McMahon EARTH SCIENCE

93 CAMPBELLS LANE COOLAMON NSW 2701

DETAILED SITE INVESTIGATION

FOR A PROPOSED LAND REZONING (24 LOT RESIDENTIAL SUBDIVISON)

DECEMBER 2022

REPORT NO: 9005

DM McMahon Pty Ltd
6 Jones St (PO Box 6118)
Wagga Wagga NSW 2650
t (02) **6931 0510** **www.dmmcmahon.com.au**

Report type

Detailed Site Investigation

For a Proposed Land Rezoning

(24 Lot Residential Subdivision)

Site address

93 Campbells Lane

Coolamon NSW 2701

Report number

9005

Prepared for

Brian Pleming

93 Campbells Lane

Coolamon NSW 2701

Tel: 0427 273 519

Email: bpleming@bigpond.net.au

Prepared by

DM McMahon Pty Ltd

6 Jones Street (PO Box 6118)

Wagga Wagga NSW 2650

Tel: 0269 310 510

Email: admin@dmmcmahon.com.au

Document control

Role	Name	Signed	Date	Revision
Prepared by	**David McMahon** CEnvP SC BAppSc SA GradDip WRM MEnvMgmt MALGA MEIANZ MSSA		02/12/2022	0

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1.0 Executive summary

This Detailed Site Investigation (DSI) was conducted at the request of Brian Pleming for a proposed land rezoning for a 24 lot residential subdivision at 93 Campbells Lane Coolamon NSW (the site). The 67.4ha site, occupied by a house and sheds, is otherwise undeveloped broadacre agricultural land. A map of the site location and a plan of the proposed subdivision can be seen in **Attachment A**.

The purpose of this Detailed Site Investigation (DSI) is to investigate the potential contamination sources identified in the Preliminary Site Investigation (McMahon Report No. 8197, 2022) and delineate their lateral and vertical extent to a sufficient degree that a statement of site suitability can be provided, and appropriate site management strategies can be devised.

The scope of work includes:

- To provide information regarding potential contamination sources within the development area.
- Conduct soil sampling around the identified contamination sources using Data Quality Objectives (DQOs).
- From the information collected, develop a Conceptual Site Model detailing the potential contamination source-pathway-receptor linkages.
- Conduct a risk assessment for site suitability regarding potential contamination and the proposed development.
- Provide a statement of site suitability for the proposed land use and recommendations for site management during development.

The following findings and assessment around potential contamination sources include:

- Persistent chemicals that could have accumulated in the soil across the farm, around the silos, chemical storage areas, and sheep yards from pesticide and agricultural chemical use. Soil sampling of these areas returned results that are assessed to be a low risk to current and future site users. Ecological exceedances for zinc found around the sheep yards are surficial and localised. Statistical analysis supports the finding that the high levels of zinc are of low significance.
- Machinery maintenance and associated potential fuel/oil storage in and around the existing machinery shed is assessed to be of low significance. Soil surrounding the areas of concern contained levels of potential contaminants which were below the adopted criteria.
- The fragments of bonded Asbestos Containing Material (ACM) found on the soil surface around the demolished house and garage during the PSI have been removed by the landholder. Subsequent testing for bonded ACM by sieving and trace analysis around the demolished house and garage returned nil detects.
- The material in the filled farm dam is assessed to be natural soil and returned results below the adopted criteria.
- The potential septic system from the demolished house could not be located. Further assessment is recommended if the septic is found, but this can be managed during development.

In summary, pending the adoption of the recommendations of this report (**Section 12.0**) the site is suitable for the proposed subdivision and residential development.

A protocol for unexpected finds as outlined in **Section 13.0** has also been developed as part of this risk assessment framework if additional potential contamination sources are identified during development. This executive summary and the findings of this DSI are subject to the limitations as stated in **Section 14.0**.

2.0 Objectives

The objective of this investigation is to:

- Provide information regarding potential contamination sources on site.
- Provide a factual record of the works completed and results.
- Undertake a risk assessment for health risk to future site users and the environment.
- Provide a statement of recommendations for further investigation, site management or alternatively, suitability of the site for the proposed land use.
- To prepare the DSI in general accordance with the relevant guidelines and legislation, namely:
    - NSW EPA. Consultants Reporting on Contaminated Land: Contaminated Land Guidelines, (2020).
    - State Environmental Planning Policy (Resilience and Hazards) 2021.
    - National Environment Protection (Assessment of Site Contamination) Measure (NEPM), (2013).

3.0 Scope of work

The scope of work includes the following:

- Review the available information regarding historical, current, and proposed land use of the site and surrounds.
- Review the environmental setting of the site and surrounds.
- Assess the potential contamination sources and Contaminants of Potential Concern (CoPCs).
- Assess the potential contamination source-pathway-receptor linkages from the CoPCs, environmental setting and land use.
- Formulate a Sampling, Analysis & Quality Plan (SAQP) to investigate the potential contamination.
- Conduct soil sampling and vapour screening across the site for the CoPCs.
- Collect soil samples for laboratory analysis of the CoPCs.
- Compare the laboratory and screening results against the adopted criteria.
- Evaluate Quality Assurance/Quality Control (QA/QC) data to assess the sampling and analysis procedure.
- Refine a Conceptual Site Model (CSM) to assess potential contamination risk from the source-pathway-receptor linkages.
- Provide a clear statement on site suitability for the proposed land use or the need for further investigation, remediation, and/or ongoing site management if required.

4.0 Site identification

The site identification and details are as follows.

- Address: 93 Campbells Lane Coolamon NSW 2701.
- Real property description: Lot 21 DP 1224134.
- Site centre co-ordinate: 519400E 6149500N MGA GDA z55.
- Property size: 67.4ha (approx.).
- Owner: Brian Michael and Debra Ann Pleming.
- Local Government Area: Coolamon Shire Council.
- Current Zoning: RU1 Primary Production.
- Present use: Agriculture.
- Proposed use: Residential subdivision.
- Development Application reference: To be advised.

5.0 Site history

From research of the available resources, the following site history is offered.

Historical owners and occupiers

- Crown Land.
- 1911 Granted to The Rural Bank of NSW from the Crown.
- 1944 Transfer from the Rural Bank of NSW to Vernon Bartlett (farmer).
- 1955 Transfer to James Campbell from Vernon Bartlett.
- 1958 Transfer to John Campbell (farmer) from James Campbell (deceased).
- 2006 Transfer to Brian Pleming from John Campbell.

Council records

A formal access request was lodged with Council for any information relating to the site history or potential contamination and two records were found:

- An approved Development Application (DA23/2014) for a new residence and to demolish/remove an old house.
- An approved Development Application (DA16/2016) for a proposed 3 stage 20 lot rural subdivision.

Section 10.7

A Section 10.7 Planning Certificate (Certificate No: 17/2023) was obtained from Council on 3 August 2022 and the certificate states the land is not listed on the state register for significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

EPA records

There are no records on the Contaminated Land Record Database for the site pertaining to Preliminary Investigation Orders, Declaration of Significantly Contaminated Land, Approved Voluntary Management Plans, Management Orders, Ongoing Maintenance Orders, Repeal Revocation or Variation Notice, Site Audit Statement, or Notice of Completion or Withdrawal of Approved VMP. The site or adjacent properties have not been “notified” to the EPA on the list of NSW Contaminated sites as of July 2022.

Internet search

- Coolamon Shire Council DA2018/82 - 93 Campbells Lane Coolamon – Extension to Entertainment Area.
- Coolamon Shire Council DA2019/51 - 93 Campbells Lane Coolamon – Construction of Dam.

Aerial photographs and satellite images

1961 – A house, garage, and sheds that are surrounded by trees can be seen off Campbells Lane. The paddocks surrounding the house are undeveloped other than some fence lines and two farm dams. Surrounding land use is broad acre agricultural.

1978 – No change to 1961.

1987 – No change to 1978.

1991 – No change to 1987.

1994 – No change to 1991.

2007 – No change to 1994.

2012 – No change to 2007.

2013 – No change to 2012.

2015 – A new house has been built to the north east of the old house and a new driveway constructed to it.

2017 – One of the farm dams has been partially filled (in the centre west of the farmed paddocks) and earthworks for a new dam on the northern boundary have commenced. Earthworks for the adjacent 3 stage 20 lot rural subdivision has commenced with roads being partially constructed.

2018 – The old house and garage have been demolished and the dam (in the centre west of the farmed paddocks) has been filled and farmed over. Houses have been built on the adjoining lots and the earthworks for the subdivision roads has been completed. The new dam on the northern boundary has been constructed and is full of water.

2019 – No change to 2018.

2020 – Another new dam has been built on the northern boundary to the west of the one constructed in 2017-2018. More houses have been built on the adjoining lots.

2021 – No change to 2020 other than a new steel garage has been built on site to the west of the new house and more houses have been built on the adjoining lots.

Previous reports

McMahon PSI August 2022 – Report 8791

Findings of the PSI include the identification and assessment of the following potential contamination sources:

- Persistent chemicals that could have accumulated in the soil across the farm, around the silos, chemical storage areas, and sheep yards from pesticide and agricultural chemical use. Soil sampling of these areas returned results that are assessed to be a low risk to current and future site users. Ecological exceedances for zinc were found around the sheep yards that are likely to be surficial and localised.
- Machinery maintenance and associated potential fuel/oil storage in and around the existing machinery shed. Further investigation is required in this area once the shed has been removed and an unexpected finds protocol is recommended to be developed around potential fuel storage.
- Remnants of hazardous building material around the demolished house and garage. Around ten bonded ACM fragments (25-50mm) containing material was found within the demolished house and garage footprint and this will require removal and further investigation.
- The filled farm dam on site will require further investigation to assess the type and nature of the fill material. No other filled gullies or dams were observed but these are common on farmland in erosional landscapes. An unexpected finds protocol is recommended to be developed around this.

- The potential septic system from the demolished house. Further investigation is recommended, and this can be managed during development.

In summary, McMahon assesses there is no gross soil contamination across the proposed subdivision site from the historical and current agricultural land use. The other potential contamination sources identified are localised and do not preclude the rezoning or subdivision of the site, however, will be necessary to assist in the preparation of detailed development plans for site suitability specific to any future development. Owing to the latent nature of the localised potential contamination sources identified, McMahon assesses that these can be managed during development.

6.0 Site condition and surrounding environment

McMahon notes the following observations of the site condition as part of this DSI.

- The site is bound by Bartletts Lane to the north, Campbells Lane to the east, Davies Drive to the west, and large lot residential land to the south that is accessed off Campbells Lane (Campbells Lane dog legs to the west to the Rannock Road).
- Access is off Campbells Lane to the south through the large lot residential land.
- Surrounding land use is broad acre agriculture to the north and east, large lot residential to the south and west, and a state forest to the south east.
- The site is split into three paddocks, two that are farmed (61ha) and a house paddock (around 6ha). The farmed paddocks are sown to oats and brassica as a grazing crop.
- There is a dam in the western extent of the house paddock.
- There are also two new dams in the farmed paddocks on the northern boundary, these constructed between 2017 and 2020.
- There is a filled dam in the centre west of the farmed paddocks, this being filled in 2017 and 2018.
- Within the house paddock there is:
    - a slab on grade new brick veneer house that was built in 2015 with a septic system to the east.
    - A slab on grade new steel garage that was built in 2021.
    - The footprint of a recently demolished house and garage to the south west of the new house. The footprint was recognisable owing to disturbed soil and some remnants of building material such as small pieces of wood and glass. Around ten bonded ACM fragments (25-50mm) were observed on the surface in and around the demolished house and garage during the PSI but these has been removed prior to this DSI. No ACM was observed on the site surface during the DSI.
    - A wooden framed steel shed with some household items stored in it.
    - A wooden framed steel machinery shed with a trailer, some hay, and machinery parts stored in it.
    - Two steel silos, one slab on grade and one portable (which appears to have been placed many years ago).
    - A wooden and steel framed steel wool shed with one shearing stand with agricultural chemicals stored next to the doors on the northern and eastern side.
    - Some new sheep yards to the west of the wool shed with steel panel fencing and a concrete race.
    - The remnants of some old sheep yards with only a concrete race remaining.

A summary of the site environmental setting is as follows.

Topography

The site is located at an elevation range of approximately 235-245 mAHD on a north east trending very gently inclined footslope formed on recent Quaternary colluvium underlain by Ordovician metasediments.

Vegetation

The site is extensively cleared woodland with an oats and brassica based pasture land cover over much of the site.

Natural Resources Sensitivity

A search of the Coolamon Local Environment Plan (2011) found that the site is not in a biodiversity, natural resources, or water resources mapped area.

Weather

Annual rainfall is around 510mm, with the wettest months being June, July, and October. Coolamon is characterised by cold wet winters and hot dry summers with rainfall exceeding evaporation only in the winter months.

Hydrology

There are no defined drainages on site, but an ephemeral first order tributary of Boggy Creek lies around 400m to the east. Runoff from rainfall is captured in the three farm dams on site and the runoff regime has been altered by the adjoining residential development. The site is mapped as not being in a Flood Planning Area.

Soil

Soils comprise of moderately deep and moderately well drained red-brown earths. These soils lie within a transferral landscape consisting of mostly eroded parent materials washed from areas directly upslope.

Geology

The local geology is Ordovician metasediments associated with the Wagga Group consisting of siltstone, sandstone, quartz mica schist, minor graphite schist and hornfels.

Hydrogeology

Groundwater is not a resource in the locale but is likely to exist as deep low productivity aquifers in the underlying geology.

7.0 Sampling and analysis quality plan and sampling methodology

The Data Quality Objectives (DQOs) of the site assessment have been developed to define the type and quality of data to meet the project objectives. The DQOs have been developed generally in accordance with the seven step DQO process as outlined in AS 4482.1:2005 and the USA EPA: Guidance on Systematic Planning Using the Data Quality Objectives Process (2006a). These DQOs are as follows:

1. **The problem**
2. **The goal of the study**
3. **Information inputs**
4. **Study boundaries**
5. **The analytical approach**
6. **Performance and acceptance criteria**
7. **Obtaining data**

These objectives have been further outlined in the following sections.

DQO 1 - The problem

There are identified areas of potential contamination that have insufficient data relating to contamination to determine land use suitability with the necessary level of confidence.

DQO 2 - The goal of the study

Goals of the study include:

- Undertake intrusive investigations based on the data gaps to determine if there is contamination associated with the identified contamination sources.
- Determine if any contamination, should it be identified, poses a risk to current and/or future receptors or within potential exposure pathways.
- Determining whether the development area is currently, or can be made, suitable for the proposed development regarding contamination.

DQO 3 - Information inputs

- Desktop data including site inspections, site condition, history, geology, hydrogeology, and soil analysis to characterise the site.
- Observational data including visual and olfactory conditions obtained from the sampling.
- Vapour screening for Volatile Organic Compounds (VOCs) using a Photo-Ionisation Detector (PID).
- Analytical data relative to assessment criteria.

DQO 4 - Study boundaries

- Intrusive investigation across the development area.
- Temporal boundaries are limited to the proposed fieldwork timeframes in the fourth quarter of the year 2022.

DQO 5 - The analytical approach

Samples tested against the following parameters:

- **Sheep yards** - heavy metals (8 priority metals).
- **Machinery maintenance areas and septic** - heavy metals (8 priority metals), total recoverable hydrocarbons, solvents (benzene, toluene, ethylbenzene, xylene, naphthalene), phenols (speciated), organophosphate and organochlorine pesticides, polychlorinated biphenyls, and polycyclic aromatic hydrocarbons.
- **Filled dam** - heavy metals (8 priority metals), total recoverable hydrocarbons, solvents (benzene, toluene, ethylbenzene, xylene, naphthalene), phenols (speciated), organophosphate and organochlorine pesticides, polychlorinated biphenyls, and polycyclic aromatic hydrocarbons.
- **Demolished house and garage**– Asbestos (bonded and friable).

DQO 6 - Performance and acceptance criteria

Specific limits for the investigation are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and industry standard procedures for field sampling and handling. To assess the validity of data for decision making, the data is assessed against a set of data quality indicators, the following predetermined data quality indicators have been adopted.

The key decision rules for the investigation are:

1) Has the analytical data been collected as part of the testing and met the data quality indicators? If they have then the data can be used to answer the decision rule/s and the decision statements developed in Step 2 of the DQOs. If not, then the need to collect additional data may be required.
2) Do contaminant concentrations exceed the investigation and screening criteria? If not, then the potential contamination does not pose an above low level of risk. Where results exceed the investigation and screening criteria, this may indicate an unacceptable level of risk. Further risk assessment and investigations may be warranted to determine the potential for impacts.

The key decision errors for the investigation are:

i. deciding that there is contamination when there truly is not, and
ii. deciding that there is no contamination when there truly is.

The true state of nature for decision error (i) is that there is contamination.
The true state of nature for decision error (ii) is that there is no contamination.

The site assessment criteria were specifically derived and incorporate the following:

- The samples are not composited so as the direct reading of contaminant levels will be found from each sample point on which an appropriate decision can be based off.
- QA/QC duplicate should have a Relative Percentage Difference of <30%.
- Rinsate sample should return negligible concentrations for all parameters tested to ensure an appropriate sampling and decontamination procedure.

- Summary statistics for analytes above the criteria including the range, mean, median, standard deviation (SD), 95% upper confidence limit (UCL), and Coefficient of Variation (CV).
- Specific site assessment criteria can be seen below, **Table 1**.

Table 1: *Assessment criteria*

Material	Analytes	Criteria
Soil	Heavy metals Hydrocarbons Solvents Pesticides Phenols PCBs PAHs	**Health Investigation Levels (HILs)** -Residential A NEPM (2013) -Table 1A(1) Heavy metals, OCPs, OPPs and PCBs. -Soils within 3m of surface **Health Screening Levels (HSLs) for vapour intrusion** - Residential A NEPM (2013) -Table 1A(3) TRH (F1 & F2) and BTEX -0m to <1m depth -Clay soil **HSLs for direct contact (CRC Care Technical Report 10, 2011)** - Residential A **Added Contaminants Limits (ACLs)** - Residential A NEPM (2013) -Table 1B(1) Zinc -Table 1B(2) Copper -Table 1B(3) Nickel -Table 1B(4) Lead -Soils within 2m of surface -pH of 6.0 ($CaCl_2$) assumed from local knowledge -CEC of 10 assumed from local knowledge **Environmental Investigation Levels (EILs)** - Residential A NEPM (2013) -Table 1B(5) Arsenic, DDT and naphthalene -Soils within 2m of surface **Ecological Screening Levels (ESLs)** - Residential A NEPM (2013) -Table 1B(6) TRH (F1-F4) and BTEX -Soils within 2m of surface
Asbestos	Asbestos bonded and friable	- Residential A NEPM (2013) -Table 7 HSLs bonded, friable and all forms of asbestos
Vapour screening	VOCs from PID	20.0ppm (based on similar sites and previous consultant experience)

The Tier 1 assessment criteria are used as an initial screening of the data to determine whether further assessment and statistical analysis is required. Where above tier 1 criteria exceedance indicates a risk to human health or the environment, site specific risk assessment,

statistical analysis, management, or remediation will be undertaken and recommended as appropriate.

DQO 7 - Obtaining data

The sampling pattern and strategy identifies the occurrence of potential contamination for suitable site characterisation. The sampling pattern and strategy has been devised based on the property history, land uses, aerial imagery, site inspections, previous investigations (PSI) and the NEPM (2013). The sampling pattern has been described in more detail below.

Sampling strategy and pattern

A systematic sampling pattern has been chosen for the sheep yards, machinery maintenance area, and demolished house while a judgemental sampling pattern has been chosen for the filled dam.

The adopted sampling pattern is suitable to make a quantitative statement about the level of confidence regarding the quality and accuracy of results. McMahon assesses that the sampling pattern is suitable to be used for decision making and site characterisation.

Key features of the sampling pattern include:

- Eight samples to 0.3m depth in a grid formation around the sheep yards.
- Eight samples to 0.3m depth in a grid formation around machinery maintenance area.
- Two samples (0.5m and 1.5m) in judgmental locations within the filled dam.
- Eighteen samples to 0.3m depth) taken from within the demolished house and garage footprint at double the density recommended by the WA DoH (2021) as some isolated asbestos was found during the PSI (since removed). A 10 litre sample will be sieved (<7mm) at each location for bonded ACM and a sieved 500g sample will be taken for trace analysis.
- Surficial samples were collected by hand excavated pits to capture the profile of any fill, topsoil, and subsoil. The sample pits were excavated using a shovel and grab samples taken from the soil in the middle of the pit.
- Subsoil samples were collected using a 0.1m diameter hand auger.
- A visual and tactile assessment in situ material for potential signs of contamination.
- One duplicate sample.
- One rinsate samples.
- A map of the sample locations can be seen in **Attachment B**.

Sampling design justification

The sampling design targets the contamination sources and the media they may reside in to adequately assess the site suitability for the development.

Failure to meet objectives procedure

If the procedures undertaken do not satisfy the expected data quality objectives, a review of the SAQP will be conducted prior to any further works.

Sampling and analysis methodology

The sampling officer wore unused disposable nitrile gloves to extract samples directly from the excavated pit or hand auger to place into the sample receptacles. Collected sample containers were placed into a chilled esky for preservation prior to analysis. All in-field observations and any relevant comments are detailed in the field sheets/bore logs and a Chain of Custody form was produced to accompany the samples to the laboratory.

Soil sampling standards

Soil sampling was undertaken by reference to:

- AS 4482.1:2005 - Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.
- AS 4482.2:1999 - Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances.
- WA Department of Health (2021) - Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia.

Vapour screening method

Soil samples were screened in-situ with a portable PID device with a 10.6eV gas discharge lamp for screening of Volatile Organic Compounds (VOCs). The 10.6eV lamp is assessed to be appropriate for VOCs screening and is recommended unless compounds that require a 10.6 eV lamp dominate the emissions scenario, RAE Systems (2016). The PID was calibrated to a known concentration (92ppm) of iso-butylene gas before use, the calibration certificate can be seen in **Attachment C**. Prior to screening locations, the PID and its sample train were submitted to a leak detection test undertaken by a suitably qualified person. Between each sampling point, fresh air sampling of the probe and sample train was undertaken to ensure representative samples are obtained from each sample point.

8.0 Results

Sampling for the DSI was conducted over one day 18 November 2022. The weather was fine and warm with light winds. A summary of the field observations and sample analytical results are as follows.

Surface and soil observations

General surface soil observations are:

- The soil across the site was topsoil overlying a reddish and yellowish sandy clay.
- No staining or odours were noted during the sampling event.
- No bonded ACM fragments were visually observed on the surface around the demolished house and garage noting that the fragments observed during the PSI have been removed.

Analysis

As follows are the results of the soil analysis within the proposed development area, including the filled dam and house paddock, as part of the DSI:

- Heavy metals are below the Limit of Reporting (LOR) and/or the adopted criteria.
- Organophosphate/organochlorine pesticides are below the LOR and/or the adopted criteria.
- Total recoverable hydrocarbons are below the LOR and adopted criteria.
- Solvents are below the LOR and adopted criteria.
- Phenols are below the LOR and adopted criteria.
- Polychlorinated biphenyls are below the LOR and adopted criteria.
- Polyaromatic hydrocarbons are below the LOR and adopted criteria.

Vapour screening

- Soil vapour results from the PID screening returned results below the adopted criteria of 20.0ppm.

Statistical analysis

As follows are the results of the statistical analysis within the proposed development area as part of the DSI:

- 95% Upper Confidence Limit (UCL) for soil zinc levels are below the adopted criteria.
- 95% UCL for all other heavy metals are below the LOR and/or the adopted criteria.

Tabulated results can be seen in **Attachment D**.

Laboratory reports can be seen in **Attachment E**.

Statistical analysis can be seen in **Attachment F**.

9.0 Quality assurance/quality control data evaluation

To assess the validity of data for decision making, the data has been assessed against a set of Data Quality Indicators (DQIs), the following predetermined DQIs have been adopted, **Table 2** and **Table 3**.

Table 2: *Sampling Data Quality Indicators*

Adopted practices	Completeness	Comparability	Representativeness	Precision	Accuracy
Details of sampling team – David McMahon (experienced consultant) and Zach Delaney (experienced technician).	✓	✓			
Reference to sampling plan/method, including any deviations from it – sampling and analysis quality plan.	✓				
Decontamination procedures carried out between sampling events.			✓	✓	✓
Logs for each sample collected, including date, time, location (with GPS coordinates), sampler, duplicate samples, chemical analyses to be performed, site observations and weather/environmental (i.e. surroundings) conditions. Include any diagrams, maps, photos.		✓	✓		
Chain of Custody fully identifying – for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from the site and dispatch courier(s) (where applicable).	✓	✓			
Field quality assurance/quality control results (rinsate).				✓	✓
Statement of duplicate and other QAQC sample frequencies – 1 per 20 samples for duplicates, 1 per sampling event for rinsate.			✓	✓	
Field instrument calibrations (when used) with supporting documentation.				✓	✓
Sampling devices and equipment appropriate to sampling requirements.	✓	✓			

Table 3: *Analysis Data Quality Indicators*

Adopted practices	Completeness	Comparability	Representativeness	Precision	Accuracy
A copy of signed Chain of Custody forms acknowledging receipt date and time, and identity of samples included in shipments.	✓	✓			
Analytical methods used, including any deviations.	✓	✓			
Calculation of Relative Percentage Difference for duplicate comparison - <30% for metals.	✓	✓			✓
Laboratory accreditation for analytical methods used, also noting any methods used which are not covered by accreditation.	✓			✓	
Surrogates and spikes used throughout the full method process, or only in parts. Results are corrected for the recovery.	✓	✓			
A list of what spikes and surrogates were run with their recoveries and acceptance criteria.		✓			✓
Practical quantification limits (PQL).	✓	✓			
Laboratory duplicates and rinsate results.	✓				✓
Evaluation of all quality assurance/control information listed above against the stated data quality objectives, including a quality assurance/control data evaluation.	✓	✓	✓	✓	✓

Data quality objectives

The soil duplicate sample (Yards/8) returned Relative Percent Difference (RPD) of less than 30%.

The rinsate sample returned results less than the laboratory limit of reporting.

In consideration of the adopted QA/QC procedures and the results from their subsequent analysis, McMahon assesses the QA/QC results are suitable for the investigation undertaken and reflect the analytical data is of a suitable quality to determine contamination risk with an appropriate level of confidence.

10.0 Conceptual Site Model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors and is presented and follows.

Summary

The site has been used for farming and grazing agriculture with associated infrastructure as far as records can ascertain. Chemicals associated with agriculture, machinery maintenance and septic systems may have accumulated in the soil as well as hazardous building materials from demolished buildings but testing of these returned results below the residential land use criteria. Receptors include future construction workers, residents, and the environment but are unlikely to be impacted. Pathways are from soil disturbance during development and occupation. Short to medium-term soil contact is likely for future construction workers, and long-term soil contact is possible for future occupants.

Potential and known sources of contamination

- Persistent chemicals that may be present in the soil.
- Asbestos from the demolished house and garage that was present on the soil surface.

List of chemicals of potential concern

From the potential contamination sources, the Chemicals of Potential Concern (COPCs) are as follows:

- Asbestos Containing Material (ACM), heavy metals, hydrocarbons, solvents, organochlorine/organophosphate pesticides, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and phenols.

Mechanism of contamination

The mechanism of chemical contamination is predominantly top-down vertical and lateral migration into soil through soil media. The mechanism of asbestos contamination is from the release of fibres from asbestos containing material during disturbance.

Potentially affected environmental media

- Soil.
- Air (from asbestos fibres if released).
- Surface water is unlikely impacted as there is no gross soil contamination.
- Groundwater is unlikely to be impacted owing to the deep depths and deep clay soil.

Consideration of spatial and temporal variations

Spatial variation in potential contamination is possible, especially surface bonded ACM around the demolished house and garage. Temporal variation is unlikely as the site appears to have been disused for some time.

Actual or potential exposure pathways

- Direct skin contact with soil for future construction workers, and future on-site occupants.
- Inhalation and/or ingestion of soil, vapour, fibres, and dust.
- Direct surface water contact however there are no surface waters within the development area.
- Groundwater ingestion, however, no domestic groundwater bores currently exist on or near the site.

Human and ecological receptors

- Future on-site users.
- Construction workers.
- Domestic groundwater users. No domestic groundwater bores currently exist on site.
- Down gradient ecological receptors.
- Future landscaping and ecological receptors.

Frequency of exposure

- Construction workers are assessed to be a short-term exposure risk.
- Future on-site users are assessed to have a long-term exposure risk.
- Future groundwater users are a medium to long-term exposure risk.
- Ecological receptors are assessed to be a medium to long-term exposure risk.

Source pathway receptor linkage assessment

- Future on-site construction workers have a risk of contact with potentially contaminated soil and building material during construction and maintenance, but testing returned results below the residential land use criteria
- Future on-site users have a risk of dermal contact with potentially contaminated soil and building material during maintenance, but testing returned results below the residential land use criteria.
- Future on-site users have a risk of inhalation of potential asbestos fibres if ACM is disturbed but none were detected through trace analysis.
- Future on-site users have a risk of inhalation of potentially contaminated soil, fill and dust but this is assessed to be low risk.
- Domestic groundwater users are unlikely as there are no domestic groundwater bores exist on site or nearby.
- On site ecological receptors are limited.

Discussion of multiple lines of evidence

A multiple lines of evidence approach is the process for evaluating and integrating information from different sources of data and uses best professional judgement to assess the consistency and plausibility of the conclusions which can be drawn, NEPM (2013). Definitive information concerning the sources of potential contamination on site is satisfactory therefore the risk assessment will rely heavily on the information provided by previous reports and this DSI and will be supplemented by data collected during development.

11.0 Site characterisation

From the assessment undertaken the following conclusion can be drawn in relation to site characterisation.

Contamination in soil

- There are no detected bonded ACM fragments on the soil surface or within the soil around the demolished house and garage. No asbestos fibres were detected during trace analysis.
- There is no gross soil chemical contamination onsite that would materially affect the proposed land use.

Contamination in groundwater

- No groundwater is likely to be encountered on site.
- The results of the laboratory analysis indicate an absence of gross chemical contamination; therefore, groundwater investigation is not considered warranted due to the low risk of contamination.
- The site presents a low groundwater contamination risk to current and future site users as direct contact is unlikely and there is no known domestic use on or downgradient of the site.

Contamination in surface water

- Based on the chemical results, there is low likelihood of contaminated run-off from the site that would impact surface waters.

12.0 Conclusions and recommendations

This investigation met the objective of investigating and assessing potential contamination that may affect the suitability of the development area for the proposed land use and provide site management strategies.

There were criteria exceedances of zinc in the soil around the yards as found in the Preliminary Site Investigation (McMahon Report No. 8197, 2022). As such, further investigation of potential contamination was conducted on the site. Statistical analysis of all soil samples revealed that the 95% Upper Confidence Limit of zinc levels on site was 379 mg/kg, which was below the adopted ecological criteria of 400 mg/kg. As such, the criteria exceedances of zinc in the soil around the yards as found in the PSI are assessed to be surficial and localised, and of low significance.

The potential septic system from the demolished house could not be located and further assessment is recommended if found, and this can be managed during development.

A protocol for unexpected finds as outlined in **Section 13.0** has also been developed as part of this risk assessment framework if additional potential contamination sources are identified during development.

In summary the analysis conducted returned results that represent a low risk to human health and the environment, and the site is suitable for the proposed development.

13.0 Unexpected findings

If any unconsolidated, odorous, stained, or deleterious soils, or suspect bonded/friable/fibrous asbestos containing material, fuel tanks or septic systems are encountered during any further excavation, suspected historical contaminating activities are encountered, or conditions that are not alike the above descriptions, the site supervisor should be informed, the work stopped, and this office be contacted immediately for further evaluation by an appropriately qualified environmental consultant. The unexpected findings may trigger the need for more investigation and assessment dependant on the scope and context of the unexpected finding. These unexpected finds include but are not limited to:

- Buried or surface bonded asbestos containing material, asbestos fines/friable asbestos.
- Underground services containing asbestos.
- Building waste and rubbish.
- Buried organic materials.
- Stained or deleterious soils.
- Malodorous soils.
- Ashy deposits.

14.0 Limitations and disclaimer

DM McMahon Pty Ltd has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Brian Pleming and only those third parties who have been authorised by DM McMahon Pty Ltd to rely on this report.

The information contained in this report has been extracted from field and laboratory sources believed to be reliable and accurate. DM McMahon Pty Ltd does not assume any responsibility for the misinterpretation of information supplied in this report. The accuracy and reliability of recommendations identified in this report need to be evaluated with due care according to individual circumstances. It should be noted that the recommendations and findings in this report are based solely upon the said site location and conditions at the time of testing. The results of the said investigations undertaken are an overall representation of the conditions encountered. The properties of the soil and groundwater within the location may change due to variations in ground conditions outside of the tested area. The author has no control or liability over site variability that may warrant further investigation that may lead to significant design changes.

15.0 Notice of Copyright

16.0 References

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WA Department of Health (2021) - Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia.

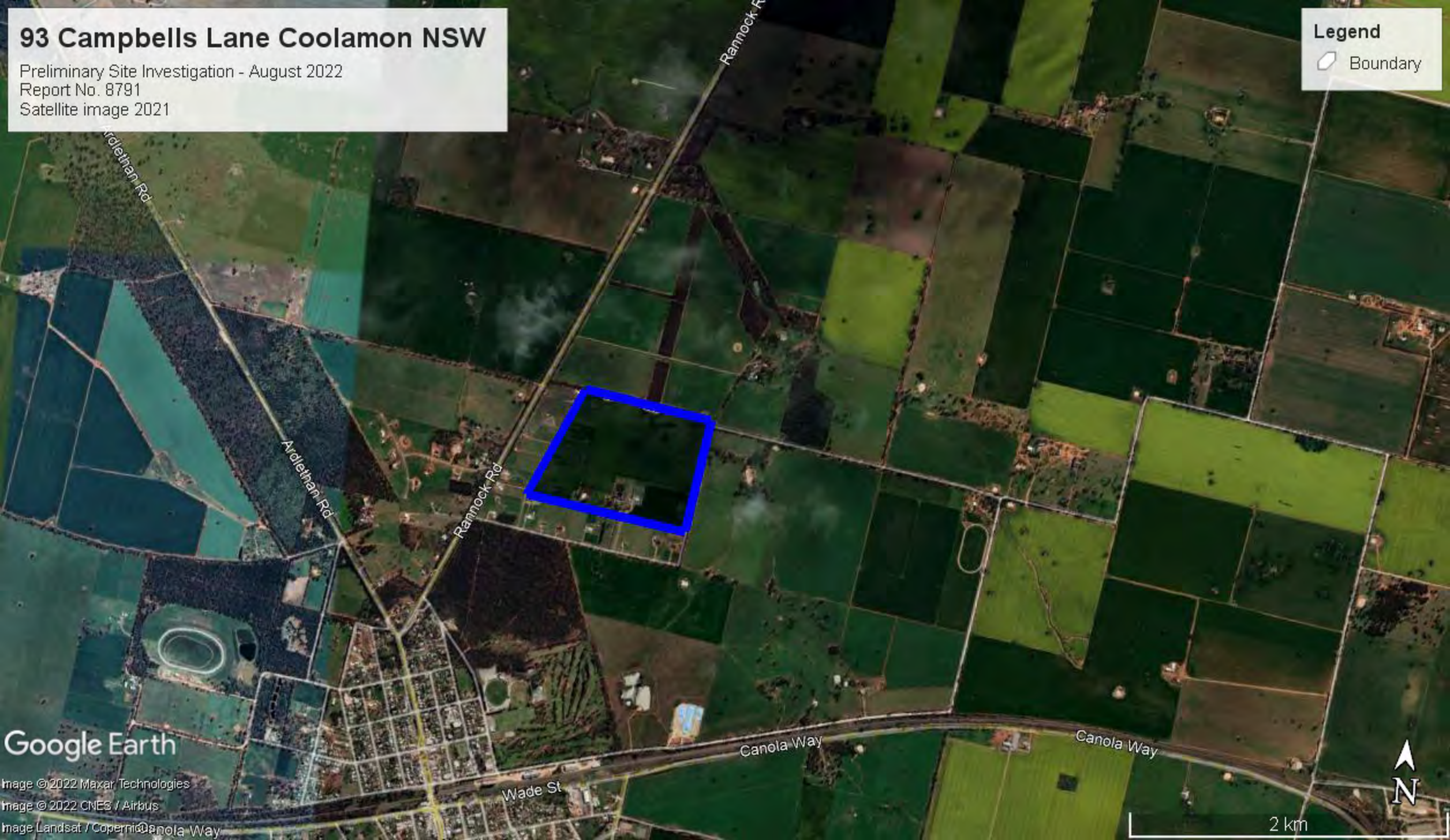
17.0 Attachments

A. Location map and plan of the proposed development	2 pages
B. Sample locations	2 pages
C. PID calibration certificate	1 page
D. Tabulated results	4 pages
E. Laboratory reports	31 pages
F. Statistical analysis	1 page

Attachment A : *Site location and subdivison plan*

93 Campbells Lane Coolamon NSW

Preliminary Site Investigation - August 2022
Report No. 8791
Satellite image 2021



NOTE:
AREAS AND DIMENSIONS SHOWN HERE ARE APPROXIMATE ONLY AND ARE SUBJECT TO COUNCIL APPROVAL AND FINAL SURVEY.

G.N.

M.G.A.

117
DP 750846

118
DP 750846

120
DP 750846

BARTLETTS LANE

ROAD DRIVE

RANNOCK DAVIES

CAMPBELLS

LANE

PROPOSED ROAD 20 WIDE

27 2.1ha	28 2.08ha	29 2.08ha	30 2.08ha	31 2.08ha	32 2.08ha	33 2.47ha	34 2.59ha		
26 2.08ha									
25 2.08ha	42 2.07ha	41 2.07ha	40 2.07ha	39 2.07ha	38 2.07ha	37 2.07ha	36 2.3ha	35 2.3ha	
24 2.1ha									
23 2.75ha	43 8.42ha		44 2.8ha EXISTING HOUSE		45 8ha				
22 2.87ha									

(P1) EASEMENT FOR OVERHEAD POWERLINES 5 WIDE, 20 WIDE & VARIABLE WIDTH

(P2) EASEMENT FOR OVERHEAD POWERLINES 15 WIDE & VARIABLE WIDTH

L.G.A.: COOLAMON	Scale: 1: 5000 (A3)	PROPOSED SUBDIVISION OF LOT 21 DP 1224134 BARTLETTS LANE & DAVIES DRIVE COOLAMON FOR: BRIAN PLEMING	T.J. HINCHCLIFFE & ASSOCIATES PTY. LTD. CONSULTANTS IN SURVEYING, PLANNING AND DEVELOPMENT	Date: 27 APRIL 2022
Locality: COOLAMON	Datum: Origin:			Reference: 22222 v2

ACN 003 619 725 ABN 18 003 619 725
33 Blake Street, Wagga Wagga, N.S.W. 2650 P.O. Box 5497 Wagga Wagga, N.S.W. 2650
Phone: 02 6931 7099 Mobile: 0402 009 795
Email: admin@waggasurveyors.com.au

Attachment B : *Sampling maps*

93 Campbells Lane Coolamon NSW

Detailed Site Investigation - December 2022
Report No. 9005
Satellite image 2022

Legend

- Dam
- Demolished house
- Demolished house soil samples
- Filled dam soil samples
- Fillled Dam
- House paddock
- Shed
- Sheds soil samples
- Site boundary
- Yards
- Yards soil samples

Yards
Shed

N

400 m

93 Campbells Lane Coolamon NSW

Detailed Site Investigation - December 2022
Report No. 9005
Satellite image 2022

Legend

- Demolished house
- Demolished house soil samples
- House paddock
- Shed
- Sheds soil samples
- Site boundary
- Yards
- Yards soil samples

1 Yards 2 3 4 5 6 7 8 Old yards

1 2 3 4 5 6 7 8 Shed

A16 A13 A7 A4 A1 Shed A14 A18 A11 A5 A2 Demolished garage

Demolished house 89

A19 A12 A15 A9 A6 A3

Google Earth

Image © 2022 Maxar Technologies

60 m

N

93 Campbells Lane Coolamon NSW

Detailed Site Investigation - December 2022
Report No. 9005
Satellite image 2022

Legend

- Filled dam soil samples
- Fillled Dam
- Site boundary

1

2

N

100 m

Attachment C: *PID calibration certificate*

14/11/2022

PID Calibration Certificate

Instrument PhoCheck Tiger
Serial No. T-114176

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 ev
Alarms	Beeper	✓	Low: 50ppm; High: 100ppm; TWA: ; STEL:
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		94ppm Isobutylene	NATA	SY506		94.1 ppm

Calibrated by: Dom Ta

Calibration date: **14/11/2022**

Next calibration due: **13/05/2023**

Attachment D : *Tabulated results*

Job number: 9005
Project: DSI - 93 Campbells Lane Coolamon NSW

			Sample date	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	-	-	-	-			
			Sample location	Yards	Yards	Yards	Yards	Yards	Yards	Yards	Yards	-	-	-	-			
			Sample ID	Yards/1	Yards/2	Yards/3	Yards/4	Yards/5	Yards/6	Yards/7	Yards/8	-	-	-	-			
			Sample depth (m)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	-	-	-	-			
Compound	**LOR**	**Unit**		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	**HILs**	**HSLs**	**ACLs**	**EILs**	**ESLs**
Arsenic	5	mg/kg		<5	<5	<5	<5	<5	<5	8	6	-	-	-	-	100	-	-	100	-
Cadmium	1	mg/kg		<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	20	-	-	-	-
Chromium	2	mg/kg		27	28	32	29	26	26	34	34	-	-	-	-	-	-	400	-	-
Copper	5	mg/kg		8	11	11	9	9	10	11	8	-	-	-	-	6000	-	190	-	-
Lead	5	mg/kg		12	29	14	44	17	34	11	13	-	-	-	-	300	-	1100	-	-
Nickel	2	mg/kg		6	7	6	7	6	5	10	8	-	-	-	-	400	-	170	-	-
Zinc	5	mg/kg		30	156	62	89	57	138	23	67	-	-	-	-	7400	-	400	-	-
Mercury	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	40	-	-	-	-
PCBs	0.1	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
HCB	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Heptachlor	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
Chlordane	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-
Endrin	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Endosulfan	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-
Aldrin+dieldrin	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
DDT+DDE+DDD	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-	-
Chlorpyrifos	0.05	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-
Phenols	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	3000	-	-	-	-
PAHs	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-
Benzo(a)pyrene	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-					
Benzo(a)pyrene TEQ (half LOR)	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	0.7
TRH C6-C10 minux BTEX (F1)	10	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	50/4400	-	-	180
TRH C10-C16 minus napthalene (F2)	50	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	280/3300	-	-	120
TRH C16-C34 (F3)	100	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	-/4500	-	-	1300
TRH C34-C40 (F4)	100	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	-/6300	-	-	5600
Benzene	0.2	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	65
Toluene	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-	105
Ethylbenzene	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125
Xylenes	0.5	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	110	-	-	45
Napthalene	1	mg/kg		-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	170	-

Residential A Criteria

Job number: 9005
Project: DSI - 93 Campbells Lane Coolamon NSW

		Sample date	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	18/11/22	-	-	-	-					
		Sample location	Sheds	Sheds	Sheds	Sheds	Sheds	Sheds	Sheds	Sheds	-	-	-	-					
		Sample ID	Sheds/1	Sheds/2	Sheds/3	Sheds/4	Sheds/5	Sheds/6	Sheds/7	Sheds/8	-	-	-	-					
		Sample depth (m)	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	-	-	-	-					
Compound	**LOR**	**Unit**	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	**HILs**	**HSLs**	**ACLs**	**EILs**	**ESLs**
Arsenic	5	mg/kg	7	12	6	6	10	8	10	8	-	-	-	-	100	-	-	100	-
Cadmium	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	20	-	-	-	-
Chromium	2	mg/kg	32	27	28	27	32	29	29	28	-	-	-	-	-	-	400	-	-
Copper	5	mg/kg	16	23	21	19	33	18	40	14	-	-	-	-	6000	-	190	-	-
Lead	5	mg/kg	72	45	50	26	66	65	97	48	-	-	-	-	300	-	1100	-	-
Nickel	2	mg/kg	7	9	7	9	8	8	9	8	-	-	-	-	400	-	170	-	-
Zinc	5	mg/kg	314	250	104	192	120	116	135	76	-	-	-	-	7400	-	400	-	-
Mercury	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	40	-	-	-	-
PCBs	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	1	-	-	-	-
HCB	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	10	-	-	-	-
Heptachlor	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	6	-	-	-	-
Chlordane	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	50	-	-	-	-
Endrin	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	10	-	-	-	-
Endosulfan	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	270	-	-	-	-
Aldrin+dieldrin	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	6	-	-	-	-
DDT+DDE+DDD	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	240	-	-	-	-
Chlorpyrifos	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	160	-	-	-	-
Phenols	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	3000	-	-	-	-
PAHs	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	-	-	-	-	300	-	-	-	-
Benzo(a)pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<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	0.6	0.6	0.6	-	-	-	-	3	-	-	-	0.7
TRH C6-C10 minux BTEX (F1)	10	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	-	-	-	-	-	50/4400	-	-	180
TRH C10-C16 minus napthalene (F2)	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	280/3300	-	-	120
TRH C16-C34 (F3)	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-/4500	-	-	1300
TRH C34-C40 (F4)	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-/6300	-	-	5600
Benzene	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	0.7	-	-	65
Toluene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	480	-	-	105
Ethylbenzene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	125
Xylenes	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	110	-	-	45
Napthalene	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	5	-	170	-

Residential A Criteria

Job number: 9005
Project: DSI - 93 Campbells Lane Coolamon NSW

	Sample date	18/11/22	18/11/22	-	-	-	-	-	-	-	-	-	-						
	Sample location	Dam	Dam	-	-	-	-	-	-	-	-	-	-						
	Sample ID	Dam/1	Dam/2	-	-	-	-	-	-	-	-	-	-						
	Sample depth (m)	0.5	1.5	-	-	-	-	-	-	-	-	-	-						
Compound	**LOR**	**Unit**	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	**HILs**	**HSLs**	**ACLs**	**EILs**	**ESLs**
Arsenic	5	mg/kg	8	6	-	-	-	-	-	-	-	-	-	-	100	-	-	100	-
Cadmium	1	mg/kg	<1	<1	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-
Chromium	2	mg/kg	25	28	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-
Copper	5	mg/kg	11	9	-	-	-	-	-	-	-	-	-	-	6000	-	190	-	-
Lead	5	mg/kg	11	11	-	-	-	-	-	-	-	-	-	-	300	-	1100	-	-
Nickel	2	mg/kg	12	9	-	-	-	-	-	-	-	-	-	-	400	-	170	-	-
Zinc	5	mg/kg	19	16	-	-	-	-	-	-	-	-	-	-	7400	-	400	-	-
Mercury	0.1	mg/kg	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-
PCBs	0.1	mg/kg	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
HCB	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Heptachlor	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
Chlordane	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-
Endrin	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Endosulfan	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-
Aldrin+dieldrin	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
DDT+DDE+DDD	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	240	-	-	-	-
Chlorpyrifos	0.05	mg/kg	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-
Phenols	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	3000	-	-	-	-
PAHs	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-
Benzo(a)pyrene	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-					
Benzo(a)pyrene TEQ (half LOR)	0.5	mg/kg	0.6	0.6	-	-	-	-	-	-	-	-	-	-	3	-	-	-	0.7
TRH C6-C10 minux BTEX (F1)	10	mg/kg	<10	<10	-	-	-	-	-	-	-	-	-	-	-	50/4400	-	-	180
TRH C10-C16 minus napthalene (F2)	50	mg/kg	<50	<50	-	-	-	-	-	-	-	-	-	-	-	280/3300	-	-	120
TRH C16-C34 (F3)	100	mg/kg	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-/4500	-	-	1300
TRH C34-C40 (F4)	100	mg/kg	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-/6300	-	-	5600
Benzene	0.2	mg/kg	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	65
Toluene	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	480	-	-	105
Ethylbenzene	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125
Xylenes	0.5	mg/kg	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	110	-	-	45
Napthalene	1	mg/kg	<1	<1	-	-	-	-	-	-	-	-	-	-	-	5	-	170	-

Residential A Criteria

Page: 1 of 1
Job No: 9005
Project: 93 Campbells Lane, Coolamon NSW 2701
Tested by: DM and ZD
Date: 18/11/2022

10L sampling for bonded ACM quantification (WA DoH Guidelines)

Sample location	Sample ID	Sampled volume (L)	Asbestos detected	Soil weight (g)	Asbestos weight (g)	Asbestos concentration (%)
House/garage	9005/1	10	No	14,520	0.0	0
House/garage	9005/2	10	No	13,880	0.0	0
House/garage	9005/3	10	No	14,010	0.0	0
House/garage	9005/4	10	No	14,890	0.0	0
House/garage	9005/5	10	No	15,620	0.0	0
House/garage	9005/6	10	No	14,980	0.0	0
House/garage	9005/7	10	No	13,990	0.0	0
House/garage	9005/8	10	No	15,680	0.0	0
House/garage	9005/9	10	No	14,558	0.0	0
House/garage	9005/10	10	No	15,874	0.0	0
House/garage	9005/11	10	No	15,231	0.0	0
House/garage	9005/12	10	No	15,668	0.0	0
House/garage	9005/13	10	No	14,963	0.0	0
House/garage	9005/14	10	No	15,874	0.0	0
House/garage	9005/15	10	No	15,223	0.0	0
House/garage	9005/16	10	No	14,857	0.0	0
House/garage	9005/17	10	No	13,996	0.0	0
House/garage	9005/18	10	No	14,578	0.0	0

Attachment E : *Laboratory reports*

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2241962**	Page	: 1 of 23
Client	: **DM MCMAHON PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID MCMAHON	Contact	: Customer Services ES
Address	: 6 JONES ST Wagga Wagga NSW, AUSTRALIA 2650	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 6931 0510	Telephone	: +61-2-8784 8555
Project	: 93 Campbells Lane Coolamon - DSI	Date Samples Received	: 21-Nov-2022 11:50
Order number	: 9005	Date Analysis Commenced	: 21-Nov-2022
C-O-C number	: ----	Issue Date	: 28-Nov-2022 17:45
Sampler	: DAVID MCMAHON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 38		
No. of samples analysed	: 36		

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
- Descriptive 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
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 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.
- 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.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/1	Yards/2	Yards/3	Yards/4	Yards/5
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-001	ES2241962-002	ES2241962-003	ES2241962-004	ES2241962-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**12.0**	**16.2**	**11.1**	**13.2**	**11.2**
EG005(ED093)T: Total Metals by ICP-AES								
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	**27**	**28**	**32**	**29**	**26**
Copper	7440-50-8	5	mg/kg	**8**	**11**	**11**	**9**	**9**
Lead	7439-92-1	5	mg/kg	**12**	**29**	**14**	**44**	**17**
Nickel	7440-02-0	2	mg/kg	**6**	**7**	**6**	**7**	**6**
Zinc	7440-66-6	5	mg/kg	**30**	**156**	**62**	**89**	**57**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/6	Yards/7	Yards/8	Duplicate	Shed/1
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-006	ES2241962-007	ES2241962-008	ES2241962-009	ES2241962-011
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	10.8	13.4	10.0	10.1	17.5
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	8	6	6	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	26	34	34	29	32
Copper	7440-50-8	5	mg/kg	10	11	8	8	16
Lead	7439-92-1	5	mg/kg	34	11	13	12	72
Nickel	7440-02-0	2	mg/kg	5	10	8	8	7
Zinc	7440-66-6	5	mg/kg	138	23	67	66	314
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
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
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	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
^ Endosulfan (sum)	115-29-7	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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/6	Yards/7	Yards/8	Duplicate	Shed/1
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-006	ES2241962-007	ES2241962-008	ES2241962-009	ES2241962-011
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	<0.05
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	<0.5
2-Chlorophenol	95-57-8	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
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/6	Yards/7	Yards/8	Duplicate	Shed/1
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-006	ES2241962-007	ES2241962-008	ES2241962-009	ES2241962-011
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
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
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/6	Yards/7	Yards/8	Duplicate	Shed/1
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-006	ES2241962-007	ES2241962-008	ES2241962-009	ES2241962-011
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
>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
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP080: BTEXN								
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
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	----	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	**98.1**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**90.9**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**108**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**79.3**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**83.4**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**63.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**86.1**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**89.0**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**80.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**81.2**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**94.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Yards/6	Yards/7	Yards/8	Duplicate	Shed/1
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-006	ES2241962-007	ES2241962-008	ES2241962-009	ES2241962-011
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**106**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/2	Shed/3	Shed/4	Shed/5	Shed/6
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-012	ES2241962-013	ES2241962-014	ES2241962-015	ES2241962-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	19.1	14.0	16.1	14.5	15.0
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	12	6	6	10	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	27	28	27	32	29
Copper	7440-50-8	5	mg/kg	23	21	19	33	18
Lead	7439-92-1	5	mg/kg	45	50	26	66	65
Nickel	7440-02-0	2	mg/kg	9	7	9	8	8
Zinc	7440-66-6	5	mg/kg	250	104	192	120	116
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/2	Shed/3	Shed/4	Shed/5	Shed/6
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-012	ES2241962-013	ES2241962-014	ES2241962-015	ES2241962-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Shed/2	Shed/3	Shed/4	Shed/5	Shed/6
				Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		ES2241962-012	ES2241962-013	ES2241962-014	ES2241962-015	ES2241962-016
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	<2	<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	**0.6**
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.9**
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
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**1.5**
^ 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	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/2	Shed/3	Shed/4	Shed/5	Shed/6
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-012	ES2241962-013	ES2241962-014	ES2241962-015	ES2241962-016
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<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	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**78.7**	**94.6**	**98.4**	**79.2**	**91.4**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**66.5**	**97.0**	**96.6**	**76.5**	**92.3**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**96.3**	**116**	**106**	**85.3**	**105**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**78.9**	**76.1**	**76.5**	**77.1**	**74.8**
2-Chlorophenol-D4	93951-73-6	0.5	%	**83.0**	**79.3**	**80.4**	**81.1**	**77.4**
2.4.6-Tribromophenol	118-79-6	0.5	%	**62.4**	**59.4**	**57.5**	**58.1**	**56.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**85.8**	**82.2**	**84.5**	**83.6**	**82.1**
Anthracene-d10	1719-06-8	0.5	%	**89.1**	**85.2**	**88.1**	**87.4**	**85.9**
4-Terphenyl-d14	1718-51-0	0.5	%	**80.4**	**77.3**	**78.9**	**78.6**	**77.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**89.6**	**102**	**83.7**	**97.1**	**90.1**
Toluene-D8	2037-26-5	0.2	%	**102**	**95.4**	**92.8**	**93.0**	**97.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Shed/2	Shed/3	Shed/4	Shed/5	Shed/6
				Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		ES2241962-012	ES2241962-013	ES2241962-014	ES2241962-015	ES2241962-016
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	**98.2**	**100.0**	**110**	**93.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/7	Shed/8	A1	A2	A3
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-017	ES2241962-018	ES2241962-019	ES2241962-020	ES2241962-021
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**13.8**	**11.4**	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	----	----	-	-	-
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	----	----	**532**	**579**	**710**
Synthetic Mineral Fibre	----	0.1	-	----	----	**No**	**No**	**No**
Organic Fibre	----	0.1	-	----	----	**No**	**No**	**No**
APPROVED IDENTIFIER:	----	-	--	----	----	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	----	----	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	----	----	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	----	----	**0.532**	**0.579**	**0.710**
ø Fibrous Asbestos >7mm	----	0.0004	g	----	----	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**10**	**8**	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**29**	**28**	----	----	----
Copper	7440-50-8	5	mg/kg	**40**	**14**	----	----	----
Lead	7439-92-1	5	mg/kg	**97**	**48**	----	----	----
Nickel	7440-02-0	2	mg/kg	**9**	**8**	----	----	----
Zinc	7440-66-6	5	mg/kg	**135**	**76**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
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	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/7	Shed/8	A1	A2	A3
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-017	ES2241962-018	ES2241962-019	ES2241962-020	ES2241962-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/7	Shed/8	A1	A2	A3
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-017	ES2241962-018	ES2241962-019	ES2241962-020	ES2241962-021
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/7	Shed/8	A1	A2	A3
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-017	ES2241962-018	ES2241962-019	ES2241962-020	ES2241962-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**90.0**	**87.7**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**92.5**	**83.8**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Shed/7	Shed/8	A1	A2	A3
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-017	ES2241962-018	ES2241962-019	ES2241962-020	ES2241962-021
				Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**105**	**100**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**74.6**	**73.9**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**77.5**	**75.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**55.7**	**54.1**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**80.4**	**81.9**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**85.2**	**86.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**76.8**	**77.5**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**85.1**	**124**	----	----	----
Toluene-D8	2037-26-5	0.2	%	**99.4**	**108**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**103**	**112**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	A4	A5	A6	A7	A8
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-022	ES2241962-023	ES2241962-024	ES2241962-025	ES2241962-026
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**601**	**727**	**797**	**759**	**817**
Synthetic Mineral Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.601**	**0.727**	**0.797**	**0.759**	**0.817**
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	A9	A10	A11	A12	A13
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-027	ES2241962-028	ES2241962-029	ES2241962-030	ES2241962-031
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**681**	**735**	**858**	**597**	**588**
Synthetic Mineral Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.681**	**0.735**	**0.858**	**0.597**	**0.588**
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	A14	A15	A16	A17	A18
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00	18-Nov-2022 00:00
Compound	CAS Number	LOR	Unit	ES2241962-032	ES2241962-033	ES2241962-034	ES2241962-035	ES2241962-036
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**584**	**658**	**581**	**659**	**590**
Synthetic Mineral Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	0.1	-	**No**	**No**	**No**	**No**	**No**
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**	**J.SPOONER**
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.584**	**0.658**	**0.581**	**0.659**	**0.590**
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Rinsate	----	----	----	----
				Sampling date / time	18-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2241962-010	--------	--------	--------	--------
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	A1 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A2 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A3 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A4 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A5 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A6 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A7 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A8 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A9 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A10 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A11 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A12 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A13 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A14 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A15 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A16 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A17 - 18-Nov-2022 00:00	Soil sample.
EA200: Description	A18 - 18-Nov-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) 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
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	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

(SOIL) EA200N: Asbestos Quantification (non-NATA)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2243085**	Page	: 1 of 8
Client	: **DM MCMAHON PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID MCMAHON	Contact	: Customer Services ES
Address	: 6 JONES ST Wagga Wagga NSW, AUSTRALIA 2650	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 6931 0510	Telephone	: +61-2-8784 8555
Project	: 93 Campbells Lane Coolamon - DSI	Date Samples Received	: 29-Nov-2022 14:22
Order number	: 9005	Date Analysis Commenced	: 29-Nov-2022
C-O-C number	: ----	Issue Date	: 01-Dec-2022 13:09
Sampler	: DAVID MCMAHON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
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

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.
- 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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Dam 1	Dam 2	----	----	----
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2243085-001	ES2243085-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**19.4**	**16.5**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**8**	**6**	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**25**	**28**	----	----	----
Copper	7440-50-8	5	mg/kg	**11**	**9**	----	----	----
Lead	7439-92-1	5	mg/kg	**11**	**11**	----	----	----
Nickel	7440-02-0	2	mg/kg	**12**	**9**	----	----	----
Zinc	7440-66-6	5	mg/kg	**19**	**16**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
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	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Dam 1	Dam 2	----	----	----
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2243085-001	ES2243085-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Dam 1	Dam 2	----	----	----
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2243085-001	ES2243085-002	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued								
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Dam 1	Dam 2	----	----	----
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2243085-001	ES2243085-002	--------	--------	--------
				Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**105**	**86.6**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**94.7**	**87.1**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**83.8**	**86.1**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**83.7**	**83.9**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**86.8**	**86.9**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**74.4**	**74.6**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**91.5**	**91.6**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**92.9**	**91.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**98.9**	**98.4**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**79.5**	**83.3**	----	----	----
Toluene-D8	2037-26-5	0.2	%	**85.6**	**87.9**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Dam 1	Dam 2	----	----	----
			Sampling date / time	18-Nov-2022 00:00	18-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2243085-001	ES2243085-002	--------	--------	--------
				Result	Result	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**86.5**	**86.2**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) 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
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	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Attachment F : *Statistical analysis*

Job number: 9005
Project: DSI - 93 Campbells Lane Coolamon NSW

Summary statistics

Compound	LOR	Unit	No.	Range	Median	Mean	SD	CV	95% UCL
Arsenic	5	mg/kg	30	7	6	6	2	0	7
Cadmium	1	mg/kg	30	0	<1	<1	0	0	<1
Chromium	2	mg/kg	30	23	28	29	4	0	30
Copper	5	mg/kg	30	34	11	13	8	1	16
Lead	5	mg/kg	30	184	18	37	42	1	50
Nickel	2	mg/kg	30	7	8	8	2	0	8
Zinc	5	mg/kg	30	2736	72	215	530	2	379
Mercury	0.1	mg/kg	30	0	<0.1	<0.1	0	0	<0.1