

Our ref: SSD-46543209

Mr Stephen Barry
Planning Director
Independent Planning commission NSW
Via email

14/05/2025

Subject: Muswellbrook Solar Farm – Supplementary Information

Dear Mr Barry

I refer to the assessment of the Muswellbrook Solar Farm project (the Project). I note that OX2 has provided supplementary information regarding contamination (see **Attachment A**).

The Department considers that the additional information supplements OX2's EIS and does not change the Department's conclusions in the Assessment Report or conditions in the Recommended Instrument of Consent.

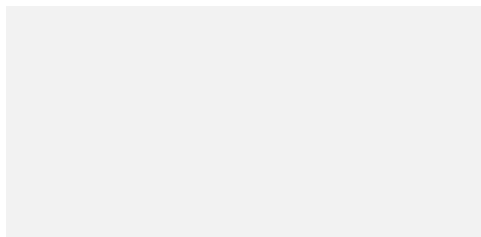
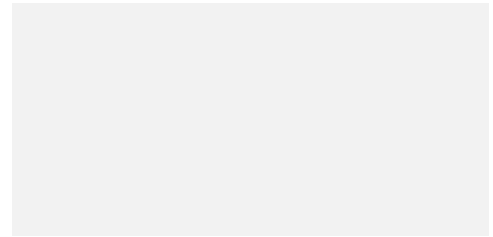
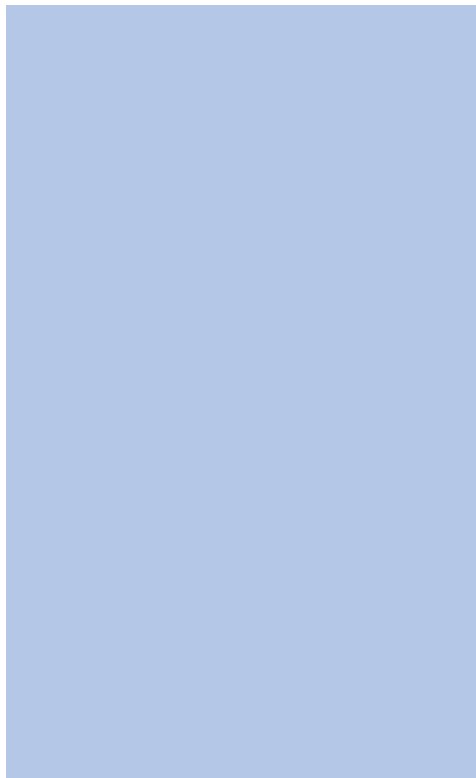
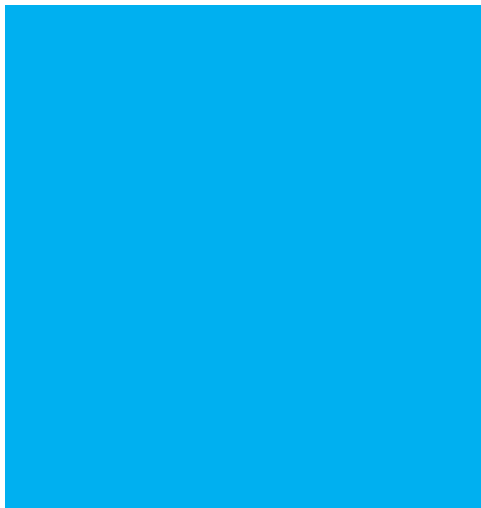
If you wish to discuss the matter further, please contact Iwan Davies on [REDACTED] or [REDACTED].

Yours sincerely,



Iwan Davies
Director
Energy Assessments

Attachment A – Preliminary Site Investigation Report



Preliminary Site Investigation

Muswellbrook Solar Farm Site

Muscle Creek Road, Muswellbrook NSW

7 May 2025

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Appendix E – Site Inspection Observations Summary

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Muswellbrook Solar Farm Site

Muscle Creek Road, Muswellbrook NSW


Preliminary Site Investigation

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Executive Summary

OX2 Holdings Pty Ltd (OX2) engaged Renewal Environmental Consulting Pty Ltd (Renewal EC) to conduct a Preliminary Site Investigation (PSI) of the Muswellbrook Solar Farm Project Site on Muscle Creek Road, Muswellbrook NSW.

The solar farm comprises two main parcels of land on the northern and southern side of the existing Muswellbrook Coal Mine, referred to herein as the Northern Project Area ('NPA') and Southern Project Area ('SPA'). A narrow easement for a transmission line connects the two solar farm areas on the eastern side of the coal mine, which is referred to herein as the Central Transmission Line Easement ('CTLE'). A second 132 kV transmission line easement from the northwestern side of the SPA will connect to the electrical grid west of the project site, herein referred to as the Western Transmission Line Easement (WTLE).

This PSI was conducted to support the Environmental Impact Assessment (EIS) (EMM, July 2023) and Submissions Report (EMM, February 2024) prepared for the project. This PSI report has been prepared in accordance with the *State Environmental Planning Policy and Hazards 2021, Chapter 4 Clause 4.6 Contamination and Remediation to Be Considered in Determining Development Application* and follows the requirements listed in the *Consultants Reporting on Contaminated Land Guidelines* (NSW EPA 2020).

This PSI included a desktop investigation using publicly available information regarding the site and its surrounds, a 2-day site inspection, and preparation of this report.

The key environmental aspects of the site are summarised as follows.

- Most of the site appears to have been used for agricultural grazing purposes. The site also includes a small area of rehabilitated mining area where the internal overhead transmission line connects the northern and southern sections of the site.
- There were several probable contaminating activities or source areas identified during the site history and related agency searches for the site and surrounding areas.

Based on the known or expected previous site activities, the following potential contaminants of concern were identified:

- Asbestos containing materials in a bonded (cement sheeting) form only.
- Total Recoverable Hydrocarbons (TRH) – most notably from drums discovered in a small waste dump at the site.
- Organochlorine and organophosphate pesticides - from pest control measures potentially utilised around sheds and stockyards.
- Miscellaneous solid waste products observed at the site, including building waste and old tyres, which should be removed as part of the site development works.

The probable contaminating activities or contamination source areas identified during the 2-day site inspection included:

- Two areas of low concern that could be managed directly as part of the pre-development site preparation work:
 - A small solid waste dump on the NPA (target location 'TL13')
 - Some treated timber posts on a cattle yard on the SPA (target location 'TL08').
- Nine areas where some basic contamination management action is required prior to the development works, with a small possibility of additional assessment and localised sampling (mostly locations where asbestos cement sheeting was visible on the soil surface).
- One location that will require cleanup and assessment prior to the development works being undertaken (a small drum waste dump along with some other dumped buildings materials and miscellaneous rubbish in the NPA).

Since the completion of the PSI site inspection, all locations where possible or probable sources of contamination identified during this PSI were addressed under the supervision of appropriately qualified environmental professionals. On this basis, there are no further immediate recommended actions in relation to contaminated land assessment or management. It can therefore be stated with a reasonable level of confidence that the project site is suitable for the proposed development and land use.

If any other waste material or residual contamination finds occur during future works as part of the solar farm construction and operation, it is understood that an unexpected finds protocol will be developed for construction, operation and decommissioning works, which will include procedures to identify and manage potentially contaminated land.

Acronyms

ABARES	Australian Bureau of Agricultural and Resource Economics
ACM	Asbestos Containing Materials
AHD	Australian Height Datum
BESS	Battery Energy Storage System
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSM	Conceptual Site Model
CTLE	Central Transmission Line Easement (33 kV line)
DPHI	Department of Planning, Housing and Infrastructure
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
EPA NSW	Environment Protection Authority of New South Wales
FA	Facilities Area
mAHD	metres (above) Australian Height Datum
MCC	Muswellbrook Coal Company Ltd
NEPC	National Environment Protection Council
NEPM ASC	National Environment Protection (Assessment of Site Contamination) Measure
NPA	Northern Project Area
PCU	Power Conversion Units
PFAS	Per- and Polyfluoroalkyl Substances
PSI	Preliminary Site Investigation
SPA	Southern Project Area
TRH	Total Recoverable Hydrocarbons
WTLE	Western Transmission Line Easement (132 kV line)

1 Preliminary Information

1.1 Introduction

OX2 Holdings Pty Ltd (OX2) engaged Renewal Environmental Consulting Pty Ltd (Renewal EC) to conduct a Preliminary Site Investigation (PSI) of the Muswellbrook Solar Farm Project Site on Muscle Creek Road, Muswellbrook NSW ('the site').

This PSI was conducted to support the Environmental Impact Assessment (EIS) (EMM, July 2023) and Submissions Report (EMM, February 2024) prepared for the project. This PSI report has been prepared in accordance with the *State Environmental Planning Policy and Hazards 2021, Chapter 4, Clause 4.6 Contamination and Remediation to be Considered in Determining Development Application* and follows the requirements listed in the *Consultants Reporting on Contaminated Land* guidelines (NSW EPA 2020).

1.2 Objectives

The objectives of this PSI included:

- Identifying any former potentially contaminating activities and potential sources of contamination that may have impacted the site.
- Conducting a 2-day site inspection across the proposed development footprint to inspect potential sources or locations where contamination may be present.
- Developing a list of potential contaminants of concern.
- Determining the need to complete intrusive Detailed Site Investigation (DSI) works or any additional contamination management at the site prior to the solar farm project development commencing.

1.3 Scope of Works

To achieve the stated objectives, the following PSI works were completed:

- A desktop review of available resources relevant to the environmental condition of the site, based on a Lotsearch Enviro Professional Report and other publicly available information.
- A 2-day site inspection, to complement the findings of the desktop study and to identify any additional relevant site information.
- Preparation of this PSI report, with recommendations regarding the need to complete a DSI or related contamination management, to satisfy the requirements of the State Environmental Planning Policy Resilience and Hazards 2021, Chapter 4.

The PSI was conducted in general accordance with the National Environment Protection Council (NEPC) (1999) National Environment Protection (Assessment of Site Contamination) Measure (as amended 2013) (aka NEPM ASC) Schedule B2 – *Guideline on Site Characterisation*.

1.4 Proposed Solar Farm Development

The Muswellbrook Solar Farm infrastructure is to be installed around 2.5 kms from the centre of Muswellbrook across a project area of around 482 ha, with the development footprint within it comprising around 318 ha.

The solar farm comprises two main parcels of land on the northern and southern side of the existing Muswellbrook Coal Mine, referred to as the Northern Project Area ('NPA') and Southern Project Area ('SPA'). A narrow easement for a transmission line connects the two solar farm areas on the eastern side of the coal mine, which is referred to herein as the Central Transmission Line Easement ('CTLE'). A second 132 kV transmission line easement from the northwestern side of the SPA will connect to the electrical grid west of the project site, herein referred to as the Western Transmission Line Easement (WTLE).

The proposed solar farm will have a generation capacity of approximately 135 megawatts alternating current (MWac) and would produce around 347 gigawatt hours (GWh) of energy annually, which is enough to power approximately 79,000 homes. The proposed battery energy storage system (BESS) will also have a capacity of up to 135 MWac and up to two hours of storage.

General infrastructure includes approximately 300,000 photovoltaic (PV) panels, with associated mounting structures and cabling, Power Conversion Units (PCUs), weather stations, internal access tracks, overhead transmission lines (connecting northern and southern sections, and connecting the on-site substation to the point of connection to the grid). The Facilities Area (FA) comprises the battery energy storage system (BESS), transformer substation, switchyard, operations and maintenance facility (including offices, amenities, equipment sheds, storage, and parking). The FA is to be established at and around the existing road siding on the bend to the current mine access road on the SPA.

2 Site Information

The following sections of the report present general site and conceptual site model (CSM) related information.

2.1 Site Identification

A general site location and features plans is presented in Appendix A. Further details of the proposed development are presented on the Overview of Project plan supplied by OX2 from the EMM Consulting Pty Limited EIS in Appendix B. The Lotsearch Enviro Pro Report is presented in Appendix C.

General site information gathered from these documents is presented in Table 2.1 below.

Table 2.1 – Site Details

Item	Detail
Site Address	Muscle Creek Road, Muswellbrook NSW
Lot and Plan Numbers	Lot 61 DP1113302, Lot 2 DP614842, Lot 101 DP1148216, Lot 71 DP629631, Lot 19 DP16352, Lot 1 DP184481, Lot 1 DP723294, Lot 6 DP26760, Lot 57 DP752484, Lot 2 DP26760, Lot 58 DP752484, Lot 5 DP26760, Lot 59 DP752484, Lot 3 DP571355, Lot 60 DP752484, Lot 1 DP571355, Lot 97 DP752484, Lot 682 DP611756, Lot 39 DP793463, Lot 1 DP614842, Lot 40 DP793463.
Development Application No	SSD-46543209
Project Area	482 hectares
Development Footprint	318 hectares
Parish/County*	Parish of Rowan/County of Durham
Municipality	Muswellbrook LGA
Current Land Zonings	Primary Production (RU1) Infrastructure (SP2) Environmental Management (C3) (not currently a part of any protected area or reserve)
Current Overlays/ Land Designations	The project area is within land identified as: <ul style="list-style-type: none"> • Bushfire Prone Land • Mine Subsidence District (Muswellbrook Mine Subsidence District) • Flood Prone Land.

* - Per National Library of Australia Map (<https://nla.gov.au/nla.obj-570030458/view>)

2.2 Regional Setting

The Muswellbrook Solar Farm infrastructure is to be installed around 2.5 kms from the centre of Muswellbrook across a project area of around 482 ha, with the development footprint within it comprising around 318 ha.

The northwestern project area boundary and access is via Sandy Creek Road. The southern project area boundary is generally defined by Muscle Creek, with the main southern access via Muscle Creek Road.

Land surrounding the project area contains infrastructure and landforms associated with the Muswellbrook Coal Mine. The surrounding area also contains rural residences and properties used for grazing and environmental conservation.

2.3 Site Layout and Usage

The NPA and CTLE portions of the project area are dominated by former mining-related activities and rehabilitated land. Much of the NPA is now covered with even-aged regrowth (Ironbark) with occasional mature trees, sparsely scattered shrubs and degraded native grasslands. Horses are currently being agisted in a portion of this area.

The SPA has not been subject to mining and is open paddocks with areas of native vegetation. Cattle grazing continues to occur in the paddocked area and fenced stockyards and sheds are present along with a sealed road, unsealed tracks, electrical pylons, and dams. Vegetation on the SPA predominantly comprises degraded native grasslands and modified pastures with widely scattered remnant paddock trees.

2.4 Local Climate

Muswellbrook is located centrally in the Hunter Region of central eastern New South Wales.

The climate of the Hunter Region is described as subtropical to temperate. Annual rainfall varies as you move inland, ranging from more than 1,100 mm per year on the coast and on the Barrington Tops, down to less than 600 mm per year in parts of the upper Hunter. Rainfall is greatest in summer and autumn, with a higher proportion of winter rainfall on the coast than inland. It is mild to warm in summer throughout much of the region, however winters are cool in more elevated parts of the region and further inland. Milder conditions occur along the coast, which typically experiences the warmest average winter temperatures and lower summer maximum temperatures in the region.

Specific climate statistics are presented in Table 2.4 below.

Table 2.4 – Muswellbrook Climate Statistics

Mean Minimum Temperature (monthly ranges)	Mean Maximum Temperature (monthly ranges)	Mean Annual Rainfall	Minimum Average Monthly Rainfall	Maximum Average Monthly Rainfall
3.4 – 17.2 °C	16.7 – 31.8 °C	616 mm	34.7 mm	77.0 mm

Per Bureau of Meteorology Climate statistics for Australian locations (Scone, NSW)

http://www.bom.gov.au/climate/averages/tables/cw_061363.shtml

2.5 Topography

Based on information sourced from the EIS, the project area is situated at relatively low-lying natural elevations (between 160 m and 260 m above the Australian Height Datum (AHD) in the north). The closest elevated terrain is Bells Mountain (2 km north-east; maximum elevation of 690 m AHD) and Skellatar Hill (approximately 1 km west; maximum elevation of 333 m AHD). There is an overall fall in topography in a westerly direction toward the Hunter River, where the elevation on the flood plain adjacent to the river lies at approximately 150 m AHD.

The land is characterised by a mix of relatively low slopes (<7.5°), plus areas of undulating terrain with slopes generally not exceeding 10°.

2.6 Regional Geology

The regional site geology has been sourced from NSW Department of Primary Industries and Regional Development, Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) NSW Department of Climate Change, Energy, the Environment and Water; Atlas of Australian Soils supplied by CSIRO (as provided by Lotsearch).

A summary of the data from these searches is presented in Table 2.6 below.

Table 2.6 – Regional Site Geology

Attribute	Detail
Dominant Geological Units	Sandstones and Siltstones of the Branxton Formation and Mulbring Siltstone Units with alluvial valley deposits prevalent across the gullies and creeks of the SPA.
Geological Periods	Permian to Triassic (circa 300 Ma to 200 Ma)
General Lithology [#]	<p>Roxburgh Soils (NPA mostly)</p> <p>Clays, silts and sands (colluvium) overlying Sandstones, shales, mudstones, conglomerates and coal.</p> <p>Dartbrook Soils (SPA mostly)</p> <p>Clays, silts and sands (alluvium and/or colluvium) overlying Calcareous shale and sandstone.</p>

Attribute	Detail
Potential for Acid Sulphate Soils	Low (6 - 70% chance) (mostly NPA) Extremely Low (1-5% chance) (mostly SPA)
Naturally Occurring Asbestos Potential	No records in buffer

- Additional information on lithology provided in Appendix C as supplemental data to the Lotsearch Report.

2.7 Regional Hydrology

The regional hydrological data has been sourced from Geoscience Australia; NSW Department of Climate Change, Energy, the Environment and Water; and Bureau of Meteorology; Water NSW. The regional hydrological information inferred for the site is summarised in Table 2.7 below.

Table 2.7 – Regional Site Hydrology

Attribute	Detail
Site Aquifer Descriptions	Porous, extensive highly productive aquifers. Fractured or fissured, extensive aquifers of low to moderate productivity.
Depth to regional groundwater	High variability expected (typically <10 mbgs, but > 50 mbgs near the former mine)
Regional water table elevation	Variable and uncertain due to mining influence. (circa 200 mAHD expected)
Regional groundwater salinity	1,000 to 3,000 mg/L (i.e., acceptable stock watering and irrigation supply)
Nearest surface water receptors	Muscle Creek – on southern site boundary of SPA Sandy Creek – 1,300 m west of NPA

2.8 Registered Groundwater Bores

A search was conducted by Lotsearch through the Bureau of Meteorology; Water NSW for registered groundwater boreholes within the vicinity of the site.

The search identified 24 registered groundwater bores within a 2 km radius of the site, with the closest two registered groundwater boreholes being the deep wells (NGIS Bore IDs 10084876 and 10048065) on the northern boundary of the NPA.

Of the registered groundwater boreholes, several were listed as being high yielding wells suitable for possible extractive purposes (i.e., 'Water Supply', 'Stock and Domestic', 'Irrigation' or 'Commercial and Industrial').

Other newly installed wells that were observed on the SPA portion of the site during the site inspection were evidently not yet listed on the register borehole search.

2.9 Environmental Records Information

Environment Protection Authority NSW (EPA NSW), Geoscience Australia, Department of Defence and other related public record holders were searched for information pertaining to contamination or potential contamination that may exist on or within a 1,000 m radius or 'buffer' of the site. The following information has been obtained from the Lotsearch Report.

Table 2.9 – Environmental Records Information

Record Source and Type	Detail
Contaminated sites notified to EPA NSW	No records in buffer
Record of Notices	No records in buffer
Former Gasworks	No records in buffer
National Waste Management Facilities	Muswellbrook Waste Management Facility (189 m west)
National Liquid Fuel Facilities	No records in buffer
EPA NSW PFAS Site Investigations	No records in buffer
Defence PFAS Investigation & Management Program Investigation Sites	No records in buffer
Airservices Australia National PFAS Management Program	No records in buffer
Defence Controlled Areas (DCA)	No records in buffer
Defence 3 Year Regional Contamination Investigation Program (RCIP)	No records in buffer
Defence National Unexploded Ordnance (UXO)	Muswellbrook Township (910 m west)
Other Sites with Contamination Issues	No records in buffer
Licensed Activities (POEO Act 1997)	Muswellbrook Coal Company Ltd (Site) Australian Rail Track Corporation Limited (85 m south) Muswellbrook Waste & Recycle Facility (189 m west)

Record Source and Type	Detail
Delicensed Activities (still regulated by the EPA NSW)	No records in buffer
Former Licensed Activities (POEO Act 1997)	Muswellbrook Quarry (on site - western section of NPA) Various (weed spraying contractors – on site)
Historical Business Directories (Potentially contaminative business activities)	Several businesses registered on Limestone Road and Sandy Creek Road, but not considered likely to have affected the subject site.
Historical Business Directories (Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches)	No records in buffer

From the searches listed above, those recorded businesses or business activities within the 1,000 m buffer are not considered likely to pose any direct risk to the project area or the intended solar farm development with respect to further contamination assessment requirements.

2.10 Review of Existing Environmental Reports

Renewal EC was provided with a copy of the Muswellbrook Solar Farm Environmental Impact Statement (EIS) prepared in July 2023 for the site.

While limited contaminated-land-specific information is provided within the EIS, the EIS provides a detailed account of the wider environmental considerations that have been made in relation to the project area and the proposed development, which are referenced and acknowledged throughout this PSI.

3 Aerial Photograph Review

Historical aerial photographs reviews were conducted to assist in identifying possible areas of contamination and an approximate timeline of any site development.

Historical aerial photographs obtained by Lotsearch were provided in four parts, as presented in Figure 3.1 below, to allow images of higher resolution to be furnished for review. The Lotsearch Aerial Photography Reports are presented in Appendix D.

Figure 3.1 Project Index Map (per Lotsearch)



An interpretive summary of the aerial photographs reviewed is provided in Table 3.1 to Table 3.4 below. Targeted inspection locations that were identified as part of the aerial imagery reviews or during the 2-day site inspection are referenced throughout these tables (denoted as 'TLXX'). Further details regarding what was observed at each targeted location are presented in Section 4 and Appendix E.

Table 3.1 – Review of Historical Aerial Photographs – Part 1 (NPA)

Year	Comments
1938 (two parts)	<p>This black and white image is of reasonable quality.</p> <p>Most of the NPA is covered with sparse established trees. A natural escarpment and creek bed is visible along the southern edge (later the area that becomes part of the coal mine).</p> <p>Several cottages or houses are visible, including those referenced as Target Locations TL11 and TL14 on the southern and southeastern side of the NPA. A shed or other small structure and some access tracks near the current day dams on the western end of current day dams (TL22) are also visible, as well as two small sheds (TL17 and TL19) to the east of the northern access point on Limestone Road.</p> <p>There is also some evidence of soil disturbance or possible shallow mining activities to the east and west of the current-day Limestone Road (TL16 and TL23), with an obvious track running onto the site from the current day Limestone Road entry way before heading in a southeast direction to the southern side of the NPA.</p>
1953	<p>This image shows very few observable changes from the 1938 image, although the structure(s) at TL22 near the dams on the western side of the NPA as well as the previously observed land disturbances are less obvious.</p>
1958	<p>This image shows very few observable changes on the NPA from the 1953 image.</p> <p>Evidence of some land clearing or shallow mining works is apparent on the southwestern corner of the NPA.</p>
1964	<p>This black and white image shows what appears to be a new structure(s) at TL22 near the dams on the western side of the NPA, some of which have now been constructed.</p> <p>A large area of land clearing, disturbance or stockpiling is apparent near the centre of the site (east of TL16). The rest of the NPA appears unchanged.</p>
1967	<p>This partial black and white image (southern part of the NPA only) indicates few significant changes when compared to the same portion of the 1964 image, although some minor ground disturbance works seem to be underway on the western side of the NPA (TL23), west of Limestone Road.</p>

Year	Comments
1972	<p>The area of land disturbance on the western side of the NPA (TL23) appears to have been extended all the way to the current location of Limestone Road. The small dam also appears to have been constructed adjacent to the northern end of Limestone Road.</p> <p>The first clear evidence of coal mining activity is also apparent around 1 km to the southeast of the NPA.</p>
1980	<p>This is the first colour image in the set.</p> <p>The house on the very northwestern corner of the NPA (TL20) is now evident. Sheds are also evident on the eastern side of the middle of Limestone Road (TL15). A new and larger structure/shed has been constructed to the east of the northern property entry point on Limestone Road (TL18). The shape and size of the house on the southeastern corner of the NPA have also changed (TL11) and more smaller outbuildings are evident on its southeastern side.</p>
1989	<p>A track following the alignment of the main transmission line running southwest to northeast across the NPA and some associated transmission line materials are now evident. Some additional small structures are evident near the dams on the western edge of the NPA (TL22).</p> <p>The coal mining operations have expanded to within 700 m of the southeastern edge of the NPA.</p>
1998	<p>This clear, coloured image shows additional buildings and garden fencing around the house on the very northwestern corner of the NPA (TL20). Evidence of a domestic waste dump on the southeastern side of the house (TL21) is now visible.</p> <p>Some small buildings or structures (TL13) were visible to the northeast and north of the former house on the southeast side of the NPA (TL11).</p> <p>The current day Limestone Road gravel track has now been established. The former road to the east of Limestone Road appears to be less trafficked now. The livestock shed and yards on the east side of Limestone Road between the former and new roads are now fully established.</p> <p>The main transmission line running southwest to northeast across the NPA now appears to have been completed.</p> <p>The coal mining operations have expanded considerably and are now within 200 m of the southeastern edge of the NPA. The quarrying site on the southwestern side of the site that utilises the western-most accessway to the NPA has also expanded.</p> <p>The groundwater bore and/or related infrastructure on the northern side of the NPA have also been installed.</p>

Year	Comments
2008	<p>This contrasted and sharp image shows an increase in new wooded vegetation across the NPA.</p> <p>The livestock shelter and yards on Limestone Road have now been removed (TL15) as well as the small structures near the north end of Limestone Road (TL17, TL18, TL19). The two houses on the southern side of the NPA (TL11 and TL14) have also been removed, although a smaller structure (possibly a shed) remains at TL11.</p> <p>The coal mining operation has expanded further and now shapes the southeastern boundary of the NPA. The quarrying site on the southwestern side of the site that utilises the western-most accessway to the NPA has also expanded further.</p>
2013	<p>This contrasted and sharp image shows a further increase in new wooded vegetation across the NPA.</p> <p>The smaller structure (possibly a shed) associated with the house at TL11 has now been removed.</p>
2023	<p>This image shows further wooded vegetation growth across the NPA.</p> <p>The house on the very northwestern corner of the NPA (TL20) also remains visible in this image.</p> <p>The portion of the coal mine adjacent to the southeastern boundary of the NPA has now been partially backfilled and rehabilitated. The quarry on the southwestern side of the NPA also appears to have ceased operation and has also been partially backfilled and rehabilitated.</p>

Table 3.2 – Review of Historical Aerial Photographs – Part 2 (CTLE)

Year	Comments
1938 (two parts)	<p>This black and white image is of reasonable quality.</p> <p>Most of the CTLE is covered with sparse established trees. Several gullies also intersect the CTLE.</p> <p>Some small buildings are also visible just west of the CTLE towards the section where the CTLE bends in a north and west direction.</p>
1953	<p>This image shows very few observable changes from the 1938 image, except for some small dams having been constructed near the southern end and northern ends.</p>
1958	<p>This image shows very few observable changes from the previous images.</p>
1964	<p>This partial image (northwestern section of the CTLE only). Very few observable changes are apparent from the previous images.</p>

Year	Comments
1967	This partial black and white image (small section of the NTLE not shown) indicates some additional infrastructure just west of the CTLE towards the section where the CTLE bends in a north and west direction.
1972	<p>This image shows very few observable changes on the CTLE from the previous images.</p> <p>The first clear evidence of coal mining activity is now apparent around 150 m to the west and 500 m southwest of the CTLE.</p>
1980	<p>This is the first colour image in the set.</p> <p>Very few observable changes can be seen on the CTLE from the previous images.</p>
1989	<p>A haul road now crosses the centre of the CTLE from the mining operations to a large tailing dump to the immediate east of the CTLE.</p> <p>The coal mining activity has also expanded significantly along the western side of the CTLE.</p> <p>High voltage overhead transmission lines are now visible along the southern portion of the CTLE.</p>
1998	<p>This clear, coloured image shows realignment of the haul road within the CTLE.</p> <p>A small structure is visible in the westernmost section of the CTLE (TL12) on the north side of a gully.</p> <p>The coal mining activity has also expanded significantly along the western side of the CTLE and now defines most of its western side. The small structures on the western side of the CTLE have now been removed (due to the expansion of the mine footprint).</p>
2008	<p>This contrasted and sharp image shows further expansion of the coal mine, which now defines the entire western and southern sides of the CTLE.</p> <p>The large tailing dump to the immediate east of the CTLE now appears to have ceased operation.</p> <p>An earth wall (understood to be a creek diversion) is visible at the bend in the CTLE.</p>
2015	Very few observable changes can be seen on the CTLE from the previous image.
2023	<p>This image shows some small, wooded vegetation growth across the CTLE.</p> <p>The portion of the coal mine adjacent to the northern section of the CTLE has now been partially backfilled and rehabilitated.</p>

Table 3.3 – Review of Historical Aerial Photographs – Part 3 (Northern section of the SPA and the WTLE)

Year	Comments
1938	<p>This black and white image is of reasonable quality.</p> <p>Most of the SPA is covered with sparse established trees. The existing creek bed and some gullies to the east are visible.</p> <p>The rail easement (TL2), leading from what appears to be a small mining operation around 400 m northwest of the SPA is also evident.</p>
1953	<p>An earth wall or surface water diversion berm is now visible to the west of the rail easement, along with an access road on its western side. A small structure is now visible at the location of the woolshed (TL4).</p>
1958	<p>This image shows very few observable changes on the NPA from the 1953 image, other than the woolshed (TL4) now appearing to have been constructed to its current size and some additional farm access tracks being visible.</p> <p>An access track to the top of the Skellatar Hill (site of the nearby telecommunications tower) that crosses the WTLE has now also been constructed.</p>
1967	<p>The two small dams have now been constructed near the northern end of the rail easement on the SPA. Some evidence of land clearing and possible cropping are apparent around the middle of the SPA.</p>
1972	<p>Very few observable changes can be seen in this section of the SPA from the previous image, although there is less clear evidence of some presumed cropping activity near the middle of the SPA.</p> <p>The mining activity to the north of SPA seems to have expanded slightly.</p>
1980	<p>This is the first colour image in the set.</p> <p>A small structure is clearly visible to the east of the woolshed (TL5), although it may be present in the 1972 image as well. High voltage overhead transmission lines are also evident on the eastern side of the SPA.</p>
1989	<p>Very few observable changes can be seen on this section of the SPA from the previous image.</p> <p>The coal mining operations to the north of the SPA have continued to expand – mostly in a northerly direction.</p>

Year	Comments
1998	<p>The existing mine access road and roadside laydown area (proposed location of the Facilities Area – TL10) have now been constructed.</p> <p>The cattle yards have been constructed near the rail easement (TL1).</p> <p>Two moderate sized dams have been constructed to the north of the mine access road.</p> <p>The coal mining operations to the north of the SPA have continued to expand – mostly in a northerly direction.</p>
2008	<p>This contrasted and sharp image shows very few observable changes in this section of the SPA from the previous image.</p> <p>The small structure to the east of the woolshed (TL5) is no longer visible, however.</p>
2015	<p>This sharp, coloured image shows very few observable changes in this section of the SPA from the previous image.</p>
2023	<p>This sharp, coloured image shows very few observable changes in this section of the SPA from the previous image.</p>

Table 3.4 – Review of Historical Aerial Photographs – Part 4 (Southern section of the SPA)

Year	Comments
1938	<p>This black and white image is of reasonable quality.</p> <p>Most of the SPA is covered with sparse established trees. The existing north-south oriented creek bed and some gullies to the east of it are visible.</p> <p>The rail easement (TL2) traverses a short section of the northwestern side of this portion of the SPA.</p>
1958	<p>This image shows very few observable changes in this section of the SPA from the 1938 image, other than a small section of land at the very southern end which appears to have been cleared for cropping.</p>
1967	<p>Some additional land clearing at the northern end for what appears to be cropping is evident.</p> <p>The large shed on the very southwestern corner of the SPA has now been constructed (TL7).</p> <p>The first evidence of the cattle yards to the east of the main access road (TL8) can be seen.</p> <p>A small structure also appears to be present near an access track at the southern end of the SPA (TL9).</p> <p>A small dam has been constructed within a gully on the eastern side of the SPA.</p>

Year	Comments
1970	<p>Very few observable changes can be seen in this section of the SPA from the previous image, although there is less clear evidence of the presumed cropping activity near the middle of the SPA.</p> <p>The cattle yards (TL8) seem to have expanded slightly.</p>
1980	<p>This is the first colour image in the set.</p> <p>The small structure near an access track at the southern end of the SPA (TL9) is no longer visible.</p> <p>High voltage overhead transmission lines are now evident on the eastern side of the SPA.</p>
1989	<p>Very few observable changes can be seen on this section of the SPA from the previous image.</p> <p>Some development is evident on the southern side of the railway and Muscle Creek Road to the south of the SPA.</p>
1998	<p>The existing mine access road and overhead transmission lines to its immediate west that essentially bisect the SPA, as well as roadside laydown area (proposed location of the Facilities Area – TL10) have now been constructed.</p>
2008	<p>This contrasted and sharp image shows very few observable changes in this section of the SPA from the previous image.</p> <p>The large shed on the very southwestern corner of the SPA (TL7) seems to be missing a section of roof on its west side.</p>
2015	<p>This sharp, coloured image shows very few observable changes in this section of the SPA from the previous image.</p>
2023	<p>This sharp, coloured image shows very few observable changes in this section of the SPA from the previous image.</p>

4 Site Inspection

4.1 Site Inspection Methodology

Within the wider 482-hectare 'Project Area', most of the site inspection 'effort' targeted the 318-hectare 'Development Footprint', which is the maximum area of land disturbance allowed as part of the solar farm development and ongoing operation.

4.1.1 Pre Inspection Features of Interest Reviews

Aerial photographs were provided as part of the Lotsearch Enviro Pro report, which date back to 1938 for the project area. Using these aerial photographs as well as Google Earth Imagery, a list of key site features was produced so that specific areas of the site could be targeted during the 2-day site inspection. Features of particular interest included:

- Houses and sheds, particularly those that were observed to be present or modified over several images.
- Areas where soil disturbance, stockpiling or rubbish dumping were evident or suspected.
- Gully heads where erosion was likely or evident, as these often represent opportune locations for building waste or other solid waste to be dumped.
- Stockyards, where dips or other more intensive chemical storage or use may have occurred.
- Miscellaneous small structures, which may have been constructed using asbestos containing materials or were used for chemical storage.
- Rail easements, particularly where there was potential for loading/unloading activities to have occurred at rail sidings.
- Areas of different or absent vegetation, which could have been caused by soil disturbances or other potentially contaminating related activity conducted between available aerial images.

4.1.2 Physical Inspection Works

During the 2-day site inspection, the pre-inspection list of targeted locations was used to prioritise locations across the site where potential contamination sources were most likely to be encountered. In addition, a 'broad coverage' approach was also adopted, whereby the more heavily wooded areas, gullied creek banks or disturbed soil areas were driven through or walked, with the intent of achieving general site coverage over the allocated time.

During the inspection of targeted locations, potential or likely contamination was deemed to have been identified when:

- Pieces of fibre cement sheeting were observed (probable asbestos containing materials).

- Bottles, cans, tins or drums that presumably contained or once contained chemicals/potential contaminants were found.
- Dumped or partly buried anthropogenic waste materials that were unable to be properly inspected were identified, including concrete, building materials, old tyres or other miscellaneous solid waste products.
- Other evidence of possible or probable contamination was identified, such as oil staining on the loading ramp of the cattle yards where termite treatment agents may have been applied.

4.2 Site Inspection – General Observations

The site inspection was completed by Renewal EC on 26 and 27 March 2025. There were no specific access restrictions due to inclement weather impacts or declared 'no-go zones', and the site was generally easily traversed where required, either by driving and/or walking.

During the inspection of parts of the site (namely the narrow easement connecting the northern and southern areas of the eastern side of the mine as well as the northeastern portion of the southern area), Rod Gallagher from Muswellbrook Coal Company Ltd (MCC) helped to provide safe passage or local access knowledge, but the inspection was always given 'full right of access'.

Key site observations made during the 2-day site inspection are presented in the following Sections. Selected photographs from the site inspection are presented in Appendix F.

4.2.1 Southern Project Area

The Southern Project Area ('SPA') was inspected on 26 March.

- The SPA mostly comprises slightly undulating to relatively flat grazing land, which slopes and drains towards Muscle Creek on its southern boundary.
- The WTLE branching from the northwestern side of the SPA included some much steeper terrain, influenced mainly by Skellatar Hill to the west where a local telecommunication network tower is located.
- A gullied creek passes from north to south along the western side of the SPA, with other minor drainage lines branching off it to the east towards the northern end of the SPA.
- Tall grasses and weeds along with sparsely wooded areas and occasional large established trees were commonly found across the SPA.
- Clearly fenced and demarcated paddocks were also commonplace across the SPA, along with several small livestock watering dams.
- The main access road to the operating coal mine basically bisects the SPA. This road appears well maintained and is asphalt paved across the entire length that passes through the SPA.

- Various electrical transmission lines pass through the SPA; however, no evidence of large ground-based substations was observed.
- A former railway easement runs north-south across the SPA from the northernmost part of the SPA.
- The former or existing structures, or other features of interest that were targeted for more detailed inspection in the SPA included:
 - The cattle yards near the northern entry to the SPA.
 - The former rail easement, running north-south across the SPA.
 - The disused woolshed.
 - A small structure/shed observed on aerial photographs, located around 60 m east of the disused woolshed.
 - A small broken wooden structure around 100 m west of the woolshed.
 - A small structure observed on aerial photographs, located around 200 m northeast of the disused woolshed.
 - Some gullies on the creek running north to south, as well as some of the gullies running in from the northeast side of the SPA.
 - A large shed on the very southwestern corner of the SPA, where drilling core trays were being stored.
 - A possible structure located around 700 m north-northeast of this large shed on the same side of the main access road.
 - Cattle yards and some livestock shelter sheds around the centre of the portion of the SPA east of the main access road.
 - An existing power pole with a small transformer located around 700 m south-southeast of these cattle yards.
 - A small structure or shed observed on aerial photographs, located 750 m south of these cattle yards.
 - The former roadside laydown area where the solar farm facilities area is to be located.

4.2.2 Central Transmission Line Easement

The Central Transmission Line Easement ('CTLE') was traversed and inspected from the vehicle on the morning of 27 March 2025.

- The CTLE rises relatively steeply from the south to north, with its highest point just east of the northeastern corner of the former coal mine 'Pit 2'.
- Sparse to moderately dense scrubby trees were observed along the majority of the CTLE.

- The CTLE is traversed by an already established overhead transmission line.
- Evidence of overburden material mounding from historic mining activities was observed during the traverse of the CTLE.
- The only former or existing structure of interest that was targeted for more detailed inspection was a small shed or structure located near a small dam on the northwesternmost end of the CTLE in one of the aerial images reviewed.

4.2.3 Northern Project Area

The Northern Project Area (NPA) was inspected on 27 March.

- The NPA comprises slightly undulating grazing land, which mostly slopes and drains towards the north and northwest boundary.
- A large part of the southern side of the NPA is fringed by the now rehabilitated portion of the Muswellbrook Coal Mine known as Pit 2.
- Some minor gullies were observed across the NPA, but most were relatively shallow with no significant erosion at the gully heads.
- Interspersed tall grasses and weeds along with sparsely and occasional, densely wooded areas covered the entire NPA.
- The NPA was secured to the north by a well maintained but standard height (1.2 m) agricultural strained wire fence.
- Clearly fenced and demarcated paddocks were also commonplace across the NPA, along with several small livestock watering dams.
- The main access roads included a well-established gravel track along the southern edge of the NPA, and Limestone Creek Road running north-south off Sandy Creek Road on the northern boundary. Other minor gravel tracks and transmission line inspection tracks were also evident.
- Various electrical transmission lines pass through the NPA; however, no evidence of large ground-based substations was observed within the NPA.
- A large groundwater extraction well and associated pumping equipment that includes a small electrical substation was located to the immediate north of the NPA. This feature was located on the down-gradient side of the NPA.
- A second bore pump along with three poly water storage tanks were located on the southern boundary of the NPA, immediately adjacent to the edge of the rehabilitated coal mine.
- The former or existing structures, or other features of interest that were targeted for more detailed inspection in the NPA included:
 - A former house on the southeastern side of the NPA that was visible in aerial photographs, which has been recently demolished.

- Several small structures/sheds observed on aerial photographs near the former house on the southeastern side of the NPA.
- A former house on the southern side of the NPA that was visible in aerial photographs that has since been demolished.
- Some stockyards and associated sheds (possibly stables) on the east side of Limestone Creek Road that were observed on aerial photographs.
- A densely wooded area to the northeast of these former sheds and yards where some minor ground disturbance was observed in aerial photographs.
- Three small structures or sheds observed in aerial photographs, located around 100 m southeast of the main access gate on the northern end of Limestone Creek Road.
- Various areas of disturbed soil observed on aerial photographs to the west of Limestone Creek Road.
- A former house, associated outbuildings, and waste dump sites on the far western side of the NPA that was visible in aerial photographs. This house recently burned down, prior to being demolished and removed.
- The dam network on the far western side of the NPA.

4.3 Contamination Related Findings

As a result of the aerial photography reviews and the 2-day site inspection, a total of 25 discrete locations or features were inspected and/or documented as locations of potential interest ('Target Locations') in relation to site contamination. Based on the inspection findings:

- Thirteen were considered as not requiring any further direct assessment or contamination-management-related action, post inspection.
- Two were of low concern only, which could be managed directly as part of the pre-development site preparation (structure removal works).
- Nine were considered to need some basic contamination management action prior to the development works, with a small possibility of additional assessment and localised sampling (mostly locations where suspected asbestos cement sheeting was visible on the soil surface).
- One location was considered to need cleanup and assessment prior to the development works being undertaken.

A table listing the AMG coordinate (approximated using Google Earth and/or the 'Commander Compass Go' smartphone application) and other feature-of-interest specific information is presented in Appendix E. For defining the relative degree of concern and recommended action that was required, the following colour scheme was adopted.

Table 4.3 Contamination Management Requirement - Colour Coding System

Level of Contamination Observed	Colour Coding
No observed contamination or obvious sources requiring further assessment or management.	No Observed Impact. No Further Action Recommended
Low level or localised impact observed or expected.	Low/Limited Impact or Concern. Action During Development Works.
Sources of contamination observed or likely.	Contamination Management Action Advised Pre Development
Contamination sources observed.	Contamination Management Action Required Pre Development

4.4 Nature of Observed/Potential Contaminants and Waste Products

The nature of contamination observed or reasonably suspected during the site inspection, along with other waste products that should be managed during the site development works included the following:

4.4.1 Asbestos Containing Materials (ACM)

- Pieces of broken cement sheeting were observed at several of the investigated locations where former houses and/or other smaller buildings were evident in aerial photographs or observed during the site inspection.
- Although no analysis was undertaken as part of this PSI to verify that any of the suspected asbestos containing materials (ACM) were ACM, previous assessment and clean-up works at the site confirmed the presence of ACM at some of the same locations that were inspected.

4.4.2 Chemical Tins, Bottles and Drums

- Various sized chemical containers were observed at several locations.
- In one location on the NPA (TL16), several 200 L drums were discovered in a small waste dump, which appeared to have once contained and possibly leaked a tarry substance.
- None of the contents of any of these vessels was inspected or tested as part of this preliminary (non-intrusive) site investigation.

4.4.3 Wood Treatment Products and Practices

- Some apparent oil staining was observed on the lower sections of the loading ramp of the cattle yards on the eastern side of the SPA.
- While the chemical constituents of the staining compound are not known, the relative extent of impact caused by what may have been a termite control practice is unlikely to be widespread, and most likely contained within the ramp structure itself.

4.4.4 Building Waste Products

- Solid waste in the form of small piles of bricks or larger concrete pieces were observed at two locations.
- While the visible building waste products may not represent a source of contamination that contains toxins or other chemical constituents of concern, they still represent waste that should be removed or more appropriately utilised. Stockpiles of building waste like this could also potentially harbour other waste products that could be a greater risk to human health and the environment, such as ACM or covered chemical containers as an example.

4.4.5 Tyres and Miscellaneous Anthropogenic Materials

- Randomly placed old tyres were observed at several locations during the site inspection.
- Old posts from partially removed or damaged fences as well as wire and other general farm security materials were also observed in several locations.

5 Contamination Management Requirements

5.1 Potential Contaminants of Concern

Based on the known or expected previous site activities as well as the nature of the potential/expected contamination sources identified during the 2-day site inspection, the following potential contaminants of concern were identified:

- Asbestos containing materials (ACM) in a bonded (cement sheeting) form only.
- Total Recoverable Hydrocarbons (TRH) – most notably from drums dumped at the site.
- Organochlorine and organophosphate pesticides - from pest control measures likely utilised around sheds and stockyards.
- Miscellaneous solid waste products observed at the site, including concrete, old tyres and other waste materials that should be removed as part of the site development works and as good environmental or 'housekeeping' practice.

Based on the observations made during the site inspection, the likelihood of encountering any of these contaminants in significant quantities or concentrations at the site appears low. Nevertheless, where sources of these contaminants or substances are observed or reasonably expected, such a risk cannot and should not be discounted.

In locations where waste products and – particularly – drums were observed to have been dumped, the only way to discount the presence of any of the potential contaminants of concern would be to conduct a soil sampling investigation as part of the identified waste management and removal works, especially if leaks or spills were reasonably expected.

In evaluating any assessment (i.e., analytical) data obtained, the risk that any residual contamination poses would be considered in the context of the relatively sensitivity of the land use that is proposed. This is reflected in contamination assessment guidelines, such as the NEPM ASC 'Tier 1' contamination investigation and screening levels, which would typically be referenced for the evaluation of detected contamination levels, if required.

5.2 Notification Requirements

The NSW EPA *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (September 2015) provides details on the accountabilities for managing contamination and the circumstances where contamination is significant enough to trigger the requirement to notify the EPA.

To assess whether the contamination of a site should be reported, a review of the site's activities and history, and a site inspection to look for indicators of contamination should be (and was) undertaken. Such an inspection of the site and its surrounds provides physical indicators of contamination or harm.

Listed examples of indicators of contamination (which were considered during the recent site inspection) include:

- visible signs of toxic responses to contaminants in flora and fauna (for example, unusual numbers of birds dying on or near the site, abnormal domestic animal or wildlife behaviour, dead vegetation within or adjacent to areas of otherwise normal growth).
- liquid or solid chemicals or chemical wastes found on or in the soil during site works.
- unusual odours emanating from the soil.
- the presence or the storage of bulk liquid dangerous goods on the site with potential for leakage or spillage.
- the presence of illegal and/or uncontrolled landfills on site.
- evidence of off-site migration of contaminants into adjacent or nearby environments (for example, migration to residential areas, creeks, rivers, wetlands, sediments or groundwater).

Where further investigation of the land is necessary to assess whether contamination should be reported to the EPA, a site investigation should be conducted to:

- describe past and present activities that potentially contaminated the land
- identify potential contamination types
- assess the site condition
- assess the nature, degree and extent of the contamination
- assess whether any harm has been or is being caused by the contamination
- assess the possible exposure routes, exposed populations and the nature of other risk(s) presented by the contamination.

The investigation should then conclude whether the contamination must be reported to the EPA based on consideration of the notification triggers. The notification triggers most relevant to the findings from this investigation include:

- where (if) friable asbestos is present, the level of asbestos (% weight for weight) in an individual soil sample is equal to or above the health screening level of friable asbestos in soil (0.001%), and a person has been, or foreseeably will be, exposed to elevated levels of asbestos fibres by breathing them into their lungs.
- the contaminant has entered or will foreseeably enter groundwater or surface water and the concentration of the contaminant in the groundwater or surface water is, or will foreseeably be, above the groundwater investigation levels for that contaminant.

5.3 Contamination Management Options Considered and Implemented

At the conclusion of the 2-day site inspection, it was agreed that immediate action would be taken to remove the identified contamination sources and validate or clear each location using the services of a qualified and locally based occupational hygienist and/or specialist environmental consultant.

Kleinfelder Australia Pty Ltd (Kleinfelder) was hence engaged by MCC to undertake the supervision and removal of ACM and other waste from locations where contamination management action was advised or recommended predevelopment as part of this PSI. These field works were completed between 28 March and 16 April 2025, with copies of the two reports prepared and provided by Kleinfelder in relation to these works presented in Appendix G.

Although some additional locations outside those identified as part of this PSI were addressed during the work and subsequent reporting conducted by Kleinfelder, it is evident that:

- A reasonable, practical and expedient approach to evaluating and remediating those locations where contamination management action was advised or recommended was taken.
- There was no evidence of contamination levels or types that exceeded EPA notification triggers.
- All subject locations were evidently remediated and validated in accordance with the requirements of the applicable guidelines to a standard in keeping with the proposed development.

5.4 General Waste Management

According to the consent prepared for the project by DPHI (Condition B34):

The Applicant must:

- (a) minimise the waste generated by the development;*
- (b) classify all waste generated on site in accordance with the EPA's Waste Classification Guidelines 2014 (or its latest version);*
- (c) store and handle all waste on site in accordance with its classification;*
- (d) not receive or dispose of any waste on site; and*
- (e) remove all waste from the site as soon as practicable, and ensure it is reused, recycled or sent to an appropriately licensed waste facility for disposal.*

Through the adoption of these protocols, it is considered that all miscellaneous waste products identified within the development footprint (including tyres and other miscellaneous building materials not otherwise addressed according to the information

discussed in the previous section) will be appropriately managed during future works as part of the solar farm construction and operation.

5.5 Unexpected Finds Protocol

Although the site inspection conducted as part of this PSI found waste products within the development footprint that have been dealt with, there is potential that other waste material or residual contamination finds may occur during future works as part of the solar farm construction and operation.

As a result, it is understood that an unexpected finds protocol will be developed for construction, operation and decommissioning works, which will include procedures to identify potentially contaminated land, such as:

- the observation of discolouration or staining of soils
- visible signs of plant stress, presence of drums or other waste material (including ACM)
- stockpiles, fill material or odours.

If a potential source of contamination is identified, work within the affected area will cease until an assessment is completed to advise on the need for further investigation or remediation.

6 Conclusions

Renewal EC completed this PSI of the proposed Muswellbrook Solar Farm Project Site, prior to development works.

The key environmental aspects of the site are summarised as follows.

- Most of the site appears to have been used for agricultural grazing purposes. The site also includes a small area of rehabilitated mining area where the internal overhead transmission line connects the northern and southern sections of the site.
- There were several probable contaminating activities or source areas identified during the site history and related agency searches for the site and surrounding areas.

Based on the known or expected previous site activities, the following potential contaminants of concern were identified:

- Asbestos containing materials in a bonded (cement sheeting) form only.
- Total Recoverable Hydrocarbons (TRH) – most notably from drums discovered in a small waste dump at the site.
- Organochlorine and organophosphate pesticides - from pest control measures potentially utilised around sheds and stockyards.
- Miscellaneous solid waste products observed at the site, including building waste and old tyres, which should be removed as part of the site development works.

The probable contaminating activities or contamination source areas identified during the 2-day site inspection included:

- Two areas of low concern that could be managed directly as part of the pre-development site preparation work:
 - A small solid waste dump on the NPA (target location 'TL13')
 - Some treated timber posts on a cattle yard on the SPA (target location 'TL08').
- Nine areas where some basic contamination management action is required prior to the development works, with a small possibility of additional assessment and localised sampling (mostly locations where asbestos cement sheeting was visible on the soil surface).
- One location that will require cleanup and assessment prior to the development works being undertaken (a small drum waste dump along with some other dumped buildings materials and miscellaneous rubbish in the NPA).

Since the completion of the PSI site inspection, all locations where possible or probable sources of contamination identified during this PSI were addressed under the supervision of appropriately qualified environmental professionals. On this basis, there are no further immediate recommended actions in relation to contaminated land assessment or

management. It can therefore be stated with a reasonable level of confidence that the project site is suitable for the proposed development and land use.

If any other waste material or residual contamination finds occur during future works as part of the solar farm construction and operation, it is understood that an unexpected finds protocol will be developed for construction, operation and decommissioning works, which will include procedures to identify and manage potentially contaminated land.

7 References

EMM Consulting Pty Limited (2023) *Muswellbrook Solar Farm Environmental Impact Statement*

Kleinfelder Australia (2025) *MCC Buffer Lands - Waste Classification, Muswellbrook Coal Mine, Muscle Creek Road, Muswellbrook, NSW, 2333*

Kleinfelder Australia (2025) *Visual Clearance and Inspection Report - Buffer Lands: Muswellbrook Coal, Muscle Creek Road, Muswellbrook, NSW, 2333*

National Environment Protection Council (NEPC) (1999) *National Environment Protection (Assessment of Site Contamination) Measure (as amended 2013)*

NSW (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*

NSW EPA (2020) *Consultants reporting on contaminated land Contaminated Land Guidelines*

NSW Government (1997) *Protection of the Environment Operations (POEO) Act 1997 - No 156 (Current version for 2 March 2025)*

8 Disclaimer & Limitations

This report has been prepared by Renewal Environmental Consulting Pty Ltd ('Renewal EC') for the sole benefit of addressed recipient/s and their direct agents. This report should not be relied upon for any other purpose without Renewal EC's prior written consent. Renewal EC accepts no responsibility or liability in any way whatsoever for reliance on this report for any purpose other than that defined within the report.

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If further information becomes available, or additional assumptions need to be made, Renewal EC reserves its right to amend this report.



Appendix A

Site Location and General Features Plan



Imagery from Google Earth –
Image Date October 2024

Approx Scale (m)

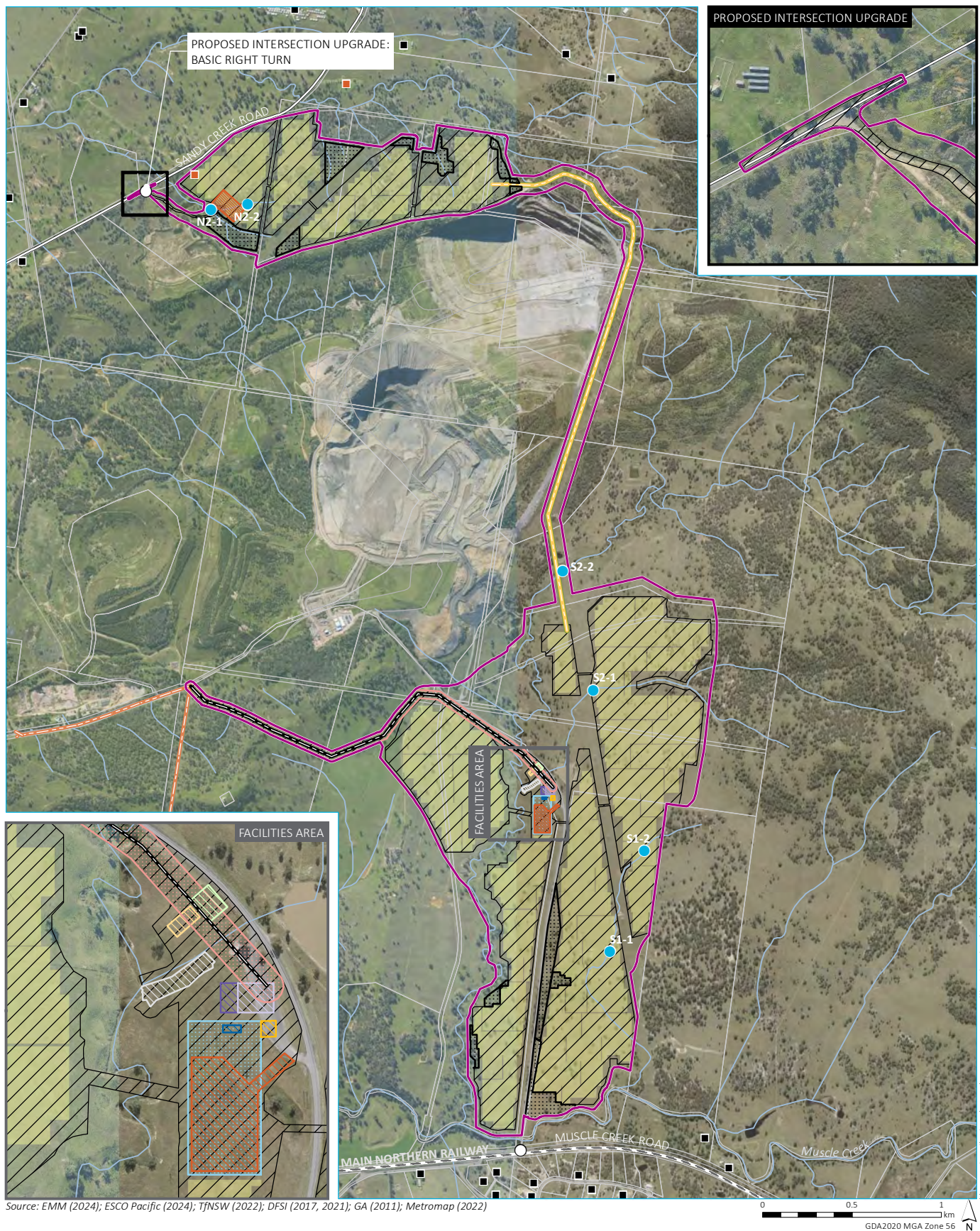
0 500 1000

Client	OX2
Project #	RECP212
Drawn By	AWL
Original Size	A4
Date	6/04/2025



Appendix B

Proposed Development Plan



KEY

 Project area	 Existing transmission line (132 kV)	 Diversion channel
 Site access	 BESS (Battery Energy Storage System)	 Existing environment
● Potential watercourse crossing	 BESS Collection Station	 Rail line
■ Associated dwellings	 Car Park	 Major road
■ Dwellings not associated with the project within 5 km	 Connection internal north to south buffer	 Minor road
 Development footprint	 132 kV connection to 95M buffer	 Watercourse/drainage line
 Indicative panel layout	 Laydown	 Cadastral boundary
 Biodiversity exclusion area	 O&M	
 Connection route	 Switchyard	
 132 kV connection to 95M	 Transformer Substation	
 Internal connection route (33 kV)		

Overview of project

Muswellbrook Solar Farm
Submissions Report
Figure 1.2





Appendix C

Lotsearch Enviro Pro Report



LOTSEARCH

LOTSEARCH ENVIRO LITE

Date: 24 Mar 2025 16:31:47

Reference: LS076934 EL

Address: Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

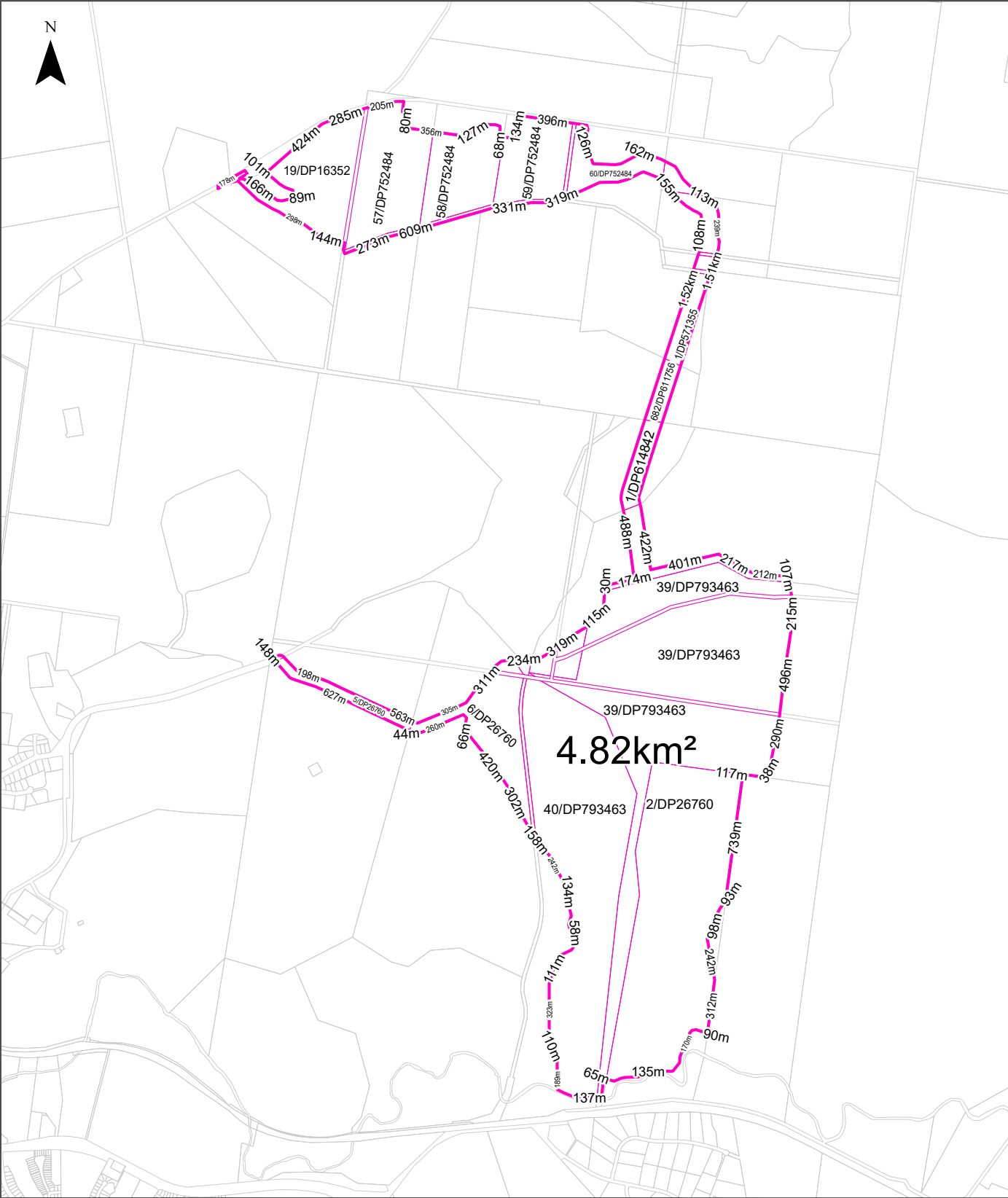
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Customer Service - Spatial Services	07/03/2025	07/03/2025	Monthly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	21/05/2024	21/05/2024	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority NSW	07/03/2025	11/12/2024	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority NSW	07/03/2025	07/03/2025	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority NSW	21/02/2025	14/07/2021	Quarterly	1000m	0	0	0
Notices under the POEO Act 1997	Environment Protection Authority NSW	20/02/2025	20/02/2025	Monthly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	29/04/2024	29/11/2022	Annually	1000m	0	0	4
National Liquid Fuel Facilities	Geoscience Australia	16/10/2024	19/01/2023	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority NSW	21/02/2025	05/02/2025	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Australian Department of Defence	05/03/2025	28/10/2024	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Australian Department of Defence	05/03/2025	28/10/2024	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	05/03/2025	05/03/2025	Monthly	2000m	0	0	0
Defence Controlled Areas	Australian Department of Defence	23/01/2025	23/01/2025	Quarterly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Australian Department of Defence	18/02/2025	02/09/2022	Quarterly	2000m	0	0	0
National Unexploded Ordnance (UXO)	Australian Department of Defence	23/01/2025	23/01/2025	Quarterly	2000m	0	0	1
EPA Other Sites with Contamination Issues	Environment Protection Authority NSW	28/11/2024	15/12/2022	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority NSW	13/03/2025	13/03/2025	Monthly	1000m	2	3	6
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority NSW	13/03/2025	13/03/2025	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority NSW	13/03/2025	13/03/2025	Monthly	1000m	5	5	5
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	0	0
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	19	19
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	0	0
Points of Interest	NSW Department of Customer Service - Spatial Services	18/02/2025	18/02/2025	Quarterly	1000m	0	0	10
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	18/02/2025	18/02/2025	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	18/02/2025	18/02/2025	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Customer Service - Spatial Services	21/02/2025	21/02/2025	Quarterly	1000m	7	9	16
State Forest	Forestry Corporation of NSW	18/12/2024	11/11/2024	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Geoscience Australia	17/04/2024	19/08/2019	Annually	1000m	2	2	2

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024	NSW Department of Climate Change, Energy, the Environment and Water	12/02/2025	28/06/2024	Quarterly	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	28/05/2024	20/06/2023	Annually	2000m	1	3	24
NSW Seamless Geology Single Layer: Rock Units	NSW Department of Primary Industries and Regional Development	17/05/2024	01/05/2024	Annually	1000m	7	8	11
NSW Seamless Geology Single Layer: Geological Boundaries and Faults	NSW Department of Primary Industries and Regional Development	17/05/2024	01/05/2024	Annually	1000m	6	7	24
NSW Seamless Geology Single Layer: Trendlines	NSW Department of Primary Industries and Regional Development	17/05/2024	01/05/2024	Annually	1000m	0	0	0
NSW Seamless Geology Single Layer: Fold Axes	NSW Department of Primary Industries and Regional Development	17/05/2024	01/05/2024	Annually	1000m	1	2	2
Naturally Occurring Asbestos Potential	NSW Department of Primary Industries and Regional Development	26/04/2024	14/03/2024	Annually	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	15/01/2025	17/02/2011	Annually	1000m	2	2	3
Soil Landscapes of Central and Eastern NSW	NSW Department of Climate Change, Energy, the Environment and Water	18/12/2024	27/07/2020	Annually	1000m	2	2	4
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Housing and Infrastructure	10/03/2025	14/02/2025	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	15/01/2025	21/02/2013	Annually	1000m	2	2	2
Dryland Salinity - National Assessment	Australian Bureau of Agricultural and Resource Economics and Sciences	03/06/2024	24/05/2024	Annually	1000m	1	1	1
Mining Subsidence Districts	NSW Department of Customer Service	21/02/2025	21/02/2025	Quarterly	1000m	1	1	1
Current Mining Titles	NSW Department of Primary Industries and Regional Development	04/03/2025	04/03/2025	Monthly	1000m	3	3	3
Mining Title Applications	NSW Department of Primary Industries and Regional Development	04/03/2025	04/03/2025	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Primary Industries and Regional Development	04/03/2025	04/03/2025	Monthly	1000m	12	16	17
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Housing and Infrastructure	10/03/2025	08/09/2023	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Housing and Infrastructure	10/03/2025	21/02/2025	Monthly	1000m	3	4	20
Commonwealth Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	21/02/2025	17/12/2024	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Housing and Infrastructure	10/03/2025	21/02/2025	Monthly	1000m	0	1	2
Bush Fire Prone Land	NSW Rural Fire Service	20/03/2025	10/01/2025	Monthly	1000m	3	3	3
NSW Native Vegetation Type Map	NSW Department of Climate Change, Energy, the Environment and Water	26/02/2025	08/11/2024	Quarterly	1000m	66	97	290
Ramsar Wetlands of Australia	Australian Department of Climate Change, Energy, the Environment and Water	16/05/2024	11/04/2024	Annually	1000m	0	0	0
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Terrestrial	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	19/06/2024	Annually	1000m	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Marine	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	30/06/2022	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	28/05/2024	28/05/2024	Annually	1000m	2	2	2
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	28/05/2024	28/05/2024	Annually	1000m	9	11	18
NSW BioNet Species Sightings	NSW Department of Climate Change, Energy, the Environment and Water	12/02/2025	12/02/2025	Monthly	10000m	-	-	-

Site Diagram

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Legend <div><div></div> Site Boundary</div> <div><div></div> Internal Parcel Boundaries</div>	Total Area: 4.82km ² Total Perimeter: 22.79km Disclaimers: Measurements are approximate only and may have been simplified or smaller lengths removed for readability. Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.	Scale: 0 150 300 600 900 1,200 1,500 Meters Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025 Coordinate System: GDA 1994 MGA Zone 56 Date: 24 March 2025
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Contaminated Land

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist	Direction
N/A	No records in buffer								

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Contaminated Land

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

EPA Notices

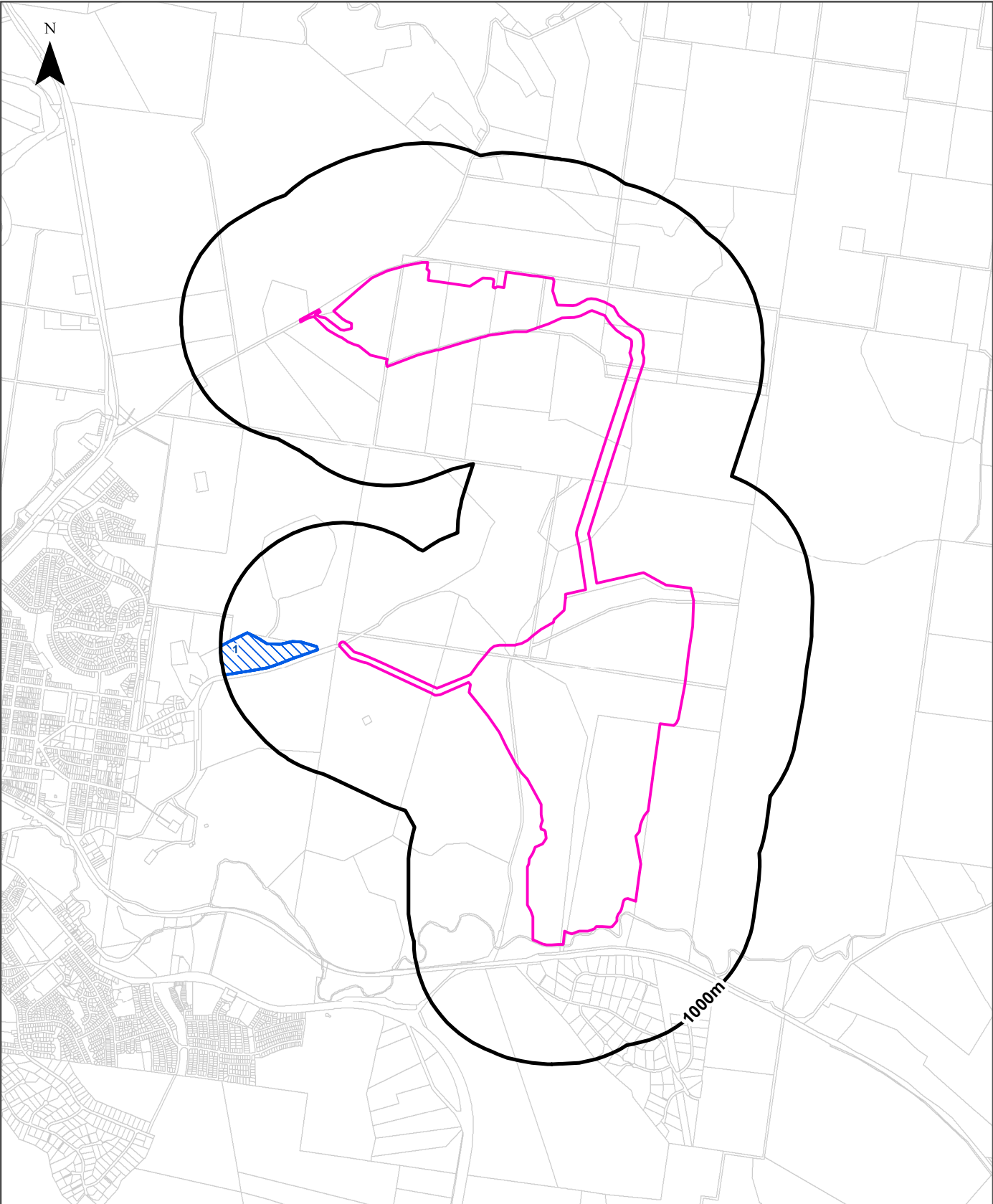
Penalty Notices, s.91 & s.92 Clean up Notices and s.96 Prevention Notices within the dataset buffer:

Map ID	Number	Type	Name	Address	Status	Issued Date	Act	Offence	Offence Date	Loc Conf	Dist	Dir
N/A	No records in buffer											

NSW EPA Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Legend

- █ Site Boundary
- ▨ Waste Management Facilities
- Buffer 1000m
- National Liquid Fuel Facilities
- Property Boundary

Scale:
0 100 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 2,200 2,400
Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 24 March 2025

Waste Management & Liquid Fuel Facilities

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

National Waste Management Facilities Database

Sites on the National Waste Management Facilities Database within the dataset buffer:

Map ID	Owner	Name	Address	Management Type	Facility Type	Status	Loc Conf	Dist	Dir
1	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE MANAGEMENT FACILITY	COAL ROAD, MUSWELLBROOK	DISPOSAL	LANDFILL – PUTRESCIBLE	OPERATIONAL	Premise Match	189m	West
	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE MANAGEMENT FACILITY	COAL ROAD, MUSWELLBROOK	DROP-OFF	TRANSFER STATION	OPERATIONAL	Premise Match	189m	West
	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE MANAGEMENT FACILITY	COAL ROAD, MUSWELLBROOK	REUSE	REUSE SHOP	OPERATIONAL	Premise Match	189m	West
	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE MANAGEMENT FACILITY	COAL ROAD, MUSWELLBROOK	RECYCLING	ORGANICS RECYCLING FACILITY	OPERATIONAL	Premise Match	189m	West

Source: Waste Management Facilities Database

Creative Commons 4.0 © Commonwealth of Australia (Geoscience Australia) 2022

National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia

Creative Commons 4.0 © Commonwealth of Australia

PFAS Investigation & Management Programs

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Map ID	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

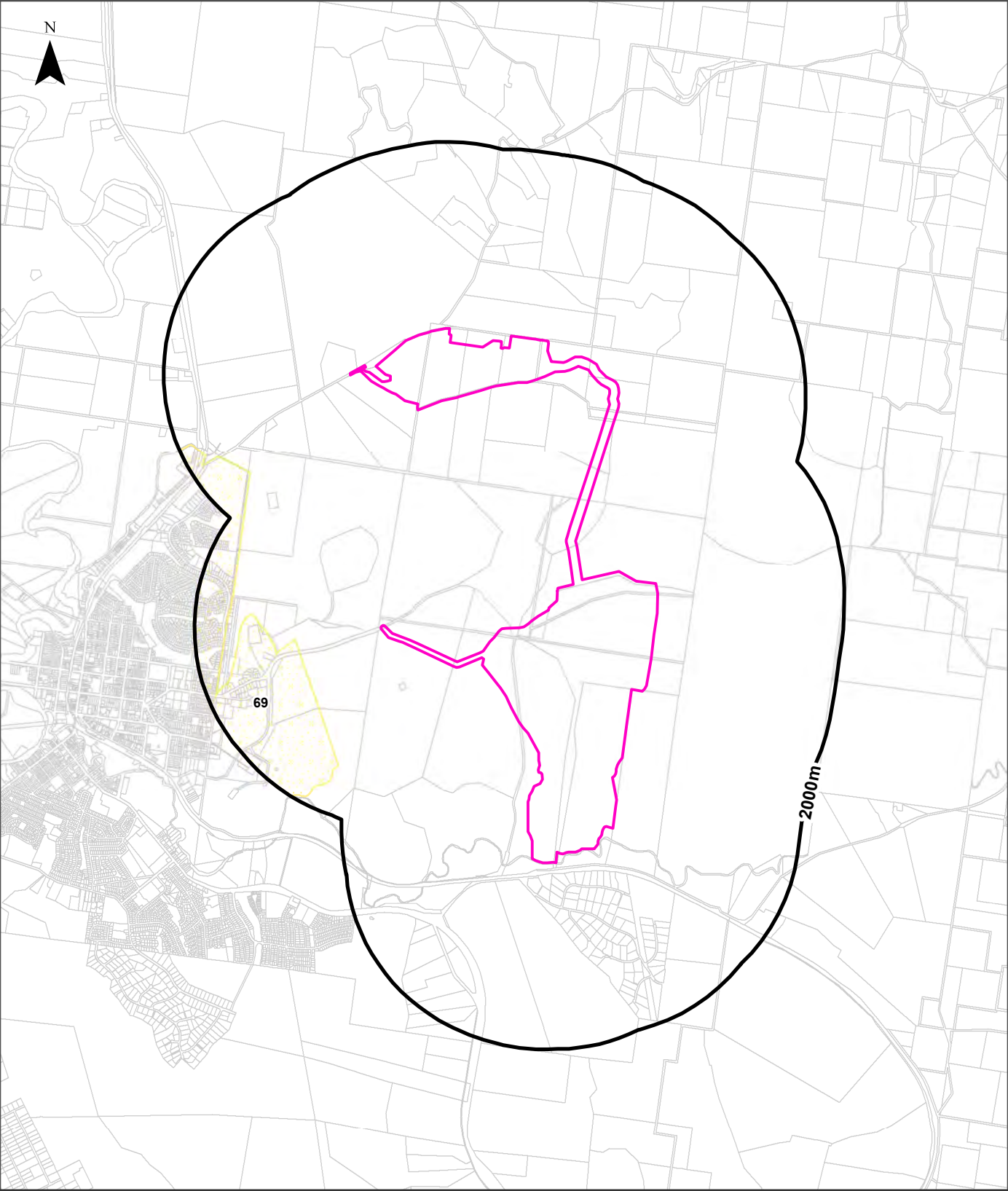
Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

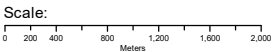
Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia



Legend			
Site Boundary	DCA	Defence 3 Year RCIP	UXO
Buffer 2000m	Defence Controlled Area	Known Contamination	Substantial Potential
Property Boundaries		No Known Contamination	Slight Potential
			Remote Potential
			Sea Dumping of Depth Charges
			Information
			Other
			Other Sea Dumping Sites



Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 24 March 2025

Defence Sites and Unexploded Ordnance

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Defence Controlled Areas (DCA)

Defence Controlled Areas provided by the Department of Defence within the dataset buffer:

Site ID	Location Name	Loc Conf	Dist	Dir
N/A	No records in buffer			

Defence Controlled Areas, Data Custodian: Department of Defence, Australian Government

Defence 3 Year Regional Contamination Investigation Program (RCIP)

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

National Unexploded Ordnance (UXO)

Sites which have been assessed by the Department of Defence for the potential presence of unexploded ordnance within the dataset buffer:

Site ID	Location Name	Category	Area Description	Additional Information	Commonwealth	Loc Conf	Dist	Dir
69	Muswellbrook	Other	This site was used as an advanced Ordnance Depot during WWII.		Not Commonwealth Land	As Supplied	910m	West

National Unexploded Ordnance (UXO), Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

EPA Other Sites with Contamination Issues

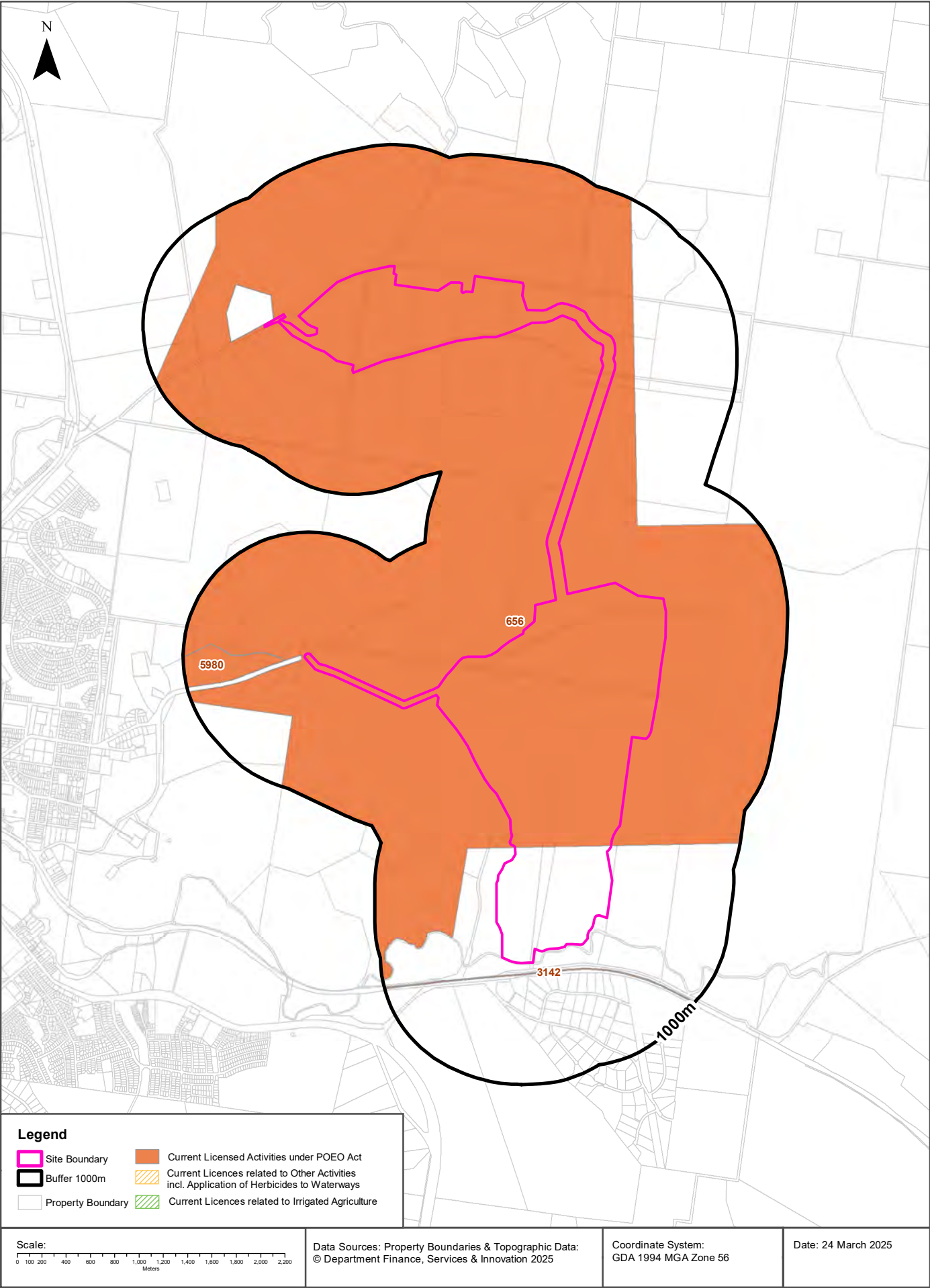
This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority



EPA Activities

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Licensed Activities under the POEO Act 1997

Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

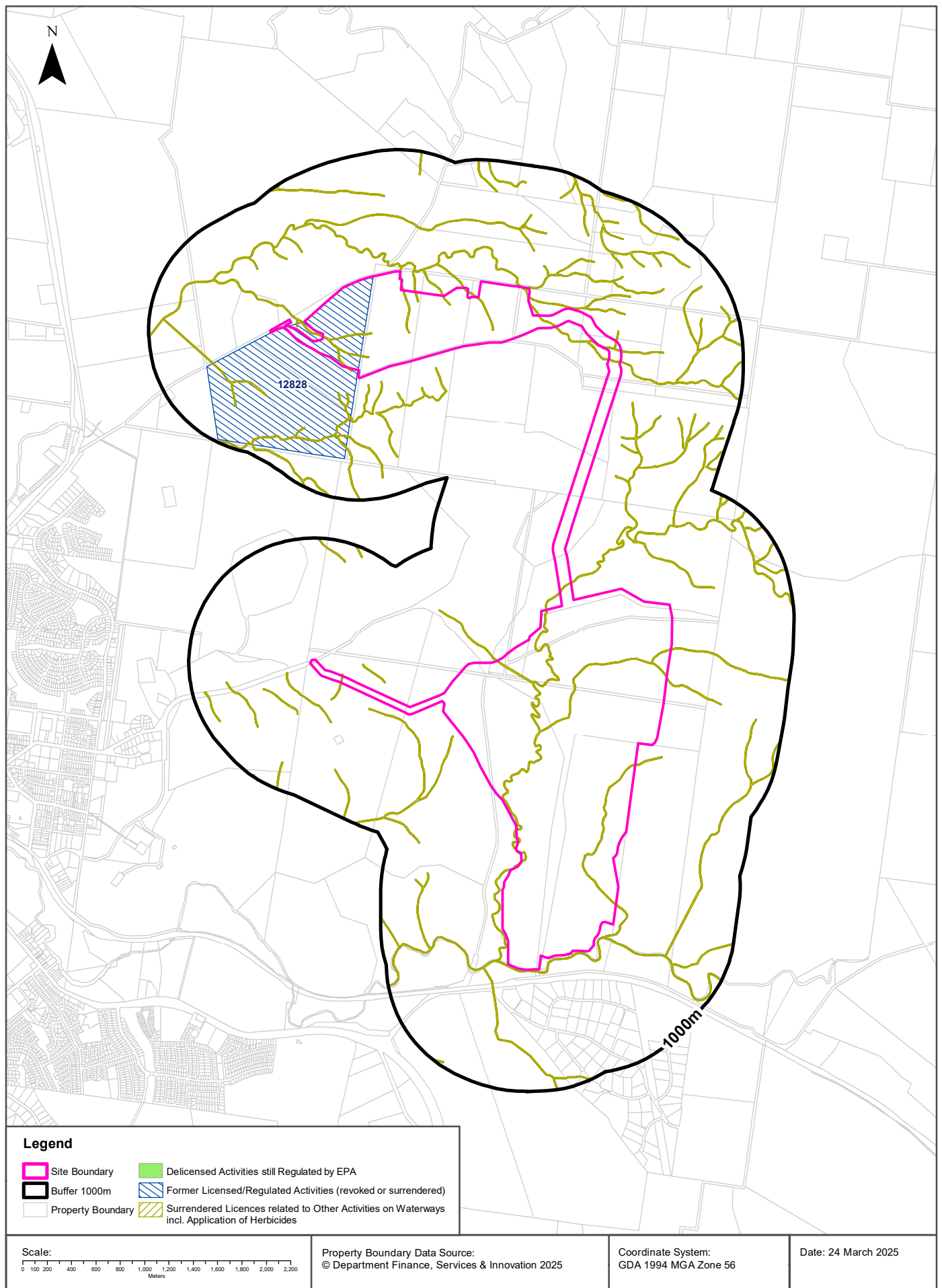
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
656	MUSWELLBROOK COAL COMPANY LTD	MUSWELLBROOK COLLIERY HOLDING	COAL ROAD	MUSWELLBROOK	Coal works	Area Match	0m	On-site
656	MUSWELLBROOK COAL COMPANY LTD	MUSWELLBROOK COLLIERY HOLDING	COAL ROAD	MUSWELLBROOK	Mining for coal	Area Match	0m	On-site
3142	AUSTRALIAN RAIL TRACK CORPORATION LIMITED		AUSTRALIAN RAIL TRACK CORPORATION (ARTC) NETWORK, SYDNEY, NSW 2001		Railway systems activities	Network of Features	85m	South
5980	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE & RECYCLE FACILITY	COAL ROAD	MUSWELLBROOK	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	189m	West
5980	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE & RECYCLE FACILITY	COAL ROAD	MUSWELLBROOK	Waste storage - other types of waste	Premise Match	189m	West
5980	MUSWELLBROOK SHIRE COUNCIL	MUSWELLBROOK WASTE & RECYCLE FACILITY	COAL ROAD	MUSWELLBROOK	Waste disposal by application to land	Premise Match	189m	West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



EPA Activities

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Delicensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

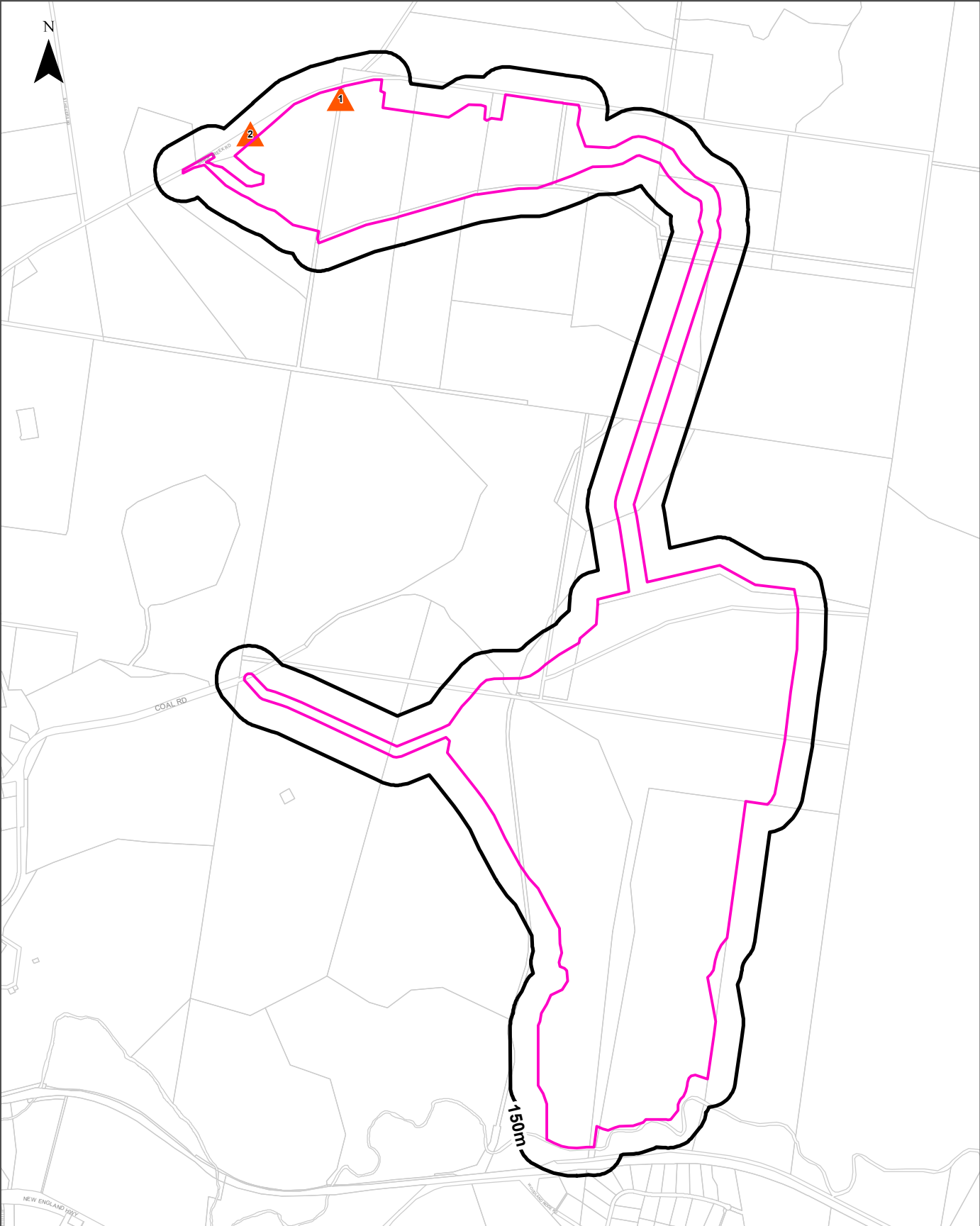
Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
12828	HERMES RESOURCES PTY LTD	Muswellbrook Quarry, "Bimbadeen" McCullys Gap Road, MUSWELLBROOK, NSW 2333, MUSWELLBROOK	Surrendered	11/03/2008	Land-based extractive activity	Premise Match	0m	On-site
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
11677	UPPER HUNTER COUNTY COUNCIL	WATERS WITHIN UPPER HUNTER COUNTY COUNCIL, NEW ENGLAND HIGHWAY, MUSWELLBROOK	Surrendered	21/06/2002	Miscellaneous licensed discharge to waters (at any time)	Network of Features	0m	On-site

Former Licensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Historical Business Directories

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Legend		Scale: 0 400 800 1200 1600 Meters	Coordinate System: GDA 1994 MGA Zone 56
Site Boundary	Business directory records mapped to a specific premise		Date: 24 March 2025
Buffer 150m	Business directory records mapped to a road intersection	Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 Property Boundaries © NSW Department Finance, Services & Innovation 2025	
Property Boundary	Business directory records mapped to a road corridor		
Business directory records mapped to a general area			

Historical Business Directories

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Business Directory Records 1950-1991 Premise or Road Intersection Matches

Potentially contaminative business activities extracted from Universal Business Directories from years 1991, 1982, 1970, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
N/A	No records in buffer						

Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018

Business Directory Records 1950-1991

Road or Area Matches

Potentially contaminative business activities extracted from Universal Business Directories from years 1991, 1982, 1970, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	BUILDERS SUPPLIES,	Hunter Valley Frames & Trusses (Div Of Upper Hunter Timbers Pty Ltd.), Limestone Rd, Muswellbrook 2333	79713	1991	Road Match	0m
	BUILDINGS - PRE-FABRICATED, PORTABLE &/OR MODULAR MFRS. &/OR DIST. &/OR ERECTORS.	Hunter Valley Frames & Trusses (Div Of Upper Hunter Timbers Pty Ltd.), Limestone Rd, Muswellbrook 2333	79723	1991	Road Match	0m
	ELECTRIC TOOLS MFRS. &/OR DIST.	Hunter Valley Frames & Trusses (Div Of Upper Hunter Timbers Pty Ltd.), Limestone Rd, Muswellbrook 2333	79876	1991	Road Match	0m
	FENCING MATERIAL MFRS. &/OR DIST.	Hunter Valley Frames & Trusses. (Div. of Upper Hunter Timbers Pty. Ltd.), Limestone Rd, Muswellbrook 2333	79927	1991	Road Match	0m
	FLOOR COVERING MFRS. &/OR WSALERS.	Hunter Valley Frames & Trusses. (Div. of Upper Hunter Timbers Pty. Ltd.), Limestone Rd, Muswellbrook 2333	79937	1991	Road Match	0m
	FLOOR LAYERS.	Hunter Valley Frames & Trusses. (Div. of Upper Hunter Timbers Pty. Ltd.), Limestone Rd, Muswellbrook 2333	79939	1991	Road Match	0m
	SAWMILLERS.	Hunter Valley Frames & Trusses. (Div. of Upper Hunter Timbers Pty. Ltd.), Limestone Rd, Muswellbrook 2333	80389	1991	Road Match	0m
	ROOF TRUSSES MFRS. &/OR DIST.	Hunter Valley Frames & Trusses., Limestone Rd, Muswellbrook 2333	80387	1991	Road Match	0m
	BUILDERS SUPPLIES,	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	79714	1991	Road Match	0m
	BUILDINGS - PRE-FABRICATED, PORTABLE &/OR MODULAR MFRS. &/OR DIST. &/OR ERECTORS.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	79724	1991	Road Match	0m
	FENCING MATERIAL MFRS. &/OR DIST.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	79928	1991	Road Match	0m
	FLOOR COVERING MFRS. &/OR WSALERS.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	79938	1991	Road Match	0m
	FLOOR LAYERS.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	79940	1991	Road Match	0m
	ROOF TRUSSES MFRS. &/OR DIST.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	80388	1991	Road Match	0m
	SAWMILLERS.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	80390	1991	Road Match	0m
	TIMBER MERCHANTS &/OR SAWMILLERS.	Upper Hunter Timbers Pty Ltd., Limestone Rd, Muswellbrook 2333	80461	1991	Road Match	0m
	TIMBER MERCHANTS &/OR SAWMILLERS	Singleton Timbers Pty. Ltd., Limestone Rd., Muswellbrook 2333	169733	1982	Road Match	0m
	CARRIERS & CARTAGE CONTRACTORS	Harpley, Ted, Limestone Rd. Muswellbrook	137341	1950	Road Match	0m
2	TIMBER MERCHANTS & SAWMILLERS	Singleton Timbers Pty. Ltd., Sandy Creek Rd., Muswellbrook 2333	641529	1970	Road Match	0m

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Historical Business Directories

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
N/A	No records in buffer						

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Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

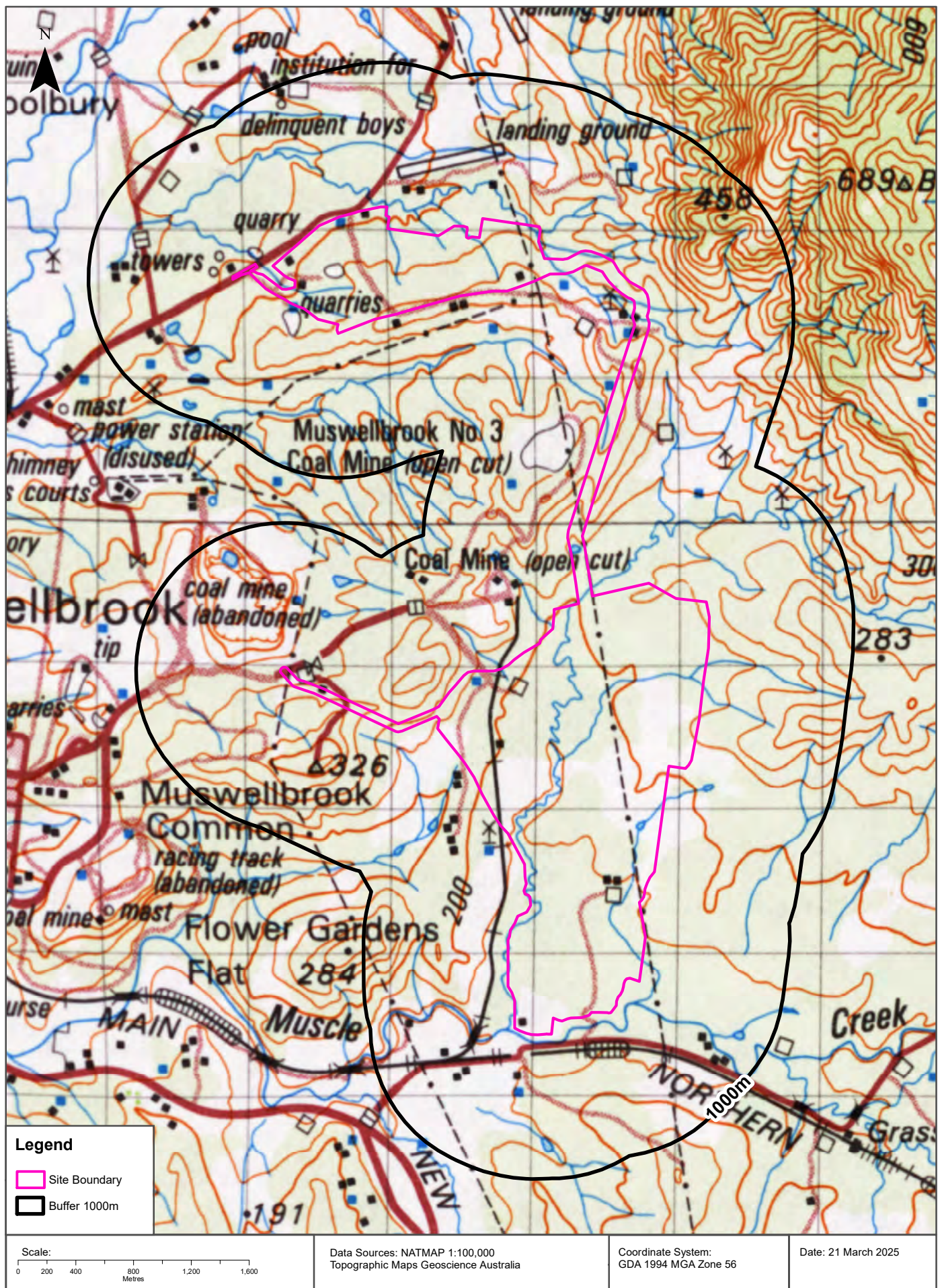
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer					

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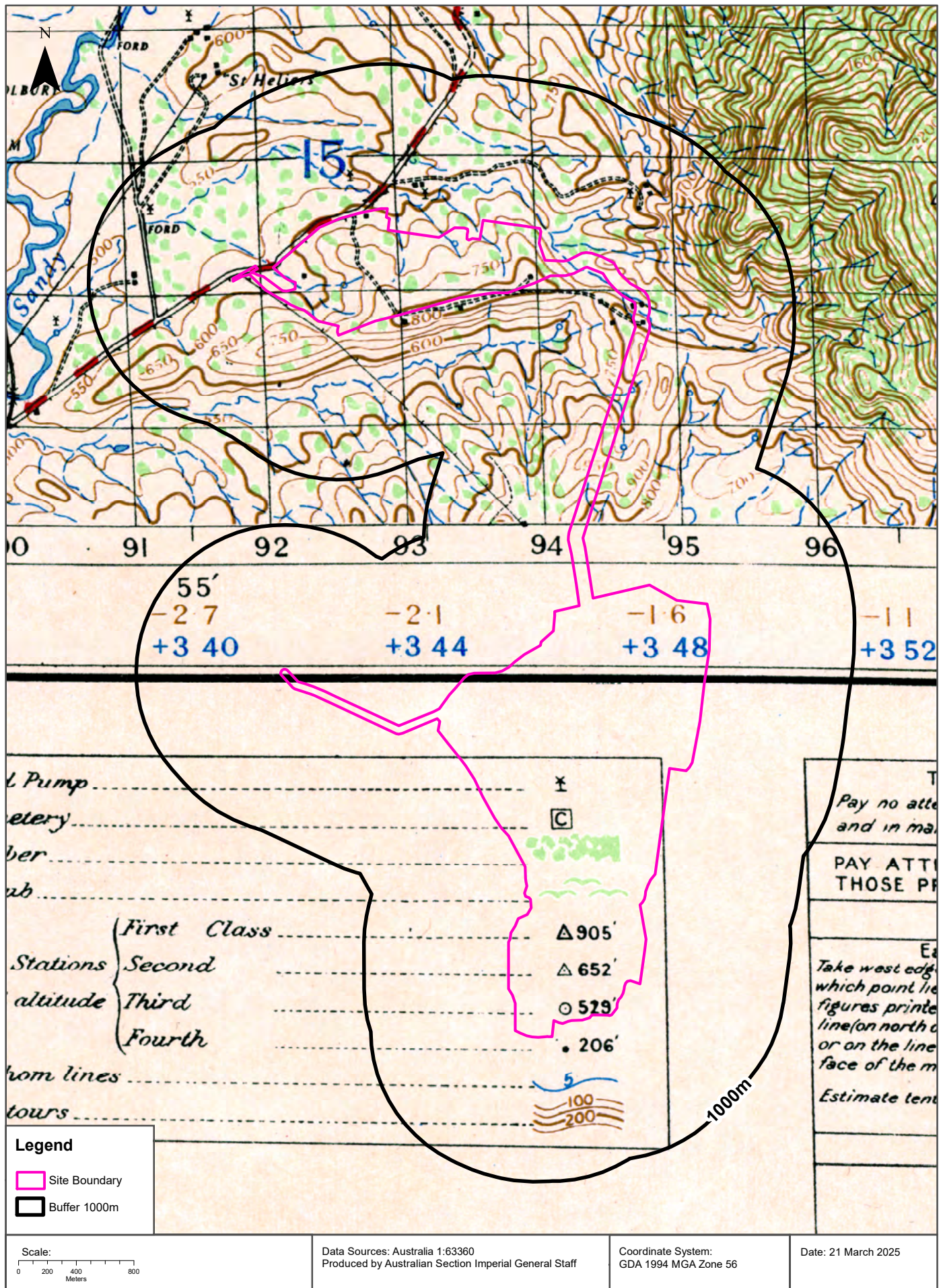
Historical Map 1978

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



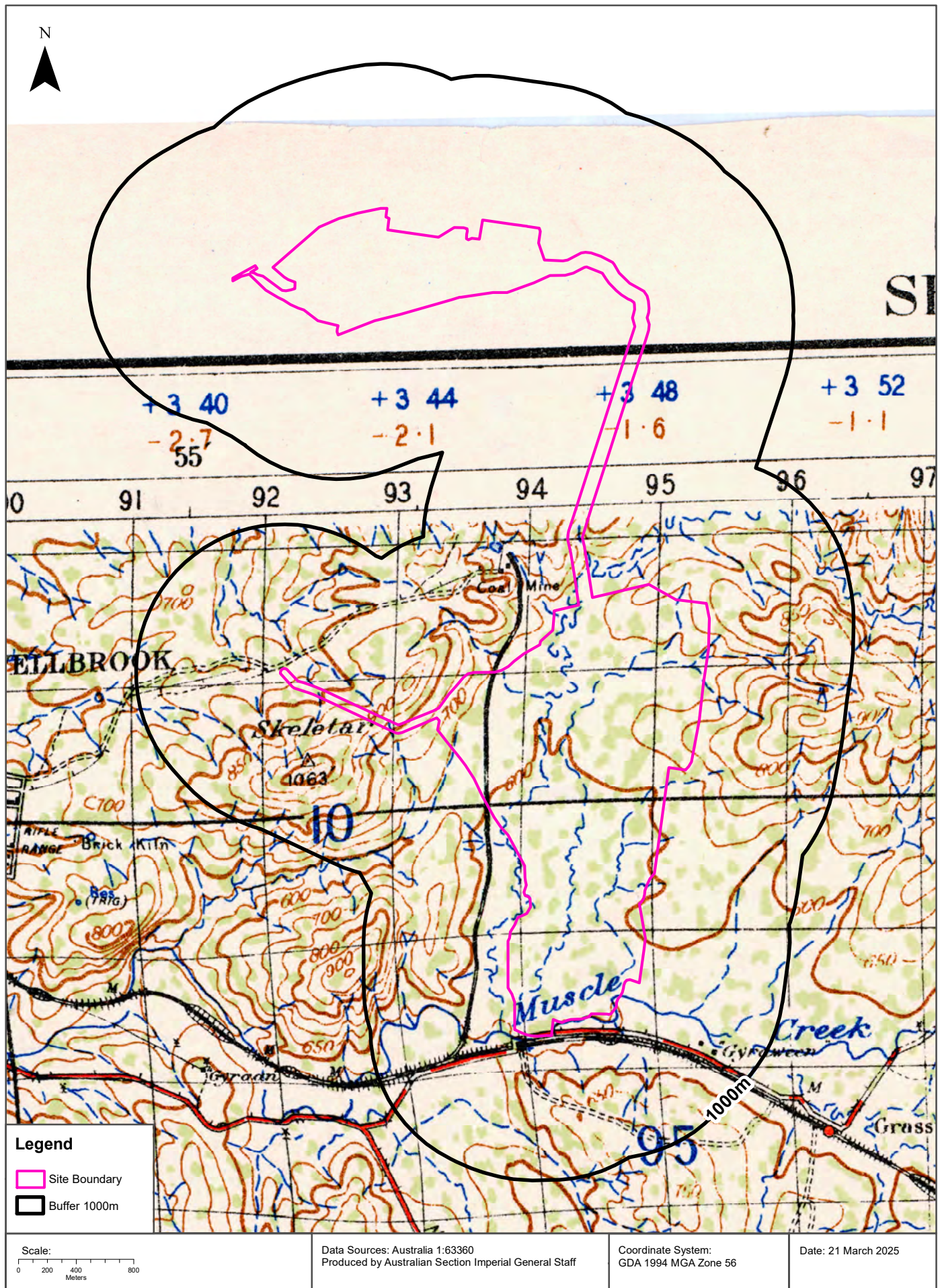
Historical Map c.1942

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



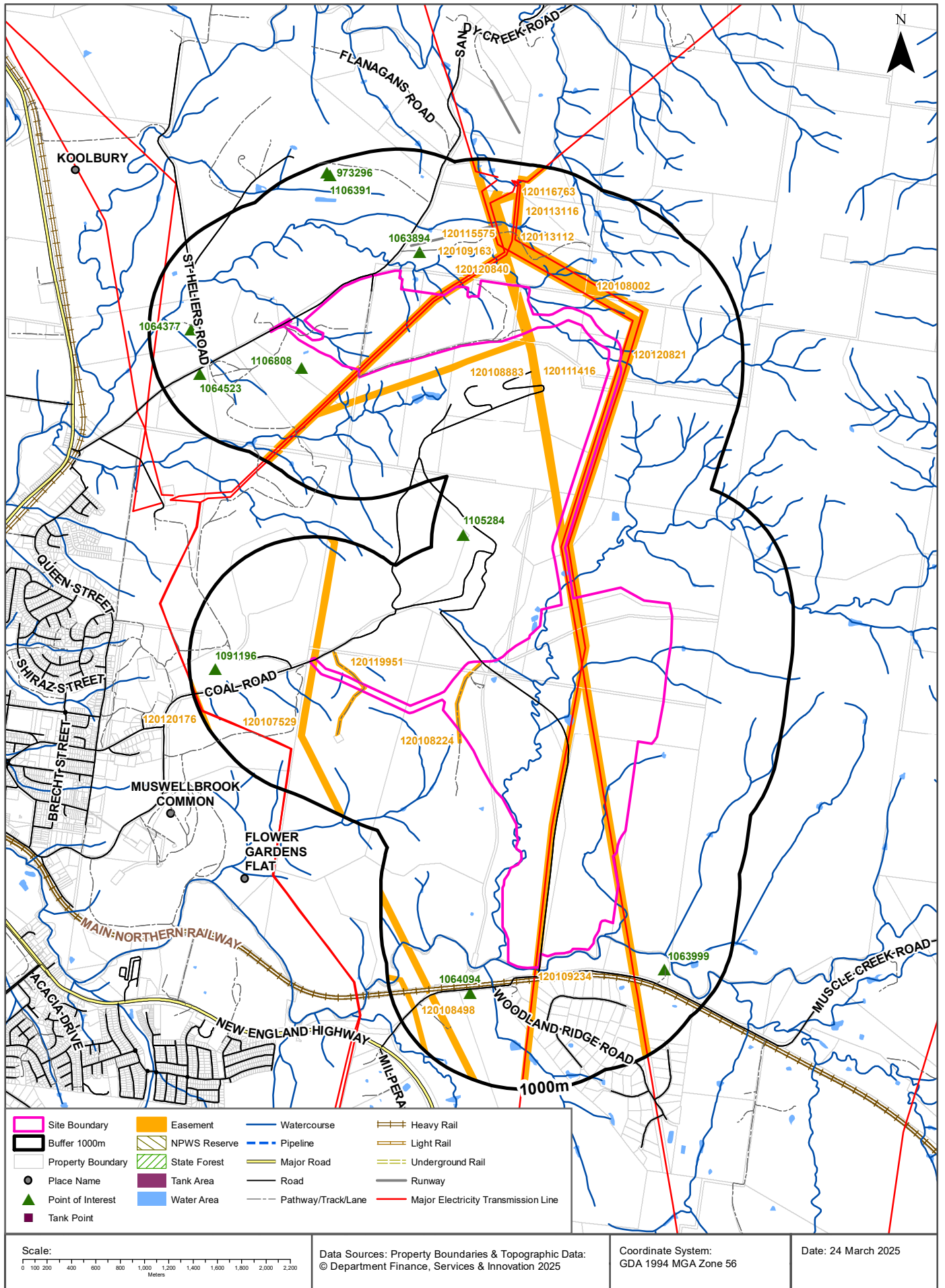
Historical Map c.1941

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Topographic Features

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Topographic Features

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1106808	Quarry - Open Cut	Quarry - Open Cut	190m	North West
1063894	Homestead	NISBET	220m	North
1064094	Homestead	JANDEL	401m	South
1063999	Homestead	GIRRAHWEEN	568m	South
1064377	Homestead	BLUE HILLS	656m	North West
1064523	Homestead	KARINYA	677m	North West
1105284	Mine - Underground	MUSWELLBROOK NO1 COAL MINE	741m	North West
1091196	Rubbish Depot	MUSWELLBROOK WASTE MANAGEMENT FACILITY	786m	West
1106391	Park	Park	890m	North West
973296	Sports Field	Sports Field	919m	North West

Topographic Data Source: © Land and Property Information (2015)

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Topographic Features

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
N/A	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
N/A	No records in buffer					

Tanks Data Source: © Land and Property Information (2015)

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Major Easements

What Major Easements exist within the dataset buffer?

Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120109234	Primary	Undefined		0m	On-site
120120821	Primary	Undefined		0m	On-site
120120840	Primary	Undefined		0m	On-site
120108224	Primary	Undefined		0m	On-site
120111416	Primary	Undefined		0m	On-site
120119951	Primary	Undefined		0m	On-site
120108883	Primary	Undefined		0m	On-site
120107529	Primary	Undefined		0m	South West
120113116	Primary	Undefined		7m	North
120108002	Primary	Undefined		169m	North
120113112	Primary	Undefined		181m	North
120109163	Primary	Undefined		270m	North
120115575	Primary	Undefined		323m	North
120108498	Primary	Undefined		846m	South
120120176	Primary	Undefined		847m	West
120116763	Primary	Undefined		848m	North

Easements Data Source: © Land and Property Information (2015)

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Topographic Features

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

State Forest

What State Forest exist within the dataset buffer?

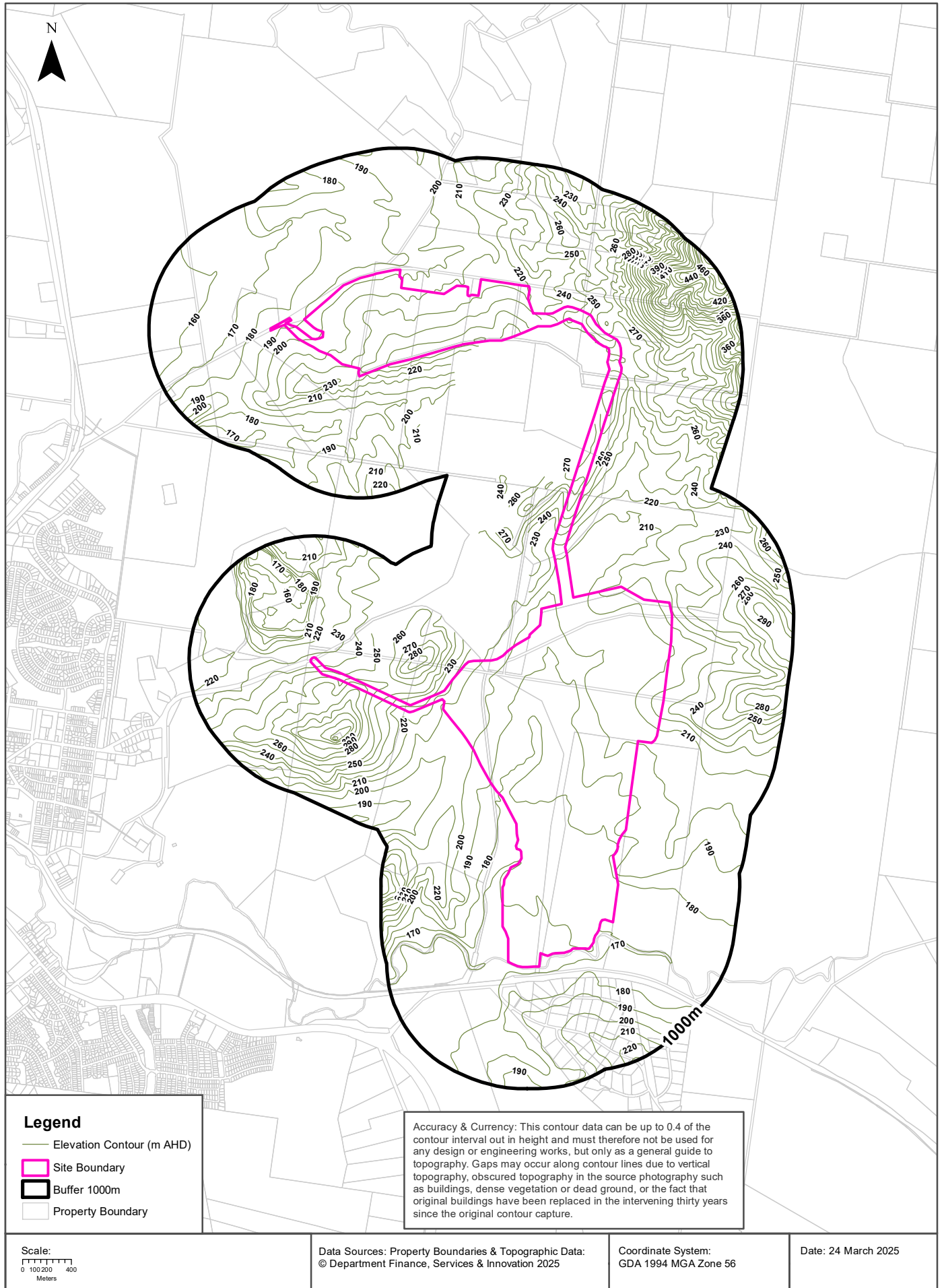
State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)

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Elevation Contours (m AHD)

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Hydrogeology & Groundwater

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive highly productive aquifers	0m	On-site
Fractured or fissured, extensive aquifers of low to moderate productivity	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024

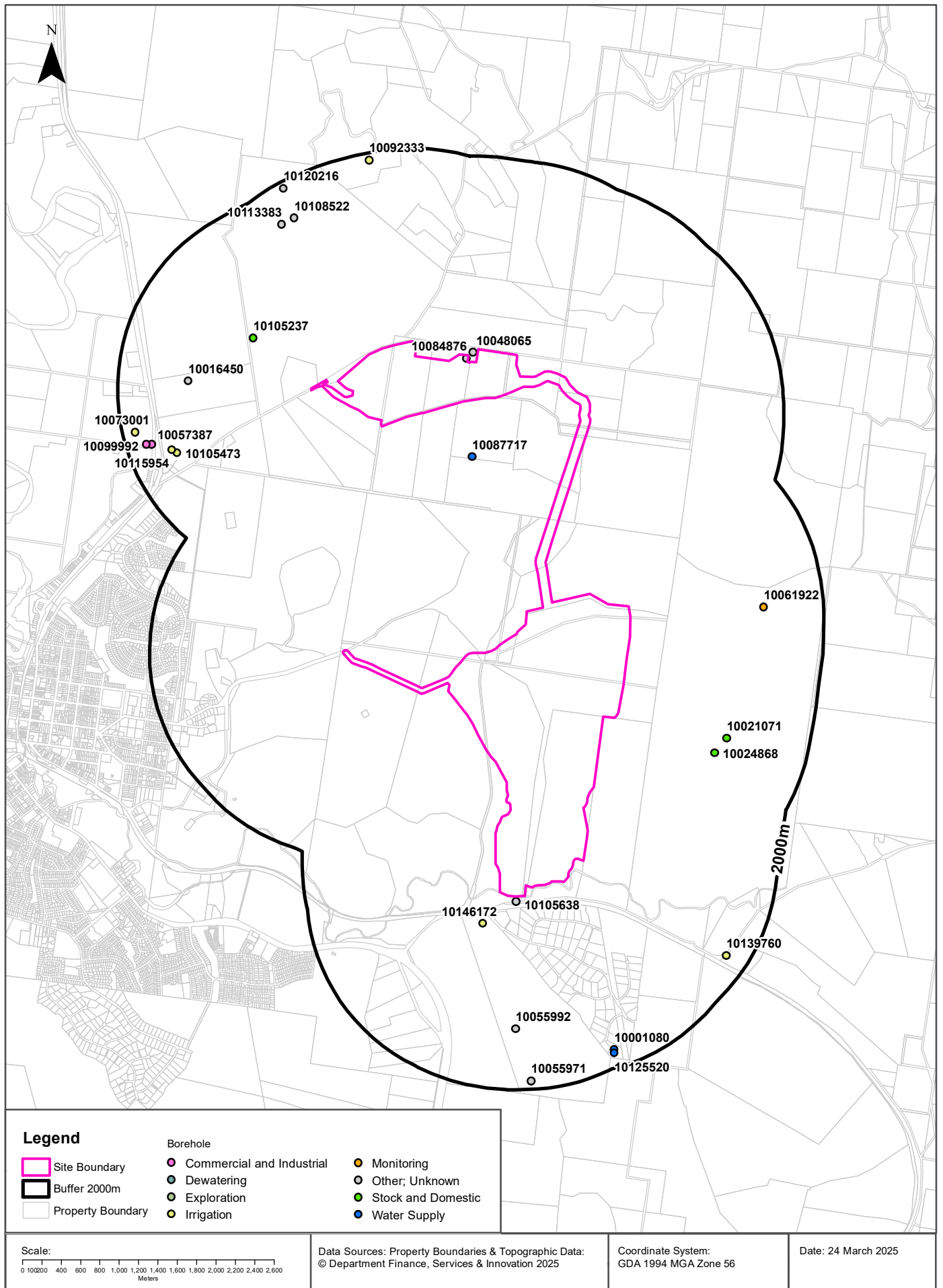
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Hydrogeology & Groundwater

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Groundwater Boreholes

Boreholes within the dataset buffer:

NGIS Bore ID	NSW Bore ID	Bore Type	Status	Drill Date	Bore Depth (m)	Reference Elevation	Height Datum	Salinity (mg/L)	Yield (L/s)	SWL (mbgl)	Distance	Direction
10084876	GW200715	Unknown	Unknown	12/09/2006	251.70		AHD		170.000	62.50	0m	On-site
10048065	GW201055	Unknown	Unknown	01/12/1991	253.00		AHD		29.000	71.72	49m	North
10105638	GW017904	Unknown	Unknown	01/02/1958	6.70	208.00	AHD	1001-3000 ppm			53m	South
10146172	GW037480	Irrigation	Unknown	01/02/1974			AHD				373m	South
10087717	GW078907	Water Supply	Unknown	01/10/1999	5.18		AHD		0.250		580m	North
10105237	GW013973	Stock and Domestic	Functioning	01/01/1959	12.20		AHD				789m	North West
10024868	GW078465	Stock and Domestic	Functioning		13.00	212.00	AHD				1081m	South East
10021071	GW078468	Stock and Domestic	Unknown	16/08/1999	7.00		AHD				1153m	South East
10016450	GW015083	Unknown	Functioning	01/01/1957	8.50		AHD				1268m	North West
10055992	GW049693	Unknown	Abandoned	01/04/1979	6.70	201.00	AHD				1373m	South
10061922	GW080903	Monitoring	Abandoned	09/09/2004	1.40	256.00	AHD			1.40	1382m	East
10105473	GW027411	Irrigation	Decommissioned	01/01/1963	12.20		AHD				1527m	North West
10115954	GW027410	Irrigation	Unknown	01/01/1953	12.20		AHD	Good			1563m	North West
10108522	GW013971	Unknown	Functioning	01/01/1959	9.10		AHD	Stock			1605m	North West
10113383	GW013972	Unknown	Functioning	01/01/1959	11.60		AHD	Stock			1617m	North West
10057387	GW011360	Commercial and Industrial	Unknown	01/11/1955	7.90		AHD	Good			1739m	North West
10139760	GW054802	Irrigation	Functioning	01/10/1981	38.10	175.00	AHD	Fair			1773m	South East
10099992	GW011361	Commercial and Industrial	Unknown	01/11/1955	7.90		AHD	Good			1789m	North West
10001080	GW203243	Water Supply	Functioning	17/09/2013	114.00		AHD			79.00	1815m	South
10125520	GW202672	Water Supply	Abandoned	07/12/2012	78.00		AHD				1851m	South
10073001	GW080181	Irrigation	Unknown	02/04/2002			AHD				1866m	North West
10055971	GW080901	Unknown	Unknown		194.00		AHD				1914m	South
10092333	GW065481	Irrigation	Unknown	01/01/1950	8.00		AHD				1924m	North
10120216	GW013980	Unknown	Functioning	01/01/1959	9.80		AHD				1927m	North West

Borehole Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Hydrogeology & Groundwater

Muswellbrook Solar Farm, Muswellbrook, NSW 2333













Driller's Logs

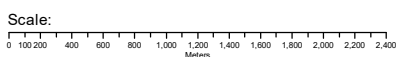
Drill log data relevant to the boreholes within the dataset buffer:

NGIS Bore ID	Drillers Log	Distance	Direction
10084876	0.00m-192.00m Conglomerate, sandstone, siltstone 192.00m-251.70m Coal seams, sandstone, siltstone	0m	On-site
10105638	0.00m-3.05m Soil Alluvial 3.05m-6.71m Sand Gravel Water Supply 6.71m-6.72m Rock	53m	South
10146172	0.00m-0.43m Topsoil 0.43m-3.35m Clay Sandy 3.35m-4.57m Silt Sandy 4.57m-9.45m Gravel Water Supply 9.45m-9.91m Clay Shaley	373m	South
10057387	0.00m-0.91m Loam 0.91m-3.96m Clay 3.96m-5.79m Loam Sandy 5.79m-7.92m Gravel Water Supply	1739m	North West
10139760	0.00m-0.60m Topsoil 0.60m-1.80m Sand 1.80m-5.50m Clay 5.50m-38.10m Sandstone Water Supply	1773m	South East
10099992	0.00m-0.91m Loam 0.91m-3.96m Clay 3.96m-5.79m Loam Sandy 5.79m-7.92m Gravel Water Supply	1789m	North West
10001080	0.00m-114.00m Shale	1815m	South
10125520	0.00m-0.30m Topsoil 0.30m-2.00m Clay 2.00m-78.00m Shale, grey	1851m	South

Drill Log Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Linear Geological Structures and Boundaries

- | | | | | | | | |
|---|-------------------|---|---------------------|---|------------------------------------|---|--------------------------|
|  | Site Boundary |  | Trendline |  | Marker Bed |  | Miscellaneous Boundary |
|  | Report Buffer |  | Fold Axis |  | Faulted Boundary |  | Water/Coastline Boundary |
|  | Property Boundary |  | Geological Boundary |  | Shear Zone or Schist Zone Boundary |  | State/Territory Border |



Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 24 March 2025

Geology

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Geological Units

Geological units within the dataset buffer:

Code	Unit Name	Description	Stratigraphy	Age Range	Dominant Lithology	Dist	Dir
Pda	Dalwood Group	Sandstone, lithic sandstone, conglomerate, siltstone, basalt.	/Dalwood Group////	Permian (base) to Permian (top)	Sandstone	0m	On-site
Pgrr	Rowan Formation	Sandstone, siltstone, claystone, coal and minor conglomerate. Averages 110 m thickness, containing up to 6 coal seams.	/Greta Coal Measures//Rowan Formation//	Artinskian (base) to Kungurian (top)	Sandstone	0m	On-site
Pgrs	Skeletal Formation	Rhyolite, chert, and white tuffaceous shale containing glossopteris leaves, coal.	/Greta Coal Measures//Skeletal Formation//	Artinskian (base) to Artinskian (top)	Quartzite	0m	On-site
Pmtb	Branxton Formation	Conglomerate, sandstone, siltstone.	/Maitland Group//Branxton Formation//	Roadian (base) to Roadian (top)	Conglomerate	0m	On-site
Pmtm	Mulbring Siltstone	Medium- to dark-grey siltstone, minor claystone, sporadic thin cherty beds (resistant), rare thin sandstone and limestone beds, sporadic marine fossils.	/Maitland Group//Mulbring Siltstone//	Guadalupian (base) to Guadalupian (top)	Siltstone	0m	On-site
Pwts	Saltwater Creek Formation	Quartz-lithic sandstone with rare shaly partings and laminae, siltstone, tuffaceous claystone beds and sporadic thin coal plies.	Singleton Supergroup/Wittingham Coal Measures//Saltwater Creek Formation//	Lopingian (base) to Lopingian (top)	Sandstone	0m	On-site
Pwts_s	Saltwater Creek Formation - sandstone	Quartz-lithic sandstone marker bed.	Singleton Supergroup/Wittingham Coal Measures//Saltwater Creek Formation/Saltwater Creek Formation - sandstone/	Lopingian (base) to Lopingian (top)	Sandstone	0m	On-site
Q_av	Alluvial valley deposits	Silt, clay, (fluvially deposited) lithic to quartz-lithic sand, gravel.	/Alluvium//Alluvial valley deposits//	Quaternary (base) to Now (top)	Clastic sediment	0m	On-site
Pmtbc	Cessnock Sandstone Member	Hard, massive- to planar-bedded quartz-lithic sandstone, sporadically conglomeratic, marine fossils in sandy phases.	/Maitland Group//Branxton Formation/Cessnock Sandstone Member/	Permian (base) to Permian (top)	Sandstone	242m	South
Cursk	Kewell Creek Volcanic Member	Interbedded, dacitic ash flow and ash fall ignimbrites, volcanic agglomerate, epiclastic conglomerate, volcanolithic sandstone and multi-coloured ash-rich siltstone.	/Ungrouped Rouchel Block units//Seaham Formation/Kewell Creek Volcanic Member/	Carboniferous (Pennsylvanian) (base) to Carboniferous (Pennsylvanian) (top)	Pyroclastic rock	280m	North East
MZui__d	Ungrouped Mesozoic igneous units - dolerite	Dolerite.	/Ungrouped Mesozoic igneous units//Ungrouped Mesozoic igneous units - dolerite//	Jurassic (base) to Jurassic (top)	Dolerite	624m	East

Geology

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Linear Geological Structures

Fault and shear or schist zone boundaries within the dataset buffer:

Map ID	Boundary Type	Feature Description	Fault Dip Angle	Fault Dip Direction	Dist	Dir
299927	Faulted boundary	Fault showing relative displacement: up, down			0m	On-site
300562	Faulted boundary	Thrust-fault, accurate	Steep		0m	On-site
302995	Faulted boundary	Fault showing relative displacement: up, down			0m	On-site
303710	Faulted boundary	Fault showing relative displacement: up, down			0m	On-site
304514	Faulted boundary	Fault showing relative displacement: up, down			0m	On-site
312025	Faulted boundary	Thrust-fault, accurate	Steep		0m	On-site
298232	Faulted boundary	Fault, inferred			58m	South
307837	Faulted boundary	Thrust-fault, accurate	Steep		109m	North
304853	Faulted boundary	Fault showing relative displacement: up, down			170m	North East
304075	Faulted boundary	Thrust-fault, accurate	Steep		187m	West
314813	Faulted boundary	Thrust-fault, accurate	Moderate		280m	North
304801	Faulted boundary	Thrust-fault, accurate	Steep		289m	North
297784	Faulted boundary	Fault, inferred	Shallow		313m	South
313665	Faulted boundary	Thrust-fault, accurate	Steep		457m	North
295791	Faulted boundary	Thrust-fault, accurate	Steep		621m	South
298348	Faulted boundary	Thrust-fault, accurate	Steep		630m	South
298201	Faulted boundary	Thrust-fault, accurate	Steep		635m	South
298339	Faulted boundary	Fault, inferred			670m	South
299179	Faulted boundary	Thrust-fault, accurate	Steep		670m	South
312700	Faulted boundary	Thrust-fault, accurate	Steep		757m	North
299147	Faulted boundary	Thrust-fault, accurate	Steep		767m	South West
304836	Faulted boundary	Thrust-fault, accurate	Moderate		832m	East
304529	Faulted boundary	Thrust-fault, accurate	Moderate		884m	North East
306182	Faulted boundary	Thrust-fault, accurate	Moderate		895m	North East

Trendlines within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
NA	No records in buffer				

Fold axes within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
482	Anticline, position accurate	Published map		0m	On-site
619	Anticline, position accurate	Published map	Musswellbrooke Anticline	34m	West

Marker beds within the dataset buffer:

Map ID	Feature Description	Rock Unit Description	Dist	Dir
NA	No records in buffer			

Geological Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development
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Naturally Occurring Asbestos Potential

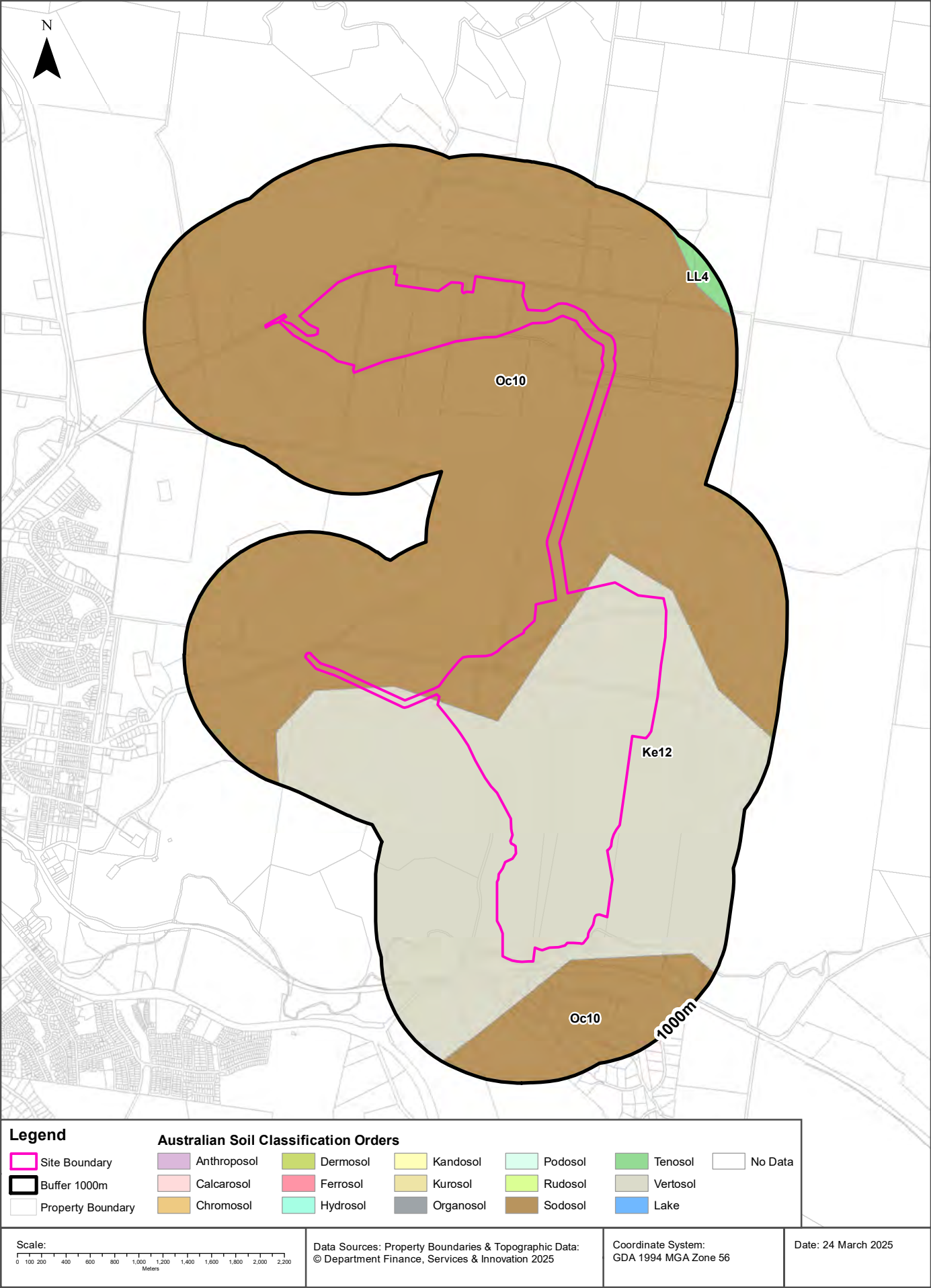
Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Naturally Occurring Asbestos Potential Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development
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Soils

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

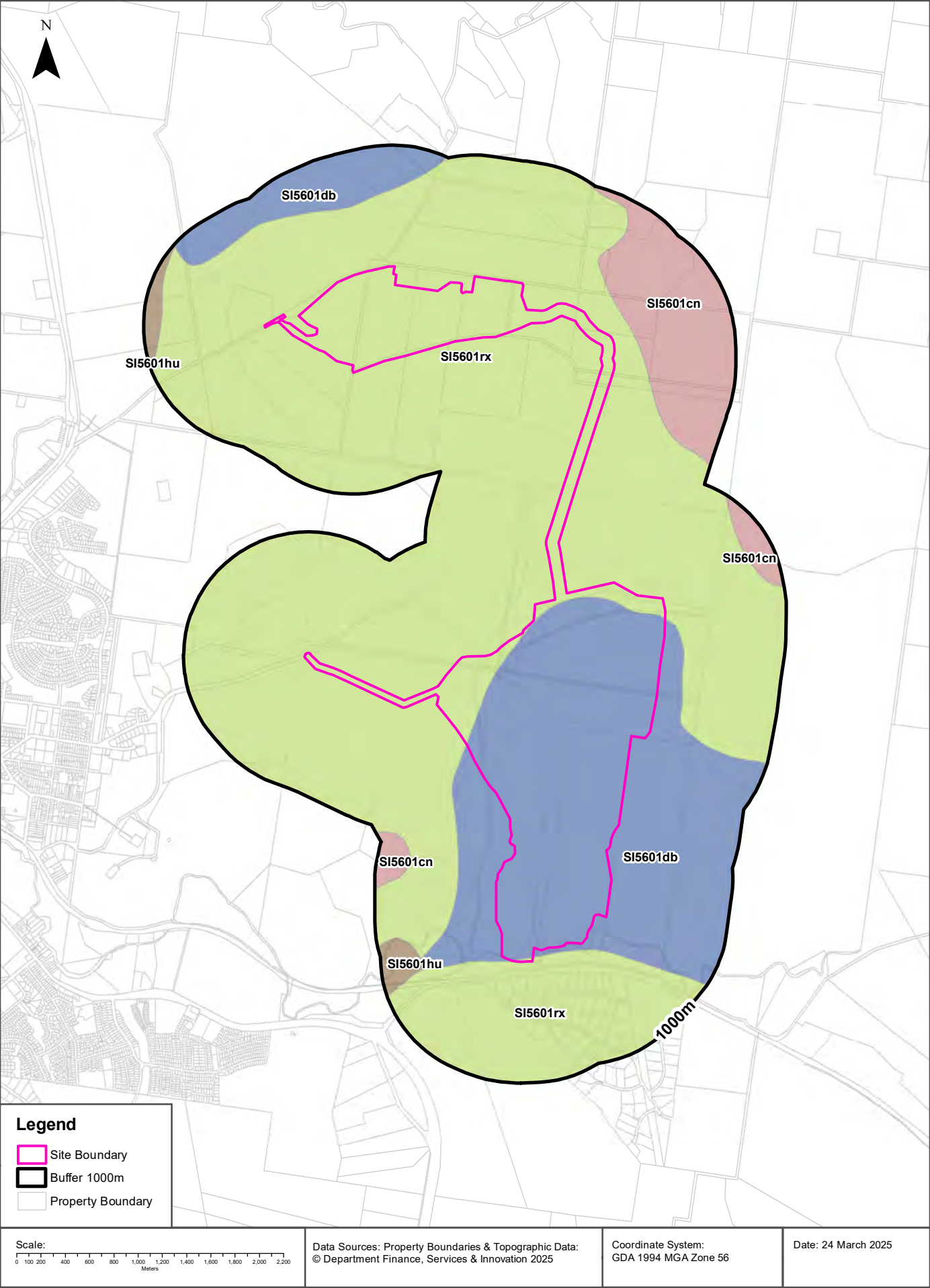
Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Ke12	Vertosol	Undulating with shallow valleys: chief soils are dark cracking clays (Ug5.15), (Ug5.16), (Ug5.13), (Ug5.12), and (Ug5.14). Associated are small areas of other cracking clays, such as (Ug5.3), (Ug5.2), and (Ug5.S); dark friable earths (Gn3.42); and minor areas of all the soils common to unit Oc10. As mapped, small areas of unit LK1 are included.	0m	On-site
Oc10	Sodosol	Rolling to hilly country with some steep slopes, gently undulating hill-tops, low cliffs, and occasionally escarpments; traversed by flat to undulating valleys: chief soils are hard alkaline and neutral red brown, yellow, and dark soils: red (Dr2.33), (Dr2.23), (Dr2.43), (Dr2.32), (Dr2.22); brown (Db1.33) (Db1.43); yellow (Dy2.33), (Dy2.43), (Dy3.43), (Dy3.42); dark (Dd1.33), (Dd1.43), (Dd1.42) (Dr2.32) notably occurs on gravelly hill-tops. Associated are: the (Ug5) soils of unit Ke12, which forms soil complexes with the above (D) soils in some areas; some basaltic hills and knolls of (Ug5.1) (Ug5.3), (Db3.12), (Gn3.42), and (Um6) soils; some (Uf6.31) and/or (Gn3.13) soils; some (Um4.1 and/or (Um4.2) soils and possibly other shallow (Um) or (Uc) soils on steep slopes; (Dy3.41) (Dr3.41), and (Dr2.41) soils as for unit Tb41; and various (Um) and (Uc) soils along the streams where some salinity is evident. This unit is very broad and the soil pattern is complex. Northward it grades towards the soil conditions found in units Qb19 and Ob14, having similarities to unit Ob10 in the Murrurundi area. To the south-east it grades into unit Tb42, the boundary between the two units is indefinite.	0m	On-site
LL4	Tenosol	Ridge and valley complex, rock outcrops common: very steep to rugged hill slopes of loamy soils having an A2 horizon (Um4.2) and yellow earths (Gn2.24 and/or Gn2.44) with (Dy2.21), (Dy3.21), (Dy3.41), (Dr2.21), (Dr3.41), and (Db1.21) soils on side slopes. Stream valleys are narrow and deeply incised. As mapped, small areas of units Ta7, LL3, and Mj5 are included.	818m	North East

Atlas of Australian Soils Data Source: CSIRO

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Soil Landscapes of Central and Eastern NSW

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Soils

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
SI5601db	Dartbrook	0m	On-site
SI5601rx	Roxburgh	0m	On-site
SI5601cn	Colonel	173m	North East
SI5601hu	Hunter	617m	South West

Soil Landscapes of Central and Eastern NSW: NSW Department of Planning, Industry and Environment
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Acid Sulfate Soils

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

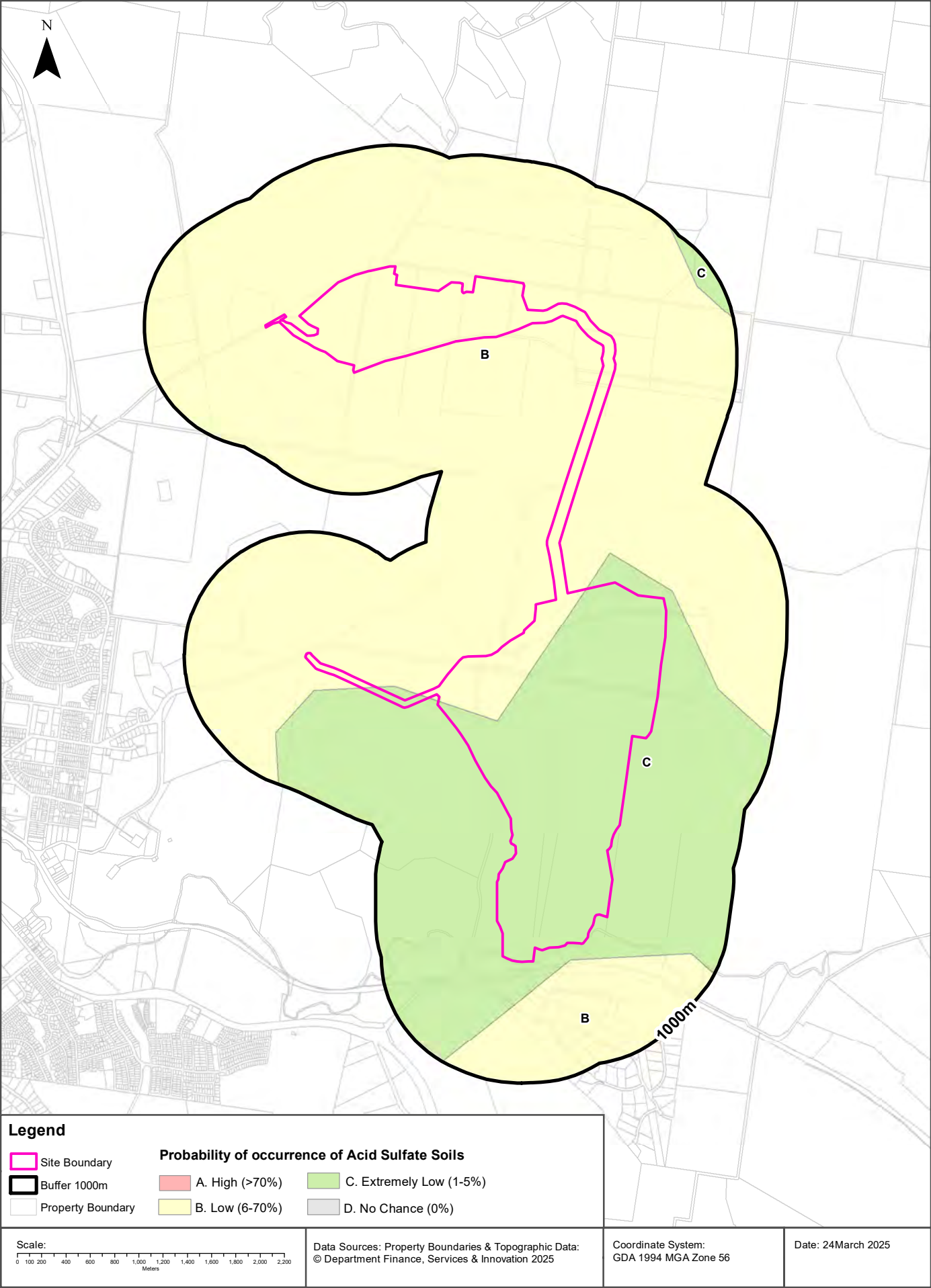
Soil Class	Description	EPI Name
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Acid Sulfate Soils

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m	On-site

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

Yes

Is there Dryland Salinity - National Assessment data within the dataset buffer?

Yes

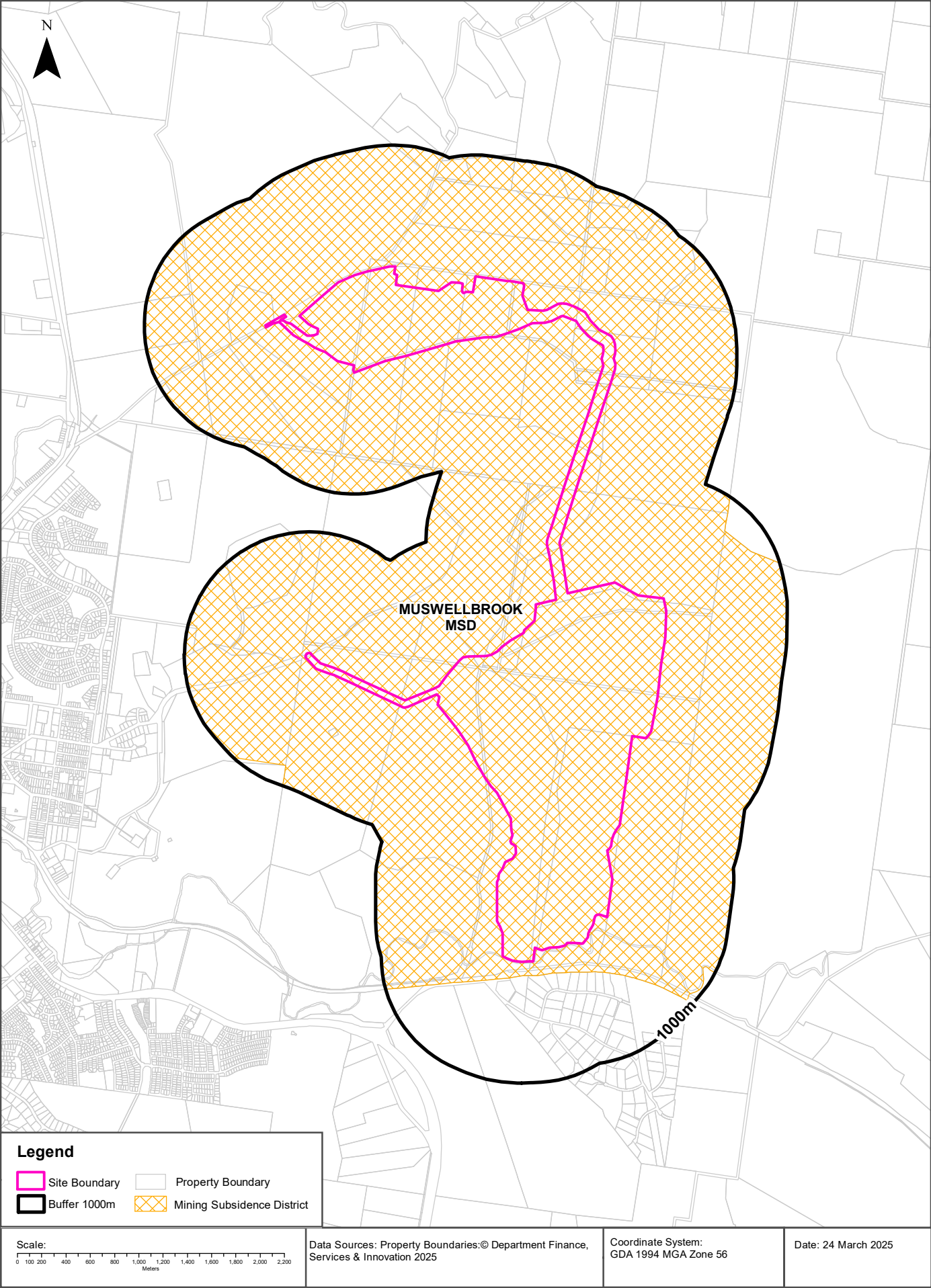
What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
High hazard or risk	High hazard or risk	High hazard or risk	0m	On-site

Dryland Salinity Data Source : National Land and Water Resources Audit

The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.

In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.



Mining

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Mining Subsidence Districts

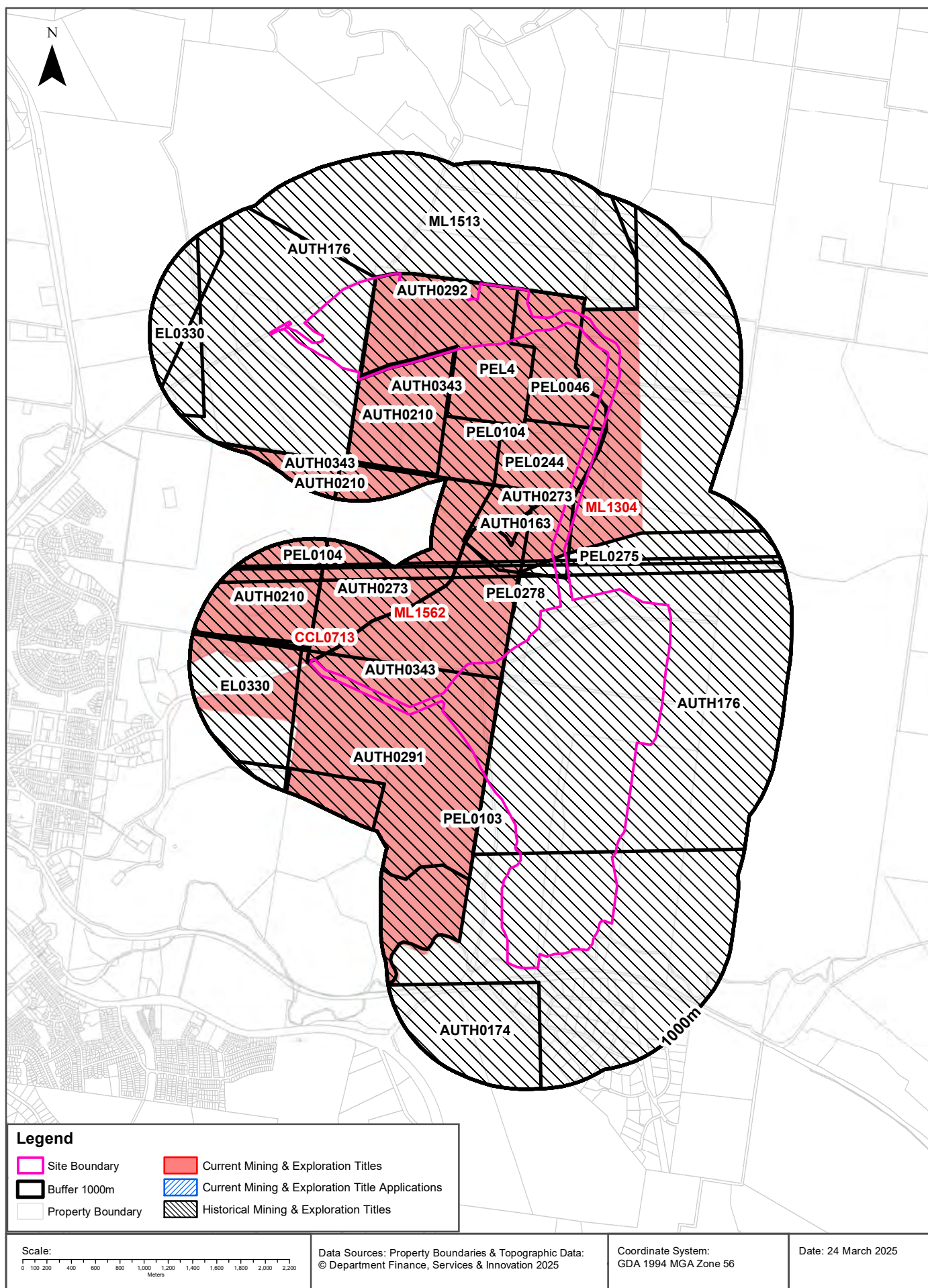
Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
MUSWELLBROOK	0m	On-site

Mining Subsidence District Data Source: © Land and Property Information (2016)

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Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Mining

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist	Dir
ML1562	MUSWELLBROOK COAL COMPANY LTD	16/02/2005	15/02/2026	20050216	MINING	COAL	Coal	0m	On-site
ML1304	MUSWELLBROOK COAL COMPANY LTD	12/01/1993	24/11/2034	20241125	MINING	COAL	Coal	0m	On-site
CCL0713	MUSWELLBROOK COAL COMPANY LTD	05/04/1990	24/11/2034	20241125	MINING	COAL	Coal	0m	On-site

Current Mining & Exploration Titles Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer						

Current Mining & Exploration Title Applications Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Mining

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
AUTH176	MUSWELLBROOK COAL COMPANY LTD	19990201	20020320	MINERALS		0m	On-site
AUTH0292	MUSWELLBROOK COAL COMPANY	19820305	19840305	COAL	Coal	0m	On-site
AUTH0343	MUSWELLBROOK COAL COMPANY LTD	19800127	19840727	COAL	Coal	0m	On-site
PEL4	AGL UPSTREAM INVESTMENTS PTY LIMITED	19931111	20011129	MINERALS		0m	On-site
AUTH0291	MUSWELLBROOK COAL COMPANY	19820329	19840329	COAL	Coal	0m	On-site
PEL0275	SYDNEY OIL COMPANY PTY LTD, MACQUARIE OIL (SYDNEY) PTY LTD, NORTH MICHIGAN EXPLORATION CO., BASE RESOURCES LTD, GOVERNME	19860502	19880402	PETROLEUM	Petroleum	0m	On-site
PEL0278	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	19910504	19931111	PETROLEUM	Petroleum	0m	On-site
PEL0046	AUSTRALIAN OIL AND GAS CORPORATION LTD, UNION OIL DEVELOPMENT CORP., KERN COUNTY LAND CO.			PETROLEUM	Petroleum	0m	On-site
AUTH0163	MUSWELLBROOK COAL COMPANY	19790727	19800127	COAL	Coal	0m	On-site
PEL0244	FRONTIER RESOURCES AUSTRALIA LTD, SION RESOURCES AUSTRALIA LTD, SYDNEY OIL COMPANY, PETROSEARCH PTY LTD	19810110	19841210	PETROLEUM	Petroleum	0m	On-site
PEL0104	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
PEL0103	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
AUTH0273	MUSWELLBROOK COAL COMPANY LTD	19810618	19911218	COAL	Coal	0m	North West
ML1513	MUSWELLBROOK COAL COMPANY LTD	20020320	30000101	MINERALS		0m	North
AUTH0210	MUSWELLBROOK COAL COMPANY	19800424	19840424	COAL	Coal	0m	North West
EL0330	ARMCO (AUST) PTY LTD	19700401	19730401	COAL	Coal	87m	West
AUTH0174	MOUNT SUGARLOAF COLLIERIES PTY LTD	19790919	19910220	COAL	Coal	119m	South

Historical Mining & Exploration Titles Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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State Environmental Planning Policy

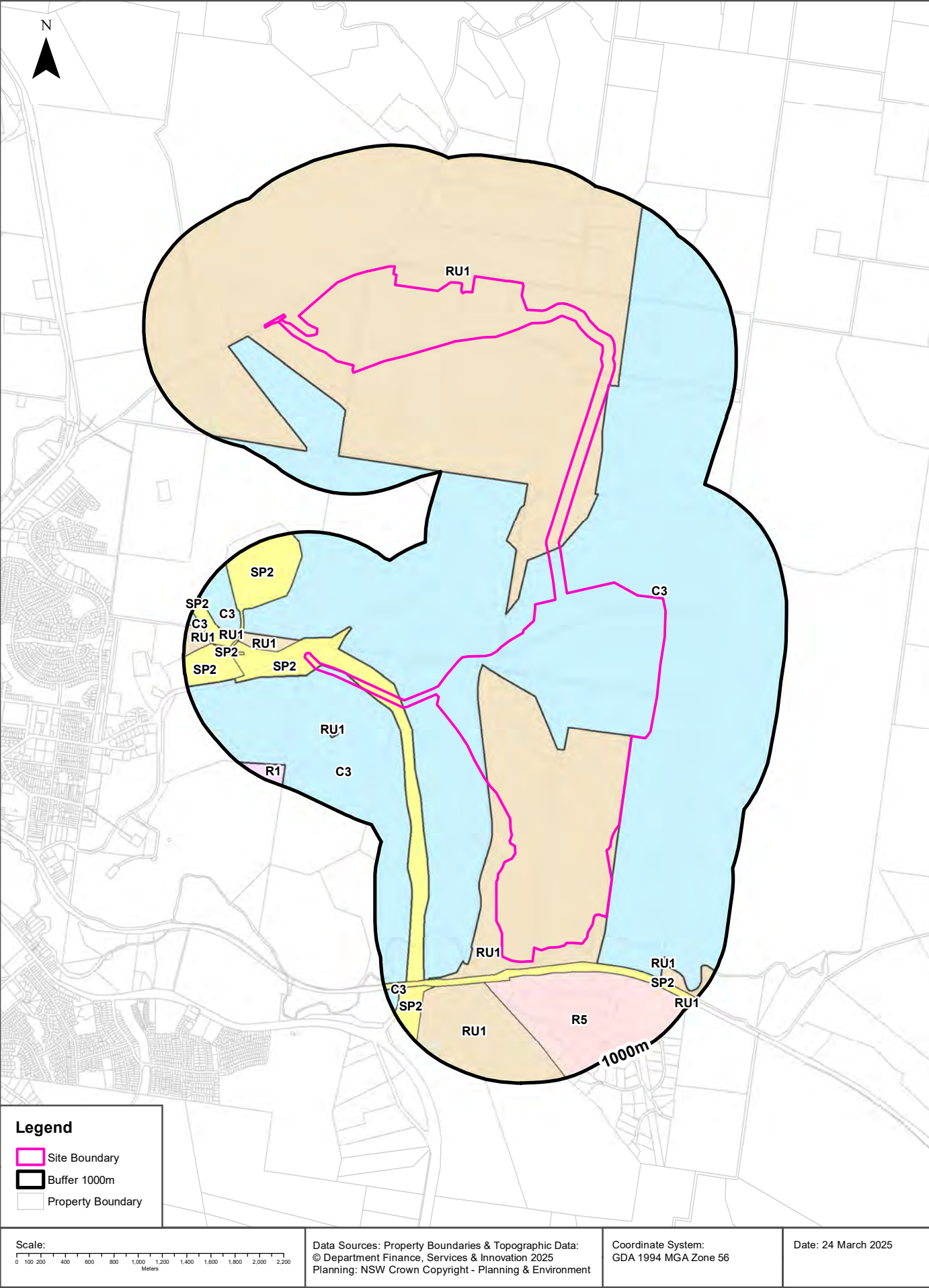
Muswellbrook Solar Farm, Muswellbrook, NSW 2333

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No records in buffer							

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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Environmental Planning Instrument

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Land Zoning

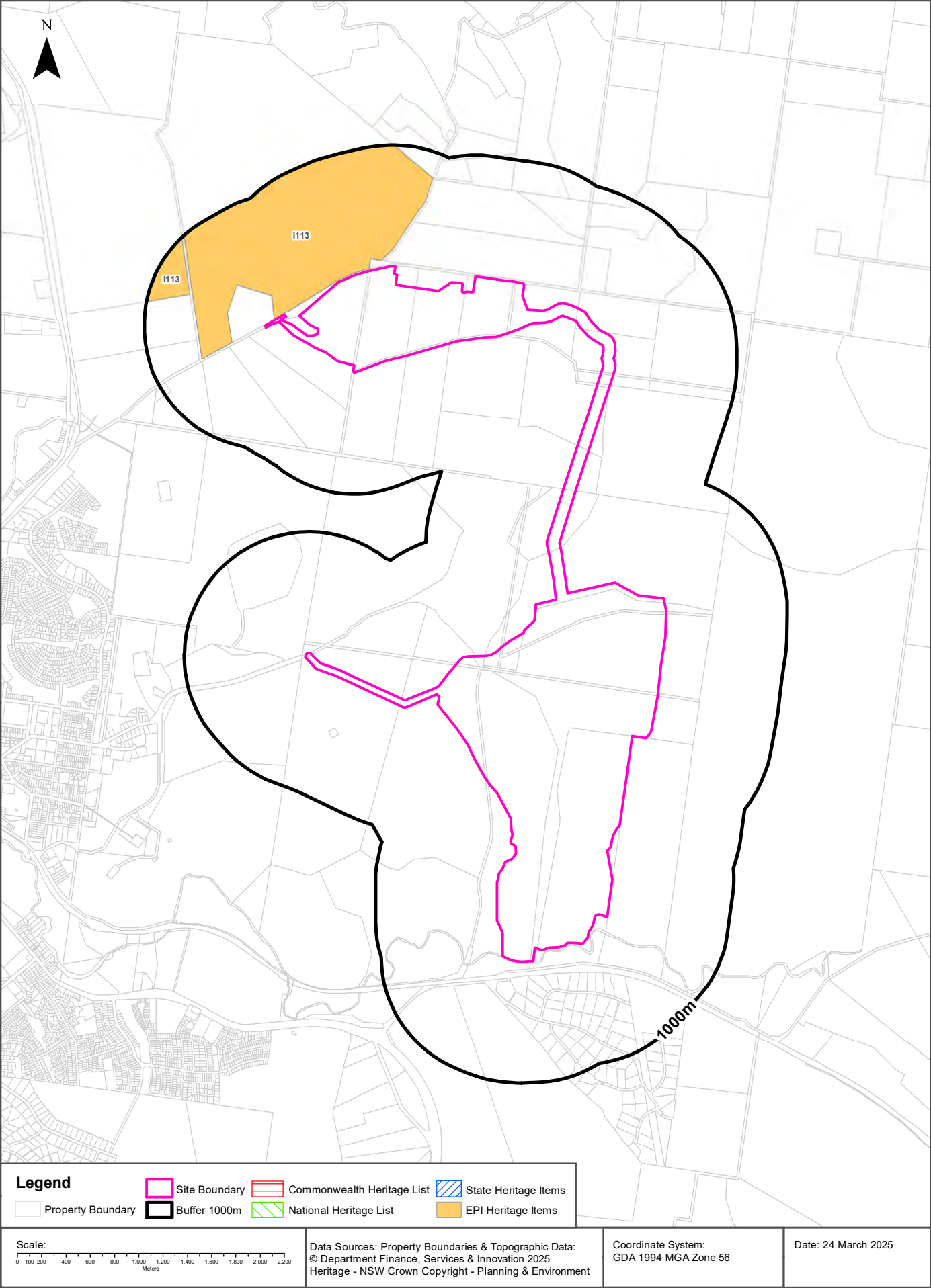
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
C3	Environmental Management		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	0m	On-site
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	0m	On-site
SP2	Infrastructure	Classified Road	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	0m	On-site
SP2	Infrastructure	Rail Infrastructure	Muswellbrook Local Environmental Plan 2009	09/06/2023	09/06/2023	09/06/2023	Map Amendment No 4	53m	South
R5	Large Lot Residential		Muswellbrook Local Environmental Plan 2009	09/06/2023	09/06/2023	09/06/2023	Map Amendment No 4	115m	South
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	122m	West
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	263m	South
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	392m	South West
SP2	Infrastructure	Waste Management Facility	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	500m	West
SP2	Infrastructure	Waste Management Facility	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	509m	West
SP2	Infrastructure	Waste Management Facility	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	524m	West
SP2	Infrastructure	Waste Management Facility	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	547m	West
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	567m	West
SP2	Infrastructure	Classified Road	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	584m	West
SP2	Infrastructure	Classified Road	Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	608m	South
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	782m	West
R1	General Residential		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	831m	South West
C3	Environmental Management		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	883m	West
C3	Environmental Management		Muswellbrook Local Environmental Plan 2009	21/04/2023	26/04/2023	09/06/2023	Map Amendment No 3	884m	South
RU1	Primary Production		Muswellbrook Local Environmental Plan 2009	09/06/2023	09/06/2023	09/06/2023	Map Amendment No 4	954m	South East

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Heritage Items

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Heritage

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?

Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

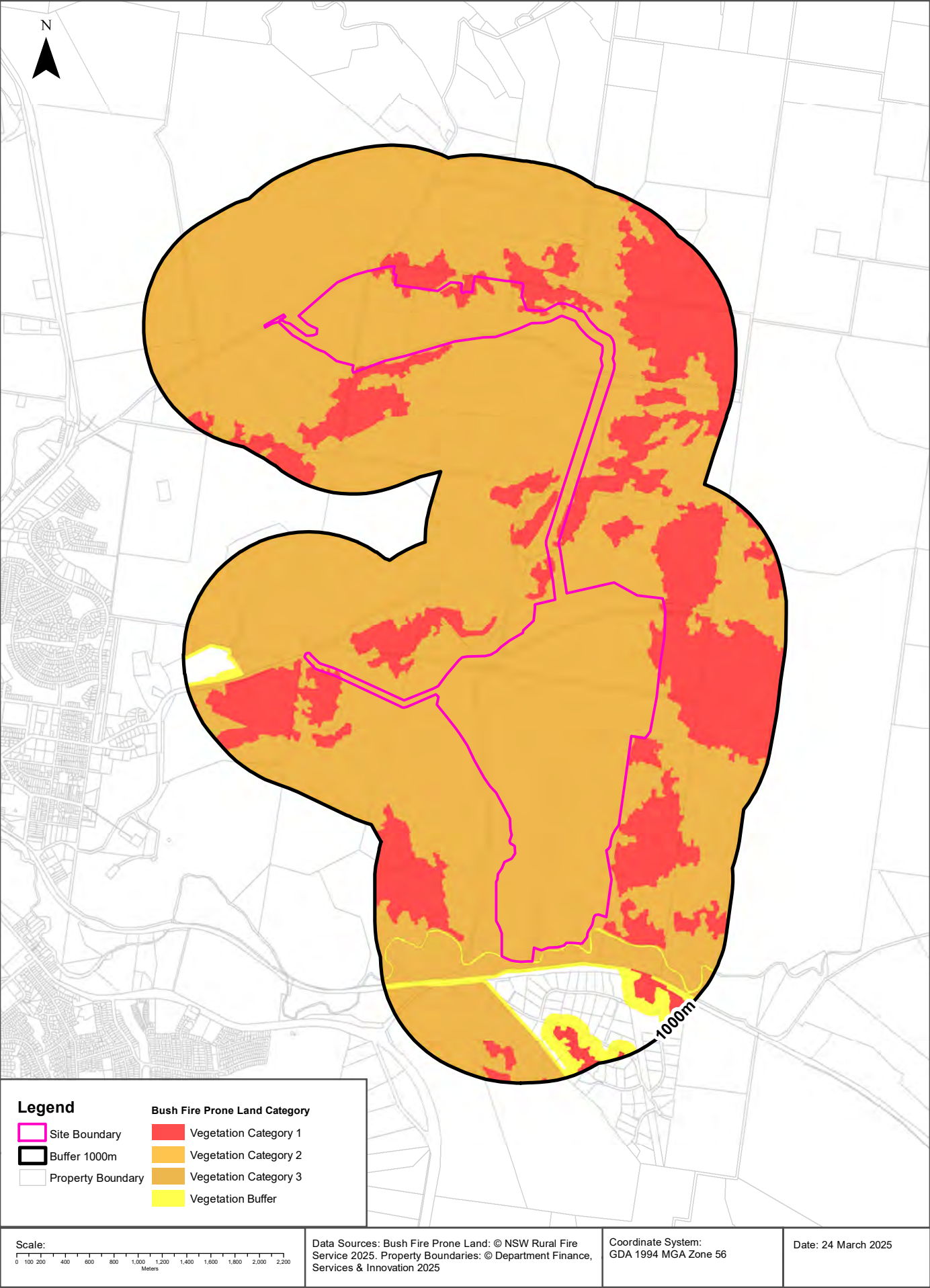
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I113	St Heliers	Item - General	Local	Muswellbrook Local Environmental Plan 2009	15/06/2012	15/06/2012	01/03/2024	6m	North West
I113	St Heliers	Item - General	Local	Muswellbrook Local Environmental Plan 2009	15/06/2012	15/06/2012	01/03/2024	675m	North West

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Natural Hazards

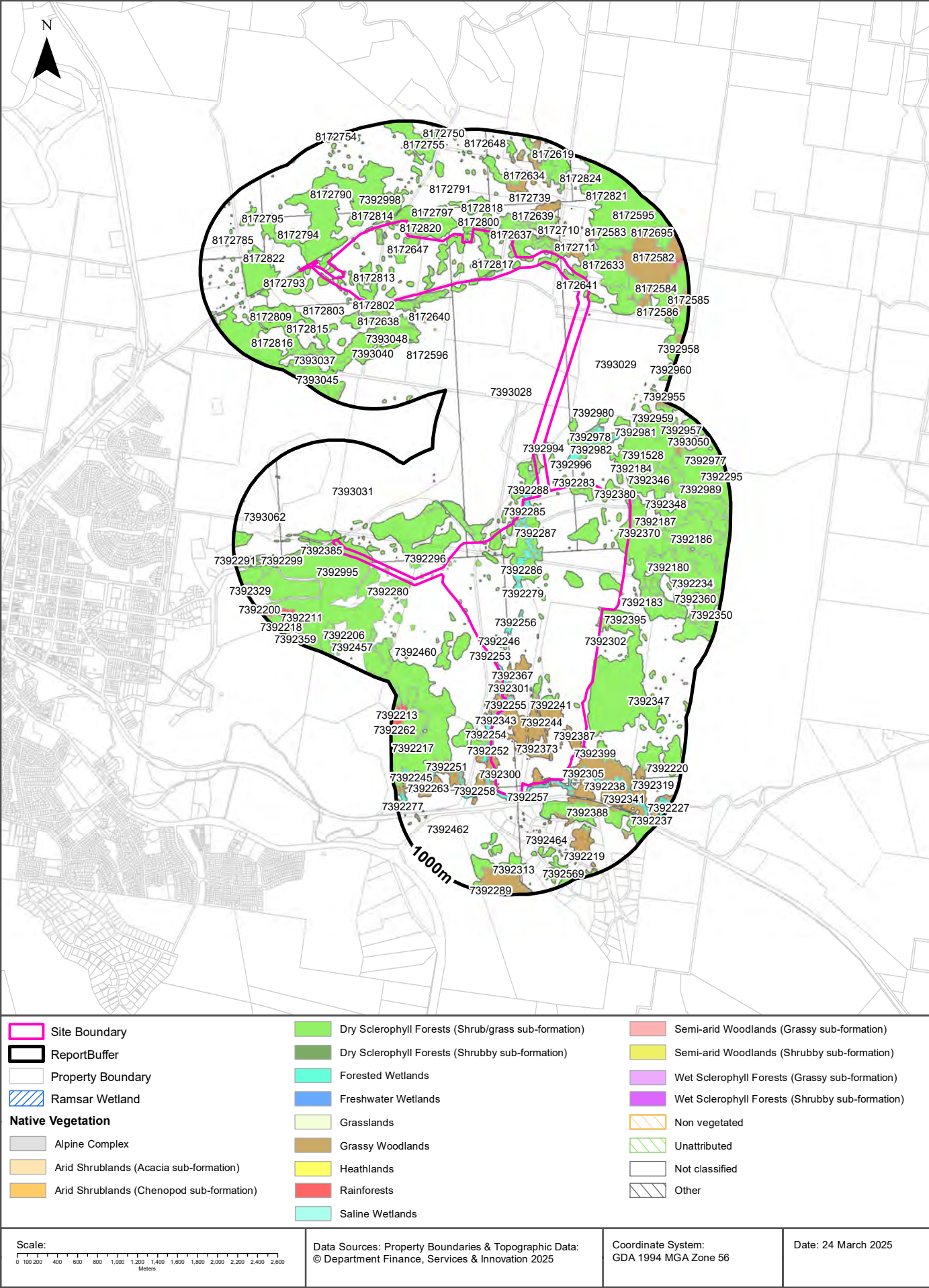
Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Category 1	0m	On-site
Vegetation Category 3	0m	On-site
Vegetation Buffer	0m	On-site

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence



Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7391528	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392184	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
7392239	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392240	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392241	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392244	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392246	Grassy Woodlands	(Grassy Woodlands) Central West Flats Grassy Box Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392247	Grassy Woodlands	(Grassy Woodlands) Central West Flats Grassy Box Woodland	Western Slopes Grassy Woodlands	0m	On-site
7392248	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392249	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392250	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392252	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392253	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392254	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392255	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392256	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392258	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392279	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392281	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392282	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
7392283	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
7392285	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392286	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392287	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site
7392288	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	On-site

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7392297	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392300	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392301	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392302	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392303	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392314	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392315	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392343	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392345	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392356	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392357	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392363	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392367	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392369	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392373	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392380	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392382	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392387	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392389	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392397	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392460	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392515	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392979	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392980	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
7392994	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7392995	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
7392998	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
7393028	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7393029	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7393031	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172637	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
8172641	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	0m	On-site
8172646	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
8172647	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	0m	On-site
8172712	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172793	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172800	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172802	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172813	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172817	Not classified	(Not classified) Not classified	Not classified	0m	On-site
8172819	Not classified	(Not classified) Not classified	Not classified	0m	On-site
7392238	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	0m	South
8172642	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	0m	North
7392257	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	4m	South
7392368	Not classified	(Not classified) Not classified	Not classified	6m	South
8172803	Not classified	(Not classified) Not classified	Not classified	7m	North West
8172801	Not classified	(Not classified) Not classified	Not classified	11m	North West
7392548	Not classified	(Not classified) Not classified	Not classified	15m	South
7392464	Not classified	(Not classified) Not classified	Not classified	21m	South
7392183	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	25m	South East
8172634	Grassy Woodlands	(Grassy Woodlands) Central Hunter Slopes Grey Box Forest	Coastal Valley Grassy Woodlands	32m	North
7392305	Not classified	(Not classified) Not classified	Not classified	33m	South
7392400	Not classified	(Not classified) Not classified	Not classified	33m	South
7392462	Not classified	(Not classified) Not classified	Not classified	34m	South
7392543	Not classified	(Not classified) Not classified	Not classified	35m	South
7393056	Not classified	(Not classified) Not classified	Not classified	35m	North
7392263	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	37m	South
8172635	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	37m	North
7392409	Not classified	(Not classified) Not classified	Not classified	38m	South
8172633	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	38m	North
7392320	Not classified	(Not classified) Not classified	Not classified	40m	South
8172810	Not classified	(Not classified) Not classified	Not classified	42m	North
7392401	Not classified	(Not classified) Not classified	Not classified	44m	South
7392536	Not classified	(Not classified) Not classified	Not classified	46m	South
8172640	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	58m	North
7392333	Not classified	(Not classified) Not classified	Not classified	62m	South
7392550	Not classified	(Not classified) Not classified	Not classified	72m	South

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
8172820	Not classified	(Not classified) Not classified	Not classified	78m	North
7392370	Not classified	(Not classified) Not classified	Not classified	86m	East
7392284	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	87m	North
7392321	Not classified	(Not classified) Not classified	Not classified	88m	South
8172638	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	100m	North West
7392280	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	102m	South West
7392385	Not classified	(Not classified) Not classified	Not classified	104m	West
7392551	Not classified	(Not classified) Not classified	Not classified	105m	South
8172791	Not classified	(Not classified) Not classified	Not classified	107m	North
7392395	Not classified	(Not classified) Not classified	Not classified	113m	South East
7392296	Not classified	(Not classified) Not classified	Not classified	115m	West
7392399	Not classified	(Not classified) Not classified	Not classified	119m	South
8172644	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	120m	North
8172711	Not classified	(Not classified) Not classified	Not classified	123m	North
8172814	Not classified	(Not classified) Not classified	Not classified	123m	North West
7392996	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	125m	North East
8172710	Not classified	(Not classified) Not classified	Not classified	125m	North
8172797	Not classified	(Not classified) Not classified	Not classified	129m	North
7392364	Not classified	(Not classified) Not classified	Not classified	131m	West
7392393	Not classified	(Not classified) Not classified	Not classified	132m	South
7392348	Not classified	(Not classified) Not classified	Not classified	147m	East
8172639	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	149m	North
8172595	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	151m	North
7392993	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	164m	North East
7392992	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	188m	North East
7392484	Not classified	(Not classified) Not classified	Not classified	200m	South
7392234	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	204m	East
7392495	Not classified	(Not classified) Not classified	Not classified	205m	South
7392187	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	206m	East
7392362	Not classified	(Not classified) Not classified	Not classified	206m	East
8172796	Not classified	(Not classified) Not classified	Not classified	208m	North
8172794	Not classified	(Not classified) Not classified	Not classified	210m	North West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7392535	Not classified	(Not classified) Not classified	Not classified	216m	South
8172818	Not classified	(Not classified) Not classified	Not classified	217m	North
8172790	Not classified	(Not classified) Not classified	Not classified	222m	North West
7393054	Not classified	(Not classified) Not classified	Not classified	231m	North East
8172596	Grassy Woodlands	(Grassy Woodlands) Central Hunter Slopes Grey Box Forest	Coastal Valley Grassy Woodlands	233m	North West
7392463	Not classified	(Not classified) Not classified	Not classified	239m	South
7392346	Not classified	(Not classified) Not classified	Not classified	242m	East
7392557	Not classified	(Not classified) Not classified	Not classified	245m	South
8172739	Not classified	(Not classified) Not classified	Not classified	262m	North
7393030	Not classified	(Not classified) Not classified	Not classified	273m	North East
7392219	Grassy Woodlands	(Grassy Woodlands) Central Hunter Ironbark-Spotted Gum Forest	Coastal Valley Grassy Woodlands	276m	South
7392180	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	279m	East
7392989	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	285m	East
7392982	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	297m	North East
7392186	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	308m	East
7393048	Not classified	(Not classified) Not classified	Not classified	320m	North West
7392408	Not classified	(Not classified) Not classified	Not classified	321m	West
7392459	Not classified	(Not classified) Not classified	Not classified	338m	South
8172582	Grassy Woodlands	(Grassy Woodlands) Upper Hunter Sheltered Viney Shrub Forest	Western Slopes Grassy Woodlands	343m	North East
8172798	Not classified	(Not classified) Not classified	Not classified	353m	North
7392329	Not classified	(Not classified) Not classified	Not classified	355m	West
7393040	Not classified	(Not classified) Not classified	Not classified	359m	North West
8172804	Not classified	(Not classified) Not classified	Not classified	362m	North West
7392360	Not classified	(Not classified) Not classified	Not classified	367m	East
8172822	Not classified	(Not classified) Not classified	Not classified	368m	North West
7393062	Not classified	(Not classified) Not classified	Not classified	374m	West
7392251	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	381m	South
8172785	Not classified	(Not classified) Not classified	Not classified	383m	North West
7392225	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	399m	South
7392388	Not classified	(Not classified) Not classified	Not classified	400m	South
7392978	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	412m	North East
7393033	Not classified	(Not classified) Not classified	Not classified	423m	North West
7392381	Not classified	(Not classified) Not classified	Not classified	428m	South
7392365	Not classified	(Not classified) Not classified	Not classified	436m	South

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7392981	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	448m	North East
8172805	Not classified	(Not classified) Not classified	Not classified	449m	North West
8172583	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	461m	North
8172815	Not classified	(Not classified) Not classified	Not classified	470m	North West
7392299	Not classified	(Not classified) Not classified	Not classified	488m	West
8172799	Not classified	(Not classified) Not classified	Not classified	494m	North
7392991	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	495m	North East
7392511	Not classified	(Not classified) Not classified	Not classified	497m	South
8172809	Not classified	(Not classified) Not classified	Not classified	515m	North West
7392242	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	521m	South
8172806	Not classified	(Not classified) Not classified	Not classified	525m	North West
7392544	Not classified	(Not classified) Not classified	Not classified	535m	South
7392221	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	537m	South East
7392319	Not classified	(Not classified) Not classified	Not classified	545m	South East
7392341	Not classified	(Not classified) Not classified	Not classified	546m	South
8172824	Not classified	(Not classified) Not classified	Not classified	560m	North
8172812	Not classified	(Not classified) Not classified	Not classified	569m	North West
7392529	Not classified	(Not classified) Not classified	Not classified	576m	South
7392538	Not classified	(Not classified) Not classified	Not classified	582m	South
8172816	Not classified	(Not classified) Not classified	Not classified	587m	North West
7392347	Not classified	(Not classified) Not classified	Not classified	588m	South East
7392539	Not classified	(Not classified) Not classified	Not classified	598m	South
7392377	Not classified	(Not classified) Not classified	Not classified	601m	South East
7392530	Not classified	(Not classified) Not classified	Not classified	604m	South
7392457	Not classified	(Not classified) Not classified	Not classified	610m	South West
7392532	Not classified	(Not classified) Not classified	Not classified	610m	South
7392396	Not classified	(Not classified) Not classified	Not classified	615m	South East
8172713	Not classified	(Not classified) Not classified	Not classified	615m	North East
8172636	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	617m	North
7392525	Not classified	(Not classified) Not classified	Not classified	618m	South
7392354	Not classified	(Not classified) Not classified	Not classified	621m	South East
7392384	Not classified	(Not classified) Not classified	Not classified	622m	South East
7392959	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	622m	North East

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7392970	Grassy Woodlands	(Grassy Woodlands) Central Hunter Slopes Grey Box Forest	Coastal Valley Grassy Woodlands	623m	North East
7392237	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	624m	South East
7392533	Not classified	(Not classified) Not classified	Not classified	626m	South
7392391	Not classified	(Not classified) Not classified	Not classified	628m	East
7392217	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	630m	South West
8172795	Not classified	(Not classified) Not classified	Not classified	631m	North West
7392374	Not classified	(Not classified) Not classified	Not classified	638m	South East
7392973	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	640m	North East
8172645	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	641m	North
7392566	Not classified	(Not classified) Not classified	Not classified	642m	South West
7392559	Not classified	(Not classified) Not classified	Not classified	643m	South
7392494	Not classified	(Not classified) Not classified	Not classified	647m	South
7392366	Not classified	(Not classified) Not classified	Not classified	649m	South East
7392338	Not classified	(Not classified) Not classified	Not classified	654m	South East
7392378	Not classified	(Not classified) Not classified	Not classified	655m	West
7392334	Not classified	(Not classified) Not classified	Not classified	662m	West
7392407	Not classified	(Not classified) Not classified	Not classified	665m	South East
8172584	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	669m	North East
7392358	Not classified	(Not classified) Not classified	Not classified	672m	South East
7393037	Not classified	(Not classified) Not classified	Not classified	680m	North West
8172586	Grassy Woodlands	(Grassy Woodlands) Upper Hunter Sheltered Viney Shrub Forest	Western Slopes Grassy Woodlands	681m	North East
8172811	Not classified	(Not classified) Not classified	Not classified	687m	North West
7392206	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	688m	South West
7392542	Not classified	(Not classified) Not classified	Not classified	691m	South
7392505	Not classified	(Not classified) Not classified	Not classified	692m	South
7392291	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	693m	West
7392313	Not classified	(Not classified) Not classified	Not classified	700m	South
7392351	Not classified	(Not classified) Not classified	Not classified	701m	South East
7393050	Not classified	(Not classified) Not classified	Not classified	716m	North East
7392200	Rainforests	(Rainforests) Hunter-Peel Ranges Dry Rainforest	Dry Rainforests	730m	West
7392488	Not classified	(Not classified) Not classified	Not classified	730m	South
7392558	Not classified	(Not classified) Not classified	Not classified	731m	South
7393044	Not classified	(Not classified) Not classified	Not classified	734m	North West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7393052	Not classified	(Not classified) Not classified	Not classified	734m	North West
7392564	Not classified	(Not classified) Not classified	Not classified	735m	South
7393049	Not classified	(Not classified) Not classified	Not classified	735m	North West
8172821	Not classified	(Not classified) Not classified	Not classified	735m	North
7392223	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	736m	South
7392211	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	738m	South West
7392289	Grassy Woodlands	(Grassy Woodlands) Central Hunter Ironbark-Spotted Gum Forest	Coastal Valley Grassy Woodlands	742m	South
7392245	Grassy Woodlands	(Grassy Woodlands) Central West Flats Grassy Box Woodland	Western Slopes Grassy Woodlands	747m	South West
7392458	Not classified	(Not classified) Not classified	Not classified	761m	South
8172585	Grassy Woodlands	(Grassy Woodlands) Upper Hunter Sheltered Viney Shrub Forest	Western Slopes Grassy Woodlands	762m	North East
8172695	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	766m	North East
7392958	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	773m	North East
8172755	Not classified	(Not classified) Not classified	Not classified	777m	North
8172748	Not classified	(Not classified) Not classified	Not classified	783m	North
7392218	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	797m	West
8172808	Not classified	(Not classified) Not classified	Not classified	799m	North
7392276	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	805m	South West
7392957	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	815m	North East
7393039	Not classified	(Not classified) Not classified	Not classified	823m	North West
7392402	Not classified	(Not classified) Not classified	Not classified	824m	South
7392520	Not classified	(Not classified) Not classified	Not classified	831m	South West
7392561	Not classified	(Not classified) Not classified	Not classified	837m	South West
7392519	Not classified	(Not classified) Not classified	Not classified	842m	South West
7392977	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Hunter Escarpment Grey Gum Sheltered Forest	Hunter-Macleay Dry Sclerophyll Forests	842m	East
7392262	Rainforests	(Rainforests) Hunter-Peel Ranges Dry Rainforest	Dry Rainforests	844m	South West
7392220	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	847m	South East
7392486	Not classified	(Not classified) Not classified	Not classified	848m	South West
8172581	Rainforests	(Rainforests) Hunter-Peel Ranges Dry Rainforest	Dry Rainforests	850m	North East
7392224	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	851m	South East
8172619	Grassy Woodlands	(Grassy Woodlands) Central Hunter Slopes Grey Box Forest	Coastal Valley Grassy Woodlands	854m	North
8172648	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	854m	North
7392355	Not classified	(Not classified) Not classified	Not classified	867m	South East

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7393045	Not classified	(Not classified) Not classified	Not classified	873m	North West
7392379	Not classified	(Not classified) Not classified	Not classified	875m	South East
7392361	Not classified	(Not classified) Not classified	Not classified	881m	South East
7392569	Not classified	(Not classified) Not classified	Not classified	886m	South
7392508	Not classified	(Not classified) Not classified	Not classified	887m	South West
7392955	Grassy Woodlands	(Grassy Woodlands) Central Hunter Slopes Grey Box Forest	Coastal Valley Grassy Woodlands	887m	North East
7392277	Forested Wetlands	(Forested Wetlands) Lower North Hinterland River Oak Forest	Eastern Riverine Forests	888m	South West
7392390	Not classified	(Not classified) Not classified	Not classified	888m	South East
7392371	Not classified	(Not classified) Not classified	Not classified	895m	South East
7392504	Not classified	(Not classified) Not classified	Not classified	902m	South West
7392517	Not classified	(Not classified) Not classified	Not classified	904m	South West
7392540	Not classified	(Not classified) Not classified	Not classified	906m	West
7392340	Not classified	(Not classified) Not classified	Not classified	909m	South East
7392222	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	910m	South East
7392295	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	910m	East
7392359	Not classified	(Not classified) Not classified	Not classified	913m	South West
7393053	Not classified	(Not classified) Not classified	Not classified	916m	North East
7392350	Not classified	(Not classified) Not classified	Not classified	928m	East
7392406	Not classified	(Not classified) Not classified	Not classified	928m	South East
7392565	Not classified	(Not classified) Not classified	Not classified	931m	West
7392960	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	939m	North East
8172750	Not classified	(Not classified) Not classified	Not classified	940m	North
7392213	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	941m	South West
7392552	Not classified	(Not classified) Not classified	Not classified	943m	South West
8172823	Not classified	(Not classified) Not classified	Not classified	947m	North
7392227	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	949m	South East
7392212	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Upper Hunter Box-Blakelys Red Gum Grassy Forest	North-west Slopes Dry Sclerophyll Woodlands	953m	South West
7392339	Not classified	(Not classified) Not classified	Not classified	964m	South East
7392398	Not classified	(Not classified) Not classified	Not classified	979m	South East
7392497	Not classified	(Not classified) Not classified	Not classified	981m	South West
7392974	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Central Hunter Ironbark Grassy Woodland	Hunter-Macleay Dry Sclerophyll Forests	986m	North East
7392509	Not classified	(Not classified) Not classified	Not classified	987m	South West
8172754	Not classified	(Not classified) Not classified	Not classified	987m	North West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
7392226	Grassy Woodlands	(Grassy Woodlands) Northwest Yellow Box Grassy Woodland	Western Slopes Grassy Woodlands	991m	South East

Native Vegetation Type Map : NSW Department of Planning and Environment 2022

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Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map ID	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Agriculture, Water and the Environment

Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Collaborative Australian Protected Areas Database - Terrestrial

Protected areas in terrestrial environments identified by the CAPAD within the dataset buffer:

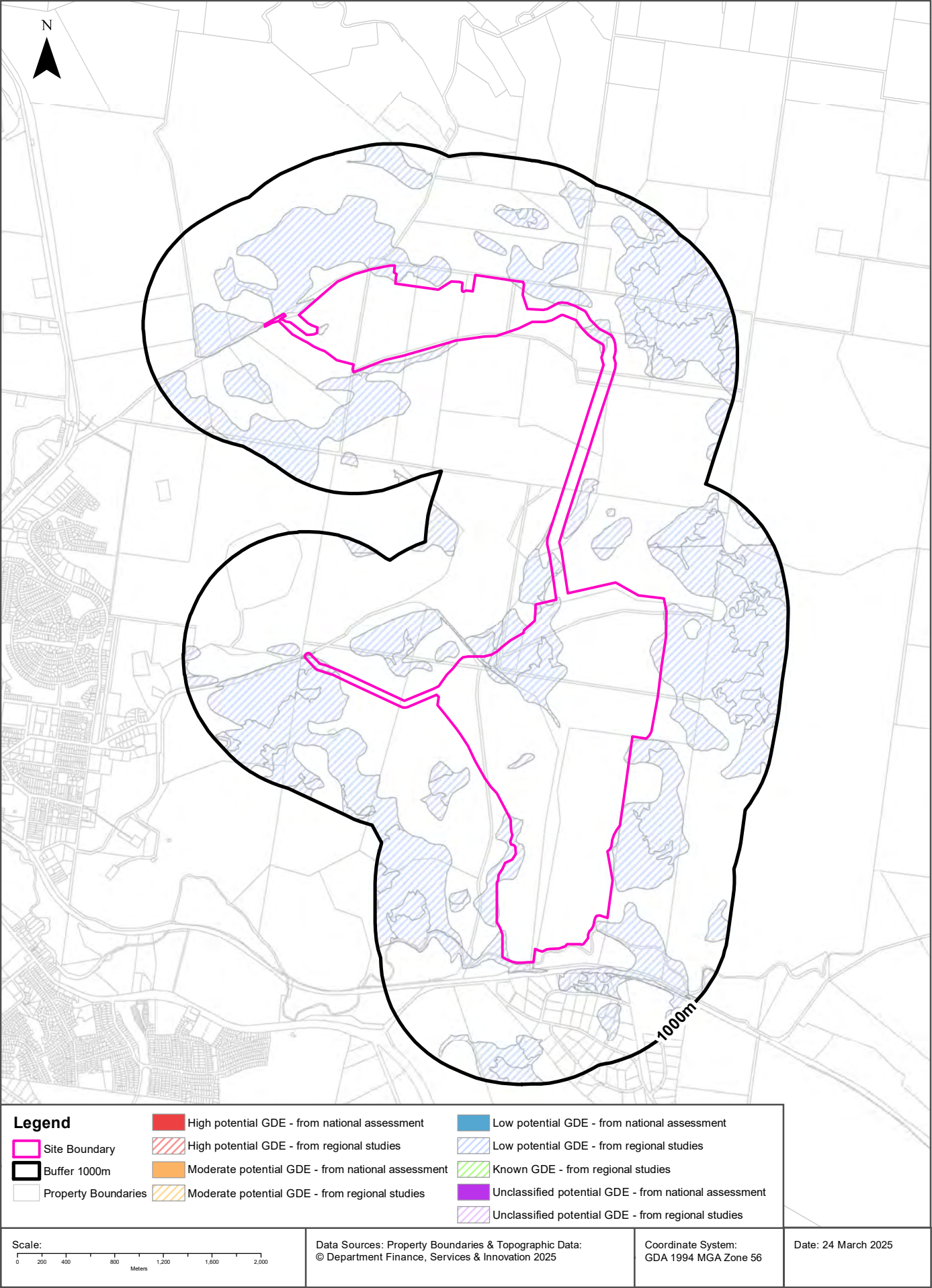
Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
N/A	No records in buffer						

Collaborative Australian Protected Areas Database - Marine

Protected areas in marine environments identified by the CAPAD within the dataset buffer:

Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
N/A	No records in buffer						

Source: Collaborative Australian Protected Areas Database (CAPAD) 2022
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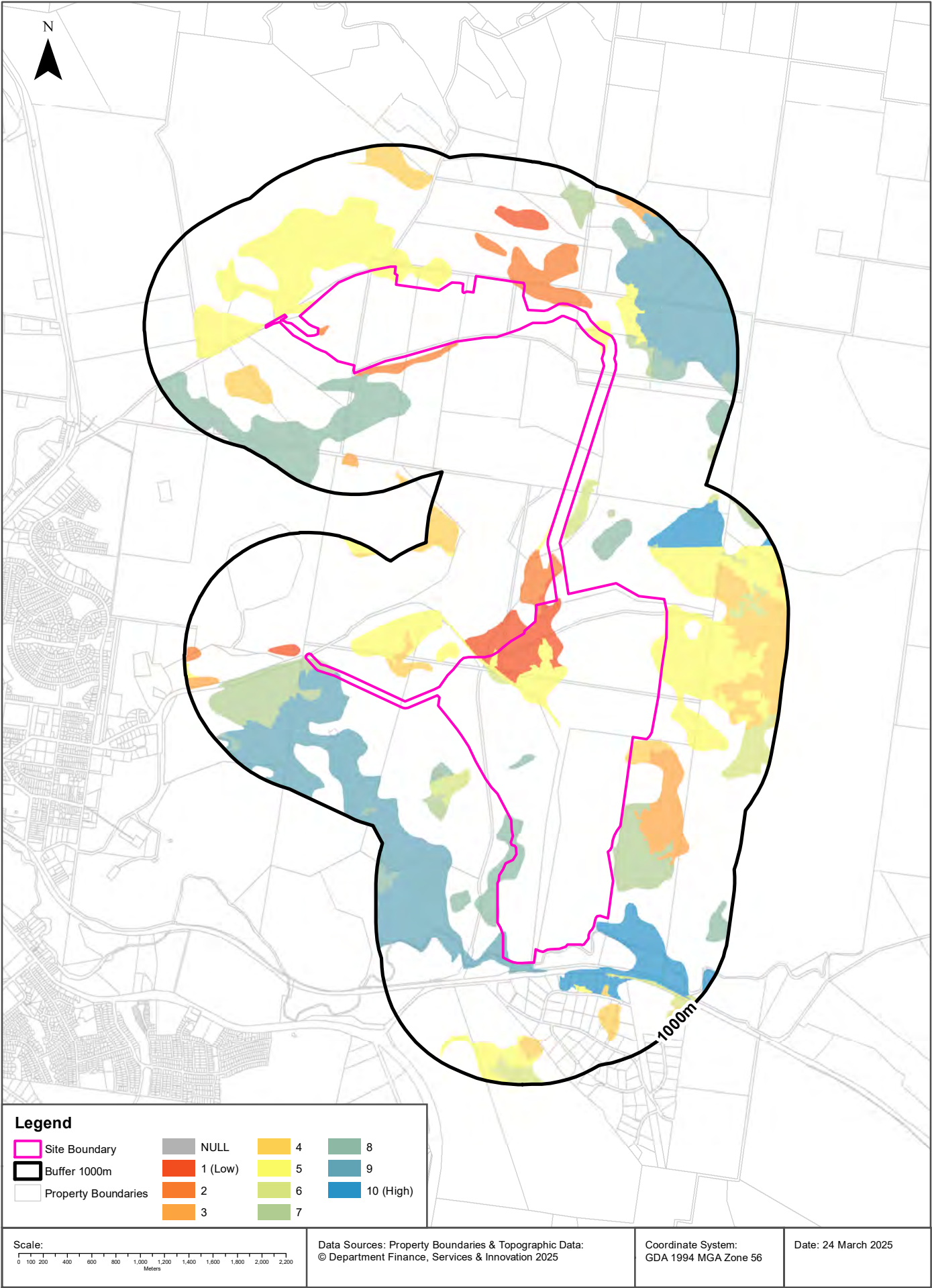
Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		0m	On-site
Terrestrial	Low potential GDE - from regional studies	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	1	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	5	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	7	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		0m	On-site
Terrestrial	8	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	6	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	2	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	4	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	9	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		0m	On-site
Terrestrial	7	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		0m	On-site
Terrestrial	10	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		14m	South
Terrestrial	3	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		85m	South East
Terrestrial	9	Plateau flank dissected into narrow strike ridges and valleys.	Vegetation		227m	North East
Terrestrial	6	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		296m	South
Terrestrial	4	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		598m	South
Terrestrial	5	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		598m	South
Terrestrial	3	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		740m	West
Terrestrial	8	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		804m	South West
Terrestrial	2	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		861m	West

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Muswellbrook Solar Farm, Muswellbrook, NSW 2333

NSW BioNet Species Sightings

Species sightings from the NSW BioNet Repository that have either a state or federal conservation status, or a sensitivity status, and are within 10 km of the site:

Note: This data does not include NSW Category 1 sensitive species.

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Category 2	Critically Endangered	Critically Endangered	
Animalia	Aves	Aphelocephala leucopsis	Southern Whiteface	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Ardena pacifica	Wedge-tailed Shearwater	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calyptorhynchus lathamii lathamii	South-eastern Glossy Black-Cockatoo	Category 2	Vulnerable	Vulnerable	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lathamus discolor	Swift Parrot	Not Sensitive	Endangered	Critically Endangered	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	South-eastern Hooded Robin	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Ninox strenua	Powerful Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Not Sensitive	Vulnerable	Not Listed	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Category 3	Vulnerable	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Not Sensitive	Vulnerable	Endangered	
Animalia	Mammalia	Dasyurus viverrinus	Eastern Quoll	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Nyctophilus corbeni	Corben's Long-eared Bat	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Phascogale tapoatafa	Brush-tailed Phascogale	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Ctenotus brooksi	Wedgesnout Ctenotus	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Delma impar	Striped Legless Lizard	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Acacia pendula	Weeping Myall, Boree	Not Sensitive	Endangered Population	Not Listed	
Plantae	Flora	Cymbidium canaliculatum	Tiger Orchid	Category 2	Endangered Population	Not Listed	
Plantae	Flora	Diuris tricolor	Pine Donkey Orchid	Category 2	Endangered Population, Vulnerable	Not Listed	
Plantae	Flora	Eucalyptus camaldulensis	River Red Gum	Not Sensitive	Endangered Population	Not Listed	
Plantae	Flora	Eucalyptus glaucina	Slaty Red Gum	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Prasophyllum petilum	Tarengo Leek Orchid	Category 2	Endangered	Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Not Sensitive	Critically Endangered	Critically Endangered	

Source: NSW BioNet Species Sightings

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Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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GENERAL

This soil landscape covers undulating low hills and undulating hills. yellow podzolic soils (Dy3.11, Dy2.41) occur on upper to midslopes with Red Solodic Soils (Dr2.43) on more rounded hills. Lithosols (Um5.21) occur on crests. Brown Podzolic soils (Db2.21) occur on slopes on conglomerate with associated flat pavements. Yellow Soloths (Dy3.41) have been recorded in some gullies.

CLIMATIC ZONE: 3B**LANDFORM**

Undulating low hills and undulating hills with elevations of 80 – 370 m. Slopes are 0 – 10%, with slope lengths of 800 – 1,200 m. Local relief is 60 – 120 m. Drainage lines occur at intervals of 300 – 1,500 m.

NATIVE VEGETATION

An open-woodland of narrow-leaved red ironbark, white box and yellow box with some Blakelys red gum, broad-leaved red ironbark, grey gum and grey box. Extensive clearing for grazing has occurred.

GEOLOGY

Geological Unit: Singleton Coal Measures

Parent Rock: Sandstone, shale, mudstone, conglomerate and coal.

Parent Material: *In situ* weathered parent rock and derived colluvium.

SOIL EROSION

Minor to moderate sheet erosion is common. Some gullies up to 3 m deep are associated with the dispersible Soloths and Solodic Soils.

GENERAL SOIL DESCRIPTIONS:**Yellow Podzolic Soils (Dy3.11, Dy2.41)**

Topsoil: Brown fine sandy loam to silt loam; weak sub-angular blocky structure or massive; pH 6.0 - 6.5.

There may be an A₂ horizon. Bleached; light brownish grey fine sandy loam; massive; pH 6.5; depth to 40 cm.

Subsoil: Sharp change to bright brown or bright reddish brown sandy clay to heavy clay; moderate to strong structure; porous rough-faced peds; may be mottled brown, yellow and red (to 30%); pH 6.0.

Red Solodic Soils (Dr2.43)

Topsoil: Dark reddish brown fine sandy loam with weak structure; pH 6.5. Overlies A₂ horizon. Massive; pH 6.0; depth to 20 cm.

Subsoil: Clear change to reddish brown light to light medium clay that has strong structure; pH 7.0 – 8.0. Becomes brighter with depth with distinct orange mottles (to 20%); pH 8.0 – 9.0.

Lithosols (Um5.21)

Topsoil: Dark reddish brown light sandy clay loam; single-grained; pH 7.5.
Becomes a loam fine sandy at 10 cm depth; pH 8.0.
Bedrock at 35 cm.

Brown Podzolic Soils (Db2.21)

Topsoil: Very dark brown loam fine sandy with weak structure; pH 5.5.
Overlies dark brown A₂ horizon. Loam fine sandy with weak structure; depth to 20 cm.

Subsoil: Clear change to brown sandy clay with strong sub-angular blocky structure; faint yellow and brown mottles (to 20%); pH 6.0.
Becomes brighter with depth.

Yellow Soloths (Dy3.41)

Not described.

	Yellow Podzolic Soils	Brown Podzolic Soils
Northcote code	Dy3.11, Dy2.41	Db2.21
Dominance	Common	Minor
Landform element	Upper to midslopes	Upper to midslopes
Surface condition	Hardsetting, sometimes gravelly	Hardsetting
Drainage	Imperfectly drained to moderately well drained	Moderately well drained
Soil permeability	Moderately permeable	Moderately permeable
Watertable depth	-	-
Available water-holding capacity	Moderate	Moderate
Depth to bedrock	+80 cm	+60 cm
Flood hazard	Low	Low
pH (topsoil)	6.0 – 6.5	5.5
Fertility (chemical)	Low	Low
Known nutrient deficiencies	P	P
Soil salinity	Low	Low
Erodibility (topsoil)	Moderate	Moderate
Erodibility (subsoil)	Low to moderate	Low
Erosion hazard	Moderate to very high	High
Structural degradation hazard	High	High
Land capability classification	V	V
USCS (subsoil)	-	-
Shrink-swell potential	-	-
Mass movement hazard	Low	Low

	Red Solodic Soils	Lithosols
Northcote code	Dr2.43	Um5.21
Dominance	Minor	Minor
Landform element	Upper concave slopes	Crest
Surface condition	Hardsetting	Hardsetting
Drainage	Moderately well drained	Well drained
Soil permeability	Moderately permeable	Highly permeable
Watertable depth	-	-
Available water-holding capacity	Moderate	Low
Depth to bedrock	+140 cm	35 cm
Flood hazard	Low	Low
pH (topsoil)	6.5	7.5
Fertility (chemical)	Low	Low
Known nutrient deficiencies	P	P
Soil salinity	High	Low
Erodibility (topsoil)	Moderate	Moderate
Erodibility (subsoil)	Moderate	-
Erosion hazard	High	High
Structural degradation hazard	High	High
Land capability classification	V	V
USCS (subsoil)	-	-
Shrink-swell potential	-	Low
Mass movement hazard	Low	Low

GENERAL

This soil landscape covers smooth undulating rises and low hills, becoming at higher elevations the Brays Hill soil landscape. The main soils are Brown Clays (Ug5.32) with some Black Earths (Uf6.22, Ug5.14) on upper to midslopes, Euchrozems (Gn4.23) and Non-calcic Brown Soils (Dr4.12, Dr2.12) on mid to lower slopes, and Prairie Soils (Gn3.42) on the alluvial flats. In other areas there are Red-brown Earths (Dr2.13) on the upper slopes, Chocolate Soil - Red-brown Earth intergrades (Gn4.13) on midslopes and Chocolate Soils (Gn3.23) on the lower slopes.

ASSOCIATED SOIL LANDSCAPES: Brays Hill and Hunter

CLIMATIC ZONE: 3B

LANDFORM

Undulating rises and low hills with elevation ranges of 100 – 140 m and 200 – 260 m. Slopes are gently (0 – 10%) and long and smooth (100 – 2,500 m). Local relief is 30 – 80 m. Drainage lines occur at intervals of 400 – 600 m, with some to 1,000 m. Some of this landscape is made up of old gravel terrace remnants by the Hunter River.

NATIVE VEGETATION

Woodland of white box, grey box, yellow box and Blakelys red gum, extensively cleared for grazing.

GEOLOGY

Geological Unit: Singleton Coal Measures and Quaternary alluvium.

Parent Rock: Calcareous shale and sandstone, some alluvial sediments.

Parent Material: *In situ* weathered parent rock, colluvium and alluvium.

SOIL EROSION

Minor to moderate sheet erosion on some hillslopes.

GENERAL SOIL DESCRIPTIONS:**Brown Clays (Ug5.32)**

Topsoil: Dark reddish brown or dark brown light clay with strong structure; pH 7.0 – 8.5. May become brownish black with depth; depth to 45 cm.

Subsoil: Gradual change to dark brown light medium clay with strong structure; smooth-faced dense peds; pH 8.0 – 8.5.

Black Earths (Uf6.22, Ug5.14)

Topsoil: Dark brown to brownish black light medium clay with strong structure; pH 6.5 – 7.0; depth to 15 cm.

Subsoil: Clear change to brownish black light medium clay with strong structure; carbonate nodules may be present; pH 7.0. Becomes more brown with depth; medium clay; dense peds; pH 7.5 – 9.0.

Euchrozems (Gn4.23)

- Topsoil: Dark reddish brown fine sandy clay loam with moderate structure; pH 9.0 dropping to 6.0.
- Subsoil: Clear change to dark reddish brown light clay with strong structure; rough-faced porous peds; pH 8.0.

Non-calcic Brown Soils (Dr4.12, Dr2.12)

- Topsoil: Dark reddish brown clay loam to silty clay loam with weak to moderate structure; pH 6.5; depth to 10 cm.
- Subsoil: Clear change to darker reddish brown clay loam overlying light medium to medium clay; strong structure; rough- or smooth-faced dense peds; pH 6.5 – 7.0.

Prairie Soils (Gn3.42)

- Topsoil: Brownish black silty clay loam with strong structure; pH 6.5; depth to 15 cm.
- Subsoil: Gradual change to brownish black light clay over sandy clay with strong structure; porous smooth- and rough-faced peds; pH 6.5 – 7.5.

Red-brown Earths (Dr2.13)

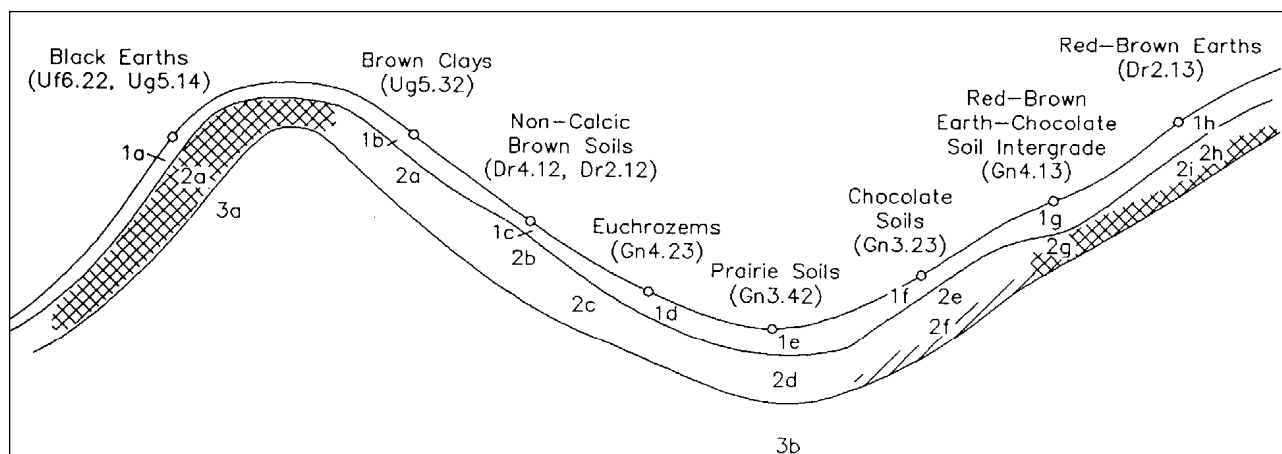
- Topsoil: Dark brown clayey sand; single-grained; pH 6.0 - 6.5; depth to 40 cm.
- Subsoil: Clear change to reddish brown light medium clay with moderate structure; pH 8.0. With depth becomes a darker medium clay with carbonate nodules; pH 9.0.



Chocolate Soils (Gn3.23)

- Topsoil: Very dark reddish brown silty clay loam with moderate structure; pH 6.5; depth to 20 cm.
- Subsoil: Gradual change to dark brown silty clay with strong structure; pH 7.0. Becomes a brown heavy clay with strong structure; dense smooth-faced peds; pH 8.5 – 9.0.

Chocolate Soil - Red-brown Earth intergrades (Gn4.13)

- Topsoil: Dark brown fine sandy clay loam with weak structure; pH 6.5; depth to 5 cm.
- Subsoil: Gradual change to dark brown light medium clay with strong structure; pH 7.0. With depth becomes a brown medium clay with strong structure; diffuse carbonate present; pH 9.0.



- 1a. Friable; dark brown light medium clay with strong structure.
 - 1b. Self-mulching and loose; dark reddish brown, dark brown or brownish black light clay with strong structure.
 - 1c. Hardsetting or loose; dark reddish brown clay loam to silty clay with weak to moderate structure.
 - 1d. Friable; dark reddish brown fine sandy loam with moderate structure.
 - 1e. Hardsetting; brownish black silty clay loam with strong structure.
 - 1f. Self mulching; very dark reddish brown silty clay loam with moderate structure.
 - 1g. Hardsetting; dark brown fine sandy clay loam with weak structure.
 - 1h. Hardsetting; dark brown clayey sand that is apedal.
 - 2a. Brownish black to brown light medium to medium clay with strong structure.
 - 2b. Dark reddish brown clay loam with strong structure.
 - 2c. Dark reddish brown light medium to medium clay with strong structure.
 - 2d. Brownish black light clay over sandy clay with strong structure.
 - 2e. Dark brown silty clay with strong structure.
 - 2f. Brown heavy clay with strong structure.
 - 2g. Dark brown to brown light medium to medium clay with strong structure.
 - 2h. Reddish brown light medium clay with moderate structure.
 - 2i. Dark reddish brown medium clay with moderate structure.
 - 3a. Permian calcareous sediments.
 - 3b. Alluvium.
-  Carbonate
 Mottling

	Brown Clays	Black Earths
Northcote code	Ug5.32	Uf6.22, Ug5.14
Dominance	Common	Minor
Landform element	Upper to midslope	Upper slope
Surface condition	Self - mulching and loose	Friable
Drainage	Moderately well-drained	Moderately well-drained
Soil permeability	Slowly to moderately permeable	Slowly permeable
Watertable depth	+100 cm	-
Available water-holding capacity	High	High
Depth to bedrock	+75 cm	100 cm
Flood hazard	Low	Low
pH (topsoil)	7.0 – 8.5	6.5 – 7.0
Fertility (chemical)	Moderate	High
Known nutrient deficiencies	P	-
Soil salinity	Low	Low
Erodibility (topsoil)	Low to moderate	Low
Erodibility (subsoil)	Moderate	Low
Erosion hazard	Moderate	Moderate
Structural degradation hazard	Low	Low
Land capability classification	II, III	III
USCS (subsoil)	-	-
Shrink-swell potential	High	High
Mass movement hazard	Low	low

	Euchrozems	Non-calcic Brown Soils
Northcote code	Gn4.23	Dr4.12, Dr2.12
Dominance	Minor	Minor
Landform element	Lower slope	mid to lower slope
Surface condition	Friable	Loose or hardsetting
Drainage	Well-drained	Well-drained
Soil permeability	Moderately permeable	Moderately permeable
Watertable depth	-	-
Available water-holding capacity	Moderate to high	Moderate
Depth to bedrock	+70 cm	+60 cm
Flood hazard	Low	Low
pH (topsoil)	9.0	6.5
Fertility (chemical)	Moderate	Moderate
Known nutrient deficiencies	P	P
Soil salinity	Low	Low
Erodibility (topsoil)	Low	Low to moderate
Erodibility (subsoil)	Moderate	Low
Erosion hazard	Moderate	Moderate to high
Structural degradation hazard	Moderate	Moderate to high
Land capability classification	IV, V	V
USCS (subsoil)	-	-
Shrink-swell potential	-	-
Mass movement hazard	Low	Low

	Prairie Soils	Red-brown Earths
Northcote code	Gn3.42	Dr2.13
Dominance	Minor	Minor
Landform element	Alluvial flat	Upper slope
Surface condition	Hardsetting	Hardsetting
Drainage	Well-drained	Moderately well-drained
Soil permeability	Moderately permeable	Moderately permeable
Watertable depth	+100 cm	-
Available water-holding capacity	Moderate to high	Moderate
Depth to bedrock	+50 cm	+100 cm
Flood hazard	Moderate	Low
pH (topsoil)	6.5	6.0
Fertility (chemical)	Moderate	Moderate
Known nutrient deficiencies	P	P
Soil salinity	Low	Low
Erodibility (topsoil)	Low	Low
Erodibility (subsoil)	Low	Low
Erosion hazard	Moderate	Slight
Structural degradation hazard	High	High
Land capability classification	III	III
USCS (subsoil)	-	-
Shrink-swell potential	-	-
Mass movement hazard	Low	Low

	Chocolate Soils	Chocolate Soil – Red-brown Earth intergrades
Northcote code	Gn3.23	Gn4.13
Dominance	Minor	Minor
Landform element	Midslope	mid to lower slope
Surface condition	Self - mulching	Hardsetting
Drainage	Imperfectly drained	Moderately well-drained
Soil permeability	Moderately permeable	Moderately permeable
Watertable depth	-	-
Available water-holding capacity	Moderate to high	Moderate
Depth to bedrock	+100 cm	+60 cm
Flood hazard	Low	Low
pH (topsoil)	6.5	6.5
Fertility (chemical)	Moderate	Moderate
Known nutrient deficiencies	P	P
Soil salinity	Low	Low
Erodibility (topsoil)	Moderate	Moderate
Erodibility (subsoil)	Low	Low
Erosion hazard	High	High
Structural degradation hazard	Moderate	High
Land capability classification	IV	IV
USCS (subsoil)	-	-
Shrink-swell potential	-	-
Mass movement hazard	Low	Low



Appendix D

Lotsearch Aerial Photographs

Project Index Map

Muswellbrook Solar Farm, Muswellbrook, NSW 2333



Legend <div><div></div> Project Report Boundaries</div>	Coordinate System: GDA 1994 MGA Zone 56	Scale: <div><div></div><div>04509001,3501,800</div><div>Meters</div></div>
	Date: 21 March 2025	Data Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS UserCommunity



LOTSEARCH
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Date: 25 Mar 2025

Reference: LS076935 EA

Address: Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333

Aerial Imagery 2023

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



<p>Scale:</p> <p>0 175 350 525 700</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 21 March 2025</p>
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Aerial Imagery 2013

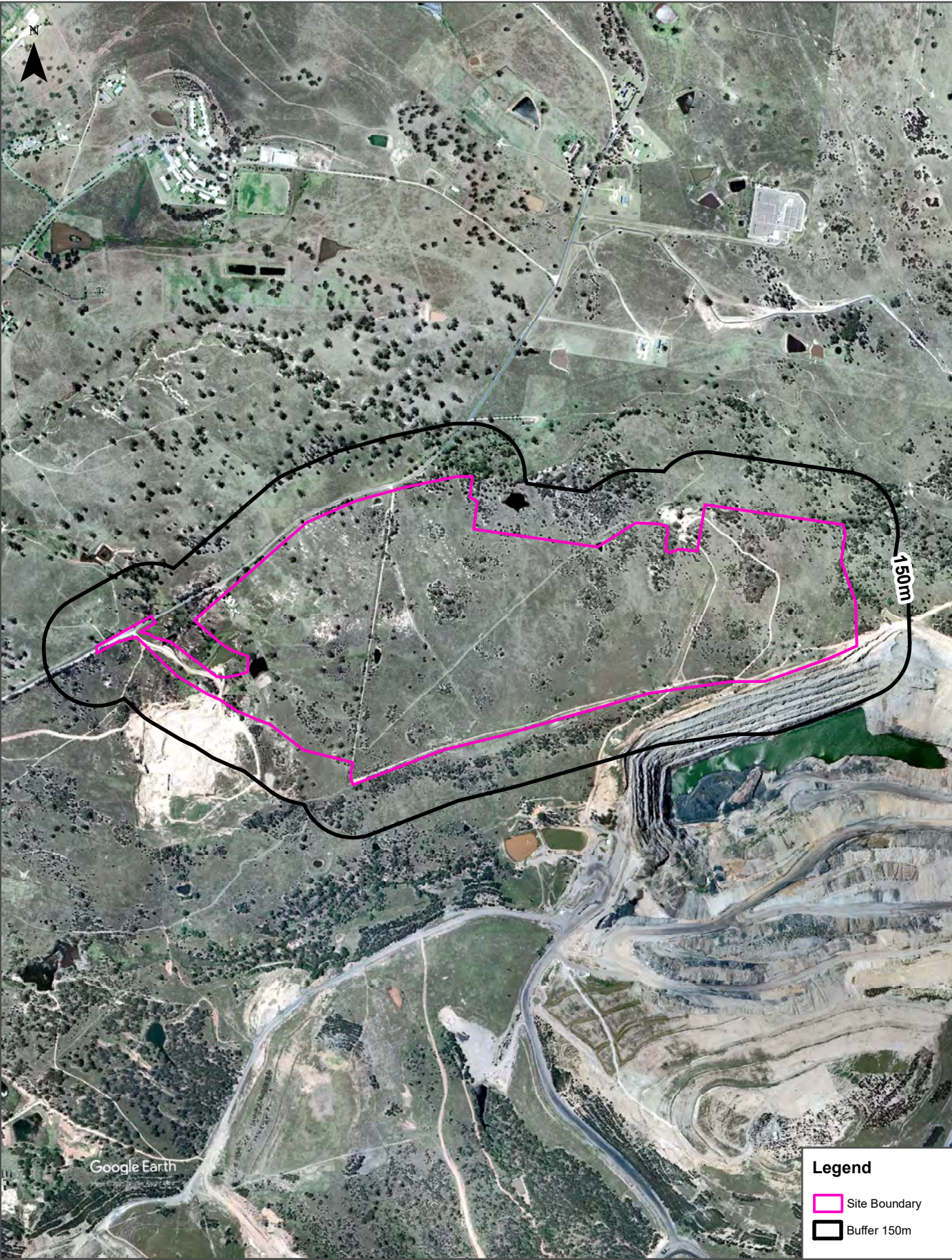
Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



<p>Scale:</p> <p>0 175 350 525 700</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 21 March 2025</p>
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Aerial Imagery 2008

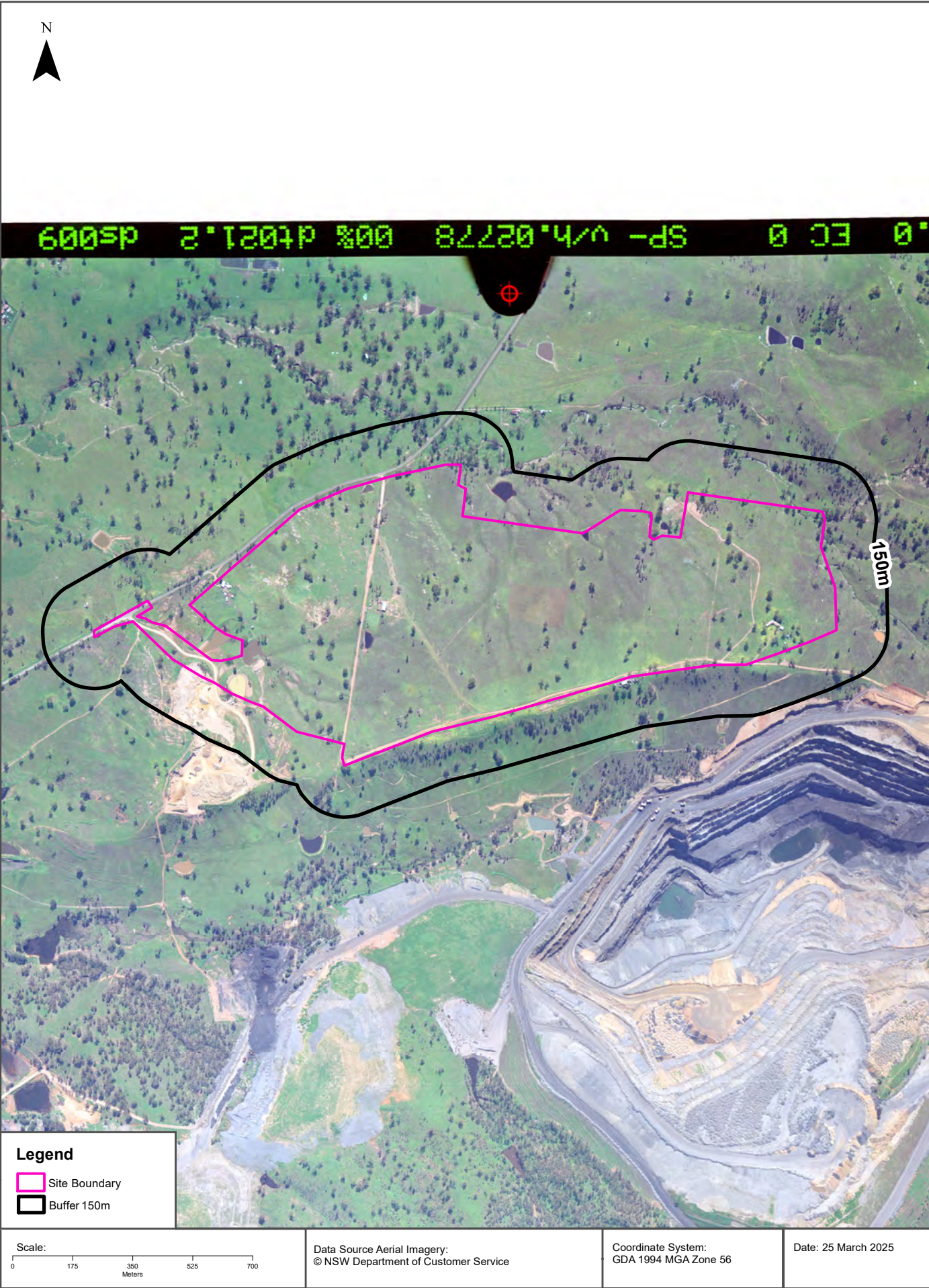
Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Scale: 0 175 350 525 700 Meters	Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 March 2025
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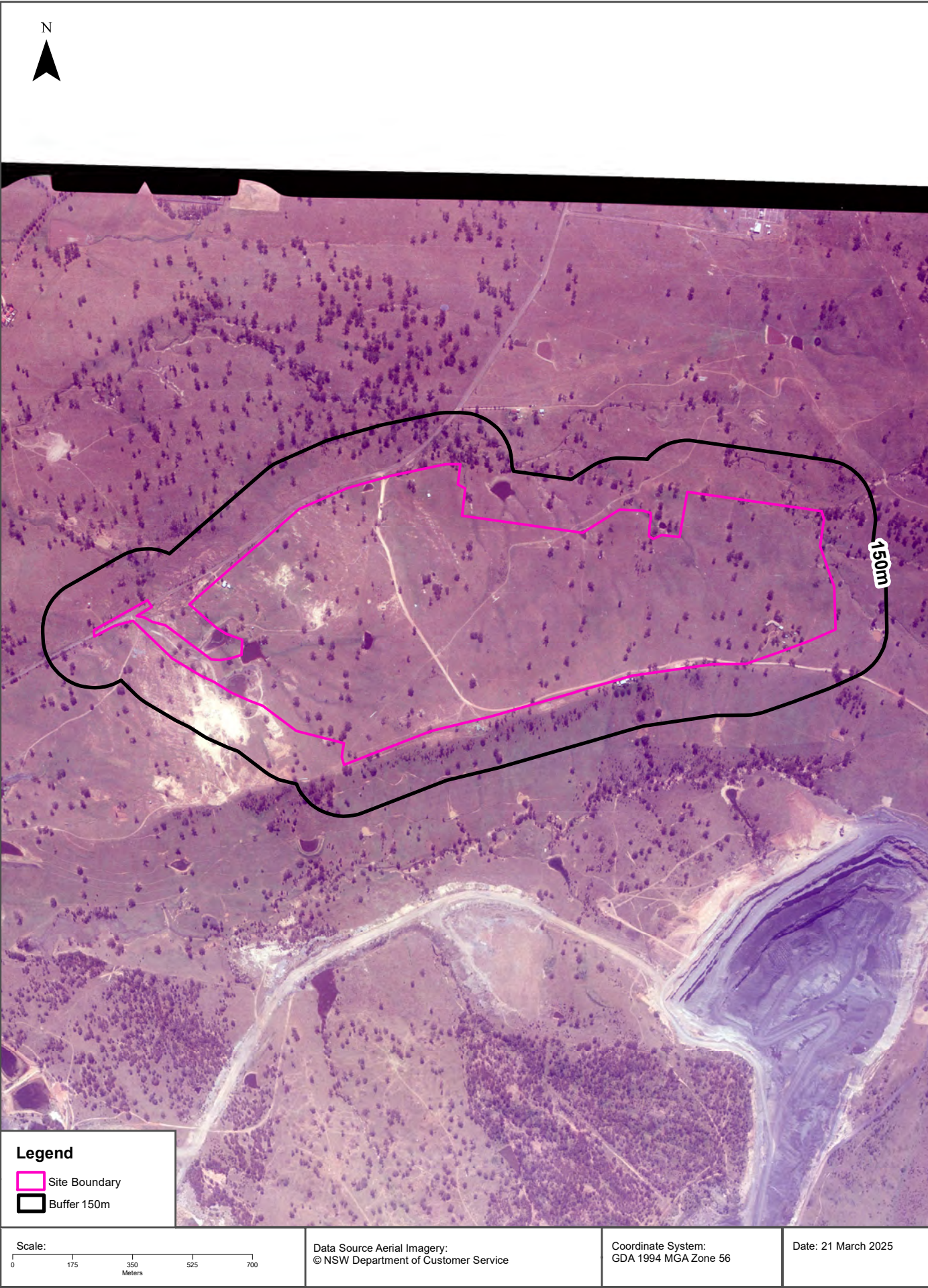
Aerial Imagery 1998

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



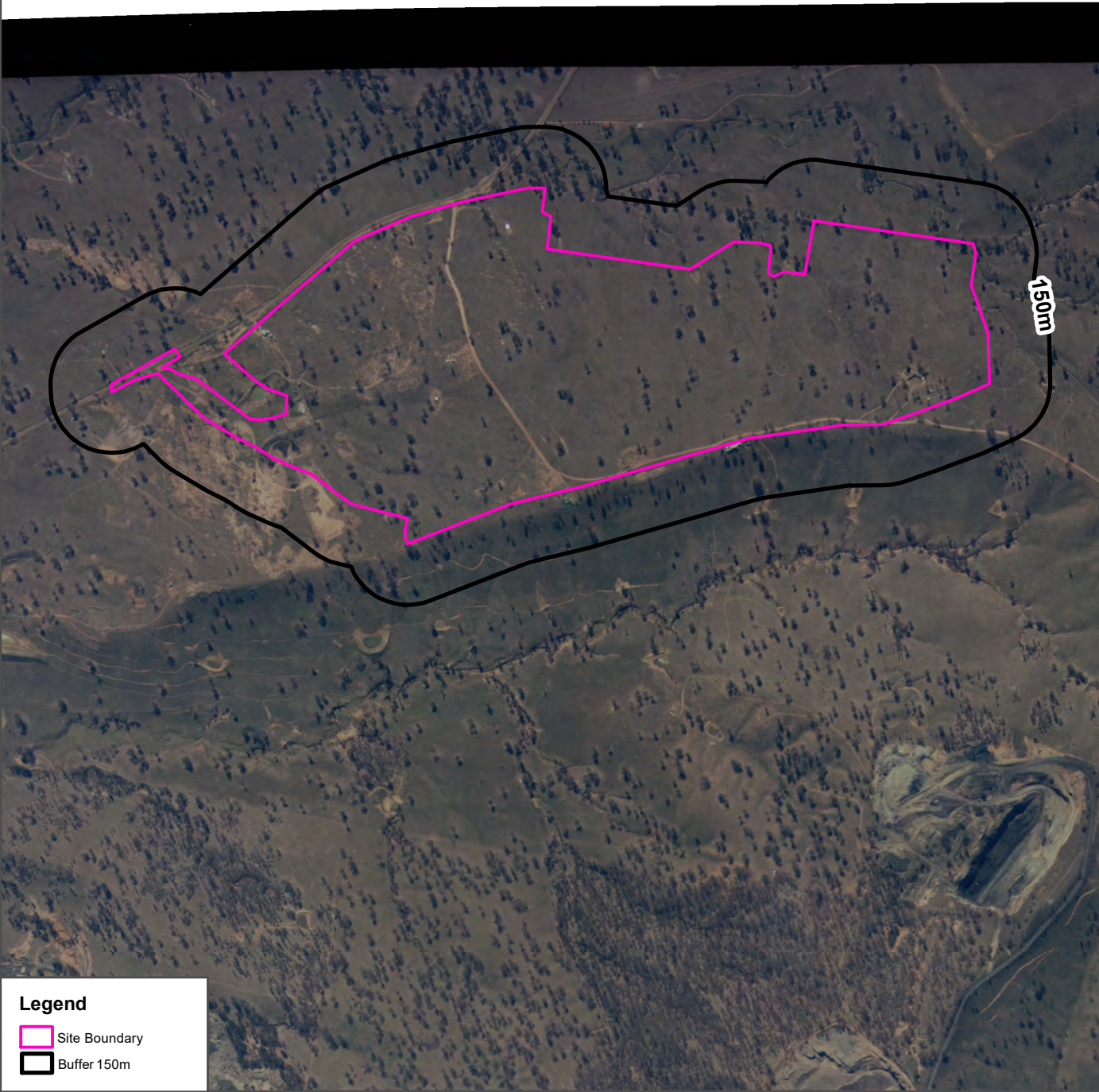
Aerial Imagery 1989

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1980

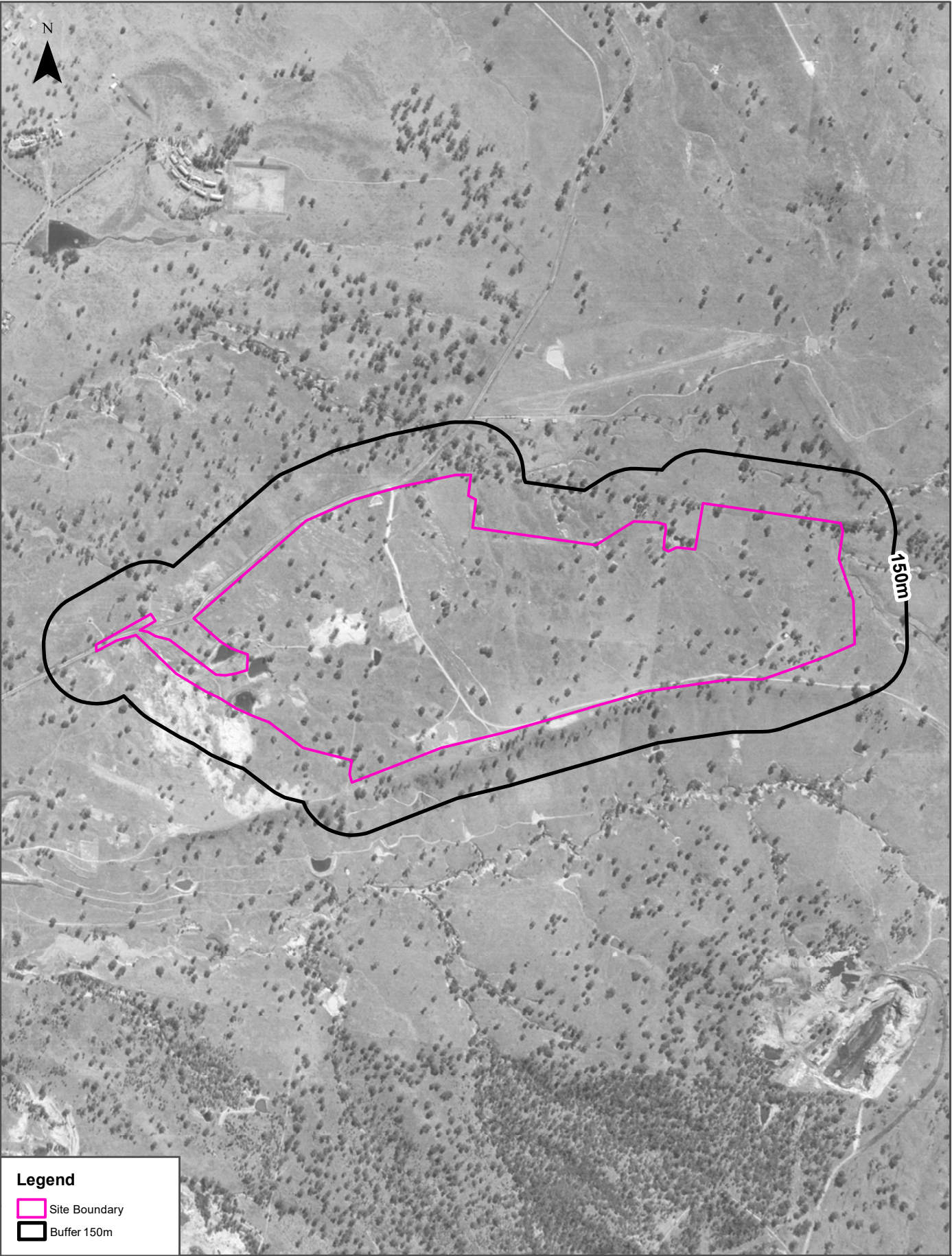
Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Scale: 0 175 350 525 700 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 March 2025
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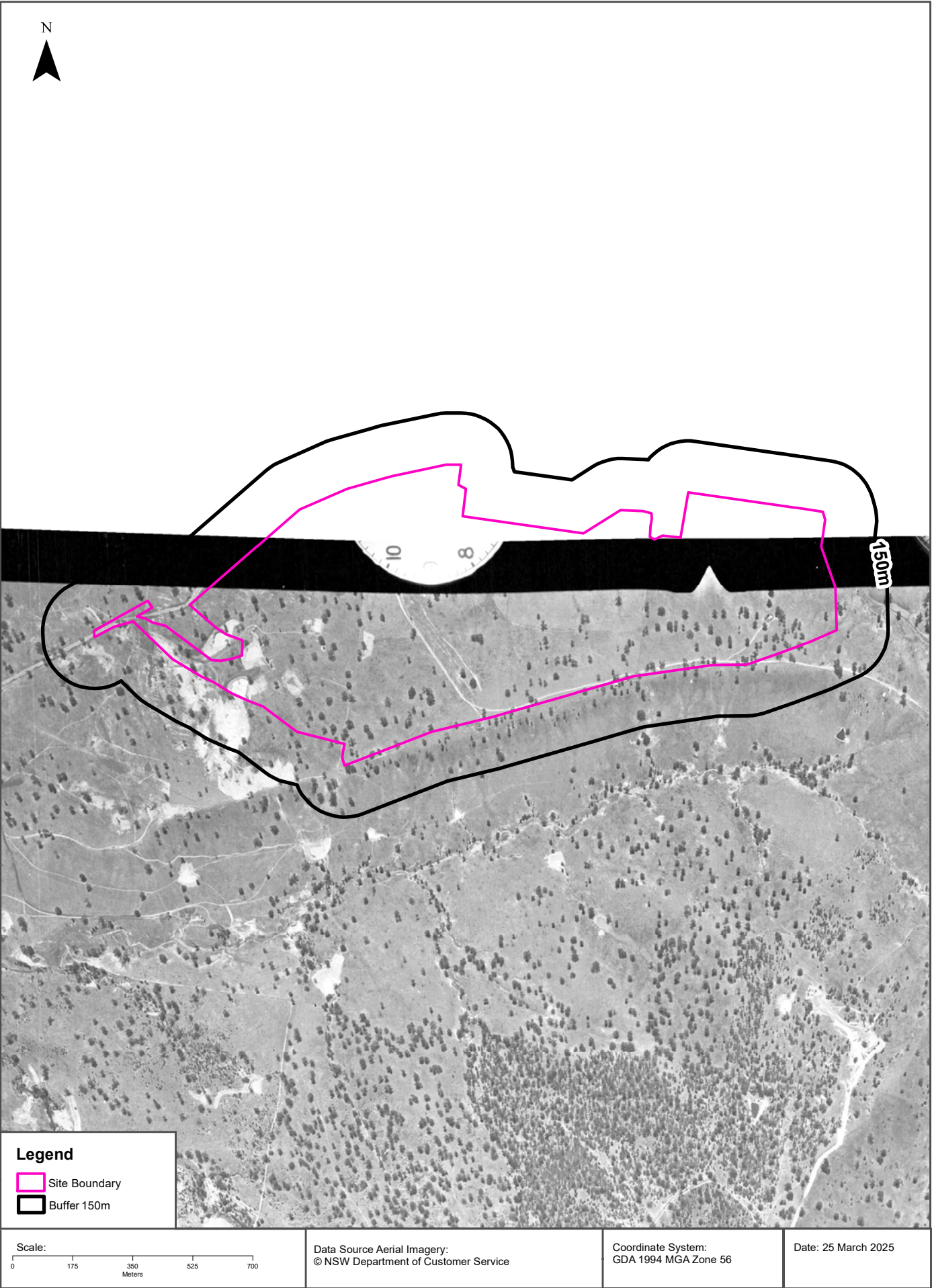
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Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



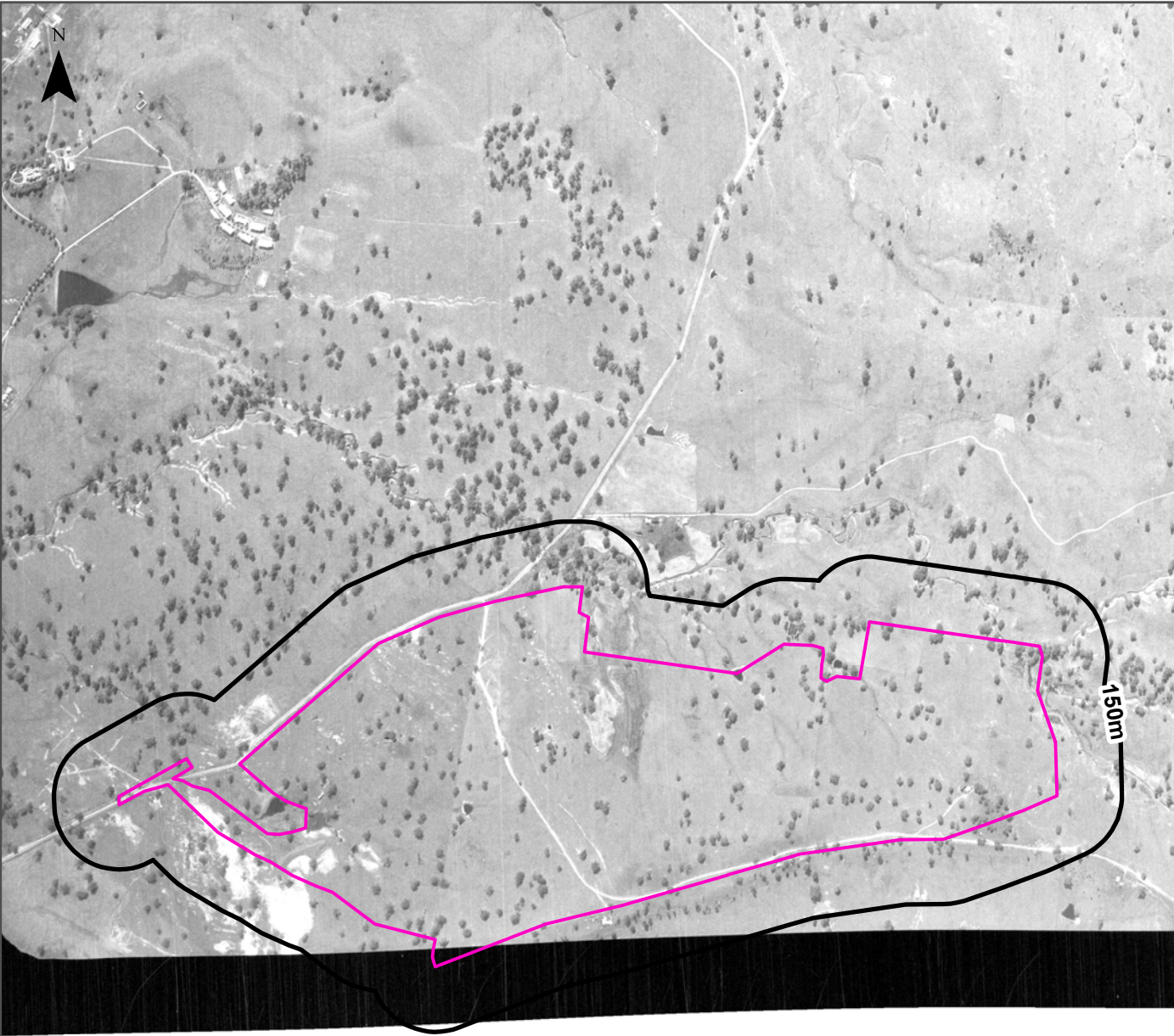
Aerial Imagery 1967

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1964

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Legend

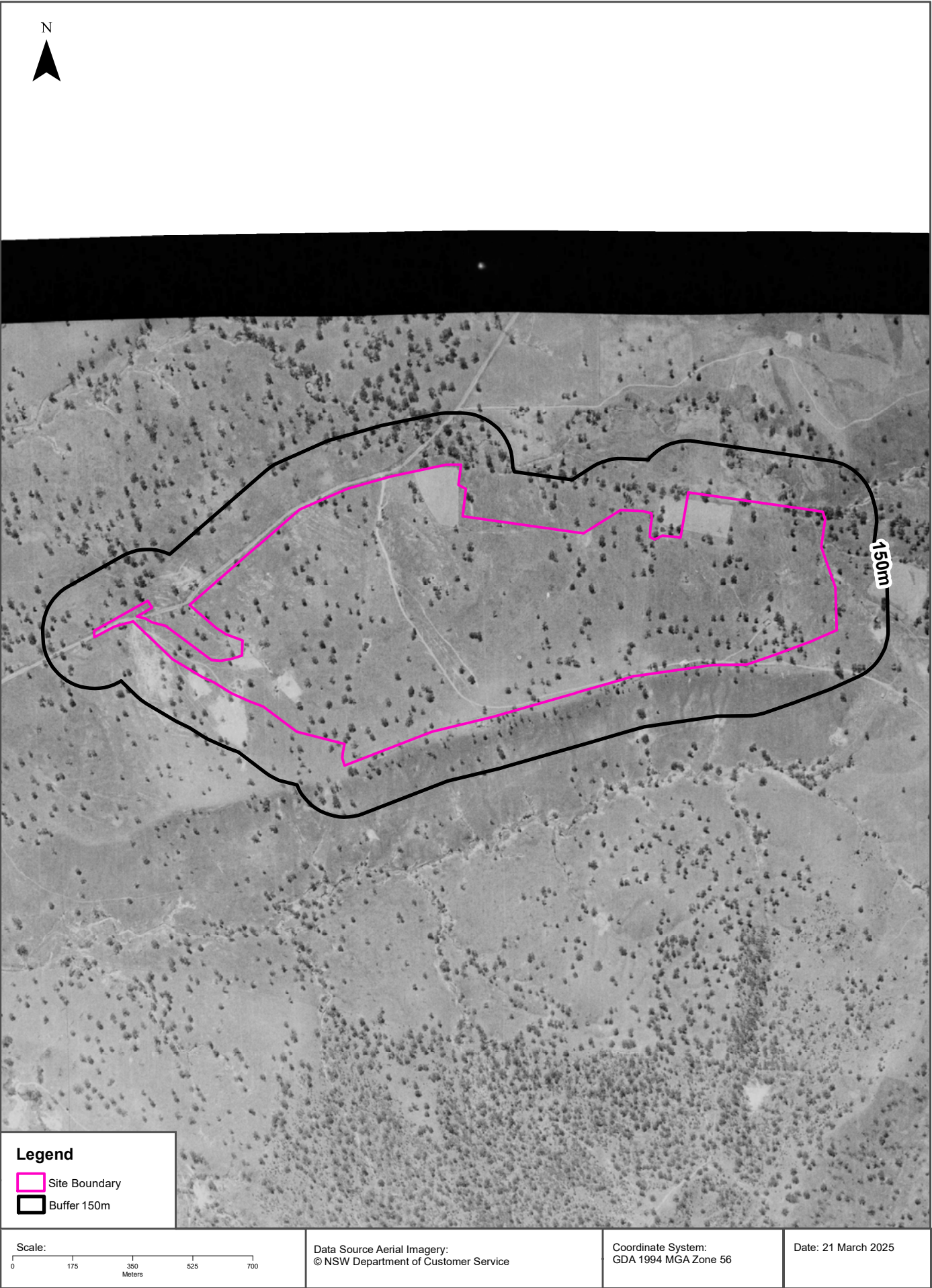
Site Boundary

Buffer 150m

Scale: 0 175 350 525 700 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 25 March 2025
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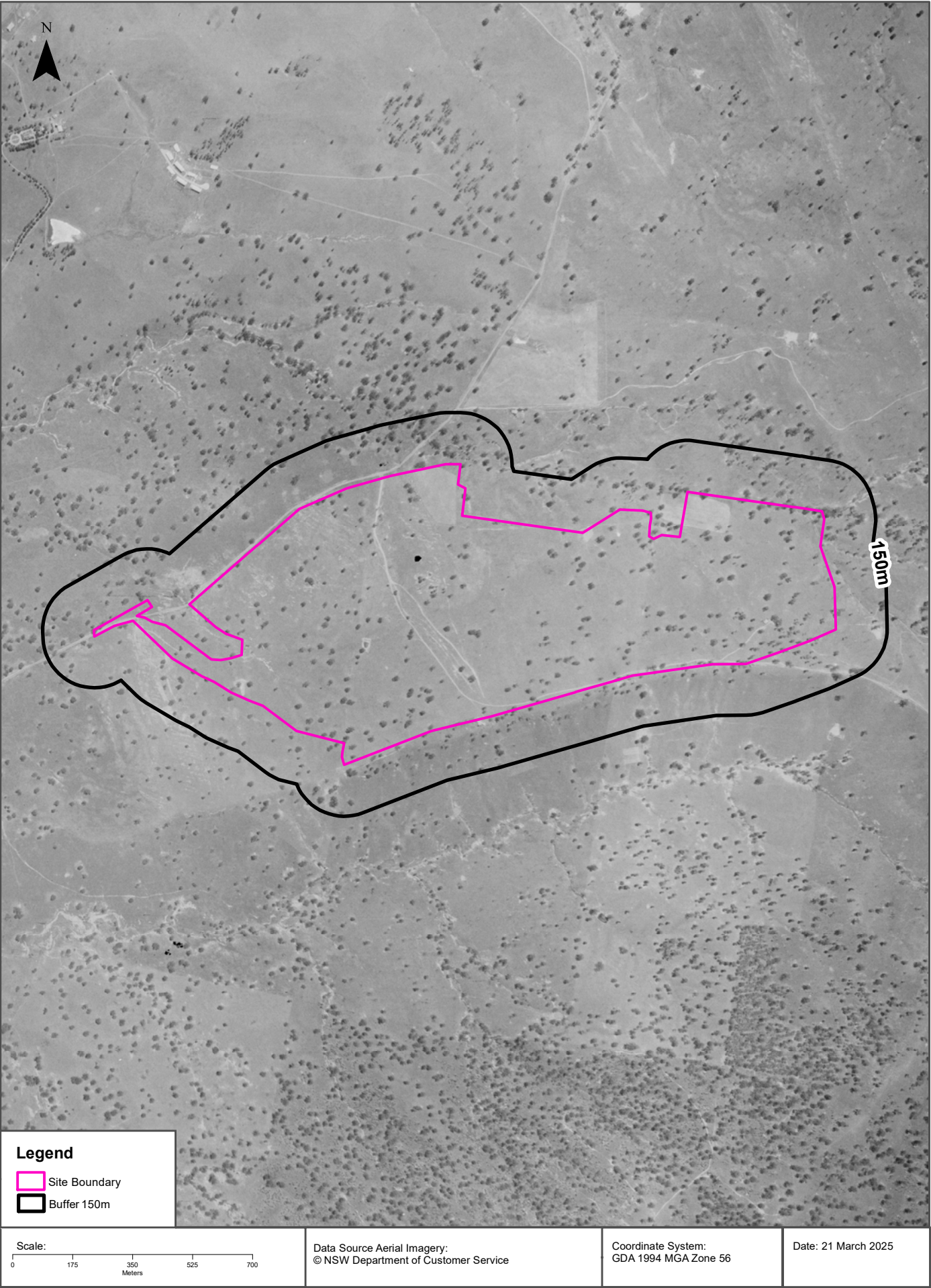
Aerial Imagery 1958

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1953

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1938

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



Legend

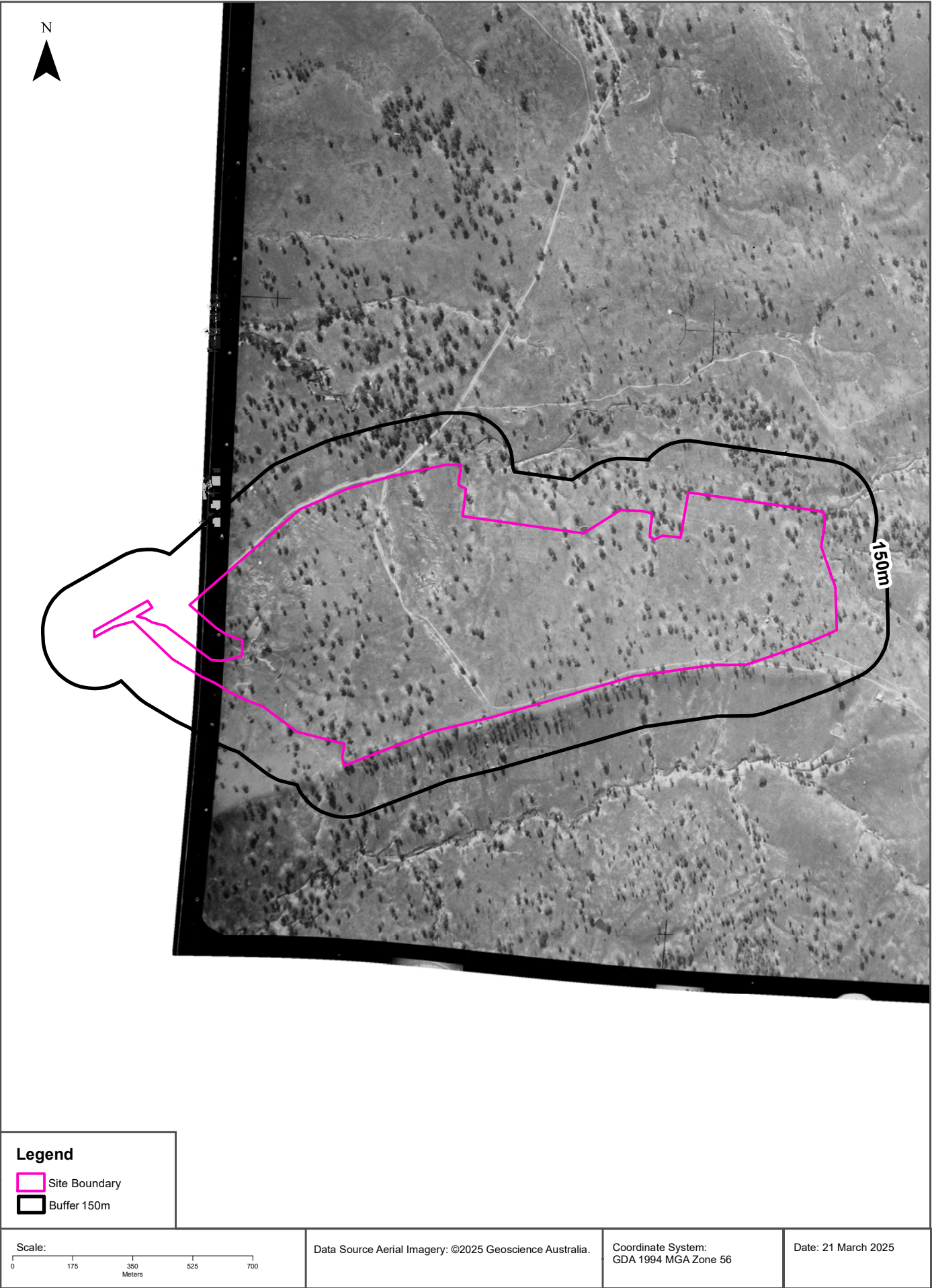
Site Boundary

Buffer 150m

Scale: 0 175 350 525 700 Meters	Data Source Aerial Imagery: ©2025 Geoscience Australia.	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 March 2025
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Aerial Imagery 1938

Muswellbrook Solar Farm (1 of 4), Muswellbrook, NSW 2333



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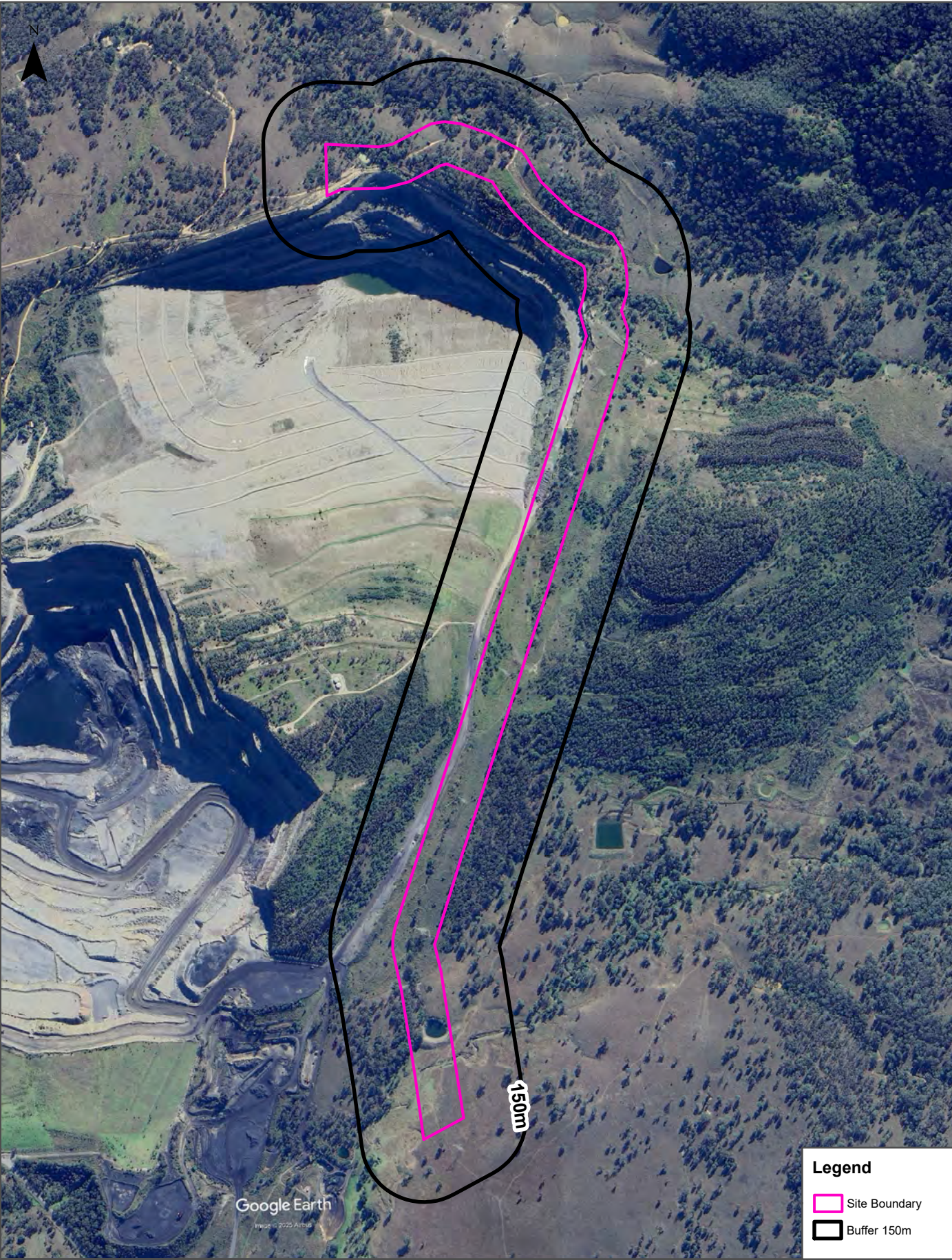
Date: 25 Mar 2025

Reference: LS076936 EA

Address: Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333

Aerial Imagery 2023

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



<p>Scale:</p> <p>0 140 280 420 560</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 24 March 2025</p>
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Aerial Imagery 2015

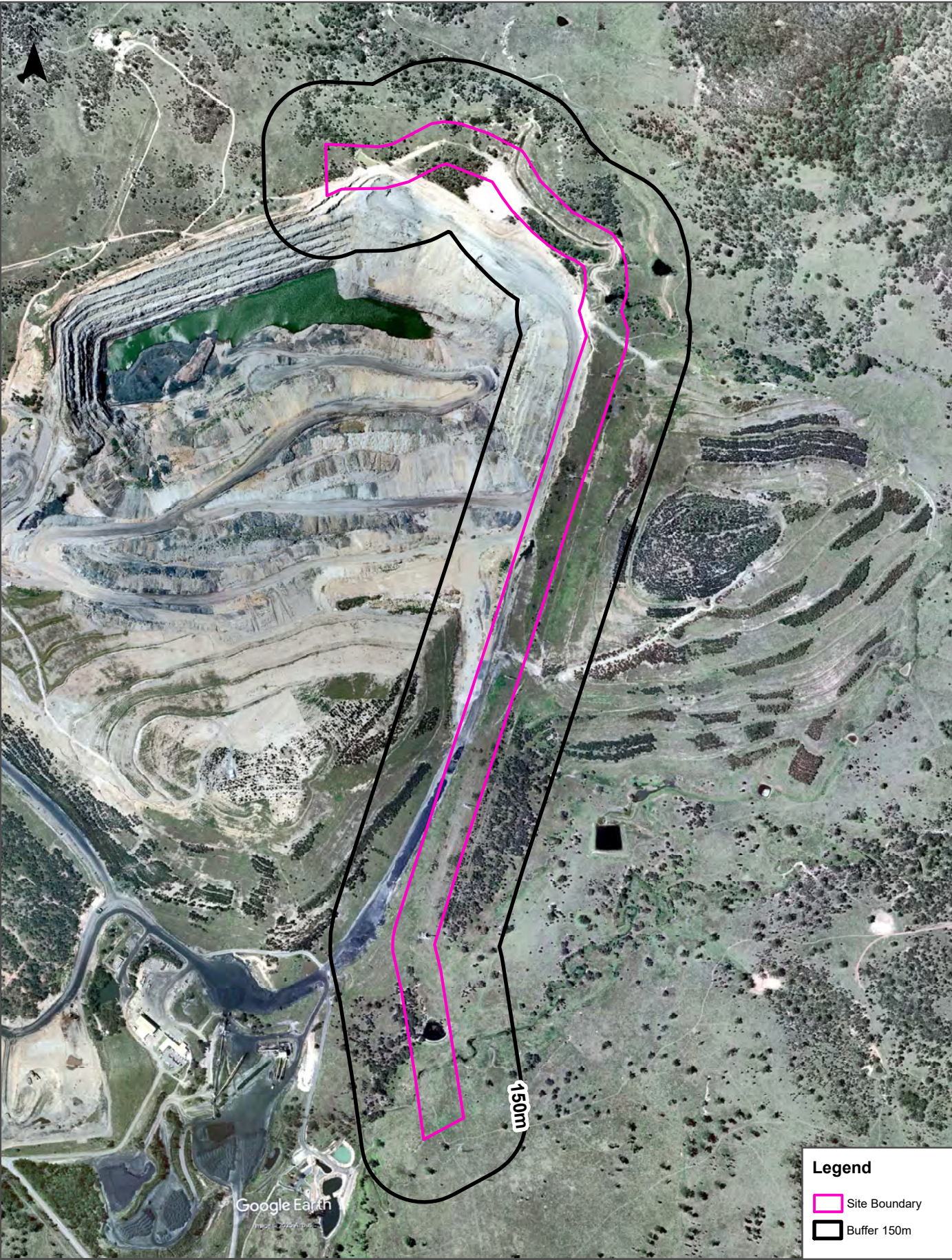
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



<p>Scale:</p> <p>0 140 280 420 560</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 24 March 2025</p>
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Aerial Imagery 2008

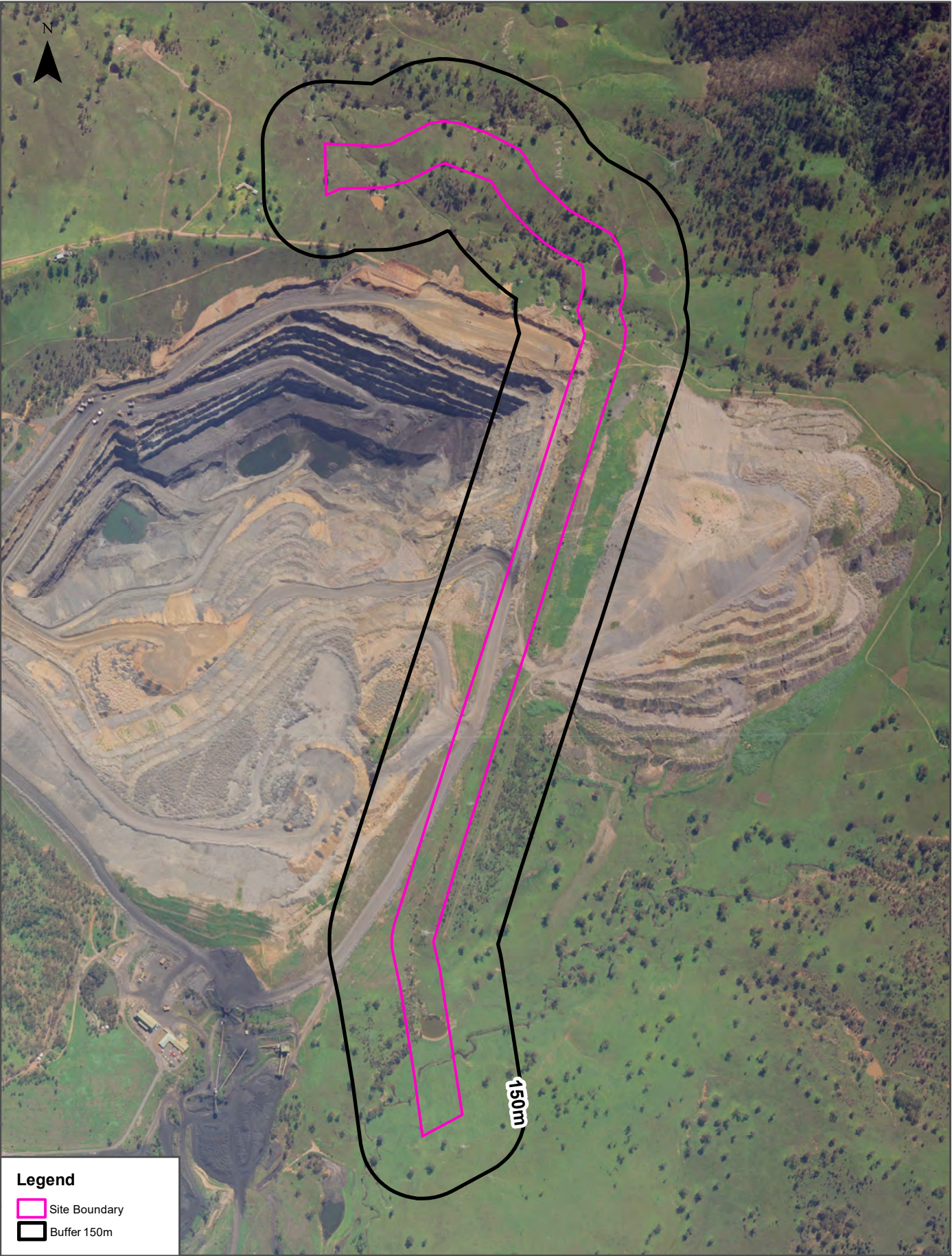
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



<p>Scale:</p> <p>0 140 280 420 560</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 24 March 2025</p>
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Aerial Imagery 1998

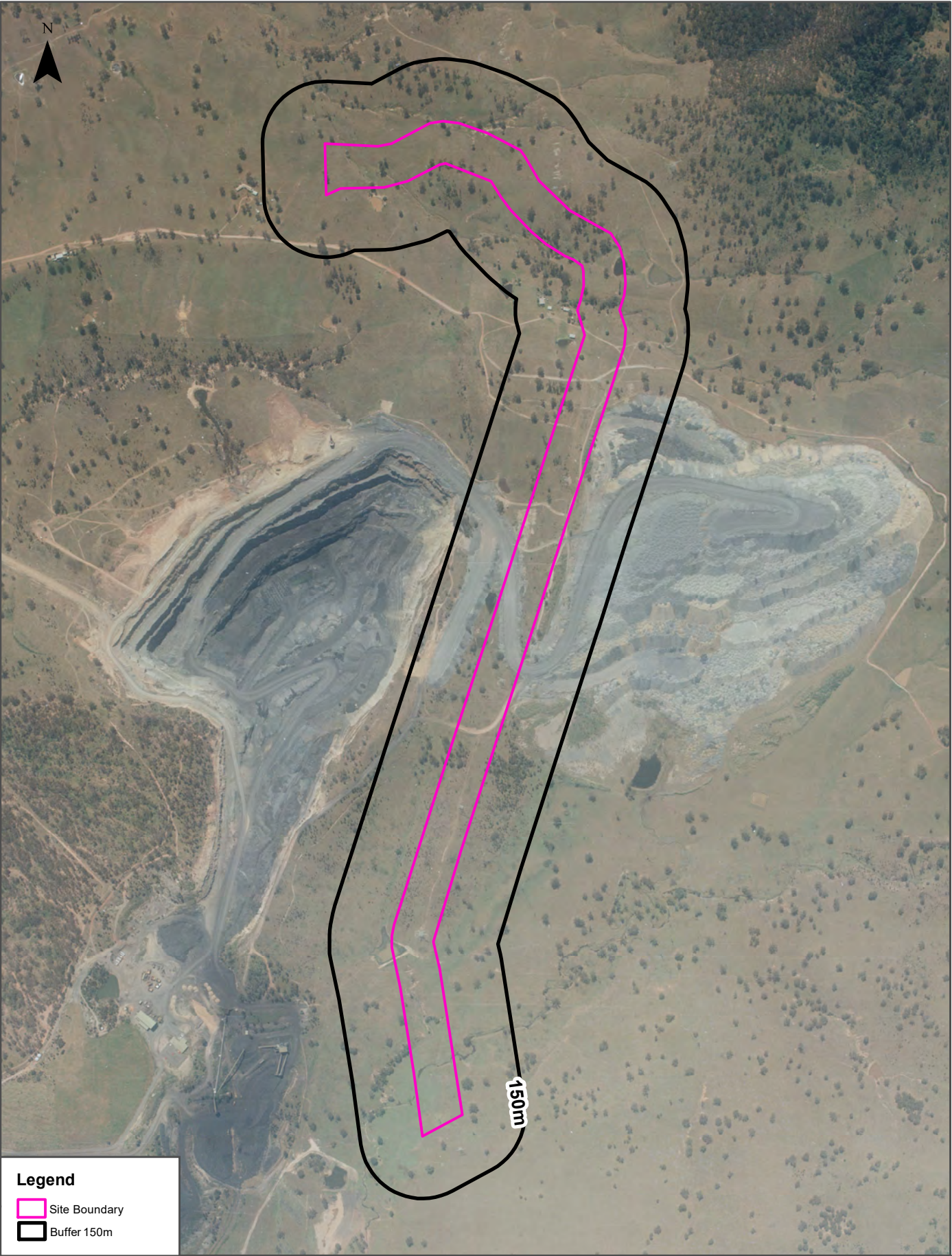
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Scale: 0 140 280 420 560 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 25 March 2025
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Aerial Imagery 1989

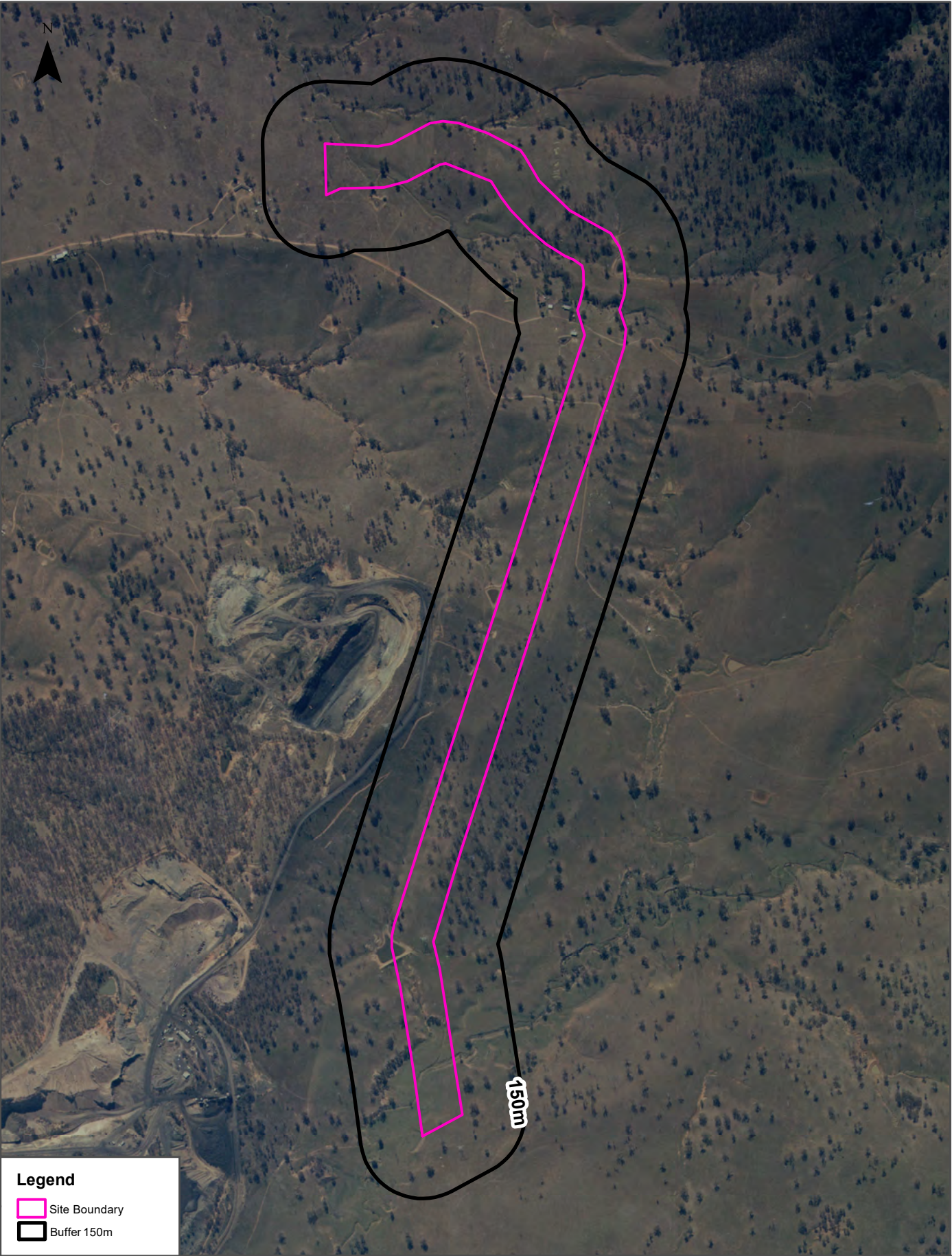
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Scale: 0 140 280 420 560 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 25 March 2025
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Aerial Imagery 1980

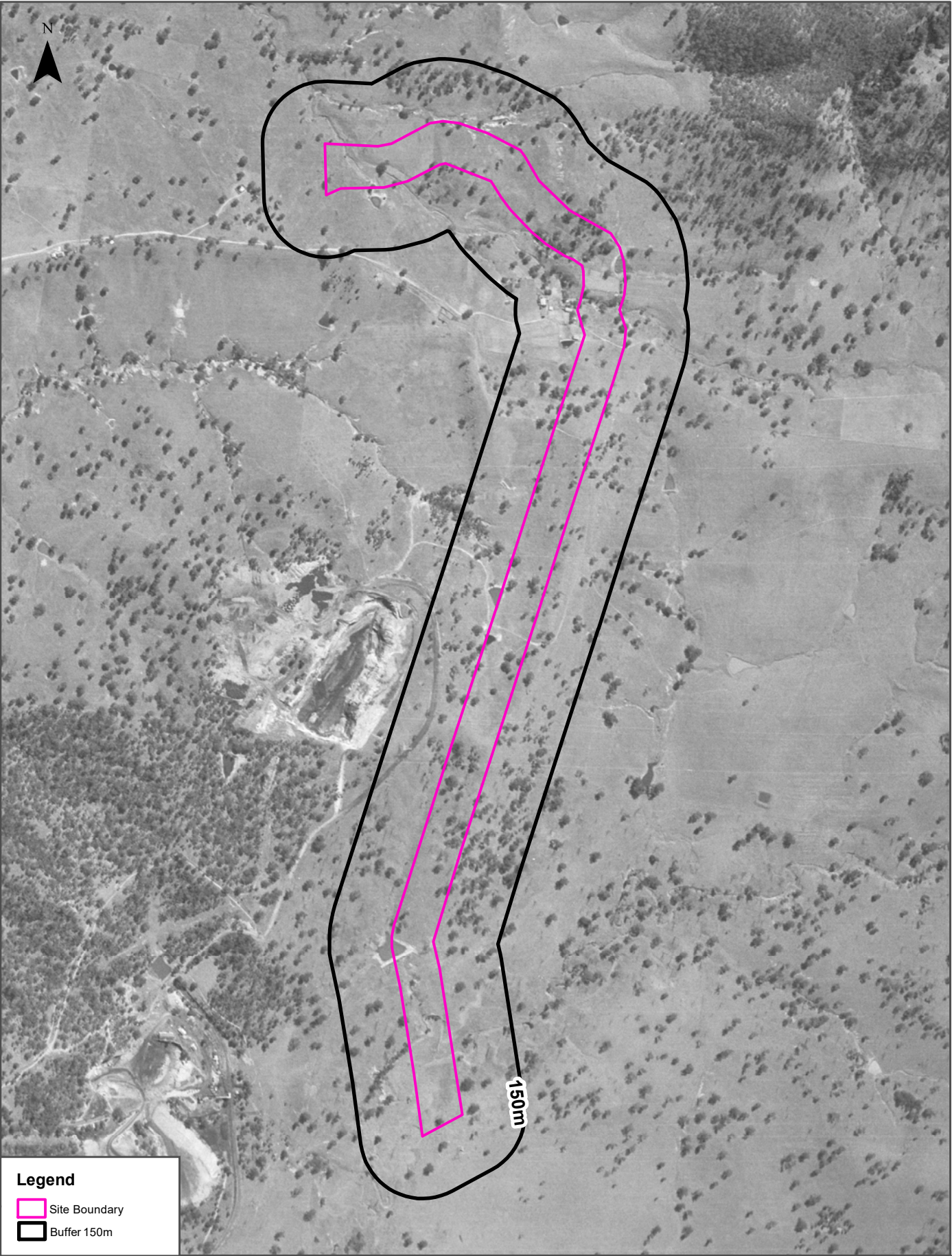
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Scale: 0 140 280 420 560 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 March 2025
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Aerial Imagery 1972

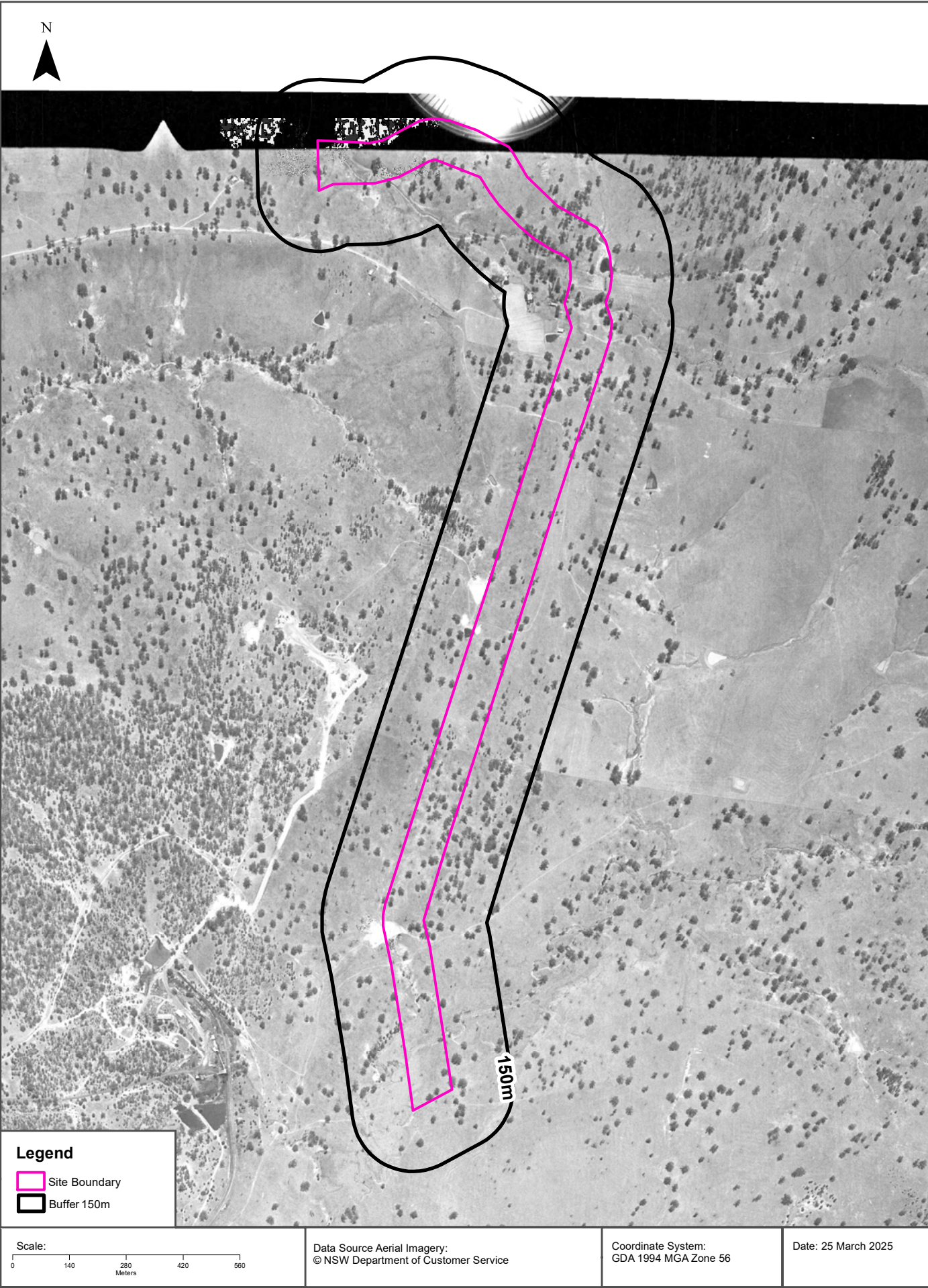
Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Scale: 0 140 280 420 560 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 March 2025
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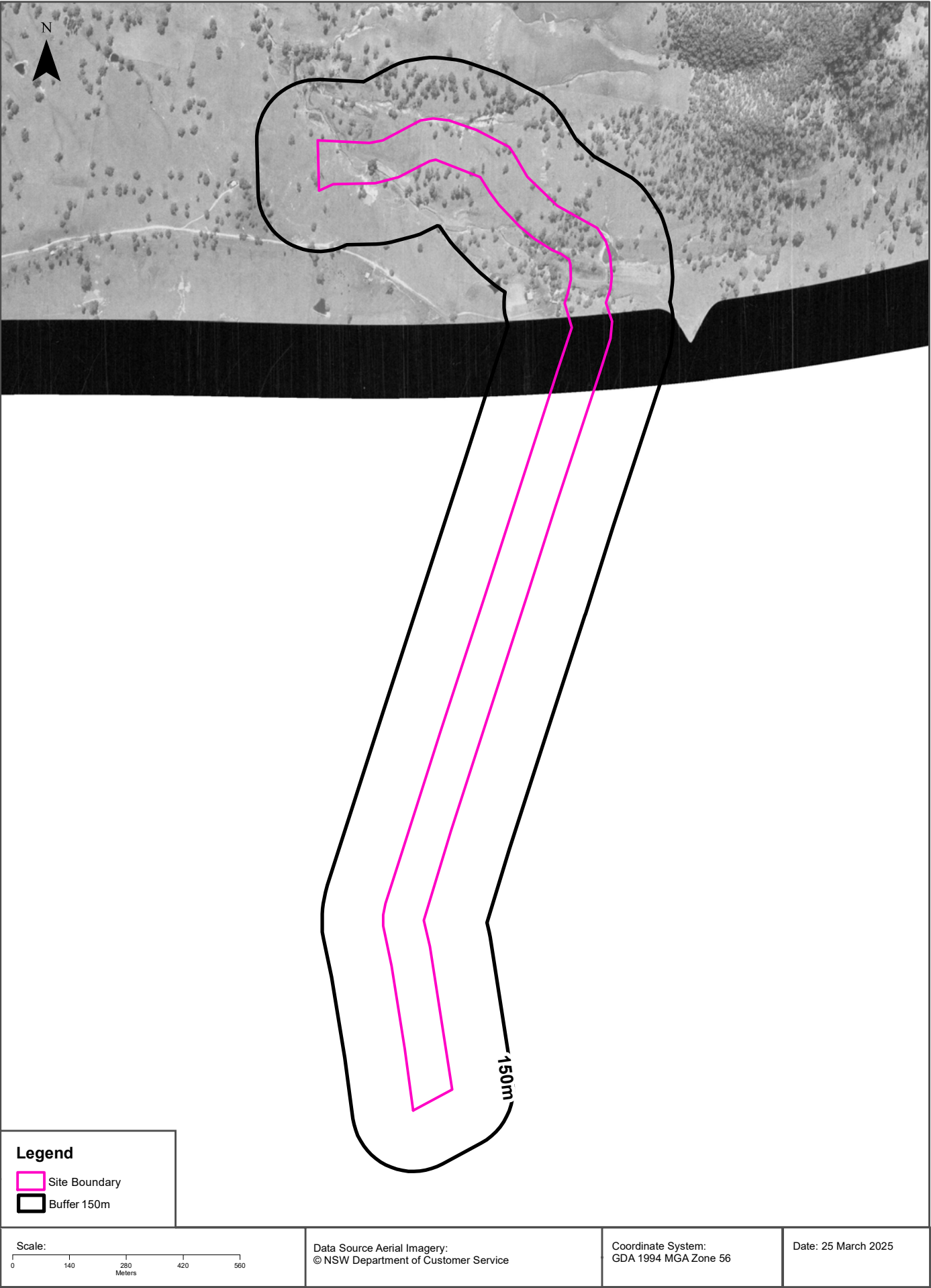
Aerial Imagery 1967

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1964

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



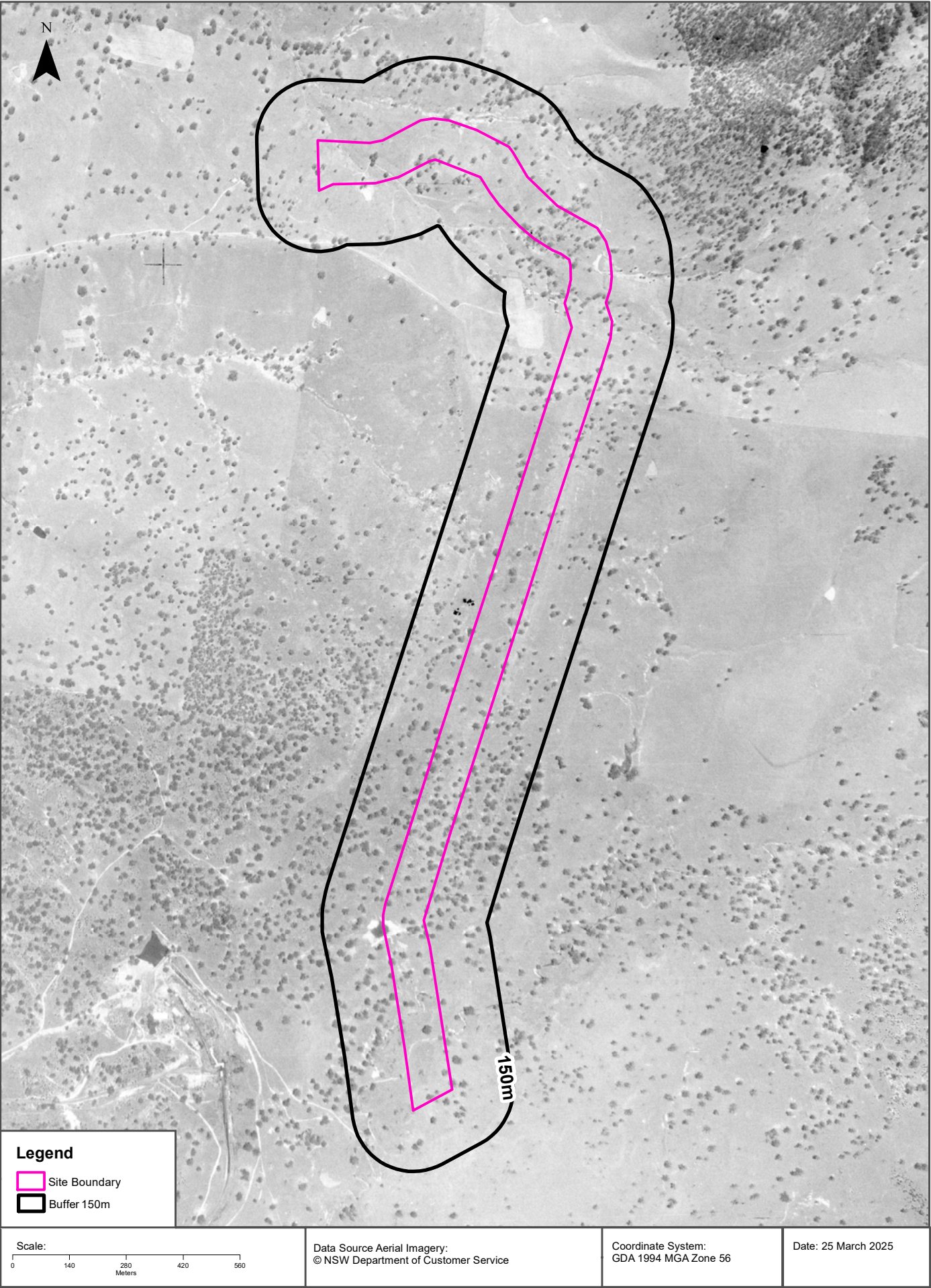
Aerial Imagery 1958

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



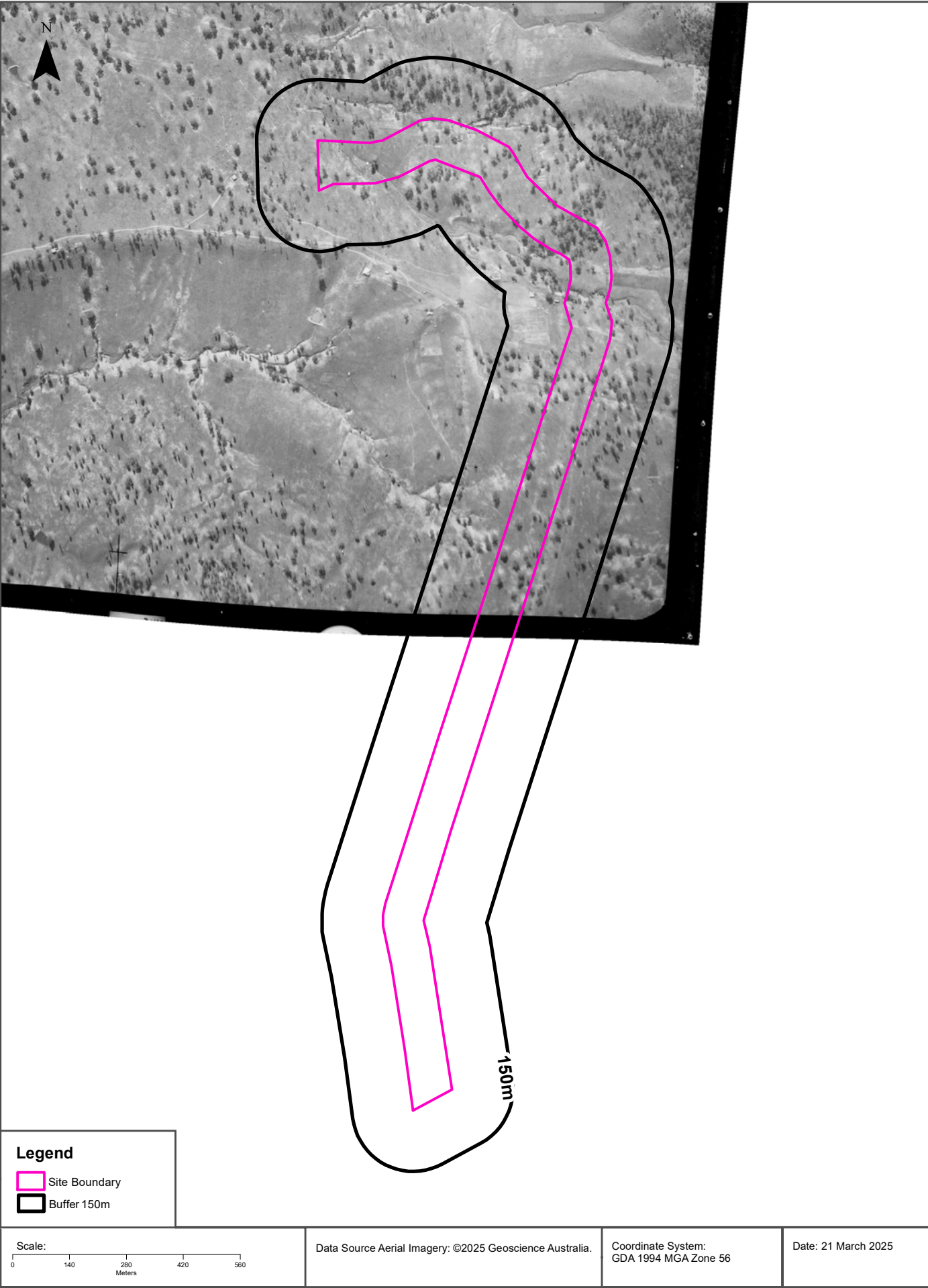
Aerial Imagery 1953

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



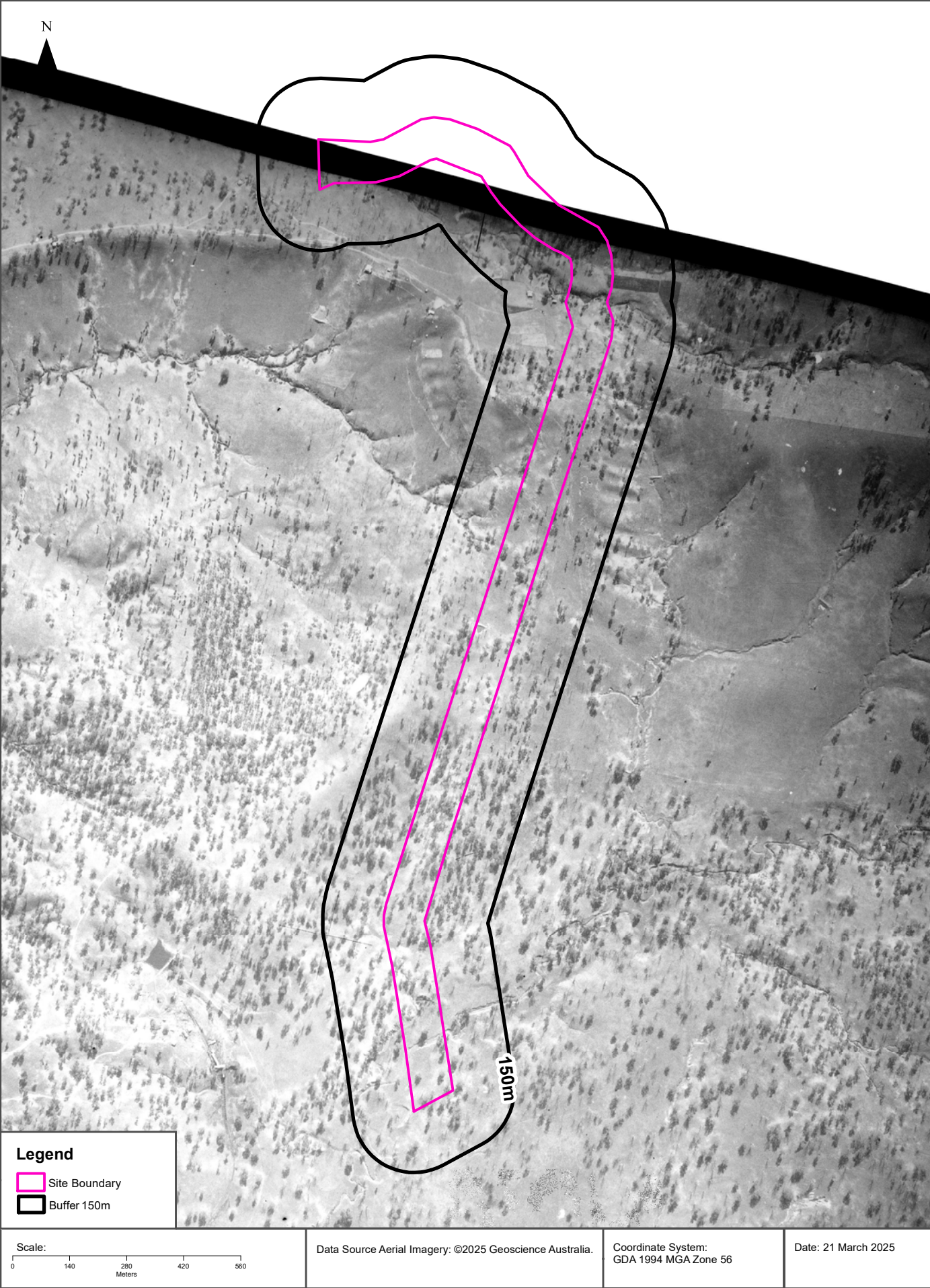
Aerial Imagery 1938

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1938

Muswellbrook Solar Farm (2 of 4), Muswellbrook, NSW 2333



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LOTSEARCH AERIALS

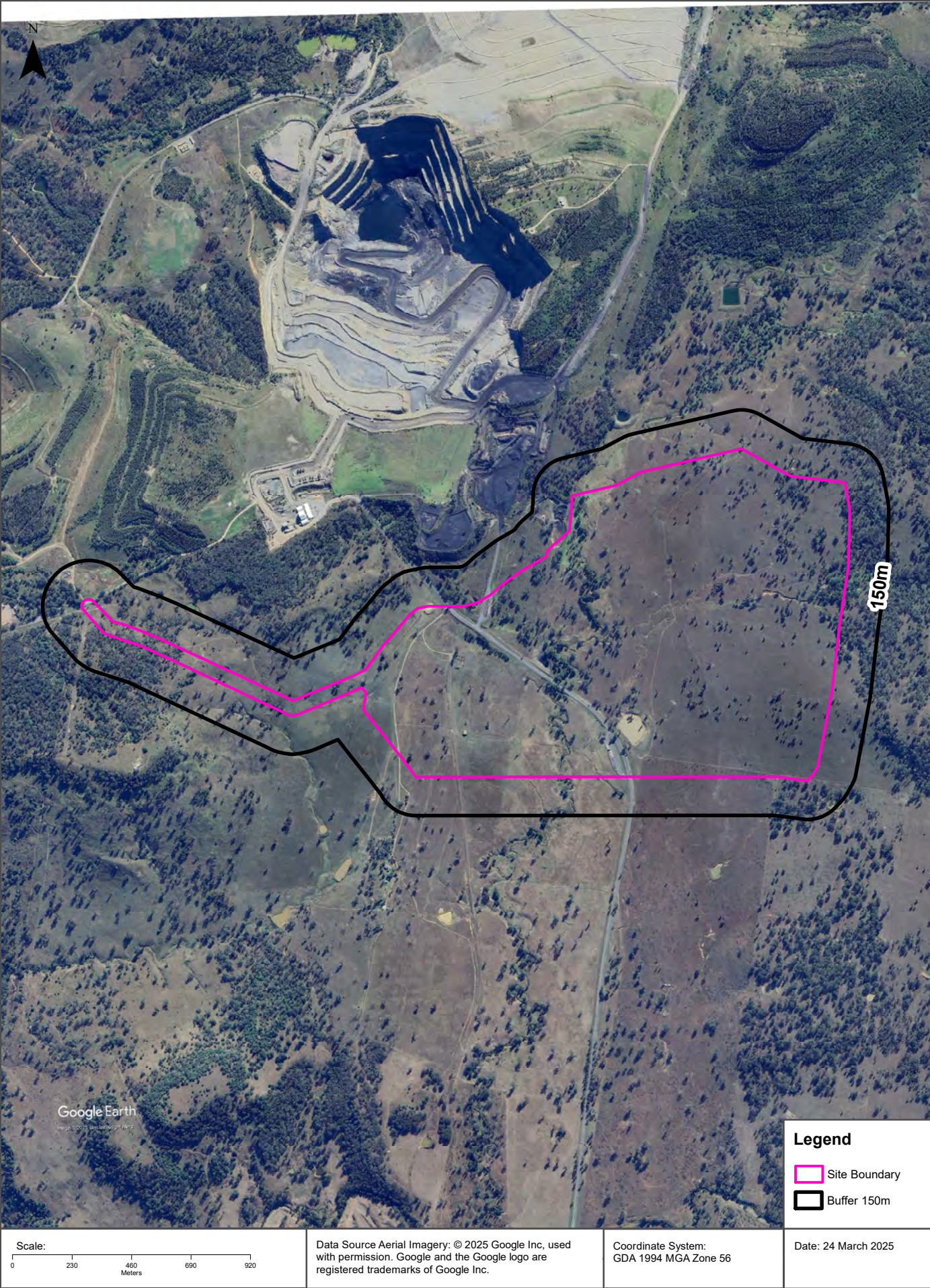
Date: 25 Mar 2025

Reference: LS076937 EA

Address: Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333

Aerial Imagery 2023

Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



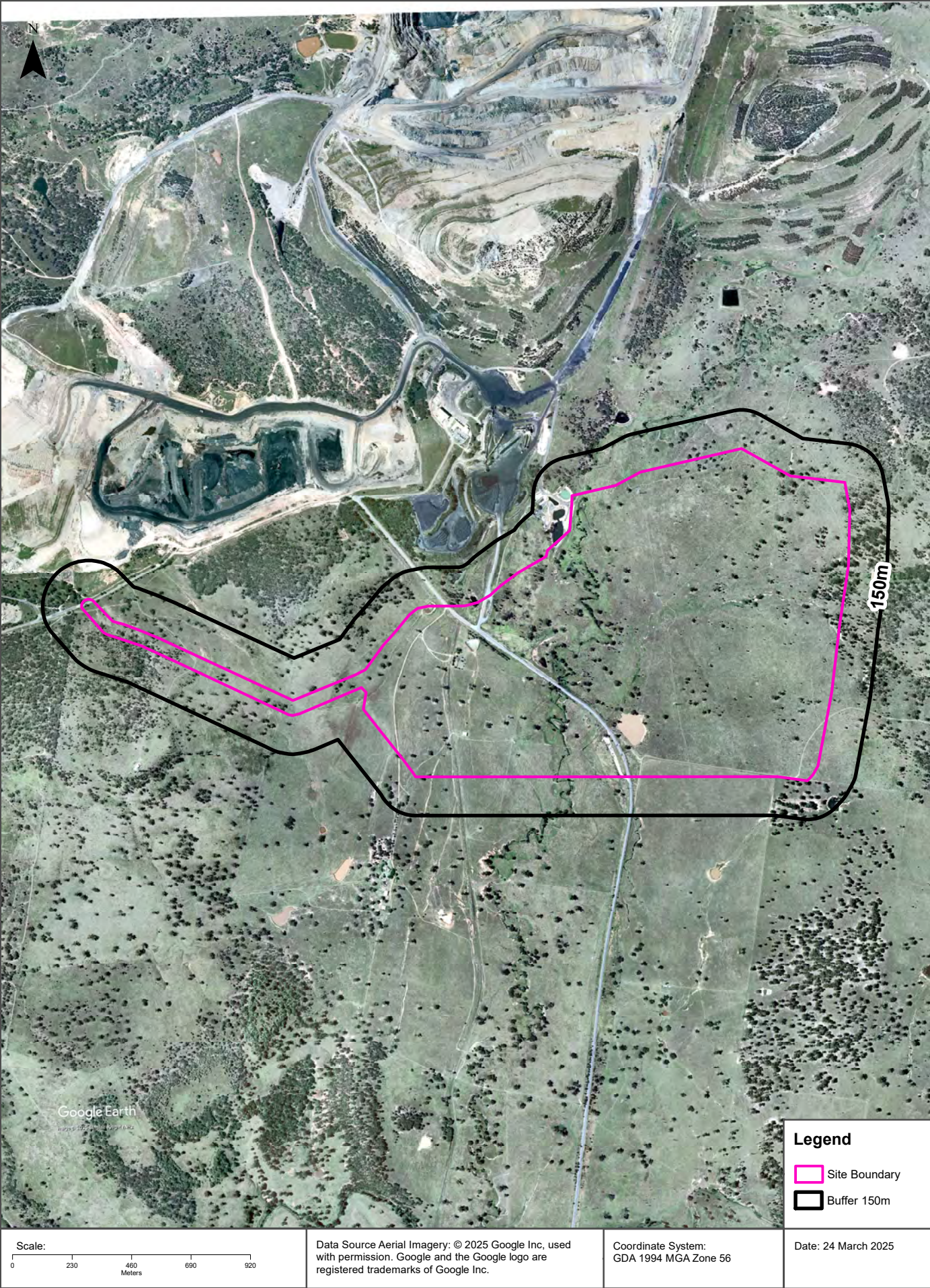
Aerial Imagery 2015

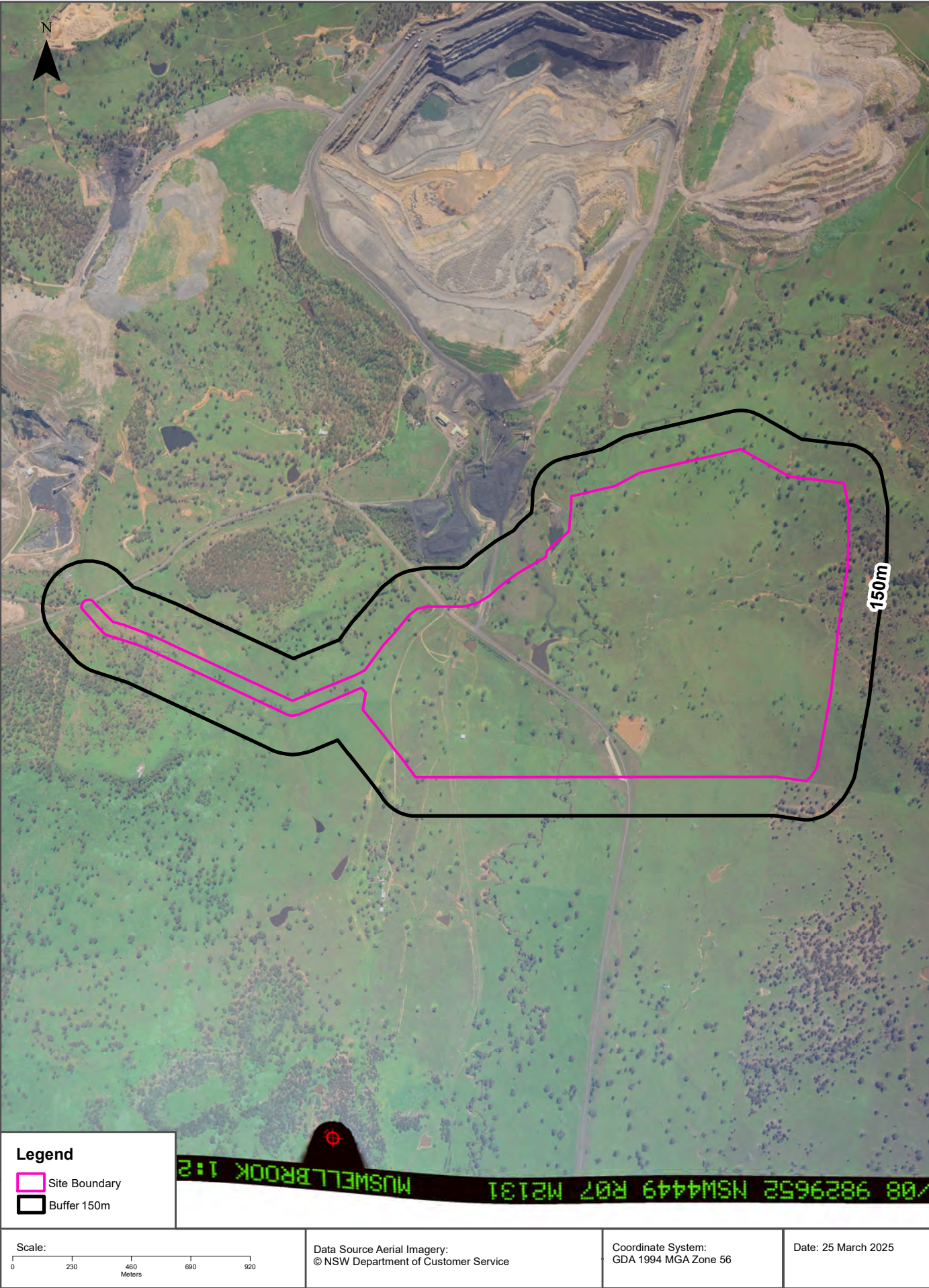
Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



Aerial Imagery 2008

Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333





Aerial Imagery 1989

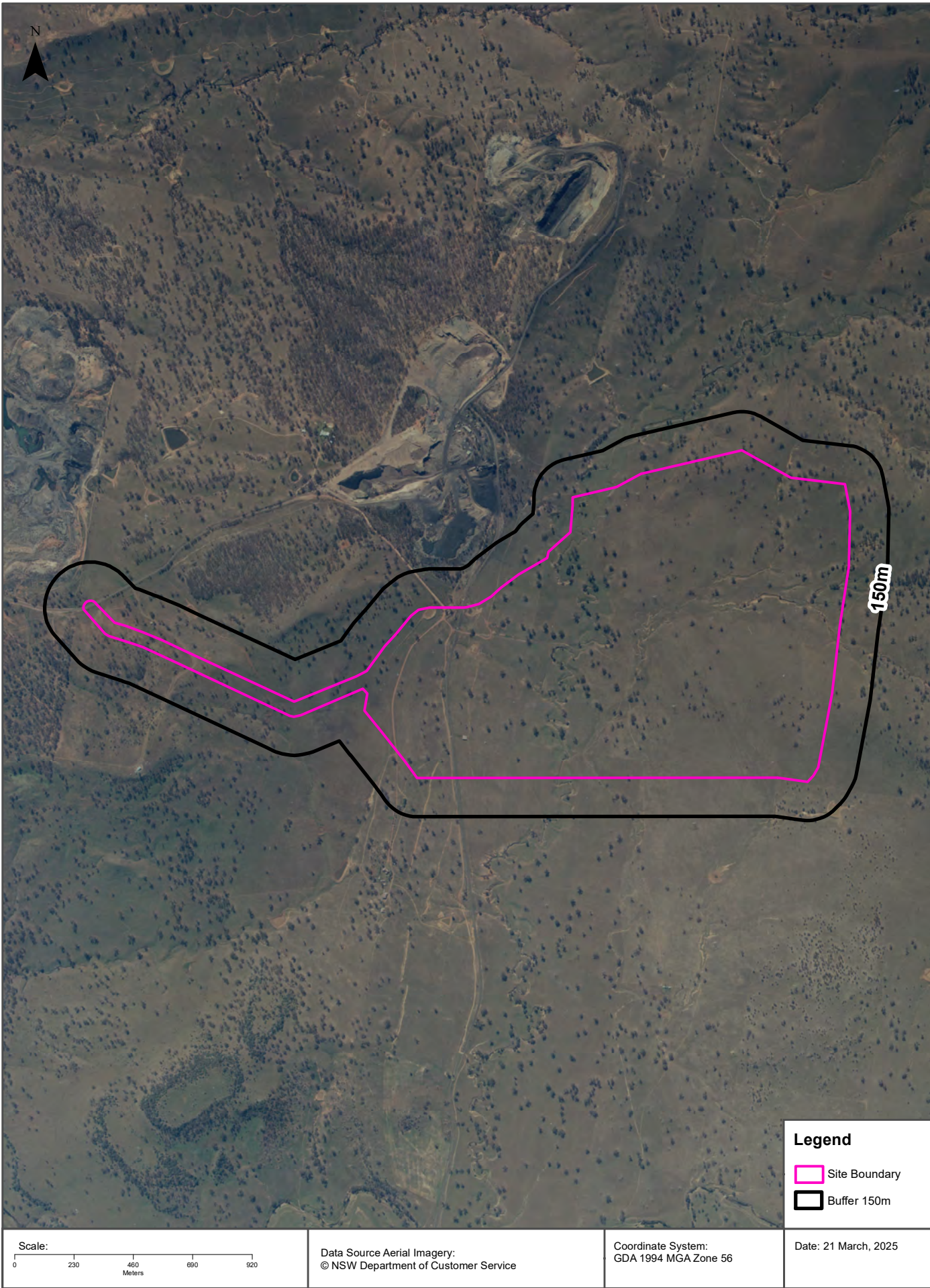
Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



<div><div>Legend</div><div><div><div></div>Site Boundary</div><div><div></div>Buffer 150m</div></div></div>			
<div>Scale:<div><div>0</div><div>230</div><div>460</div><div>690</div><div>920</div></div><div>Meters</div></div>	<div>Data Source Aerial Imagery: © NSW Department of Customer Service</div>	<div>Coordinate System: GDA 1994 MGA Zone 56</div>	<div>Date: 25 March 2025</div>

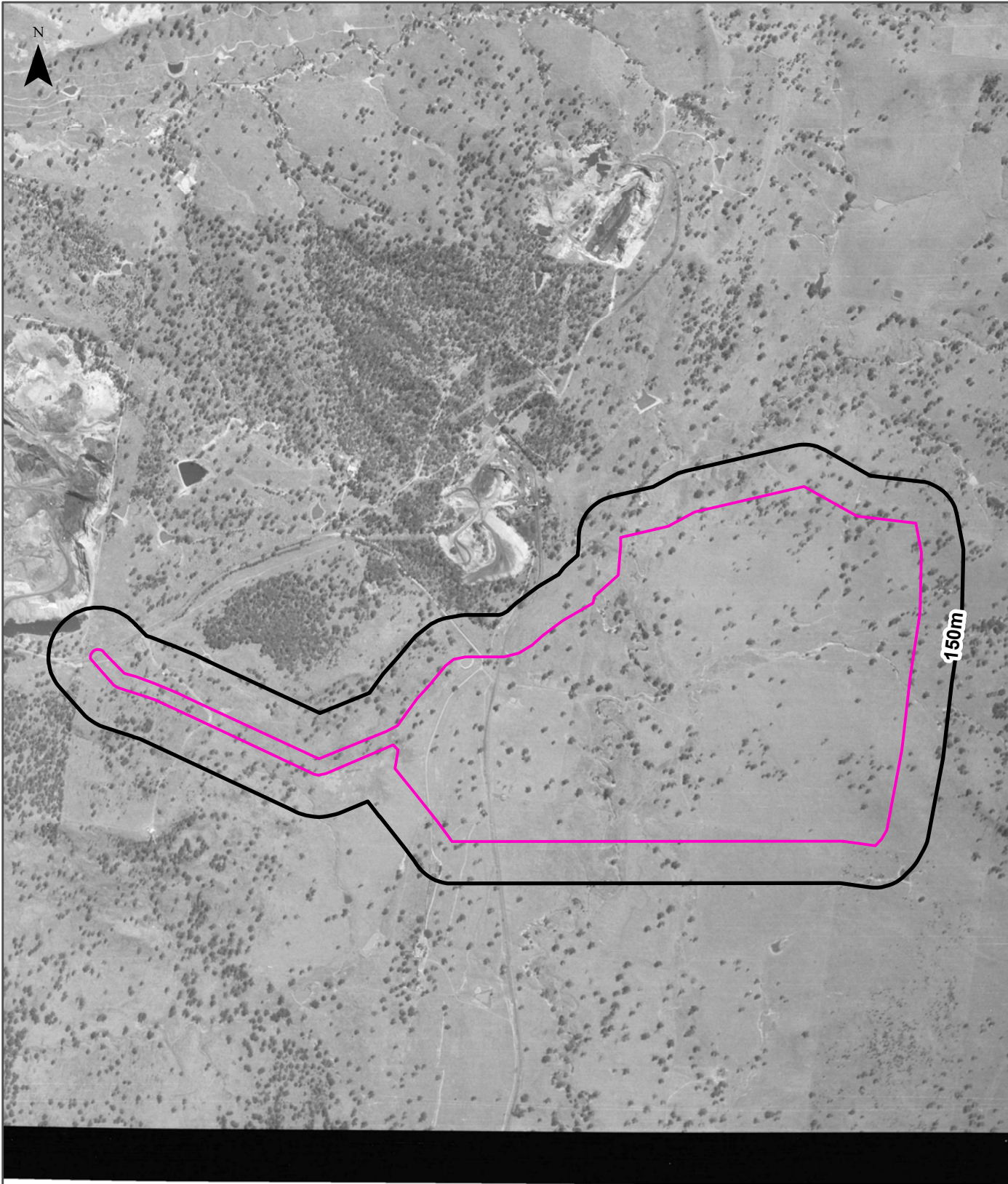
Aerial Imagery 1980

Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1972

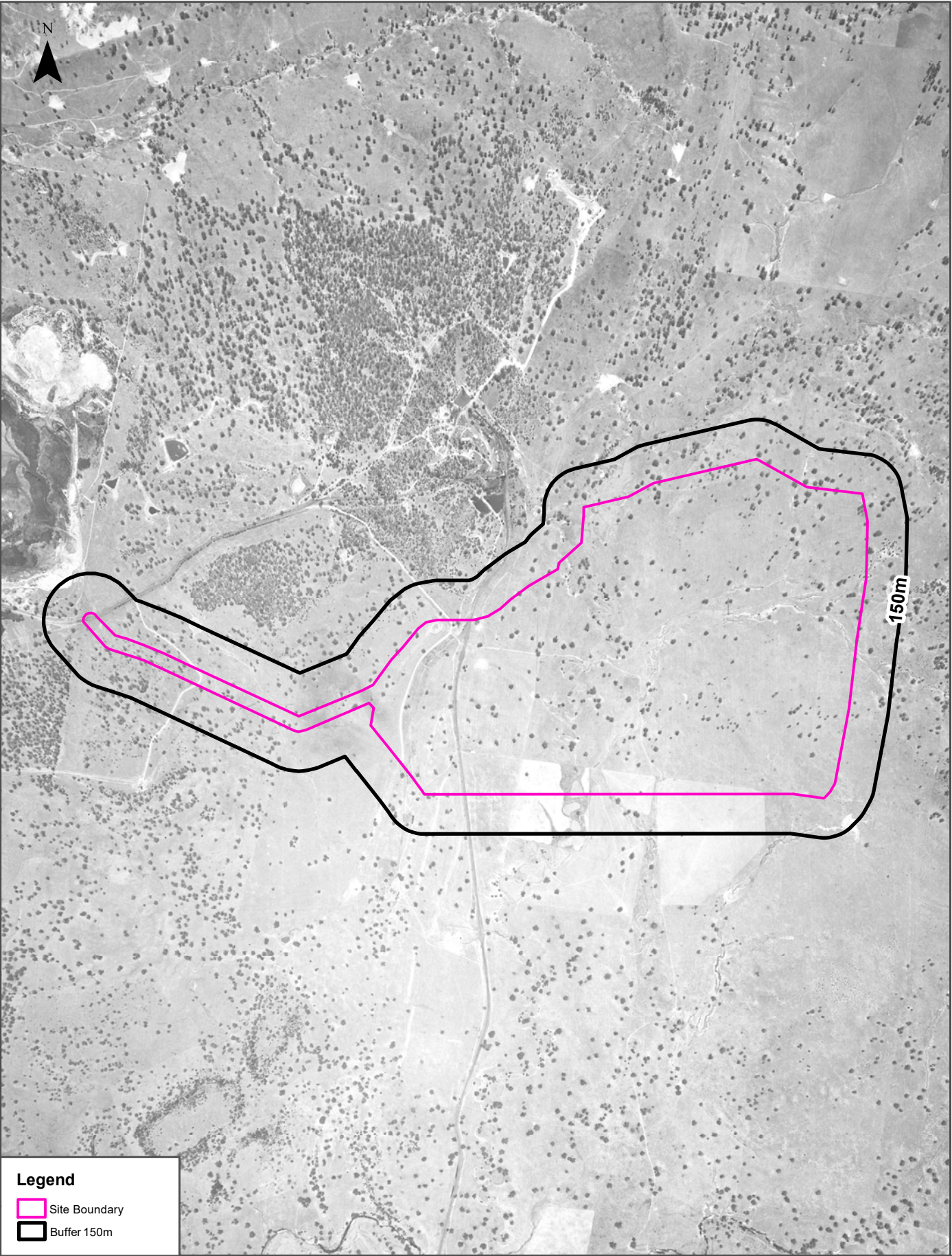
Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



			Legend <div><div>Site Boundary</div><div>Buffer 150m</div></div>
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Aerial Imagery 1967

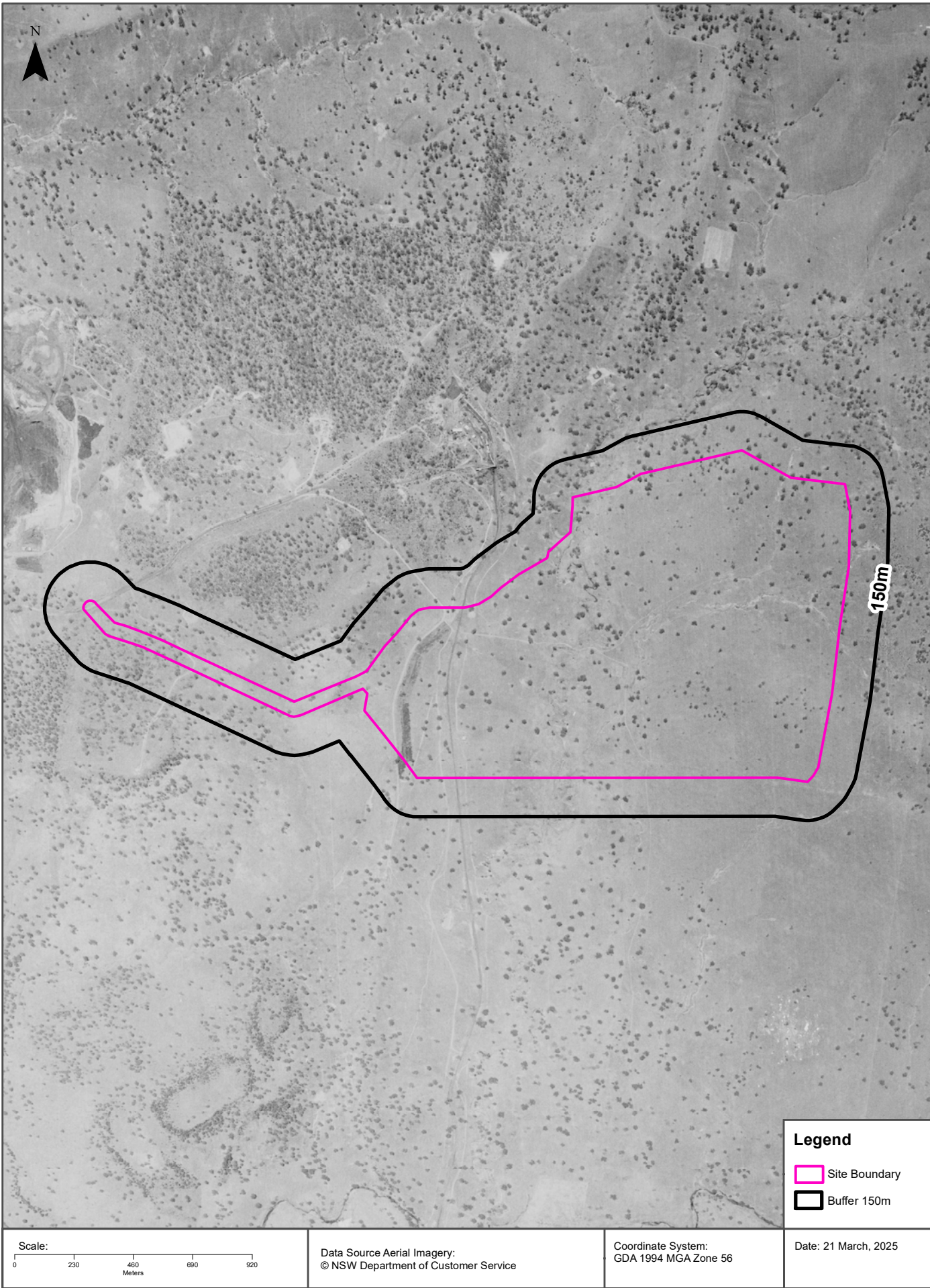
Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333

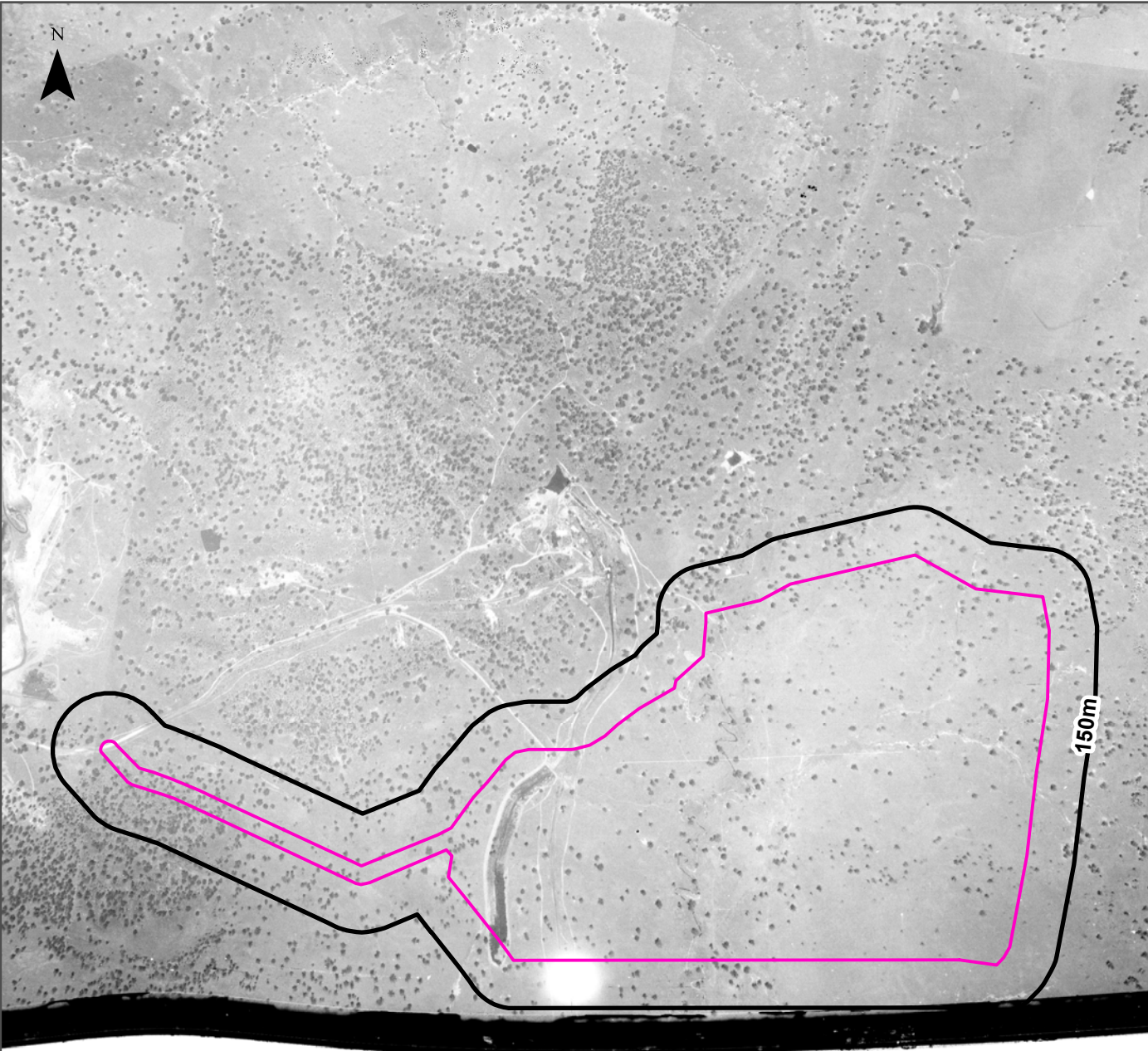


Scale: 0 230 460 690 920 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 25 March 2025
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Aerial Imagery 1958

Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333





Legend

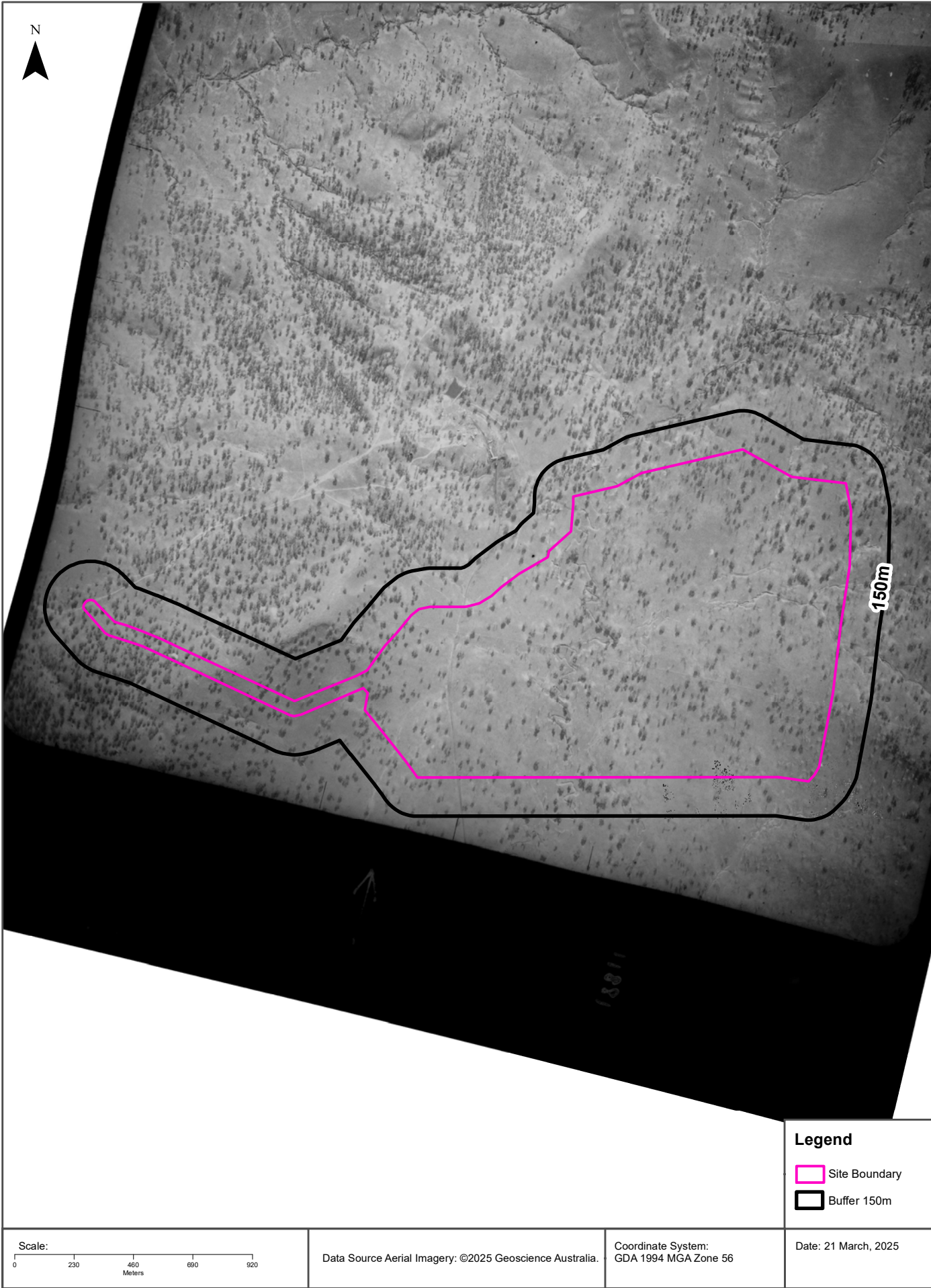
Site Boundary

Buffer 150m

Scale: 0 230 460 690 920 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 25 March 2025
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Aerial Imagery 1938

Muswellbrook Solar Farm (3 of 4), Muswellbrook, NSW 2333



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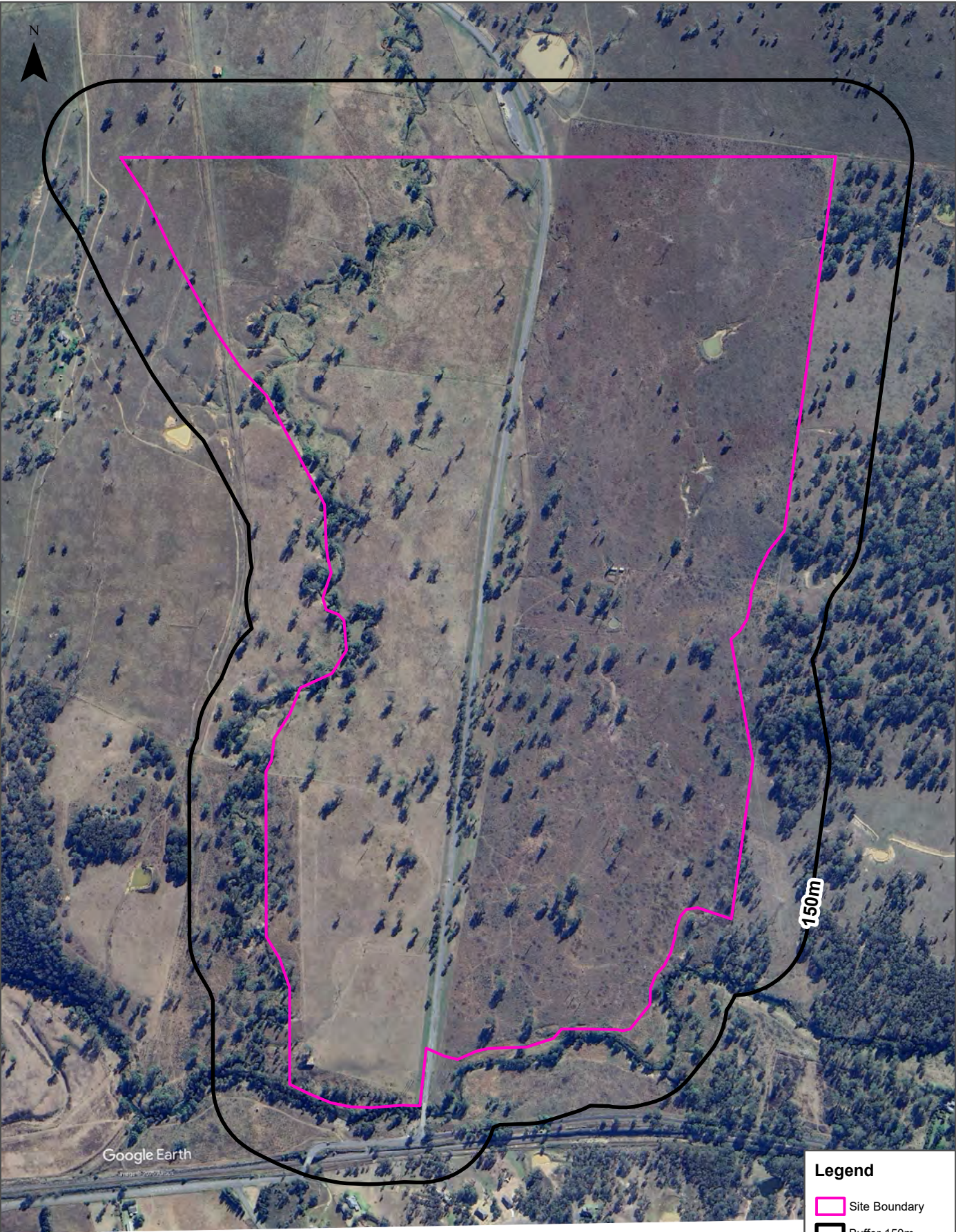
Date: 25 Mar 2025

Reference: LS076938 EA

Address: Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333

Aerial Imagery 2023

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



Legend

- Site Boundary
- Buffer 150m

<p>Scale:</p> <p>0 120 240 360 480</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 24 March 2025</p>
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Aerial Imagery 2015

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Aerial Imagery 2008

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



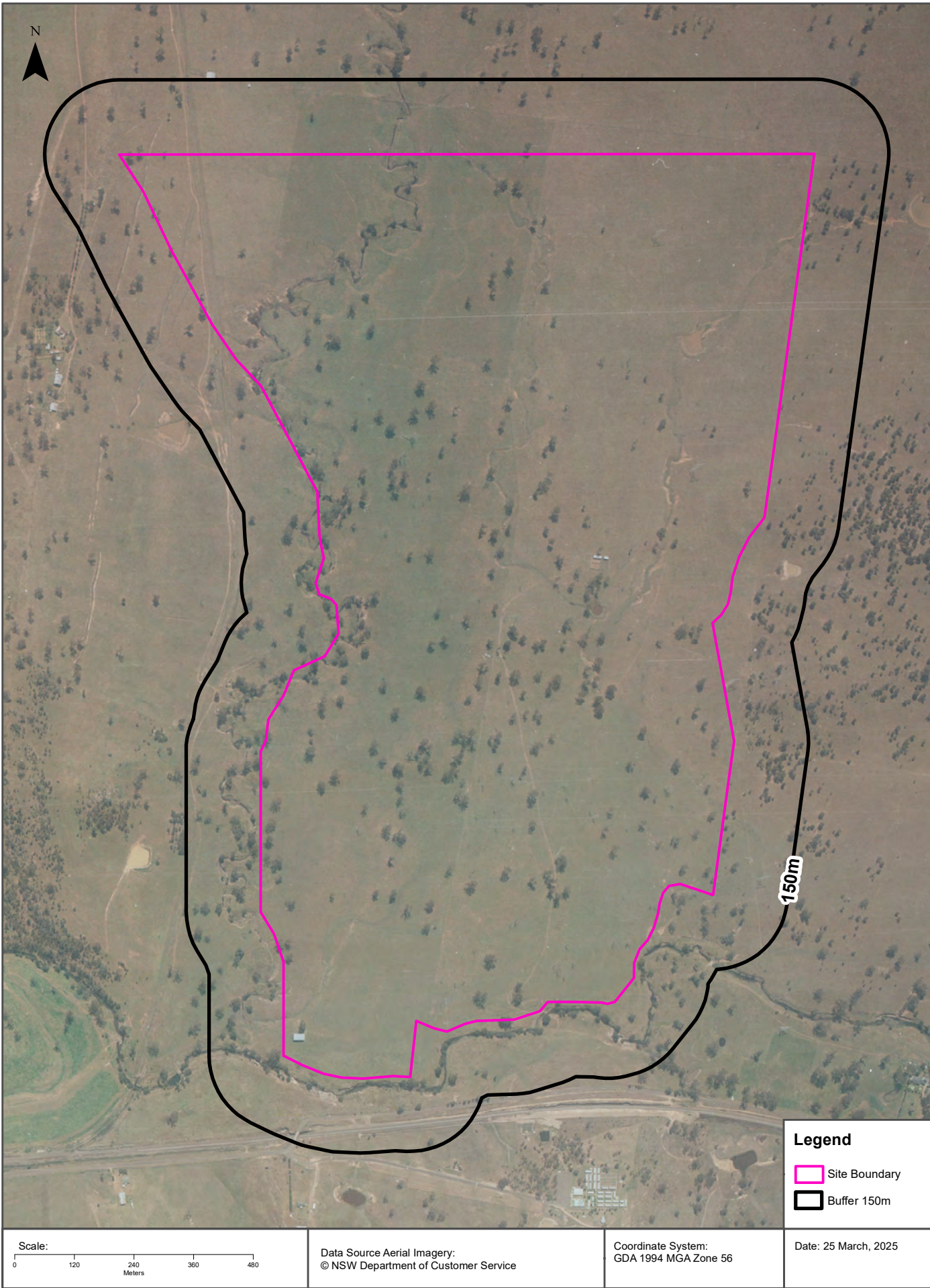
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Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



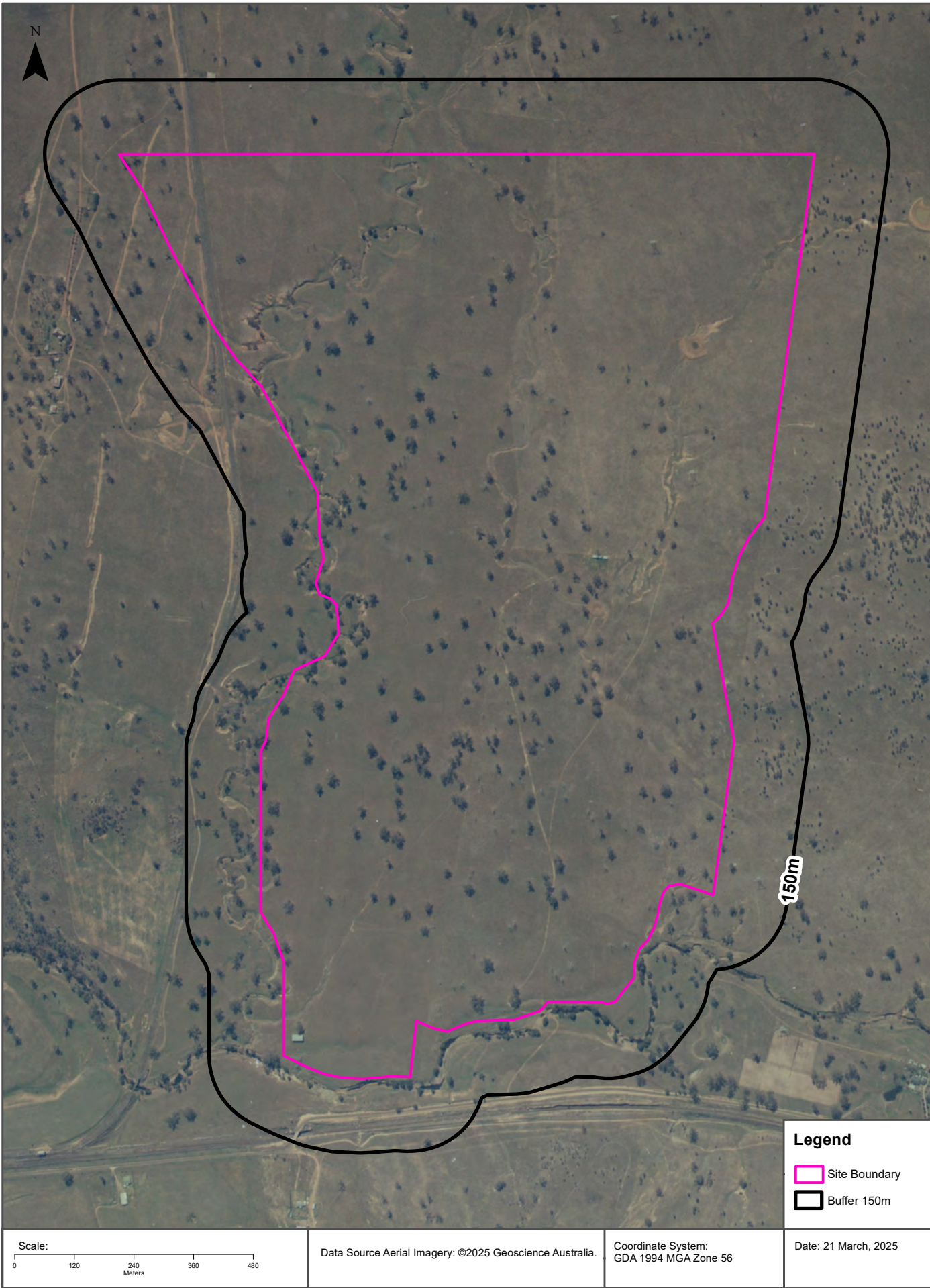
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Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



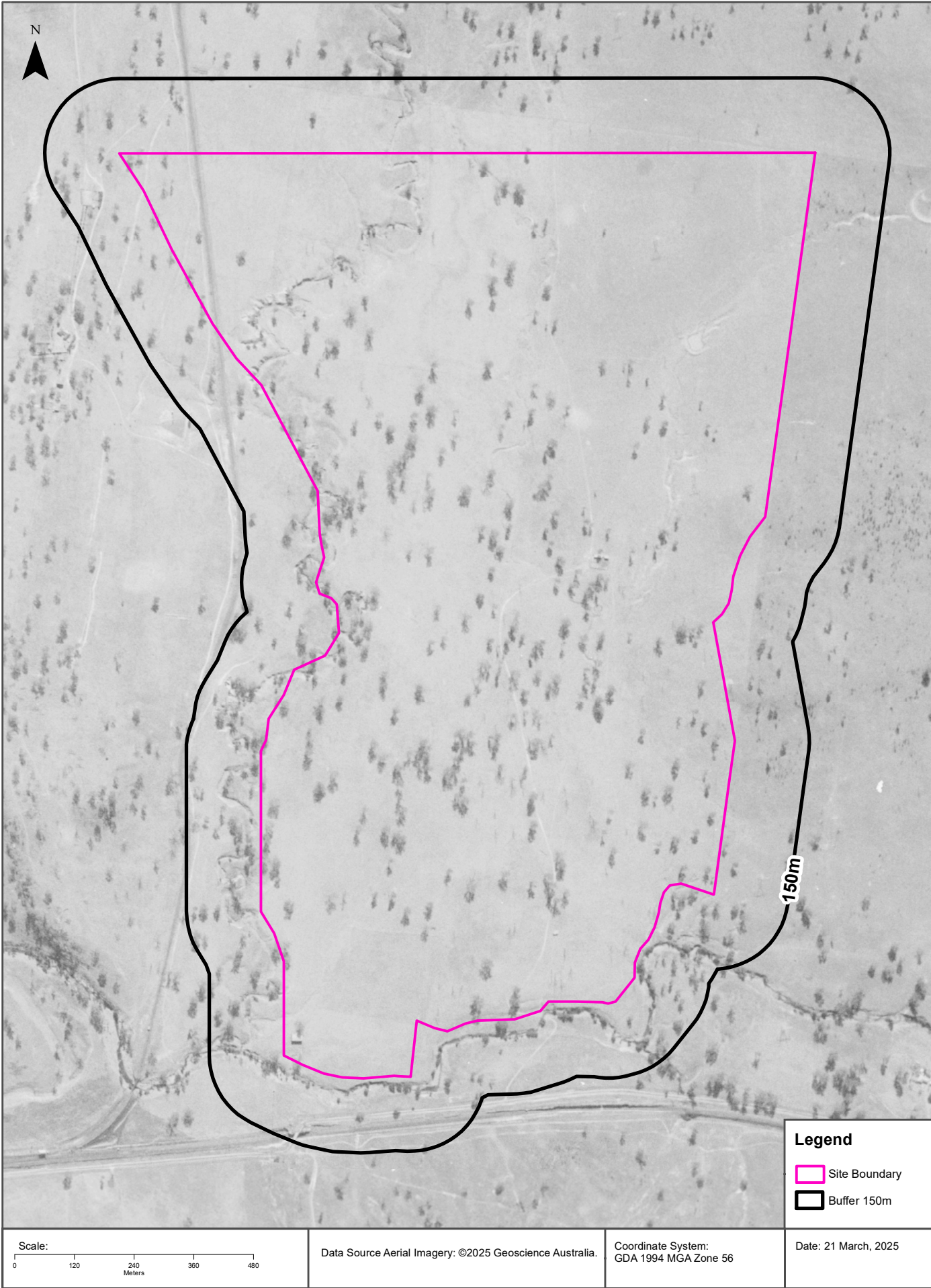
Aerial Imagery 1980

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1970

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



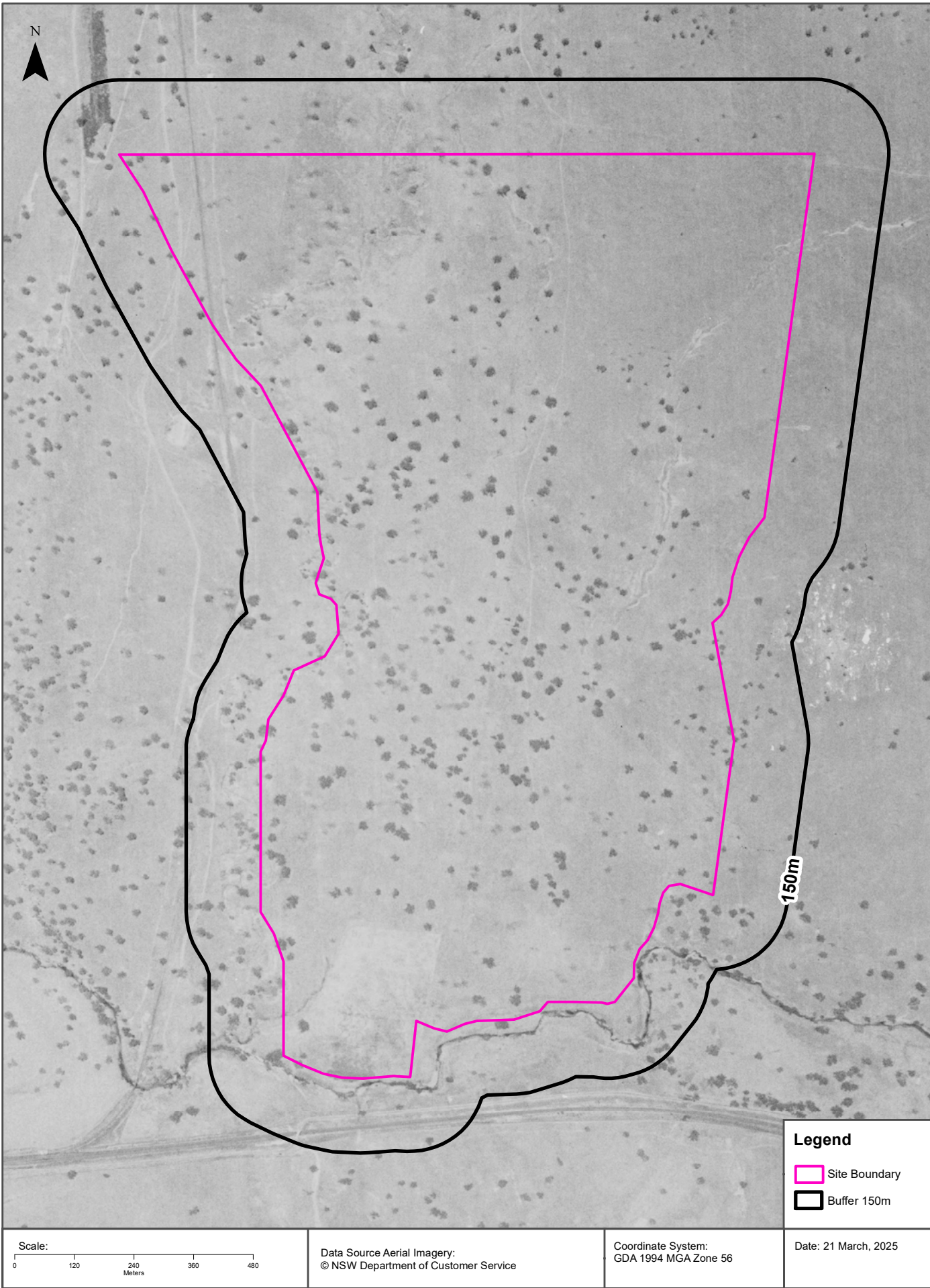
Aerial Imagery 1967

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



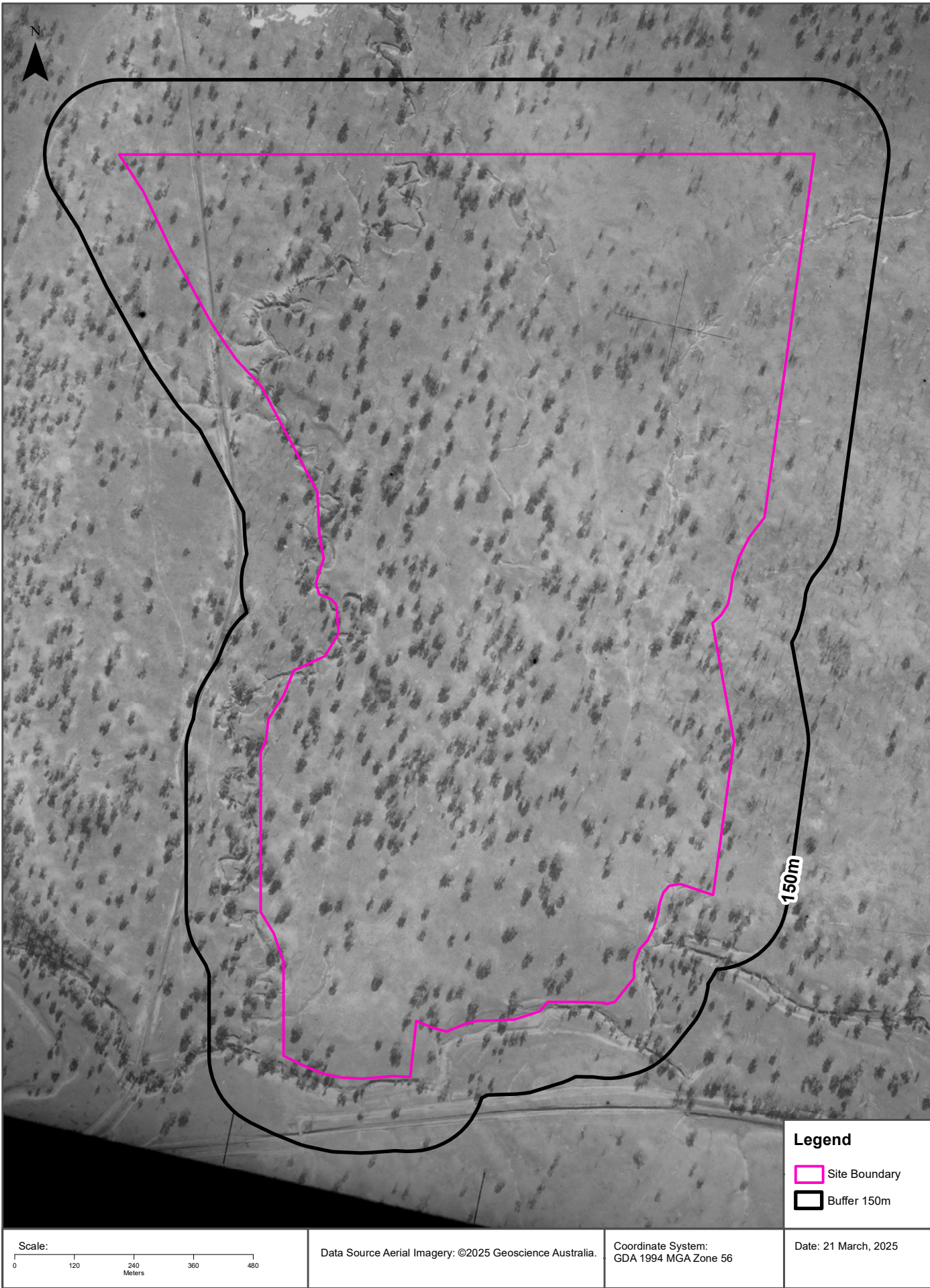
Aerial Imagery 1958

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



Aerial Imagery 1938

Muswellbrook Solar Farm (4 of 4), Muswellbrook, NSW 2333



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Appendix E

Site Inspection Observations Summary

Muswellbrook Coal Solar Farm
PSI Walkover Observations

Target	Position		Feature	Where/How Observed	Potential Impact	Observed Impact	Notes
Location	Eastings (56H)	Northings					
1	305835	6428903	Cattle yards	Current	Ag chemicals, dips, ACM	None observed	No obvious sources of contamination observed.
2	305832	6429045	Former rail easement/sidings	Current	Loading or unloading chemicals	None observed	Easement passes south from entry road for around 900 m. Full length walked. All ballast from river rock. No sidings or obvious unloading areas observed.
3	305790	6428934	Monitoring wells	Current	Observation only	None observed	Two newly installed groundwater monitoring wells - 'GW08' and 'GW09' - noted at this location.
4	305857	6428620	Woolshed	Current	Ag chemicals, oils, dips, ACM	Chemical tins and drums	Small store of misc. rusty tins and drums noted throughout, as well as misc. rubbish.
5	305910	6428596	Small structure	circa 2015	Unknown	None observed	No clear evidence of a former small structure located east of the woolshed was found.
6	305768	6428638	Building debris	Current	ACM	Broken ACM Sheeting	Pieces of apparent ACM sheeting observed along with a former wooden structure.
7	306036	6426681	Shed	Current	Various	None observed	Drilling core trays stored within. No other obvious contamination sources observed.
8	306626	6427634	Cattle yards and sheds	Current	Ag chemicals, dips, ACM	Wood treatment on loading ramp?	Oily staining noted on low sections of loading ramp - possibly from white ant treatment. Some empty glass bottles and misc. rubbish observed in stalls. Two salt licks also seen nearby.
9	306552	6426890	Small structure	1967 & 1970 aerials	Unknown	None observed	A few scattered pieces of wood were only anthropogenic items observed. (IMG 7719)
10	306430	6428540	11	Current	Asphalt products and temporary fuel storages	None observed	Compacted gravel area seems free of obvious staining. No clear evidence of mobile refuelling tanks. Minor rubbish (water storage IBCs, wooden pallets and some tyres) to be cleared.
11	306034	6431867	Former house	1938 - 2008 aerials	ACM, chemical stores, misc. waste	Broken ACM Sheeting	Pieces of apparent ACM sheeting (flat and corrugated) observed across a 40 x 40 m area.
12	306315	6431953	Small structure	1998 aerial	ACM, chemical stores, misc. waste	None observed	No structure observed, but some old tyres present on east side of small dam.
13	306018	6431950	Small structures	1998 aerial	ACM, chemical stores, misc. waste	Building Waste	A small pile of orange house bricks noted at the base of a large tree near investigated locations. Some tyres also noted nearby.
14	305600	6431710	Former house	1938 - 1998 aerials	ACM, chemical stores, misc. waste	Broken ACM Sheeting	Although just outside the investigation area, this location was inspected while driving nearby.
15	304897	6431912	Former sheds/tank stands	1980 aerial - current	ACM, chemical stores, misc. waste	Broken ACM Sheeting	Only two pieces observed, but others possible. Surrounding area inspected (100 x 100 m area).
16	305030	6431990	Small quarries/dump sites	Current	ACM, misc. chemicals and waste	Drums, ACM pipe	Several small waste dumps noted in this wooded area, including 200 L and 20 L drums, ACM piping, corrugated iron, tyres, concrete and other miscellaneous building debris.
17	305010	6432226	Small structure	1964 - 1972 aerials	ACM, chemical stores, misc. waste	None observed	Former slab observed.
18	305027	6432232	Small structure	1980 - 1998 aerials	ACM, chemical stores, misc. waste	None observed	Former slab observed (with galvanised bolts protruding).
19	304986	6432270	Small structure	1964 - 1998 aerials	ACM, chemical stores, misc. waste	None observed	No sign of former structure observed.
20	304428	6431975	Former Quarry Cottage & Sheds	1980 - 2023 aerials	ACM, chemical stores, misc. waste	Broken ACM Sheeting	House apparently burned down in 2023. Residual waste cleared by Major Projects Group in August 2023. Copy of clearance report received from MusCoal. Residual pieces of ACM likely to have become exposed after rainfall and wind.
21	304525	6431888	Former Domestic Waste Dump	Google Earth 2023	ACM, misc. chemicals and waste	None observed	Area remediated by Major Projects Group in August 2023. Copy of clearance report received from MusCoal.
22	304516	6431842	Old Sheds (Near dams)	1938 - 2013 aerials	ACM, misc. chemicals and waste	Broken ACM Sheeting	Area remediated by Major Projects Group in August 2023. Copy of clearance report received from MusCoal. Residual pieces of ACM likely to have become exposed after rainfall and wind.
23	304720	6431900	Disturbed Soil Area	1938 - 1972 aerials	Possible waste dumping sites	None observed	Area was understood to have been explored as a potential limestone quarrying site. Disturbed soils and excavations evident.
24	304552	6431995	Rocky outcrop	Current	ACM and misc. wastes	Broken ACM sheeting & large ACM sheets	Pieces of miscellaneous rubbish, metal pieces, broken cement sheeting pieces and two large and thick cement sheets observed.
25	304512	6432015	Rubbish Dump	Current	ACM and misc. wastes	Building Waste	Pieces of concrete and sheets of corrugated iron noted in a small waste dump of unknown depth. Potential for other wastes (e.g., ACM and other chemical wastes) to be present.

Note: All coordinates presented above should be considered as approximate locations only.

All presumed asbestos containing materials (ACM) finds that are reported are based on inspection observations only. None of the presumed ACM reported above was confirmed by analytical data at the time this report was prepared.

For further information regarding aerial photography based observations, refer to the Lotsearch reports in Appendix C.

TL 1 - 10	Inspected 26 March 2025
TL 11 - 25	Inspected 26 March 2026



Appendix F

Site Inspection Photographs

Photo 1: View of Southern Project Area, looking south from the northern end.



Photo 2: View of Cattle Yards (TL1), looking southeast.



Photo 3: View of former rail easement (TL2), looking south.



Photo 4: Newly installed groundwater monitoring wells (TL3) near cattle yards, looking east.



Photo 5: Disused Woolshed on SPA (TL4), looking north.



Photo 6: Waste chemical tins in Woolshed (TL4).



Photo 7: Location of previous structure east of Woolshed (TL5), looking west.



Photo 8: Building debris west of Woolshed (TL6). Note cement sheeting pieces (likely ACM)



Photo 9: Western Transmission Line Easement (running west from the SPA), looking east.



Photo 10: Large storage shed on southwest corner of the SPA (TL7), looking southeast.



Photo 11: Cattle yards and livestock sheds on east side the SPA (TL8), looking east.



Photo 12: Cattle loading ramp at (TL8). Note possible wood treatment product staining.



Photo 13: Location of previous structure on southeast end of the SPA (TL9), looking southwest.



Photo 14: Former roadside laydown area (TL10) and proposed Facilities Area, looking north



Photo 15: Access road on northwestern stretch of CTLE, looking west.



Photo 16: Former house and garden area on southeast corner of the NPA (TL11). Some probable ACM sheeting pieces noted in this area.



Photo 17: Corrugate cement sheeting piece at former house (TL11), presumed to be ACM.



Photo 18: Location of former small structure (TL12) on CTLE, near small dam.



Photo 19: Small pile of bricks from demolished structure (TL13) near former house (TL11).



Photo 20: Former tank stands in livestock shed yard, east of Limestone Road (TL15), looking south. Some small pieces of possible ACM found on west side of tank stands.



Photo 21: Waste drums and probable ACM pipe east of Limestone Road (TL16), looking west.



Photo 22: Waste drums and building materials east of Limestone Road (TL16), looking southwest



Photo 23: Location of former structure east of the northern end of Limestone Road (TL17).



Photo 24: Location of former structure east of the northern end of Limestone Road (TL18)



Photo 25: Location of former house on western side of the NPA (TL20), looking south. Some probable ACM sheeting pieces noted in this area



Photo 26: Former domestic waste dump on western end of the NPA (TL21), looking north.



Photo 27: Former structures area near western end of the NPA (TL22), looking west. Some probable ACM sheeting pieces noted in this area.



Photo 28: Signs of previous quarrying activity, west of Limestone Road (TL23).



Photo 29: Large pieces of suspected ACM on a rocky outcrop on the western side of the NPA (TL24). Smaller pieces of suspected ACM were also observed at this location.



Photo 30: Building waste dump of unknown depth discovered on the western side of the NPA (TL25).



Photo 31: Waste tyre observed on the NPA.



Photo 32: Miscellaneous posts and fencing near former house on the NPA





Appendix G

Contamination Removal and Validation
Reports (Post PSI)

MCC Buffer Lands - Waste Classification

Muswellbrook Coal Mine, Muscle Creek Road, Muswellbrook,
NSW 2333

26000055.001A

30 April 2025



Charlestown, NSW 2290

Muswellbrook Coal Company
Muscle Creek Road
Muswellbrook, NSW 2333,

Attention: Rod Gallagher

Subject: MCC Buffer Lands - Waste Classification
Muswellbrook Coal Mine, Muscle Creek Road, Muswellbrook, NSW 2333

1 INTRODUCTION

At the request of Muswellbrook Coal Company (MCC), on 7 and 8 April 2025, Kleinfelder Australia Pty Ltd (Kleinfelder) undertook a program of asbestos impacted soil removal from three locations, The Dog Track (approximate coordinates 32°14'38.43"S, 150°54'53.01"E), the Sandy Creek Road Fire Cottage (the Fire Cottage) (approximate coordinates 32°13'54.73"S, 150°55'27.62"E) and Limestone Road Pit 2 Hilltop Farm House (the Hilltop Farmhouse) (approximate coordinates 32°14'4.48"S, 150°56'12.41"E) which are located within the buffer lands of the Muswellbrook Coal Mine at Muscle Creek Road, Muswellbrook, NSW 2333.

Previous investigations at the three locations indicated the presence of bonded asbestos debris in surface soils relating to collapsed structures and residual asbestos debris associated with rural farm properties. The impacted areas identified to require asbestos removal were indicated to be as follows:

- An approximate 5 square metre (m²) area at the Dog Track, associated with a small collapsed shed
- An approximate 25m² area at the Fire Cottage, associated with a rubbish dump, and
- An approximate 30m² area at the Hilltop Farmhouse, associated with residual debris from the farmhouse demolition.

A Kleinfelder Licensed Asbestos Assessor (LAA) provided supervision of the asbestos removalist works and conducted ex-situ sampling of the waste materials following removal. The objective of the investigation was to remediate asbestos impacted materials from the identified areas and provide a waste classification letter (this report) to inform offsite disposal options for the materials generated by the asbestos removal works.

2 SCOPE

The Kleinfelder LAA (Mr. Michael Gosling, LAA001248), and the asbestos removalist contractors, Aztech Services Australia Pty Ltd, attended the site on 7 and 8 April 2025 to complete the asbestos removal works.

Approximately 5 tonnes of asbestos impacted soils generated from the removal works at the Dog Track were collected and stored within a skip bin at this location, whilst a further 15 tonnes of material generated from the removal works at the Fire Cottage and Hilltop Farmhouse were collected and stored within a skip bin at the Hilltop Farmhouse.

Following removal works, soil sampling of the generated materials was undertaken to provide the chemical characterisation of the approximately 20 tonnes of asbestos impacted material which requires offsite disposal to an appropriately licensed facility under NSW EPA waste classification guidelines. Following sampling, the skip bins were enclosed and signposted as asbestos impacted wastes to ensure they were not disturbed prior to removal.

A total of six soil samples (three from each skip bin) were collected from the homogenized material to provide analytical information on Contaminants of Potential Concern (CoPC) within the soil. Samples were collected from



a hand trowel using a nitrile gloved hand, and transferred directly into laboratory supplied containers, which were stored in an ice chilled esky under chain of custody conditions for delivery to the National Association of Testing Authorities (NATA) accredited laboratory (ALS) for analysis.

3 MATERIAL DESCRIPTION

The material classified consists of ex-situ soils excavated during asbestos removal works to an approximate maximum depth of 0.1m below ground level (m bgl). The total volume of soil being classified is approximately 20t (5t in one skip bin located at the Dog Track and 15t in the other located at the Hilltop Farmhouse).

The general soil type encountered during the investigation was clay, with inclusions of silt and minor inclusions of sand. No other visual or olfactory indicators of potential contamination were observed during site investigations.

A total of six primary soil samples were collected with the analytical results provided in **Attachment 2**. NATA accredited laboratory reports and chain of custody documents are provided in **Attachment 3**.

The outcomes of the waste classification assessment, which has been conducted in accordance with the NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste, is summarised below.

4 CLASSIFICATION PROCESS

Step	Description	Yes/No	Comment
Step 1:	Is the waste special waste?	Yes	Asbestos debris was identified by the LAA on the surface in all three locations prior to removal works. Asbestos debris was collected via surface soil scraping and then picking to be included in the material collected within the skip bins.
Step 2:	Is the waste liquid waste?	No	Further assessment is not required
Step 3:	Is the waste pre-classified?	No	Further assessment is not required
Step 4:	Does the waste possess hazardous characteristics?	No	Further assessment is not required
Step 5:	Determining a waste's classification using chemical assessment:	Yes	See Section 5 for details
Step 6:	Is the waste putrescible or non-putrescible?	Non-Putrescible	Further assessment is not required



5 CHEMICAL ASSESSMENT

Assessment	Comments
Analytical Suite:	<p>Analysis of soil samples collected included the following:</p> <p>Metals (including As, Be, Cd, Cr (VI), Pb, Mo, Ni, Se, Ag, Hg)</p> <p>Organochlorine Pesticides (OCP)</p> <p>Organophosphorus Pesticides (OPP)</p> <p>Polychlorinated Biphenyls (PCB)</p> <p>Total Recoverable Hydrocarbons (TRH)</p> <p>Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN)</p> <p>Phenols (halogenated & non-halogenated)</p> <p>Volatile Organic Compounds (VOC)</p> <p>Polycyclic Aromatic Hydrocarbons (PAH)</p> <p>Cyanide and Fluoride</p>
Justification for Suite selected:	<p>The sampling suite is based on the potential for contaminants from historical land use of the site and CoPC from fill material believed to be imported to the site. Analytes listed in Table 1 of the NSW EPA Waste Classification Guidelines which have not been analysed were determined unlikely to be contaminants of concern at the site or already confirmed from previous investigations (asbestos).</p>
Summary of Results:	<p>Heavy metals, TRH, BTEXN, PAH, OCP, OPP, PCB, VOC, Phenols, Cyanide, and Fluoride concentrations were reported below the laboratory Limit of Reporting (LOR) or below the General Solid Waste Maximum Value (CT1) criteria in all soil sample material assessed.</p>

6 WASTE CLASSIFICATION STATEMENT

Based on the assessment, the material is considered to meet the requirements to be classified as:

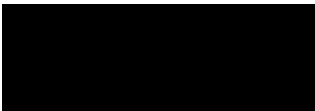
Special Waste (Asbestos)

In accordance with the requirements of the NSW EPA (2014) Waste Classification Guidelines.

If you require additional information or clarification, please contact the undersigned.

Sincerely,

Kleinfelder Australia Pty Ltd



Michael Gosling

Environmental Scientist

Contaminated Land Management



Attachments

Attachment 1 Analytical Results Table

Attachment 2 Laboratory Reports



Photo 1:
Bin 1 material



Photo 2:
Bin 1 material wrapped up



Photo 3:
Bin 2 material



Photo 4:
Bin 2 material wrapped up



Project No: 26000055	SITE PHOTOGRAPHS
Date: 24 April 2025	
Suite 3, 240-244 Pacific Highway, Charlestown, NSW 2290	
Phone: +61 2 4949 5200	
	Muswellbrook Coal Company
	Muscle Creek Road Muswellbrook, NSW 2333



ATTACHMENT 1 ANALYTICAL RESULTS TABLE



Table 1
Soil Classification - Metals
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Metals												
			Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc
LOR			5.0	1.0	0.4	2.0	0.5	5.0	5.0	0.1	2.0	2.0	5.0	2.0	5.0
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			100	20	20	--	100	--	100	4	100	40	20	100	--
NSW EPA – GENERAL SOLID WASTE - SCC1			500	100	100	--	1900	--	1500	50	1000	1050	50	180	--
NSW EPA – RESTRICTED SOLID WASTE - CT2			400	80	80	--	400	--	400	16	400	160	80	400	--
NSW EPA – RESTRICTED SOLID WASTE - SCC2			2000	400	400	--	7600	--	6000	200	4000	4200	200	720	--
Sample Name	Sample Date	Start Depth (m)													
Bin 1/1	16-Apr-25	0.0	< 5	----	<1	35	----	10	10	<0.1	----	22	----	----	50
Bin 1/2	16-Apr-25	0.0	< 5	<1	<1	----	<3.9	----	25	<0.1	<2	20	<5	<2	----
Bin 1/3	16-Apr-25	0.0	5.0	----	<1	29	----	11	13	<0.1	----	27	----	----	171
Bin 2/1	16-Apr-25	0.0	10	----	<1	9.0	----	16	69	0.1	----	10	----	----	204
Bin 2/2	16-Apr-25	0.0	9.0	<1	<1	----	<2.0	----	86	<0.1	<2	11	<5	<2	----
Bin 2/3	16-Apr-25	0.0	9.0	----	<1	11	----	17	89	<0.1	----	12	----	----	389

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
mg/kg - Milligrams per kilogram
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)
"" denotes duplicate/triplicate sample result adopted for analytical use due to RPD >50%

Criteria:
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 2
Soil Classification - Cations and Anions
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Anions and Cations		
			Cyanide (total)	Fluoride	Weak Acid Dissociable Cyanide
LOR			1.0	40	1.0
Units			mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			320	3000	--
NSW EPA – GENERAL SOLID WASTE - SCC1			5900	10000	--
NSW EPA – RESTRICTED SOLID WASTE - CT2			1280	12000	--
NSW EPA – RESTRICTED SOLID WASTE - SCC2			23600	40000	--
Sample Name	Sample Date	Start Depth (m)			
Bin 1/1	16-Apr-25	0.0	----	----	----
Bin 1/2	16-Apr-25	0.0	<1	120	<1
Bin 1/3	16-Apr-25	0.0	----	----	----
Bin 2/1	16-Apr-25	0.0	----	----	----
Bin 2/2	16-Apr-25	0.0	<1	130	<1
Bin 2/3	16-Apr-25	0.0	----	----	----

Notes:

- - Not analysed
- < - Less than laboratory limit of reporting
- mg/kg - Milligrams per kilogram
- µS/cm - Microsiemens per centimeter
- Bold indicates a detection above the laboratory limit of reporting

Criteria:

- NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
- NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
- NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
- NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 3
Soil Classification - PCBs
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Polychlorinated Biphenyls
			Total PCBs
LOR			0.1
Units			mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			50
NSW EPA – GENERAL SOLID WASTE - SCC1			50
NSW EPA – RESTRICTED SOLID WASTE - CT2			50
NSW EPA – RESTRICTED SOLID WASTE - SCC2			50
Sample Name	Sample Date	Start Depth (m)	
Bin 1/1	16-Apr-25	0.0	----
Bin 1/2	16-Apr-25	0.0	<0.1
Bin 1/3	16-Apr-25	0.0	----
Bin 2/1	16-Apr-25	0.0	----
Bin 2/2	16-Apr-25	0.0	<0.1
Bin 2/3	16-Apr-25	0.0	----

Notes:
< - Less than laboratory limit of reporting
LOR - Laboratory limit of reporting
mg/kg - Milligrams per kilogram
PCB - Polychlorinated Biphenyl

Criteria:
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 4
Soil Classification - BTEXN, TPH, TRH
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			BTExN					Total Petroleum Hydrocarbons					Total Recoverable Hydrocarbons					
			Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	C ₆ - C ₉	C ₁₀ - C ₁₄	C ₁₅ - C ₂₈	C ₂₉ - C ₃₆	C ₁₀ - C ₃₆ sum	C ₆ - C ₁₀	>C ₁₀ - C ₁₆	>C ₁₆ - C ₃₄	>C ₃₄ - C ₄₀	>C ₁₀ - C ₄₀ (sum)
LOR			0.2	0.5	0.5	0.5	0.5	10	50	100	100	50	10	50	100	100	50	
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			10	288	600	--	--	1000	650	--	--	--	10000	--	--	--	--	--
NSW EPA – GENERAL SOLID WASTE - SCC1			18	518	1080	--	--	1800	650	--	--	--	10000	--	--	--	--	--
NSW EPA – RESTRICTED SOLID WASTE - CT2			40	1152	2400	--	--	4000	2600	--	--	--	40000	--	--	--	--	--
NSW EPA – RESTRICTED SOLID WASTE - SCC2			72	2073	4320	--	--	7200	2600	--	--	--	40000	--	--	--	--	--
Sample Name	Sample Date	Start Depth (m)																
Bin 1/1	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	80	500	730	1,310	<10	90	1,070	270	1,430
Bin 1/2	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	< 50	< 100	< 100	< 50	<10	< 50	< 100	< 100	< 50
Bin 1/3	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	100	660	950	1,710	<10	110	1,420	340	1,870
Bin 2/1	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	<50	<100	120	120	<10	<50	140	<100	140
Bin 2/2	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	< 50	< 100	< 100	< 50	<10	< 50	< 100	< 100	< 50
Bin 2/3	16-Apr-25	0.0	<0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<10	<50	120	190	310	<10	<50	220	140	360

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
mg/kg - Milligrams per kilogram
BTEXN - Benzene, toluene, ethylbenzene, total xylenes, naphthalene
Bold indicates a detection above the laboratory limit of reporting

Criteria:
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 5
Soil Classification - VOCs
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Halogenated Aliphatic Compounds						Volatile Halogenated Compounds	Volatile Halogenated Compounds				Monocyclic Aromatic Hydrocarbons (MAH)	Volatile Halogenated Compounds	Solvents
			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Carbon tetrachloride	Tetrachloroethene	Trichloroethene	Vinyl chloride	Chlorobenzene	Styrene	Chloroform	2-Butanone (MEK)
LOR			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.0	0.5	0.5	0.5	5.0	
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			200	600	26	24	--	10	10	14	10	4	2000	60	120	4000
NSW EPA – GENERAL SOLID WASTE - SCC1			360	1080	46.8	43.2	--	18	18	25.2	18	7.2	3600	108	216	7200
NSW EPA – RESTRICTED SOLID WASTE - CT2			800	2400	104	96	--	40	40	56	40	16	8000	240	480	16000
NSW EPA – RESTRICTED SOLID WASTE - SCC2			1440	4320	187.2	172.8	--	72	72	100.8	72	28.8	14400	432	864	28800
Sample Name	Sample Date	Start Depth (m)														
Bin 1/1	16-Apr-25	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bin 1/2	16-Apr-25	0.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 4	< 0.5	< 0.5	< 0.5	< 5
Bin 1/3	16-Apr-25	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bin 2/1	16-Apr-25	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bin 2/2	16-Apr-25	0.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 4	< 0.5	< 0.5	< 0.5	< 5
Bin 2/3	16-Apr-25	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
< - Less than laboratory limit of reporting
LOR - Laboratory limit of reporting
mg/kg - Milligrams per kilogram

Criteria:
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Analyte			Phenolic Compounds (Non-Chlorinated)			Phenolic Compounds (Chlorinated)			
			Phenol	2-Methylphenol (o-Cresol)	3- & 4-Methylphenol (m&p cresol)	4-Chloro-3-methylphenol	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	Pentachlorophenol
LOR			0.5	0.5	1.0	0.5	0.5	0.5	2.0
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			--	4000	--	--	40	8000	--
NSW EPA – GENERAL SOLID WASTE - SCC1			--	7200	--	--	72	14400	--
NSW EPA – RESTRICTED SOLID WASTE - CT2			--	16000	--	--	160	32000	--
NSW EPA – RESTRICTED SOLID WASTE - SCC2			--	28800	--	--	288	57600	--
Sample Name	Sample Date	Start Depth (m)							
Bin 1/1	16-Apr-25	0.0	-	-	-	-	-	-	-
Bin 1/2	16-Apr-25	0.0	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 2
Bin 1/3	16-Apr-25	0.0	-	-	-	-	-	-	-
Bin 2/1	16-Apr-25	0.0	-	-	-	-	-	-	-
Bin 2/2	16-Apr-25	0.0	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 2
Bin 2/3	16-Apr-25	0.0	-	-	-	-	-	-	-

Notes:

< - Less than laboratory limit of reporting

LOR - Laboratory limit of reporting

mg/kg - Milligrams per kilogram

Criteria:

NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test

NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test

NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 7
Soil Classification - PAH
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Polycyclic Aromatic Hydrocarbons																			
			Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno[1,2,3-c,d]pyrene	Dibenz[a,h]anthracene	Benzo[g,h,i]perylene	Total PAH	Benzo[a]pyrene TEQ	Benzo[a]pyrene TEQ (LOR)	Benzo[a]pyrene TEQ (Half LOR)
LOR			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA – GENERAL SOLID WASTE - CT1			--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	--	--	200	--	--	--
NSW EPA – GENERAL SOLID WASTE - SCC1			--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--	200	--	--	--
NSW EPA – RESTRICTED SOLID WASTE - CT2			--	--	--	--	--	--	--	--	--	--	--	--	3.2	--	--	--	800	--	--	--
NSW EPA – RESTRICTED SOLID WASTE - SCC2			--	--	--	--	--	--	--	--	--	--	--	--	23	--	--	--	800	--	--	--
Sample Name	Sample Date	Start Depth (m)																				
Bin 1/1	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
Bin 1/2	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
Bin 1/3	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
Bin 2/1	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
Bin 2/2	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
Bin 2/3	16-Apr-25	0.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
LOR - Laboratory limit of reporting
mg/kg - Milligrams per kilogram
Bold indicates a detection above the laboratory limit of reporting

Criteria:
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT1 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC1 values for classifying waste by chemical assessment (when TCLP and SCC are used together)
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - CT2 values for classifying waste by chemical assessment without the TCLP test
NSW Environmental Protection Agency (EPA) - Waste Classification Guidelines - SCC2 values for classifying waste by chemical assessment (when TCLP and SCC are used together)

Table 8
QA/QC Results - Metals
Muswellbrook Coal Buffer Lands - Asbestos Remediation



Analyte			Metals							
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	Sample Date	Sample Type								
Bin 1/1	16-Apr-25	Primary	< 5	< 1	35	10	10	< 0.1	22	50
QC01	16-Apr-25	Duplicate	< 5	< 1	28	10	10	< 0.1	23	34
Relative Percentage Difference			NC	NC	22%	0%	0%	NC	4%	38%

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
NC - Not calculated
mg/L - Milligrams per litre
mg/kg - Milligrams per kilogram
Bold indicates a detection above the laboratory limit of reporting

Orange highlighting indicates an RPD in excess of 50%
RPD - Relative Percentage Difference



ATTACHMENT 2 LABORATORY REPORTS





CERTIFICATE OF ANALYSIS

Work Order : **ES2511329**
Client : **KLEINFELDER AUSTRALIA PTY LTD**
Contact : Michael Gosling
Address : 95 MITCHELL ROAD
CARDIFF NSW 2285
Telephone : ----
Project : 26000055.001A
Order number : ----
C-O-C number : ----
Sampler : Michael Gosling
Site : ----
Quote number : EN/222
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 15
Laboratory : Environmental Division Sydney
Contact : Jason Dighton
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 17-Apr-2025 14:30
Date Analysis Commenced : 23-Apr-2025
Issue Date : 30-Apr-2025 09:45



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Sum of chlorinated hydrocarbons includes carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, hexachlorobutadiene and methylene chloride.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Poor spike recovery for Hexavalent Chromium Alkaline Digest analysis due to matrix interferences
- EG048G: LOR raised for Hexavalent Chromium Alkaline Digest analysis due to sample matrix.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.7	15.6	19.0	10.6	10.6
EG005(ED093)T: Total Metals by ICP-AES									
Beryllium	7440-41-7	1	mg/kg	----	----	----	----	----	<1
Molybdenum	7439-98-7	2	mg/kg	----	----	----	----	----	<2
Selenium	7782-49-2	5	mg/kg	----	----	----	----	----	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	----	<2
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	26	31	35	----	----
Copper	7440-50-8	5	mg/kg	<5	20	24	10	----	----
Lead	7439-92-1	5	mg/kg	8	12	20	10	25	25
Nickel	7440-02-0	2	mg/kg	6	24	30	22	20	20
Zinc	7440-66-6	5	mg/kg	20	152	207	50	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	----	<3.9	<3.9
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	----	----	----	<1	<1
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	----	----	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	----	----	----	120	120
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time				15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	
Compound	CAS Number	LOR	Unit	ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05	
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	----	----	----	----	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05	
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05	
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05	
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2	
EP068B: Organophosphorus Pesticides (OP)									
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	<0.05	
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50	
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									

Page : 5 of 15
 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup - Continued									
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	<100
[^] C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg		----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
EP074B: Oxygenated Compounds									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	----	----	<5
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	4	mg/kg		----	----	----	----	<4
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	----	----	<0.5
Methylene chloride	75-09-2	0.5	mg/kg		----	----	----	----	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	----	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	----	----	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	----	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg		----	----	----	----	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	----	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	----	----	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	----	----	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	----	----	<0.5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	----	----	<0.5
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	<1
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	----	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^A Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	80	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	500	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	160	730	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	160	1310	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	90	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	170	1070	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	150	270	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	320	1430	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	90	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	126
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	104
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	78.6
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	----	----	102
Toluene-D8	2037-26-5	0.5	%		----	----	----	----	94.0
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	----	----	97.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		92.0	97.9	92.5	93.6	98.4
2-Chlorophenol-D4	93951-73-6	0.5	%		101	104	89.5	94.4	94.6
2,4,6-Tribromophenol	118-79-6	0.5	%		89.2	72.7	74.2	79.1	87.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.2	84.2	96.1	99.8	104
Anthracene-d10	1719-06-8	0.5	%		96.1	108	106	103	104
4-Terphenyl-d14	1718-51-0	0.5	%		108	89.4	91.5	90.2	88.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		101	103	94.3	105	103
Toluene-D8	2037-26-5	0.2	%		99.7	91.5	92.9	105	97.6
4-Bromofluorobenzene	460-00-4	0.2	%		108	99.7	102	107	98.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.5	17.2	17.9	14.0	23.6
EG005(ED093)T: Total Metals by ICP-AES									
Beryllium	7440-41-7	1	mg/kg		----	----	<1	----	----
Molybdenum	7439-98-7	2	mg/kg		----	----	<2	----	----
Selenium	7782-49-2	5	mg/kg		----	----	<5	----	----
Silver	7440-22-4	2	mg/kg		----	----	<2	----	----
Arsenic	7440-38-2	5	mg/kg		5	10	9	9	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		29	9	----	11	28
Copper	7440-50-8	5	mg/kg		11	16	----	17	10
Lead	7439-92-1	5	mg/kg		13	69	86	89	10
Nickel	7440-02-0	2	mg/kg		27	10	11	12	23
Zinc	7440-66-6	5	mg/kg		171	204	----	389	34
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	----	<2.0	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	<1	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg		----	----	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	----	130	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	<0.05	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time				16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	
Compound	CAS Number	LOR	Unit	ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----	
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	----	----	<0.05	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----	
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----	
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----	
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----	
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----	
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----	
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----	
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----	
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----	
EP068B: Organophosphorus Pesticides (OP)									
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	----	
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup - Continued									
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	<100	----	----
[^] C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	<50	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
EP074B: Oxygenated Compounds									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	4	mg/kg		----	----	<4	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	<0.5	----	----
Methylene chloride	75-09-2	0.5	mg/kg		----	----	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	----	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	<0.5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	<0.5	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^A Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----

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 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		100	<50	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		660	<100	----	120	----
C29 - C36 Fraction	----	100	mg/kg		950	120	----	190	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		1710	120	----	310	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		110	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		1420	140	----	220	----
>C34 - C40 Fraction	----	100	mg/kg		340	<100	----	140	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		1870	140	----	360	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		110	<50	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	113	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	110	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	86.7	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	102	----	----
Toluene-D8	2037-26-5	0.5	%		----	----	92.9	----	----
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	90.6	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		92.2	88.0	102	97.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		91.9	100	105	99.3	----
2,4,6-Tribromophenol	118-79-6	0.5	%		84.8	94.4	91.6	92.7	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		98.4	102	98.9	102	----
Anthracene-d10	1719-06-8	0.5	%		100	96.9	93.8	101	----
4-Terphenyl-d14	1718-51-0	0.5	%		87.0	110	105	103	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		92.0	107	104	97.8	----
Toluene-D8	2037-26-5	0.2	%		89.8	91.8	96.5	97.5	----
4-Bromofluorobenzene	460-00-4	0.2	%		90.2	102	92.8	104	----

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 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(SOIL) EK040T: Fluoride Total



QUALITY CONTROL REPORT

Work Order : ES2511329

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Client : KLEINFELDER AUSTRALIA PTY LTD

Contact : Michael Gosling

Address : [REDACTED]

Laboratory : Environmental Division Sydney

Contact : Jason Dighton

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61-2-8784 8555

Project : 26000055.001A

Date Samples Received : 17-Apr-2025

Order number : ----

Date Analysis Commenced : 23-Apr-2025

C-O-C number : ----

Issue Date : 30-Apr-2025

Sampler : Michael Gosling

Site : ----

Quote number : EN/222

No. of samples received : 10

No. of samples analysed : 10



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6528608)									
ES2511352-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	22	24.2	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	25.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	199	222	11.0	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	405	449	10.5	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	291	241	18.8	0% - 20%
ES2511329-001	SS01	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	10	17.6	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6528608) - continued									
ES2511329-001	SS01	EG005T: Zinc	7440-66-6	5	mg/kg	20	18	12.3	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6528611)									
ES2509386-019	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	9.8	9.7	0.0	No Limit
ES2511138-023	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	34.5	31.4	9.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6528612)									
ES2511329-003	SS03	EA055: Moisture Content	----	0.1 (1.0)*	%	19.0	17.7	7.1	0% - 50%
ES2511352-001	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	20.0	19.4	3.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6528610)									
ES2511329-001	SS01	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 6529499)									
ES2511065-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5 (2.0)*	mg/kg	<2.0	<2.0	0.0	No Limit
ES2511448-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5 (2.0)*	mg/kg	<2.0	<2.0	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6530431)									
EB2510486-062	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QC Lot: 6530432)									
EB2510486-062	Anonymous	EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 6537095)									
ES2511272-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	90	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 6526429)									
ES2511329-005	Bin 1/2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6526427)									
ES2511329-005	Bin 1/2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6526427) - continued									
ES2511329-005	Bin 1/2	EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6526427)									
ES2511329-005	Bin 1/2	EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 6526428)									
ES2511329-005	Bin 1/2	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071SG-S: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 6526428)									
ES2511329-005	Bin 1/2	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 6526424)									
ES2511359-074	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES2511359-078	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 6526426)									
ES2511329-005	Bin 1/2	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526424)									
ES2511359-074	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526424) - continued										
ES2511359-074	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES2511359-078	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526426)								
ES2511329-005	Bin 1/2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526426) - continued									
ES2511329-005	Bin 1/2	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526425)									
ES2511359-074	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2511359-078	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2511501-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526425)									
ES2511359-074	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2511359-078	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2511501-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2511501-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6528608)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	101	88.0	113
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	103	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	98.2	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	106	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	101	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	94.8	82.0	119
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.3 mg/kg	81.7	77.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	93.0	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.3 mg/kg	117	42.0	158
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	91.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6528610)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	85.6	70.0	125
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 6529499)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	102	68.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6530431)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	40 mg/kg	108	81.0	129
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 6530432)								
EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	40 mg/kg	105	70.0	130
EK040T: Fluoride Total (QCLot: 6537095)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	89.2	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 6526429)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.3	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	67.0	119
EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	67.0	115

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427) - continued								
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	66.0	116
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	69.0	115
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	76.5	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	62.0	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.4	66.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6526427)								
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	76.0	118
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 6526428)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	102	80.0	116
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	105	85.0	115
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	106	75.0	123
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 6526428)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	104	89.0	109
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	105	84.0	112
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	106	71.0	119
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612)								
EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	71.0	121
EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	99.2	65.0	131
EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.9	72.0	114
EP074: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	98.4	70.0	116
	106-42-3							
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	99.2	67.0	113
EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.6	75.0	115
EP074B: Oxygenated Compounds (QCLot: 6526612)								
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	93.3	58.0	136
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612)								



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612) - continued								
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	99.3	43.0	147
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	100	54.0	126
EP074: Methylene chloride	75-09-2	0.5	mg/kg	<0.5	1 mg/kg	104	58.0	148
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	98.8	65.0	117
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	95.7	59.0	125
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	103	65.0	125
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	98.2	70.0	118
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	100	64.0	126
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	96.9	67.0	143
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	95.4	62.0	122
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	101	65.0	121
EP074F: Halogenated Aromatic Compounds (QCLot: 6526612)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	98.9	68.0	116
EP074G: Trihalomethanes (QCLot: 6526612)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	99.6	66.0	124
EP075(SIM)A: Phenolic Compounds (QCLot: 6526424)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	97.0	71.0	125
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	90.4	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	98.7	67.0	127
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	89.4	70.0	116
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	89.0	54.0	114
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	86.6	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	42.0	10.0	80.0
EP075(SIM)A: Phenolic Compounds (QCLot: 6526426)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	95.2	71.0	125
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	93.0	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	98.4	67.0	127
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	92.5	70.0	116
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	96.8	54.0	114
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	83.4	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	46.1	10.0	80.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	93.3	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.6	72.0	124



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	96.7	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.4	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	96.6	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	94.4	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.5	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.1	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.8	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	88.2	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	87.4	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	88.8	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	101	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	92.7	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	100	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526426)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.3	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	98.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	98.1	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	99.4	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.5	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	96.2	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	103	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	100	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.5	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.4	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	91.6	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.4	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	94.4	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	92.3	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	90.0	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.0	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	97.3	75.0	129



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.2	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526611)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	80.5	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526629)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.1	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526425)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.5	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	92.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	91.0	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526611)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.9	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526629)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.6	72.4	133
EP080: BTEXN (QCLot: 6526611)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	88.5	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.2	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.2	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	89.1	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.8	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.0	78.8	122
EP080: BTEXN (QCLot: 6526629)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	91.1	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	95.4	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.2	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.6	78.8	122

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6528608)							
ES2511329-001	SS01	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.9	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6528610)							
ES2511329-001	SS01	EG035T: Mercury	7439-97-6	5 mg/kg	88.5	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 6529499)							
ES2511329-005	Bin 1/2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 6.4	70.0	130
ES2511329-005	Bin 1/2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 27.7	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6530431)							
EB2510486-062	Anonymous	EK026SF: Total Cyanide	57-12-5	40 mg/kg	106	70.0	130
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 6530432)							
EB2510486-062	Anonymous	EK028SF: Weak Acid Dissociable Cyanide	----	40 mg/kg	108	70.0	130
EK040T: Fluoride Total (QCLot: 6537095)							
ES2511272-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	76.6	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 6526429)							
ES2511329-005	Bin 1/2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427)							
ES2511329-005	Bin 1/2	EP068: gamma-BHC - (Lindane)	58-89-9	0.5 mg/kg	95.5	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	87.1	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.1	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	106	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	73.0	70.0	130
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	77.7	70.0	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 6526428)							
ES2511329-005	Bin 1/2	EP071SG-S: C10 - C14 Fraction	----	480 mg/kg	103	43.0	139
		EP071SG-S: C15 - C28 Fraction	----	3100 mg/kg	105	49.0	131
		EP071SG-S: C29 - C36 Fraction	----	2060 mg/kg	129	64.0	158
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 6526428)							
ES2511329-005	Bin 1/2	EP071SG-S: >C10 - C16 Fraction	----	900 mg/kg	82.4	33.0	137
		EP071SG-S: >C16 - C34 Fraction	----	4320 mg/kg	118	40.0	137
		EP071SG-S: >C34 - C40 Fraction	----	890 mg/kg	126	30.0	190
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612) - continued							
ES2511573-001	Anonymous	EP074: Benzene	71-43-2	2.5 mg/kg	90.9	70.0	130
		EP074: Toluene	108-88-3	2.5 mg/kg	90.5	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612)							
ES2511573-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	84.2	70.0	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	89.2	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6526612)							
ES2511573-001	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	92.0	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 6526424)							
ES2511359-074	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.3	70.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.6	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	99.1	20.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 6526426)							
ES2511329-005	Bin 1/2	EP075(SIM): Phenol	108-95-2	10 mg/kg	88.9	70.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.2	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	70.9	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424)							
ES2511359-074	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.4	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	102	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526426)							
ES2511329-005	Bin 1/2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.1	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425)							
ES2511359-074	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	111	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	120	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	105	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	67.0	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526629)							
ES2511329-001	SS01	EP080: C6 - C9 Fraction	----	32.5 mg/kg	90.3	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526425)							
ES2511359-074	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	120	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	114	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	108	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	68.6	61.1	142

Matrix Spike (MS) Report

				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526629)							
ES2511329-001	SS01	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.1	61.1	142
EP080: BTEXN (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	66.2	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	75.9	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	76.5	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	76.3	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.6	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	90.3	61.1	115
EP080: BTEXN (QCLot: 6526629)							
ES2511329-001	SS01	EP080: Benzene	71-43-2	2.5 mg/kg	81.9	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	91.4	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	95.3	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	97.1	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	96.9	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.5	61.1	115



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2511329	Page	: 1 of 9
Client	: KLEINFELDER AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: Michael Gosling	Telephone	: +61-2-8784 8555
Project	: 26000055.001A	Date Samples Received	: 17-Apr-2025
Site	: ----	Issue Date	: 30-Apr-2025
Sampler	: Michael Gosling	No. of samples received	: 10
Order number	: ----	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	ES2511329--005	Bin 1/2	Hexavalent Chromium	18540-29-9	6.4 %	70.0-130%	Recovery less than lower data quality objective
EG048: Hexavalent Chromium (Alkaline Digest)	ES2511329--005	Bin 1/2	Hexavalent Chromium	18540-29-9	27.7 %	70.0-130%	Recovery less than lower data quality objective

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) SS01, SS03	SS02,	15-Apr-2025	----	----	----	23-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EA055) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	----	----	----	23-Apr-2025	30-Apr-2025	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	12-Oct-2025	✓	24-Apr-2025	12-Oct-2025	✓
Soil Glass Jar - Unpreserved (EG005T) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	23-Apr-2025	13-Oct-2025	✓	24-Apr-2025	13-Oct-2025	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	13-May-2025	✓	28-Apr-2025	13-May-2025	✓
Soil Glass Jar - Unpreserved (EG035T) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	23-Apr-2025	14-May-2025	✓	28-Apr-2025	14-May-2025	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	14-May-2025	✓	28-Apr-2025	01-May-2025	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	30-Apr-2025	✓	28-Apr-2025	08-May-2025	✓
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK028SF) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	30-Apr-2025	✓	28-Apr-2025	08-May-2025	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) Bin 1/2,	Bin 2/2	16-Apr-2025	28-Apr-2025	14-May-2025	✓	29-Apr-2025	14-May-2025	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	29-Apr-2025	02-Jun-2025	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	29-Apr-2025	02-Jun-2025	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074E: Halogenated Aliphatic Compounds								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓	
EP074F: Halogenated Aromatic Compounds								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓	
EP074G: Trihalomethanes								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓	
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) SS01, SS03 SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓	
Soil Glass Jar - Unpreserved (EP075(SIM)) Bin 1/1, Bin 1/3, Bin 2/1, Bin 2/2, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) SS01, SS03 SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓	
Soil Glass Jar - Unpreserved (EP080) SS01, SS03 SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓	
Soil Glass Jar - Unpreserved (EP080) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	23-Apr-2025	30-Apr-2025	✓	
Soil Glass Jar - Unpreserved (EP071) Bin 1/1, Bin 2/1, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓	
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓	

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 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	23-Apr-2025	30-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP071) Bin 1/1, Bin 2/1,	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1,	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1.	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	13	23.08	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
WAD Cyanide by Segmented Flow Analyser	EK028SF	SOIL	In house: Referenced to APHA 4500-CN C&O / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Hydrogen cyanide is liberated from a slightly acidified (pH 4.5) and is dialysed. Tight cyanide complexes that would not be amenable to oxidation by chlorine are not converted. Iron cyanide complexes are precipitated with zinc acetate. Liberated HCN diffuses through a membrane into a stream of sodium hydroxide where it is carried as CN ⁻ . The cyanide in caustic solution is buffered to pH 5.2 and further converted to cyanogen chloride by reaction with chloramine-T. Cyanogen chloride subsequently reacts with 4-pyridine carboxylic and 1,3-dimethylbarbituric acids to give a red colour complex. This colour is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).



Analytical Methods	Method	Matrix	Method Descriptions
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015. Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260 Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



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CLIENT: Kleinfelder Australia Pty Ltd	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): 29/4/25	FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No N/A Free ice / frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: 1.0 °C Other comment:
OFFICE: [REDACTED]	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
PROJECT: 26000055.001A	PROJECT NO.: ALS QUOTE NO.:	
ORDER NUMBER:	PURCHASE ORDER NO.:	
PROJECT MANAGER: M Gosling	CONTACT PH: 0421 765 729	
SAMPLER: M Gosling	SAMPLER MOBILE: 0421 765 729	
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	mgosling@kleinfelder.com	
Email Invoice to (will default to PM if no other addresses are listed):	Aus_Accounts@kleinfelder.com	
RELINQUISHED BY: M Gosling		RECEIVED BY: Cassie
DATE/TIME: 17/4/25 @ 2:30pm		DATE/TIME: 17.04.25
RECEIVED BY: Bn		DATE/TIME: 17/4 2:30
RELINQUISHED BY: Cassie		RECEIVED BY: Nave
DATE/TIME: 17/4/25 @ 2:30pm		DATE/TIME: 17.04.25

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	P-7/4 Short	S-26	S-2	LAB OF ORIGIN: NEWCASTLE				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SS01	15/04/2025 0:00	S	Glass Jar	1		X						
2	SS02	15/04/2025 0:00	S	Glass Jar	1		X						
3	SS03	15/04/2025 0:00	S	Glass Jar	1		X						
4	Bin 1/1	16/04/2025 0:00	S	Glass Jar	1		X						
5	Bin 1/2	16/04/2025 0:00	S	Glass Jar	1	X							
6	Bin 1/3	16/04/2025 0:00	S	Glass Jar	1		X						
7	Bin 2/1	16/04/2025 0:00	S	Glass Jar	1		X						
8	Bin 2/2	16/04/2025 0:00	S	Glass Jar	1	X							
9	Bin 2/3	16/04/2025 0:00	S	Glass Jar	1		X						
10	QC01	16/04/2025 0:00	S	Glass Jar	1			X					
TOTAL					10	2	7	1					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

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Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT:	Kleinfelder Australia Pty Ltd	TURNAROUND REQUIREMENTS:	<input checked="" type="checkbox"/> Standard TAT (List due date): 29/4/25	FOR LABORATORY USE ONLY (Circle)	
OFFICE:		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No <input checked="" type="radio"/> N/A	
PROJECT:	26000055.001A	PROJECT NO.:	ALS QUOTE NO.:	Firm ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	Random Sample Temperature on Receipt: 1.0 °C	
PROJECT MANAGER:	M Gosling	CONTACT PH:	0421 765 729	Other comment:	
SAMPLER:	M Gosling	SAMPLER MOBILE:	0421 765 729	RELINQUISHED BY: Cassie	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: Nave	
Email Reports to (will default to PM if no other addresses are listed):	mgosling@kleinfelder.com	RELINQUISHED BY:	M Gosling	DATE/TIME: 1700	
Email Invoice to (will default to PM if no other addresses are listed):	Aus_Accounts@kleinfelder.com	DATE/TIME:	17/4/25 @ 2:30pm	DATE/TIME: 17.04.25	
		RECEIVED BY:	Bn	DATE/TIME: 17/4 2:30	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required) or Split WO				Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	SS01	15/04/2025 0:00	S	Glass Jar	1						
2	SS02	15/04/2025 0:00	S	Glass Jar	1						
3	SS03	15/04/2025 0:00	S	Glass Jar	1						
4	Bin 1/1	16/04/2025 0:00	S	Glass Jar	1						
5	Bin 1/2	16/04/2025 0:00	S	Glass Jar	1	X					
6	Bin 1/3	16/04/2025 0:00	S	Glass Jar	1						
7	Bin 2/1	16/04/2025 0:00	S	Glass Jar	1						
8	Bin 2/2	16/04/2025 0:00	S	Glass Jar	1	X					
9	Bin 2/3	16/04/2025 0:00	S	Glass Jar	1						
10	QC01	16/04/2025 0:00	S	Glass Jar	1						
TOTAL					10	2	7	1			

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

Visual Clearance and Inspection Report

Buffer Lands: Muswellbrook Coal, Muscle Creek Road,
Muswellbrook, NSW, 2333

26000055.001A

7 May 2025





Visual Clearance and Inspection Report

Buffer Lands: Muswellbrook Coal, Muscle Creek Road, Muswellbrook, NSW, 2333

Kleinfelder Project: 26000055.001A

Kleinfelder Document: NCA25R181061

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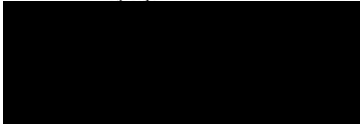
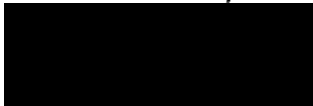


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1 INTRODUCTION

Kleinfelder Australia Pty Ltd (Kleinfelder) was engaged by Muswellbrook Coal Company Ltd (MCC) to undertake site supervision during bonded asbestos removal works, a visual and analytical inspection of residual in-situ soil surfaces following asbestos removal works, and mixed waste removal works at the Muswellbrook Coal Mine, located at Muscle Creek Road, Muswellbrook, NSW, 2333 (the site).

Asbestos clearance investigation work and mixed waste removal works were undertaken following the removal of asbestos containing material (ACM) and mixed waste (including chemical tins, drums, corrugated iron, tyres, and miscellaneous rubbish) from several locations within buffer lands surrounding the former open-cut coal mining operational areas of the site, which are currently undergoing rehabilitation.

Removal works were conducted by a Class A licensed asbestos removal contractor, Aztech Services Australia Pty Ltd (Aztech) (License No.: 2313682 (QLD, recognized in NSW/ACT/NT/TAS/WA). The inspection was conducted by Kleinfelder representative Mr. Michael Gosling (Licensed Asbestos Assessor (LAA) No.: LAA001248). The investigation and removal locations are summarised in **Table 1-1** and presented in **Appendix A**. Photographs compiled during the inspection are provided in **Appendix B**.

1.1 BACKGROUND

Kleinfelder understands that buffer lands surrounding the Muswellbrook Coal Mine previously contained several rural residential properties, primarily used for agricultural purposes, including cottages, sheds, small structures, and areas historically used as rubbish dumps by these properties. The majority of these structures have been demolished since land acquisition by MCC.

It is further understood that, as part of the closure and rehabilitation of the site, the buffer lands are proposed to be repurposed for the installation of a solar farm. As part of due diligence investigations by the prospective site occupier, a Preliminary Site Investigation (PSI) was conducted by Renew Environmental Consulting (REC) in March 2025, which included a walk-over inspection within the buffer lands, targeting areas of previous structures observed in historical aerial imagery.

The PSI inspected a total of 25 target locations, of which 12 locations were observed to contain waste material requiring further investigation or remediation, prior to acquisition of the buffer lands from MCC. Additionally, MCC identified a further two sites (within buffer lands, but outside of the proposed solar farm investigation area) which contained ACM and mixed waste, which were required to be remediated in conjunction with the locations identified during the PSI.

Due to the findings of the PSI, Kleinfelder were engaged to assist MCC with the removal of ACM and mixed waste from the target locations identified by REC and by MCC. This enabled MCC to satisfy its obligations to provide the prospective site occupier with, as far as reasonably practicable, an area free of known contamination for the proposed reuse of the buffer lands.

1.2 OBJECTIVES

Kleinfelder understands that MCC's overall objective for this investigation was to remove, as far as reasonably practicable, all occurrences of identified anthropogenic materials within the buffer lands that may be considered potentially contaminating to the surrounding environment.

Kleinfelder's specific objective of this investigation was to facilitate and manage a program of non-intrusive and intrusive removal works within the Target Locations, to render the areas low risk of contamination, and enable re-use of the Target Areas.

1.3 SCOPE OF WORK

To achieve the stated objectives, the following scope of work was undertaken:



- An inspection of the Target Locations was undertaken by a Licensed Asbestos Assessor (LAA) on 28th March 2025. The inspection was undertaken to confirm the presence and potential extent of potential ACM identified during the PSI, and to determine the scope of removal works required by a licensed asbestos removal contractor.
- Following the inspection of the Target Locations, an asbestos hen-picking and bulk waste removal program was initiated on 7th April 2025 to remove bulk asbestos waste and fragments of ACM identified on the site surface at the Target Locations. Asbestos removal works were conducted in conjunction with mixed waste removal, which also initiated on 7th April 2025.
- Where significant quantities of ACM fragments were identified within in-situ topsoils, which was not visible or accessible during the site inspection on 28th March 2025, a program of excavation and offsite disposal of asbestos impacted topsoils was initiated on 14th April 2025.
- A program of visual clearance inspections was undertaken by the LAA at each Target Location following the completion of asbestos and mixed waste removal works between 7th April and 16th April 2025.
- Additionally, targeted validation sampling was undertaken by Kleinfelder field staff at Target Location 16 on 14th April 2025 following mixed waste removal works. A total of three soil samples were collected from residual surface soils following removal works, which were submitted to a National Association of Testing Authorities (NATA) accredited laboratory for chemical assessment.
- Following the completion of site removal works, visual clearance inspections, and validation sampling, a Visual Clearance and Inspection Report (this report) was to be prepared to present the findings of the visual clearance inspection, in accordance with the requirements of Section 3.10 of the Safe Work Australia Code of Practice: *How to Safely Remove Asbestos*, and the findings of the soil validation assessment, against the adopted NEPM (2013) and CRC CARE investigation levels for contaminants in soil.

1.4 ASBESTOS AND MIXED WASTE REMOVAL DETAILS

An inspection of the asbestos removal Target Locations was conducted by a LAA on 28th March 2025. The inspection determined that all ACM present at the site was in a bonded, non-friable condition at the time of inspection. As such, all asbestos removal works were undertaken using bonded asbestos removal controls.

Vision Excavations Pty Ltd and Kore Enterprises Pty Ltd were engaged by MCC to provide mobile plant for use during mixed waste and asbestos removal works, including the use of a 29-tonne excavator, 5-tonne excavator, Posi-Track loader, and a tipper truck. Aztech were engaged to undertake asbestos removal works. Mixed waste removal works were conducted by Aztech, Vision Excavations Pty Ltd, Kore Enterprises Pty Ltd, and Kleinfelder field staff.

The asbestos and mixed waste removal work locations are described in **Table 1-1** below and are presented in site figures in **Appendix A**.



Table 1-1: Investigation and Removal Locations

Target Location (as per PSI)	Coordinates		Feature / Target Location Name	Asbestos Removal Method			Mixed Waste – Bulk Removal	Notes
	Eastings (56H)	Northings		Asbestos Hen Pick ¹	Asbestos Bulk Waste – Bagging ²	Asbestos – Excavation ³		
4	305857	6428620	Woolshed	-	-	-	Yes	Sealed chemical tins, Television, and Speakers removed from Woolshed on 8 th April 2025
6	305768	6428638	Building debris	Yes ^{1a}	-	-	-	Small volume of Asbestos debris and timber removed by Hen Pick on 28 th March 2025
8	306626	6427634	Cattle yards and sheds	-	-	-	-	Not inspected as part of this investigation
11	306034	6431867	Former house	Yes ^{1a}	-	-	-	Small volume of Asbestos debris removed by Hen Pick on 28 th March 2025
13	306018	6431950	Small structures	-	-	-	-	Area inspected on 16 th April 2025; no potentially hazardous material identified. Area contains small pile of bricks and metal springs.
14	305600	6431710	Former house	-	-	Yes	-	Area remediated by excavation of asbestos impacted topsoil on 16 th April 2025
15	304897	6431912	Former sheds/tank stands	Yes ^{1a}	-	-	-	Small volume of Asbestos debris removed by Hen Pick on 28 th March 2025
16*	305030	6431990	Small quarries/dump sites	-	Yes	-	Yes	Asbestos conduit (5 lengths of asbestos pipe, each approx. 1 metre long by 150-millimetre diameter) removed by bulk removal on 7 th April 2025. Mixed waste, including drums, corrugated iron, glass, plastic, concrete, and brick removed on 14 th April 2025. Validation samples of residual soil collected due to presence of drums – detailed in Section 3 .



Target Location (as per PSI)	Coordinates		Feature / Target Location Name	Asbestos Removal Method			Mixed Waste – Bulk Removal	Notes
	Eastings (56H)	Northings		Asbestos Hen Pick ¹	Asbestos Bulk Waste – Bagging ²	Asbestos – Excavation ³		
20	304428	6431975	Former Quarry Cottage & Sheds	Yes	-	-	Yes	Area remediated by asbestos Hen Pick on 8 th April 2025. Removal of waste tyres in surrounding area also completed on 8 th April 2025
22	304516	6431842	Old Sheds (Near dams)	Yes	-	-	-	Area remediated by asbestos Hen Pick on 8 th April 2025
24	304552	6431995	Rocky outcrop	Yes	Yes	-	-	Area remediated by Hen Pick of asbestos debris and bulk removal of large sheets on 8 th April 2025
25	304512	6432015	Rubbish Dump	-	-	Yes	Yes	Area inspected and observed to contain fibrous cement sheeting on 8 th April 2025. Area remediated by excavation of asbestos impacted soil on 14 th and 15 th April 2025. Mixed waste including corrugated iron, scrap metal, tyres, and rubber matting removed on 15 th April 2025. Site surface reinstated on 17 th April 2025.
Bra Gate**	304639	6429060	Former Cottage	-	Yes	-	Yes	Asbestos conduit (5 lengths of asbestos pipe, each approx. 1 metre long by 150-millimetre diameter) removed by bulk removal on 8 th April 2025. Mixed waste, including corrugated iron and refrigerator, removed on 8 th April 2025.
Dog Track**	303539	6430609	Greyhound Track and Kennel	-	-	Yes	Yes	Area remediated by excavation of asbestos impacted topsoil on 16 th April 2025. Mixed waste, including metal, plastic tubing, carpet, and timber debris, removed on 16 th April 2025.

Notes:

1: Hen pick asbestos removal works were conducted by methodically walking in a grid pattern over a defined area and collecting any visible ACM debris by hand. ACM was then placed into asbestos removal bags and sealed. Hen picks were carried out by Aztech (licensed asbestos removalists, licence n° 2313682 (QLD, recognised in NSW/ACT/NT/TAS/WA)) under Kleinfelder supervision. Following asbestos removal, a visual clearance inspection to confirm adequate removal was carried out by a Kleinfelder Licensed Asbestos Assessor (LAA), Mr. Michael Gosling, licence n° LAA001248.



1a: Hen picks in areas 6, 11, and 15 were conducted by the Kleinfelder LAA during the site inspection, due to small quantities of asbestos debris identified (less than 100kg and less than 10 square metres).

2: Asbestos removal works were carried out by wrapping bulk asbestos waste material, such as conduit and sheeting, in asbestos removal bags. The bulk asbestos material was slid into one removal bag, another removal bag was slid over the other end of the material, and they were sealed using duct tape.

3: Asbestos removal works in these locations were carried out by way of excavation. Material was excavated and placed into skip bins pre-lined with 200µm builder's plastic. Samples to allow for waste classification were taken from the material. Once completed, the plastic was sealed around it, and it was removed from site.

*Tar in weathered drums was present at Location 16. Samples were collected from residual soil for laboratory testing to confirm that no contamination of the surrounding environment had occurred.

**These locations were identified for asbestos clearance by MCC in addition to those identified in the PSI.

2 ASBESTOS CLEARANCE AND REMOVAL DETAILS

2.1 ASBESTOS REMOVAL AND OFFSITE DISPOSAL

2.1.1 Asbestos Hen Picking and Bulk Waste

Bulk asbestos waste, hen-picked asbestos debris, and used, disposable Personal Protective Equipment (PPE) generated during removal works conducted on 28th March, 7th April, and 8th April 2025 were placed into 200 µm plastic asbestos removal bags, gooseneck tied, sealed with duct tape, and removed from the site as asbestos waste at the conclusion of asbestos removal works. A total of 300 kg of asbestos waste was transported to a licensed landfill facility, lawfully able to accept asbestos waste (Lucas Heights Resource Recovery Park, New Illawarra Road, Lucas Heights, NSW 2234). Tip disposal documentation is provided in **Appendix D**.

2.1.2 Asbestos Impacted Soils

Asbestos impacted soils and used, disposable PPE were placed into onsite skip bins lined with 200 µm builders' plastic on 15th April and 16th April 2025. Asbestos impacted soils excavated from Target Location 25 were placed into the tipper truck, which was lined with 200 µm builders' plastic, and transported across the site to be placed into the skip bin serving Target Locations 14 and 25, which was initially placed on the access road between Target Locations 14 and 25, at approximate coordinates (Zone 56H) 304785 m E, 6431462 m S. Due to the height of the skip bin in relation to the tipper truck, soils were placed onto 200 µm builders' plastic on the ground, and transferred into the skip bin with a 5-tonne excavator. The skip bin was subsequently moved to Target Location 14. Asbestos impacted soils excavated from Target Locations 14 and Dog Track were placed directly into two separate skip bins located adjacent to each of the Target Locations.

A total of six soil samples were collected from soils placed into the skip bins (three from each skip bin) for waste classification purposes. Analytical results indicated that soils within both skip bins were classified as Special Waste (Asbestos), in accordance with the NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste (as detailed in Kleinfelder (2025) MCC Buffer Lands – Waste Classification, Report No. 26000055.001A, dated 30 April 2025). Two skip bins, containing a combined total of 16.9 tonnes of asbestos waste, were removed from site on 2nd May 2025, and transported to a licensed landfill facility, lawfully able to accept asbestos waste (Raymond Terrace Waste Management Centre, 330 Newline Road, Raymond Terrace, NSW 2324). Tip disposal documentation is provided in **Appendix D**.

2.2 VISUAL ASBESTOS CLEARANCE

The purpose of the visual clearance inspections was to assess whether all visible and accessible ACM had been removed to a satisfactory standard, prior to the Target Locations in the buffer lands being deemed fit for re-use.

A final visual clearance inspection was conducted within the asbestos work areas defined in **Table 1-1** by a LAA following the completion of asbestos removal works defined in **Section 2.1**. Additionally, an inspection of all non-disposable equipment used during asbestos removal works (including excavator buckets and tracks) was undertaken following decontamination at the completion of asbestos removal works. Refer to **Appendix B** for photographs collected from Target Locations prior to and following asbestos removal works.

At the completion of removal and decontamination works noted above, a visual clearance inspection was undertaken in the following areas:

- Visible and accessible residual soil surfaces at each of the asbestos removal Target Locations defined in **Table 1-1**
- Visible and accessible residual soil surfaces within the path of the excavator when mobilising between the asbestos excavation removal areas (Target Locations 14, 25, and Dog Track) and the skip bins
- Visible and accessible residual soil surfaces at the temporary soil laydown location at approximate coordinates (Zone 56H) 304785 m E, 6431462 m S, as described in **Section 2.1.2**.

3 TARGETED SOIL VALIDATION

3.1 PRE-REMOVAL OBSERVATIONS

Target Location 16 was visually identified to contain potential hydrocarbon associated contamination, due to the presence of a tar-like substance within drums present in the area. Drums in the area were observed to be weathered, with the tar-like substance solidified and crystallised adjacent to the drums on the surrounding exposed weathered sandstone surfaces. The tar-like substance was noted to have a very high viscosity and remained bound to itself or the waste drums. The substance did not bind to underlying soil, sandstone, or other material, and did not leach staining or odours to surrounding surfaces.

Based on the presence of potentially contaminating material within the drums, in conjunction with the observed poor condition of the drums, it was determined that soil samples should be collected as part of a targeted validation assessment following the removal of mixed waste from Target Location 16.

3.2 WASTE REMOVAL

The waste drums and other waste materials present at Target Location 16 were removed as Mixed Waste to a licensed landfill facility, Muswellbrook Waste Management Facility, Coal Road, Muswellbrook NSW, on 14th April 2025. Due to the presence of potential hydrocarbon associated contamination, validation sampling and assessment of residual soils was undertaken following removal of waste material from Target Location 16.

3.3 BASIS OF ASSESSMENT CRITERIA

In order to assess the significance of potential contaminants in soil samples collected from the Target Location 16, reference was made to published environmental and/or human health-based guideline values in Australia. The adopted screening criteria consider the ongoing commercial /industrial use of the buffer lands.

The primary source of guideline values adopted for this assessment is the National Environment Protection (Assessment of Site Contamination) Measure (NEPM (1999, amended 2013)), specifically those provided in Schedule B1: Guideline on Investigation Levels for Soil and Groundwater. The NEPM (amended 2013) emphasises consideration of the site on a site-specific basis using a risk-based approach. According to the NEPM (amended 2013), human health should be a primary concern when assessing land use and exposure scenarios. Furthermore, the selection of the most appropriate investigation levels (for use in a range of environmental settings and land use scenarios) should also consider factors including the protection of ecosystems, groundwater resources and aesthetics.

As such, the NEPM 2013 amendment presents a tiered assessment framework with a number of risk-based and management investigation levels that are endorsed by the NSW government for assessing chemical contaminants in soil and groundwater.

The chosen screening criteria should be relevant to the current and proposed future use of the site, and:

- In the first instance, assess the Human Health Risk presented by the site.
- Secondly, assess the Ecological Risk presented by the site.
- Thirdly, assess if physical and aesthetic management limits apply and require consideration.

It should be noted that the NEPM (amended 2013) states that:

“Investigation and screening levels are not clean-up or response levels, nor are they desirable soil quality criteria. Investigation and screening levels are intended for assessing existing contamination and to trigger consideration of an appropriate site-specific risk-based approach or appropriate risk management options when they are exceeded”.

Therefore, if the assessment process indicates that the site conditions may pose a potential risk to human health or the environment, then refinement and closure of any data gaps (identified as part of a Conceptual Site Model (CSM)) would be required. This may be followed by a Site Specific Risk Assessment process (as defined in the

NEPM, amended 2013) or the adoption of a long-term environmental management plan to mitigate uncontrolled exposure to residual contamination (e.g. occupational hygiene protocols for trench workers).

The assessment standard and criteria considered for this project are drawn from the following published Australian guidance:

- National Environment Protection (Assessment of Site Contamination) Measure (NEPM) (Amendment 2013), Schedule B - General Guidelines for the Assessment of Site Contamination, with reference to:
 - NEPM (Amendment 2013) Schedule B1 - Investigation Levels for Soil and Groundwater, "Soil HSLs for vapour intrusion (mg/kg)" Table 1A (3).
 - NEPM (Amendment 2013) Schedule B1 - Investigation Levels for Soil and Groundwater, "ESLs for TPH fractions F1-F4, BTEX and benzo(a)pyrene in soil", Table 1B (6).
 - NEPM (Amendment 2013) Schedule B1 - Investigation Levels for Soil and Groundwater, "Management Limits for TPH fractions F1-F4 in soil", Table 1B (7).
 - NEPM (Amendment 2013) Schedule B1 – Health Investigation Levels for Soil Contaminants, "Health-based Investigation Levels (mg/kg)", Table 1A (1).
- Friebel, E and Nadebaum, P, 2011. Health screening levels for petroleum hydrocarbons in soil and groundwater. CRC CARE Technical Report 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia.

3.4 SOIL ASSESSMENT CRITERIA

To frame the site-specific setting, the following environmental context is relevant for Target Location 16:

- The future land use is continued commercial/industrial use, relating to the proposed future use as a solar farm.
- The surrounding land use is predominantly zoned as RU1 – Primary Production, C3 – Environmental Management, and SP2 – Infrastructure, associated with surrounding rural agricultural properties, bushland, and other areas within the MCC buffer lands.
- The geology below the site is primarily a mix of sandy and silty clays and clays. The soil category of FINE has been adopted as the majority of soils across the study area are likely to comprise cohesive (clay) soils.

The amended ASC NEPM (NEPC 2013) provides investigation screening levels for health investigation levels (HILs), health screening levels (HSLs), ecological investigation levels (EILs) and ecological screening levels (ESLs) for various exposure settings for some of the chemicals analysed.

Based on the current and proposed future use of Target Location 16 (Commercial/industrial), the following criteria were adopted:

- HSL D – Soil Vapour – Clay (NEPM, 2013).
- HIL D - Commercial/Industrial (NEPM, 2013).
- ESL - Commercial/Industrial - Fine (NEPM, 2013).
- EIL - Commercial/Industrial - Fine (NEPM, 2013).
- HSL D - Direct Contact (CRC CARE, 2011),
- HSL - Direct Contact Maintenance Workers for both residential and commercial/industrial (CRC CARE 2011).
- Petroleum Hydrocarbon Management Limits - Fine (NEPM, 2013).

It is noted that, given that sensitive ecological receptors are potentially present in the surrounding environment, ESLs and EILs (aged) have been adopted as part of this investigation.

Following appropriate consideration of the HSLs and ESLs, the purpose of the Management Limits is to "avoid or minimise" potential effects of petroleum hydrocarbons. ASC NEPM Schedule B (1) Section 2.9 provides these as an interim Tier 1 guidance to manage effects of:

- Formation of observable Light Non-Aqueous Phase Liquid (LNAPL).
- Fire and explosive hazards.
- Effects on buried infrastructure.

The application of the management limits requires the consideration of site-specific factors such as the depth of building services and depth to groundwater, to determine the maximum depth to which the limits should apply. The limits will have less relevance at operating industrial sites which have no or limited sensitive receptors in the area of potential impact. It should be noted that the presence of site Total Recoverable Hydrocarbons (TRH) contamination at levels above the Management Limits does not imply that there is a need for administrative notification or controls in accordance with jurisdiction requirements.

3.5 ADOPTED SOIL VALIDATION SCREENING LEVELS

A summary of the published soil validation screening levels is presented in **Table 3-1** below:

Table 3-1: Summary of Adopted Soil Validation Criteria (mg/kg)

Analyte	HSL D (mg/kg)	HIL D Commercial / Industrial (mg/kg)	HSL D Direct Contact CRC Care (mg/kg)	ESL Commercial / Industrial (mg/kg)	EIL Commercial / Industrial (Aged) (mg/kg)	Management Limits Commercial / Industrial (mg/kg)
TRH C ₆ -C ₁₀	-	-	26,000	-	-	800
C ₆ -C ₁₀ minus BTEX (F1)	310	-	-	215	-	-
>C ₁₀ -C ₁₆	-	-	20,000	170	-	1,000
>C ₁₀ -C ₁₆ minus naphthalene (F2)	NL	-	-	-	-	-
TRH >C ₁₆ -C ₃₄	-	-	27,000	2,500	-	5,000
TRH >C ₃₄ -C ₄₀	-	-	38,000	6,600	-	10,000
C ₆ – C ₉	-	-	-	-	-	-
C ₁₀ -C ₃₆	-	-	-	-	-	-
Benzene	4	-	430	95	-	-
Toluene	NL	-	99,000	135	-	-
Ethylbenzene	NL	-	27,000	185	-	-
Total Xylene	NL	-	81,000	95	-	-
Naphthalene	NL	-	11,000	-	370	-
Arsenic	-	3,000	-	-	160	-
Cadmium	-	900	-	-	-	-
Chromium	-	-	-	-	-	-
Copper	-	240,000	-	-	85	-
Lead	-	1,500	1800	-	1,800	-
Mercury	-	730	-	-	-	-
Nickel	-	6,000	-	-	55	-
Zinc	-	400,000	-	-	110	-
Benzo[a]pyrene	-	-	-	0.7	-	-

Analyte	HSL D (mg/kg)	HIL D Commercial / Industrial (mg/kg)	HSL D Direct Contact CRC Care (mg/kg)	ESL Commercial / Industrial (mg/kg)	EIL Commercial / Industrial (Aged) (mg/kg)	Management Limits Commercial / Industrial (mg/kg)
Benzo[a]pyrene TEQ	-	40	-	-	-	-
Total PAH	-	4,000	-	-	-	-

Notes:

1. NEPM 2013: Soil Health Screening Levels HSL D Commercial/Industrial - Clay.
 2. NEPM 2013: Soil Health Investigation Levels HIL D Commercial/Industrial.
 3. NEPM 2013: Soil Ecological Investigation Levels EILs Commercial/ Industrial.
 4. NEPM 2013: Soil Ecological Screening Levels ESL Commercial/Industrial – fine soil texture.
 5. Depth: 0.0 m – <1.0m
 6. Depth: 1.0 m – <2.0m
 7. Depth: 2.0 m – <4.0m
 8. Depth: 4.0 m +
 9. NEPM 2013: Management Limits Commercial/Industrial – fine soil texture.
- “NL” denotes Non-Limiting.
“-“ Denotes no criteria specified.

3.6 AESTHETICS

The NSW EPA and NEPM (amended 2013) also require consideration of aesthetics. That is, the presence of low-concern or non-hazardous inert foreign material (refuse) in soil or fill resulting from human activity. Sites that have been assessed as being acceptable from a human health and environmental perspective may still contain such foreign material. The following characteristics are examples of where site assessment may not have detected contamination above investigation or screening levels but where further assessment would be required:

- Highly malodorous soils or extracted groundwater (e.g. strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds).
- Hydrocarbon sheen on surface water; and
- Discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature.

Surface water is not present at the site and groundwater is anticipated to be at depths greater than 10 metres below ground level (mbgl) based on previous investigations undertaken at MCC by Kleinfelder. Offensive odours were assessed using qualitative olfactory methods. The presence of staining and discolouration were assessed through visual inspections of excavation surfaces. Photographic evidence of visible staining (or lack thereof) was collected and recorded in field notes. Heavily stained and highly odorous soils were excavated and removed from site where practical (if present).

3.7 VALIDATION RESULTS

Following the removal of mixed waste from Target Location 16, an inspection of residual soil and sandstone surfaces was undertaken. No visual or olfactory indicators of contamination were identified during the inspection. Three soil samples were collected from residual surfaces for comparison against the adopted soil validation screening levels presented in **Section 3.4**.

The validation locations are detailed in **Appendix A**. Validation sample analytical results are presented in **Table 3-3** below. Laboratory certificates of analysis are provided in **Appendix C**. Field observations recorded during the fieldworks are outlined below in **Table 3-2**.

Table 3-2: Validation Observations and Soil Descriptions

Sample ID	Depth (m)	Location	Soil Type
SS01	0.0 – 0.1	Base of mixed waste removal area – north side (downgradient)	Sandy CLAY – brown, medium plasticity, no odour/staining
SS02	0.0 – 0.1	Base of mixed waste removal area – centre	Weathered SANDSTONE – light brown to tan, fine grained, no odour/staining
SS03	0.0 – 0.1	Base of mixed waste removal area – south side (upgradient)	Weathered SANDSTONE – light brown to tan, fine grained, no odour/staining

Table 3-3 below summarises the range of reported analytical results of validation soil samples assessed during the investigation.

Table 3-3: Validation Soil Sample Analytical Results

Analyte	SS01	SS02	SS03	Exceeding Criteria
Total Recoverable Hydrocarbons				
TRH C ₆ -C ₁₀	< 10	< 10	< 10	None
F1	< 10	< 10	< 10	None
TRH >C ₁₀ -C ₁₆	< 50	< 50	< 50	None
F2	< 50	< 50	< 50	None
TRH >C ₁₆ -C ₃₄	< 100	< 100	170	None
TRH >C ₃₄ -C ₄₀	< 100	< 100	150	None
TRH >C ₁₀ -C ₄₀ (sum)	< 50	< 50	320	None
BTEXN Compounds				
Benzene	<0.2	<0.2	<0.2	None
Toluene	<0.5	<0.5	<0.5	None
Ethylbenzene	<0.5	<0.5	<0.5	None
Total Xylene	<0.5	<0.5	<0.5	None
Naphthalene	<1.0	<1.0	<1.0	None
Heavy Metals				
Arsenic	< 5.0	< 5.0	< 5.0	None
Cadmium	< 1.0	< 1.0	< 1.0	None
Chromium	8	26	31	None
Copper	< 5.0	20	24	None
Lead	8	12	20	None
Nickel	6	24	30	None
Mercury	< 0.1	< 0.1	< 0.1	None

Analyte	SS01	SS02	SS03	Exceeding Criteria
Zinc	20	152	207	NEPM, 2013 (EIL D) (SS02, SS03)
PAHs				
Benzo[a]pyrene	< 0.5	< 0.5	< 0.5	None
Total PAH	< 0.5	< 0.5	< 0.5	None
Benzo[a]pyrene TEQ	1.2	1.2	1.2	None

Validation samples collected from residual soils following waste removal at Target Location 16 reported concentrations below the adopted Health Screening Levels and Management Limits for commercial/industrial land use in all soil sample material assessed. Two exceedances of the adopted Ecological Investigation Levels for commercial/industrial land use were reported for zinc in samples SS02 and SS03.

It is noted that the adopted zinc criteria are based on a conservative, non-site-specific assumption of a soil Cation Exchange Capacity (CEC) value of 5 cmol/kg, soil pH of 4.0 pH units, and with no ambient background concentrations or added contaminant limits applied. As such, the adopted zinc criteria may likely overstate the actual risk of ecological harm present within residual soils at the site. The source of the zinc in soil is likely associated with degradation of zinc coating on corrugated iron sheeting which was present at Target Location 16.

Overall, on the basis of the validation data obtained and assessed following the completion of removal works, Kleinfelder considers that no residual contamination remains at Target Location 16 as a result of removed waste materials, and that the area has been satisfactorily validated in accordance with the requirements of the NSW EPA (2020) Contaminated Land Guidelines Consultants Reporting on Contaminated Land. Target Location 16 is therefore considered suitable for ongoing commercial/industrial use.

4 CONCLUSIONS AND LIMITATIONS

4.1 CONCLUSIONS

The final visual clearance inspections were conducted on all asbestos and mixed waste removal locations between 28th March and 16th April 2025 by Michael Gosling (LAA001248), following the completion of hen picks, bulk waste removal, and asbestos impacted soil excavation and removal works. The inspections were carried out in accordance with Section 3.10 of the Safe Work Australia Code of Practise: *How to Safely remove Asbestos*.

At the time of the final inspections, neither visible nor accessible ACM was identified as remaining within the Target Locations described in **Section 2**.

Based on the results of the visual inspections conducted by the LAA, the area can be considered as being free of visible ACM and safe to reoccupy with respect to asbestos health and safety.

Validation samples collected from residual soils following waste removal at Target Location 16 reported concentrations below the adopted Health Screening Levels and Management Limits for commercial/industrial land use in all soil sample material assessed. Two exceedances of the adopted Ecological Investigation Levels for commercial/industrial land use were reported for zinc in samples SS02 and SS03, however, it was noted that the adopted zinc criteria are conservative and not based on site-specific factors, and therefore the adopted zinc criteria may likely overstate the actual risk of ecological harm present within residual soils at the site.

4.2 LIMITATIONS

It is noted that the visual clearance inspection and mixed waste removal works were limited to the current scope of removal works, associated with visible and accessible surface areas within the Target Locations as defined in **Table 1-1**. This report does not guarantee that the entire buffer lands are asbestos-free, as ACM may be present within other areas of the site which were not inspected as part of this scope of work. Due care should therefore be taken when disturbing site soils or structures not associated with this clearance inspection in the future. Works must cease, and further assessment should be conducted, if suspected ACM is identified in the future.

It is noted that no inspection of soil or vegetated surfaces can be regarded as absolute. Potential exists for ACM, which was not visible or accessible at the time of inspection, to undergo natural disturbances or weathering processes rendering it visually or analytically identifiable in the future. Due care should therefore be taken when disturbing grounds in the buffer lands in the future, and works must cease for further assessment to be conducted if suspected ACM is identified.

The visual clearance inspections were conducted within visible and accessible areas of the Target Locations. A visual clearance inspection is applicable to the visible and accessible surfaces within investigation locations only. No intrusive investigations have been undertaken within these areas. This clearance report does not guarantee that each cleared location is free of asbestos; only that the visible and accessible surfaces were inspected and were found to be free of visible asbestos debris at the time of inspection.

This work was performed in a manner consistent with that level of care and skill 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 known to date. 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. The projections made in this report only reflect the professional judgment of the Project Team applying a standard of care consistent with the level of care and skill of other professionals undertaking similar work in the same locality under similar conditions at the date the services are provided. For these reasons, the recommendations, predictions, and projections made within this report provide guidelines based on the knowledge available to Kleinfelder as of the date provided based on Kleinfelder's review of the resources [identified below].

Any reliance upon maps or data presented herein used to make decisions or conclusions is at the sole discretion and risk of the user. This information is provided with the understanding that the data is not guaranteed to be accurate, correct, or complete and assumes no responsibility for errors or omissions.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder's recommendations. In addition to the above, the footer of letters and letter reports must indicate the Kleinfelder copyright, and the bottom front page of a bound report must contain the following:

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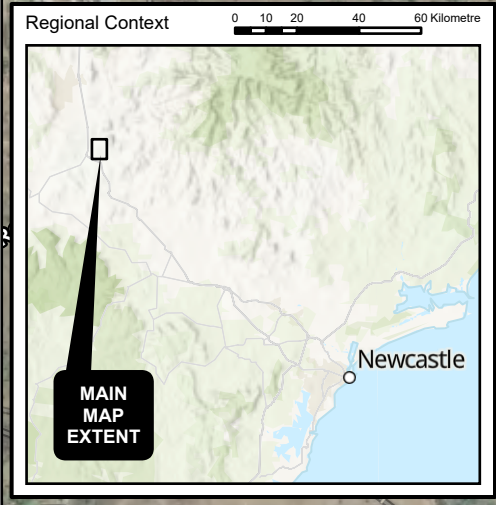
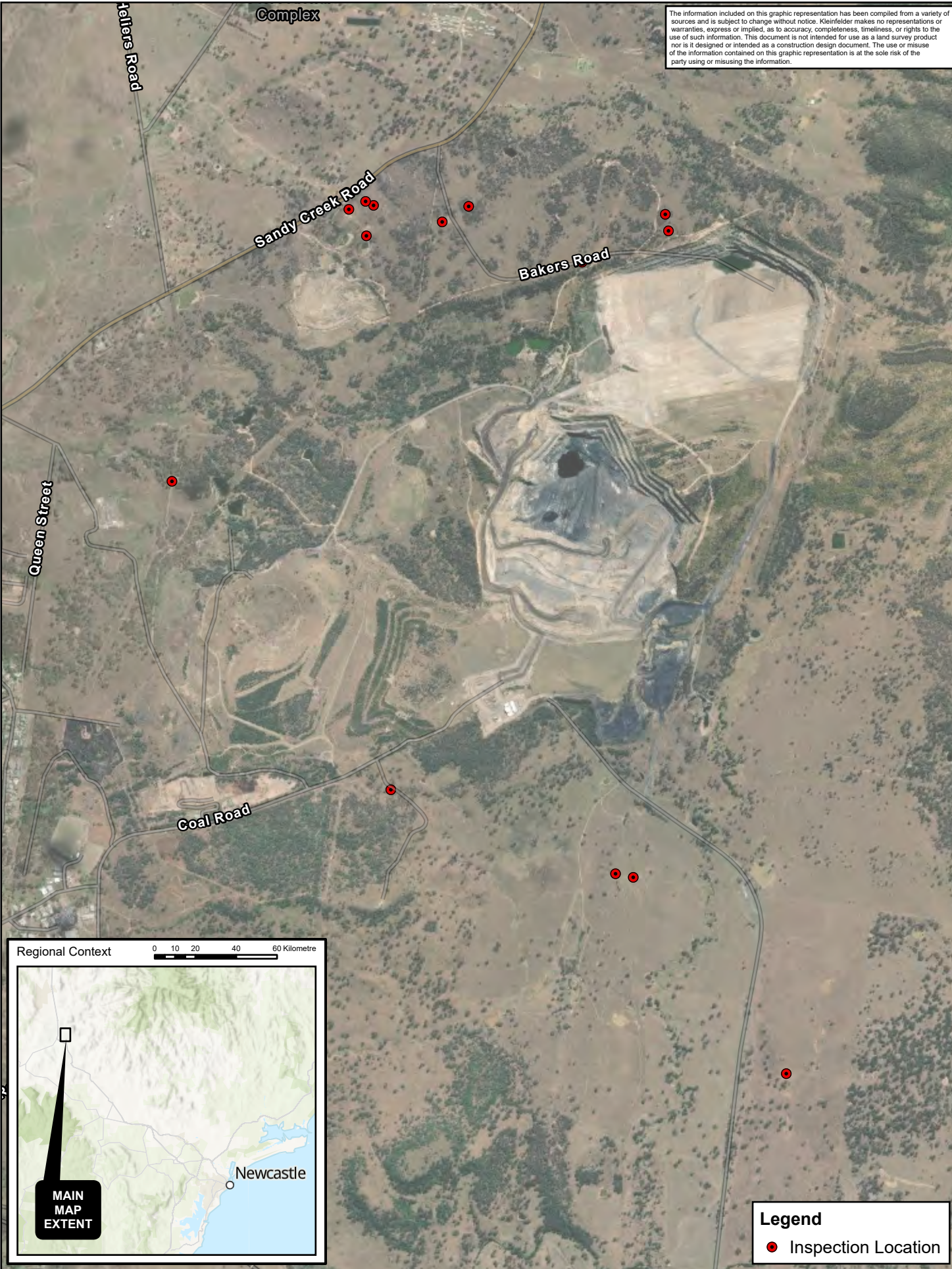
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APPENDIX A FIGURES





<div>0 125 250 500 750 1,000 1,250</div> <div>Scale @ A4</div> <div>1:25,000</div> <div>Metres</div> <div>GDA 1994 MGA Zone 56</div> <div> www.kleinfelder.com</div>	PROJECT REFERENCE: 26000055	SITE LOCATION	FIGURE: 1
	DATE DRAWN: 28/04/2025 Version 1		
	DRAWN BY: RHourigan		
	DATA SOURCE: Eri - 2025	MUSWELLBROOK COAL COMPANY LTD BUFFER LANDS ASBESTOS REMEDIATION MUSCLE CREEK ROAD, MUSWELLBROOK, NSW	

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Site Context 0 0.5 1 2 3 Kilometre



MAIN
MAP
EXTENT

Legend

● Inspection Location

0 5 10 20 30 40 50
Scale @ A4 1:1,000 Metres

GDA 1994 MGA Zone 56



PROJECT REFERENCE: 26000055

DATE DRAWN: 28/04/2025 Version 1

DRAWN BY: RHourigan

DATA SOURCE:
Metromap - 2025

INSPECTION LOCATIONS

MUSWELLBROOK COAL COMPANY LTD
BUFFER LANDS ASBESTOS REMEDIATION
MUSCLE CREEK ROAD,
MUSWELLBROOK, NSW

FIGURE:

2



www.kleinfelder.com

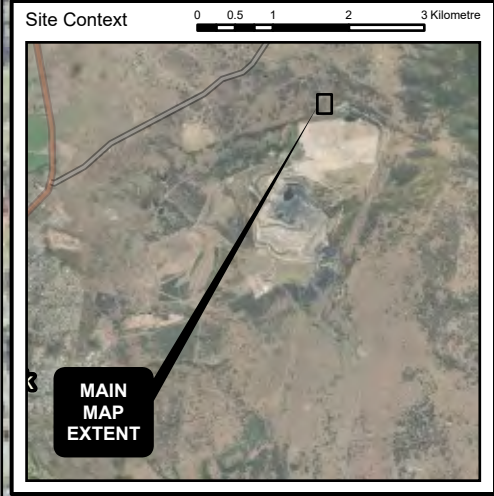
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Legend
● Target Location


<p>0 5 10 20 30 40 50 Scale @ A4 1:1,000 Metres</p> <p>GDA 1994 MGA Zone 56</p> <p>KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com</p>		<p>PROJECT REFERENCE: 26000055</p> <p>DATE DRAWN: 5/05/2025 Version 1</p> <p>DRAWN BY: RHourigan</p> <p>DATA SOURCE: Metromap - 2025</p>	<p>TARGET LOCATION</p> <p>MUSWELLBROOK COAL COMPANY LTD BUFFER LANDS ASBESTOS REMEDIATION MUSCLE CREEK ROAD, MUSWELLBROOK, NSW</p>	<p>FIGURE:</p> <p>3</p>
---	--	--	---	--------------------------------

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Legend

● Inspection Location

<p>0 5 10 20 30 40 50</p> <p>Scale @ A4 1:1,000 Metres</p> <p>GDA 1994 MGA Zone 56</p> 		<p>PROJECT REFERENCE: 26000055</p> <p>DATE DRAWN: 28/04/2025 Version 1</p> <p>DRAWN BY: RHourigan</p> <p>DATA SOURCE: Metromap - 2025</p>	<p>INSPECTION LOCATIONS</p> <p>MUSWELLBROOK COAL COMPANY LTD BUFFER LANDS ASBESTOS REMEDIATION MUSCLE CREEK ROAD, MUSWELLBROOK, NSW</p>	<p>FIGURE:</p> <p>4</p>
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Location 14

Site Context

0 0.5 1 2 3 Kilometre



Legend

● Inspection Location

0 5 10 20 30 40 50
Scale @ A4 1:1,000 Metres

GDA 1994 MGA Zone 56



PROJECT REFERENCE: 26000055

DATE DRAWN: 28/04/2025 Version 1

DRAWN BY: RHourigan

DATA SOURCE:
Metromap - 2025

INSPECTION LOCATIONS

MUSWELLBROOK COAL COMPANY LTD
BUFFER LANDS ASBESTOS REMEDIATION
MUSCLE CREEK ROAD,
MUSWELLBROOK, NSW

FIGURE:

5



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Site Context

0 0.5 1 2 3 Kilometre



Legend

● Inspection Location

0 5 10 20 30 40 50
Scale @ A4 1:1,000 Metres

GDA 1994 MGA Zone 56



PROJECT REFERENCE: 26000055

DATE DRAWN: 28/04/2025 Version 1

DRAWN BY: RHourigan

DATA SOURCE:
Metromap - 2025

INSPECTION LOCATIONS

MUSWELLBROOK COAL COMPANY LTD
BUFFER LANDS ASBESTOS REMEDIATION
MUSCLE CREEK ROAD,
MUSWELLBROOK, NSW

FIGURE:


6



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<div><div><div>051020304050</div><div>Scale @ A41:1,000Metres</div><div>GDA 1994 MGA Zone 56</div></div><div><div><div><div></div><div></div><div></div></div><div><div>Bright People. Right Solutions.</div><div>www.kleinfelder.com</div></div></div></div></div>		<div><div>PROJECT REFERENCE:26000055</div><div>DATE DRAWN:28/04/2025Version 1</div><div>DRAWN BY:RHourigan</div><div>DATA SOURCE:Metromap - 2025</div></div>		<div><div>INSPECTION LOCATIONS</div><div>MUSWELLBROOK COAL COMPANY LTD BUFFER LANDS ASBESTOS REMEDIATION MUSCLE CREEK ROAD, MUSWELLBROOK, NSW</div></div>		<div><div>FIGURE:</div><div>7</div></div>	
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Dog Track

Site Context

0 0.5 1 2 3 Kilometre



Legend

● Inspection Location

0 5 10 20 30 40 50
Scale @ A4 1:1,000 Metres

GDA 1994 MGA Zone 56



PROJECT REFERENCE: 26000055

DATE DRAWN: 28/04/2025 Version 1

DRAWN BY: RHourigan

DATA SOURCE:
Metromap - 2025

INSPECTION LOCATIONS

MUSWELLBROOK COAL COMPANY LTD
BUFFER LANDS ASBESTOS REMEDIATION
MUSCLE CREEK ROAD,
MUSWELLBROOK, NSW

FIGURE:

8



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Bra Gate

Site Context

0 0.5 1 2 3 Kilometre



0 5 10 20 30 40 50
Scale @ A4 1:1,000 Metres

GDA 1994 MGA Zone 56



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PROJECT REFERENCE: 26000055

DATE DRAWN: 28/04/2025 Version 1

DRAWN BY: RHourigan

DATA SOURCE:
Metromap - 2025

INSPECTION LOCATIONS

MUSWELLBROOK COAL COMPANY LTD
BUFFER LANDS ASBESTOS REMEDIATION
MUSCLE CREEK ROAD,
MUSWELLBROOK, NSW

FIGURE:

9



APPENDIX B SITE PHOTOGRAPHS





Photo 1:
Location 13 – Orange house brick pile, prior to inspection



Photo 2:
Location 13 – Orange house brick pile following inspection. No ACM or potentially hazardous material identified



Photo 3:
Location 14 – Visible and accessible ACM debris identified on the site surface prior to removal work



Photo 4:
Location 14 – Asbestos removal works by hen-picking debris



Photo 5:
Location 14 – Asbestos removal works by excavation of topsoil into onsite skip bin



Photo 6:
Location 14 – Wash-down of excavator following the completion of asbestos contaminated soil excavation work



Photo 7:
Location 14 – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal work



Photo 8:
Location 14 – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal work



Photo 9:
Location 14 – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal work



Photo 10:
Location 16 – Asbestos conduit adjacent to waste pile prior to removal work



Photo 11:
Location 16 – Mixed waste pile (corrugated iron) being removed



Photo 12:
Location 16 – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal work



Photo 13:
Location 16 – mixed waste, including waste drums, tyres, concrete, and miscellaneous debris being removed from the area



Photo 14:
Location 16 – residual soil surfaces following the removal of mixed waste



Photo 15:
Location 20 – Visible and accessible residual soil surfaces following the completion of hen-pick asbestos removal works



Photo 16:
Location 22 – Visible and accessible residual soil surfaces following the completion of hen-pick asbestos removal works



Photo 17:
Location 24 – Large cement sheets present on rocky outcrop prior to asbestos removal work



Photo 18:
Location 24 – Visible and accessible residual surfaces following removal of large cement sheets



Photo 19:
Location 24 – Asbestos debris present on a small patch of grass and dirt within the rocky outcrop, prior to removal work



Photo 20:
Location 24 – Visible and accessible residual soil surfaces and rock surfaces following the completion of hen-pick asbestos removal works



Photo 21:
Location 25 – Mixed waste, including corrugated iron, present on the site surface associated with a rubbish dump



Photo 22:
Location 25 – Cement sheeting visible within rubbish dump prior to asbestos removal work



Photo 23:
Location 25 – Cement sheeting and miscellaneous debris present within the rubbish dump, during asbestos and mixed waste removal work



Photo 24:
Location 25 – Site surface reinstatement following the completion of asbestos and mixed waste removal works from the rubbish dump



Photo 25:
Dog Track – Asbestos and mixed waste debris present on the site surface during a site inspection prior to the commencement of removal works



Photo 26:
Dog Track – Debris and mixed waste present within topsoils during removal work.



Photo 27:
Dog Track – Asbestos removal works undertaken by excavation and offsite disposal of impacted topsoils



Photo 28:
Dog Track – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal work



Photo 29:
Bra Gate – Asbestos conduit present within structure footprint prior to removal work



Photo 30:
Bra Gate & Location 16 – Bulk asbestos waste and used PPE bagged during asbestos removal work



Photo 31:
Bra Gate – Visible and accessible residual soil surfaces following the completion of the current scope of asbestos removal works



Photo 32:
Visible and accessible residual soil surfaces adjacent to removal skip bin at approximate coordinates (Zone 56H) 304788 m E, 6431463 m S, following the completion of the current scope of removal works

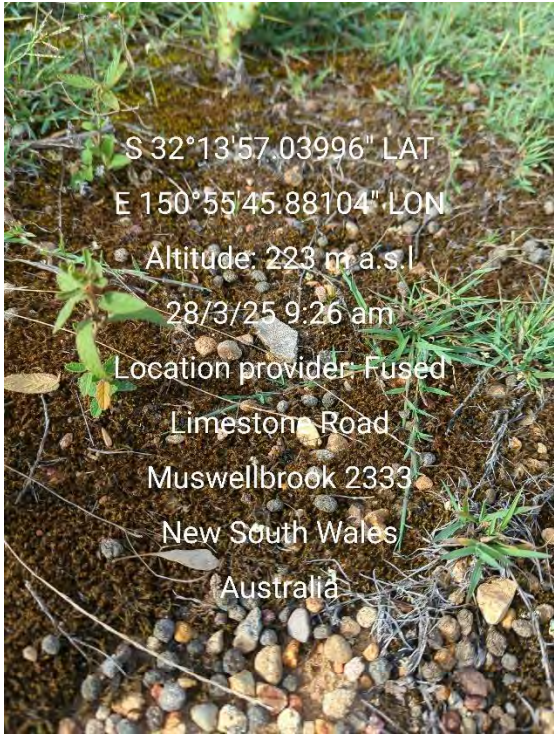


Photo 33:
Location 15 – Two small asbestos fragments visually identified and removed by Kleinfelder LAA during site inspection on 28th March 2025




APPENDIX C LABORATORY REPORTS





CERTIFICATE OF ANALYSIS

Work Order : **ES2511329**
Client : **KLEINFELDER AUSTRALIA PTY LTD**
Contact : Michael Gosling
Address : 

Telephone : ----
Project : 26000055.001A
Order number : ----
C-O-C number : ----
Sampler : Michael Gosling
Site : ----
Quote number : EN/222
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 15
Laboratory : Environmental Division Sydney
Contact : Jason Dighton


Telephone : +61-2-8784 8555
Date Samples Received : 17-Apr-2025 14:30
Date Analysis Commenced : 23-Apr-2025
Issue Date : 30-Apr-2025 09:45



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Sum of chlorinated hydrocarbons includes carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, hexachlorobutadiene and methylene chloride.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Poor spike recovery for Hexavalent Chromium Alkaline Digest analysis due to matrix interferences
- EG048G: LOR raised for Hexavalent Chromium Alkaline Digest analysis due to sample matrix.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.7	15.6	19.0	10.6	10.6
EG005(ED093)T: Total Metals by ICP-AES									
Beryllium	7440-41-7	1	mg/kg		----	----	----	----	<1
Molybdenum	7439-98-7	2	mg/kg		----	----	----	----	<2
Selenium	7782-49-2	5	mg/kg		----	----	----	----	<5
Silver	7440-22-4	2	mg/kg		----	----	----	----	<2
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		8	26	31	35	----
Copper	7440-50-8	5	mg/kg		<5	20	24	10	----
Lead	7439-92-1	5	mg/kg		8	12	20	10	25
Nickel	7440-02-0	2	mg/kg		6	24	30	22	20
Zinc	7440-66-6	5	mg/kg		20	152	207	50	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	----	----	----	<3.9
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	----	----	<1
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg		----	----	----	----	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	----	----	----	120
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	----	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time				15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	
Compound	CAS Number	LOR	Unit	ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05	
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	----	----	----	----	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05	
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05	
^ Total Chlordane (sum)	-----	0.05	mg/kg	----	----	----	----	<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05	
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05	
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2	
EP068B: Organophosphorus Pesticides (OP)									
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	<0.05	
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	-----	50	mg/kg	----	----	----	----	<50	
>C16 - C34 Fraction	-----	100	mg/kg	----	----	----	----	<100	
>C34 - C40 Fraction	-----	100	mg/kg	----	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	-----	50	mg/kg	----	----	----	----	<50	
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup - Continued									
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	<100
[^] C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg		----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
EP074B: Oxygenated Compounds									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	----	----	<5
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	4	mg/kg		----	----	----	----	<4
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	----	----	<0.5
Methylene chloride	75-09-2	0.5	mg/kg		----	----	----	----	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	----	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	----	----	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	----	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg		----	----	----	----	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	----	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	----	----	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	----	----	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	----	----	<0.5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	----	----	<0.5
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	<1
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	----	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^A Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	80	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	500	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	160	730	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	160	1310	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	90	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	170	1070	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	150	270	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	320	1430	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	90	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS01	SS02	SS03	Bin 1/1	Bin 1/2
Sampling date / time					15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-001	ES2511329-002	ES2511329-003	ES2511329-004	ES2511329-005
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	126
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	104
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	78.6
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	----	----	102
Toluene-D8	2037-26-5	0.5	%		----	----	----	----	94.0
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	----	----	97.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		92.0	97.9	92.5	93.6	98.4
2-Chlorophenol-D4	93951-73-6	0.5	%		101	104	89.5	94.4	94.6
2,4,6-Tribromophenol	118-79-6	0.5	%		89.2	72.7	74.2	79.1	87.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.2	84.2	96.1	99.8	104
Anthracene-d10	1719-06-8	0.5	%		96.1	108	106	103	104
4-Terphenyl-d14	1718-51-0	0.5	%		108	89.4	91.5	90.2	88.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		101	103	94.3	105	103
Toluene-D8	2037-26-5	0.2	%		99.7	91.5	92.9	105	97.6
4-Bromofluorobenzene	460-00-4	0.2	%		108	99.7	102	107	98.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.5	17.2	17.9	14.0	23.6
EG005(ED093)T: Total Metals by ICP-AES									
Beryllium	7440-41-7	1	mg/kg		----	----	<1	----	----
Molybdenum	7439-98-7	2	mg/kg		----	----	<2	----	----
Selenium	7782-49-2	5	mg/kg		----	----	<5	----	----
Silver	7440-22-4	2	mg/kg		----	----	<2	----	----
Arsenic	7440-38-2	5	mg/kg		5	10	9	9	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		29	9	----	11	28
Copper	7440-50-8	5	mg/kg		11	16	----	17	10
Lead	7439-92-1	5	mg/kg		13	69	86	89	10
Nickel	7440-02-0	2	mg/kg		27	10	11	12	23
Zinc	7440-66-6	5	mg/kg		171	204	----	389	34
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	----	<2.0	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	<1	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg		----	----	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	----	130	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	<0.05	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time				16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	
Compound	CAS Number	LOR	Unit	ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----	
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	----	----	<0.05	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----	
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----	
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----	
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----	
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----	
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----	
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----	
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----	
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----	
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----	
EP068B: Organophosphorus Pesticides (OP)									
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	----	
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup - Continued									
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	<100	----	----
[^] C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	<50	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
EP074B: Oxygenated Compounds									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	4	mg/kg		----	----	<4	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	<0.5	----	----
Methylene chloride	75-09-2	0.5	mg/kg		----	----	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	----	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	<0.5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	<0.5	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^A Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		100	<50	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		660	<100	----	120	----
C29 - C36 Fraction	----	100	mg/kg		950	120	----	190	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		1710	120	----	310	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		110	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		1420	140	----	220	----
>C34 - C40 Fraction	----	100	mg/kg		340	<100	----	140	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		1870	140	----	360	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		110	<50	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Bin 1/3	Bin 2/1	Bin 2/2	Bin 2/3	QC01
Sampling date / time					16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00	16-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2511329-006	ES2511329-007	ES2511329-008	ES2511329-009	ES2511329-010
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	113	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	110	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	86.7	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	102	----	----
Toluene-D8	2037-26-5	0.5	%		----	----	92.9	----	----
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	90.6	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		92.2	88.0	102	97.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		91.9	100	105	99.3	----
2,4,6-Tribromophenol	118-79-6	0.5	%		84.8	94.4	91.6	92.7	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		98.4	102	98.9	102	----
Anthracene-d10	1719-06-8	0.5	%		100	96.9	93.8	101	----
4-Terphenyl-d14	1718-51-0	0.5	%		87.0	110	105	103	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		92.0	107	104	97.8	----
Toluene-D8	2037-26-5	0.2	%		89.8	91.8	96.5	97.5	----
4-Bromofluorobenzene	460-00-4	0.2	%		90.2	102	92.8	104	----

Page : 15 of 15
 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(SOIL) EK040T: Fluoride Total



QUALITY CONTROL REPORT

Work Order : ES2511329

Page : 1 of 16

Client : KLEINFELDER AUSTRALIA PTY LTD

Contact : Michael Gosling

Address : [REDACTED]

Telephone : ----

Project : 26000055.001A

Order number : ----

C-O-C number : ----

Sampler : Michael Gosling

Site : ----

Quote number : EN/222

No. of samples received : 10

No. of samples analysed : 10

Laboratory : Environmental Division Sydney

Contact : Jason Dighton

[REDACTED]

Telephone : [REDACTED]

Date Samples Received : 17-Apr-2025

Date Analysis Commenced : 23-Apr-2025

Issue Date : 30-Apr-2025



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6528608)									
ES2511352-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	22	24.2	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	25.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	199	222	11.0	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	405	449	10.5	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	291	241	18.8	0% - 20%
ES2511329-001	SS01	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	10	17.6	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6528608) - continued									
ES2511329-001	SS01	EG005T: Zinc	7440-66-6	5	mg/kg	20	18	12.3	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6528611)									
ES2509386-019	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	9.8	9.7	0.0	No Limit
ES2511138-023	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	34.5	31.4	9.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6528612)									
ES2511329-003	SS03	EA055: Moisture Content	----	0.1 (1.0)*	%	19.0	17.7	7.1	0% - 50%
ES2511352-001	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	20.0	19.4	3.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6528610)									
ES2511329-001	SS01	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 6529499)									
ES2511065-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5 (2.0)*	mg/kg	<2.0	<2.0	0.0	No Limit
ES2511448-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5 (2.0)*	mg/kg	<2.0	<2.0	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6530431)									
EB2510486-062	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QC Lot: 6530432)									
EB2510486-062	Anonymous	EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 6537095)									
ES2511272-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	90	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 6526429)									
ES2511329-005	Bin 1/2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6526427)									
ES2511329-005	Bin 1/2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6526427) - continued									
ES2511329-005	Bin 1/2	EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6526427)									
ES2511329-005	Bin 1/2	EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 6526428)									
ES2511329-005	Bin 1/2	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071SG-S: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 6526428)									
ES2511329-005	Bin 1/2	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6526612)									
ES2511573-001	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 6526424)									
ES2511359-074	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES2511359-078	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 6526426)									
ES2511329-005	Bin 1/2	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526424)									
ES2511359-074	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526424) - continued										
ES2511359-074	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES2511359-078	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526426)								
ES2511329-005	Bin 1/2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6526426) - continued									
ES2511329-005	Bin 1/2	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526425)									
ES2511359-074	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2511359-078	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2511501-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526425)									
ES2511359-074	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2511359-078	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2511501-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 6526611)									
ES2511573-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 6526629)									
ES2511329-001	SS01	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2511501-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6528608)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	101	88.0	113
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	103	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	98.2	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	106	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	101	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	94.8	82.0	119
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.3 mg/kg	81.7	77.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	93.0	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.3 mg/kg	117	42.0	158
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	91.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6528610)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	85.6	70.0	125
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 6529499)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	102	68.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6530431)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	40 mg/kg	108	81.0	129
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 6530432)								
EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	40 mg/kg	105	70.0	130
EK040T: Fluoride Total (QCLot: 6537095)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	89.2	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 6526429)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.3	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	67.0	119
EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	67.0	115

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427) - continued								
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	66.0	116
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	69.0	115
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	76.5	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	62.0	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.4	66.0	120
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6526427)								
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	76.0	118
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 6526428)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	102	80.0	116
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	105	85.0	115
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	106	75.0	123
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 6526428)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	104	89.0	109
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	105	84.0	112
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	106	71.0	119
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612)								
EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	71.0	121
EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	99.2	65.0	131
EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.9	72.0	114
EP074: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	98.4	70.0	116
	106-42-3							
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	99.2	67.0	113
EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.6	75.0	115
EP074B: Oxygenated Compounds (QCLot: 6526612)								
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	93.3	58.0	136
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612)								



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612) - continued								
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	99.3	43.0	147
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	100	54.0	126
EP074: Methylene chloride	75-09-2	0.5	mg/kg	<0.5	1 mg/kg	104	58.0	148
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	98.8	65.0	117
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	95.7	59.0	125
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	103	65.0	125
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	98.2	70.0	118
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	100	64.0	126
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	96.9	67.0	143
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	95.4	62.0	122
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	101	65.0	121
EP074F: Halogenated Aromatic Compounds (QCLot: 6526612)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	98.9	68.0	116
EP074G: Trihalomethanes (QCLot: 6526612)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	99.6	66.0	124
EP075(SIM)A: Phenolic Compounds (QCLot: 6526424)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	97.0	71.0	125
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	90.4	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	98.7	67.0	127
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	89.4	70.0	116
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	89.0	54.0	114
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	86.6	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	42.0	10.0	80.0
EP075(SIM)A: Phenolic Compounds (QCLot: 6526426)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	95.2	71.0	125
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	93.0	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	98.4	67.0	127
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	92.5	70.0	116
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	96.8	54.0	114
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	83.4	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	46.1	10.0	80.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	93.3	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.6	72.0	124



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	96.7	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.4	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	96.6	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	94.4	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.5	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.1	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.8	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	88.2	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	87.4	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	88.8	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	101	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	92.7	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	100	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526426)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.3	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	98.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	98.1	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	99.4	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.5	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	96.2	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	103	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	100	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.5	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.4	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	91.6	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.4	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	94.4	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	92.3	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	90.0	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.0	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	97.3	75.0	129



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.2	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526611)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	80.5	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526629)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.1	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526425)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.5	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	92.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	91.0	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526611)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.9	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526629)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.6	72.4	133
EP080: BTEXN (QCLot: 6526611)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	88.5	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.2	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.2	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	89.1	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.8	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.0	78.8	122
EP080: BTEXN (QCLot: 6526629)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	91.1	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	95.4	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.2	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.6	78.8	122

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6528608)							
ES2511329-001	SS01	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.9	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6528610)							
ES2511329-001	SS01	EG035T: Mercury	7439-97-6	5 mg/kg	88.5	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 6529499)							
ES2511329-005	Bin 1/2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 6.4	70.0	130
ES2511329-005	Bin 1/2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 27.7	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6530431)							
EB2510486-062	Anonymous	EK026SF: Total Cyanide	57-12-5	40 mg/kg	106	70.0	130
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 6530432)							
EB2510486-062	Anonymous	EK028SF: Weak Acid Dissociable Cyanide	----	40 mg/kg	108	70.0	130
EK040T: Fluoride Total (QCLot: 6537095)							
ES2511272-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	76.6	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 6526429)							
ES2511329-005	Bin 1/2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 6526427)							
ES2511329-005	Bin 1/2	EP068: gamma-BHC - (Lindane)	58-89-9	0.5 mg/kg	95.5	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	87.1	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.1	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	106	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	73.0	70.0	130
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	77.7	70.0	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 6526428)							
ES2511329-005	Bin 1/2	EP071SG-S: C10 - C14 Fraction	----	480 mg/kg	103	43.0	139
		EP071SG-S: C15 - C28 Fraction	----	3100 mg/kg	105	49.0	131
		EP071SG-S: C29 - C36 Fraction	----	2060 mg/kg	129	64.0	158
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 6526428)							
ES2511329-005	Bin 1/2	EP071SG-S: >C10 - C16 Fraction	----	900 mg/kg	82.4	33.0	137
		EP071SG-S: >C16 - C34 Fraction	----	4320 mg/kg	118	40.0	137
		EP071SG-S: >C34 - C40 Fraction	----	890 mg/kg	126	30.0	190
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6526612) - continued							
ES2511573-001	Anonymous	EP074: Benzene	71-43-2	2.5 mg/kg	90.9	70.0	130
		EP074: Toluene	108-88-3	2.5 mg/kg	90.5	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6526612)							
ES2511573-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	84.2	70.0	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	89.2	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6526612)							
ES2511573-001	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	92.0	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 6526424)							
ES2511359-074	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.3	70.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	90.6	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	99.1	20.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 6526426)							
ES2511329-005	Bin 1/2	EP075(SIM): Phenol	108-95-2	10 mg/kg	88.9	70.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.2	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	70.9	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526424)							
ES2511359-074	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.4	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	102	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6526426)							
ES2511329-005	Bin 1/2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.1	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526425)							
ES2511359-074	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	111	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	120	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	105	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	67.0	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6526629)							
ES2511329-001	SS01	EP080: C6 - C9 Fraction	----	32.5 mg/kg	90.3	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526425)							
ES2511359-074	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	120	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	114	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	108	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	68.6	61.1	142

Matrix Spike (MS) Report

				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6526629)							
ES2511329-001	SS01	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.1	61.1	142
EP080: BTEXN (QCLot: 6526611)							
ES2511573-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	66.2	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	75.9	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	76.5	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	76.3	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.6	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	90.3	61.1	115
EP080: BTEXN (QCLot: 6526629)							
ES2511329-001	SS01	EP080: Benzene	71-43-2	2.5 mg/kg	81.9	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	91.4	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	95.3	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	97.1	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	96.9	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.5	61.1	115



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2511329	Page	: 1 of 9
Client	: KLEINFELDER AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: Michael Gosling	Telephone	: [REDACTED]
Project	: 26000055.001A	Date Samples Received	: 17-Apr-2025
Site	: ----	Issue Date	: 30-Apr-2025
Sampler	: Michael Gosling	No. of samples received	: 10
Order number	: ----	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	ES2511329--005	Bin 1/2	Hexavalent Chromium	18540-29-9	6.4 %	70.0-130%	Recovery less than lower data quality objective
EG048: Hexavalent Chromium (Alkaline Digest)	ES2511329--005	Bin 1/2	Hexavalent Chromium	18540-29-9	27.7 %	70.0-130%	Recovery less than lower data quality objective

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) SS01, SS03	SS02,	15-Apr-2025	----	----	----	23-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EA055) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	----	----	----	23-Apr-2025	30-Apr-2025	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	12-Oct-2025	✓	24-Apr-2025	12-Oct-2025	✓
Soil Glass Jar - Unpreserved (EG005T) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	23-Apr-2025	13-Oct-2025	✓	24-Apr-2025	13-Oct-2025	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	13-May-2025	✓	28-Apr-2025	13-May-2025	✓
Soil Glass Jar - Unpreserved (EG035T) Bin 1/1, Bin 1/3, Bin 2/2, QC01	Bin 1/2, Bin 2/1, Bin 2/3,	16-Apr-2025	23-Apr-2025	14-May-2025	✓	28-Apr-2025	14-May-2025	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	14-May-2025	✓	28-Apr-2025	01-May-2025	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	30-Apr-2025	✓	28-Apr-2025	08-May-2025	✓
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK028SF) Bin 1/2,	Bin 2/2	16-Apr-2025	24-Apr-2025	30-Apr-2025	✓	28-Apr-2025	08-May-2025	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) Bin 1/2,	Bin 2/2	16-Apr-2025	28-Apr-2025	14-May-2025	✓	29-Apr-2025	14-May-2025	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	25-Apr-2025	02-Jun-2025	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	29-Apr-2025	02-Jun-2025	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	29-Apr-2025	02-Jun-2025	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	23-Apr-2025	✓	23-Apr-2025	23-Apr-2025	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM)) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) SS01, SS03, SS02	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) Bin 1/1, Bin 1/3, Bin 2/1, Bin 2/2, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) SS01, SS03, SS02	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) SS01, SS03, SS02	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/2, Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	23-Apr-2025	30-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP071) Bin 1/1, Bin 2/1, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓

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 Work Order : ES2511329
 Client : KLEINFELDER AUSTRALIA PTY LTD
 Project : 26000055.001A



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/2,	Bin 2/2	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	23-Apr-2025	30-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP071) Bin 1/1, Bin 2/1,	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	24-Apr-2025	02-Jun-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1,	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) SS01, SS03	SS02,	15-Apr-2025	23-Apr-2025	29-Apr-2025	✓	28-Apr-2025	29-Apr-2025	✓
Soil Glass Jar - Unpreserved (EP080) Bin 1/1, Bin 2/1,	Bin 1/3, Bin 2/3	16-Apr-2025	23-Apr-2025	30-Apr-2025	✓	28-Apr-2025	30-Apr-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	13	23.08	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.38	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
WAD Cyanide by Segmented Flow Analyser	EK028SF	SOIL	In house: Referenced to APHA 4500-CN C&O / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Hydrogen cyanide is liberated from a slightly acidified (pH 4.5) and is dialysed. Tight cyanide complexes that would not be amenable to oxidation by chlorine are not converted. Iron cyanide complexes are precipitated with zinc acetate. Liberated HCN diffuses through a membrane into a stream of sodium hydroxide where it is carried as CN ⁻ . The cyanide in caustic solution is buffered to pH 5.2 and further converted to cyanogen chloride by reaction with chloramine-T. Cyanogen chloride subsequently reacts with 4-pyridine carboxylic and 1,3-dimethylbarbituric acids to give a red colour complex. This colour is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).



Analytical Methods	Method	Matrix	Method Descriptions
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015. Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260 Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



CHAIN OF CUSTODY

ALS Laboratory: please tick →

LADELAIDE 5/1 Burma Road Pooraka SA 5095
Ph: 08 8162 5130 E: adelade@alsglobal.com
LBRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
LGLADSTONE 46 Callernindah Drive Gladstone QLD 4660
Ph: 07 4978 7944 E: ALSEnviro.Gladstone@alsglobal.com

LMACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4952 5705 E: ALSEnviro.Mackay@alsglobal.com
LMELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
LMUDGEE 1/20 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee@mail@alsglobal.com

LNEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
LNOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com
LPERTH 26 Rigall Way Wangara WA 6065
Ph: 08 9406 1501 E: samples.perth@alsglobal.com

LSYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
LTOWNSVILLE 13 Carlton Street Kirrawong QLD 4817
Ph: 07 4773 0000 E: ALSEnviro.Townsville@alsglobal.com
LWOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Kleinfelder Australia Pty Ltd	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): 29/4/25 <input type="checkbox"/> Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No N/A Free ice / frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: 1.0 °C Other comment:
OFFICE: [REDACTED]	COC SEQUENCE NUMBER (Circle) COC: 0 2 3 4 5 6 7 OF: 0 2 3 4 5 6 7	
PROJECT: 26000055.001A PROJECT NO.: ALS QUOTE NO.:		
ORDER NUMBER: PURCHASE ORDER NO.: COUNTRY OF ORIGIN:		
PROJECT MANAGER: M Gosling CONTACT PH: 0421 765 729	RELINQUISHED BY: M Gosling RECEIVED BY: Cassie DATE/TIME: 17/4/25 @ 2:30pm DATE/TIME: 17/4 2:30	RELINQUISHED BY: Cassie RECEIVED BY: Nave DATE/TIME: 17.04.25 DATE/TIME: 17/4 (940)
SAMPLER: M Gosling SAMPLER MOBILE: 0421 765 729	EDD FORMAT (or default):	
COC Emailed to ALS? (YES / NO)	Email Reports to (will default to PM if no other addresses are listed): mgosling@kleinfelder.com	
Email Invoice to (will default to PM if no other addresses are listed): Aus_Accounts@kleinfelder.com		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	P-7/4 Short	S-26	S-2	LAB OF ORIGIN: NEWCASTLE				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SS01	15/04/2025 0:00	S	Glass Jar	1		X						
2	SS02	15/04/2025 0:00	S	Glass Jar	1		X						
3	SS03	15/04/2025 0:00	S	Glass Jar	1		X						
4	Bin 1/1	16/04/2025 0:00	S	Glass Jar	1		X						
5	Bin 1/2	16/04/2025 0:00	S	Glass Jar	1	X							
6	Bin 1/3	16/04/2025 0:00	S	Glass Jar	1		X						
7	Bin 2/1	16/04/2025 0:00	S	Glass Jar	1		X						
8	Bin 2/2	16/04/2025 0:00	S	Glass Jar	1	X							
9	Bin 2/3	16/04/2025 0:00	S	Glass Jar	1		X						
10	QC01	16/04/2025 0:00	S	Glass Jar	1			X					
TOTAL					10	2	7	1					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

Environmental Division
Sydney
Work Order Reference
ES2511329



Telephone : +61-2-8784 8555

E-MAILED



CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADLAIDE 3/1 Burma Road Moorooka SA 5095
Ph: 08 8162 5130 E: adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 48 Callenondah Drive Gladstone QLD 4680
Ph: 07 4978 7944 E: ALS@enviro Gladstone@alsglobal.com

MACRAE Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4952 6796 E: ALS@enviro Mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 9549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 1/20 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee@mail@alsglobal.com

NEWCASTLE 6/565 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 26 Rigall Way Wangara WA 6065
Ph: 08 9406 1301 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 13 Carillon Street Kirwan QLD 4817
Ph: 07 4773 0000 E: ALS@enviro Townsville@alsglobal.com

WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT:	Kleinfelder Australia Pty Ltd	TURNAROUND REQUIREMENTS:	<input checked="" type="checkbox"/> Standard TAT (List due date): 29/4/25	FOR LABORATORY USE ONLY (Circle)	
OFFICE:		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No (N/A)	
PROJECT:	26000055.001A	PROJECT NO.:	ALS QUOTE NO.:	Firm ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	Random Sample Temperature on Receipt: 1.0 °C	
PROJECT MANAGER:	M Gosling	CONTACT PH:	0421 765 729	Other comment:	
SAMPLER:	M Gosling	SAMPLER MOBILE:	0421 765 729	RELINQUISHED BY: Cassie	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: Nave	
Email Reports to (will default to PM if no other addresses are listed):	mgosling@kleinfelder.com			DATE/TIME: 1700	
Email Invoice to (will default to PM if no other addresses are listed):	Aus_Accounts@kleinfelder.com			DATE/TIME: 17.04.25	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required) or Split WO				Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	P-7/4 Short	S-26	S-2	LAB OF ORIGIN: NEWCASTLE	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
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2	SS02	15/04/2025 0:00	S	Glass Jar	1		X				
3	SS03	15/04/2025 0:00	S	Glass Jar	1		X				
4	Bin 1/1	16/04/2025 0:00	S	Glass Jar	1		X				
5	Bin 1/2	16/04/2025 0:00	S	Glass Jar	1	X					
6	Bin 1/3	16/04/2025 0:00	S	Glass Jar	1		X				
7	Bin 2/1	16/04/2025 0:00	S	Glass Jar	1		X				
8	Bin 2/2	16/04/2025 0:00	S	Glass Jar	1	X					
9	Bin 2/3	16/04/2025 0:00	S	Glass Jar	1		X				
10	QC01	16/04/2025 0:00	S	Glass Jar	1			X			
TOTAL					10	2	7	1			

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

total phuride / newcastle

LAB OF ORIGIN:
NEWCASTLE

Attached By: R / Internals

E-MAILED

Environmental Division
Sydney
Work Order Reference
ES2511329

Barcode

Telephone : +61-2-8784 8555



APPENDIX D TIP DISPOSAL DOCUMENTS



CLEANAWAY

Making a sustainable future possible

CLEANAWAY PTY LTD
Lucas Heights Resource Recovery Park

New Illawarra Road
Lucas Heights NSW 2234

Phone: 13 13 39
ABN: 79 000 164 938

Delivery Docket

Ticket No: LUC100146431.0
Time In: 15/04/2025 7:18:14 AM
Time Out: 15/04/2025 7:32:14 AM
Vehicle Rego: CS20ZR
Vehicle Config: 2 Axle Rigid Truck

Client: Aztech Services Australia
Pty Ltd

Carrier:
Trans Ref:
Order No:

scanned

Asbestos
0.30t @

Source: External
Dest: Lucas Heights Landfill

GROSS:	3.34t
TARE:	3.04t
NET Weight:	0.30t

Chargeable Weight:	0.30t
Each Item Weight:	0.00t

Total (ex GST):
GST :

Total Price:

----- Payment Details -----
ACCOUNT

=====

Total Price:

=====

Total Amount Tendered:
Change Given:

Driver:

Veolia Recycling & Recovery Pty Ltd

Your waste management services are now managed by Veolia. We may have a new name, but we'll continue to deliver quality services to our customers.

Raymond Terrace Waste Management Centre
330 Newline Road
Raymond Terrace 2324
Mon-Fri 6AM-4.30PM Sat 8AM-3.30PM
Phone: 02 4983 4100
ABN: 34071096421

Delivery Docket

Ticket No: RT210278517.0
Time In: 6/05/2025 10:11:01 AM
Time Out: 6/05/2025 10:28:40 AM
Vehicle Rego: CM96HM
Vehicle Config: 4 Axle Rigid Truck (LS)

Client: 3460363 - JJ RICHARDS & SONS
PTY LTD NRL
Carrier: Skips & Skrap
Trans Ref:
Order No: MAGFDJZEKFA

Asbestos
2.62t @

Source: External
Dest: Raymond Terrace Landfill

GROSS:	17.56t
TARE:	14.94t
NET Weight:	2.62t

Chargeable Weight:	2.62t
Each Item Weight:	0.00t

Total (ex GST):
GST :

Total Price:

----- Payment Details -----

=====
Total Price:
=====

Total Amount Tendered:
Change Given:

Driver:

DAVE

Operator:

WORXP

Mon-Fri 6AM-4.30PM Sat 8AM-3.30PM
Phone: 02 4983 4100
ABN: 34071096421

Delivery Docket

MASS MANAGEMENT
BREACH RECORDED

Breach Category: Substantial
Legal Mass Limit: 27.50t
Amount Overloaded: 1.82t

106.62% of Legal Mass Limit

Overloaded Vehicle Arrival:
2/05/2025 10:52:05 AM

FORM007 Issued
TRUCK OVERLOADED

----- OVERLOADED NOTE -----
Your vehicle has exceeded its
legal mass limit based on the
incoming weighbridge reading and
the information we have on your
vehicle. Please follow the
weighbridge operator's
instructions. We remind you of
your compliance obligations under
the Heavy Vehicle National Law.

Ticket No: RT210278081.0
Time In: 2/05/2025 10:52:05 AM
Time Out: 2/05/2025 11:14:28 AM
Vehicle Rego: CM96HM
Vehicle Config: 4 Axle Rigid Truck
(LS)

Client: 3460363 - JJ RICHARDS & SONS
PTY LTD NRL
Carrier: Skips & Skrap
Trans Ref:
Order No: MAGFDJZEKFA

Asbestos
14.28t @

Source: External
Dest: Raymond Terrace Landfill

GROSS: 29.32t
TARE: 15.04t
NET Weight: 14.28t

Chargeable Weight: 14.28t
Each Item Weight: 0.00t

Total (ex GST):
GST :

Total Price:

----- Payment Details -----

Total Price:

