

Preliminary Site Investigation

Smithfield Battery Energy Storage System, 6 Herbert Place, Smithfield, NSW, 2164

30 October 2023

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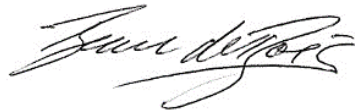
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Acronyms and Abbreviations

Acronym	Definition
Arcadis	Arcadis Australia Pacific Pty Ltd
ASS	Acid sulphate soils
AST	Aboveground Storage Tank
B(a)P	Benzo(a)pyrene
BESS	Battery Energy Storage System
BTEXN	Benzene, toluene, ethylbenzene, xylene and naphthalene
CBA	Contamination Baseline Assessment
CEMP	Construction Environmental Management Plan
CLM Act	Contaminated Land Management Act 1997
CoPC	Contaminant of potential concern
CSM	Conceptual Site Model
DP	Deposited Plan
DPIE	Department of Planning, Industry and Environment
DP	Deposited Plan
EPA	Environment Protection Authority
EPL	Environmental Protection License
ESL	Ecological screening level
HEPA	Heads of the EPA
HIL	Health investigation level
HSL	Health screening level
LNAPL	Light Non-Aqueous Phase Liquid
mbgl	metres below ground level
Metals (8)	Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), nickel (Ni), lead (Pb), zinc (Zn) and mercury (Hg)
mAHD	metres Australian Height Datum
MW	Megawatt
MWh	Megawatt hours
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
NEPC	National Environmental Protection Council
NSW	New South Wales
OCP	Organochlorine pesticides

Acronym	Definition
OPP	Organophosphate pesticides
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PFAS	Per and poly-fluoroalkyl substances
PSI	Preliminary Site Investigation
Pty Ltd	Proprietary Limited
SEF	Smithfield Energy Facility
SPR	Source-Pathway-Receptor
SSD	State Significant Development
TRH	Total recoverable hydrocarbons
UFP	Unexpected Finds Protocol

1 Introduction

1.1 Project Overview

Smithfield BESS Pty Ltd (Smithfield BESS), as owned by Iberdrola Australia Limited (Iberdrola) (the Proponent) is seeking development consent for the construction, operation and maintenance of a Battery Energy Storage System (BESS) at the Smithfield Energy Facility (SEF) (Lot 33, DP850596) at 6 Herbert Place, Smithfield NSW 2164 (the Project Site). The BESS will be up to 72 Megawatt (MW) and would provide up to 260 Megawatt hours (MWh) of battery storage capacity. The location of the Site is shown in **Figure 1**.

When operational, the Project will support the NSW Government's electricity strategy for a reliable, affordable and sustainable electricity future that supports a growing economy. BESS facilities, such as the Project, assist with intermittency risks associated with renewable energy generation in NSW, and are considered a key element of the transformation of the NSW energy sector.

The Project would involve construction and operation of the following:

- A BESS including battery enclosures, inverters, transformers, switch room and control building
- Medium voltage cables between transformers and the existing switchgear building in the northeast corner of the SEF
- Switchgear building upgrades to facilitate connection of the BESS
- Site access to the BESS from Herbert Place
- Utilities to support operation of the BESS
- Stormwater management infrastructure, lighting, fencing and security.

The Proponent is seeking State Significant Development (SSD) approval for the Project under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and has received Planning Secretary's Environmental Assessment Requirements (SEARs) for the Project.

The BESS would operate 24 hours a day, seven days a week.

1.2 Purpose and Objectives

The purpose of the PSI was to provide the Client with sufficient information to inform on site suitability (in the context of land contamination) and potential contamination risks associated with the proposed future development of the Site.

The objective of this PSI was to:

- Assess the potential for contamination to be present on the Site, as a result of past and present land use activities
- Assess potential risks to human health or the environment posed by the potential contamination (if any)
- Provide advice on the suitability of the Site (in the context of land contamination) for the proposed development of the Site
- Provide recommendations for further assessment, management and/or remediation of the Site (if required).

1.3 Scope of Work

The scope of work undertaken to address the project objective included:

- A desktop review of the following:
 - LotSearch Pty Ltd (2023), *Lotsearch Enviro Professional, {LS045045_EP}* (LotSearch 2023), provided in **Appendix A**, which included a search conducted on 20 June 2023 of:
 - Site environmental setting
 - Heritage and cultural sensitivity items, local historical business directories
 - Landfills, gasworks and waste facilities
 - PFAS investigation sites
 - Online searches of relevant NSW EPA and Office of Water databases
 - Historical land title ownership records for the Site
 - A selection of historical aerial imagery for the Site
 - Section 10.7 (2) and (5) council planning certificates for the Site
 - Previous contamination investigation reports, provided by the Client
- A site walkover
- Preparation of this PSI report.

The scope of work was undertaken in accordance with:

- National Environment Protection Council (NEPC) 2013, *National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999*, as amended in May 2013 ('NEPM'; NEPC, 2013)
- NSW Environmental Protection Authority (EPA) (2020), *Contaminated Land Guidelines: Consultants reporting on contaminated land*
- Heads of the EPA (HEPA) 2020, *PFAS National Environmental Management Plan (NEMP) 2.0*. (NEMP, 2.0).

This report is subject to the limitations provided in Section 9.

2 Site Setting

2.1 Site Identification

The Site identification details are summarised in **Table 2-1** with the current site layout shown in **Figure 2**.

Table 2-1 Site Identification Summary

Item	Details
Site Address	6 Herbert Place, Smithfield, NSW, 2164
Title Information	Lot 33, Deposited Plan (DP) 850596
Site Area	Approximately 13,885 m ²
Site Coordinates	The approximate coordinates for the centre of the Site are: Easting: 310287.949 Northing: 6252584.065
Local Government Authority	Cumberland City Council
Owner	The Smithfield Energy Facility is owned and operated by Smithfield Power Generation Pty Ltd on land leased from Visy Industries Pty Ltd (Visy).
Zoning	The Section 10.7 (2) planning certificate indicates the Site is currently zoned E4 – General Industrial.
Land Use (Current/Proposed)	The Site is currently used as an energy facility. The Site is proposed to construct a BESS within the existing energy facility This use is consistent with commercial/industrial, as defined in the NEPM (NEPC, 2013).
Surrounding Land Use	The land uses immediately surrounding the Site includes: <ul style="list-style-type: none"> • North – A carpark then a commercial/industrial premise known as Kingspan (part of the Goodman’s Cumberland Industrial Estate) • South – Visy Recycling (commercial/industrial) then Kaluna Reserve, Prospect Creek and Tarrawarra Reserve • East – Visy Smithfield (industrial), then a commercial/industrial premise with Visypack, packaging supply store and two food manufacturing suppliers • West – VISY Smithfield (industrial), then Warren Road.

2.2 Site Environmental Setting

Arcadis conducted a desktop review of the environmental setting of the Site as presented in **Table 2-2**.

Table 2-2 Site Environmental Setting

Item	Description
Topography and elevation	<p>The surface of the Site is located at an elevation of approximately 20 m Australian Height Datum (mAHD). The topography of the Site is generally flat.</p> <p>The topography surrounding the Site is generally flat with gentle slopes reaching a maximum height of 36 m AHD north of the Site and 32 m AHD south of the Site.</p>
Geology and Soils	<p>The Site is likely to be underlain by unconsolidated alluvial clay, silt, sand and gravel deposits. Kurosol soil is likely to be found onsite, which typically comprises hard acidic red soils with hard neutral and acidic yellow mottled soils on lower slopes and in valleys.</p> <p>The Site lies within the Berkshire Park soil group. This soil group typically comprises weakly pedal orange heavy clays and clayey sands, often mottled. Limitations associated with the soil group include very high wind erosion hazard if cleared, localised seasonal waterlogging, localised flood hazard, impermeable subsoils, low fertility.</p>
Hydrology and Hydrogeology	<p>There are total of 36 groundwater bores located within a 1 km radius of the Site, used predominantly for monitoring purposes. No details on standing water levels or soil logging data were identified. One groundwater well used for commercial/industrial purposes was identified approximately 700m west of the Site. This borehole is 204m AHD in depth and has recorded salinity levels of 5750 mg/L.</p> <p>The aquifer onsite is considered to be porous, extensive and of low to moderate productivity.</p> <p>The nearest surface water body to the Site is Prospect Creek, located approximately 330m south of the Site. The creek feeds into the Georges River, approximately 5.5 km southwest of the Site.</p> <p>Based on the location of the identified surface water courses and site topography, the inferred groundwater flow direction at the Site is considered likely to be towards the southeast.</p> <p>Based on site surface topography and elevation, the inferred general surface water flow direction on the Site is considered likely to be toward the southeast.</p>
Acid Sulphate Soils	<p>A review of the CSIRO Atlas of Australian Acid Sulphate Soils Data Source indicated that the Site is located in a map class description of ‘extremely low (1-5%) probability’.</p>

2.2.1 Local Meteorology

The Bureau of Meteorology website (<http://www.bom.gov.au/climate/data>) was accessed and a search conducted for mean annual rainfall and temperature for 2022, measured by the nearest bureau station to the Site. A summary of data available and obtained from that search is presented in **Table 2-3**:

Table 2-3 Local Meteorology Information

Nearest Weather Station Location and Number	Mean Annual Maximum Temperature (°C)	Total Annual Rainfall (mm)
Horsley Park Equestrian Centre 067119	22.3 (2022)	1,290.2 (2022, excluding March as there was no total rainfall data available)

A copy of the search record is presented in **Appendix B**.

3 Regulatory Records

A summary of the regulatory records pertaining to the Site, collated from the LotSearch 2023 and other publicly available information sources is provided in the following sections.

3.1 Council, State and Defence Records

A summary of the council, state and defence records review within the buffers detailed below from the centre of the Site (unless noted otherwise) is provided in **Table 3-1**.

Table 3-1 Summary of Council Records

Item	Description
Defence Sites	None identified on-site or within 2 km of the Site.
Waste Management Facilities	None identified on-site or within 1 km of the Site.
Liquid Fuel Facilities	None identified onsite. Two identified within 1 km of the Site, located at Smithfield Caltex, 16-18 Tait Street, Smithfield, approximately 595m northwest (hydraulically upgradient) of the Site.
Air services	None identified on-site or within 2 km of the Site.
Dry Cleaners and Motor Garages/Service Stations	None identified onsite. Five businesses were identified within 500 m of the Site. Two were identified to a specific premise and four were identified to a road corridor, therefore their precise locations are unknown. Two motor garage business directories were identified hydraulically upgradient: <ul style="list-style-type: none"> • Leeder, Terry Automatics Pty. Ltd., Unit 10, 20 Percival Road, Smithfield, located approximately 255m north of the Site. Records indicate that Terry Automatics Pty. Ltd. operated in 1978, and between 1980 and 1984, and it can be assumed that the site was operational in only those years. • Garlands, Tom Home Auto Care Pty. Ltd., 10 Long Street, Smithfield, located approximately 390m northwest of the Site. Records indicate that Tom Home Auto Care Pty. Ltd. operated between 1984 and 1989, and it can be assumed that the site was operational in only those years. The NSW EPA records search did not identify any current contamination issues or notices at these properties.
PFAS Investigation and Management Sites	None identified on-site or within 2 km of the Site.
Naturally Occurring Asbestos Potential	None identified on-site or within 1 km of the Site.

Item	Description
Tanks (Areas and Points)¹	None identified on-site or within 1 km of the Site.
Mining Subsidence Districts	None identified on-site or within 1 km of the Site.
Mining and Exploration Titles and Applications	None identified on-site or within 1 km of the Site.
Heritage Sites	No Commonwealth Heritage sites identified on-site or within 1 km of the Site. No National or State Heritage List sites identified on-site or within 1 km of the Site.
Bush Fire Prone Land	None identified on-site or within the report buffer.
Major Easements²	Two undefined major easements were identified onsite along the northern and western boundaries. Six major easements were identified within 1 km of the Site. One easement was identified as electricity, 637m northwest of the Site. Two easements were identified as a right of way, located 795m and 837m south and southwest of the Site, respectively.
Wetlands	No Ramsar Wetland areas were identified onsite or within 1 km of the Site. Two coastal floodplain wetlands and one coastal freshwater lagoon were identified within 1 km of the Site, all located between approximately 280m and 295m south to southwest of the Site.
Groundwater Dependent Ecosystems	None identified onsite. One terrestrial high potential groundwater dependent ecosystem was located, hydraulically downgradient, approximately 280m southeast of the Site. One terrestrial moderate potential groundwater dependent ecosystem was located, hydraulically downgradient, approximately 705m west of the Site.

Based on the results of the desktop review of the council, state and defence records, potential land contaminating activities were not identified on the Site.

¹ The large majority of tank features provided by Land and Property Information are derived from aerial imagery and therefore primarily above ground tanks.

² They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water and significant subterranean pipelines (gas, water etc.).

3.2 Planning Certificates

Section 10.7(2) and Section 10.7(5) planning certificates were obtained from Cumberland City Council and are provided in **Appendix C**. A summary of the planning certificates relevant to the Site is provided in **Table 3-2**. Based on the results of the desktop review of the planning certificate, potential land contaminating activities were not identified on the Site.

Table 3-2 Summary of Planning Certificates

Item	Description
Development Control Plan	Cumberland Development Control Plan 2021
Local Environmental Plan	Cumberland Local Environment Plan 2021
State Environmental Planning Policies	The plan relevant to this PSI is the State Environment Planning Policy (Resilience and Hazards) 2021
Outstanding Biodiversity Value	No
Environmental Heritage	No
Conservation Area	No
Policies on Hazard Risk Restrictions³	No
Loose Fill Asbestos	No
Coastal Protection	No
Mine Subsidence	No
Flood Planning Area and Related Development Controls	Yes - The land or part of the land is within a flood planning area and is subject to flood related development controls.

³ Land slip, bushfire, tidal inundation, subsidence, acid sulphate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding

Item	Description
Biodiversity Certified Land	No
Biodiversity Stewardship Sites	No
Bushfire Prone Land	No
Contaminated Land Matters⁴	<p>The Site was not identified as:</p> <ul style="list-style-type: none"> • Significantly contaminated land; • Subject to a management order; • Subject of an approved voluntary management proposal; • Subject to an ongoing maintenance order; or • Subject of a site audit statement.
Development Consent within the last 5 years	No

3.3 NSW EPA Records

A summary of the results of a search of various NSW EPA public registers relevant to the Site, is provided in **Table 3-3**.

Table 3-3 Summary of NSW EPA Records

Item	Description
Gasworks Sites	None identified on-site or within the report buffer.
Register of Notices	<p>None identified on-site.</p> <p>Two locations were identified within the report buffer:</p> <ul style="list-style-type: none"> • TetraPak Site, 6 Foray Street, Yennora, nine former notices, located approximately 640m southeast of the Site. • Drum Reconditioner, 25 Victoria Street, Smithfield, three former notices, located approximately 695m west of the Site.

⁴ Prescribed under Section 290 of the Environmental Planning & Assessment Regulation 2021 by section 59(2) of the *Contaminated Land Management (CLM) Act 1997*

Item	Description
Register of Notified Sites	<p>None identified on-site.</p> <p>Five locations were identified within the report buffer:</p> <ul style="list-style-type: none"> • Caltex Smithfield, 16-18 Tait Street, Smithfield, located approximately 595m northwest of the Site. Regulation under the CLM Act is not required. • TetraPak Site, 6 Foray Street, Yennora, located approximately 640m southeast of the Site. Contamination was formerly regulated under the CLM Act. • Former Landfill, Little Street, Smithfield, approximately 645m west of the Site. Contamination is being managed via the planning process (EP&A Act). • Spicer Axle Australia Manufacturing Facility, 205-231 Fairfield Road, Yennora, located approximately 845m southeast of the Site. Regulation under the CLM Act is not required. • Coles Express Service Station, 678 The Horsley Drive, Smithfield, located approximately 860m southwest of the Site. Regulation under the CLM Act is not required.
PFAS Investigation	<p>None identified on-site or within the report buffer.</p>
Environmental Protection License (EPL)	<p>One identified on-site for the generation of electrical power from gas at Smithfield Energy Facility (5701), 6 Herbert Place, Smithfield.</p> <p>A total of 15 locations were identified within the report buffer. Two locations were reported at the same address as the Site and six locations were identified hydraulically upgradient of the Site:</p> <ul style="list-style-type: none"> • Visy Paper Pty Ltd (4100), 6 Herbert Place, Smithfield, paper or pulp waste generation, located approximately 55m southeast of the Site. • Visy Paper Pty Ltd (20752), 6 Herbert Place, Smithfield, waste storage – other types of waste, recovery of general waste, located approximately 120m south of the Site. • Demast Pty Ltd (20875), 7 Long Street, Smithfield, waste storage – hazardous, restricted solid, liquid, clinical and related waste and asbestos waste, and non-thermal treatment of liquid waste, located approximately 490 m northwest of the Site. • Smartskip Bins Pty Ltd (21633), 13 Long Street, Smithfield, non-thermal treatment of general waste and waste storage – other types of waste, located approximately 575m northwest of the Site. • Snack Brands Industries Pty Ltd (21202), 15-21 Britton Street, Smithfield, general agricultural processing, located approximately 490m northwest of the Site. • DGL Industries Pty Ltd (20863), 28-54 Percival Street, Smithfield, chemical storage, located approximately 520m north of the Site. • Tollchem Surface Coating Solutions Pty Ltd (20024), 33 Britton Street, Smithfield, toxic substance production, located approximately 835m northwest of the Site.

Item	Description
Delicensed & Former Licensed EPA Activities	<p>None identified onsite and 23 delicensed and former licensed activities located within the report buffer.</p> <p>The closest delicensed EPA activity site located hydraulically upgradient of the Site was Boral Resources (NSW) Pty Ltd on Long Road, Smithfield, where concrete works were undertaken, approximately 290m northwest of the Site.</p>

Based on the results of the desktop search of the NSW EPA Records, potential land contaminating activities were identified on or surrounding the Site. These include the current site use as an energy facility and Visy Paper Pty Ltd, immediately adjacent to the Site. Further investigation of the following contaminants is considered warranted:

- Asbestos
- PCBs
- Water treatment chemicals
- PFAS

3.4 Schedule 11 Hazardous Chemicals

A request to undertake a Schedule 11 Hazardous Chemicals (Dangerous Goods) search was submitted; however, authorisation was not provided by the Site Owner to Arcadis. Based on the site walkover observations and site history review, Arcadis considers the potential for unknown underground storage tanks to be present onsite is unlikely. Furthermore, Arcadis recommends an unexpected finds protocol (UFP) be implemented during construction works which will document procedure and protocols to manage any unexpected finds of contamination.

4 Site History

4.1 Previous Contamination Assessments

The following previous contamination assessment reports were available for review:

- Arcadis (2019). *Contamination Baseline Assessment, Smithfield OCGT – 6 Herbert Place, Smithfield, NSW.*

A summary of the review, with key points relevant to this PSI is detailed below.

4.1.1 Contamination Baseline Assessment (Arcadis, 2019)

Arcadis was commissioned by Infigen Energy Pty Ltd to complete a contamination baseline assessment (CBA) at the Site, historically known as Smithfield Open Cycle Gas Turbine.

The objective of the CBA was to undertake an intrusive investigation to collect soil and groundwater samples to assess the baseline contamination status of the Site.

The scope of work, relevant to the Site included the following:

- A review of the historical PSI (Jacobs Group Australia Pty Ltd (Jacobs), 2016)
- A site walkover to confirm access proposed drilling and sample locations, and to identify any areas of concern that have been missed in the PSI
- Drilling of 16 soil bores in proposed locations to a maximum depth of 2.0 mbgl or 0.5 into natural material, whichever was reached first
- Four soil bores were converted into groundwater monitoring wells to a maximum depth of 7.5 mbgl.
- Soil samples were collected at immediately below surface, 0.5 mbgl, 1.0 mbgl and every metre thereafter, at changes in lithology and zones of gross contamination. Samples were analysed for the following contaminants of potential concern (CoPC):
 - Total recoverable hydrocarbons (TRH)
 - Benzene, toluene, ethyl benzene, xylenes and naphthalene (BTEXN)
 - Polycyclic aromatic hydrocarbons (PAHs)
 - Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn and Hg)
 - Organochlorine pesticides (OCP) and organophosphorus pesticides (OPP)
 - Polychlorinated biphenyls (PCBs)
 - Major anions (Cl, SO₄) and cations (Ca, Mg, Na, K)
 - pH
 - Per and poly-fluoroalkyl substances (PFAS)
 - Asbestos identification – selected fill samples only
- Groundwater sampling was conducted at the four newly installed groundwater monitoring wells and two existing wells onsite. Samples were analysed for the following CoPC:
 - TRH
 - BTEXN
 - PAHs (low-level)
 - Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn and Hg)
 - Major anions (Cl, SO₄) and cations (Ca, Mg, Na, K)
 - pH
 - PFAS.

The Arcadis (2019) report provided the following key findings:

- Possible contaminant sources based on the site walkover and a review of the PSI (Jacobs, 2016) included:
 - Fill of known and unknown origin used in the development of the Site, including the presence of heavy metals and asbestos.
 - Onsite operations, including leakages and spills from the storage and movement of chemicals and fuel around the Site, either by pipework or by operational staff.
 - Historical pastoral use of the land prior to the Site's development, including the use of pesticides and herbicides.
 - Potential asbestos containing material and other hazardous materials associated with onsite buildings.
 - Migration of offsite contamination onto the Site through groundwater, given the Site's location in a commercial/industrial zone.
- Fill was present across the entire site and generally comprised of engineering sub-base (gravels) and reworked natural silty clays. Natural material was noted to become more plastic, soft and moist with depth. At locations BH04, BH05, BH08, BH09, BH11, MW04 and MW05, fill was observed between 0.1 mbgl and 0.8 mbgl in locations surrounding the proposed development works.
- Depth to groundwater was approximately 14.2 m AHD, or 4.4 mbgl in the northeast corner of the Site.
- No exceedances of human or ecological health assessment criteria for soil were observed within soil samples taken from the Site.
- Minor exceedances of groundwater and surface water criteria were observed.
- The baseline contamination status of the Site was established and there was a low risk of gross contamination to be present on the site based on the results of the intrusive investigation and groundwater and surface water monitoring.
- Arcadis considered that the likelihood of contamination being present in the inaccessible areas was low due to the fact that chemical and fuel storage/transfer areas are within concrete hardstand bunded areas. If contamination was present in these areas, it was likely to be limited to the footprint of the buildings and equipment.
- The Site was considered suitable for on-going commercial/industrial land use as a power generation facility.
- The onsite soils were indicatively classified as general solid waste under the NSW EPA (2014) Waste Classification Guidelines.

The Arcadis (2019) report concluded that based on the baseline nature of the assessment, no further immediate actions were recommended. Should the Site be decommissioned, or should further assessment otherwise become appropriate, such as the replacement of equipment, the following recommendations should be considered to fully assess the Site:

- Further drilling and sampling to both satisfy sampling density requirements, and to assess portions of the Site which were inaccessible during the assessment due to an extensive network of services around the Site, and the presence of structures such as buildings and generation equipment.
- If the site is to be decommissioned, another GME should be conducted to assess any changes in the contamination status of groundwater.
- Installation of a well upgradient of the Site to determine whether elevated concentrations of selected analytes are indicative of off-site migration onto the site or are due to the Site's operations.
- A hazardous materials survey of the Site should be conducted. Hazardous materials such as asbestos may be present within on-site structures and services.

- If bulk earthworks are required at the site, the work should be completed under a Construction Environmental Management Plan (CEMP). The CEMP should include an UFP in the event that additional fill material or waste is identified during construction/civil activities.

4.2 Aerial Photography

Aerial photographs, including approximately two images per decade, were sourced from the LotSearch 2023 report, for the period from 1930 to 2023. These photos were reviewed to assess the historical use of the Site and any potential land contaminating activities on the Site or immediately surrounding the Site. A review of the aerial photography is summarised in **Table 4-1**.

Copies of the aerial photographs are provided in the LotSearch 2023 report in **Appendix A**.

It is noted that conclusions drawn from the aerial photographs must be treated with caution as the interpretation is subjective and is often limited by the quality of the photo.

Table 4-1 Summary of Aerial Photographs

Date	Description of the Site	Description of Surrounding Land
1930	The Site appeared to be undeveloped, rural land with no building structures. A darkened area near the centre of the Site was observed, likely ponded water in a dam/lake along the water course. Darker shading is likely indicative of denser vegetation growth along the water course. Unvegetated surfaces were visible in the centre of the Site, possibly attributed to ground disturbance and possible walking track dissecting diagonally through the southern portion of the Site.	Open space with some vegetated areas, possibly agricultural land, were observed surrounding the Site with no visible buildings. A possible unsealed road was observed directly north of the Site and appeared to run east to west. Northwest of the Site, a sealed road was observed running diagonally from northeast to southwest.
1943	The Site remained undeveloped with some vegetation along the eastern portion of the Site. Two shadows in the centre of the Site, possibly two water bodies are present, however, the image was not clear enough to confirm. The northern water body appeared larger than the southern. A creek also appeared to run through the Site from the northern boundary to southeast corner.	A possible creek appeared to run from north to south, through the Site. Vegetation was observed along the creek bank. There appeared to be no significant changes to the surrounding land relative to the 1930 imagery.
1949	The aerial photo is blurry. The Site still appeared undeveloped with a large amount of previously present vegetation/trees cleared and removed. No other significant changes were observed to the Site relative to the 1943 imagery.	Vegetation to the north of the Site appeared to be predominantly cleared. No other notable changes were observed to the surrounding area relative to the 1943 imagery.
1955	No significant changes relative to the 1949 imagery.	A rectangular building was observed to be constructed approximately 250m northeast of

Date	Description of the Site	Description of Surrounding Land
		the Site. No other significant changes to the surrounding land relative to the 1949 imagery.
1961	The Site remained undeveloped with no structures visible. The two possible water bodies in centre of the Site remained visible in the imagery.	No significant changes relative to the 1955 imagery.
1965	The Site was predominantly unchanged relative to the 1961 imagery, however, the larger water body (northern) appeared to have a possible vegetation growth in the centre. Majority of the vegetation along the creek in the south of the Site was no longer visible, possibly from land clearing activities.	North of the Site, powerlines were observed to run diagonally from northwest to east. Northwest of the Site, land north of the sealed road appeared to be cleared and removed of vegetation covering.
1970	The southern water body was not present in the imagery and was possibly dry. No other notable changes were observed to the Site relative to the 1965 imagery.	East of the Site, vegetation appeared to be disturbed and a circular track was visible. North of the Site, near the existing rectangular building, a small industrial site was established, possibly two aboveground storage tanks were observed. The unsealed road directly north of the Site appeared to be disused, and vegetation was observed covering the path. The sealed road northwest of the Site appeared to have been developed into a larger main road, possibly Warren Road.
1978	The southern water body was visible in the 1978 aerial imagery. No other significant changes were observed to the Site relative to the 1970 imagery.	The rectangular building northeast of the Site was no longer visible, possibly demolished. The industrial site was still present and appeared to be more established, possibly Terry Automatics Pty Ltd. Warren Road was widened.
1982	The aerial was in colour and the Site appeared to be covered predominantly in low lying grasses, some trees were observed in the southeast corner of the Site. No surface water was observed on Site; however, the shadows of the possible water bodies were still evident, with an additional two shadows along the eastern boundary of the Site. The creek appeared to still be present onsite.	The surrounding land remained predominantly rural and undeveloped. Southwest of the Site, four industrial buildings were observed to be constructed. South of the Site, an excavator and a row of white blocks was observed.
1986	Possible surface water was observed in the centre of the Site, in the northern water body. The southern water body was still visible however the shadowed areas along the eastern boundary were not present. The creek running through the Site appeared to stop at the	Two large industrial buildings were observed east and southeast of the Site. Possible aboveground storage tanks were observed around the buildings, as well as possible shipping containers. Southwest of the Site, some of the industrial buildings appeared to be

Date	Description of the Site	Description of Surrounding Land
	northern water body and has not continued towards the southeast corner of the Site.	removed, the overall site footprint appeared to have expanded south and new buildings were established in that area.
1991	Vegetation growth was observed around the two water bodies present on Site. No other significant changes relative the 1986 imagery.	<p>The industrial site southwest of the Site was observed to have more buildings lined up in four rows, possibly demountable buildings.</p> <p>The industrial site east and southeast of the Site was also further developed, extending east, and the building footprints appeared similar to the current footprint of the Visy Recycling facility.</p>
1994	<p>Some earthworks appeared to have started on the Site, however, the Site appeared predominantly similar to the 1991 imagery.</p> <p>The two onsite water bodies appeared to have man-made creek systems established to move the water offsite in an easterly direction to a new creek line.</p>	<p>The area surrounding the Site was significantly altered with major earthworks, possible levelling, conducted on the rural area surrounding the Site. The southwest industrial site appeared to be demolished. The footprint of Herbert Place was visible in the aerial imagery.</p> <p>The Visy Recycling facility, east of the Site, and Terry Automatics Pty Ltd, northeast, were both still visible.</p> <p>The existing creek line appeared to be redirected, running parallel with the eastern boundary of the Site, rather than through the Site.</p>
2000	<p>The Site underwent significant redevelopment and appeared to be built into the current energy facility, Smithfield Energy Facility.</p> <p>No surface water or vegetation were observed, and the Site appeared to be completely sealed.</p>	<p>Further development works were undertaken on the area surrounding the Site. Herbert Place appeared to be established. Terry Automatics Pty Ltd appeared to be demolished.</p> <p>Adjacent to the eastern boundary of the Site, a warehouse was established that is possibly attached to the Visy Recycling facility. Two large warehouses were constructed west and north of the Site, possibly Visy Smithfield and Cumberland Industrial Estate, respectively.</p> <p>The area north of Cumberland Industrial Estate appeared to be undergoing further development, with a construction dam present and possible levelled ground. Open space was observed southwest of the Site.</p> <p>The creek line was not present in the 2000 imagery.</p>

Date	Description of the Site	Description of Surrounding Land
2007	No significant changes were observed to the Site relative to the 2000 imagery.	The area surrounding the Site appeared to be predominantly industrial with an additional two warehouses constructed to the north and one warehouse to the south of the Site.
2011	No significant changes were observed relative to the 2007 imagery.	No significant changes were observed relative to the 2007 imagery.
2016	No significant changes were observed relative to the 2011 imagery.	<p>The road running parallel with the western boundary of the Site was observed to be redeveloped, and a roundabout was constructed. The open space area southeast of the Site appeared to be used for waste skip bins and possibly shipping containers.</p> <p>No other significant changes were observed relative to the 2011 imagery.</p>
2020	No significant changes were observed relative to the 2016 imagery.	<p>The Visy Recycling facility, southeast of the Site, appeared to have some renovations completed with a new rectangular building with a green roof established.</p> <p>The industrial area northeast of the Site was redeveloped. The existing buildings were demolished, and four new warehouses were built in their place.</p>
2023	No significant changes were observed relative to the 2020 imagery.	No significant changes were observed relative to the 2020 imagery.

The review of historical aerial photography indicated a potential for land contaminating activities to have been undertaken on the site, specifically:

- The Site’s location in an industrial area.

Further assessment of these identified potential land contaminating activities is considered warranted.

4.3 Historical Land Titles

The historical land title ownership records of the Site were reviewed, and a summary is provided in **Table 4-2**.

Table 4-2 Summary of Land Title Ownership

Date of Acquisition & Term Held	Registered Proprietor(s)	Reference to Title at Acquisition & Sale
01/12/1886 (1886 to 1939)	Fanny Maria Kenyon	Book 353 No. 63 (Mortgage)
30/08/1939 (1939 to 1965)	William Leisk (Dairyman) (& his deceased estate) (Purchased from Mortgagee in possession)	Book 1856 No. 904
05/03/1965 (1965 to 1987)	The Minister for Public Works (Acquired for a site of public buildings)	Book 2806 No. 984
06/05/1987 (1987 to 1995)	Her Most Gracious Majesty Queen Elizabeth the Second (on behalf of the Minister for Education)	Volume 12621 Folio 212 Then: 1/224262 Now: 3/849480
22/06/1995 (1995 to Present)	McCredie Road Properties Pty. Limited	3/849480 Now: 33/850596

The results indicated that the Site was privately owned from 1886 up until 1965. The site was associated with agricultural land use.

One lease was reported for the Site:

- 28/05/2019 (AP283189) To Smithfield Land Holdings Pty Limited. Expires 22/05/2039 with a 5 year option of renewal with one further option.

Three easements were reported for the Site:

- 17/05/1995 (DP849480) Easement to drain water 19m wide, 15m wide & variable width affecting part shown so burdened in the title diagram; located in the northeast corner of the Site.
- 07/12/2005 (AB951220) Easement for pipeline variable width affecting part shown so burdened in D.P. 1040107
- 07/12/2005 (AB951220) Easement now vested in Alinta Degp Pty Ltd. & Alinta Deepg Pty Ltd.

A copy of the historical land title search record is presented in **Appendix D**.

4.4 Complaints and Incident Reports

There was no evidence provided to Arcadis during the PSI, regarding historical complaints or incidents about the Site.

4.5 Chemical Control Orders

Chemical control orders are created under Part 3, Division 5 of the *Environmentally Hazardous Chemicals Act 1985*, and are used to selectively and specifically control particular chemicals or chemical wastes to limit their potential or actual impact on the environment. Arcadis has used the decision matrix presented in **Table 4-3** (based on the NSW EPA chemical control orders.⁵ available at the time of this PSI), to facilitate an assessment of the potential for those control chemicals to be present on the Site.

Table 4-3 Chemical Control Orders Decision Matrix

Preliminary Screening Question	Decision
Were aluminium smelter wastes used or stored on the Site?	No
Were dioxin contaminated wastes generated or stored on Site?	No
Were organotin wastes generated or stored on Site?	No
Were polychlorinated biphenyls (PCB) used or stored on Site?	No
Were scheduled chemicals used, or wastes stored, on Site?	No
Were aluminium smelter wastes used or stored on Site?	No

Based on the desktop review and observations made during the site walkover, potential sources of chemical control orders related chemicals on the Site is considered unlikely.

⁵ SPCC 1986, *Chemical Control Order in Relation to Aluminium Smelter Wastes Containing Fluoride and/or Cyanide*
 NSW EPA 1986, *Chemical Control Order in Relation to Dioxin-Contaminated Waste Materials*
 NSW EPA 1989, *Chemical Control Order in Relation to Organotin Wastes*
 NSW EPA 1997, *Polychlorinated Biphenyl Chemical Control Order*
 NSW EPA 2004, *Chemical Control Order in Relation to Scheduled Chemical Wastes*

5 Site Condition at Walkover

5.1 Observations

A site walkover was undertaken by an Arcadis environmental consultant, on 27th July 2023. During the walkover, observations were made of land use activities being undertaken on the Site, as well as on the properties located immediately adjacent to the Site. A summary of these observations is provided in **Table 5-1**.

A photographic log of the images collected during the Site walkover is provided in **Appendix E**.

The Site layout at the time of the site walkover is shown in **Figure 2**.

Table 5-1 Site Walkover Observations

Item	Description
Current Land Use	The Site currently operates as an energy facility.
Buildings and Infrastructure	<p>Along the northern boundary, four cooling towers were observed. The two towers to the west were operational and in use and the two towers towards the eastern boundary were disused (refer to Appendix E, Photo 6 to 8). Cooling water was identified in the concrete bunds below the active cooling towers, approximately 1m depth. The site contact advised this water is to be removed and disposed offsite prior to demolition works.</p> <p>Pipes and chemical storage tanks for dosing were observed in the eastern portion of the Site.</p> <p>Operational infrastructure was observed in the centre of the Site.</p>
Site Boundaries	The Site is defined by walls and fences surrounding it. Part of the Site appeared to extend beyond the northwestern boundary (refer to Appendix E , Photo 5).
Drainage	No surface water bodies observed onsite, including stormwater detention, dams, lakes or rivers. Stormwater drains were present that captures all surface water runoff. The surface water is fed into the onsite oil/water separator before moving into the detention tanks.
Staining and Odours	No staining observed. Slight biogenic odour was observed around the cooling tower. No other odours were observed.
Chemical Handling and Storage	<p>Bulk chemicals were stored near the cooling towers and in the centre of the Site. Chemicals included:</p> <ul style="list-style-type: none"> Phosphoric Acid – a tank was confirmed by the site contact to be present within the storage shed east of the cooling tower, however the volume of phosphoric acid present onsite was unknown. Sodium hydroxide – one tank was observed in the centre portion of the Site, the storage tank held 18,175 L and was noted to be decommissioned.

Item	Description
	<ul style="list-style-type: none"> • Hydrochloric acid – one tank was observed in the centre portion of the site, the storage tank held approximately 20 L and was noted to be decommissioned. • Corrosive liquid, acidic, organic, N.O.S (UN No. 3265) – one 1,000 L IBC was observed, the site contact verbally confirmed that there were another two 1,000 L IBCs of this corrosive liquid stored within the storage shed east of the cooling towers. • Lube/mineral oil – several tanks were observed across the centre portion of the Site. Tanks were approximately 500 to 9,000 L. • Diesel – 500L tank was observed in the centre of the Site. <p>Routine 3 monthly checking is conducted on the storage area. The pumping station is located in a bunded, hardstand area with shut off valves to contain any spills.</p> <p>Spill kits were observed to be present adjacent to storage areas for emergency and maintenance requirements.</p>
Aboveground and Underground Storage Tanks	Chemical storage reported and observed onsite and are in aboveground storage tanks (ASTs) and bunded. Underground storage tanks for stormwater detention are reported to be present.
Onsite Septic	None observed.
Wastes	No wastes observed on the surface of the Site and no stockpiles observed. Skip bins and general wheelie bins of general solid waste and recyclables were present. Spill kits were visible and in use storing waste from pads and booms from previous leaks and/or small spills.
Hazardous Materials	As mentioned above, hazardous materials were observed onsite stored within IBCs or tanks. All materials were bunded. No potential asbestos containing material observed on the surface of the Site. During the inspection, the site contact advised that the cooling towers did not contain asbestos or lead paint, although no register was available.
Fill Material	No obvious signs of filling observed, site was generally flat. Likely some fill is present in the historic creek and dam onsite. Surrounding topography was consistent with the Site. The CBA (Arcadis, 2019) noted that fill material was a reworked natural material which was encountered across the Site.
Phytotoxicity	No vegetation was present onsite. No evidence of die back was observed in vegetation along the eastern boundary.
Activities on Adjacent Land	The surrounding land use is commercial/industrial. Surrounding businesses are operational sites, with Visy facilities on the eastern, southern and western boundaries of the Site, and Cumberland Industrial Estate north of the Site. This is consistent with surrounding land use identified in Section 2.1 .

6 Conceptual Site Model

A conceptual site model (CSM) assesses potential sources, pathways and receptors at a site and the connections between these. In order for a potential risk to exist to human health and/or ecological receptor there must be a clear or suspected source -pathway-receptor (SPR) linkage between the known or potential source(s) and receptor(s) in relation to the Site. The following sections provide a summary of the identified (or potential) sources, pathways and receptors at the Site, based on the available site information at the time of writing.

6.1 Adopted Land Use Scenario and Receptors

Based on the information provided, Arcadis has assumed the Site will be developed along the northern boundary with the construction, operation and maintenance of a BESS. The Site will be predominantly covered in hardstand (assumed more than 80% coverage), comprising of office buildings, amenities, with no access to soil, and no basements. Arcadis has identified cooling water below the active cooling towers, in a concrete sealed bund. Arcadis assumes this water will be extracted, classified and disposed of offsite to a licenced waste facility prior to demolition. No natural surface water bodies were identified. The receptors include:

- Site users associated with the BESS and energy facility (considered to be predominantly adult employees)
- Construction workers
- Intrusive maintenance workers.

Opportunities for direct access to soil by employees using these facilities are likely to be minimal, but there may be potential for employees to inhale, ingest or come into direct dermal contact with dust particulates from exposed areas of soil during construction works on the Site.

Given the Site is located in a commercial/industrial area it is assumed the drinking water at the Site will continue to be a council supplied reticulated water supply, consistent with surrounding properties.

Therefore, the proposed land use for the Site is consistent with Commercial/Industrial, as defined in NEPM (NEPC, 2013).

6.2 Sources of Contamination

Based on the site history review, regulatory records and site walkover observations a number of potential land contaminating activities have been identified for the Site, which include:

- Uncontrolled filling
- Chemical storage and dosing.

Based on historical aerials, uncontrolled fill was identified as a potential source of contamination. However, information provided in the CBA report revealed fill surrounding the BESS Area to be between 0.1 mbgl and 0.8 mbgl. Arcadis considers it unlikely that significant fill will be identified below the cooling towers due to the generally consistent flat surrounding topography and the previously reported depths of fill reported in sampling locations surrounding the proposed BESS.

Potential sources of contamination associated potential affected media and CoPC are listed in **Table 6-1**.

Table 6-1 Sources of Contamination and CoPC

Source	Matrix	Evidence	CoPC
Uncontrolled fill	Soils (fill)	Previous contamination assessments, aerials	TRH, BTEXN, PAH, OCP/OPP, PCB, Asbestos, metals (8) ¹
Chemical storage and dosing	Soils and Groundwater	Site walkover, previous contamination assessments	Phosphoric acid, sodium hydroxide, hydrochloric acid

¹ Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), nickel (Ni), lead (Pb), zinc (Zn) and mercury (Hg)

6.3 Exposure Pathways

6.3.1 Human Health

The Site history review indicated a potential for uncontrolled filling and leaks/spills from storage tanks with associated contaminants which may present a dermal contact, ingestion or dermal contact exposure risk to human health for future site users and a direct contact risk to intrusive maintenance workers. The previous investigation (Arcadis, 2019) failed to identify any exceedances for the land use scenario and therefore considered unlikely to pose a risk to the proposed development to a commercial/industrial site.

6.3.2 Ecological (Terrestrial)

The proposed development is likely to be predominantly hardstand with large building structures and extensive areas covered with concrete or asphalt, with minimal soil access, hence, may have limited environmental values requiring consideration while in operational use. If landscaped areas are proposed, there are often practical considerations that enable soil properties to be improved by addition of ameliorants with a persistent modifying effect or by the common practice of backfilling or top dressing with clean soil (NEPC, 2013). Historical screening by Arcadis (2019) found no exceedances of contaminant concentrations at the Site against the ecological investigation and screening levels. On that basis, Arcadis considers the potential for terrestrial ecological exposure risks, under a commercial/industrial land use to be low.

6.3.3 Ecological (Aquatic)

No groundwater dependent ecosystems or sensitive ecological receptors were identified onsite. One groundwater dependent ecosystem was identified hydraulically downgradient, approximately 280 m southeast of the Site. However, as the Site and surrounding area underlain with clay material, it is unlikely that any contamination created onsite will pose a risk to aquatic ecological receptors down gradient of the Site. The Site is also located within a commercial/industrial area and is unlikely the source of any downgradient contamination. On that basis, Arcadis considers the potential for aquatic ecological exposure risks, under a commercial/ industrial land use to be low.

6.3.4 Buildings and Infrastructure

In addition to appropriate consideration and application of the HSLs and ESLs, there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

- Formation of observable Light Non-Aqueous Phase Liquid (LNAPL),

- Fire and explosive hazards, and
- Effects on buried infrastructure (e.g., penetration of, or damage to, in-ground services by hydrocarbons).

Management limits have been adopted as interim Tier 1 guidance to minimise these potential effects.

Historical screening by Arcadis (2019) found no exceedances of TRH/TPH in soil, groundwater or surface water samples and were all below the adopted human assessment criteria. On that basis, potential risk of petroleum hydrocarbons in soils, in the context of those policy considerations above, is currently considered low.

6.3.5 Aesthetics

Arcadis has used the guidance outlined in Section 3.6.2 - 3.6.3 of the NEPM (2013) to facilitate an assessment of field observations in the context of aesthetic risk. An assessment of site aesthetics is presented in **Table 6-2**.

Table 6-2 Aesthetic Risk Screening

Aesthetic Risk Screening Questions	Decision
Are highly malodorous soils present onsite?	No
Are hydrocarbon sheens present on surface waters onsite?	No
Are discoloured chemical deposits or soil staining with chemical waste (other than of a very minor nature) present in soils onsite?	No
Are large monolithic deposits of otherwise low risk material (e.g. gypsum as powder or plasterboard or cement kiln dust) present in soils onsite?	No
Are materials including putrescible refuse (that may generate hazardous levels of methane, such as a deep fill profile of green waste or large quantities of timber waste) present in soils onsite?	No
Are soils containing residue from animal burials (e.g. former abattoir sites) present onsite?	No
Are large quantities of non-hazardous inert material (e.g. foreign material) likely to be present in soils onsite?	No
Are high odour residue materials present in soils onsite?	No
Are large quantities of various fill types and demolition rubble likely to be present in soils onsite?	No

The Site history, previous works review and visual observations during the site walkover did not identify potential aesthetic risks. Section 3.6.3 of the NEPM (NEPC, 2013) advises that:

- Small quantities of non-hazardous inert material should not be a cause of concern or limit the use of the site in most circumstances.
- Sites with large quantities of well-covered known inert materials that present no health hazard such as brick fragments and concrete wastes (for example, broken cement blocks) are usually of low concern for both non-sensitive and sensitive land uses.

On this basis, the observations made on site are considered to not present circumstances which would trigger further assessment of aesthetics.

6.3.6 Summary of Potential Exposure Pathways

The identified or potential pathways (P) for contamination to move from the identified sources to the identified receptors at the Site are considered to be:

- Dermal Contact / Ingestion / Dust Inhalation of contaminated soil (onsite)
- Vapour Intrusion (Onsite)

6.4 Potential Source, Pathway and Receptor Linkages

The desktop review and site walkover observations were assessed in the context of the project objectives, in order to develop a preliminary conceptual site model (CSM) for the Site.

The linkages consider whether there may be risks to the receptor, either now or in the future. Arcadis adopted the following qualitative rationale for assessing whether a complete SPR linkage was present:

- **Complete:** a complete linkage was able to be demonstrated through empirical data indicating concentrations exceeding the Site Assessment Criteria or site observations indicating an unacceptable exposure risk to future receptors.
- **Possible:** a complete linkage is considered possible based on the current understanding of site conditions and empirical data indicating concentrations above the Site Assessment Criteria, however, in consideration of the assumptions of the proposed land use scenario the risk can be managed appropriately.
- **Unlikely:** a complete linkage is considered unlikely based on the current understanding of site conditions, however there are insufficient data or site observations, and further assessment may be required to confirm this.
- **Incomplete:** empirical data or site observations demonstrate that the SPR linkage is incomplete.

The potential sources of contamination and associated media affected potential exposure pathways to future receptors under a commercial/industrial land use is provided in **Table 6-3**.

Table 6-3 Summary of Potentially Complete SPR Linkage Assessment

Source / Media	CoPC	Exposure Pathway	Receptor	SPR Linkage Assessment	Risk
Soil: <ul style="list-style-type: none"> Uncontrolled Fill Chemical storage and dosing 	TRH, BTEXN, PAH, OCP/OPP, PCB, Asbestos, PFAS	<ul style="list-style-type: none"> Direct Contact, Ingestion/ Dermal Contact/Dust Inhalation 	<ul style="list-style-type: none"> Site End Users (Onsite) – Industrial/Commercial Intrusive Maintenance Workers 	Incomplete: Field observations and analytical results for CoPC (including PFAS) in soil were below the Tier 1 screening criteria. Hence, a source of contamination which may pose a direct contact exposure risk to human health under a commercial/industrial land use has not been identified.	Negligible
		<ul style="list-style-type: none"> Inhalation of Asbestos fibres 	<ul style="list-style-type: none"> Site End Users (Onsite) – Industrial/Commercial 	Incomplete: Field observations and analytical results for asbestos in soil were below the Tier 1 screening criteria. Hence, a source of contamination which may pose an inhalation of asbestos fibre risk to human health under a commercial/industrial land use has not been identified.	Negligible
		<ul style="list-style-type: none"> Vapour Intrusion 	<ul style="list-style-type: none"> Site End Users (Onsite) – Industrial/Commercial Intrusive Maintenance Workers 	Incomplete: Field observations and analytical results for volatile CoPC in soil were below the Tier 1 screening criteria. Hence, a source of contamination which may pose a vapour intrusion exposure risk to human health under a commercial/industrial land use has not been identified.	Negligible
		<ul style="list-style-type: none"> Direct Uptake 	<ul style="list-style-type: none"> Terrestrial- Ecological 	Incomplete: Field observations and analytical results for CoPC (including PFAS) in soil were below the Tier 1 screening criteria. Hence, a source of contamination which may pose a direct uptake under a commercial/industrial land use has not been identified.	Negligible

7 Conclusions and Recommendations

Arcadis completed this PSI at the Site to provide the Client with sufficient information to inform on site suitability (in the context of land contamination) and potential contamination risks associated with the proposed future development of the Site.

Based on the information detailed in this PSI report, and in consideration of the PSI objectives, Arcadis has drawn the following conclusions regarding contamination at the Site:

- Based on the desktop review and site walkover observations, it is considered unlikely significant depth of fill will be identified below the proposed BESS.
- Based on the desktop review and information provided in the PSI report, it is considered unlikely groundwater poses a contamination risk at the Site, and further assessment is currently considered not required.
- The Site history review identified potential sources of contamination including potential uncontrolled fill and chemical storage and dosing.
- A Dangerous Goods search could not be completed as authorisation for the search was not received. Based on the site history review and site walkover observations Arcadis considers the risks of potential unknown underground storage tanks of dangerous goods onsite unlikely.
- The Site is considered suitable for the future commercial/industrial land use scenario, based on the assumptions provided within this report.

The following mitigation measures are recommended:

- In line with recommendations provided in the CBA (Arcadis, 2019), should fill be identified post demolition, further sampling should be undertaken to address the data gap present by the cooling towers and for possible waste classification.
- The CEMP should include an UFP, to manage any disturbance of material that is odorous, stained or containing anthropogenic materials, in the event these are encountered during construction/civil activities.

8 References

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9 Limitations

The findings of this report are based on the Scope of Work described in this report. Arcadis performed the services in a manner consistent with the level of care and expertise exercised by members of the environmental profession. That standard of care may change, and new methods and practices of exploration, testing and analysis may develop in the future, which might produce different results.

No warranties, express or implied, are made. Subject to the Scope of Work, Arcadis' assessment is limited strictly to identifying typical environmental conditions associated with the subject property.

While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Arcadis, or developments resulting from situations outside the scope of this project.

Arcadis prepared this report for the sole and exclusive benefit and use of the client. Notwithstanding delivery of this report by Arcadis or the client to any third party, any copy of this report provided to a third party is provided for informational purposes only, without the right to rely. Arcadis cannot accept any responsibility for any use of or reliance on the contents of prepared reports by any third party except where expressly agreed via an agreed and properly executed reliance letter. Subject to the terms of the reliance letter, Arcadis would disclaim all and any liability to any third person in respect of anything or in consequence of anything done or omitted to be done by that person in reliance, whether whole or partial.

Information from historical data reviewed relating to soil, groundwater, waste, air or other matrix conditions in this document is considered to be accurate at the date of issue. Surface, subsurface and atmospheric conditions can vary across a particular site or region, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site that may exist. Subsurface conditions including contaminant concentrations can change in a limited period of time and typically have a high level of spatial heterogeneity.

From a technical perspective, there is a high degree of uncertainty associated with the assessment of subsurface, aquatic and atmospheric environments. They are prone to be heterogeneous, complex environments, in which small subsurface features or changes in geologic conditions or other environmental anomalies can have substantial impact on water, air and chemical movement.

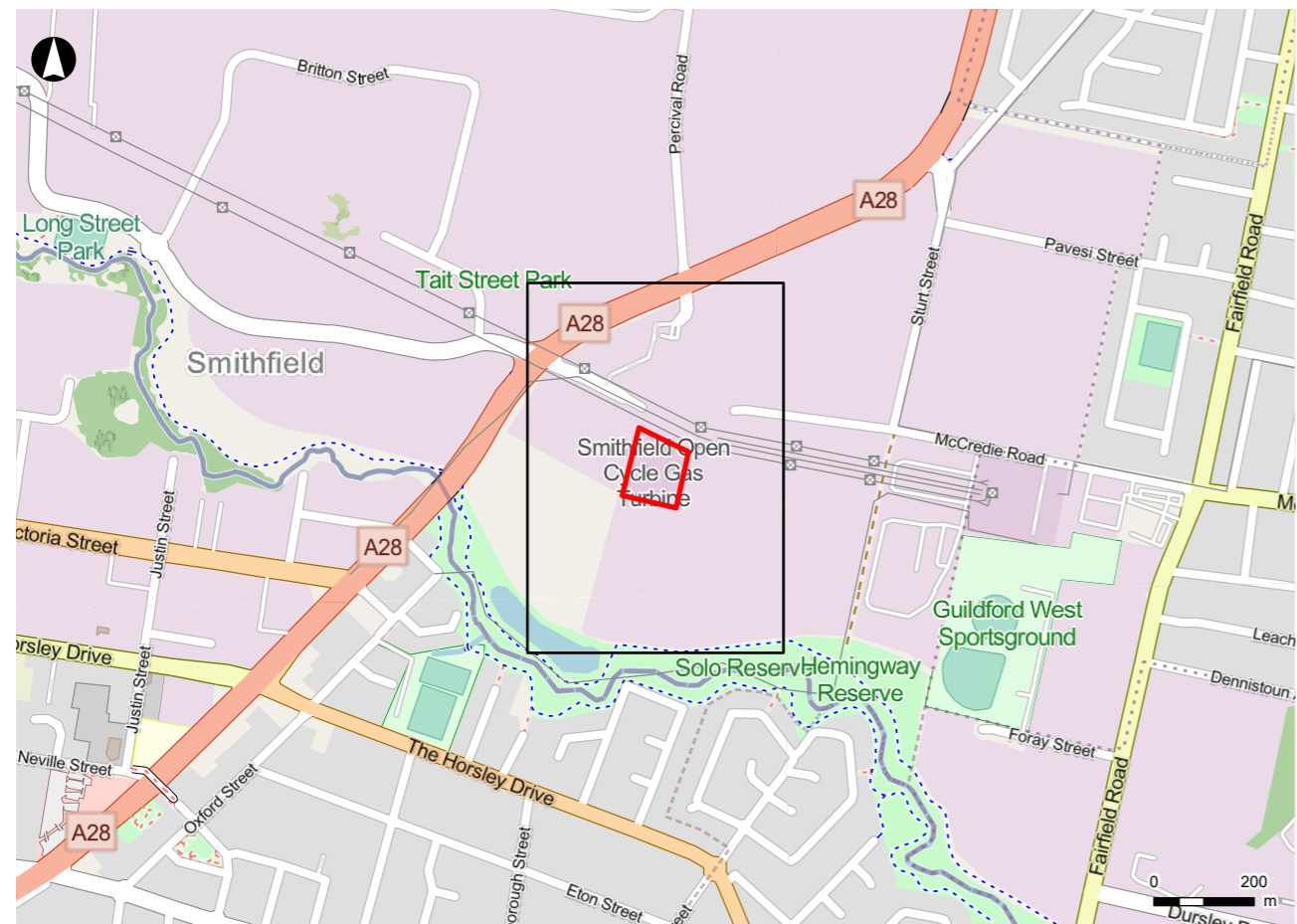
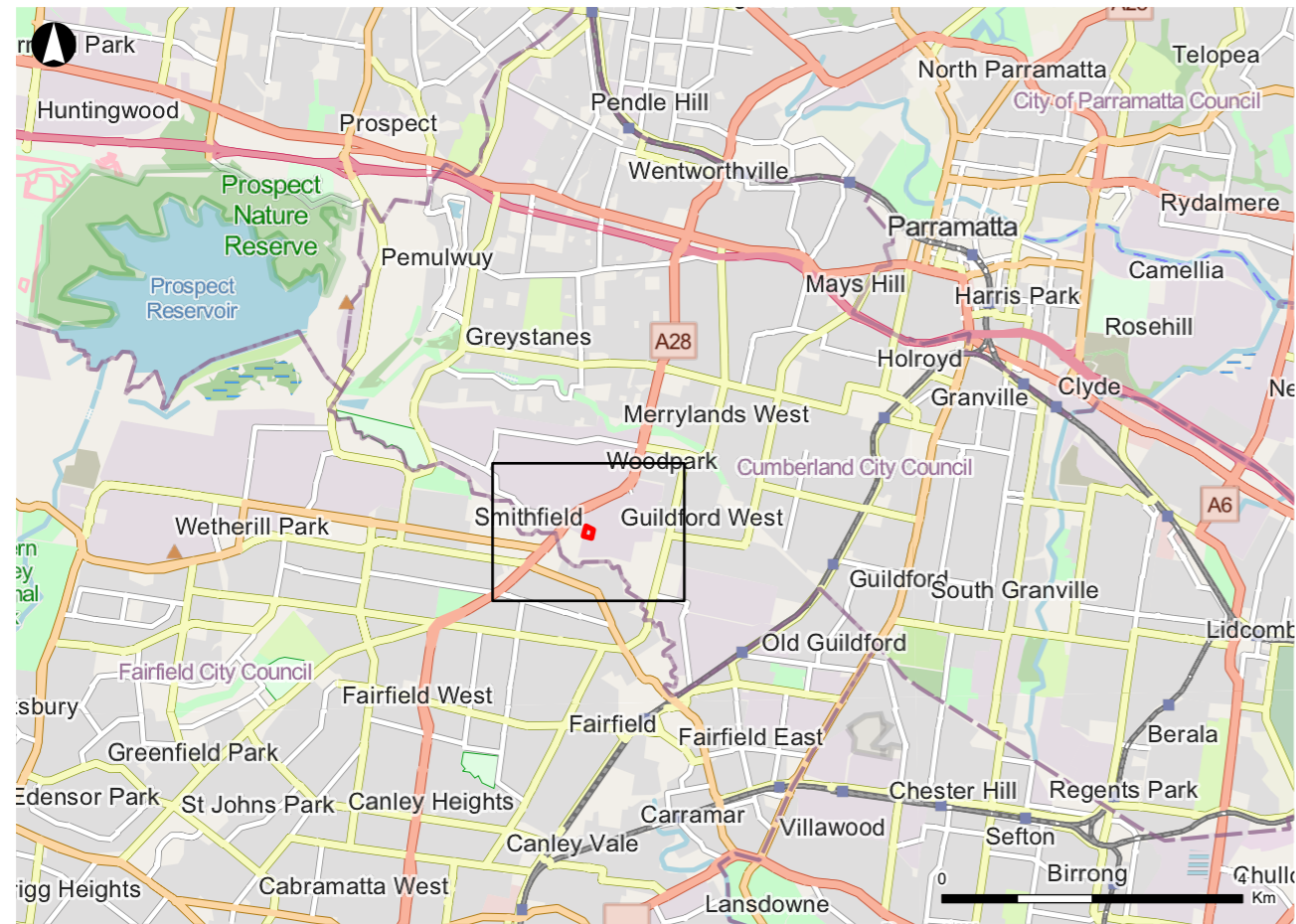
Arcadis' professional opinions are based upon its professional judgment, experience, and training. These opinions are also based upon data derived from the limited testing and analysis described in this report. It is possible that additional testing and analysis might produce different results and/or different opinions. Arcadis has limited its investigation(s) to the scope agreed upon with its client.

Figures

Figure 1 – Site Location

Figure 2 – Site Layout

30178302- Iberdrola - Smithfield



- LEGEND**
- Approximate Site Boundary
 - Approximate BESS Area

Iberdrola Australia
ARCADIS

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 Date issued: August 2, 2023
 Topographic Service Layer Credits: OpenStreetMap
 Imagery: Nearthmap, captured on 30/03/2023

Figure 1 - Site Location



- LEGEND**
- ▭ Approximate Site Boundary
 - ▭ Approximate BESS Area
 - ▨ Site Office
 - ▨ Cooling Towers
 - ▭ Chemical Storage Areas
 - ▭ Anion Exchange and Water Dosing Tanks
 - ▭ Water Tank
 - ▭ Oil-Water Separator
 - ▭ Gas Turbine Generator Facility
 - MV Cable
 - Wells

1:720 at A3



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 Coordinate System: GDA2020 MGA Zone 56
 Date issued: August 22, 2023
 Topographic Service Layer Credits: OpenStreetMap
 Imagery: Nearmap, captured on 30/03/2023

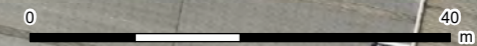


Figure 2 - Site Layout