of the surrounding environment ○ Exceedances identified in groundwater discharging to Lake Liddell were evaluated on the basis of sediment and surface water samples collected from Lake Liddell, although it is noted that Lake Liddell also receives discharges from Liddell. Metals and PAHs in sediments and metals in surface water were identified at concentrations in excess of the adopted ecological screening values. Further assessment was considered warranted, however ERM considered it unlikely that there would be a need for active remediation of sediments • No contamination issues were identified which would require material management or remediation based on the current and continued use of the site as a power station with the potential exception of the identified asbestos impacts in soils surrounding the asbestos pipeline and works associated with surface water, seepage and groundwater management works in the vicinity of the Pikes Gully Ash Dam. Active management of these was either being undertaken on planned to be undertaken • Some recommendations were made by ERM for further sampling including delineation and groundwater monitoring.

ERM 2014 Liddell Stage 2 environmental site assessment

Following the development of the Bayswater preliminary ESA, ERM were engaged to undertake a Stage 2 ESA in accordance with the recommendations made in the preliminary ESA. **Table B.4** provides a summary of key elements within the report.

Table B.4: Summary of the ERM Liddell Stage 2 ESA report

Project objectives	The primary objective of the Stage 2 ESA was to gather soil and groundwater data in order to develop a baseline assessment of environmental conditions at the site[4].
Scope of work	• Ground-truthing of proposed sampling locations • Intrusive drilling works and environmental sampling, including soil, groundwater, sediment and surface water sampling, in accordance with the SAQP • Laboratory analysis of samples collected for COPC • Visual inspection of exposed pipework known or suspected to contain asbestos • Preparation and submission of a Stage 2 ESA report.
Investigation program	

AEC description	ID	No. monitoring wells	No soil bores	No. sediment / surface water samples
Ammonia plant	LA	3	2	
Ash dam	LB	9	6	46
Bulk fuel storage – light vehicle refuelling area	LC		4	
Bulk fuel storage – mobile refuelling facility	LD	8	4	
Bulk fuel storage – fuel oil installation ASTs (A-F)	LE	9	9	
Bulk fuel storage – Waste oil AST (Transformer Road) and former transformer oil ASTs	LF		4	
Bulk fuel storage – turbine oil AST	LG	3		

	Bulk fuel storage – Waste oil ASTs (liquid alternative fuels) and emergency generator AST	LH	3	1	
	Current and former coal storage area	LI	9	5	
	Dangerous goods, flammable liquids and stores	LJ	3	11	
	Former construction workshop and storage	LK		5	
	Hunter valley gas turbines	LL	6	20	
	Machinery Graveyard	LM	2	2	
	Oil and grit trap	LN	6	1	
	Former and current maintenance stores, workshops, foam generator and unofficial lay-down areas	LO	15	10	
	Fill material	LP	6	14	
	Transformer operations / transformer road	LQ	4	11	
	TransGrid switchyard	LR	3		
	Landfills (waste disposal and borrow pit)	LS	5	4	
	Water intake and pump station	LT	4		
	Water treatment plant	LU	2	6	
	Buffer land	LV	3	4	
	Totals		**103**	**123**	**46**

Sample analysis

Soil, sediment, groundwater and surface water samples were analysed for the following COPC:

- Metals and metalloids (arsenic, cadmium, chromium, copper, nickel, lead, mercury, selenium, and zinc)
- TRH
- BTEX
- PAHs
- Asbestos (presence / absence).

A sub-section of samples were also analysed for the following additional analytes:

- Barium, beryllium, boron, cobalt, manganese, molybdenum, thallium, vandium
- PCBs
- VOC
- PFOS and PFOA.

Selected samples were sampled for:

- TOC

[4] ERM have defined their 'site' as the Liddell Power Station covering an area of approximately 1500ha.

	• PSD • EC and • pH and CEC.
Sample results	Sample results relevant to this project have been presented in **Section 3**.
Report conclusions	The following conclusions were made by ERM based on the data collected during the investigation: • The key impacts identified include asbestos present beneath the ACM pipelines to the Liddell Ash Dam, potential risks associated with inhalation of petroleum hydrocarbon vapours near the light vehicle refuelling area, potential migration of petroleum hydrocarbons from the bulk fuel storage areas towards Lake Liddell • No contamination issues were identified which would require material management or remediation based on the current and continued use of the site as a power station with the potential exception of the potential material issues associated with identified asbestos impacts in soils surrounding the ACM pipelines to Liddell Ash Dam and water management issues related to Liddell Ash Dam (which already had a management program in place) • Some recommendations were made by ERM for further assessment to address hydrocarbon impacts in the bulk fuel storage areas and in the former and current maintenance stores, workshops, foam generator and unofficial lay-down areas and asbestos impacted areas.

ES 2018 Bayswater APECS

The Environmental Strategies (ES) were engaged by AGLM to complete an additional pre-existing contamination study (APECS) at Bayswater for the purpose of identifying pre-existing contamination (ES 2018). **Table B.5** provides a summary of key elements within the report.

Table B.5: Summary of the ES Bayswater APECS report

Project objectives	• To define to the extent practicable, the nature and extent of contamination on the Bayswater site[5] identified in the ERM report and at other locations assessed as part of the Bayswater APECS program • To make determination weather the contamination identified was pre-existing contamination.

Scope of work	• Review previous ERM reports and relevant documents
	• Assessment of data gaps and identification of uncertainties and issues that require further investigation to define, to the extent practicable, the nature and extent of contamination on Bayswater and to make determinations whether the contamination is 'pre-existing contamination'
	• Develop a sample analysis and quality plan
	• Completion of a field investigation to close the assessed data gaps and uncertainties identified in the review of the previous reports including:
	  ○ A field sampling programme
	  ○ A laboratory analytical programme
	  ○ Comparison of laboratory results with relevant investigation criteria both human health and environmental
	• Preparation of an assessment report and presenting areas of identified contamination (AIC) considered to be "pre-existing".

Investigation program	

Medium	Location	Investigation type	Number investigation locations	Number of samples
Soil	AEC	Soil Bores	159	309
		Test Pits	26	63

Groundwater	AEC	Existing wells	92	104
		New wells	95	103
Sediment	AEC	Sediment	57	57
Surface water	AEC	Surface water	35	35

ES identified 85 AEC that were investigated.

COPC

- Metals and metalloids (arsenic, boron, cadmium, chromium (Total), copper, lead, mercury (total), nickel, Selenium and zinc
- TRH
- BTEX
- PAH
- VOCs
- PCBs
- Aqueous Film Forming Foam (AFFF), also referred to as PFAS, as:
  - PFOS
  - PFOA and
  - Perfluoroalky sulfonates (PFHxS)
- Salinity
- High and low pH
- TOC
- Nutrients (specifically nitrate (NO_3), Nitrite (NO_2), Ammonia (NH_3) and phosphorous (P))
- Ferric chloride ($FeCl_3$).

Sample results

Sampling results relevant to this investigation have been reviewed in more detail in **Section 3** and compared against screening criteria relevant to this project (i.e. commercial / industrial land use scenario).

Report conclusions

- ES identified a number of AIC in which COPC have been identified as exceeding the adopted assessment criteria. These include:
  - AEC5 – Maintenance store
  - AEC 11W – Fire-fighting training area
  - AEC 38 – Sludge lagoons
  - Various AEC for salinity
  - pH across 24 AECs in groundwater
  - Ammonia in six AECs in groundwater
  - Ash and Coal across Bayswater.

ES 2018 Liddell APECS

The Environmental Strategies (ES 2018) [now Arcadis Australia Pacific Pty Ltd] reports supplemented the ERM (2014) reports by including additional data points, locations, and analytes. **Table B.6** provides a summary of key elements within the report.

[5] ES have defined their 'site' as the Bayswater Power Station and covers an area of approximately 8,300ha.

Table B.6: Summary of the ES Liddell APECS report

<table>
<tr><td>Project objectives</td><td>

To define to the extent practicable, the nature and extent of contamination on the Liddell site[6] identified in the ERM report and at other locations assessed as part of the Liddell APECS program
To make determination weather the contamination identified was pre-existing contamination.

</td></tr>
<tr><td>Scope of work</td><td>

Review previous ERM reports and relevant documents
Assessment of data gaps and identification of uncertainties and issues that require further investigation to define, to the extent practicable, the nature and extent of contamination on Bayswater and to make determinations whether the contamination is ‘pre-existing contamination’
Develop a sample analysis and quality plan
Completion of a field investigation to close the assessed data gaps and uncertainties identified in the review of the previous reports including:

A field sampling programme
A laboratory analytical programme
Comparison of laboratory results with relevant investigation criteria both human health and environmental

Preparation of an assessment report and presenting AIC considered to be “pre-existing”.

</td></tr>
<tr><td>Investigation program</td><td>
<table>
<tr><th>Medium</th><th>Location</th><th>Investigation type</th><th>Number investigation locations</th><th>Number of samples</th></tr>
<tr><td>Soil</td><td>AEC</td><td>Soil Bores</td><td>141</td><td>285</td></tr>
<tr><td></td><td></td><td>Test Pits</td><td>19</td><td>41</td></tr>
<tr><td>Groundwater</td><td>AEC</td><td>Existing wells</td><td>84</td><td>84</td></tr>
<tr><td></td><td></td><td>New wells</td><td>50</td><td>50</td></tr>
<tr><td>Sediment</td><td>AEC</td><td>Sediment</td><td>73</td><td>85</td></tr>
<tr><td>Surface water</td><td>AEC</td><td>Surface water</td><td>55</td><td>55</td></tr>
<tr><td>Soil vapour</td><td></td><td></td><td>3</td><td>3</td></tr>
</table>
</td></tr>
<tr><td>COPC</td><td>

Metals and metalloids (arsenic, boron, cadmium, chromium (Total), copper, lead, mercury (total), nickel, Selenium and zinc
TRH
BTEX
PAH
VOCs
PCBs
AFFF, also referred to as PFAS, as:

PFOS
PFOA and
PFHxS

Salinity
High and low pH
TOC
Nutrients (specifically NO_3, NO_2, NH_3 and P)
$FeCl_3$.

</td></tr>
</table>

[6] ES have defined their ‘site’ as the Liddell Power Station covering an area of approximately 1500ha.

Sample results	Sampling results relevant to this investigation have been reviewed in more detail in **Section 3** and compared against screening criteria relevant to this project (i.e. commercial / industrial land use scenario).

Report conclusions	• ES identified a number of areas of AIC in which COPC have been identified as exceeding the adopted assessment criteria. These include:
	  ○ AEC 76 – Hunter valley gas turbine
	  ○ AEC 95 – Interceptor pits
	  ○ AEC 96 – Fuel tanks
	  ○ AEC 99 – Oil and grit trap
	  ○ AEC 102 – UST
	  ○ AEC 138 – Liddell coal stockpile area
	  ○ Various AECs for salinity
	  ○ pH across 20 AECs in groundwater
	  ○ Ammonia in five AECs in groundwater
	  ○ Ash and Coal across Liddell.

AECOM 2019 Bayswater and Liddell PFAS investigation

In response to a request from the NSW AECOM were engaged by AGLM to complete a Stage 2 PFAS Investigation across both sites[7]. **Table B.7** provides a summary of key elements within the report.

Table B.7: Summary of the AECOM PFAS investigation report

Project objectives	• To refine the existing PFAS conceptual site model (CSM) and better define the potential risk posed to sensitive off-site human health and ecological receptors • Make recommendations for additional investigations, if required.
Scope of work	Soil and groundwater sampling: • Underground service clearance at all intrusive sampling locations • Non-Destructive Digging (NDD) and/or hand augering at all intrusive sampling locations • Mechanical drilling using a Sonic Drill Rig at locations designated for deep (> 1.5 m below ground level) soil bores and/or groundwater monitoring well installation • Lithological logging of the soil and/or rock profile encountered at each intrusive sampling location • Installation of 25 new groundwater monitoring wells • Collection and analysis of 276 soil samples from 117 soil bores • Collection of groundwater samples from 49 existing monitoring wells and from 25 newly installed wells. Surface Water and Sediment Sampling • Collection of co-located surface water and sediment samples; 83 surface water samples from 48 locations, and collection of 55 sediment samples from 41 co-located sampling locations • Collection of field measured surface water geochemical parameters • Recording of global positioning system coordinates for all surface water and sediment sampling locations • Characterisation and disposal of waste soil and groundwater by a licenced waste contractor. Laboratory analysis

[7] AECOM have identified their site as Liddell Power Station (approximately 1,500 ha) and Bayswater Power Station (approximately 8,300 ha) together

	• Laboratory analysis of selected soil, groundwater, surface water, and sediment samples for the full suite of PFAS compounds • Analysis of 29 primary soil and sediment samples for PFAS concentrations using demineralized water to replicate pH neutral conditions. These samples were collected from the upper unsaturated soil profile. These soil data were compared with groundwater PFAS guidelines to assist the understanding of the potential for an on-going secondary source of PFAS impacts from migration from soil to groundwater.
AICs	LPS • Northern Peninsula (AIC NP): a low-lying grassed peninsula of approximately 8 ha, to the north of LPS, on the shores of Lake Liddell. It is located immediately west of the Lake Liddell process water intake. Firefighting training was conducted on the southern side of the NP • AICs 93, 94, 95 and 96 (AIC 93-96): these four AICs are located adjacent to each other and have been investigated as one area. AIC 93 contains decommissioned fuel tanks E & F, AIC 94 includes the chemical drain outlet from the Water Treatment Plant (WTP) and AIC 95 has interceptor pits capturing discharge from LPS prior to entering Lake Liddell. PFAS-containing AFFF was used during firefighting training activities conducted across the grassed area and in the tank farm. BPS • AIC 11W: a grassed, level area of ~ 0.8 ha (Figure 7). Firefighting training activities using AFFF were conducted across the grassed area; several fire hydrants are also present in the area • AIC17: the area includes transformers and infrastructure on concrete hardstand at the southern end of the plant; it also comprises a 'clean' and 'contaminated' stormwater system moving surface water runoff into the Environmental Protection License (EPL) discharge point and the contaminated water system, respectively. Firefighting activities with AFFF were carried out on infrastructure in this area • AICs 51 and 52 (AIC 51-52): two AICs investigated / reported as one area. Specifically, AIC 51 comprises of a Diesel Tank Overflow Pond, an unlined settling pond catching surface runoff from the diesel AST bunds within AIC 52. Pond overflows into a dry gully and into the Ash Dam. AIC 52 is the BPS tank farm with a concrete hardstand and is fitted with extensive fire suppression system throughout the tank farm. Firefighting activities and testing using AFFF are known to have occurred around the diesel tanks and testing of the AFFF deluge system was conducted regularly at AIC 52.
Sample results	Sampling results relevant to this investigation have been reviewed in more detail in **Section 3** and compared against screening criteria relevant to this project (i.e. commercial / industrial land use scenario).
Report conclusions	The following conclusions are made by AECOM based on the data collected during the investigation: • Lateral and vertical soil sampling in the AICs and surrounding areas has demonstrated that PFAS concentrations are generally less than the laboratory limit of reporting (LORs) and/or investigation levels (ILs). Where ILs are exceeded in 3 of 274 soil samples, nearby sediment and surface water results were all less than the LOR and or ILs, indicating no complete exposure linkage • Sampling of groundwater in the AICs and surrounding areas indicated that while PFAS has migrated to groundwater at concentrations exceeding ILs in 21 of 74 monitoring well locations, nearby downgradient sediment and surface water results were all less than the LOR and/or ILs, indicating no complete exposure linkage. Whilst the full vertical and lateral extent of PFAS impacts may not have been fully defined at each AIC (which was not the purpose of the investigation), the refined CSMs, based on the data obtained, infer that PFAS does not appear to be impacting off-site receptors and has been assessed relative to the downgradient receptors • Sampling from nearby drainage lines, receiving waters and sediments demonstrated that PFAS was not migrating from the AICs at concentrations greater than the ILs, indicating no complete exposure linkage

- Investigation of potential off-site migration of impacts at EPL discharge points, specifically EPL8, has demonstrated that PFAS concentrations are less than the laboratory LORs at all locations, indicating no complete exposure linkage with surface water receptors.

APPENDIX C HISTORICAL AERIAL PHOTOS


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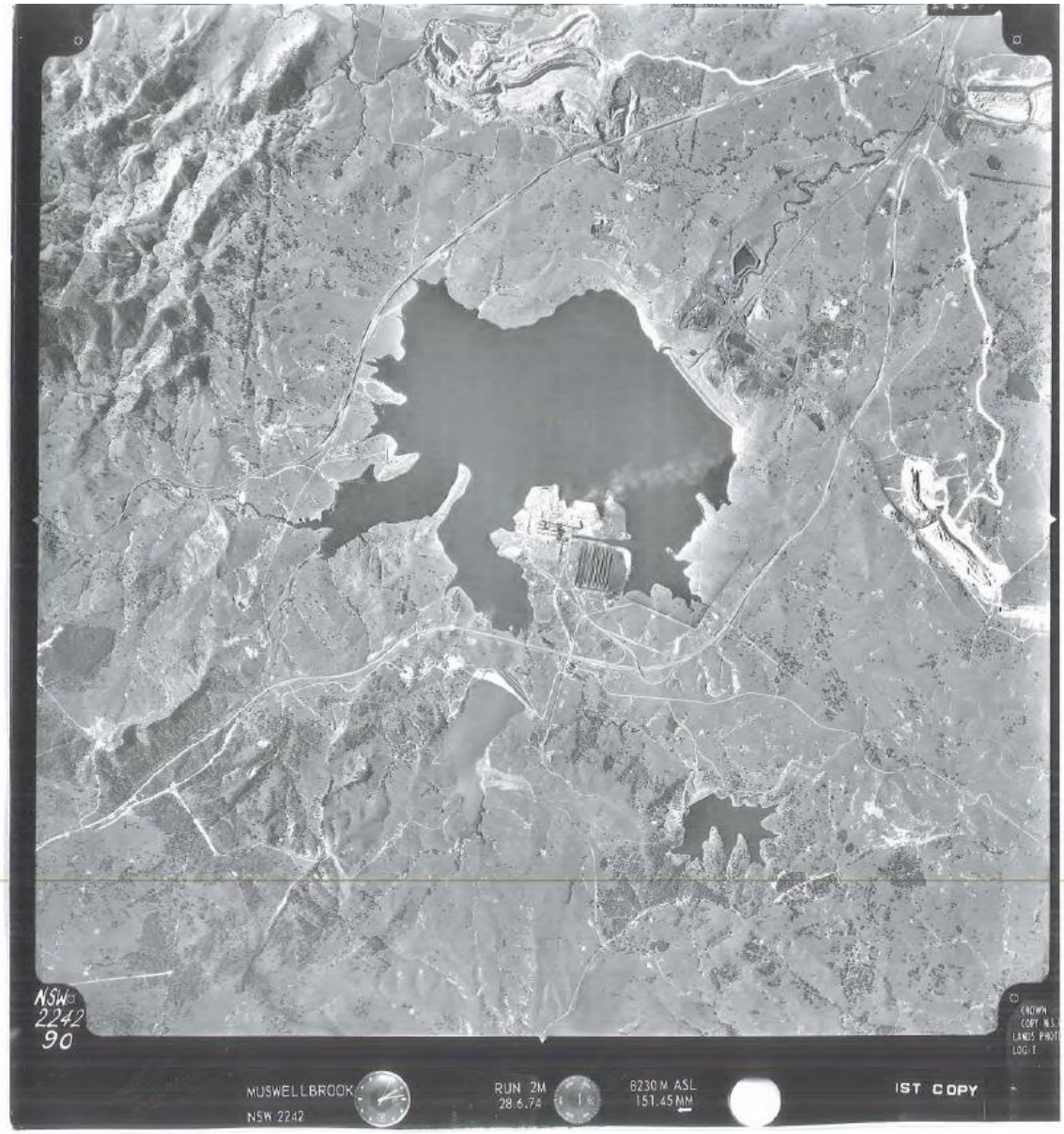
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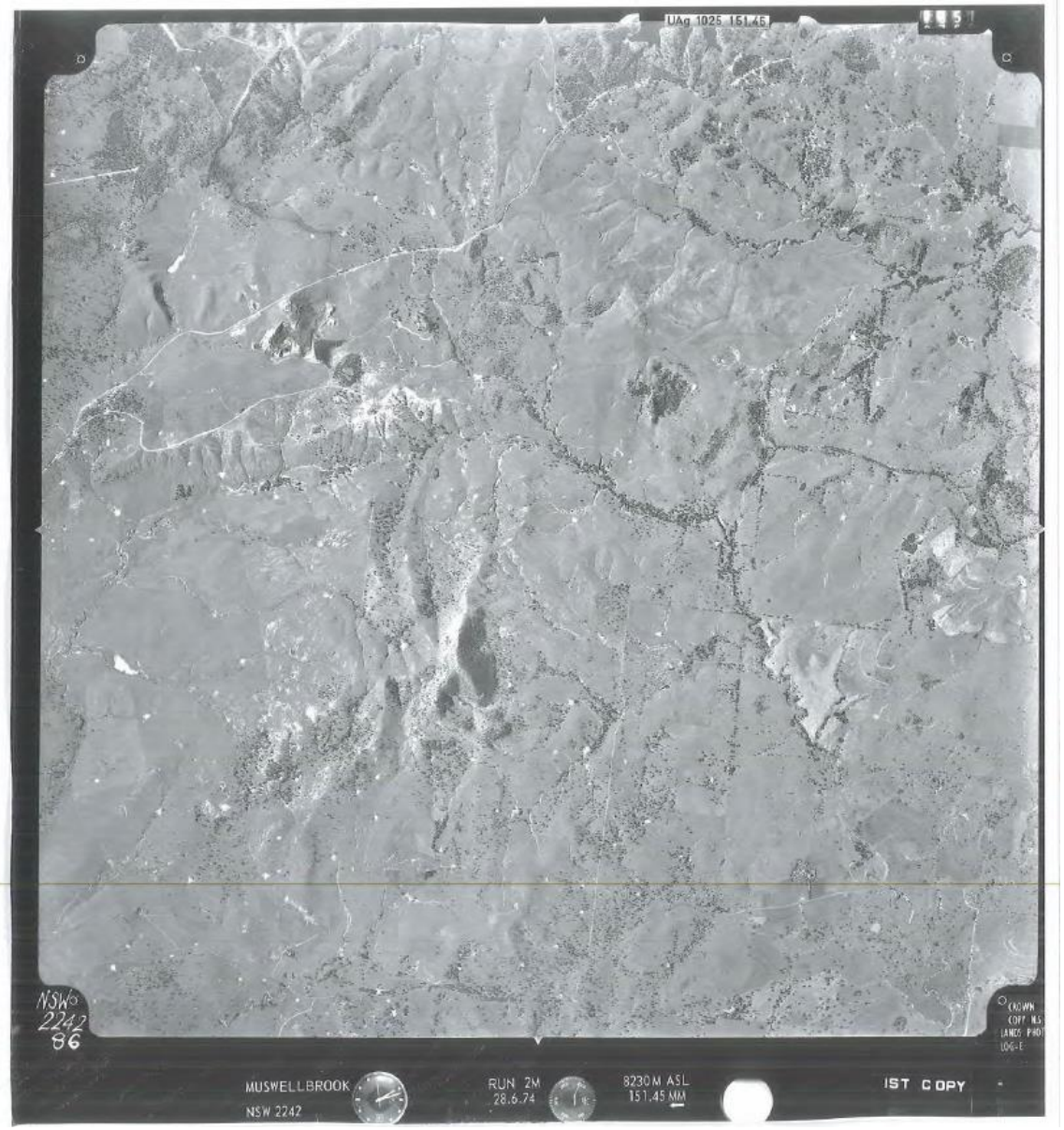
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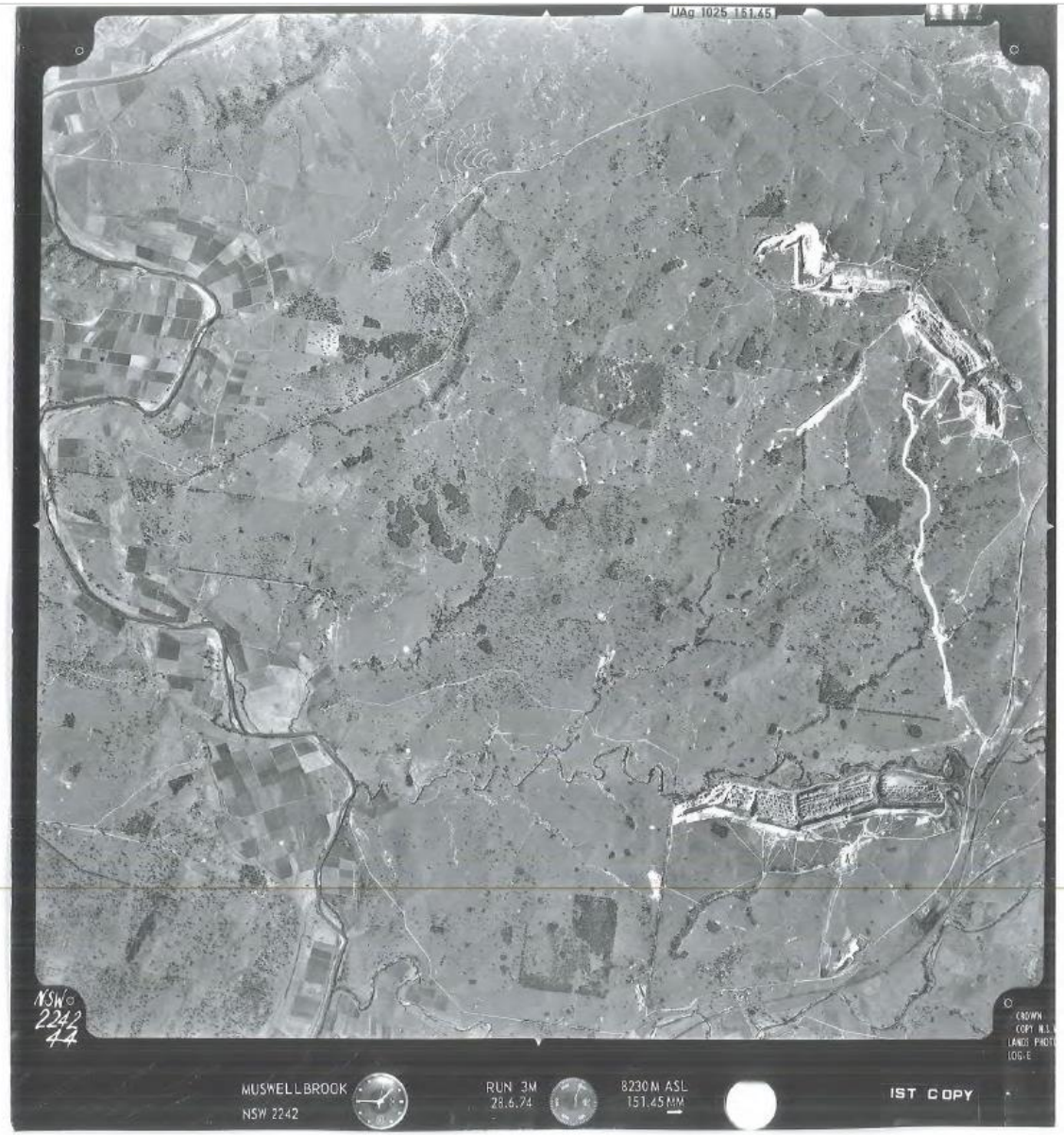
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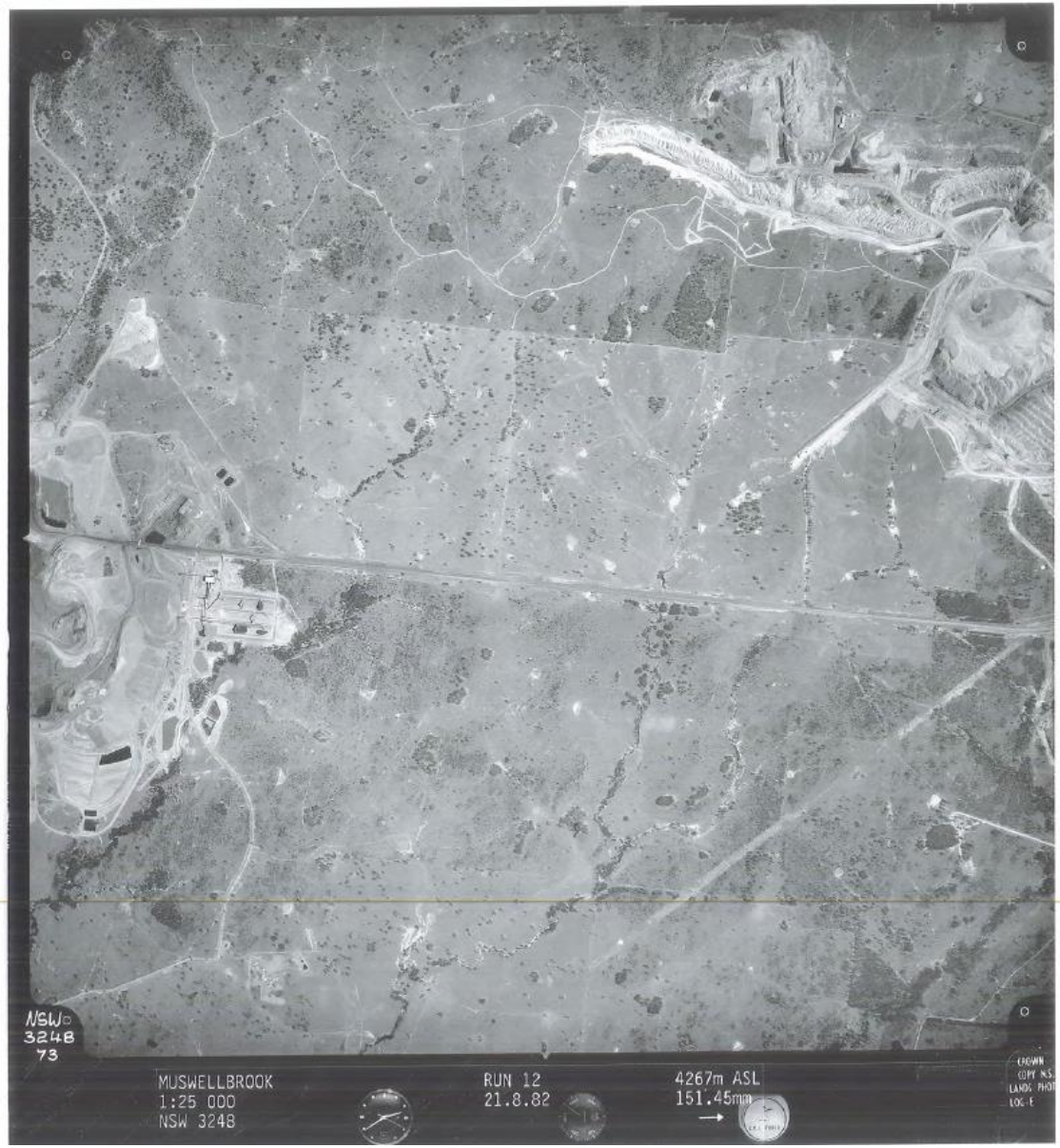
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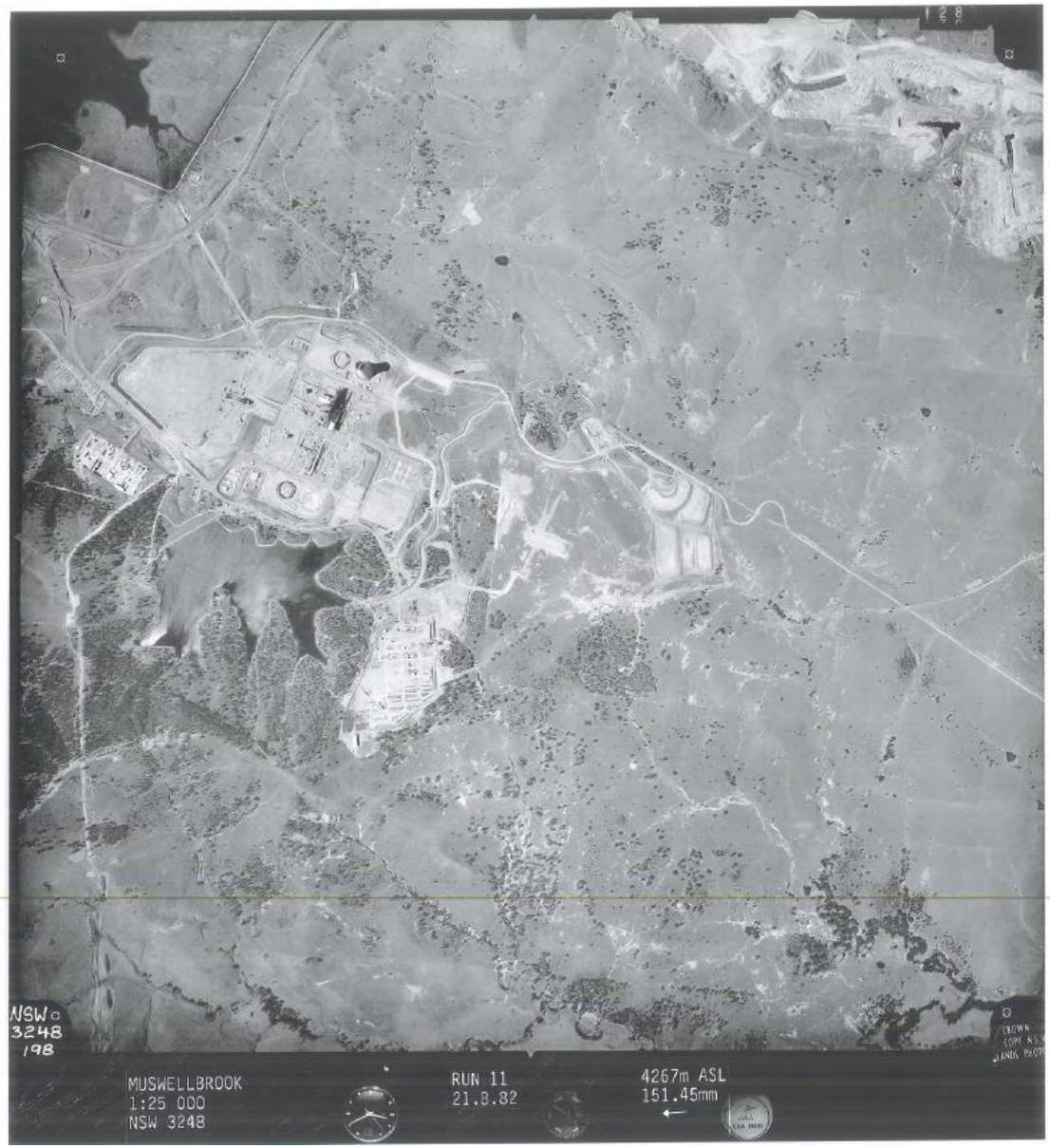
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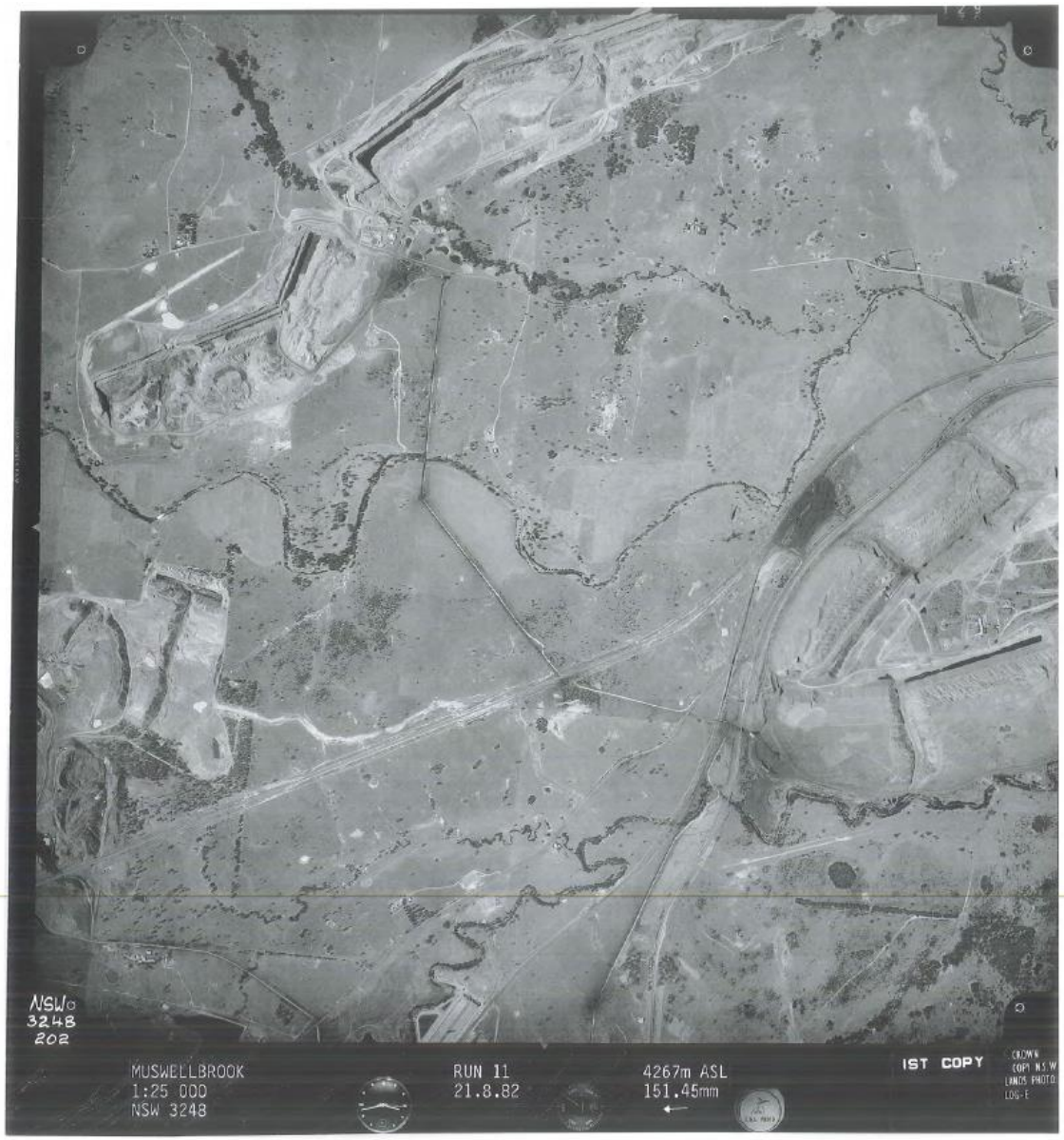
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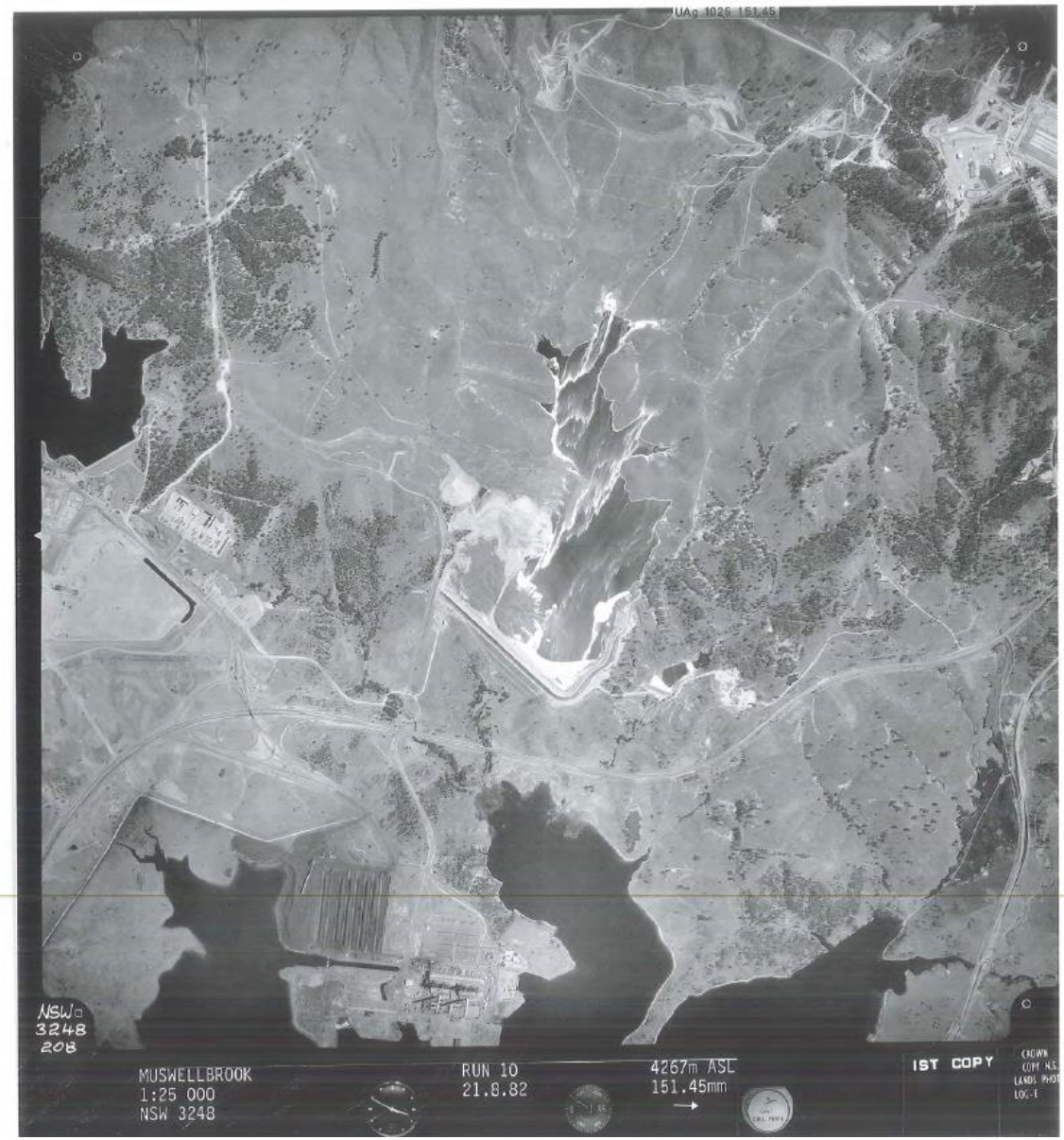
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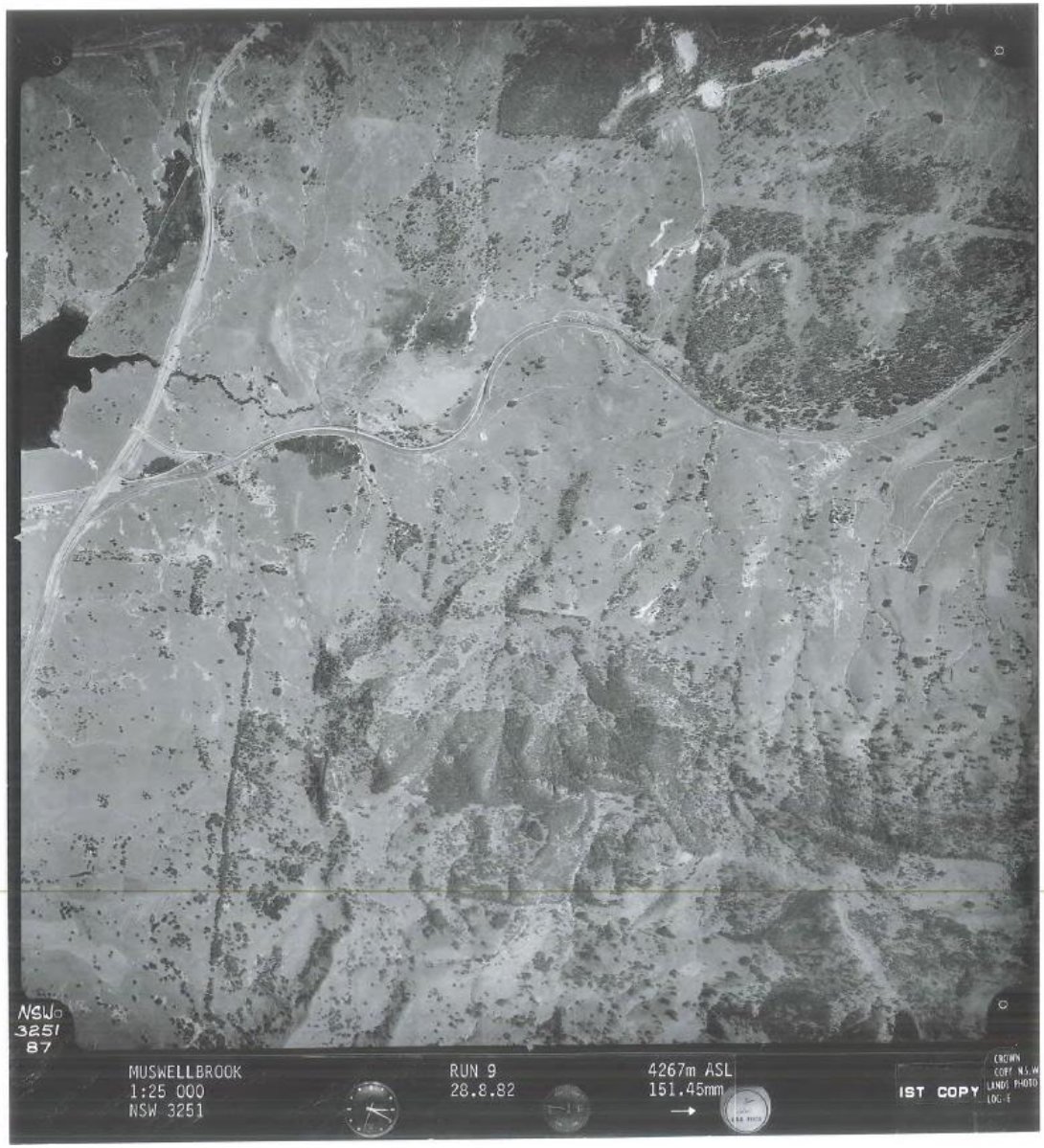
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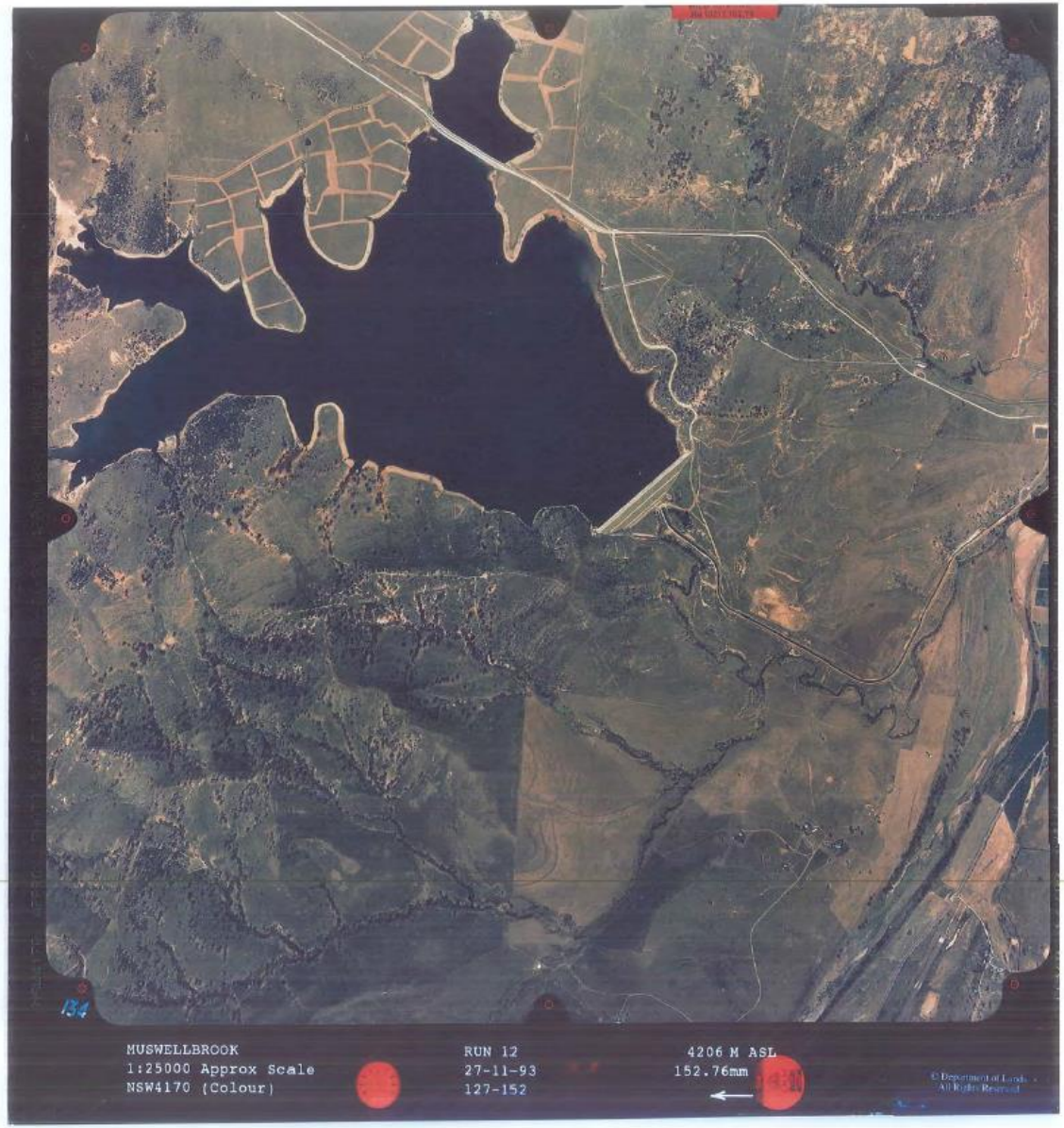
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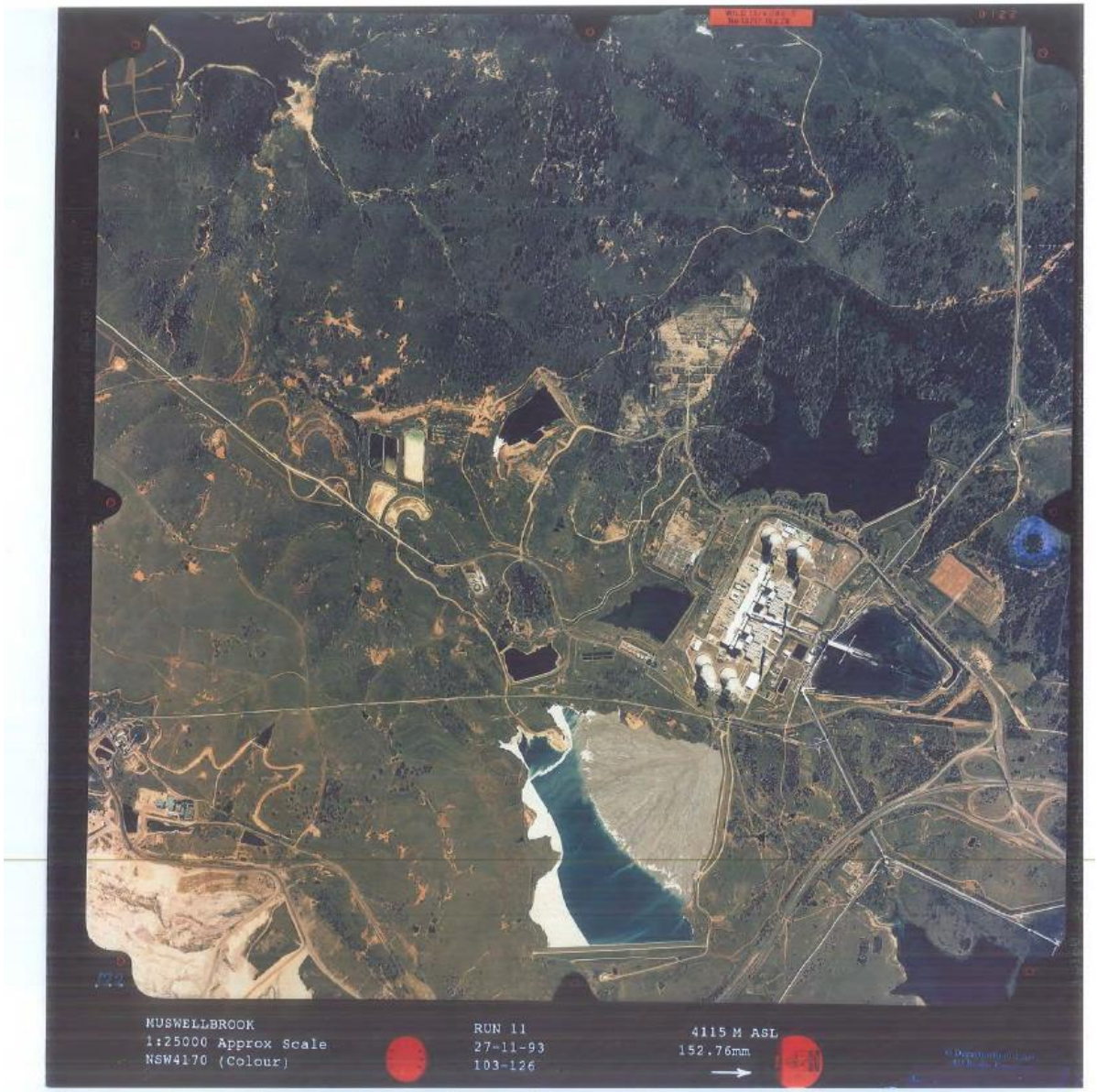
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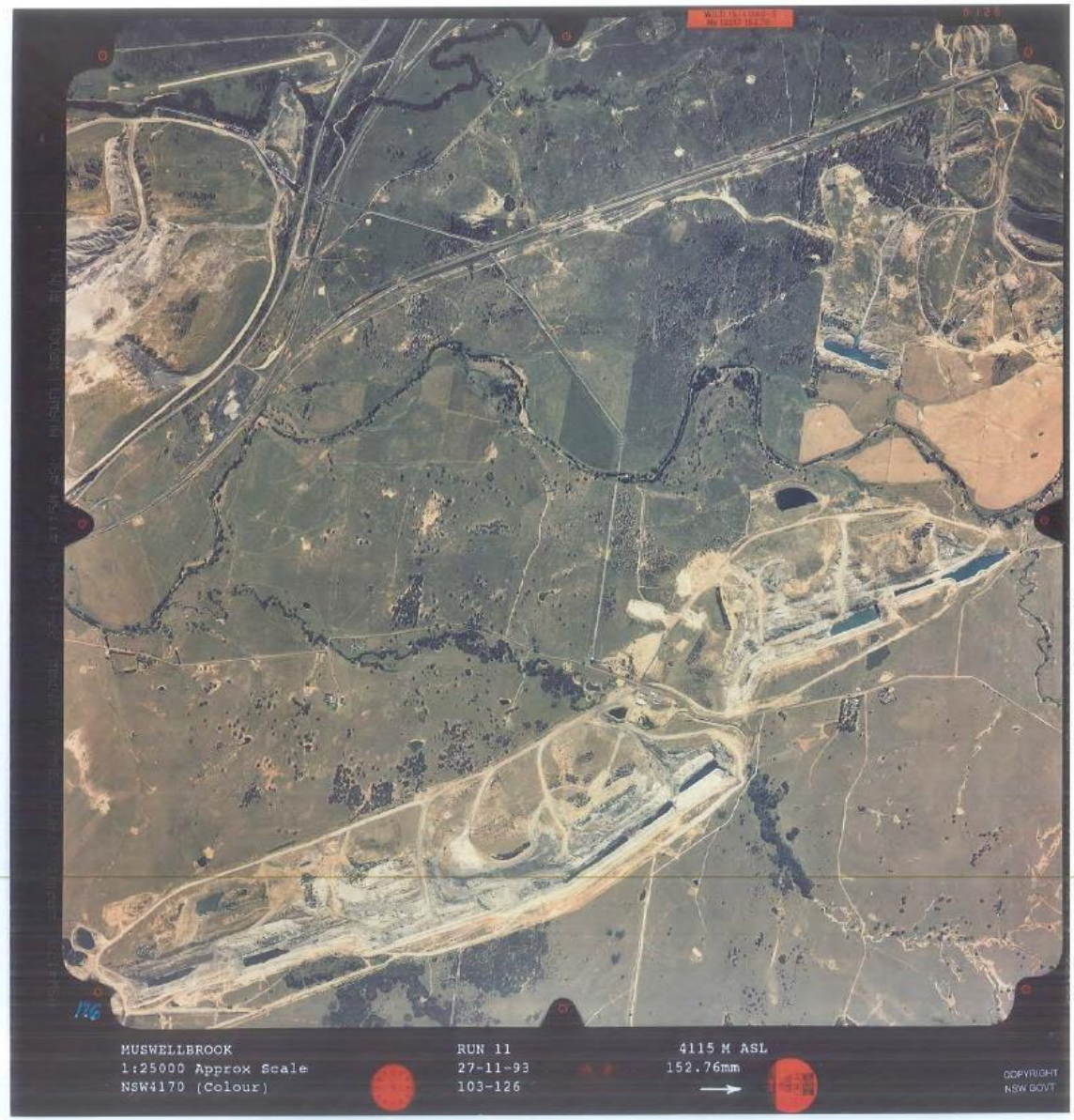
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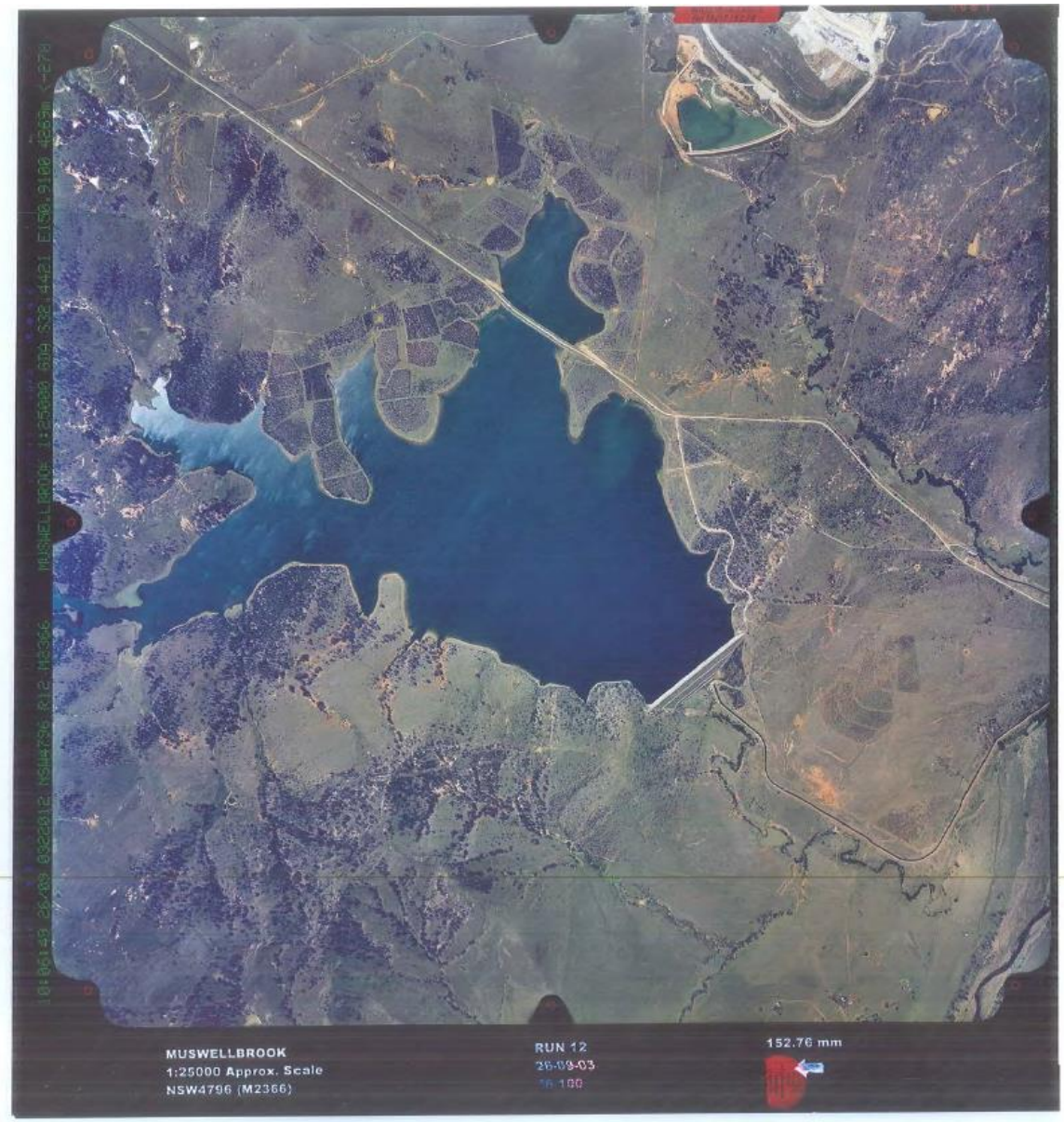
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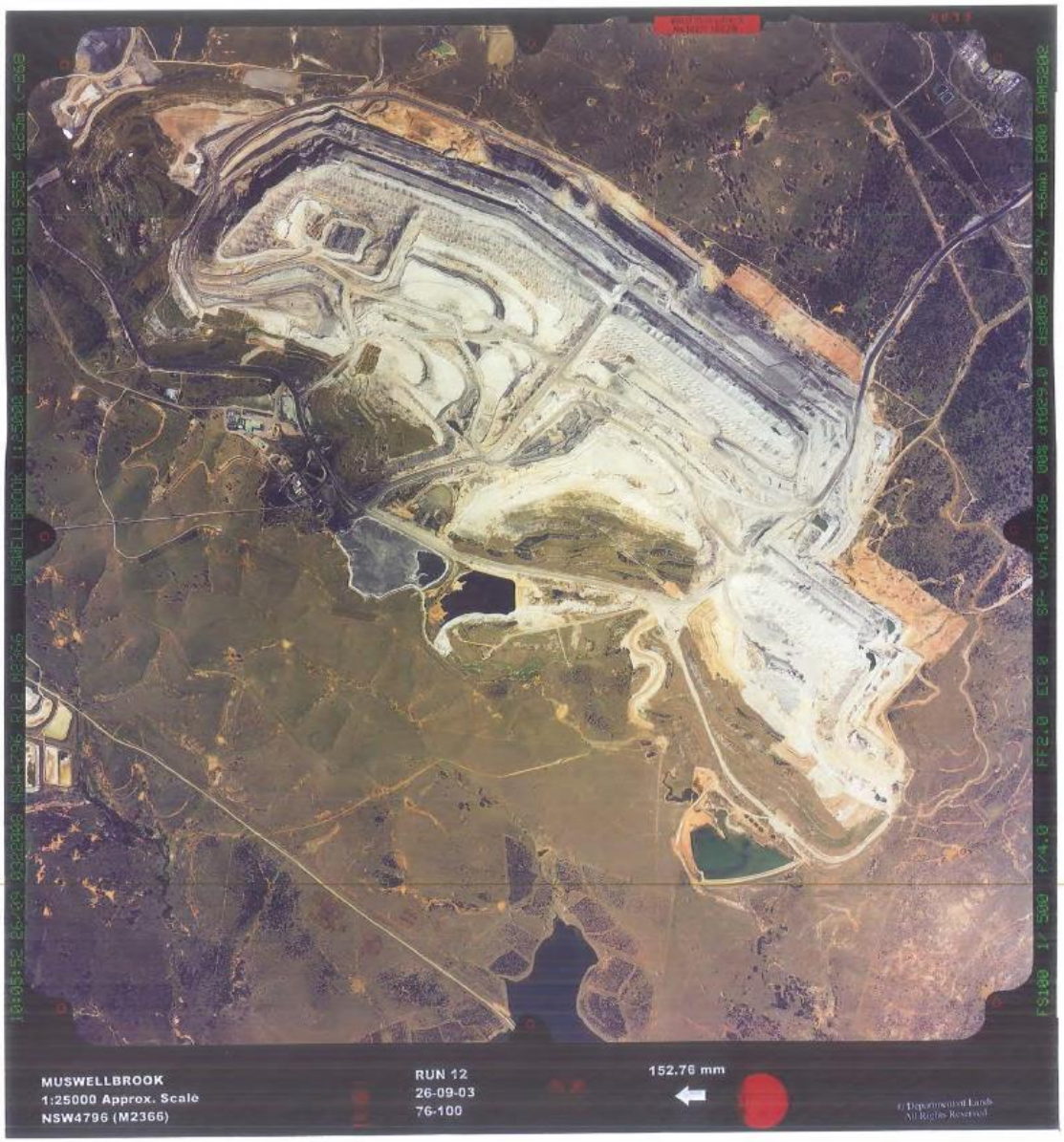
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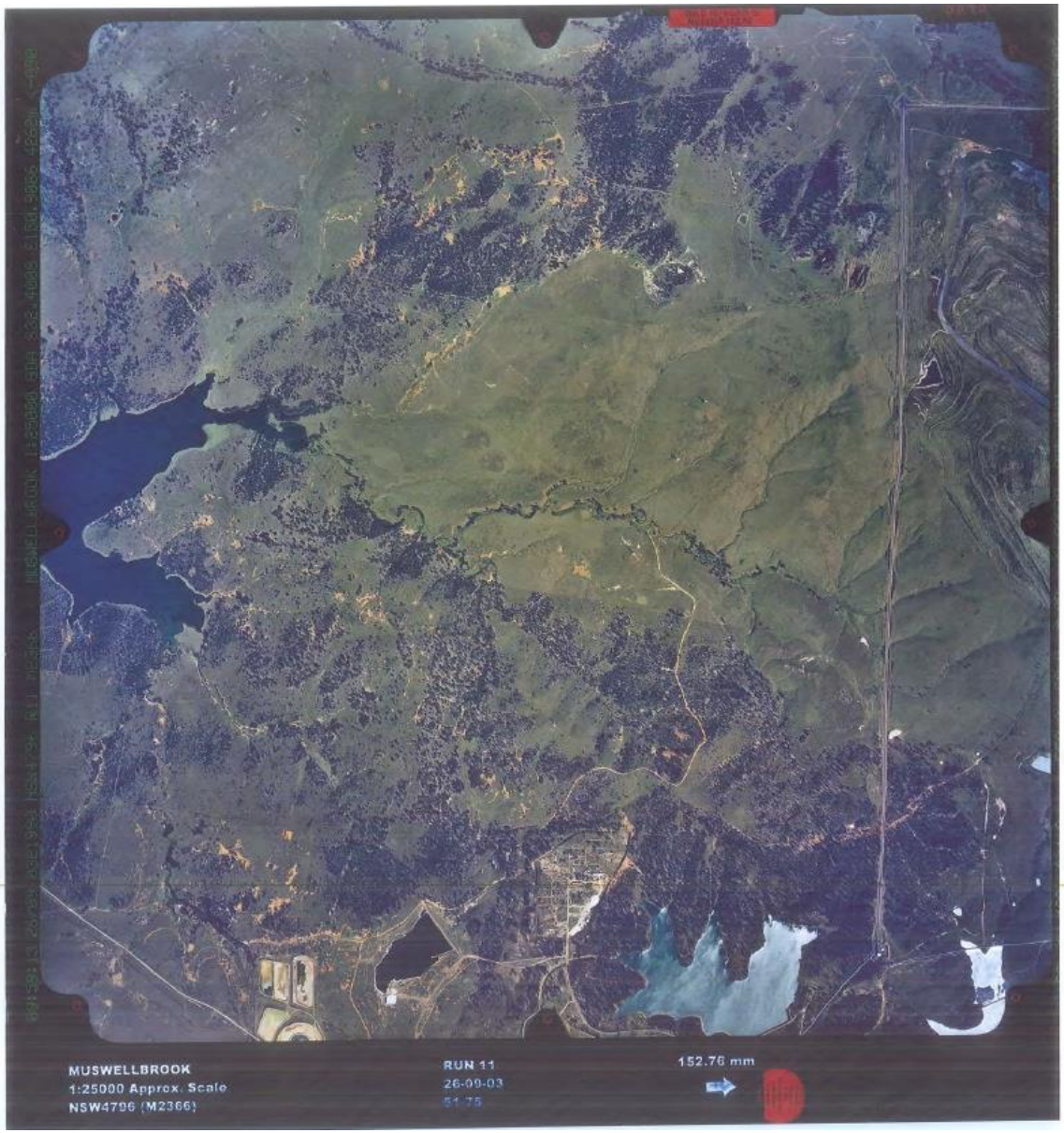
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RUN 11
26-09-03
51 75
152.76 mm


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NSW4796 (M2366)
RUN 11
26-09-03
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152.76 mm
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APPENDIX D AECOM GROUNDWATER CONTOUR MAPS

AECOM

N

0 30 60 m

FIGURE 5: GROUNDWATER ELEVATIONS AND CONCENTRATIONS - NORTHERN PENINSULA

LPS_AICNP_MW122
126.68

LPS_AICNP_MW112
126.89

LPS_AICNP_MW114
126.84

LPS_AICNP_MW105
126.56

LPS_AICNP_MW129
127.22

130m
132m
134m
136m
138m
140m
142m
144m
146m
148m

126.95m
127.05m
126.85m
126.75m
126.65m
127.15m

Legend

- EPL site boundary
- New groundwater monitoring well
- Inferred groundwater contour
- Inferred groundwater flow direction

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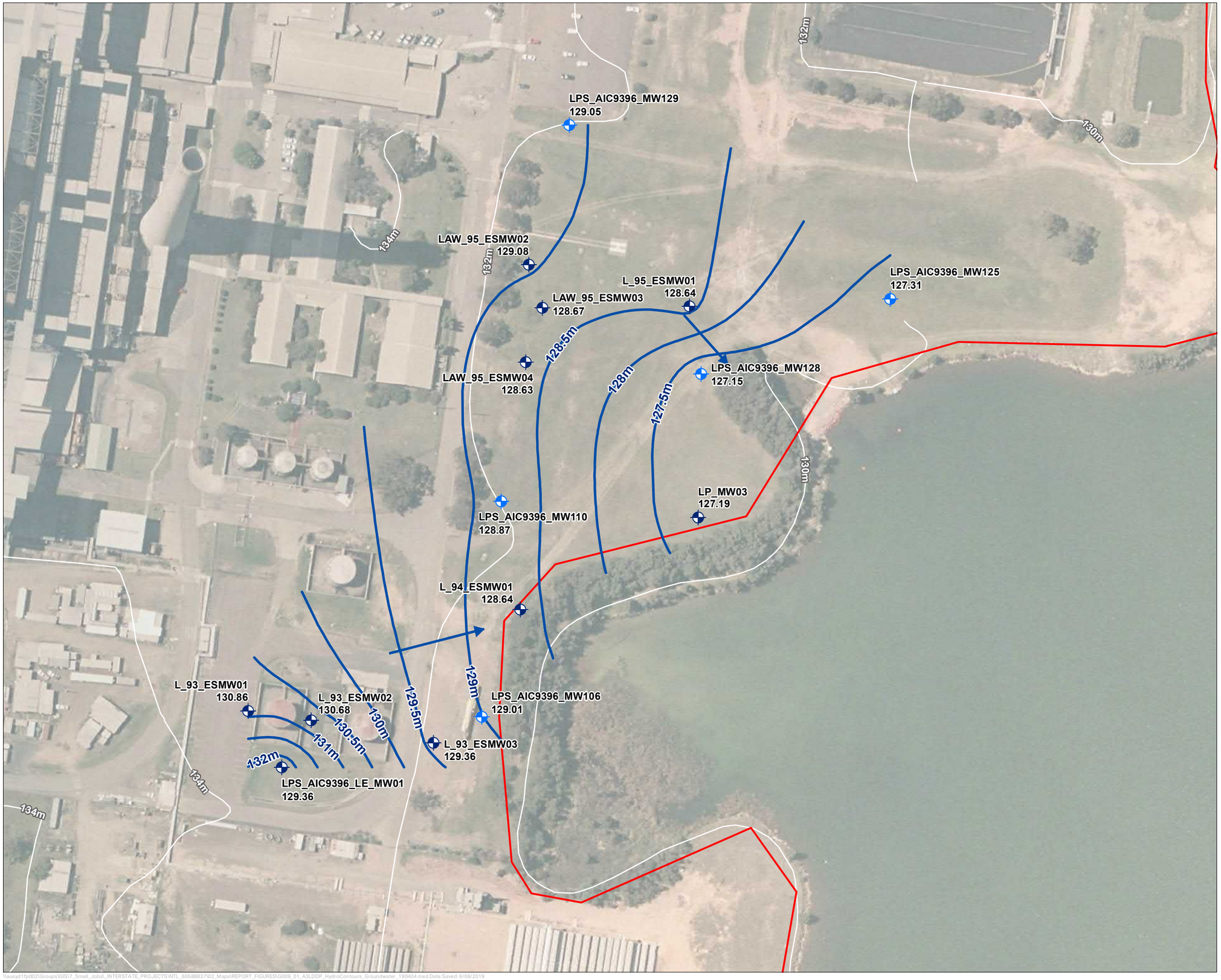

FIGURE 6: GROUNDWATER ELEVATIONS AND CONCENTRATIONS - AIC 93-96

Legend

- EPL site boundary
- New groundwater monitoring well
- Existing groundwater monitoring well
- Inferred groundwater contour
- Inferred groundwater flow direction

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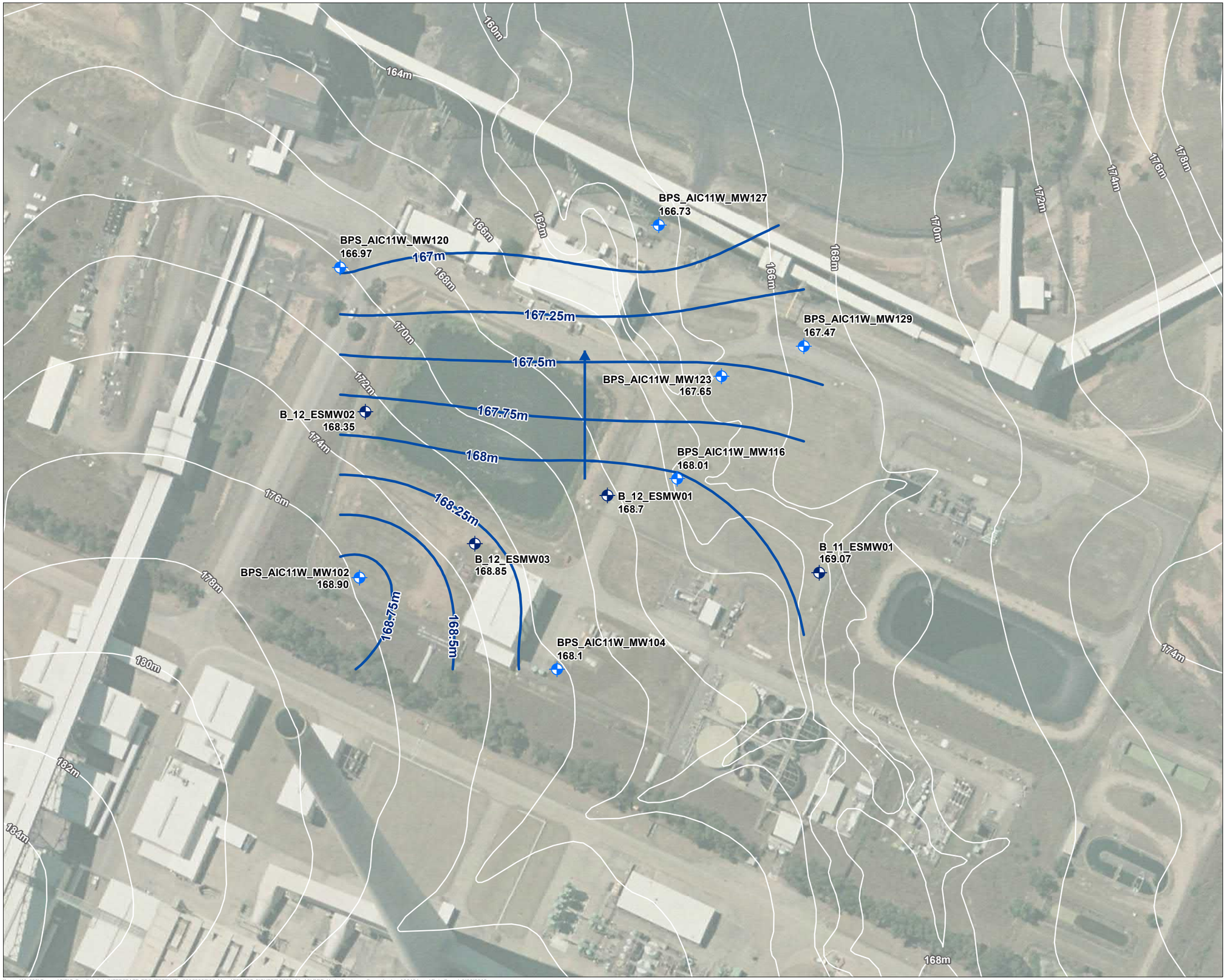

AECOM

N

0 25 50 m

FIGURE 7: GROUNDWATER ELEVATIONS AND CONCENTRATIONS - AIC 11W

Legend

- EPL site boundary
- New groundwater monitoring well
- Existing groundwater monitoring well
- Inferred groundwater contour
- Inferred groundwater flow direction

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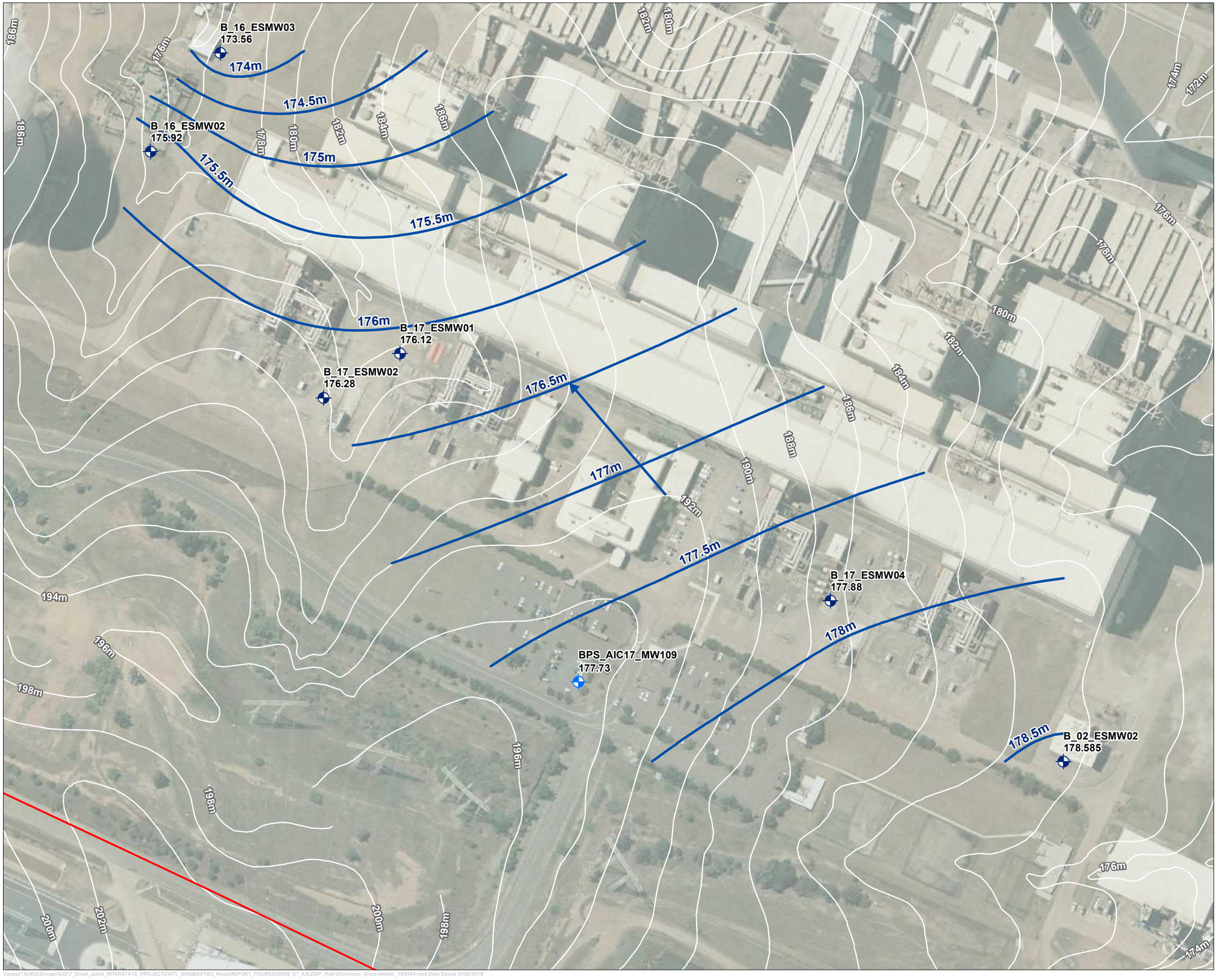

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N

0 30 60 m

FIGURE 8: GROUNDWATER ELEVATIONS AND CONCENTRATIONS - AIC 17

Legend

- EPL site boundary
- New groundwater monitoring well
- Existing groundwater monitoring well
- Inferred groundwater contour
- Inferred groundwater flow direction

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N

0 30 60 m

FIGURE 9: GROUNDWATER ELEVATIONS AND CONCENTRATIONS - AIC 51-52

BPS_AIC5152_MW112
193.42

BPS_AIC5152_MW108
195.28

BPS_AIC5152_MW106
196.07

B_52_ESMW01
196.48

BPS_AIC5152_MW120
186.89

B_51_ESMW01
186.67

BPS_AIC5152_MW116
173.94

BPS_AIC5152_MW119
185.14

Legend

- EPL site boundary
- New groundwater monitoring well
- Existing groundwater monitoring well
- Inferred groundwater contour
- Inferred groundwater flow direction

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APPENDIX E RESULTS TABLES

Table A: Option 1 Solar Array
Soil sampling results

Site ID	Sample Code	Sample Depth Range	Sampled Date Time	Matrix Description	Land Use	Receptor	Pathway	Organic	Inorganic	C10-C16	>C10-C16 less Naphthalene (F	C16-C34	C34-C40	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	>C10 - C40 (Sum of total)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ (half LO	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (Zero)	Benzo(g,h,i)perylene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene
					Arc View GIS Coding					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					Land Use	Receptor	Pathway	Organic	Inorganic	25	25	90	120	20	45	45	110	210	1	0.3	0.3	0.5	1	0.5	0.5	0.01	0.1	0.1				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					CI	HH	DC	HC	IC	--	20,000	27,000	38,000	--	--	--	--	--	3,000	900	3,600	240,000	1,500	6,000	400,000	730	--	--	--	40	--	--	--	--	--	--	--	11,000
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					CI	HH	VI	HC	IC	--	NL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NL
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					CI	ECO	DC	HC	IC	--	170	1,700	3,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	172	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					CI	ECO	DC	HC	IC	--	--	--	--	--	--	--	--	--	160	--	550	320	1,800	450	1,100	--	--	--	--	--	--	--	--	--	--	--	--	370
ERM_LPS	LS_SB01	0.1	14-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**17**	< 1.0	**24**	**23**	**26**	**10**	**40**	**0.8**	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LS_SB01	2.9-3.0	26-Nov-13	Soil						< 50	-	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**7**	< 1.0	**21**	**15**	**17**	**10**	**82**	< 0.1	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LS_SB02	0.1	11-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**14**	< 1.0	**15**	**16**	**15**	**7**	**45**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB11	0.1	14-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**10**	< 1.0	**18**	**13**	**16**	**13**	**54**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB11	1.2	20-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**7**	< 1.0	**13**	**5**	**9**	**4**	**21**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB11	3	20-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**7**	< 1.0	**8**	< 5.0	**8**	**3**	**21**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB12	0.1	14-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**12**	< 1.0	**28**	**9**	**19**	**8**	**31**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB12	0.8	20-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**11**	< 1.0	**13**	**12**	**14**	**20**	**55**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_SB12	3	20-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**19**	< 1.0	**39**	**8**	**18**	**10**	**21**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LS_SB03	0.1	14-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**8**	< 1.0	**14**	**18**	**14**	**17**	**66**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LS_SB03	2.7-2.8	26-Nov-13	Soil						< 50	-	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**25**	< 1.0	**21**	**12**	**20**	**2**	**64**	< 0.1	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_MW02	0.1	14-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**10**	< 1.0	**16**	**13**	**13**	**12**	**120**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LP_MW02	2.9	21-Nov-13	Soil						< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**12**	< 1.0	**10**	**6**	**11**	**3**	**14**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0

Site ID	Sample Code	Sample Depth Range	Sampled Date Time	Matrix Description	Phenanthrene	PAHs (Sum of total)	2-Chlorophenol	2-Methylphenol	Naphthalene	Xylene Total	C6-C10	>C6-C10 less BTEX (F1)	C6-C9	Total BTEX	Benzene	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,6-dichlorophenol	2-nitrophenol	4-chloro-3-methylphenol	Acenaphthene	Acenaphthylene	Anthracene	Cresols	Dibenz(a,h)anthracene	Indeno(1,2,3-c,d)pyrene	Pentachlorophenol	Pyrene	Phenol	Ammonia as N	Asbestos	Moisture Content	Perfluorooctane sulfonate (PFOS)*	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoic acid (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	PA	%	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					0.1	0.8			0.1	0.3	25	25	20	0.6	0.1	0.5	0.5	0.5	0.5	0.5	0.5	2	0.1	0.1	0.1		0.1	0.1	0.5	0.1	0.5	0.15		0.5			
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	4,000	--	--	11,000	81,000	--	26,000	--	--	430	--	--	--	--	--	--	--	--	--	--	25,000	--	--	660	--	240,000	--		--	20	--	50
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	NL	230	--	260	--	--	3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	370	180	--	215	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	1.0	--	10
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	0.01	--	--
ERM_LPS	LS_SB01	0.1	14-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	< 0.1	12	-	-	-
ERM_LPS	LS_SB01	2.9-3.0	26-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	20	-	-	-
ERM_LPS	LS_SB02	0.1	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	15	-	-	-
ERM_LPS	LP_SB11	0.1	14-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	< 0.1	26	-	-	-
ERM_LPS	LP_SB11	1.2	20-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	17	-	-	-
ERM_LPS	LP_SB11	3	20-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	14	-	-	-
ERM_LPS	LP_SB12	0.1	14-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	< 0.1	18	-	-	-
ERM_LPS	LP_SB12	0.8	20-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	11	-	-	-
ERM_LPS	LP_SB12	3	20-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	18	-	-	-
ERM_LPS	LS_SB03	0.1	14-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	< 0.1	14	-	-	-
ERM_LPS	LS_SB03	2.7-2.8	26-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	14	-	-	-
ERM_LPS	LP_MW02	0.1	14-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	< 0.1	11	-	-	-
ERM_LPS	LP_MW02	2.9	21-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5	-	-	18	-	-	-

Table B: Option 2 DL1 and DL2
Soil sampling results

Site_ID	Location_Code	Sample_Depth_Rang	Sampled_Date_Time	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rem_Eff	TRH C37-C40	C10-C16	>C10-C16 less Naphth	C16-C34	C34-C40	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of tot	>C10 - C40 (Sum of t	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ	Benzo(g,h,i)perylene	Benzo(b)fluoranther	Benzo(k)fluoranthen	Chrysene	Fluoranthene	Fluorene	Naphthalene
					Arc View GIS Coding								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rem_Eff	100	25	25	90	120	20	45	45	110	210	1	0.3	0.3	0.5	1	0.5	0.5	0.01	0.1	0.1				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					CI	HH	DC	HC	IC				--	--	20,000	27,000	38,000	--	--	--	--	--	3,000	900	3,600	240,000	1,500	6,000	400,000	730	--	--	--	40	--	--	--	--	--	--	--	11,000
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					CI	HH	VI	HC	IC				--	--	NL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NL
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					CI	ECO	DC	HC	IC				--	--	170	1,700	3,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	172	--	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					CI	ECO	DC	HC	IC				--	--	--	--	--	--	--	--	--	--	160	--	550	320	1,800	450	1,100	--	--	--	--	--	--	--	--	--	--	--	--	370
ERM_LPS	LM_MW01	0.5	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**7**	< 1.0	**11**	< 5.0	**10**	**2**	**10**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW01	1.9	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**17**	< 1.0	**15**	**8**	**14**	**4**	**28**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW01	6.3	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**14**	< 1.0	**14**	< 5.0	**14**	**5**	**17**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW02	0.5	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**8**	< 1.0	**19**	< 5.0	**12**	**8**	**24**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW02	3.6	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**13**	< 1.0	**12**	**8**	**21**	**4**	**17**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW03	0.5	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**11**	< 1.0	**16**	< 5.0	**12**	**5**	**16**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_MW03	2.3	11-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**6**	< 1.0	**3**	< 5.0	**8**	< 2.0	< 5.0	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LA_MW01	2.1	25-Nov-13	Soil							Y			< 50	-	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**9**	< 1.0	**14**	**14**	**22**	**8**	**34**	< 0.1	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LA_SB01	3	25-Nov-13	Soil							Y			< 50	-	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**11**	< 1.0	**13**	**11**	**9**	**4**	**25**	< 0.1	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_SB01	0.1	11-Nov-13	Soil							Y			< 50	< 50	**150**	< 100	< 50	< 100	< 100	< 50	**150**	**11**	< 1.0	**12**	**13**	**26**	**12**	**209**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LM_SB01	0.7	13-Nov-13	Soil							Y			< 50	< 50	< 100	< 100	< 50	< 100	< 100	< 50	< 50	**7**	< 1.0	**13**	**11**	**13**	**7**	**70**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
ERM_LPS	LR_MW01	0.1	11-Nov-13	Soil							Y			< 50	< 50	**120**	< 100	< 50	< 100	< 100	< 50	**120**	**6**	< 1.0	**13**	**14**	**24**	**8**	**144**	< 0.1	< 0.5	< 0.5	**0.6**	**1.2**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
ERM_LPS	LB_SV46	0	29-Nov-13	Soil	CI	HH	VI	-	-	ASB	N			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site_ID	Location_Code	Sample_Depth_Rang	Sampled_Date_Time	Matrix_Description	Phenanthrene	PAHs (Sum of total)	2-Chlorophenol	2-Methylphenol	Naphthalene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10	>C6-C10 less BTEX (F	C6-C9	Total BTEX	Benzene	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,6-dichlorophenol	2-nitrophenol	4-chloro-3-methylph	Acenaphthene	Acenaphthylene	Anthracene	Cresols	Dibenz(a,h)anthrace	Indeno(1,2,3-c,d)pyr	Pentachlorophenol	Pyrene	Phenol	Ammonia as N	Asbestos	Asbestos	Moisture Content	Perfluorooctane sulfo	6:2 Fluorotelomer Su	Perfluorooctanoic ac
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			%	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					0.1	0.8			0.1	0.1	0.1	0.2	0.1	0.3	25	25	20	0.6	0.1	0.5	0.5	0.5	0.5	0.5	0.5	2	0.1	0.1	0.1		0.1	0.1	0.5	0.1	0.5	0.15			0.5			
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	4,000	--	--	11,000	99,000	27,000	--	--	81,000	--	26,000	--	--	430	--	--	--	--	--	--	--	--	--	--	25,000	--	--	660	--	240,000	--			--	20	--	50
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	NL	NL	NL	--	--	230	--	260	--	--	3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	370	135	165	--	--	180	--	215	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			--	1.0	--	10
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			--	0.01	--	--
ERM_LPS	LM_MW01	0.5	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**19**	-	-	-
ERM_LPS	LM_MW01	1.9	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**21**	-	-	-
ERM_LPS	LM_MW01	6.3	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**19**	-	-	-
ERM_LPS	LM_MW02	0.5	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**18**	-	-	-
ERM_LPS	LM_MW02	3.6	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**26**	-	-	-
ERM_LPS	LM_MW03	0.5	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**21**	-	-	-
ERM_LPS	LM_MW03	2.3	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**22**	-	-	-
ERM_LPS	LA_MW01	2.1	25-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**16**	-	-	-
ERM_LPS	LA_SB01	3	25-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**19**	-	-	-
ERM_LPS	LM_SB01	0.1	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**21**	-	-	-
ERM_LPS	LM_SB01	0.7	13-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**15**	-	-	-
ERM_LPS	LR_MW01	0.1	11-Nov-13	Soil	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10	< 0.2	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 0.5	< 2.0	< 0.5	< 0.5		-	-	**24**	-	-	-
ERM_LPS	LB_SV46	0	29-Nov-13	Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			**16**	< 0.1	-	-	-

Site_ID	Location_Code	Sample_Depth_Rang	Sampled_Date_Time	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rem_Eff	TRH C37-C40	C10-C16	>C10-C16 less Naphth	C16-C34	C34-C40	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of tot	>C10 - C40 (Sum of t	Arsenic	Boron	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Selenium	Zinc	Mercury	1-Methylnaphthalen	2-methylnaphthalen	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b+j)fluoranth	Benzo(k)fluoranthen
					Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rem_Eff	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
					Arc View GIS Coding																																						
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					CI	HH	DC	HC	IC				--	--	20,000	27,000	38,000	--	--	--	--	--	3,000	300,000	900	3,600	240,000	1,500	6,000	10,000	400,000	730	--	--	--	--	--	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					CI	HH	VI	HC	IC				--	--	NL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					CI	ECO	DC	HC	IC				--	--	170	1,700	3,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	172	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					CI	ECO	DC	HC	IC				--	--	--	--	--	--	--	--	--	--	160	--	--	550	320	1,800	450	--	1,100	--	--	--	--	--	--	--	--	--	--	--
15092_Liddell	L_124_ESMW01	0.2-0.2	24-Aug-15	SOIL							Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	**2**	<5	<0.3	**12**	**6.2**	**5**	**5**	<3	**14**	**0.02**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Liddell	L_124_ESMW01	1	24-Aug-15	SOIL							Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	**6**	<5	<0.3	**13**	**4.6**	**7**	**4.8**	<3	**12**	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Liddell	L_124_ESMW02	1	24-Aug-15	SOIL							Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	**9**	<5	<0.3	**15**	**9.1**	**15**	**7.6**	<3	**42**	**0.01**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Liddell	L_124_ESMW02	3	24-Aug-15	SOIL							Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	**17**	<5	**0.5**	**23**	**11**	**14**	**6.7**	<3	**36**	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Site_ID	Location_Code	Sample_Depth_Rang	Sampled_Date_Time	Matrix_Description	Chrysene	Carcinogenic PAHs (e	Carcinogenic PAHs (a	Dibenz(a,h)anthrace	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyr	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	Benzene	Naphthalene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F	C6-C9	Benzene	Moisture Content	pH (Lab)	Electrical conductivi	Salinity	TOC
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	pH_Units	uS/cm	mg/kg	mg/kg
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	40	--	--	--	--	--	11,000	--	--	4,000	430	11,000	99,000	27,000	--	--	81,000	--	--	26,000	--	430	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	--	--	--	NL	--	--	--	3.0	NL	NL	NL	--	--	230	--	--	260	--	3.0	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	--	--	--	--	--	--	--	75	370	135	165	--	--	180	--	--	215	--	50	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	--	--	--	370	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15092_Liddell	L_124_ESMW01	0.2-0.2	24-Aug-15	SOIL	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**6.5**	-	**200**	**660**	-
15092_Liddell	L_124_ESMW01	1	24-Aug-15	SOIL	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**17**	-	**400**	**1300**	-
15092_Liddell	L_124_ESMW02	1	24-Aug-15	SOIL	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**17**	-	**820**	**2700**	-
15092_Liddell	L_124_ESMW02	3	24-Aug-15	SOIL	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**17**	-	**960**	**3100**	-

Table C: Option 3 Coal Yards
Soil sampling results

Site_ID	Location_Code	Sample_Depth_Range	Sampled_Date_Time	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Data_Con	Rem_Eff	TRH C37-C40	C10-C16	>C10-C16 less Naphth	C16-C34	C34-C40	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total	>C10 - C40 (Sum of tot	Arsenic	Boron	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Selenium	Zinc	Mercury	2,4-DDT	a-BHC	Aldrin	Dieldrin	b-BHC	gamma-Chlordane	Chlordane (cis)	d-BHC	DDD	4,4-DDE	DDT	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor
					Arc View GIS Coding							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LAND USE EXPOSURE SCENARIO					Land Use	Receptor	Pathway	Organic	Inorganic	Data_Con	Rem_Eff	100	25	25	90	120	20	45	45	110	210	1	5	0.3	0.3	0.5	1	0.5	3	0.5	0.01	0.1	100	100	200	100	0.1	100	100	100	100	100	100	200	200	100	200	100	100	100
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					CI	HH	DC	HC	IC			--	--	20,000	27,000	38,000	--	--	--	--	--	3,000	300,000	900	3,600	240,000	1,500	6,000	10,000	400,000	730	--	--	45,000	45,000	--	530	530,000	--	3,600,000	3,600,000	3,600,000	--	2,000,000	2,000,000	--	100,000	--	--	50,000
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					CI	HH	VI	HC	IC			--	--	NL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					CI	ECO	DC	HC	IC			--	--	170	1,700	3,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					CI	ECO	DC	HC	IC			--	--	--	--	--	--	--	--	--	--	160	--	--	550	320	1,800	450	--	1,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15092_Liddell	L_87_ESTP03	0.19-0.19	15-Sep-15	SOIL						N		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP02	0.8-0.8	16-Sep-15	SOIL						Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	10	<5	<0.3	18	7.4	13	5.2	<3	25	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP04	2.2-2.2	16-Sep-15	SOIL						Y		<100	81	81	390	<120	52	350	78	480	480	1	<5	<0.3	1.1	5.5	6	2.7	<3	15	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	0.1-0.1	23-Sep-15	SOIL						Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	5	<5	<0.3	11	6	10	3.8	<3	25	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	3-Mar	23-Sep-15	SOIL						Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	13	<5	0.6	24	20	18	8	<3	40	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	1-Jan	10-Sep-15	SOIL						Y		<100	26	26	180	<120	<20	160	<45	160	<210	6	<5	<0.3	14	18	14	11	<3	48	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	2-Feb	10-Sep-15	SOIL						Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	16	<5	<0.3	17	25	22	17	<3	76	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESSD03		14-Jan-16	SED						Y		<100	62	62	270	<120	42	250	50	340	340	<3	6	<0.3	2.5	6.9	9	5.3	<3	59	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESSD04	0.05-0.4	12-Jan-16	SED						Y		<100	44	44	140	<120	28	140	<45	160	<210	3	<5	<0.3	6.3	17	12	7.1	<3	240	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESTP01	0.5	12-Jan-16	SOIL						Y		<100	30	30	<90	<120	21	68	<45	<110	<210	5	<5	<0.3	13	4.9	9	4.3	<3	16	<0.01	<0.1	<100	<100	<200	<100	<0.1	<100	<100	<100	<100	<100	<100	<200	<200	<100	<200	<100	<100	<100
15092_Liddell	LAW_138_ESTP02	0.2	12-Jan-16	SOIL						Y		<100	<25	<25	<90	<120	<20	<45	<45	<110	<210	8	<5	0.5	15	11	12	7.9	<3	41	0.02	<0.1	<100	<100	<200	<100	<0.1	<100	<100	<100	<100	<100	<100	<200	<200	<100	<200	<100	<100	<100

Site_ID	Location_Code	Sample_Depth_Range	Sampled_Date_Time	Matrix_Description	Heptachlor epoxide	Hexachlorobenzene	Isodrin	Methoxychlor	Mirex	o,p-DDD	o,p'-DDE	trans-Nonachlor	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1268	Arochlor 1248	Arochlor 1254	Arochlor 1260	Aroclor 1262	PCBs (Sum of total)	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Chrysene	Carcinogenic PAHs (as B(a)P TPE)	Carcinogenic PAHs (as B(a)P TPE, PEFx3)	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Diazinon	Dichlorvos	Dimethoate	Ethion
					µg/kg	µg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					100	100	0.1	100	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.2	0.2	0.2	0.5	0.5	0.5	0.2
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	80,000	--	2,500,000	100	3,600	3,600	--	--	--	--	--	--	--	--	--	--	7.0	--	--	--	--	--	--	--	--	--	--	--	40	--	--	--	--	--	11,000	--	--	4,000	--	--	2,000	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NL	--	--	--	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	172	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--
15092_Liddell	L_87_ESTP03	0.19-0.19	15-Sep-15	SOIL	-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP02	0.8-0.8	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP04	2.2-2.2	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	1	0.2	0.2	0.7	0.3	0.7	0.5	0.5	<0.1	2.2	<0.1	0.1	<0.1	0.9	1.4	8.1	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	0.1-0.1	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	3-Mar	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	1-Jan	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	0.2	0.2	0.5	0.1	0.5	0.4	0.4	<0.1	1.2	<0.1	0.2	<0.1	0.4	0.6	4.6	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	2-Feb	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESSD03		14-Jan-16	SED	-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	0.3	0.3	<0.1	<0.1	0.2	0.8	0.3	0.1	0.4	0.3	0.5	0.5	0.5	<0.1	1	0.2	<0.1	0.1	1.2	0.8	6.6	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESSD04	0.05-0.4	12-Jan-16	SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.2	<0.2	<0.3	<0.1	0.4	<0.1	<0.1	<0.1	0.5	0.3	1.7	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESTP01	0.5	12-Jan-16	SOIL	<100	<100	<0.1	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.2	<0.3	<0.1	0.3	<0.1	<0.1	<0.1	0.2	0.2	<0.8	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2
15092_Liddell	LAW_138_ESTP02	0.2	12-Jan-16	SOIL	<100	<100	<0.1	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2

Site_ID	Location_Code	Sample_Depth_Range	Sampled_Date_Time	Matrix_Description	Fenitrothion	Malathion	Methidathion	Parathion	1,1,2,2-tetrachloroethane	1,1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1,1-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2,4-trichlorobenzene	1,2,4-trimethylbenzene	1,2-dibromoethane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichlorobenzene	1,2-dichloropropane	1,3,5-trimethylbenzene	1,3-dichlorobenzene	2-Nitropropane	cis-1,4-Dichloro-2-butene	trans-1,4-Dichloro-2-butene	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	Methyl Ethyl Ketone	2-chlorotoluene	2-hexanone (MBK)	4-chlorotoluene	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Allyl chloride	Benzene	Bromodichloromethane	Bromochloromethane	Bromobenzene	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO					0.2	0.2	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	1	0.1	0.1	0.1	10	0.1	5	0.1	1	10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.5	0.1	0.1	0.1
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	430	--	--	--	--	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.0	--	--	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15092_Liddell	L_87_ESTP03	0.19-0.19	15-Sep-15	SOIL	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.1	<0.1
15092_Liddell	L_87_ESTP02	0.8-0.8	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP04	2.2-2.2	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	0.1-0.1	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESSB01	3-Mar	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	1-Jan	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	L_138_ESMW01	2-Feb	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
15092_Liddell	LAW_138_ESSD03		14-Jan-16	SED	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.1	<0.1
15092_Liddell	LAW_138_ESSD04	0.05-0.4	12-Jan-16	SED	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.1	<0.1
15092_Liddell	LAW_138_ESTP01	0.5	12-Jan-16	SOIL	<0.2	<0.2	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.1	<0.1
15092_Liddell	LAW_138_ESTP02	0.2	12-Jan-16	SOIL	<0.2	<0.2	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.1	<0.1

Site_ID	Location_Code	Sample_Depth_Range	Sampled_Date_Time	Matrix_Description	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Hexachlorobutadiene	Iodomethane	Isopropylbenzene	MTBE	n-butylbenzene	Naphthalene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	Trichloroethene	tert-butylbenzene	Tetrachloroethene	Toluene	Ethylbenzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl acetate	Trichlorofluoromethane	Vinyl chloride	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F1)	C6-C9	Benzene	1-Methylnaphthalene	2-methylnaphthalene	Chrysene	Fluoranthene	Naphthalene	Phenanthrene	Pyrene	TOC	Organic Matter (calc)	Moisture Content	Electrical conductivity *(lab)	Salinity
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%w/w	%	uS/cm	mg/kg
LAND USE EXPOSURE SCENARIO					1	0.1	1	0.1	0.1	0.1	1	0.5	0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	0.1	0.2	0.1	0.3	0.6	25	25	20	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	500	0.1	0.5	1	10
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEMP					--	--	--	--	--	--	--	--	--	--	--	--	--	11,000	--	--	--	--	--	--	--	99,000	27,000	--	--	--	--	--	--	--	81,000	--	--	26,000	--	430	--	--	--	--	11,000	--	--	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m					--	--	--	--	--	--	--	--	--	--	--	--	--	NL	--	--	--	--	--	--	--	NL	NL	--	--	--	--	--	--	--	230	--	--	260	--	3.0	--	--	--	--	NL	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)					--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	135	165	--	--	--	--	--	--	--	180	--	--	215	--	50	--	--	--	--	--	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure					--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--
15092_Liddell	L_87_ESTP03	0.19-0.19	15-Sep-15	SOIL	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15092_Liddell	L_87_ESTP02	0.8-0.8	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	-	-	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	21	400	1300
15092_Liddell	L_87_ESTP04	2.2-2.2	16-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	-	-	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	21	710	2300
15092_Liddell	L_87_ESSB01	0.1-0.1	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	14	1000	3300
15092_Liddell	L_87_ESSB01	3-Mar	23-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	12	580	1900
15092_Liddell	L_138_ESMW01	1-Jan	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	-	-	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	16	920	3000
15092_Liddell	L_138_ESMW01	2-Feb	10-Sep-15	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	-	-	<25	<25	<20	<0.1	-	-	-	-	-	-	-	-	-	15	2500	8100
15092_Liddell	LAW_138_ESSD03		14-Jan-16	SED	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	-	-	-	-	-	-	-	110,000	19	30	-	-
15092_Liddell	LAW_138_ESSD04	0.05-0.4	12-Jan-16	SED	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	0.1	-	-	34	690	2300
15092_Liddell	LAW_138_ESTP01	0.5	12-Jan-16	SOIL	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	20	1100	3500
15092_Liddell	LAW_138_ESTP02	0.2	12-Jan-16	SOIL	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	22	160	520

Table D: Deoxygling
Soil sampling results

Site_ID	Location_Code	Sample_Date_Time	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Conf	Rank_ER
LAND USE EXPOSURE SCENARIO				Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rank_ER
RIL D/C/IC CARE Direct Contact – Commercial / Industrial – (NEPM 2013) & HEPA NEPM				C3	HH	DC	HC	IC			
RIL Dispose Intrusion) D –Commercial / Industrial – SAND (NEPM 2013) – D – < 1m				C2	HH	VI	HC	IC			
RIL – Commercial / Industrial – Crane (NEPM 2013) / CRC Care (2017)				C3	ECO	DC	HC	IC			
RIL – Commercial / Industrial (NEPM 2013) & HEPA NEPM Indirect Exposure				C2	ECO	DC	HC	IC			
150922 Lobster	L_142_ES0201	1	0-0.2	15-Jul-15	SED					Y	
150922 Lobster	L_142_ES0202	0-0.2		15-Jul-15	SED					Y	
150922 Lobster	L_144_ESMW01	1		28-Aug-15	SOIL					N	
150922 Lobster	L_106_ES0201	0-0.02		14-Jul-15	SED					N	
150922 Lobster	L_106_ES0202	0-0.01		14-Jul-15	SED					N	
150922 Lobster	L_106_ES0201	0-0.02		14-Jul-15	SED					Y	
150922 Lobster	L_106_ES0202	0-0.1		14-Jul-15	SED					Y	
150922 Lobster	L_106_ESMW05	0.5-0.5		15-Sep-15	SOIL					Y	
150922 Lobster	L_106_ESMW06	0.27-0.77		23-Sep-15	SOIL					Y	
150922 Lobster	L_89_ESMW04	0.24-0.24		16-Sep-15	SOIL					Y	
150922 Lobster	L_89_ESMW01	0.2-0.2		26-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW03	0.2		26-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW02	0.2-0.2		25-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW05	2		25-Aug-15	SOIL					Y	
150922 Lobster	L_91_ESMW04	2		19-Aug-15	SOIL					Y	
150922 Lobster	L_91_ESMW05	3		19-Aug-15	SOIL					Y	

Site_ID	Location_Code	Sample_Date_Time	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rank_ER
LAND USE EXPOSURE SCENARIO				Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rank_ER
RIL D/C/IC CARE Direct Contact – Commercial / Industrial – (NEPM 2013) & HEPA NEPM				C3	HH	DC	HC	IC			
RIL Dispose Intrusion) D –Commercial / Industrial – SAND (NEPM 2013) – D – < 1m				C2	HH	VI	HC	IC			
RIL – Commercial / Industrial – Crane (NEPM 2013) / CRC Care (2017)				C3	ECO	DC	HC	IC			
RIL – Commercial / Industrial (NEPM 2013) & HEPA NEPM Indirect Exposure				C2	ECO	DC	HC	IC			
150922 Lobster	L_142_ES0201	1	0-0.2	15-Jul-15	SED					Y	
150922 Lobster	L_142_ES0202	0-0.2		15-Jul-15	SED					Y	
150922 Lobster	L_144_ESMW01	1		28-Aug-15	SOIL					N	
150922 Lobster	L_106_ES0201	0-0.02		14-Jul-15	SED					N	
150922 Lobster	L_106_ES0202	0-0.01		14-Jul-15	SED					N	
150922 Lobster	L_106_ES0201	0-0.02		14-Jul-15	SED					Y	
150922 Lobster	L_106_ES0202	0-0.1		14-Jul-15	SED					Y	
150922 Lobster	L_106_ESMW05	0.5-0.5		15-Sep-15	SOIL					Y	
150922 Lobster	L_106_ESMW06	0.27-0.77		23-Sep-15	SOIL					Y	
150922 Lobster	L_89_ESMW04	0.24-0.24		16-Sep-15	SOIL					Y	
150922 Lobster	L_89_ESMW01	0.2-0.2		26-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW03	0.2		26-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW02	0.2-0.2		25-Aug-15	SOIL					Y	
150922 Lobster	L_89_ESMW05	2		25-Aug-15	SOIL					Y	
150922 Lobster	L_91_ESMW04	2		19-Aug-15	SOIL					Y	
150922 Lobster	L_91_ESMW05	3		19-Aug-15	SOIL					Y	

Site_ID	Sample_Depth_Range	Location_Code_Zone	Matrix_Description	Sample_Date	Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rank_ER
LAND USE EXPOSURE SCENARIO					Land Use	Receptor	Pathway	Organic	Inorganic	Asbestos	Data_Con	Rank_ER
RIL D/C/IC CARE Direct Contact – Commercial / Industrial – (NEPM 2013) & HEPA NEPM					C3	HH	DC	HC	IC			
RIL Dispose Intrusion) D –Commercial / Industrial – SAND (NEPM 2013) – D – < 1m					C2	HH	VI	HC	IC			
RIL – Commercial / Industrial – Crane (NEPM 2013) / CRC Care (2017)					C3	ECO	DC	HC	IC			
RIL – Commercial / Industrial (NEPM 2013) & HEPA NEPM Indirect Exposure					C2	ECO	DC	HC	IC			
ERM UPS	LB_SV08	0		29-Nov-13	Soil				ASB	N	
ERM UPS	LB_SV09	0		29-Nov-13	Soil					N	
ERM UPS	LB_SV10	0		29-Nov-13	Soil					N	
ERM UPS	LB_SV11	0		29-Nov-13	Soil	C3	HH	VI	-	ASB	N
ERM UPS	LB_SV12	0		29-Nov-13	Soil					N	
ERM UPS	LB_SV46	0		29-Nov-13	Soil	C3	HH	VI	-	ASB	N
ERM UPS	LF_MW03	0.1		21-Nov-13	Soil					Y	
ERM UPS	LF_SB01	0.1		21-Nov-13	Soil	C3	ECO	DC	HC	-	Y
ERM UPS	LF_SB02	0.1		21-Nov-13	Soil					Y	
ERM UPS	LF_SB03	0.5		25-Nov-13	Soil					Y	
ERM UPS	LF_SB04	0.1		25-Nov-13	Soil					Y	
ERM UPS	LF_SB05	0.3		26-Nov-13	Soil					Y	
ERM UPS	LF_SB06	0.3		26-Nov-13	Soil					Y	
ERM UPS	LH_MW01	0.5		26-Nov-13	Soil					N	
ERM UPS	LH_MW02	1.87		5-Dec-13	Soil					Y	
ERM UPS	LH_MW03	0.1		5-Dec-13	Soil					Y	
ERM UPS	LH_MW04	3		5-Dec-13	Soil					Y	
ERM UPS	LH_SB01	0.5		30/11/2013	Soil					Y	
ERM UPS	LH_SB03	2		5/12/2013	Soil					Y	
ERM UPS	LJ_MW01	0.1		4-Dec-13	Soil					Y	
ERM UPS	LJ_MW03	3.2		4-Dec-13	Soil					Y	
ERM UPS	LJ_SB11	0.5		5-Dec-13	Soil					Y	
ERM UPS	LJ_SB13	3		5-Dec-13	Soil					Y	
ERM UPS	LK_MW01	0.1		11-Dec-13	Soil					Y	
ERM UPS	LO_MW14	0.3		2-Dec-13	Soil					Y	
ERM UPS	LO_MW15	0.5		25-Nov-13	Soil					Y	
ERM UPS	LO_MW16	3.7-3.9		26-Nov-13	Soil					Y	
ERM UPS	LO_SB01	0.5		2-Dec-13	Soil					Y	
ERM UPS	LO_SB03	3		5-Dec-13	Soil					Y	
ERM UPS	LO_SB05	0.5		5-Dec-13	Soil					Y	
ERM UPS	LO_SB06	2		5-Dec-13	Soil					Y	
ERM UPS	LO_SB07	0.5		5-Dec-13	Soil					Y	
ERM UPS	LO_SB08	1.7		5-Dec-13	Soil					Y	
ERM UPS	LQ_MW03	0.5		2-Dec-13	Soil					Y	
ERM UPS	LQ_MW05	0.1		28-Nov-13	Soil					Y	
ERM UPS	LQ_MW06	0.7		28-Nov-13	Soil					Y	
ERM UPS	LQ_MW07	0.3		28-Nov-13	Soil					Y	
ERM UPS	LQ_SB01	1		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB02	1.9		30-Nov-13	Soil					Y	
ERM UPS	LQ_SB03	1		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB04	0.1		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB05	0.7		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB06	0.1		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB07	0.7		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB08	0.7		26-Nov-13	Soil					Y	
ERM UPS	LQ_SB11	1		2-Dec-13	Soil					Y	
ERM UPS	LR_MW04	0.2		27-Nov-13	Soil					Y	
ERM UPS	LR_MW04	0.5		11-Nov-13	Soil					Y	
ERM UPS	LU_MW03	0.5		5-Dec-13	Soil					Y	
ERM UPS	LU_MW05	0.1		28-Nov-13	Soil					Y	
ERM UPS	LU_SB02	0.5		10-Dec-13	Soil					Y	

Table E: BPS
Sample results containing exceedances of CI Criteria

Site_ID	Location_Code	Sample_Depth_Range	Matrix_Description	Land Use	Receptor	Pathway	Organic	Inorganic	Data_Con	Rem_Eff	>C10-C16 less Naphthalene (F	C10-C36 (Sum of total)	>C10 - C40 (Sum of total)	Nitrogen (Total)	Phosphorus	TRH C37-C40	C10-C16	C16-C34	C34-C40	C10-C14	C15-C28	C29-C36	Arsenic	Boron	Cadmium	Chromium (III+VI)	Copper	Lead	Nickel	Selenium	Zinc	Mercury	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1268	Arochlor 1248	Arochlor 1254	Arochlor 1260	Aroclor 1262	PCBs (Sum of total)	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Chrysene
				Arc View GIS Coding							mg/kg	mg/kg	mg/kg			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO				Land Use	Receptor	Pathway	Organic	Inorganic	Data_Con	Rem_Eff	25	110	210			100	25	90	120	20	45	45	1	5	0.3	0.3	0.5	1	0.5	3	0.5	0.01	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEI				CI	HH	DC	HC	IC			20,000	--	--			--	--	27,000	38,000	--	--	--	3,000	300,000	900	3,600	240,000	1,500	6,000	10,000	400,000	730	--	--	--	--	--	--	--	--	--	7.0	--	--	--	--	--	--	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m				CI	HH	VI	HC	IC			NL	--	--			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)				CI	ECO	DC	HC	IC			170	--	--			--	--	1,700	3,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	172	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure				CI	ECO	DC	HC	IC			--	--	--			--	--	--	--	--	--	--	160	--	--	550	320	1,800	450	--	1,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15092_Bayswater	B_18_ESSD02		SED	CI	ECO	DC	HC	-	Y	1	**770**	**790**	**790**	0	**190**	<100	<25	<90	<120	<20	**540**	**260**	0	**8**	0	**5**	**17**	**2**	**7**	<3	**11**	<0.01	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Bayswater	B_11_ESSD01		SED	CI	HH	DC	HC	-	Y	3	**11,000**	**180,000**	**180,000**	0	**530**	**3500**	**11,000**	**160,000**	**12,000**	**4900**	**110,000**	**58,000**	0	**9**	**1.3**	**100**	**1600**	**71**	**100**	**62**	**1300**	**0.28**	-	-	-	-	-	-	-	-	-	-	**1.2**	**1.8**	<1	<1	<1	<1	<1	<1	<1	<1	<1
15092_Bayswater	B_11_ESSD02		SED	CI	HH	DC	HC	-	Y	3	**3300**	**110,000**	**110,000**	0	**610**	**4700**	**3300**	**96,000**	**12,000**	**1100**	**65,000**	**40,000**	0	<5	**0.4**	**18**	**300**	**22**	**29**	**7**	**210**	**0.2**	-	-	-	-	-	-	-	-	-	-	<0.7	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15092_Bayswater	B_40_ESTP01	0.1-0.1	SOIL	CI	ECO	DC	HC	-	Y	1	**200**	**990**	**990**	0	0	<100	**200**	**780**	<120	**140**	**730**	**130**	**5**	**6**	**0.6**	**8**	**16**	**14**	**9.5**	<3	**130**	**0.06**	-	-	-	-	-	-	-	-	-	-	**0.3**	**0.3**	**0.1**	<0.1	**0.2**	**0.9**	**0.4**	**0.1**	**1.2**	**0.3**	**0.7**
15092_Bayswater	B_46_ESTP04	0.01-0.01	SOIL	CI	ECO	DC	HC	-	Y	1	**420**	**2500**	**2500**	0	0	<100	**420**	**2000**	**140**	**300**	**1600**	**660**	**5**	**7**	**0.4**	**7**	**16**	**10**	**9.4**	<3	**600**	**0.05**	-	-	-	-	-	-	-	-	-	-	**1**	**1.2**	<0.5	<0.5	<0.5	<2	<1	<1	<1	<1	<2
15092_Bayswater	B_55_ESSB01	1-Jan	SOIL	CI	ECO	DC	-	IC	Y	1	<25	<110	<210	0	0	<100	<25	<90	<120	<20	**53**	<45	**5**	<5	**0.5**	**14**	**35**	**51**	**18**	<3	**1600**	**0.03**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Bayswater	B_59_ESSB02	1-Jan	SOIL	CI	HH	VI	HC	-	Y	4	**120**	**250**	**250**	0	0	<100	**120**	**110**	<120	**130**	**110**	<45	**5**	<5	**0.5**	**4**	**20**	**12**	**14**	<3	**63**	**0.02**	-	-	-	-	-	-	-	-	-	-	**0.6**	**0.7**	<0.1	<0.1	<0.1	**0.2**	**0.1**	<0.1	0.1	<0.1	**0.2**
15092_Bayswater	B_67_ESSD01	0-0.2	SED	CI	ECO	DC	HC	-	Y	1	**240**	**2100**	**2200**	0	**220**	**120**	**240**	**1600**	**300**	**160**	**1200**	**720**	0	<5	0	**2**	**7**	**12**	**5.1**	<3	**42**	**0.03**	-	-	-	-	-	-	-	-	-	-	**0.8**	**0.9**	<1	<0.2	**0.6**	**3.1**	**1.2**	**0.5**	**2.1**	**0.7**	**2.2**
15092_Bayswater	B_67_ESSD02	0-0.16	SED	CI	ECO	DC	HC	-	Y	1	**390**	**2600**	**2600**	0	**200**	<100	**390**	**2100**	**170**	**230**	**1600**	**750**	0	**5**	0	**3**	**7.8**	**9**	**6.3**	<3	**52**	**0.02**	-	-	-	-	-	-	-	-	-	-	**0.7**	**0.9**	<1	<0.2	**0.7**	**3.4**	**1.2**	**0.5**	**1.9**	**0.8**	**2.3**
15092_Bayswater	B_69_ESSD01	0-0.05	SED	CI	ECO	DC	HC	-	Y	1	**390**	**2600**	**2600**	0	**280**	<100	**390**	**2100**	**140**	**240**	**1700**	**650**	**2**	**10**	0	**2**	**12**	**16**	**5.5**	<3	**85**	**0.05**	-	-	-	-	-	-	-	-	-	-	**0.9**	**1.2**	<1	<0.2	**0.8**	**3.8**	**1.4**	**0.7**	**2**	**0.9**	**2.6**
15092_Bayswater	B_72_ESSD01	0-0.07	SED	CI	ECO	DC	HC	-	Y	1	**260**	**2100**	**2100**	0	**300**	<100	**260**	**1700**	**200**	**180**	**1300**	**640**	0	**11**	0	**2**	**7.1**	**9**	**3.7**	<3	**30**	**0.02**	-	-	-	-	-	-	-	-	-	-	**0.6**	**0.8**	<0.5	<0.1	**0.4**	**2.3**	**0.9**	**0.4**	**1.3**	**0.6**	**1.6**
15092_Bayswater	B_38_ESSD05	0.5-0.5	SED	CI	ECO	DC	-	IC	Y	1	<25	<110	<210	0	0	<100	<25	<90	<120	<20	<45	<45	**8**	**12**	**0.3**	**8**	**1000**	**5**	**40**	<3	**47**	**0.02**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15092_Bayswater	B_38_ESSD06	0.5-0.5	SED	CI	ECO	DC	-	IC	Y	1	<25	<110	<210	0	0	<100	<25	<90	<120	<20	<45	<45	**6**	**17**	**0.4**	**9**	**680**	**5**	**29**	<3	**47**	**0.02**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ERM_BPS	BI_MW02	0.2	SOIL	CI	ECO	DC	-	IC	Y	1	< 50	< 50	< 50	0	0		< 50	< 100	< 100	< 50	< 100	< 100	**11**	-	0	0	**21**	**24**	**20**	-	**3680**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BJ_MW01	0.2	SOIL	CI	ECO	DC	-	IC	Y	1	< 50	< 50	< 50	0	0		< 50	< 100	< 100	< 50	< 100	< 100	**9**	-	**2**	0	**274**	**215**	**22**	-	**1950**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BJ_SB04	0.2	SOIL	CI	ECO	DC	-	IC	Y	1	< 50	< 50	< 50	0	0		< 50	< 100	< 100	< 50	< 100	< 100	**13**	-	**2**	0	**271**	**246**	**32**	-	**2800**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BJ_SB04	0.7	SOIL	CI	ECO	DC	-	IC	Y	1	< 50	< 50	< 50	0	0		< 50	< 100	< 100	< 50	< 100	< 100	**14**	-	**2**	0	**106**	**113**	**34**	-	**1220**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BN_MW01	10	SOIL	CI	ECO	DC	HC	-	Y	1	**540**	**2,340**	**2,370**	0	0		**540**	**1,670**	**160**	**360**	**1,650**	**330**	**7**	-	0	0	**20**	**12**	**21**	-	**60**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BN_MW02	10	SOIL	CI	ECO	DC	HC	-	Y	1	**420**	**1,900**	**1,930**	0	0		**420**	**1,390**	**120**	**260**	**1,390**	**250**	**6**	-	0	0	**21**	**13**	**20**	-	**60**	< 0.1										0			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5
ERM_BPS	BP_MW05	0.1	SOIL	CI	ECO	DC	HC	-	Y	1	**260**	**2,860**	**3,070**	0	0		**260**	**2,410**	**400**	**120**	**1,940**	**800**	**16**	-	0	0	**22**	**14**	**12**	-	**164**	**0.1**										0			< 0.5	< 0.5	< 0.5	**1.2**	< 0.5	< 0.5		< 0.5	**1.4**

Site_ID	Location_Code	Sample_Depth_Range	Matrix_Description	Carcinogenic PAHs (as B(a)P TPE)	Carcinogenic PAHs (as B(a)P TPE, PEFx3)	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	1,1,2,2-tetrachloroethane	1,1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1,1-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2,4-trichlorobenzene	1,2,4-trimethylbenzene	1,2-dibromoethane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichlorobenzene	1,2-dichloropropane	1,3,5-trimethylbenzene	1,3-dichlorobenzene	2-Nitropropane	cis-1,4-Dichloro-2-butene	trans-1,4-Dichloro-2-butene	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	Methyl Ethyl Ketone	2-chlorotoluene	2-hexanone (MBK)	4-chlorotoluene	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Allyl chloride	Benzene	Bromodichloromethane	Bromochloromethane	Bromobenzene	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO						0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	1	0.1	0.1	0.1	10	0.1	5	0.1	1	10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.5	0.1
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEI				40	--	--	--	--	--	11,000	--	--	4,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	430	--	--	--	--	--	--	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m				--	--	--	--	--	--	NL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.0	--	--	--	--	--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75	--	--	--	--	--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure				--	--	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15092_Bayswater	B_18_ESSD02		SED	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_11_ESSD01		SED	<2	<3	<1	<1	<1	<1	<1	<1	<1	<8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**2.5**	<0.1	<0.1	<0.1	<0.1	<0.1	**1.5**	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1
15092_Bayswater	B_11_ESSD02		SED	<1	<1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_40_ESTP01	0.1-0.1	SOIL	**0.7**	**0.7**	<0.1	**2.3**	<0.1	**0.1**	**0.1**	**1**	**1.4**	**9.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_46_ESTP04	0.01-0.01	SOIL	<0.2	<0.3	<1	**3.2**	<0.5	<1	<1	**2.3**	**2.1**	**9.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_55_ESSB01	1-Jan	SOIL	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1
15092_Bayswater	B_59_ESSB02	1-Jan	SOIL	**0.2**	<0.3	<0.1	**0.4**	<0.1	<0.1	**0.2**	**0.6**	**0.3**	**3.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**29**	-	-	-	-	-	-	-
15092_Bayswater	B_67_ESSD01	0-0.2	SED	**2**	**2**	<0.2	**6**	<2	**0.3**	<0.4	**4.6**	<0.1	**23**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_67_ESSD02	0-0.16	SED	**1.9**	**2**	<0.1	**6.6**	<2	**0.3**	<0.2	**4.2**	**3.8**	**27**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_69_ESSD01	0-0.05	SED	**2.2**	**2.3**	<0.3	**6.8**	<1	**0.4**	<0.4	**4.7**	**4.2**	**30**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_72_ESSD01	0-0.07	SED	**1.4**	**1.4**	<0.2	**4.6**	<1	**0.2**	<0.3	**3**	**2.7**	**19**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
15092_Bayswater	B_38_ESSD05	0.5-0.5	SED	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1
15092_Bayswater	B_38_ESSD06	0.5-0.5	SED	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<1	<0.1	<0.1	<0.1	<10	<0.1	<5	<0.1	<1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.5	<0.1
ERM_BPS	BI_MW02	0.2	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BJ_MW01	0.2	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BJ_SB04	0.2	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BJ_SB04	0.7	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BN_MW01	10	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BN_MW02	10	SOIL				< 0.5	< 0.5		< 1.0	< 0.5		< 0.5	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0
ERM_BPS	BP_MW05	0.1	SOIL				**3.3**	< 0.5		< 5.0	**3.4**		**13**	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0				< 0.2	0		0	0	0	0	0

Site_ID	Location_Code	Sample_Depth_Range	Matrix_Description	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Hexachlorobutadiene	Iodomethane	Isopropylbenzene	MTBE	n-butylbenzene	Naphthalene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	Trichloroethene	tert-butylbenzene	Tetrachloroethene	Toluene	Ethylbenzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl acetate	Trichlorofluoromethane	Vinyl chloride	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F1)	C6-C9	Benzene	Ammonia as N	TOC	Organic Matter (calc)	Moisture Content	pH (Lab)	Electrical conductivity *(lab)	Salinity	Chromium	Chromium VI	Benzo(a)pyrene TEQ (Half LOR)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (Zero)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%w/w	%	pH_Units	uS/cm	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
LAND USE EXPOSURE SCENARIO				0.1	0.1	1	0.1	1	0.1	0.1	0.1	1	0.5	0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	1	0.1	0.2	0.1	0.3	0.6	25	25	20	0.1	0.15	500	0.1	0.5	0	1	10	0.3				
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEI				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11,000	--	--	--	--	--	--	--	99,000	27,000	--	--	--	--	--	--	--	81,000	--	--	26,000	--	430	--	--	--	--		--	--	3,600		--	40	--
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NL	--	--	--	--	--	--	--	NL	NL	--	--	--	--	--	--	--	230	--	--	260	--	3.0	--	--	--	--		--	--	--		--	--	--
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	135	165	--	--	--	--	--	--	--	180	--	--	215	--	50	--	--	--	--		--	--	--		--	--	--
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	550		--	--	--
15092_Bayswater	B_18_ESSD02		SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**1**	0	0	**29**	**9**	**530**	**1700**	0	0	0	0	
15092_Bayswater	B_11_ESSD01		SED	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	**1.6**	**0.2**	**1**	**0.2**	<0.1	<0.1	<0.1	<0.1	**1.6**	**0.3**	<0.1	<0.1	<10	<1	<0.1	**2**	**1.3**	**3.3**	**5.3**	**69**	<25	**34**	<0.1	**34**	0	0	**17**	**6**	**200**	**640**	0	0	0	0	
15092_Bayswater	B_11_ESSD02		SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.6**	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**20**	0	0	**19**	**6**	**92**	**300**	0	0	0	0	
15092_Bayswater	B_40_ESTP01	0.1-0.1	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	0	0	0	**24**	0	**52**	**170**	0	0	0	0	
15092_Bayswater	B_46_ESTP04	0.01-0.01	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	0	0	0	**26**	0	**29**	**94**	0	0	0	0	
15092_Bayswater	B_55_ESSB01	1-Jan	SOIL	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	0	0	0	**18**	0	**2300**	**7500**	0	0	0	0	
15092_Bayswater	B_59_ESSB02	1-Jan	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.5**	-	-	-	-	-	-	-	**61**	**9.6**	-	-	-	-	-	**34**	**10**	**45**	**140**	**380**	**240**	**350**	**29**	0	0	0	**12**	0	**160**	**530**	0	0	0	0	
15092_Bayswater	B_67_ESSD01	0-0.2	SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**4**	0	0	**38**	**6**	**640**	**2100**	0	0	0	0	
15092_Bayswater	B_67_ESSD02	0-0.16	SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**3**	0	0	**23**	**7**	**440**	**1400**	0	0	0	0	
15092_Bayswater	B_69_ESSD01	0-0.05	SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**4**	0	0	**39**	**8**	**1400**	**4600**	0	0	0	0	
15092_Bayswater	B_72_ESSD01	0-0.07	SED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	**4**	0	0	**33**	**7**	**650**	**2100**	0	0	0	0	
15092_Bayswater	B_38_ESSD05	0.5-0.5	SED	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	0	**4700**	**1**	**35**	0	**0**	**0**	0	0	0	0	
15092_Bayswater	B_38_ESSD06	0.5-0.5	SED	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<1	<0.1	<0.2	<0.1	<0.3	<0.6	<25	<25	<20	<0.1	0	**6300**	**1**	**27**	0	**0**	**0**	0	0	0	0	
ERM_BPS	BI_MW02	0.2	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	< 10	< 10	< 10		0	0	0	**18**	**8**	**1020**	0	**17**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BJ_MW01	0.2	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	< 10	< 10	< 10		0	0	0	**8**	0	0	0	**19**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BJ_SB04	0.2	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	< 10	< 10	< 10		0	0	0	**17**	0	0	0	**28**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BJ_SB04	0.7	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	< 10	< 10	< 10		0	0	0	**10**	0	0	0	**18**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BN_MW01	10	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	**156**	**156**	**102**		0	0	0	**4**	**9**	**567**	0	**13**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BN_MW02	10	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	**49**	**49**	**25**		0	0	0	**4**	**9**	**580**	0	**11**	0	**0.6**	**1.2**	< 0.5
ERM_BPS	BP_MW05	0.1	SOIL	0		0	0	0	0	0	0	0		0	0	0		0		0	0	0	0	0	0	0	< 0.5	< 0.5	0	0	0	0	0	< 0.5	< 0.5	< 0.5	< 0.2	**10**	**10**	< 10		0	0	0	**21**	0	0	0	**8**	0	**0.8**	**1.3**	< 0.5

Site_ID	Location_Code	Sample_Depth_Range	Matrix_Description	Benzo(b)fluoranthene	Cresols	Sulfate	Asbestos	Asbestos	Perfluorooctane sulfonate (PFOS)*	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoic acid (PFOA)	Asbestos
				mg/kg	mg/kg		PA	g	mg/kg	mg/kg	mg/kg	PA
LAND USE EXPOSURE SCENARIO				0.1								
HIL D/CRC CARE Direct Contact - Commercial / Industrial - (NEPM 2013) & HEPA NEI				--	25,000				20	--	50	
HSL (Vapour Intrusion) D -Commercial / Industrial - SAND (NEPM 2013) - 0 - <1m				--	--				--	--	--	
ESL - Commercial / Industrial - Coarse (NEPM 2013) / CRC Care (2017)				--	--				1.0	--	10	
EIL - Commercial / Industrial (NEPM 2013) & HEPA NEMP Indirect Exposure				--	--				0.01	--	--	
15092_Bayswater	B_18_ESSD02		SED			0			0	0	0	
15092_Bayswater	B_11_ESSD01		SED			0			0	0	0	
15092_Bayswater	B_11_ESSD02		SED			0			0	0	0	
15092_Bayswater	B_40_ESTP01	0.1-0.1	SOIL			0			0	0	0	
15092_Bayswater	B_46_ESTP04	0.01-0.01	SOIL			0			0	0	0	
15092_Bayswater	B_55_ESSB01	1-Jan	SOIL			0			0	0	0	
15092_Bayswater	B_59_ESSB02	1-Jan	SOIL			0			0	0	0	
15092_Bayswater	B_67_ESSD01	0-0.2	SED			0			0	0	0	
15092_Bayswater	B_67_ESSD02	0-0.16	SED			0			0	0	0	
15092_Bayswater	B_69_ESSD01	0-0.05	SED			0			0	0	0	
15092_Bayswater	B_72_ESSD01	0-0.07	SED			0			0	0	0	
15092_Bayswater	B_38_ESSD05	0.5-0.5	SED			0			0	0	0	
15092_Bayswater	B_38_ESSD06	0.5-0.5	SED			0			0	0	0	
ERM_BPS	BI_MW02	0.2	SOIL	< 0.5	< 1.0	**3060**		< 0.1	0	0	0	
ERM_BPS	BJ_MW01	0.2	SOIL	< 0.5	< 1.0	0		< 0.1	0	0	0	
ERM_BPS	BJ_SB04	0.2	SOIL	< 0.5	< 1.0	0		< 0.1	0	0	0	
ERM_BPS	BJ_SB04	0.7	SOIL	< 0.5	< 1.0	0		-	0	0	0	
ERM_BPS	BN_MW01	10	SOIL	< 0.5	< 1.0	0		-	0	0	0	
ERM_BPS	BN_MW02	10	SOIL	< 0.5	< 1.0	0		-	0	0	0	
ERM_BPS	BP_MW05	0.1	SOIL	**1.1**	< 1.0	0		-	0	0	0	