DETAILED SITE INVESTIGATION

77-79 TRAFALGAR STREET, PEAKHURST, NSW

NSW Land and Housing Corporation

Report No: 19/2236

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EXECUTIVE SUMMARY

STS GeoEnvironmental Pty Limited (STS) carried out a detailed site investigation (DSI) at 77-79 Trafalgar Street, Peakhurst, NSW hereafter referred to as "the site".

The investigation was commissioned by Mr Mano Manoharan on behalf of the NSW Land and Housing Corporation. The objective of the DSI was to characterise the nature and extent of potential soil contamination at the site. The contamination characterisation of the site is required to support the development approval (DA) submission for the proposed redevelopment.

STS understands that the subject site which covers approximately 1,352 m^2 is proposed for redevelopment as a medium-density residential apartment complex comprising a 3-storey residential building constructed over a single-level basement car park. The building is to contain fifteen (15) residential units comprised of three (3) 1-bedroom units and twelve (12) 2-bedroom units. Landscaping has been proposed around the perimeter of the development with the existing large trees within the south-west of the site proposed to be retained.

As part of the DSI scope, data from the PSI was reviewed and soil samples were recovered from an additional four (4) boreholes for chemical analysis by NATA accredited laboratories to supplement the data set within the PSI.

Based on the history of the site, the main potential contaminating activities that were identified included historical site filling and the use of pesticides; poor historic demolition practices; and the weathering of built structures. Based on the onsite potential contaminating activities, the following contaminants of concern have been identified as potentially impacting the site; asbestos, heavy metals, total recoverable hydrocarbons (TRH), monocyclic aromatic hydrocarbons (MAH), polyaromatic hydrocarbons (PAH), organochlorine pesticides (OCP), organophosphorus pesticides (OPP), polychlorinated biphenyls (PCB), and phenolic compounds.

The investigation was performed with reference to the Environment Protection Authority (EPA) and national guidelines for the assessment and management of site contamination. The investigation objective was met by implementing a desktop historical information review of the site and surrounds and an intrusive investigation with soil sampling and chemical analysis programme.

Based on the proposed development plans, the site has been assessed under a medium-density residential land use scenario. The results of chemical analysis of the selected soil samples were compared with NEPM (1999, 2013) HIL-B, HSL-B, EIL, ESL, NEPM (1999, 2013) management limits for TRH fraction in soils and CRCCARE's human health screening criteria for petroleum hydrocarbons.

The results of the soil sampling have generally shown that the concentrations of chemical contaminants recorded within the analysed samples met the respective assessment criteria that are protective of human health in a medium-density residential land use setting.

However, a localised area of topsoil and near-surface fill soils within the vicinity of BH103 and BH104 (south-western corner of the site) showed impact by TRH F2, cadmium and zinc at concentrations that would potentially pose a risk to onsite ecological receptors. The location of these soils appears to be within the proposed landscaping area, with the large existing trees proposed to be retained throughout the development.

Though there are limited exceedances of the ecological protection thresholds, STS consider that based on the proposed development plans, the site is unlikely to present an unacceptable risk to on-site ecological receptors as the detected concentrations of contaminants were relatively low and the vegetation within the impacted area appeared to be of similar health to other local vegetation within the general vicinity of the site.

Based on the findings of this investigation, STS consider that the site is suitable for the proposed medium-density residential development provided that the development is constructed in accordance with the proposed architectural drawings. Should the proposed landscape design change, specialist advice regarding the selection of vegetation species should be sought, and remedial actions may be warranted.

Due to the presence of fibre-cement sheeting within the building fabrics of some structures on-site, a hazmat survey should be undertaken prior to their demolition. Recommendations in the hazmat report should include safe management and removal of all ACM from the site in accordance with the current relevant guidance such as SafeWork NSW, codes of practice and standards.

A clearance certificate should be issued once all hazardous materials are removed prior to demolition taking place including the removal of any loose fragments that may be near the structures from previous damage. A final clearance certificate should be issued post-demolition to ensure there is no ACM remaining on the ground surface.

STS recommend due care during the construction phase of the development and especially for intrusive work activities, by way of implementation of an Unexpected Finds Protocol (UFP) upon construction commencement. In the event potentially contaminated soil, that is, materials suspected to contain asbestos, buried waste, materials with offensive odours and hydrocarbon stained soils are encountered within an area of the site, all work activities in that area should cease. Access to the area should be prohibited until a suitably qualified consultant advises on the need for investigation, remediation or any other action deemed appropriate.

1. INTRODUCTION

This report presents the results of a detailed site investigation (DSI) carried out by STS GeoEnvironmental Pty Limited (STS) at 77-79 Trafalgar Street, Peakhurst NSW, hereafter referred as "the site". The investigation was commissioned by Mr Mano Manoharan on behalf of the NSW Land and Housing Corporation.

The objective of the DSI was to investigate the nature and extent of contaminants potentially present within the soils within the site. The data would then be employed to characterise the site to enable the assessment of potential risks to human health and the environment with respect to the proposed site redevelopment. Further, the investigation would support the development approval (DA) submission for the proposed site redevelopment.

The investigation was carried out with reference to Environment Protection Authority (EPA) and other national guidelines related to the assessment and management of site contamination.

The scope of the DSI included:

- Review of the preliminary site investigation (PSI) report prepared for the site by STS in 2018;
- Site inspection;
- Assessment of the potential contamination from surrounding sites;
- Review of local geology and hydrogeology;
- Soil sampling from an additional four (4) boreholes;
- Laboratory analyses of selected soil samples for a broad range of potential contaminants;
- Interpretation of analytical data and quality assurance (QA);
- Assessment of concentrations of contaminants in the soil at the site;
- Assessment of potential contaminant exposure pathways and risks of harm to human-health and the environment at the site;
- Assessment of potential contaminant releases, migration and potential impacts on off-site human and ecological receptors;
- Recommendations for any further investigation or remediation that may be required based on relevant assessment and management guidelines for site contamination; and
- Preparation of a confidential report based on the results of the investigation.

2. REDEVELOPMENT AND PROPOSED LAND USE

The architectural drawings made available at the time of this assessment indicate that the proposed redevelopment involves the construction of a medium-density residential apartment complex comprising a 3-storey residential building constructed over a single-level basement car park. The building is to contain fifteen (15) residential units comprising three (3) 1-bedroom units and twelve (12) 2-bedroom units. Landscaping has been proposed around the perimeter of the development with the existing large trees within the south-west of the site to remain.

A copy of the architectural drawings is provided in Appendix A.

3. SITE IDENTIFICATION

The site covers an approximate area of 1,352.7 m^2 and is located within the Georges River Council Local Government Area (LGA). Currently the site is zoned as "R3 – Medium Density Residential" and is legally defined as Lots 227 and 228 in Deposited Plan (DP) 36317. Development at the site is managed under the "Hurstville Local Environmental Plan 2012" (LEP 2012).

The site boundaries are formed by Trafalgar Street to the north with low-density residential dwellings beyond; Lawrence Street to the east with medium-density and low-density residential housing beyond; Jacques Street to the west with low-density residential dwellings beyond; and low-density residential dwellings to the south. The site is accessed by a driveway on Lawrence Street and two (2) driveways on Trafalgar Street.

The site location is presented on Drawing No. 19/2236/1.

4. PREVIOUS ENVIRONMENTAL REPORTS

STS has reviewed the following report prepared for the site:

- *Preliminary Site Investigation for NSW Land and Housing Corporation, Land at 77-79 Trafalgar Street, Peakhurst, New South Wales, Project No.: 10530 (2984A)/0099D,* prepared by STS GeoEnvironmental Pty Ltd (October 2018).

4.1 Preliminary Site Investigation (2018) Findings

In 2018, STS conducted a PSI for the site. The investigation included a site history review, site inspection and a limited intrusive soil sampling programme.

Based on the historical information and site inspection, the key potential contaminant sources identified at the site were the importation of fill soils for site levelling, and the presence of potential asbestos-based materials and potential lead-based paints within the fabrics of current and former site structures.

A total of three (3) boreholes were advanced across the site to terminal depths of between 0.4 m and 0.55 m bgl. A total of six (6) primary soil samples were recovered from the encountered fill and natural soil profiles. The samples were analysed for a range of potential contaminants of concern, including; heavy metals, petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), phenolics and monocyclic aromatic hydrocarbons (MAH), organochlorine and organophosphorus pesticides (OCP/OPP), polychlorinated biphenyls (PCB) and asbestos.

The results of the soil sampling programme indicated that the concentrations of chemical contaminants within the analysed soils met the respective criteria which are protective of human health for the proposed land use as a medium density residential housing complex. However, the results of the soil sampling programme indicated that the concentration of zinc and TPH F2 within one (1) soil sample did not meet the respective generic ecological assessment thresholds for an urban residential environment. All other detected concentrations of chemical contaminants within the analysed soils met the respective ecological assessment thresholds.

Though the results of the soil sampling programme indicate that the site may present an unacceptable risk to ecological receptors, STS consider that the site is likely to be made suitable for the proposed development contingent upon the understanding that the site is to be developed in accordance with the provided architectural drawings and that further investigation, and remediation if necessary, beyond the proposed basement footprint is conducted.

Sections 5 to 10 provide a summary of relevant details from the PSI.

5. SITE FEATURES

The site was initially inspected on 12 September 2018, with a supplementary inspection on 28 August 2019. The site inspection consisted of a walkover survey with the following objectives:

- Assessment of site accessibility;
- Inspection of the surface ground conditions;
- Identification of current site structures;
- Visual assessment of the current land conditions;
- Assessment of surrounding land uses and activities; and
- Identification of potential contamination sources at the site and surrounds.

The current site configuration (as at 28 August 2019) is summarised below and are shown on Drawing No. 19/2236/2.

5.1 77 Trafalgar Street

- The allotment is bounded by timber fencing to the west, a low chain-link fence to the north and north-west, and steel fencing to the east and south.
- The allotment is accessed via a concrete driveway from Trafalgar Street in the north which extends along the western boundary, terminating beside the existing residence.
- The existing residence is located within the central-northern portion of the allotment and comprises a single-storey fibre-cement sheet cladded home, constructed on brick piers with timber floor joists. It is assumed that the frames of the residence are also timber. The existing residence was observed to be damaged, with holes observed within the exterior wall sheeting. Based on the expected date of construction, STS consider it highly likely that asbestos is present within the fabrics of the building.
- A concrete hardstand was adjacent the rear of the existing residence, which was covered with a broken temporary shade shelter. Several house-hold items, such as a clock, filing cabinet and clothes hangers, were observed beneath the shade shelter.
- A steel shed constructed on a concrete slab was observed to the south of the existing residence, along the western boundary. An inspection of the shed internals indicated that it was used for the storage of general house-hold items. A lean-to shelter was constructed to the southern side of the shed, constructed from timber frames with compressed timber board used for wall and roof sheeting. The floor consisted of pavers. The lean-to was also used for general house-hold storage, with bicycles and a filing cabinet observed.
- The rear yard was predominantly grass covered with a few large trees and a few smaller trees observed. Children's play equipment (swing set, trampoline) were also observed within the rear yard. The grass covering, though not well maintained, did not appear significantly distressed, considering the canopy cover provided by the large trees.
- Within the front yard, a broken swinging chair was observed adjacent the front of the residence. Along the front boundary, an overgrown garden with timber boarding was present, as well as a large tree to the east of the residence.
- Within the grass cover of the front yard, a large barren patch was observed. Standing tyre marks along with wheel tracks were observed either side of the barren patch, indicating that the area was frequently used for car parking.

5.2 79 Trafalgar Street

- The allotment is bounded by steel fencing to the south and west, and semi-permanent chain-link security fencing along the northern and eastern perimeters.
- The allotment is accessed via a gated driveway (through the security perimeter fence) from Lawrence Street to the east of the allotment. The concrete driveway extends to within the rear yard to a vehicle parking area.
- A second kerb and gutter layback was observed along Trafalgar Street, located to the north-west of the allotment. No formal council cross-over was observed, though vehicle tracks and bare earth were observed, indicating that this layback and area was used for vehicular access and parking.
- The existing residence is located within the central-northern portion of the allotment and comprises a single-storey fibre-cement sheet cladded home, constructed on brick piers with timber floor joists. It is assumed that the frames of the residence are also timber. The existing residence was observed to be in good condition and well maintained. Based on the expected date of construction, STS consider it highly likely that asbestos is present within the fabrics of the building.
- A large concrete hardstand extends southerly from the rear of the existing residence, with two (2) paths extending to the end of the driveway and the pebblecrete built-in BBQ located in the approx. centre of the rear yard.
- To the west of the large concrete hardstand, a smaller concrete slab was observed, presumed to be location of a former shed-like structure.
- Within the south-western corner of the site, a paved area was observed, with a narrow garden containing a few larger shrubs and bushes adjacent the western boundary. To the east of this paved area, a second concrete hardstand with a 'zincalume' coated galvanised steel shed was observed.
- A garden with established plants and vegetation was noted extending the length of the western boundary (central fence between the two (2) allotments). During the inspection, it was noted that the grass and weeds were growing within the garden area, likely due to a lessened maintenance schedule as the property has been vacated.
- A few large scattered trees were observed within the rear yard, and all non-hardstand areas were grass-covered. Within the rear yard, no indications of vegetative distress were observed.
- Within the front and side yards, formed gardens bounded the existing residence and western boundary fence, with established bushes and shrubs observed. The vegetation did not appear distressed, though weeds and grasses were observed, likely due to less maintenance of the gardens since the property was vacated.

- The front and side yards were grass covered with minimal pedestrian concrete paths. A sewer main access was observed within the north-easternmost corner of the allotment. With the exception of a large barren patch within the centre of the front yard, the grass cover did not appear distressed. Vehicle tracks were observed from the barren patch leading to the kerb and gutter layback, indicating that the barren patch was related to the use of the area for car parking. It is noted that previous investigations confirmed the presence of vehicles parked within the front yard.

6. GEOLOGY

Reference to the 1:100,000 geological map of Sydney, sheet 9130, indicates that the site is underlain by Middle Triassic Age Ashfield Shale of the Wianamatta Group. Bedrock within this formation comprises black to dark grey shale and laminite.

Topsoil and filling comprised of silty CLAY, dark brown and silty sandy CLAY with sand, dark brown and dark grey to a maximum depth of 0.5 m below existing ground level (bgl). The fill soils across the site were underlain by native gravelly CLAY and silty CLAY, dark brown, orange brown and light grey. Boreholes BH104-BH107 were advanced to the underlying rock strata, comprising SHALE, orange brown, dark brown with light grey, with some clay seams, which was encountered at depths of between 1.1 m and 1.6 m bgl. The boreholes were terminated at a maximum depth of 2.5 m bgl.

Further, a review of the NSW Department of Land and Water Conservation (DLWC) 1:25,000 Acid Sulfate Soil (ASS) risk maps of Botany Bay (sheet 9130S3, edition 2) indicates the site is located within an area of no known occurrence of ASS. It is to be noted that the ASS risk maps are generally indicative and are not intended to be a confirmation of the presence (or absence) of ASS and/or potential ASS on a particular site.

7. HYDROGEOLOGY

Groundwater was not encountered in any of the boreholes advanced during the PSI and this investigation. A search of the NSW Office of Water groundwater database conducted in 2018 identified five (5) registered groundwater bores located within a 500 m radius of the site. The bores were registered for domestic purposes, though no drilling logs were available. The search was extended to a 1 km radius of the site, returning four (4) additional registered groundwater bores. The drilling logs for these bores (where available) indicated water bearing zones were encountered between 3.0 m and 8.8 m bgl within clay and shale strata.

Based on the observations made during the site investigation, a summary of the site hydrology is shown in Table 7.1 below.

Table 7.1 – Site Hydrogeology

Aquifer Type and Lithology:	Clays and Shale [1,2]
Perched groundwater:	Potentially present at the soil/bedrock interface [2]
Depth to Regional Aquifer at Site:	Expected to be in the order of approx. 3.0 m to 6.0 m below the ground surface [2]
Local Groundwater Flow Direction:	West-north-west, in alignment with natural land slope [2]
Regional Groundwater Flow Direction:	Generally westerly towards Salt Pan Creek.[2]
Receiving Environments:	An unnamed tributary creek located 660 m approx. west of the site, flowing into Salt Pan Creek, located 1 km approx. west-south-west of the site.

[1] Actual condition based on observations made during on-site drilling and sampling.
[2] Inferred conditions based on site/regional geology and geomorphology.

8. HYDROLOGY

The hardstand areas of the site are sealed with concrete and generally slope gently towards the north (within allotment 79 Trafalgar St) and east (within allotment 77 Trafalgar St). Stormwater is anticipated to flow towards street drainage along Trafalgar and Lawrence Streets to the north and east. It is anticipated that stormwater will discharge into an unnamed tributary creek of Salt Pan Creek, located 660 m approx. west of the site.

Within the grassed areas, water is anticipated to infiltrate through the unsealed surface and drain into underlying soils. In periods of heavy or extended rainfall, surface run-off would be anticipated to flow across the surface and ultimately into stormwater drainage along Trafalgar and Lawrence Streets.

9. SITE HISTORY

STS researched the following sources of historical information:

- Selected aerial photographs of the site and surrounds;
- Local Council Section 10.7 (formerly Section 149) planning certificates;
- Historical land titles; and
- NSW EPA register for listings of contaminated sites.

The site history is summarised in the following sections.

9.1 Aerial Photographs

STS undertook a review of historical aerial photographs in 2018. Photographs of the site and surrounds reviewed were dated; 1930, 1951, 1961, 1970, 1986, 1994, 2009 and 2016 were obtained from Land and Property Information (LPI) NSW.

The findings from the 2018 review are presented in Table 9.1 below. Copies of the selected aerial photographs are provided in Appendix B.

Table 9.1 – Aerial Photograph and Satellite Image Observations

Year	Site Features	Surrounding Land Use
1930	The site is vacant/undeveloped and scattered covered by mature trees (bushland).	The surrounding land is also vacant and undeveloped. The land to the north, west and south of the site appears to be covered by mature trees (bushland) whilst a portion of the land to the east appears to have been cleared of the majority of trees. Rural residential properties are present in further surrounding land and seems to be used for a mix of both residential and agricultural purposes. Possible orchards occupy the land further to the south of the site
1951	The site has been cleared of the majority of trees and developed for residential purposes. The site comprises two adjacent residential allotments (one at the west and one at the east) divided by a fence, with a house being located in each lot. Shed-like structures are visible in each backyard to the south of each house. The majority of land outside the built structure footprints appears predominantly grass covered, although small sections of hardstand (e.g., driveway or footpaths) are visible near the houses.	Main roads including Trafalgar Street, Jacques Avenue and Lawrence Street have been constructed. The majority of the land surrounding the site has been cleared off all vegetation and developed for low-density residential purposes although an area to the south-west of the site beyond Jacques Avenue remains undeveloped and covered by mature trees (bushland).
1961	The site remains essentially unchanged although it appears that a new shed has been west installed to the south-west of the house in the western allotment.	The land surrounding the site remains largely unchanged, although an increase in residential dwellings has occurred to the west of the site beyond Jacques Avenue.

Year	Site Features	Surrounding Land Use
1970	The site remains essentially unchanged although the shed previously installed to the south-west of the house in the western allotment (79 Trafalgar St) is not visible.	The land surrounding the site remains largely unchanged, although the vacant land to the south-west of the site beyond Jacques Avenue has been developed for residential purposes and a new increase in residential dwellings has occurred now further to the south-west beyond Arnold Street. The land further to the north-east of the site appears to be in the early stages of redevelopment for recreational purposes (Peakhurst Park).
1986	The site remains essentially unchanged although the house in the western allotment (79 Trafalgar St) appears to have been extended (or awnings installed) to the west and south-east. Scattered trees are present. Two (2) sheds previously present in the backyard of the eastern allotment (77 Trafalgar St) have been either removed or relocated, two sheds (2) are now visible near to the south-east and central-west portions of the allotment.	The land surrounding the site remains largely unchanged.
1994	The site remains essentially unchanged.	The land surrounding the site remains largely unchanged.
2009	The site remains essentially unchanged although significant vegetation regrowth has occurred in the backyard of the western allotment (79 Trafalgar St). The awning previously identified to the west of the house in the western allotment seems to have been removed.	The land surrounding the site to the north and east remains largely unchanged although the land to the south and north-west has been redeveloped/ refurbished (likely for medium density residential purposes).

Year	Site Features	Surrounding Land Use
2016	The site remains essentially unchanged. The density of vegetation (trees) in the backyard in the western allotment (79 Trafalgar St) obscured any change that may have occurred in this allotment.	The land surrounding the site to the south and north-west remains largely unchanged although the land to the north and east has been redeveloped/ refurbished. The land further to the north of the site has been recently redeveloped whilst the land further to the south of the site is in early stages of redevelopment for medium-density residential purposes.

9.2 Planning Certificate

A copy of the Planning Certificates for the site issued under Section 10.7 (formerly Section 149) obtained from Georges River Council, are presented in Appendix D. A review of the documents indicate that the site is not subjected to any notice or order within the meaning of the *Contaminated Land Management Act*. Further, the site had never been subjected to a Site Audit under the same *Act*.

9.3 Historical Title Search

STS undertook a historical title search for the site in 2018, with a summary of the findings presented in Table 9.2 below.

Copies of the historical land title records were obtained from the Land Titles Office and are presented in Appendix E.

Table 9.2 – Historical Land Title Summary

Period	Registered Owner/Occupant
August 1903 – November 1945	Frederick William Johnson, Baker
November 1945 – May 1952	The Council of the Municipality of Hurstville
May 1952 – Current (Present Owner)	The Housing Commission of New South Wales

9.4 NSW EPA Records

STS conducted a search of the NSW EPA contaminated land records and the POEO public register on the 28 August 2019. The following was noted:

- No EPA notices have been issued to the site or any other site within a 500 m radius under the CLM Act 1997.
- As of 01 August 2019, no sites within a 500 m radius of the site have been notified to the NSW EPA under Section 60 of the CLM Act 1997.
- A search for the suburb of "Peakhurst" for issued notices did not return any results. The NSW EPA contaminated land records did not allow for a search of Georges River LGA. As Georges River Council was formed by an amalgamation in 2016, a search of the former LGA (being Hurstville City Council) was conducted. The search of the Hurstville City Council LGA did not return any results for issued notices.
- No EPA licences have been issued to the site under the POEO Act 1997.

9.5 Anecdotal Information

During the 2018 site inspection, STS were advised by the current occupant of the 77 Trafalgar Street allotment that a shed of fibre-cement construction has previously existed within the western portion of the allotment. The shed had fallen approx. 3-4 months prior to STS inspection and had been removed due to the presence of asbestos within the building fabric.

9.6 Site History Summary

The historical information indicates that the site comprised vacant undeveloped land that may have been harvested for timber supplies until the 1950s when the site was developed for low-density residential land use. The development comprised the construction of a single-storey residence and shed-like structures within each allotment. The residential use of the and has continued until recently, with both residences now vacated, though the structures remain.

Minimal changes to the layout of the allotments were noted from the 1950s to 1986, when the residence in the western allotment (79 Trafalgar Street) was extended southerly, and additional hardstand areas laid in 2016. No other significant changes to the site configuration were noted since the 1950s.

10. CONCEPTUAL SITE MODEL

Based on the historical review and site inspection, a review of potential contaminant sources, receptors and exposure pathways are presented in Table 10.1.

Table 10.1 – Conceptual Site Model

Potential Contaminant Source	Location	Potential Contaminants of Concern	Potential Exposure Pathways	Potential Onsite Receptors	Potential Offsite Receptors
Historically imported fill for site levelling activities	Site-wide	Heavy metals, TRHs, BTEXN, PAHs, PCBs, OCPs, OPPs and asbestos.	Inadvertent ingestion, direct contact, dust inhalation, root uptake by vegetation and migration into underlying natural soils and aquifer.	Construction workers, intrusive maintenance workers, existing and future site occupants.	Occupants and visitors of neighbouring sites during the construction phase. Flora and fauna living within proximity to the site. Groundwater aquifer beneath and beyond the site, and Salt Pan Creek ecosystem.
Poor historic demolition practices onsite	Surface and near-surface soils around the former built structures	Asbestos and heavy metals			
Historical use of pesticides	Surface and near-surface soil around the existing structures and gardens	Heavy metals, OCPs and OPPs			
Weathering of built structures	Surface and near-surface soils around current and former built structures	Asbestos and heavy metals			

11. DATA QUALITY OBJECTIVES

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM) (updated April 2013) recommend that data quality objectives (DQOs) be implemented during the investigation of potentially contaminated sites. The DQO process described in NEPM (2013) outlines seven (7) distinct steps which are designed to ensure an investigation is performed in a structured and efficient manner. The seven (7) steps and the associated processes that were implemented to ensure data, hence decision-making is of quality, are outlined below:

Step 1 – State the Problem

The proposed development at the site involves the construction of a medium-density residential apartment complex comprising a 3-storey residential building constructed over a single-level basement car park. The building is to contain fifteen (15) residential units comprising three (3) 1-bedroom units and twelve (12) 2-bedroom units. Landscaping has been proposed around the perimeter of the development with the existing large trees within the south-west of the site to remain. Prior to this assessment there was insufficient data to assess whether in its current condition the site is suitable for the intended use.

Step 2 – Identify the Decision

Is the Site suitable for the proposed development?

If not, what additional investigation/remediation is required to make the Site suitable?

Will other media (groundwater, vapour) require assessment?

Step 3 – Identify Inputs to the Decision

To enable a decision regarding the contamination status of the site to be made, the following inputs were required:

- Historical review of information pertinent to the site;
- Data from the PSI;
- Soil sampling from additional locations distributed across the site;
- Analysis of selected samples for a broad screen of potential chemical contaminants; and
- Implementation of a quality assurance/quality control (QA/QC) programme.

Step 4 – Define the Study Boundaries

The assessment was undertaken within the boundaries of the site, which is the land at 77-79 Trafalgar Street, Peakhurst, NSW. The boundaries of the site are defined in Section 3 and are shown on Drawing No. 19/2236/2.

For this assessment, the vertical extent was beyond the base of the fill soils.

Step 5 – Develop a Decision Rule

A data validation assessment will be carried out for all data collected with respect to quality assurance and quality control (QA/QC) and conclude if the data collected is useable, partially useable with some limitations, or unusable in forming conclusions to the assessment.

For the assessment of site soils, the results of the laboratory analysis will be directly compared to the relevant EPA and NEPM endorsed criteria to determine whether any soil impacted by contaminants at the site are significant for the proposed land use.

In the event that the direct results of the laboratory analysis indicate that contaminants do not meet the relevant thresholds, the results of the laboratory analysis will be statistically assessed to determine the significance of the impact. This process will include comparing the upper confidence limit of the arithmetic mean of analyte concentrations (except for asbestos) from comparable soil profiles to the relevant EPA and NEPM endorsed criteria to determine whether concentrations of contaminants in the soil at the site are significant for the proposed land use.

For the statistical assessment of soils for contaminant levels (except for asbestos), the following requirements apply:

- The upper confidence limit of the arithmetic mean is to be assessed at a 95% confidence level;
- No single concentration within the data set is to be greater than 250% of the respective criterion; and
- The standard deviation of the data sent is to be no greater than 50% of the respective criterion.

In the event that the above criteria are not satisfied, further assessment of the data set will be required, and may include the isolation of contaminant hotspots, or other methods, as appropriate.

EPA guidance notes that the use of statistical analysis is not appropriate for the assessment of asbestos. Therefore, the detected concentrations of asbestos within the soils, if any, are to be compared to the relevant EPA and NEPM endorsed criteria directly.

Step 6 - Specify Limits on Decision Errors

We have assumed the following to be true in the absence of contrary evidence (i.e. the null hypothesis):

- Contamination at the Site currently pose a potential risk to human and environmental receptors.

The possibility exists of making the following decision errors based on the data obtained during this investigation:

- Type 1 error – Deciding the above null hypothesis is false, when it is true; or
- Type 2 error – Deciding the above null hypothesis is true, when it is false.

The consequence of making a Type 1 error is more detrimental as it can result in adverse consequences or may include material impact to human and environmental health. The consequence of making a Type 2 error may result in 'over-conservatism' and unnecessary expense of conceptual remediation options.

The potential for decision errors will be minimised by completing a robust QA/QC programme and by completing an investigation that has an appropriate sampling and analytical density for the purposes of the investigation.

Step 7 – Optimize the Design for Obtaining Data

The following was implemented to ensure data collected are sufficient and reliable to meet the project objectives:

- The site has an area of 1,352.7 m^2 and for a site of this area, the NSW EPA (1995) Sampling Design guidelines recommend a minimum of seven (7) locations across the site for site characterisation subject to the results of the Site history. For this assessment, a judgemental sampling strategy was selected to target soil from an additional four (4) locations to supplement the earlier testing in the PSI and meet the recommended minimum number of sample locations.
- Direct assessment of groundwater is not proposed at this stage and the need to assess groundwater or other media will depend on the results of the soil assessment.
- Store and transport soil samples in an appropriate manner to ensure sample integrity.
- Design an appropriate chemical analysis programme to screen selected soil samples for contaminants potentially present in the soil at the site based on STS site history review and site inspection.

12. FIELD INVESTIGATION

The field activities for the investigation were undertaken by STS on 12 September 2018 and 28 August 2019. The assessment was performed with reference to:

- EPA/OEH guidelines comprising:

  - *Contaminated Sites: Sampling Design Guidelines (1995)*;

  - *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (2011);

  - *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd Edition)* (2017); and

  - *Managing Asbestos in or on Soil (2014).*

- Guidelines issued under Schedule B of the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM), Environment Protection and Heritage Council (EPHC)/National Environment Protection Council (NEPC), December 1999 (and updated NEPM April 2013).

- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992 (ANZECC Guidelines).

- *Australian Standard 4482.1-2005: Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-volatile and Semi-Volatile Compounds, Standards Australia* (2 November 2005).

- *CRC Care Technical Report No. 10: Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater* (Friebel, E. & Nadebaum, P., 2011).

12.1 Soils

12.1.1 Soil sampling

A total of seven (7) boreholes were advanced during the PSI and DSI using a combination of 4x4-mounted drilling rig and hand auger. The boreholes were located at approximately equidistant locations to provide adequate coverage of the site to provide an understanding of the sub-surface ground conditions at the site.

Soil samples were recovered directly from the auger with care taken to not sample material that had been in direct contact with the auger. The sampled material was transferred into new clean glass jars and/or 500 ml plastic zip locked bags provided by the analytical laboratories. The depths of the soil samples were referenced to the existing surface level at the borehole locations.

All soil samples were recovered by a qualified environmental geologist. To minimise the potential for cross contamination to occur, new disposable latex gloves were used to recover each sample. Care was also taken to ensure that sampled material had not been in direct contact with the auger, to minimise potential cross contamination. Soil sample identifications and the description of the soil profiles encountered at each borehole are described on the log sheets presented in Appendix F. Borehole locations are shown on Drawing No. 19/2236/2.

12.1.2 Soil Sample Handling and Equipment Decontamination

As mentioned above, each soil sample was recovered using new disposable latex gloves, with care taken to ensure sampled material had not been in direct contact with the auger, to prevent cross contamination. Further, soil samples were recovered in glass jars with no headspace. The soil samples were not mixed to minimise the potential loss of volatile compounds from the soil matrix. The samples recovered were then placed in an ice-cooled container and transferred to the analytical laboratory for analysis under a "Chain of Custody" (COC). The COC detailed the requested analyses and was used to record the samples' history. A copy of the COC is presented in Appendix G.

The use of new disposable latex gloves and standard field procedures to ensure sampled material had not been in direct contact with the auger were considered adequate to minimise the potential for cross contamination to occur.

Further, the sampling auger was brushed clean of adhering soils between sampling locations.

12.1.3 Analytical Programme for Soil Samples

The selection of analytes was based on our review of the historical data and site inspection observations, along with EPA NSW and NEPM (2013) contaminated site assessment guidelines. Selected soil samples were analysed for both inorganic and organic contaminants.

The analytes included heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), monocyclic aromatic hydrocarbons (MAHs), polycyclic aromatic hydrocarbons (PAHs), total recoverable petroleum hydrocarbons (TRHs), organochlorine pesticides (OCPs), organophosphorus pesticides (OPPs), polychlorinated biphenyls (PCBs), phenolic compounds and asbestos.

The analytical programme is illustrated in greater details in the COC in Appendix G.

SGS and ALS Environmental (ALS), which are both NATA accredited analytical laboratories, were selected to complete the analytical programme. The primary soil samples collected in 2018 were analysed by ALS in Sydney, with the interlaboratory analysis conducted by ALS in Brisbane. Due to contractual arrangements, the primary soil samples collected in 2019 were analysed by SGS in Sydney, with the interlaboratory analysis conducted by ALS in Sydney.

13. QUALITY ASSURANCE PROGRAMME

In compliance with the NEPM (2013), compliance with data quality indicators (DQIs) (completeness, comparability, representativeness, precision and accuracy) was a key component of this investigation. The QA allows the assessment of the integrity of soil samples recovered during the site investigation and the accuracy of the laboratory analyses, thus the reliability of the analytical results. Hence the QA programme will ensure the overall representativeness and quality of the analytical data to characterise the condition of the site under investigation.

The QA procedures, actions and checks implemented during the investigation included:

- the utilisation of appropriate sampling methods in accordance with EPA requirements and NEPM (2013);
- appropriate sample handling and transportation, and analysis of samples within recommended analytical holding times;
- the collection and analysis of quality control (QC) samples;
- implementation of internal laboratory QC analyses; and
- the use of National Association of Testing Authorities (NATA) registered laboratory and analytical methods.

DQIs are presented in the following sections.

13.1 Quality Control Sampling

Inaccuracies in sampling and analytical programmes can result from many causes, including collection of unrepresentative and heterogeneous samples, cross-contamination between samples, unanticipated interferences between elements during laboratory analysis, equipment malfunctions and operator error. Inappropriate sampling, preservation, handling, storage and analytical techniques can also reduce the precision and accuracy of results.

A field-based QC programme was implemented, and the results were compared to accepted criteria to assess its effectiveness. NEPM (2013) has documented procedures for QC sampling and analysis to ensure that the required level of accuracy and precision is obtained.

NEPM (2013) and EPA guidelines recommend the use of two (2) analytical laboratories for the implementation of a field QC programme in addition to the internal QC procedures that are required to be followed by the laboratories in compliance to their NATA accreditation.

According to the NEPM (2013), the collection of intra and inter-laboratory duplicate samples are required, along with blank samples. Intra-laboratory and inter-laboratory duplicate samples are collected in the field from the same sample profile as primary samples and using the same procedures. Intra-laboratory samples are analysed by the primary laboratory and are used as a check on the precision of the sampling and analytical procedures.

Inter-laboratory samples are analysed by a secondary laboratory and provide a check of the accuracy of the analytical data.

Field blank samples include rinsate blanks and trip blank samples along with trip spike samples. Rinsate blanks are samples of water collected from field equipment after decontamination and are used to determine the effectiveness of the decontamination procedures. Trip blanks are samples of blank sand or water (as appropriate) prepared prior to sampling and are stored and transported with the samples. They are used to identify laboratory errors or to identify sources of contamination due to sample storage and handling. Trip spikes are samples of blank sand or water (as appropriate) that have been spiked with a known concentration of volatile compounds (commonly BTEX) which are prepared prior to sampling and are stored and transported with the samples. They are used to identify loss of volatile compounds due to sample storage and handling.

According to the NEPM a split of a minimum of 10% of the primary samples as field duplicate samples (5% inter-laboratory and 5% intra-laboratory) as well as blank samples is required. Where less than twenty (20) samples are to be analysed, a minimum of two (2) field duplicate samples (one (1) inter-laboratory and one (1) intra-laboratory sample) and a blank sample per sample matrix is generally considered sufficient. Blank samples are generally collected daily during the sampling period and analysed where necessary.

For this contamination assessment, the following field quality control samples were collected and analysed:

- Two (2) intra-laboratory duplicate soil samples;
- Two (2) inter-laboratory duplicate soil samples;
- one (1) trip spike sample;
- Two (2) trip blank samples; and
- One (1) rinsate blank sample.

As described in Section 12, STS place an emphasis on implementing robust field-based sampling collection/storage procedures. In view of the implemented sampling procedures and use of dedicated equipment for the direct handling of sampled soils, the collection and analysis of a rinsate sample for the 2019 sampling event was not considered necessary in this instance as part of the QC programme.

No trip spike sample was recovered during the 2018 sampling event, though was used in the 2019 event.

As the site history does not suggest the likelihood for volatile contaminants, STS considers that the accuracy and precision of the soil data used in this assessment has not been compromised.

13.2 Quality Control Criteria

The analytical results of each duplicate were compared with the results for the primary sample using Relative Percent Difference (RPD). The RPD is defined as the absolute difference between two (2) values divided by their mean.

Reference to AS 4482.1-2005 (and referenced in the NEPM) indicates that RPDs below 50% are considered to demonstrate a good correlation between duplicate sample results for inorganic species. However, the same standard indicates possible higher RPDs for organics. Based on STS experience, RPDs of up to 70% are considered acceptable for organic analytes. RPDs are not calculated when the analytical results for either the primary sample or the duplicate is less than the laboratory limits of reporting (LOR). RPDs of 100% or greater demonstrate a poor correlation, unless results are less than five (5) times the analytical laboratory LOR.

13.3 Laboratory Quality Control

A laboratory QC programme involves the preparation and analysis of their own duplicate samples, reagent blanks and control samples (where the analyte concentration is known) or matrix spikes. Duplicate samples are subjected to the same preparation and analytical procedures as primary samples. The laboratories are required to analyse matrix spikes or control samples at a minimum frequency of 5% of the total number of primary samples in each sample batch.

The results of method blanks, duplicates and control sample analyses are compared by the laboratory to established quality assurance criteria for data precision and accuracy. If the results do not meet the criteria, then the analyses should be repeated.

The relevant criteria are:

- method blanks should not return any positives on analysis;
- duplicate samples should not return results beyond the laboratory specified criteria; and
- laboratory control samples should generally give a recovery of 70-130% for inorganics and 60-140% for organics.

The laboratory QC programme implemented for this assessment involved the preparation and analysis of laboratory duplicates, method blanks, laboratory control spike and surrogate samples and matrix spike samples. The results of the laboratory quality control are documented in Appendix H. The data reported are considered of sufficient quality to enable an acceptable assessment of the contamination of the site.

14. ASSESSMENT CRITERIA

The *National Environmental Protection (Assessment of Site Contamination) Measure* (NEPM *1999*, 2013) is the key national guideline on the assessment and management of site contamination. NEPM (2013) guidelines are endorsed by the NSW EPA and the equivalent regulatory authorities in other Australian states.

The assessment criteria utilised for this investigation to determine the significance of the contaminant concentrations within the soil and groundwater at the site are detailed below in Sections 14.1 and 14.2.

14.1 Site Assessment Criteria for Soils

The key NEPM criteria for the assessment of soils comprise Health-Based Investigation Levels (HILs) and the Ecologically-Based Investigation Levels (EILs)/Environmental Screening Levels (ESLs). The HILs are threshold values that are indicative of potential adverse impacts to human health. EILs/ESLs are values that indicate potential phytotoxicity to plants and potential harm to other environment compartments.

EILs requires pH and Cation Exchange Capacity (CEC) data and in some cases the clay content of the soil. In the absence of pH and CEC data, EILs from NEPM (1999) are considered as screening levels for the evaluation of potential adverse (phytotoxic) impacts to vegetation.

In addition, the NEPM (2013) outlines criteria for key volatile hydrocarbon compounds which are designed to be protective of human-health via a soil vapour inhalation exposure pathway, the “Health Screening Levels” (HSLs).

Four (4) classes of HIL are described in the NEPM (2013) to assess the risks posed by site contamination for different land use settings. These include:

HIL Residential A: for a 'standard' residential land use with garden and accessible soil, including children's day care centres, preschools and primary schools;

HIL Residential B: for a residential land use with minimal opportunities for soil access, including properties with fully and permanently paved yard space such as high-rise apartment buildings and flats;

HIL Recreational C: for public open spaces, such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths, but excluding undeveloped public open space; and

HIL Commercial/Industrial D: for a commercial/industrial land use such as shops, offices, factories and industrial sites.

The HSLs outlined in the NEPM also include thresholds for the different land use settings as defined above, however, a combined set of criteria is provided that is to be applied for both Residential A and B land use settings.

Regarding the EILs and ESLs, criteria are provided for three (3) categories of land uses including a) areas of ecological significance, b) urban residential and public open space, and c) commercial/industrial.

The NEPM (2013) also outlines 'management limits' for petroleum hydrocarbons in soil which are designed to be thresholds which minimise the potential for light non-aqueous phase liquids (LNAPL) formation, fire and explosive hazards and penetration/damage to below ground infrastructure by hydrocarbons. These criteria are considered key when evaluating immediate impacts to human-health and the environment and long-term potential impacts associated with the on-site containment of contamination.

It is noted that the NEPM HILs do not include criteria for petroleum hydrocarbons for direct contact, however, CRC Care's *Technical Report No. 10: Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater* (Friebel and Nadebaum, 2011) does provide health-based screening levels for key petroleum hydrocarbons based on the direct contact with soil which may be used as alternative screening criteria. The 1999 NEPM also provides threshold HIL values for petroleum hydrocarbon fractions that may be adopted provided that speciation testing is undertaken for specific aromatic and aliphatic components.

Where a proposed land use includes more than one (1) land use category (e.g. mixed residential/commercial development) the criteria which are protective of the most sensitive of the combined land uses should be adopted.

Reference to the architectural drawings indicate that the proposed redevelopment involves the construction of a medium-density residential apartment complex comprising a 3-storey residential building constructed over a single-level basement car park.

The building is to contain fifteen (15) residential units comprising three (3) 1-bedroom units and twelve (12) 2-bedroom units. Landscaping has been proposed around the perimeter of the development with the existing large trees within the south-west of the site to remain.

In view of the proposed development, NEPM (2013) HIL-B/HSL-B criteria are considered appropriate to assess the human health risk associated to potential exposure to contaminants. With regards to the HSLs management limits, criteria applicable for clay have been used, since materials encountered at the site was predominantly clayey textured soils.

As the development includes limited landscaped areas, the NEPM EILs and ESLs have been adopted to evaluate the potential for adverse impacts to plants and the general environment within these zones. Due to the inclusion of landscaping areas around the perimeter of the basement excavation, and that some existing trees are to remain, site-specific EILs have been calculated using the Ecological Investigation Level Calculation Spreadsheet developed by the CSIRO for the National Environment Protection Council (NEPC), and is included within the NEPM (2013) toolbox. The site-specific EILS are presented in further detail within Table D.

When considering the appropriate site-specific EILs to be adopted, consideration was given to the predominant encountered soil profile as well as the depth of analysed soils, as the NEPM (2013) indicates that EILs are generally applicable only to a depth of 2 m bgl.

Where the NEPM (2013) does not provide generic EILs, and no site-specific EILs were generated, the 1999 NEPM EILs have been adopted.

In addition, the background ranges for contaminants in Australian soils outlined in the 1999 NEPM have been considered.

The criteria adopted for this investigation are outlined in Tables 14.1 - Tables 14.2 below.

Table 14.1 – Site soil assessment criteria for inorganic contaminants

Contaminant	NEPM 2013 HIL B [(1)] / HSL (Residential A & B) [(2)]	NEPM 2013 EIL/ESL (Urban Residential and Public Open Space) [(3)]	CRC CARE 2011 HSL-B Direct Soil Contact [(4)]	NEPM 2013 Management Limits (Residential, Parkland & Public Open Space) [(5)]
Metals				
Arsenic	500	100 (b), (h)	-	-
Cadmium	150	3 (c)	-	-
Chromium	500 (l)	610 (a), (n)	-	-
Copper	30,000	170 (o), 80 (p), 30 (q), (a)	-	-
Lead	1,200	1,100 (b), (h)	-	-
Mercury	120 (m)	1 (c), (m)	-	-
Nickel	1,200	320 (o), 220 (p), 35 (q), (a)	-	-
Zinc	60,000	390 (o), 210 (p), 140 (q), (a)	-	-
Asbestos				
Visible asbestos	No visible at surface			
Friable Asbestos	0.001% w/w	-	-	-

Notes: *All criteria in mg/kg concentrations unless otherwise specified*

(1) NEPM (2013) – Schedule B1 – HILs for Soil Contaminants – Residential B - Table 1A (1).
(2) NEPM (2013) – Schedule B1 – HSLs for Vapour Intrusion – HSL A & B Low/High Density Residential -Table 1A (3.)
(3) NEPM (2013) – Schedule B1 – Soil EILs and ESLs – Urban Residential and Public Open Space – Tables 1B (5) and 1B (6).
(4) CRC CARE (2011) – Technical Report No. 10 – Soil HSLs for Direct Contact – HSL B High Density Residential – Table B4.
(5) NEPM (2013) – Schedule B1 – Management Limits for TRH Fractions F1-F4 in Soil – Table 1B (7).
(a) NEPM 2013 site-specific EIL.
(b) NEPM 2013 generic EIL.
(c) NEPM 1999 EIL used where no generic NEPM 2013 criteria are available
(d) F1 TRH = TRH (C_6-C_{10}) minus BTEX fraction.
(e) F2 TRH = TRH (C_{10}-C_{16}) minus naphthalene fraction.
(f) NEPM 2013 HSL criterion for vapour intrusion, 0m to <1m depth in clay.
(g) Criterion for fine texture grade soils.
(h) Criterion for 'aged' contamination.
(i) Insufficient data available to calculate 'aged' contamination. Consequently, the values for fresh contamination should be used.
(j) Criterion for DDT.
(k) NL= Contaminant is not considered to pose a risk to human health through vapour inhalation regardless the concentration.
(l) Criterion for chromium VI.
(m) Criterion for inorganic mercury.
(n) Criterion for chromium III.
(o) Criterion for silty clay filling soils.
(p) Criterion for natural gravelly/silty/sandy clay soils.
(q) Criterion for weathered shales.

Table 14.2 – Site soil assessment criteria for organics contaminants

Contaminant	NEPM 2013 HIL B [1] / HSL (Residential A & B) [2]	NEPM 2013 EIL/ESL (Urban Residential and Public Open Space) [3]	CRC CARE 2011 HSL-B Direct Soil Contact [4]	NEPM 2013 Management Limits Residential, Parkland & Public Open Space) [5]
Total Recoverable Hydrocarbons				
TRH (C_6-C_{10})	-	-	-	800 (g)
TRH (C_{10}-C_{16})	-	120	-	1,000 (g)
F1 TRH (C_6-C_{10}) (d)	50 (f)	180	5,600	-
F2 TRH (C_{10}-C_{16}) (e)	280 (f)	-	4,200	-
F3 TRH (C_{16}-C_{34})	-	1,300 (g)	5,800	3,500 (g)
F4 TRH (C_{34}-C_{40})	-	5,600 (g)	8,100	10,000 (g)
TRH (C_{10}-C_{40})	-	-	-	-
Volatile Organic Compounds				
Benzene	0.7 (f)	65 (g)	140	-
Toluene	480 (f)	105 (g)	21,000	-
Ethylbenzene	NL (f), (k)	125 (g)	5,900	-
Xylenes	110 (f)	45 (g)	17,000	-
Naphthalene	5 (f)	170 (b), (i)	2,200	-
Polycyclic Aromatic Hydrocarbons				
Carcinogenic PAHs	4	-	-	-
B(a)P	-	0.7 (g)	-	-
Total PAHs	400	-	-	-
Organochlorine Pesticides				
DDT+DDD+ DDE	600	180 (b), (j)	-	-
Aldrin + Dieldrin	10	-	-	-
Chlordane	90	-	-	-
Endosulfan	400	-	-	-
Endrin	20	-	-	-
Heptachlor	10	-	-	-
HCB	15	-	-	-
Methoxychlor	500	-	-	-
Mirex	20	-	-	-
Other Pesticides				
Chlorpyrifos	340	-	-	-
Phenolic Compounds				
Phenol	45,000	-	-	-
Pentachlorophenol	130	-	-	-
Cresols	4,700	-	-	-

Contaminant	NEPM 2013 HIL B [1] / HSL (Residential A & B) [2]	NEPM 2013 EIL/ESL (Urban Residential and Public Open Space) [3]	CRC CARE 2011 HSL-B Direct Soil Contact [4]	NEPM 2013 Management Limits Residential, Parkland & Public Open Space) [5]
Other Organics				
PCBs	1	-	-	-

Notes: *All criteria in mg/kg concentrations unless otherwise specified*

[1] NEPM (2013) – Schedule B1 – HILs for Soil Contaminants – Residential B - Table 1A (1).
[2] NEPM (2013) – Schedule B1 – HSLs for Vapour Intrusion – HSL A & B Low/High Density Residential -Table 1A (3.)
[3] NEPM (2013) – Schedule B1 – Soil EILs and ESLs – Urban Residential and Public Open Space – Tables 1B (5) and 1B (6).
[4] CRC CARE (2011) – Technical Report No. 10 – Soil HSLs for Direct Contact – HSL B High Density Residential – Table B4.
[5] NEPM (2013) – Schedule B1 – Management Limits for TRH Fractions F1-F4 in Soil – Table 1B (7).
(a) NEPM 2013 site-specific EIL.
(b) NEPM 2013 generic EIL.
(c) NEPM 1999 EIL used where no generic NEPM 2013 criteria are available
(d) F1 TRH = TRH (C_6-C_{10}) minus BTEX fraction.
(e) F2 TRH = TRH (C_{10}-C_{16}) minus naphthalene fraction.
(f) NEPM 2013 HSL criterion for vapour intrusion, 0m to <1m depth in clay.
(g) Criterion for fine texture grade soils.
(h) Criterion for 'aged' contamination.
(i) Insufficient data available to calculate 'aged' contamination. Consequently, the values for fresh contamination should be used.
(j) Criterion for DDT.
(k) NL= Contaminant is not considered to pose a risk to human health through vapour inhalation regardless the concentration.
(l) Criterion for chromium VI.
(m) Criterion for inorganic mercury.
(n) Criterion for chromium III.
(o) Criterion for silty clay filling soils.
(p) Criterion for natural gravelly/silty/sandy clay soils.
(q) Criterion for weathered shales.

15. ANALYTICAL RESULTS AND INTERPRETATION

The analytical results for the soil samples are presented in the NATA-endorsed laboratory reports included in Appendix K and are summarised in the Table of Results (Table A) attached to this report. The analytical results exceeding the assessment criteria are highlighted in the tables accordingly.

15.1 Human Health Risk Interpretation of Soil Sampling Results

The analytical results for the soil samples recovered from the site show that the concentrations of chemical contaminants measured in the soils on the site meet the NEPM HIL/HSL-B criteria, the CRC Care HSL-B criteria and the NEPM management limits for residential, parklands and public open space land use.

No concentrations of BTEX, MAH, TRH F1, OPP, PCB, phenolic compounds or asbestos were detected above the LOR within the analysed soil samples.

15.2 Environmental Risk Interpretation of Soil Sampling Results

The analytical results for the soil samples recovered from the site show that with the exception of cadmium, zinc and TRH (C_{10}-C_{16}) (TRH F2), the concentrations of chemical contaminants measured in the soils on the site meet the EIL/ESL criteria for urban residential and public open space land use.

The concentrations of TRH F2 in soil sample S7 (230 mg/kg) and cadmium in soil sample S9 (4.8 mg/kg) did not meet the NEPM EIL/ESL thresholds of 120 mg/kg and 3 mg/kg respectively. The concentration of zinc in soil sample S9 (580 mg/kg) did not meet the site-specific EIL threshold of 390 mg/kg.

Once the data was categorised based upon the soil composition, the data set was not of a suitable size to produce meaningful statistical analysis. Therefore, the raw data was used for this assessment.

15.3 Potential of Groundwater Impacts

As outlined in Sections 15.1 and 15.2, the concentrations of chemical contaminants are generally low and meet the respective human health-based investigation thresholds, however, isolated concentrations of TRH F2, cadmium and zinc within the surface soils did not meet the respective ecological investigation thresholds. It is noted that the concentrations of chemical contaminants generally decreased with depth, and that the clay soil stratum beneath the site would likely impede downward migration of contaminants.

Furthermore, no point sources of contamination were identified within the site during the investigations. As such, the soils within the site are not considered to present a source of contamination.

Therefore, it is considered unlikely that the site presents a source of unacceptable groundwater impacts.

15.4 Potential for Off-Site Migration of Contamination

The concentrations of contaminants within the soils at the site are generally low, and the site is not considered to present a source of contamination. Further, as the site is predominantly covered with vegetation and hardstands (driveways, concrete slabs) limiting the potential for soils to be mobilised as a result of surface runoff or wind action, offsite migration of chemically impacted soils us unlikely to have occurred.

As outlined in Section 15.3, the site is not expected to be a source of groundwater impacts that may present an unacceptable risk to off-site receptors.

15.5 Duty to Report Site Contamination

Under the provisions of the *Contaminated Land Management Act 1997* (CLM Act), a site owner or occupant has a duty to notify EPA of any significant contamination that has the potential to cause human-health or environmental impacts. The requirements for reporting contamination are outlined in EPA's (2015) *Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act 1997*. This guideline outlines the specific triggers which need to be considered regarding soil, groundwater and soil vapour for notifiable contamination under the CLM Act. it should be noted that the Duty to Report Guidelines also provide a list of situations which though exceed the trigger notifications, are not intended to be captured within the duty to report, such as the presence of bonded or naturally occurring asbestos on or in site soils, regardless of the concentration.

For soil, the notification thresholds are the HILs and soil based HSLs, which are outlined in Schedule B1 of *the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999* (NEPC 2013). Where contaminants in the soils on a particular site exceed their HIL criteria by more than 2.5 times in any one (1) sample or where the average concentrations (i.e. 95% upper confidence limits of the arithmetic means of the contaminant concentrations) of contaminants in soil exceed the applicable HILs, **and** where foreseeable exposure pathways exist or have previously existed, EPA must be notified. The Duty to Report Guidelines also apply the specific criteria for asbestos in soil that are provided in the NEPM, these being that notification would be required where friable asbestos from anthropogenic sources is present in the soil at a weight-based percentage which exceeds 0.001%. In addition, where a particular site is the source of contamination which results in the above being realised on adjacent land, EPA must also be notified.

It should be noted that the Duty to Report Guidelines do not define notification thresholds for all contaminants. EPA has advised that where no criteria are listed, the need to submit a notification (or otherwise) should be based on advice provided by an environmental consultant.

15.6 Appraisal of Duty to Report Requirements

The results of the soil sampling performed for this investigation show that the concentrations of contaminants measured in the soil samples do not exceed the applicable thresholds for notification to the NSW EPA. Therefore, we consider there would be no need to notify the NSW EPA based on currently available data.

16. HUMAN HEALTH AND ENVIRONMENTAL RISK ANALYSIS

The key potential exposure pathways by which human-health could be affected by soil and groundwater impacts include dermal contact, ingestion and inhalation. Further, both plant health and the environment generally should be protected. An appraisal of the potential risks to human-health and environmental receptors is provided below.

16.1 Dermal contact and Ingestion Exposure Pathways

The analytical results show that the concentrations of chemical contaminants in all samples analysed meet the respective threshold criteria which are protective of human health in a medium-density residential land-use setting. Therefore, the soils within the site are not considered to present an unacceptable human health risk via dermal contact or ingestion exposure pathways provided the development is in accordance with the proposed architectural drawings.

16.2 Inhalation Exposure Pathways

The analytical results show that the concentrations of chemical contaminants in all soil samples analysed meet the respective assessment criteria which are protective of human health via a vapour intrusion pathway in a medium-density residential setting. Further, no asbestos fibres were detected within the soil samples, as outlined in Section 15.1.

Therefore, the soils within the site are not considered to present an unacceptable human health risk via inhalation exposure pathways provided the development is in accordance with the proposed architectural drawings.

It is noted that the residences currently within the site are considered likely to contain ACM within the building fabrics. The demolition, removal and subsequent clean-up of these buildings and their footprints will be required to be undertaken by suitably licensed contractors and in accordance with the current relevant guidance such as SafeWork NSW, codes of practice and standards including relevant clearances.

16.3 Potential Risk to Terrestrial Environments

As outlined in Section 15.2, the concentration of TRH F2 in soil sample S7 (230 mg/kg), cadmium in soil sample S9 (4.8 mg/kg) and zinc in soil sample S9 (580 mg/kg) did not meet the respective EIL/ESL thresholds applicable to the site. Soil samples S7 (BH103) and S9 (BH104) relate to silty clay and topsoil fill soils at a depth of 0.2m bgl approx. located within the south-western portion of the site. It is noted that fill soils within BH103 and BH104 extend to a depth of 0.25 m bgl and 0.4 m bgl respectively.

STS notes that the concentrations of contaminants within the underlying natural silty clays met the respective thresholds that are protective of ecological receptors.

Based on the provided architectural drawings, BH103 and BH104 are located within the proposed landscaping area. It is noted that the existing large trees within this area are to remain undisturbed. Within this area, minor distress of grass cover was observed though was not considered to be significant and appeared to be consistent with the surrounding area (beyond the site boundaries) where considerable canopy cover was observed. Therefore, the minor vegetative distress was considered to likely be attributed to the canopy cover shielding the sunlight rather than from chemical contaminants within the soils.

Based on the analytical results, it is considered that the exposure risk is limited to planting within the proposed landscape zone within the south-western portion of the site, specifically within the upper topsoil and filling soil profiles.

Though there are limited exceedances of the ecological protection thresholds, STS consider that based on the proposed development, the site is unlikely to present an unacceptable risk to on-site ecological receptors for the following reasons:

- The concentrations detected were relatively low, with the highest detected concentrations being <250% of the respective ecological protection thresholds;
- The existing vegetation within the impacted area appears in similar health to other local vegetation in the general vicinity of the site;
- The existing vegetation within the impacted area is to be retained within the proposed development. The provided architectural drawings do not indicate any additional vegetation within this area;
- Localised excavation of the upper topsoil and fill soil profiles within close-proximity of the existing mature trees (which are proposed to be retained) may adversely impact their health;
- The majority of the site will be subjected to bulk excavation for the construction of the basement, resulting in a small area of potentially impacted soils to remain on-site.

Should the proposed landscape design change, specialist advice regarding the selection of vegetation species should be sought, and remedial actions may be warranted.

16.4 Risk to Aquatic Environments

As elaborated in Section 15.3, the site is not likely to be a source of unacceptable groundwater impacts. As such, unacceptable impacts to down-gradient aquatic environments emanating from on-site sources are considered unlikely to occur.

16.5 Assessment Outcomes

Based on the results of this investigation, the site does not present an unacceptable risk to human-health for the proposed development. A localised unacceptable risk to ecological

receptors, specifically onsite vegetation within the landscaping area located within the south-west of the site, is considered to exist. This risk may be mitigated by localised excavation of topsoil and filling soils and confirmation of residual concentrations via validation sampling.

17. EVALUATION OF QUALITY ASSURANCE

17.1 Field Quality Sample Results

The analytical results of the field intra-laboratory and inter-laboratory duplicate samples are compared to those of the corresponding primary samples, presented in Table B. The results of rinsate, trip spike and blank samples are presented in Table C.

The results show that the variations between the primary and duplicate sample concentrations were generally within the allowable Relative Percentage Difference (RPD) criterion of 50% for inorganic analytes and 70% for organic analytes. However, RPDs of 53% to 108% were calculated for arsenic, copper and nickel. The RPD exceedances for arsenic and copper were likely attributable to localised variation within the sampled soils, whilst the RPD exceedance for nickel was exacerbated due to the low concentrations recorded.

The results show that the trip spike samples for soil produced spike recoveries within the acceptable range of 70% - 130%, whilst the rinsate and trip blank samples for soil did not return any contaminant concentrations above the LOR.

Therefore, the reported data is considered adequate to be used to characterise the site.

17.2 Laboratory Quality Control Programme

Our review of the laboratory's internal QC programme for soil has shown that except for one (1) internal duplicate sample, seven (7) matrix spike recoveries and four (4) surrogate recoveries, all laboratory blanks, internal duplicate samples, laboratory control samples, matrix spike recoveries, and surrogate recovery standards were within the analytical laboratories' recommended range for acceptable reproducibility. Three (3) of the matrix spike recoveries were attributed to interference within the soil samples, whilst within the four (4) surrogate recoveries, two thirds (⅔) of the surrogates were recovered within the acceptance criteria.

No further information regarding the internal duplicate sample and the remaining four (4) matrix spike recovery failures was provided by the laboratories.

Overall, STS consider the laboratory data obtained in the sampling programme to be of acceptable precision, accuracy and reliability and representative of the site conditions encountered.

17.3 Procedure-Based Quality Control

An appraisal of the key procedure-based quality control aspects of the investigation are summarised in Table 17.1 below.

Table 17 .1 Appraisal of procedure-based quality control

Item	Compliance	Reference/Comments
Appropriate sampling methods adopted?	Yes	Refer to Section 12.1.1
Appropriate sample handling and transportation procedures implemented?	Yes	Refer to Section 12.1.2 and COC documentation in Appendix G
Samples analysed within recommended laboratory holding times?	No	The trip blank sample for the 2018 sampling event was extracted and analysed twelve (12) days beyond the holding time recommended by ALS. The primary samples were extracted and analysed within the recommended holding time and did not record concentrations of volatile compounds and short-chain hydrocarbons, indicating the delay in analysing the trip blank sample would not significantly impact upon the usability of the data. All other samples were analysed within the recommended holding times. Refer to COC documentation in Appendix G and laboratory reports in Appendix H
NATA-accredited laboratory testing methods used	Yes	Refer to laboratory reports in Appendix H

18. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this investigation the following conclusions and recommendations are made:

- The historical information indicates that the site comprised vacant undeveloped land that may have been harvested for timber supplies until the 1950s when the site was developed for low-density residential land use. The development comprised the construction of a residence and shed-like structures within each allotment. The residential use of the site has continued to date.
- Based on the site history, the potential contaminating activities identified included historic site filling for levelling purposes and pesticide use, weathering of former building structures and historical demolition of structures likely to contain asbestos.
- Results of the soil sampling have shown that the concentrations of chemical contaminants in the soil across the site would not pose an unacceptable risk to human health for a medium-density residential land-use.
- A localised area of topsoil and near-surface fill soils within the vicinity of BH103 and BH104 (south-western corner of the site) showed impact by TRH F2, cadmium and zinc at concentrations that would potentially pose a risk to onsite ecological receptors. The location of these soils appears to be within the proposed landscaping area, with the large existing trees proposed to be retained throughout the development.
- Though there are limited exceedances of the ecological protection thresholds, STS consider that based on the proposed development plans, the site is unlikely to present an unacceptable risk to on-site ecological receptors as the detected concentrations of contaminants were relatively low and the vegetation within the impacted area appeared to be of similar health to other local vegetation within the general vicinity of the site.
- Based on the findings of this investigation, STS consider that the site is suitable for the proposed medium-density residential development provided that the development (including landscaping) is constructed in accordance with the proposed architectural drawings. Should the proposed landscape design change, specialist advice regarding the selection of vegetation species should be sought, and remedial actions may be warranted.
- Due to the presence of fibre-cement sheeting within the building fabrics of some structures on-site, a hazmat survey should be undertaken prior to their demolition. Recommendations in the hazmat report should include safe management and removal of all ACM from the site in accordance with the current relevant guidance such as SafeWork NSW, codes of practice and standards including relevant clearances.

- A clearance certificate should be issued once all hazardous materials are removed prior to demolition taking place including the removal of any loose fragments that may be near the structures from previous damage. A final clearance certificate should be issued post-demolition to ensure there is no ACM remaining on the ground surface.

- STS recommend due care during the construction phase of the development and especially for intrusive work activities, by way of implementation of an Unexpected Finds Protocol (UFP) upon construction commencement. In the event potentially contaminated soil, that is, materials suspected to contain asbestos, buried waste, materials with offensive odours and hydrocarbon stained soils are encountered within an area of the site, all work activities in that area should cease. Access to the area should be prohibited until a suitably qualified consultant advises on the need for investigation, remediation or any other action deemed appropriate.

19. LIMITATIONS

STS GeoEnvironmental Pty Ltd has performed its services for this project in accordance with its current professional standards. Laboratory analyses were undertaken as part of this investigation by SGS Australia and ALS Environmental, who are NATA-accredited for the analyses performed.

When assessing the extent of contamination across a site from a soil and groundwater sampling programme there is the possibility that variations may occur between sample locations and the actual presence of contaminated material at the site may differ from that referred to herein, since no sampling programme, no matter how comprehensive, can reveal all anomalies and hot spots that may be present.

STS assumed that data/information provided by a third party which STS have used in generating this report are accurate, true and complete. The verification of the data/information provided by a third party does not form part of this DSI.

The data collected has been used to form an opinion about land contamination with regard to the construction of a medium-density residential apartment complex comprising a 3-storey residential building constructed over a single-level basement car park. The building is to contain fifteen (15) residential units comprising three (3) 1-bedroom units and twelve (12) 2-bedroom units. Landscaping has been proposed around the perimeter of the development with the existing large trees within the south-west of the site to remain. If the nature of the proposed land use changes, the conclusions given in this report may need to be revised. Also, regulatory evaluation criteria are constantly changing and as a consequence, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards which could alter the outcome of this investigation. Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

This report does not provide information on hazardous building materials in structures or subsurface utilities or waste classification.

This document and the information herein have been prepared solely for the use of NSW Land and Housing Corporation for the purposes nominated in this report. No person or organisation other than of NSW land and Housing Corporation are entitled to rely on any part of the report without the prior written consent of STS GeoEnvironmental Pty Ltd. Any third party relying on this report shall have no legal recourse against STS GeoEnvironmental Pty Ltd or its parent organisations or subsidiaries and shall indemnify and defend them from all and against all claims arising out of, or in conjunction with such use or reliance.

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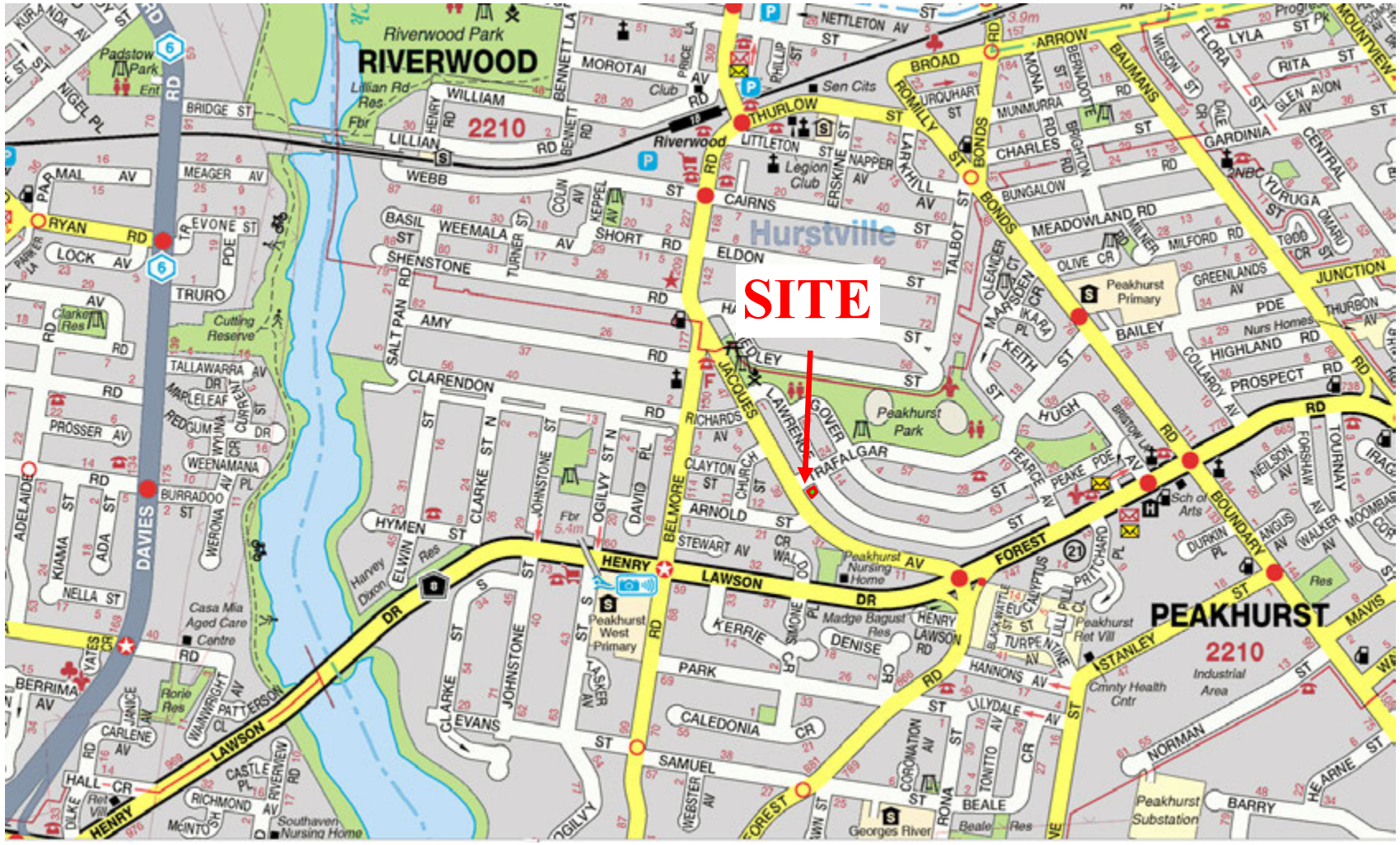
FIGURES



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STS GEOENVIRONMENTAL PTY LTD	Scale:1:16000 (at A4)	Date: August 2019
CLIENT: NSW Land and Housing Corporation		
DETAILED SITE INVESTIGATION **Land at 77-79 Trafalgar Street, Peakhurst, NSW: Site Location**		Project No.: 10530 (2984B)/2365D-E Drawing No: 19/2236/1

Imagery Source: Six Maps

Legend

- Boundary of Site
- BH101 Borehole Location (2018 STS PSI)
- BH104 Borehole Location (2019 STS DSI)

A - Single Storey Fibro House
B - Metal/ Fibro Shed
C - Single Storey Fibro House
D - Metal Shed

STS GEOENVIRONMENTAL PTY LTD	Scale: 1:600 (at A4)	Date: September 2019
CLIENT: NSW Land and Housing Corporation		
DETAILED SITE INVESTIGATION **Land at 77-79 Trafalgar Street, Peakhurst, NSW: Plan Showing Site Features and Soil Sampling Locations**	Project No.:10530 (2984B)/2365D	Drawing No: 19/2236/2

N

Imagery Source: Six Maps

Legend

- Boundary of Site
- BH101 Borehole Location (2018 STS PSI)
- BH104 Borehole Location (2019 STS DSI)

A - Single Storey Fibro House
B - Metal/ Fibro Shed
C - Single Storey Fibro House
D - Metal Shed

STS GEOENVIRONMENTAL PTY LTD	Scale: 1:600 (at A4)	Date: September 2019
CLIENT: NSW Land and Housing Corporation		
DETAILED SITE INVESTIGATION Land at 77-79 Trafalgar Street, Peakhurst, NSW: Plan Showing Locations of Ecological Threshold Exceedances		Project No.:10530 (2984B)/2365D Drawing No: 19/2236/3

TABLES OF RESULTS

Table A Analytical Results for Primary Soil Samples

Analytes	Borehole No.	BH101	BH101	BH102	BH102	BH103	BH103	BH104	BH104	NEPM Background Ranges	NEPM 2013 HIL Residential B/ HSL A&B (Low-High Density Residential)	NEPM 2013 EILs/ ESLs (Urban Residential and Public Open Space)	CRC CARE 2011 HSL-B Residential (High Density) Direct Contact	NEPM 2013 Management Limits (Residential, Parkland & Public Open Space)
	Sample No.	S1	S4	S5	S6	S7	S8	S9	S10					
	Sample Depth (m)	0.2	0.5	0.2	0.3	0.2	0.3	0.2	0.5					
	Type of Soil	Silty Clay	Gravelly Clay	Silty Clay	Silty Clay	Silty Clay	Gravelly Clay	Silty Clay	Silty Clay					
	Strata	Fill	Natural	Fill	Old Top Soil	Fill	Natural	Topsoil/Fill	Natural					
	Sample Date	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	28-Aug-19	28-Aug-19					
Metals														
Arsenic		**8**	**8**	**11**	**10**	**47**	**32**	**78**	**70** [3]	1-50	500	100 (b), (h)		
Cadmium		<1	<1	<1	<1	<1	<1	**4.8**	**0.4**	1	150	3 (c)		
Chromium		**15**	**13**	**10**	**12**	**17**	**17**	**20**	**13**	5-1000	500 (l)	610 (a), (n)		
Copper		**76**	**64**	**15**	**17**	**47**	**29**	**50**	**57**	2-100	30,000	170 (o), 80 (p), 30 (q) (a)		
Lead		**96**	**48**	**36**	**25**	**137**	**84**	**150**	**26**	2-200	1,200	1,100 (b), (h)		
Mercury		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.14**	<0.05	0.03 (a)	120 (m)	1 (c), (m)		
Nickel		**12**	**8**	**7**	**6**	**23**	**8**	**8.1**	**5** [3]	5-500	1,200	320 (o), 220 (p), 35 (q) (a)		
Zinc		**194**	**81**	**23**	**16**	**378**	**161**	**580**	**110**	10-300	60,000	390 (o), 210 (p), 140 (q) (a)		
Monocyclic Aromatic Hydrocarbons (MAHs)														
Benzene		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1		0.7 (f)	65 (g)	140	
Toluene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1		480 (f)	105 (g)	21,000	
Ethylbenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1		NL (f), (k)	125 (g)	5,900	
Xylenes		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	<0.3		110 (f)	45 (g)	17,000	
Napthalene		<1	<1	<1	<1	<1	<1	<0.1	<0.1		5 (f)	170 (b), (i)	2,200	
Total MAHs above detection limits		ND	ND	ND	ND	ND	ND	ND	ND					
Total Petroleum Hydrocarbons (TPHs)														
Total C_6-C_{10}		<10	<10	<10	<10	<10	<10	<25	<25					800 (g)
Total C_{10}-C_{16}		<50	<50	<50	<50	**230**	<50	<25	<25			120		1,000 (g)
F1 C_6-C_{10} [1] (d)		<10	<10	<10	<10	<10	<10	<25	<25		50 (f)	180	5,600	
F2 C_{10}-C_{16} [1] (e)		<50	<50	<50	<50	**230**	<50	<25	<25		280 (f)		4,200	
F3 >C_{16}-C_{34}		<100	<100	<100	<100	**950**	<100	<90	<90			1,300 (g)	5,800	3,500 (g)
F4 >C_{34}-C_{40}		<100	<100	<100	<100	**410**	<100	<120	<120			5,600 (g)	8,100	10,000 (g)
Total C_{10}-C_{40}		ND	ND	ND	ND	**1,590**	ND	ND	ND					
Polycyclic Aromatic Hydrocarbons (PAHs)														
Benzo(a)pyrene		<0.5	----	<0.5	----	<0.5	----	<0.1	<0.1			0.7 (g)		
Carcinogenic PAHs [2]		<0.5	----	<0.5	----	<0.5	----	<0.2	<0.2		4			
Total PAHs above detection limits		ND	----	ND	----	ND	----	ND	ND		400			
Organochlorine Pesticides (OCPs)														
DDT+DDE+DDE		<0.05	<0.05	<0.05	<0.05	**0.07**	<0.05	<0.6	----		600			
Aldrin and Dieldrin		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.3	----		10			
Chlordane		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	----		90			
Endosulfan		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	----		400			
Endrin		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	----		20			
Heptachlor		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	----		10			
HCB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	----		15			
Methoxychlor		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	----		500			
Mirex		-	-	-	-	-	-	<0.1	----		20			
Total OCPs above detection limits		ND	ND	ND	ND	**0.07**	ND	ND	----					
Organophosphorus Pesticides (OPPs)														
Chlorpyrifos		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	----		340			
Total OPPs above detection limits		ND	ND	ND	ND	ND	ND	ND	----					
Phenolic Compounds														
Phenol		<0.5	----	<0.5	----	<0.5	----	----	----		45,000			
Pentachlorophenol		<2	----	<2	----	<2	----	----	----		130			
Cresols		<1.5	----	<1.5	----	<1.5	----	----	----		4,700			
Total Phenols above detection limits		ND	----	ND	----	ND	----	----	----					
Polychlorinate Biphenyls (PCB)														
Total PCBs above detection limits		ND	----	ND	----	ND	----	ND	----		1			
Asbestos														
Asbestos Detected		No	----	No	----	No	----	No	----					
Friable asbestos (fibrous and fines)(w/w) (%)		<0.001	----	<0.001	----	<0.001	----	<0.001	----		0.001			
Asbestos Type		-	----	-	----	-	----	-	----					

Notes :
Results in mg/kg unless specified otherwise.
ND = No individual species detected above laboratory detection limits.
[1] Calculated in accordance with Table 1A(3) of NEPM 2013
[2] Combined carcinogenic PAHs with relative potency to benzo(a)pyrene
[3] Value adopted from duplicate sample due to RPD exceedance
CH = Chrysotile (white asbestos) detected
AM = Amosite (brown asbestos) detected
CR = Crocidolite (blue asbestos) detected

Results shaded red exceed the NEPM 2013 HIL Residential B /HSL A & B low - high density residential criteria
Results shaded blue exceed the NEPM 2013 EIL/ESL criteria for an urban residential and public open space setting
Results shaded green exceed the CRC CARE 2011 HSL-B high density residential criteria for direct contact with soil
Results shaded yellow exceed the NEPM 2013 management limits for a residential, parkland and public open space land setting

(a) NEPM 2013 site-specific EIL
(b) NEPM 2013 generic EIL
(c) NEPM 1999 EIL used where no generic NEPM 2013 criteria are available
(d) F1 = TRH (C_6-C_{10}) minus BTEX fraction
(e) F2 = TRH (C_{10}-C_{16}) minus naphthalene fraction
(f) NEPM 2013 HSL criterion for vapour intrusion, 0m to <1m depth in clay
(g) Criterion for fine texture grade soils
(h) Criterion for 'aged' contamination (>2 years)
(i) Insufficient data available to calulcate 'aged' contamination. Consequently, the values for fresh contamination should be used
(j) Criterion for DDT
(k) NL = Contaminant is not considered to pose a risk to human health through vapour intrusion regardless the concentration
(l) Criterion for chromium VI
(m) Criterion for inorganic mercury
(n) Criterion for chromium III
(o) criterion for silty clay filling soils
(p) criterion for natural gravelly/silty/sandy clay soils
(q) criterion for weathered shales

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Table A Analytical Results for Primary Soil Samples

Analytes	Borehole No.	BH104	BH104	BH105	BH105	BH105	BH105	BH106	BH106	NEPM Background Ranges	NEPM 2013 HIL Residential B/ HSL A&B (Low-High Density Residential)	NEPM 2013 EILs/ ESLs (Urban Residential and Public Open Space)	CRC CARE 2011 HSL-B Residential (High Density) Direct Contact	NEPM 2013 Management Limits (Residential, Parkland & Public Open Space)
	Sample No.	S13	S14	S15	S16	S17	S18	S19	S20					
	Sample Depth (m)	1.0	1.2	0.2	0.4	0.8	1.2	0.2	0.6					
	Type of Soil	Silty Clay	Weathered Shale	Silty Clay	Silty Clay	Silty Clay	Weathered Shale	Silty Sandy Clay	Silty Clay					
	Strata	Natural	Natural	Topsoil/Fill	Natural	Natural	Natural	Topsoil/Fill	Natural					
	Sample Date	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19					
Metals														
Arsenic		**4**	----	**23**	**3**	**3**	----	**6**	**6**	1-50	500	100 (b), (h)		
Cadmium		<0.3	----	**0.4**	<0.3	<0.3	----	**3**	<0.3	1	150	3 (c)		
Chromium		**4.5**	----	**16**	**10**	**6**	----	**10**	**11**	5-1000	500 (l)	610 (a), (n)		
Copper		**31**	----	**22**	**16**	**13**	----	**23**	**17**	2-100	30,000	170 (o), 80 (p), 30 (q) (a)		
Lead		**16**	----	**77**	**17**	**15**	----	**260**	**30**	2-200	1,200	1,100 (b), (h)		
Mercury		<0.05	----	**0.06**	<0.05	<0.05	----	<0.05	<0.05	0.03 (a)	120 (m)	1 (c), (m)		
Nickel		**2.1**	----	**5.1**	**0.9**	<0.5	----	**8.9**	**4.3**	5-500	1,200	320 (o), 220 (p), 35 (q) (a)		
Zinc		**32**	----	**65**	**5.5**	**4.2**	----	**120**	**20**	10-300	60,000	390 (o), 210 (p), 140 (q) (a)		
Monocyclic Aromatic Hydrocarbons (MAHs)														
Benzene		<0.1	----	<0.1	<0.1	<0.1	----	<0.1	<0.1		0.7 (f)	65 (g)	140	
Toluene		<0.1	----	<0.1	<0.1	<0.1	----	<0.1	<0.1		480 (f)	105 (g)	21,000	
Ethylbenzene		<0.1	----	<0.1	<0.1	<0.1	----	<0.1	<0.1		NL (f), (k)	125 (g)	5,900	
Xylenes		<0.3	----	<0.3	<0.3	<0.3	----	<0.3	<0.3		110 (f)	45 (g)	17,000	
Napthalene		<0.1	----	<0.1	<0.1	<0.1	----	<0.1	<0.1		5 (f)	170 (b), (i)	2,200	
Total MAHs above detection limits		ND	----	ND	ND	ND	----	ND	ND					
Total Petroleum Hydrocarbons (TPHs)														
Total C_6-C_{10}		<25	----	<25	<25	<25	----	<25	<25					800 (g)
Total C_{10}-C_{16}		<25	----	<25	<25	<25	----	<25	<25			120		1,000 (g)
F1 C_6-C_{10} [1] (l)		<25	----	<25	<25	<25	----	<25	<25		50 (f)	180	5,600	
F2 C_{10}-C_{16} [1] (m)		<25	----	<25	<25	<25	----	<25	<25		280 (f)		4,200	
F3 >C_{16}-C_{34}		<90	----	<90	<90	<90	----	<90	<90			1,300 (g)	5,800	3,500 (g)
F4 >C_{34}-C_{40}		<120	----	<120	<120	<120	----	<120	<120			5,600 (g)	8,100	10,000 (g)
Total C_{10}-C_{40}		ND	----	ND	ND	ND	----	ND	ND					
Polycyclic Aromatic Hydrocarbons (PAHs)														
Benzo(a)pyrene		<0.1	----	<0.1	<0.1	<0.1	----	<0.1	<0.1			0.7 (g)		
Carcinogenic PAHs [2]		<0.2	----	<0.2	<0.2	<0.2	----	<0.2	<0.2		4			
Total PAHs above detection limits		ND	----	**0.2**	ND	ND	----	ND	ND		400			
Organochlorine Pesticides (OCPs)														
DDT+DDE+DDE		----	----	<0.6	----	----	----	<0.6	----		600			
Aldrin and Dieldrin		----	----	<0.3	----	----	----	<0.3	----		10			
Chlordane		----	----	<0.2	----	----	----	<0.2	----		90			
Endosulfan		----	----	<0.5	----	----	----	<0.5	----		400			
Endrin		----	----	<0.2	----	----	----	<0.2	----		20			
Heptachlor		----	----	<0.1	----	----	----	<0.1	----		10			
HCB		----	----	<0.1	----	----	----	<0.1	----		15			
Methoxychlor		----	----	<0.1	----	----	----	<0.1	----		500			
Mirex		----	----	<0.1	----	----	----	<0.1	----		20			
Total OCPs above detection limits		----	----	ND	----	----	----	ND	----					
Organophosphorus Pesticides (OPPs)														
Chlorpyrifos		----	----	<0.2	----	----	----	<0.2	----		340			
Total OPPs above detection limits		----	----	ND	----	----	----	ND	----					
Phenolic Compounds														
Phenol		----	----	----	----	----	----	----	----		45,000			
Pentachlorophenol		----	----	----	----	----	----	----	----		130			
Cresols		----	----	----	----	----	----	----	----		4,700			
Total Phenols above detection limits		----	----	----	----	----	----	----	----					
Polychlorinate Biphenyls (PCB)														
Total PCBs above detection limits		----	----	ND	----	----	----	ND	----		1			
Asbestos														
Asbestos Detected		----	----	No	----	----	----	No	----					
Friable asbestos (fibrous and fines)(w/w) (%)		----	----	<0.001	----	----	----	<0.001	----		0.001			
Asbestos Type		----	----	-	----	----	----	-	----					

Notes : Results in mg/kg unless specified otherwise.
ND = No individual species detected above laboratory detection limits.
[1] Calculated in accordance with Table 1A(3) of NEPM 2013
[2] Combined carcinogenic PAHs with relative potency to benzo(a)pyrene
[3] Value adopted from duplicate sample due to RPD exceedance
CH = Chrysotile (white asbestos) detected
AM = Amosite (brown asbestos) detected
CR = Crocidolite (blue asbestos) detected

Results shaded red exceed the NEPM 2013 HIL Residential B /HSL A & B low - high density residential criteria
Results shaded blue exceed the NEPM 2013 EIL/ESL criteria for an urban residential and public open space setting
Results shaded green exceed the CRC CARE 2011 HSL-B high density residential criteria for direct contact with soil
Results shaded yellow exceed the NEPM 2013 management limits for a residential, parkland and public open space land setting

(a) NEPM 2013 site-specific EIL
(b) NEPM 2013 generic EIL
(c) NEPM 1999 EIL used where no generic NEPM 2013 criteria are available
(d) F1 = TRH (C_6-C_{10}) minus BTEX fraction
(e) F2 = TRH (C_{10}-C_{16}) minus naphthalene fraction
(f) NEPM 2013 HSL criterion for vapour intrusion, 0m to <1m depth in clay
(g) Criterion for fine texture grade soils
(h) Criterion for 'aged' contamination (>2 years)
(i) Insufficient data available to calulcate 'aged' contamination. Consequently, the values for fresh contamination should be used
(j) Criterion for DDT
(k) NL = Contaminant is not considered to pose a risk to human health through vapour intrusion regardless the concentration
(l) Criterion for chromium VI
(m) Criterion for inorganic mercury
(n) Criterion for chromium III
(o) criterion for silty clay filling soils
(p) criterion for natural gravelly/silty/sandy clay soils
(q) criterion for weathered shales

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Table A Analytical Results for Primary Soil Samples

Analytes	Borehole No.	Sample No.	Sample Depth (m)	Type of Soil	Strata	Sample Date	NEPM Background Ranges	NEPM 2013 HIL Residential B/ HSL A&B (Low-High Density Residential)	NEPM 2013 EILs/ ESLs (Urban Residential and Public Open Space)	CRC CARE 2011 HSL-B Residential (High Density) Direct Contact	NEPM 2013 Management Limits (Residential, Parkland & Public Open Space)
	BH106	S21	1.1	Silty Clay	Natural	28-Aug-19					
	BH106	S22	1.7	Weathered Shale	Natural	28-Aug-19					
	BH107	S23	0.2	Silty Clay	Topsoil	28-Aug-19					
	BH107	S24	0.4	Silty Clay	Natural	28-Aug-19					
	BH107	S25	0.8	Silty Clay	Natural	28-Aug-19					
	BH107	S26	1.4	Weathered Shale	Natural	28-Aug-19					
Metals											
Arsenic	----	**5**	**16**	**69**	----	**3**	1-50	500	100 (b), (h)		
Cadmium	----	<0.3	<0.3	**0.5**	----	<0.3	1	150	3 (c)		
Chromium	----	**4.4**	**12**	**9.3**	----	**3.3**	5-1000	500 (l)	610 (a), (n)		
Copper	----	**23**	**13**	**16**	----	**34**	2-100	30,000	170 (o), 80 (p), 30 (q) (a)		
Lead	----	**21**	**27**	**20**	----	**10**	2-200	1,200	1,100 (b), (h)		
Mercury	----	<0.05	<0.05	<0.05	----	<0.05	0.03 (a)	120 (m)	1 (c), (m)		
Nickel	----	**7.9**	**4.4**	**1.9**	----	**2.0**	5-500	1,200	320 (o), 220 (p), 35 (q) (a)		
Zinc	----	**69**	**26**	**10**	----	**16**	10-300	60,000	390 (o), 210 (p), 140 (q) (a)		
Monocyclic Aromatic Hydrocarbons (MAHs)											
Benzene	----	<0.1	<0.1	<0.1	----	<0.1		0.7 (f)	65 (g)	140	
Toluene	----	<0.1	<0.1	<0.1	----	<0.1		480 (f)	105 (g)	21,000	
Ethylbenzene	----	<0.1	<0.1	<0.1	----	<0.1		NL (f), (k)	125 (g)	5,900	
Xylenes	----	<0.3	<0.3	<0.3	----	<0.3		110 (f)	45 (g)	17,000	
Napthalene	----	<0.1	<0.1	<0.1	----	<0.1		5 (f)	170 (b), (i)	2,200	
Total MAHs above detection limits	----	ND	ND	ND	----	ND					
Total Petroleum Hydrocarbons (TPHs)											
Total C_6-C_{10}	----	<25	<25	<25	----	<25					800 (g)
Total C_{10}-C_{16}	----	<25	<25	<25	----	<25			120		1,000 (g)
F1 C_6-C_{10} [1] (l)	----	<25	<25	<25	----	<25		50 (f)	180	5,600	
F2 C_{10}-C_{16} [1] (m)	----	<25	<25	<25	----	<25		280 (f)		4,200	
F3 >C_{16}-C_{34}	----	<90	<90	<90	----	<90			1,300 (g)	5,800	3,500 (g)
F4 >C_{34}-C_{40}	----	<120	<120	<120	----	<120			5,600 (g)	8,100	10,000 (g)
Total C_{10}-C_{40}	----	ND	ND	ND	----	ND					
Polycyclic Aromatic Hydrocarbons (PAHs)											
Benzo(a)pyrene	----	<0.1	<0.1	<0.1	----	<0.1			0.7 (g)		
Carcinogenic PAHs [2]	----	<0.2	<0.2	<0.2	----	<0.2		4			
Total PAHs above detection limits	----	ND	ND	ND	----	BD		400			
Organochlorine Pesticides (OCPs)											
DDT+DDE+DDE	----	----	<0.6	----	----	----		600			
Aldrin and Dieldrin	----	----	<0.3	----	----	----		10			
Chlordane	----	----	<0.2	----	----	----		90			
Endosulfan	----	----	<0.5	----	----	----		400			
Endrin	----	----	<0.2	----	----	----		20			
Heptachlor	----	----	<0.1	----	----	----		10			
HCB	----	----	<0.1	----	----	----		15			
Methoxychlor	----	----	<0.1	----	----	----		500			
Mirex	----	----	<0.1	----	----	----		20			
Total OCPs above detection limits	----	----	ND	----	----	----					
Organophosphorus Pesticides (OPPs)											
Chlorpyrifos	----	----	<0.2	----	----	----		340			
Total OPPs above detection limits	----	----	ND	----	----	----					
Phenolic Compounds											
Phenol	----	----	----	----	----	----		45,000			
Pentachlorophenol	----	----	----	----	----	----		130			
Cresols	----	----	----	----	----	----		4,700			
Total Phenols above detection limits	----	----	----	----	----	----					
Polychlorinate Biphenyls (PCB)											
Total PCBs above detection limits	----	----	ND	----	----	----		1			
Asbestos											
Asbestos Detected	----	----	No	----	----	----					
Friable asbestos (fibrous and fines)(w/w) (%)	----	----	<0.001	----	----	----		0.001			
Asbestos Type	----	----	-	----	----	----					

Notes : Results in mg/kg unless specified otherwise.
ND = No individual species detected above laboratory detection limits.
[1] Calculated in accordance with Table 1A(3) of NEPM 2013
[2] Combined carcinogenic PAHs with relative potency to benzo(a)pyrene
[3] Value ε [3] Value adopted from duplicate sample due to RPD exceedance
CH = Chrysotile (white asbestos) detected
AM = Amosite (brown asbestos) detected
CR = Crocidolite (blue asbestos) detected

Results shaded red exceed the NEPM 2013 HIL Residential B /HSL A & B low - high density residential criteria
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Results shaded green exceed the CRC CARE 2011 HSL-B high density residential criteria for direct contact with soil
Results shaded yellow exceed the NEPM 2013 management limits for a residential, parkland and public open space land setting

(a) NEPM 2013 site-specific EIL
(b) NEPM 2013 generic EIL
(c) NEPM 1999 EIL used where no generic NEPM 2013 criteria are available
(d) F1 = TRH (C_6-C_{10}) minus BTEX fraction
(e) F2 = TRH (C_{10}-C_{16}) minus naphthalene fraction
(f) NEPM 2013 HSL criterion for vapour intrusion, 0m to <1m depth in clay
(g) Criterion for fine texture grade soils
(h) Criterion for 'aged' contamination (>2 years)
(i) Insufficient data available to calulcate 'aged' contamination. Consequently, the values for fresh contamination should be used
(j) Criterion for DDT
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(l) Criterion for chromium VI
(m) Criterion for inorganic mercury
(n) Criterion for chromium III
(o) criterion for silty clay filling soils
(p) criterion for natural gravelly/silty/sandy clay soils
(q) criterion for weathered shales

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Table B: Results of Quality Control - Intra and Inter-Laboratory Duplicate Samples

Analytes	Sample No.:	S1	S2 [1]	RPD (%)	S1	S3 [3]	RPD (%)	S10	S11 [2]	RPD (%)	S10	S12 [4]	RPD (%)
	Date Sampled:	13-Sep-18	13-Sep-18		13-Sep-18	13-Sep-18		28-Aug-19	28-Aug-19		28-Aug-19	28-Aug-19	
Metals													
	Arsenic	8	8	0	8	8	0	22	36	48	22	70	**104**
	Cadmium	<1	<1	<50	<1	1	<50	0.4	0.7	<50	0.4	<1	<50
	Chromium (Total)	15	16	6	15	14	7	13	12	8	13	15	14
	Copper	76	84	10	76	90	17	57	17	**108**	57	24	**81**
	Lead	96	143	39	96	100	4	26	29	11	26	43	49
	Mercury	<0.1	<0.1	<50	<0.1	<0.1	<50	<0.05	<0.05	<50	<0.05	<0.1	<50
	Nickel	12	12	0	12	13	8	2.9	3	3	2.9	5	**53**
	Zinc	194	168	14	194	179	8	110	81	30	110	110	0
Monocyclic Aromatic Hydrocarbons (MAHs)													
	Benzene	<0.2	<0.2	<70	<0.2	<0.2	<70	<0.1	<0.1	<70	<0.1	<0.2	<70
	Toluene	<0.5	<0.5	<70	<0.5	<0.5	<70	<0.1	<0.1	<70	<0.1	<0.5	<70
	Ethylbenzene	<0.5	<0.5	<70	<0.5	<0.5	<70	<0.1	<0.1	<70	<0.1	<0.5	<70
	Xylenes	<0.5	<0.5	<70	<0.5	<0.5	<70	<0.3	<0.3	<70	<0.3	<0.5	<70
	Napthalene	<1	<1	<70	<1	<1	<70	<0.1	<0.1	<70	<0.1	<1	<70
Total Petroleum Hydrocarbons (TPHs)													
	Total C_6-C_{10}	<10	<10	<70	<10	<10	<70	<25	<25	<70	<25	<10	<70
	Total C_{10}-C_{16}	<50	<50	<70	<50	<50	<70	<25	<25	<70	<25	<50	<70
	F1 C_6-C_{10}	<10	<10	<70	<10	<10	<70	<25	<25	<70	<25	<10	<70
	F2 C_{10}-C_{16}	<50	<50	<70	<50	<50	<70	<25	<25	<70	<25	<50	<70
	F3 >C_{16}-C_{34}	<100	<100	<70	<100	<100	<70	<90	<90	<70	<90	<100	<70
	F4 >C_{34}-C_{40}	<100	<100	<70	<100	<100	<70	<120	<120	<70	<120	<100	<70
	Total C_{10}-C_{40}	<50	<50	<70	<50	<50	<70	<210	<210	<70	<210	<50	<70
Polycyclic Aromatic Hydrocarbons (PAHs)													
	Benzo(a)pyrene	<0.5	-	-	<0.5	-	-	<0.1	<0.1	<70	<0.1	<0.5	<70
	Carcinogenic Hydrocarbons	<0.5	-	-	<0.5	-	-	<0.2	<0.2	<70	<0.2	<0.5	<70
	Total PAH	<0.5	-	-	<0.5	-	-	<0.8	<0.8	<70	<0.8	<0.5	<70

Notes : Results expressed as mg/kg dry weight unless otherwise indicated
1 Denotes intra-laboratory field duplicate sample analysed by ALS Sydney
2 Denotes intra-laboratory field duplicate sample analysed by SGS Sydney
3 Denotes inter-laboratory field duplicate sample analysed by ALS Brisbane
4 Denotes inter-laboratory field duplicate sample analysed by ALS Sydney
RPDs shaded grey exceed the acceptance criteria

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Table C Results of Quality Control - Rinate, Trip Spike and Trip Blank Samples

		Sample Numbers			
	Sample No.:	**RB01**	**TB01**	**Trip Spike**	**Trip Blank**
	Medium:	**Water**	**Soil**	**Soil**	**Soil**
	Unit of Measure:	**ug/L**	**mg/kg**	**%**	**mg/kg**
Analyte	**Date Sampled:**	**13/09/2018**	**22/08/2018**	**28/08/2019**	**28/08/2019**
Metals					
Arsenic		<1	-	-	-
Cadmium		<0.1	-	-	-
Chromium		<1	-	-	-
Copper		<1	-	-	-
Lead		<1	-	-	-
Mercury		<0.1	-	-	-
Nickel		<1	-	-	-
Zinc		<5	-	-	-
Monocyclic Aromatic Hydrocarbons (MAHs)					
Benzene		<1	<0.2	105	<0.1
Toluene		<2	<0.5	108	<0.1
Ethylbenzene		<2	<0.5	107	<0.1
m/p-Xylenes		<2	<0.5	108	<0.2
o-Xylenes		<5	<0.5	108	<0.1
Total Petroleum Hydrocarbons (TRH)					
Total C_6-C_{10}		<20	-	-	-
Total C_{10}-C_{16}		<100	-	-	-
F1 C_6-C_{10}		<20	-	-	-
F2 C_{10}-C_{16}		<100	-	-	-
F3 >C_{16}-C_{34}		<100	-	-	-
F4 >C_{34}-C_{40}		<100	-	-	-

Note:

Values that have been shaded exceed the acceptance criteria

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Table D Soil-Specific Ecological Investigation levels

		Sample Numbers		
	Borehole No./ Site Location:	**BH104**	**BH104**	**BH104**
	Sample No.:	**EIL 1**	**EIL 2**	**EIL 3**
	Depth:	**0 - 0.3m**	**0.5 - 0.7m**	**1.5 - 1.6m**
	Soil Profile	**Silty Clay (Fill)**	**Silty Clay**	**Weathered Shale**
Analyte	**Date Sampled:**	**28-Aug-19**	**28-Aug-19**	**28-Aug-19**
Clay Content				
Clay Content % (estimate) (b)		35	35	35
Power of Hydrogen				
pH ($CaCl_2$)		5.7	4.6	3.9
Cation Exchange Capacity				
CEC (cMol/kg)		26	15	4.9
Total Organic Carbon				
TOC %		8.5	2.5	0.28
Soil-Specific Ecological Investigation Levels				
Chromium III		610	610	610
Copper		170	80	30
Nickel		320	220	35
Zinc		390	210	140

Notes:

(a) Results in mg/kg unless specified otherwise.

(b) Clay content estimated based on soil description

(c) EILs are generally applicable to a maximum depth of 2m

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APPENDIX A – ARCHITECTURAL DRAWINGS

MGA

APPROXIMATE TRUE NORTH

12°

SEWER NOTES
1. SEWER LINES WERE UNABLE TO BE LOCATED BY UNDERGROUND LOCATOR .
2.THE UPSTREAM MANHOLE ALONG LAWRENCE STREET WAS NOT FOUND.

STORM WATER NOTES
1. THE STORM WATER DETAILS WERE UNABLE TO BE MEASURED AT THE TIME OF SURVEY AS MECHANICAL ASSISTANCE WOULD BE NEEDED TO LIFT CONCRETE PIT LIDS.

LEGEND
- CLOTHES HANGER
- POWER POLE AND TRANSFORMER
- SIGN
- SEWER INSPECTION PIT
- SEWER MANHOLE
- TREE
- WM WATER METER
- WATER STOP VALVE
- TELSTRA SINGLE PIT
- TELSTRA TWIN PIT

TRAFALGAR STREET

LAWRENCE STREET

JACQUES AVENUE

BMN RL 26.96

SEE STORMWATER NOTES

CH 106°52'30" - 8.619
R6.095 A 9.573

NOT FENCED

27.00

REFER TO SEWER NOTES

151°52'45" - 16.765

241°52'15" - 19.2

28.00 WIRE FENCE LOW

KERB & GUTTER

DRIVEWAY

CONCRETE

METAL PANEL FENCE

GRASS

No 77
1 STOREY
FIBRO HOUSE

337°41'50" - 36.71

29.00

No 79
1 STOREY
FIBRO HOUSE

TIMBER PANEL FENCE

CB FENCE

GATE

CONC

KERB

228
DP 36317
697.6 m² BY CALCULATIONS

CH150°40'15" RAD 210.96 A 8.935

227
DP 36317
655.1 m² BY CALCULATIONS

SHED

TIMBER PALING FENCE

151°52'45" - 22.86

230°09'50" - 23.29

No 19
1 STOREY FIBRO HOUSE

TOP OF BANK

30.00

R 248.96
CH 149°57'15" - 16.765
16.76

230°09'50" - 15.24

BOTTOM OF BANK

31.00

LOT 13
DP 1035485

1. BOUNDARIES HAVE NOT BEEN SURVEYED.
2. SERVICES SHOWN ARE APPROXIMATE POSITIONS AND HAVE BEEN COMPILED FROM VISIBLE EVIDENCE AND SERVICES DIAGRAMS ONLY. ALL SERVICE LOCATIONS MUST BE VERIFIED ON SITE BEFORE CONSTRUCTION. CARDNO TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THESE SERVICES SHOWN.
3. TREE SPECIES ARE INDICATIVE ONLY. IF SPECIES IS CRITICAL THEN A QUALIFIED BOTANIST MUST BE ENGAGED.

(1) DENOTES DIRECTION & NUMBER OF PHOTO TAKEN
W DENOTES WINDOW
D DENOTES DOOR

www.dialbeforeyoudig.com.au
DIAL1100 BEFORE YOU DIG

No.	DATE	NOTATION/AMENDMENT

No.	DATE	NOTATION/AMENDMENT

FILE	FILE SIZE (MB)	CHECKED BY

CONTOUR INTERVAL: 0.5m

DATUM: AHD

ORIGIN OF DATUM: SSM 103505

100 YEAR FLOOD RL:

RECOMMENDED MINIMUM FLOOR RL:

SOURCE OF FLOOD INFO:

LEGEND OF COMMONLY USED SYMBOLS

WATER, SEWER, ELECTRICITY, TELECOM, GAS, DRAINAGE – Common, – Main

BENCH MARK SURVEY CONTROL MARK PM SSM

REDUCTION RATIO 1 : 150 @ A1, 300 @ A3

0 7.5 15m

LAND TITLE INFORMATION

LOTS: 227 and 228

PLAN NOs : DP 36317

OTHER:

AREA: Combined total 1352.7m² (By Calc.)

DATE OF SURVEY: 11/ 04 /2017

SURVEY CONSULTANT:

Cardno
Shaping the Future
23-25 Frederick Street
PO Box 175
Rockdale NSW 2216
t: (02) 9597 9700
f: (02) 9599 2146
e: surveynsw@cardno.com.au w: www.cardno.com.au

SURVEYORS Registered Surveyor
REF : 118339500

NSW GOVERNMENT Family & Community Services
Land & Housing Corporation

DRAWING TITLE

CONTOUR & DETAIL

LOCATION

PEAKHURST

STREET ADDRESS

77-79
TRAFALGAR STREET

TYPE

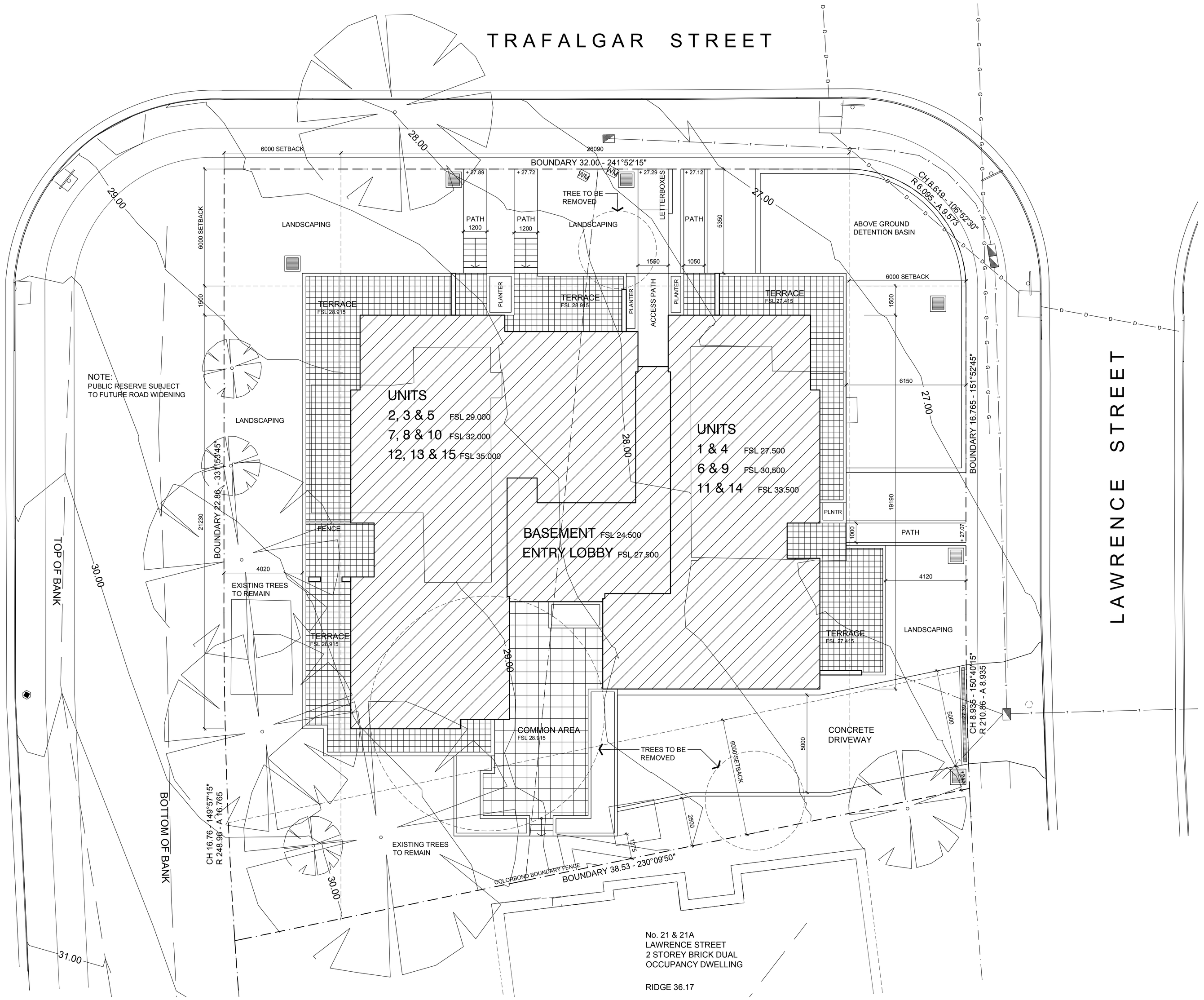
S

SITE LAYOUT JOB

74936 / 001 / 01

SHT. 1

OF 1



77 - 79 TRAFALGAR ST, PEAKHURST	
DEVELOPMENT DATA SEPP 65	
SITE AREA	1352.7m²
NUMBER OF EXISTING LOTS	2
NUMBER OF STOREYS	3
PROPOSED GFA	1283.3m² Include External Walls, Lift, Stairs & Gallery
NUMBER OF PROPOSED DWELLINGS	15 UNITS = 03x 1 BED 12 x 2 BED

DWELLINGS

NUMBER	LEVEL	No of BEDROOMS		AREA (m²)	P.O.S. (m²)
1	GF	2	LIVEABLE	70.6m²	17.9m²
2	GF	1	LIVEABLE	53.5m²	16.6m²
3	GF	2	LIVEABLE	71.4m²	40.8m²
4	GF	2	LIVEABLE	71.5m²	10.1m²
5	GF	2	LIVEABLE	72.0m²	38.0m²
6	1st	2	LIVEABLE	70.6m²	17.9m²
7	1st	1	LIVEABLE	53.5m²	9.8m²
8	1st	2	LIVEABLE	71.4m²	18.0m²
9	1st	2	LIVEABLE	71.5m²	10.1m²
10	1st	2	LIVEABLE	72.0m²	10.2m²
11	2nd	2	LIVEABLE	70.6m²	17.9m²
12	2nd	1	LIVEABLE	53.5m²	9.8m²
13	2nd	2	LIVEABLE	71.4m²	18.0m²
14	2nd	2	LIVEABLE	71.5m²	10.1m²
15	2nd	2	LIVEABLE	72.0m²	10.2m²

	CONTROL	REQUIREMENT	PROPOSED
BUILDING HEIGHT	HURSTVILLE DCP	12m ABOVE NATURAL GROUND LEVEL	12m
PARKING	ARH SEPP LAND IN NON ACCESSIBLE AREA	1 BED x 0.5 = 3 x 0.5 = 1.5 2 BED x 1 = 12 x 1 = 12 TOTAL = 12 + 1.5 = 13.5 = 14	16 SPACES
	HURSTVILLE DCP	1 or 2 BED x 1 = 15 x 1 = 15 VISITORS 1 PER 4 UNITS 15 / 4 = 3.75 = 4 TOTAL = 19	
F.S.R	HURSTVILLE DCP	1:1	1:1
SETBACKS	HURSTVILLE DCP	TO PRIMARY & SECONDARY STREET SETBACK = 6m	6m Min.
	SEPP 65	SIDE SETBACK UP TO 4 STOREYS = 6m	6m Min.
		REAR SETBACK UP TO 4 STOREYS = 6m	6.5m Min.
BUILDING SEPARATION	SEPP 65 UP TO 4 STOREYS	BETWEEN HABITABLE ROOMS /BALCONIES = 12m	12m
		BETWEEN HABITABLE AND NON-HABITABLE ROOMS = 9m	N/A
		BETWEEN NON-HABITABLE ROOMS = 6m	N/A
COMMUNAL & PUBLIC OPEN SPACE	SEPP 65	MIN. AREA EQUAL TO 25% OF SITE AREA = 338.18m²	492m²
DEEP SOIL	SEPP 65	MIN. 7% OF SITE AREA = 94.7m²	259m²
		MIN. DIMENSION = 3M	
VISUAL PRIVACY	SEPP 65 UP TO 4 STOREYS	SIDE AND REAR BOUNDARIES TO HABITABLE ROOMS /BALCONIES = 6m	6m
		SIDE AND REAR BOUNDARIES TO NON-HABITABLE ROOMS = 3m	N/A
SOLAR AND DAYLIGHT ACCESS	SEPP 65	70% OF UNITS RECEIVE 2HRS DIRECT SUNLIGHT TO LIVING ROOMS AND PRIVATE OPEN SPACES BETWEEN 9am AND 3pm AT MID WINTER	12 Units out of 15 = 80%
		MAX. 15% OF UNITS RECEIVE NO DIRECT SUNLIGHT BETWEEN 9am AND 3pm AT MID WINTER	0%
NATURAL VENTILATION	SEPP 65	AT LEAST 60% OF UNITS ARE NATURALLY CROSS VENTILATED IN 1st NINE STOREYS BUILDING	12 Units out of 15 = 80%
COMMON CIRCULATION SPACE	SEPP 65	MAX. NUMBER OF UNITS OFF A CIRCULATION CORE ON A SINGLE LEVEL = 8 UNITS	5 Units
ADAPTABLE UNITS	HURSTVILLE DCP	1 FOR EVERY 10 UNITS OR PART THEREOF	2 UNITS
LIVEABLE UNITS	SEPP 65	20% OF TOTAL UNITS 20% x 15 = 3	15 UNITS = 100%

NSW GOVERNMENT
Family & Community Services
Land & Housing Corporation
LOCKED BAG 4009
ASHFIELD NSW BC1800
PHONE No (02) 8753 9000
www.facs.nsw.gov.au

NOMINATED ARCHITECT:
JOHN PERRY 8846
MAURICE PERRY 3472

REV	DATE	NOTATION/AMENDMENT
B	15-08-18	ISSUED TO CONSULTANTS
A	11-12-17	ISSUED FOR SKETCH DESIGN

DO NOT SCALE DRAWINGS, CHECK ALL DIMENSIONS ON SITE. FIGURED DIMENSIONS TAKE PRECEDENCE.

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ELECTRICAL, MECHANICAL & HYDRAULIC CONSULTANT
ERBAS & Associates Pty Ltd
PH (02) 9437 1022 FAX (02) 9437 1025

NORTH

PROJECT:
GENERAL HOUSING
at
77-79 TRAFALGAR STREET, PEAKHURST
LOT 227 & 228 in DP 36317

TITLE:
PROPOSED SITE PLAN

FILE: 1097-BGRJ6-A03 PROPOSED SITE PLAN
PLOTTED: 11/12/17

STATUS: SKETCH DESIGN

DATE:	SCALE:	PROJ:	PROJECT No:
OCT 17	1:100	BGRJ6	1097
STAGE:	DRAWN:	CHECKED:	SHEET SIZE:
SK	GG	JP	A1
TYPE:	SHEET:		REV:
A	03 of 13		B

NSW GOVERNMENT

Family & Community Services
Land & Housing Corporation

LOCKED BAG 4009
ASHFIELD BC NSW 1800
PHONE No (02) 8753 9000
www.facs.nsw.gov.au

NOMINATED ARCHITECT:
JOHN PERRY 8846
MAURICE PERRY 3472

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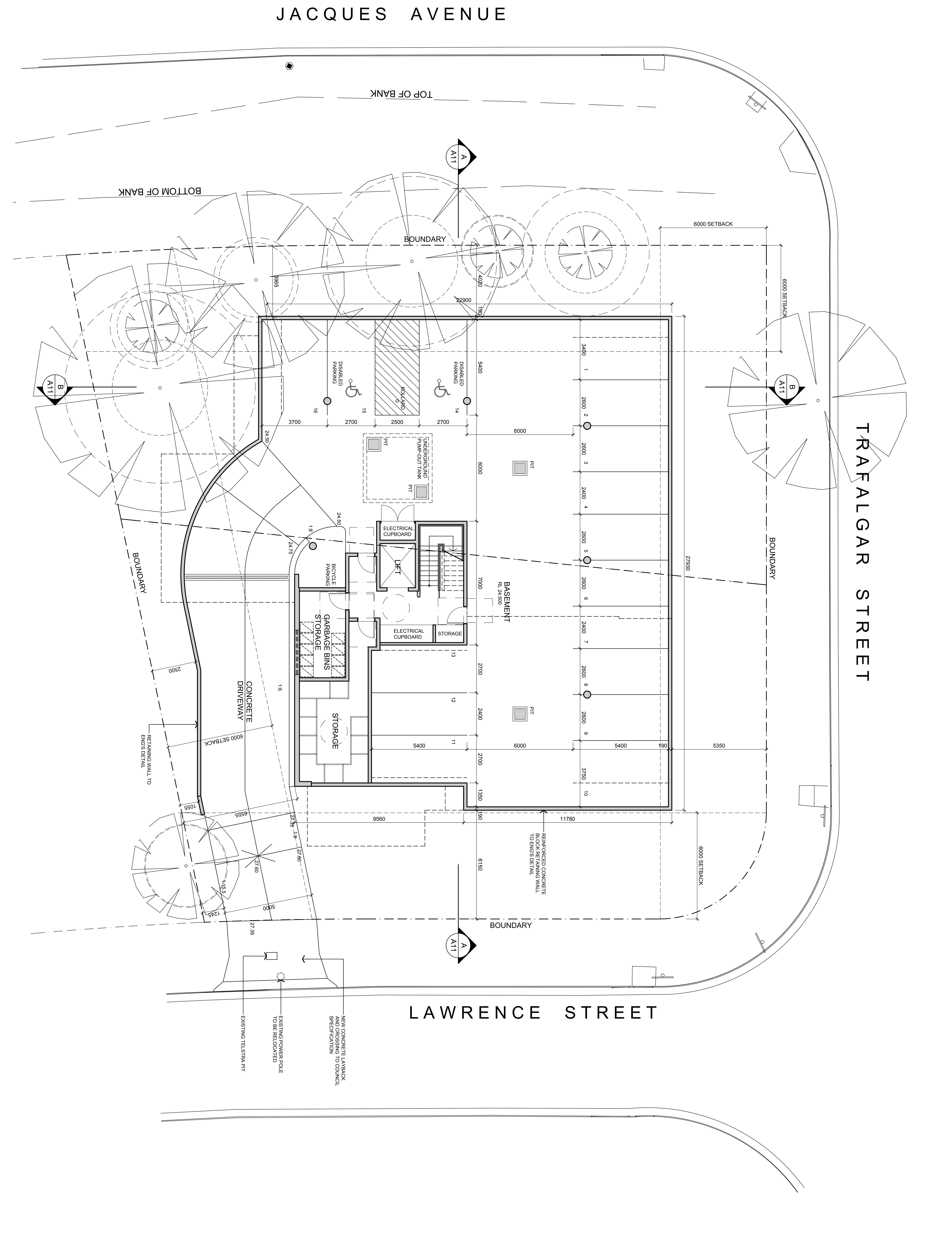
NORTH

PROJECT
GENERAL HOUSING
at
77-79 TRAFALGAR STREET, PEAKHURST
LOT 227 & 228 in DP 36317

TITLE
BASEMENT FLOOR PLAN

FILE: 1097-BGRJ6-A04 BASEMENT FLOOR PLAN
PLOTTED: 11/12/17

STATUS			
SKETCH DESIGN			
DATE: OCT 17	SCALE: 1:100	PROJ: BGRJ6	PROJECT No: 1097
STAGE: SK	DRAWN: GG	CHECKED: JP	SHEET SIZE: A1
TYPE: A	SHEET: 04 of 13		REV: B



TRAFALGAR STREET

JACQUES AVENUE

LAWRENCE STREET

NEW CONCRETE FOOTPATH

BOUNDARY

TOP OF BANK

BOTTOM OF BANK

6000 SETBACK

ABOVE GROUND DETENTION BASIN

UNIT 3
RL 29.000
A = 71.7m²

UNIT 2
RL 29.000
A = 54.8m²

UNIT 1
RL 27.500
A = 72.0m²

UNIT 4
RL 27.500
A = 71.5m²

UNIT 5
RL 29.000
A = 70.6m²

COMMUNAL AREA

CONCRETE DRIVEWAY

LOBBY
RL 29.000

LOBBY
RL 27.500

LIFT

STAIR

RAMP 1:15

RAMP 1:15.3

MAIN ACCESS 1:20

PATH 1:20

LETTERBOXES

NOTE:
SP SCREEN PANEL
CL CLOTHES LINE
HWS HOT WATER SYSTEM

FOR FURNITURE LAYOUT REFER TO DRAWING BGRJ6-1097-A12 FURNITURE LAYOUT GROUND FLOOR

NOMINATED ARCHITECT:
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MAURICE PERRY 3472

REV	DATE	NOTATION/AMENDMENT
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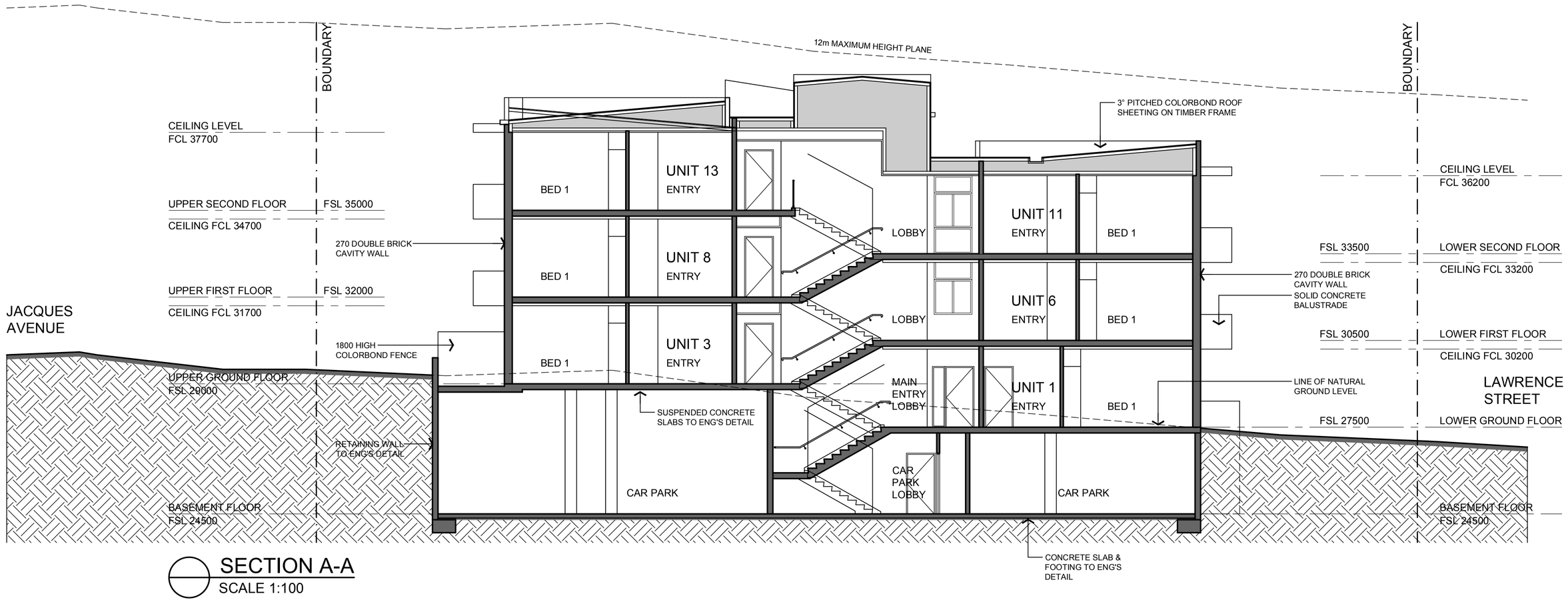
PROJECT:
GENERAL HOUSING
at
77-79 TRAFALGAR STREET, PEAKHURST
LOT 227 & 228 in DP 36317

TITLE: GROUND FLOOR PLAN

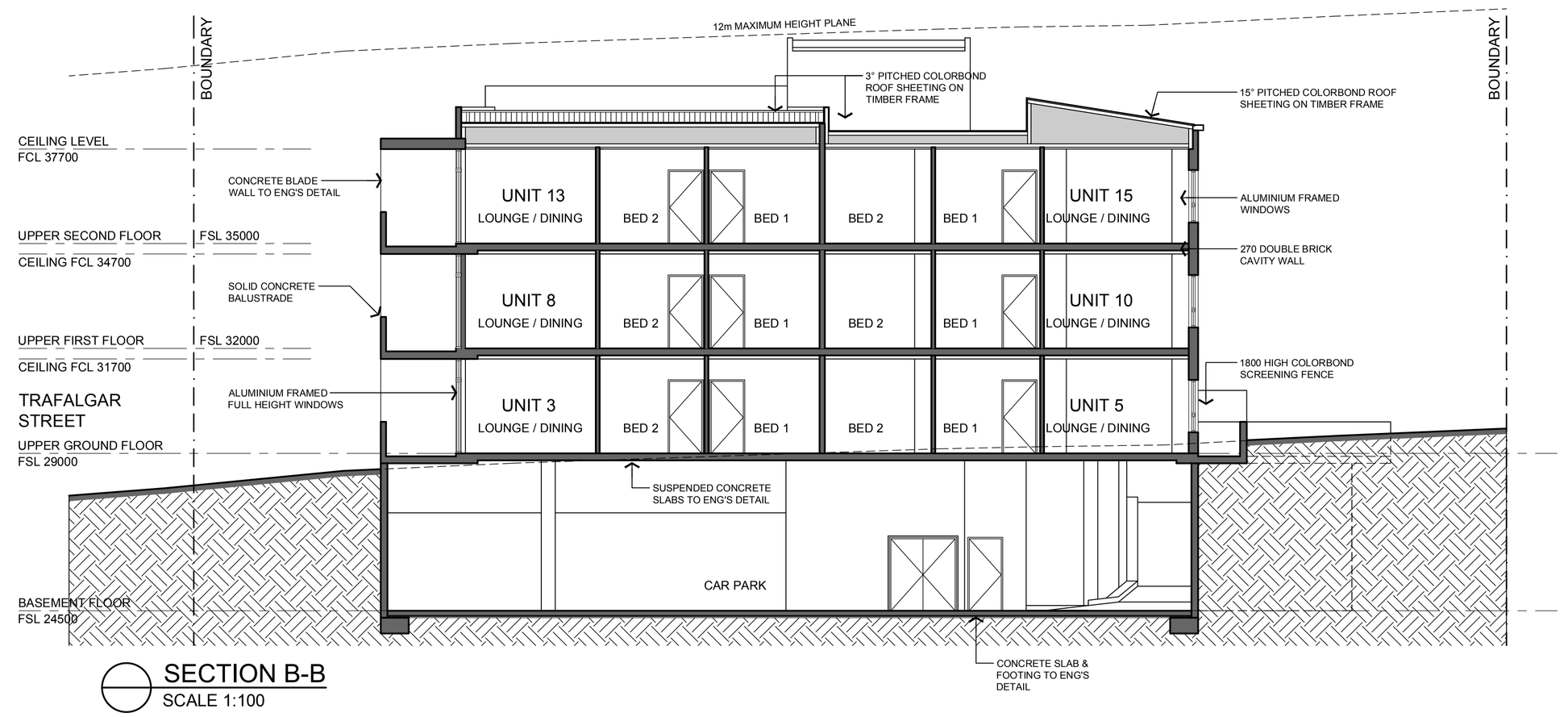
FILE: 1097-BGRJ6-A05 GROUND FLOOR PLAN

PLOTTED: 11/12/17

STATUS: SKETCH DESIGN			
DATE: OCT 17	SCALE: 1:100	PROJ: BGRJ6	PROJECT No. 1097
STAGE: SK	DRAWN: GG	CHECKED: JP	SHEET SIZE: A1
TYPE: A	SHEET: 05 of 13		REV: B



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100

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ASHFIELD NSW BC1800
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PROJECT:
GENERAL HOUSING
at
77-79 TRAFALGAR STREET, PEAKHURST
LOT 227 & 228 in DP 36317

TITLE: SECTIONS A-A & B-B

STATUS: SKETCH DESIGN			
DATE: OCT 17	SCALE: 1:100	PROJ: BGRJ6	PROJECT No: 1097
STAGE: SK	DRAWN: GG	CHECKED: JP	SHEET SIZE: A1
FILE: 1097-BGRJ6-A11 SECTIONS	PLOTTED: 11/12/17	TYPE: A	SHEET: 11 of 13 REV: B

APPENDIX B – AERIAL PHOTOGRAPHS

1930 Aerial Photograph Showing the Site and Surrounds

1951 Aerial Photograph Showing the Site and Surrounds

1961 Aerial Photograph Showing the Site and Surrounds

1970 Aerial Photograph Showing the Site and Surrounds

1986 Aerial Photograph Showing the Site and Surrounds

1994 Aerial Photograph Showing the Site and Surrounds

2009 Aerial Photograph Showing the Site and Surrounds

2016 Aerial Photograph Showing the Site and Surrounds

APPENDIX C – SELECTED SITE PHOTOGRAPHS

Photograph 1: Current street view of 77 Trafalgar Street.

Photograph 2: Current rear view of 77 Trafalgar Street.

Photograph 3: Current side view of 77 Trafalgar Street.

Photograph 4: Side garden and concrete slab in rear yard of 77 Trafalgar Street.

Photograph 5: Zincalume garden shed in rear of 77 Trafalgar Street.

Photograph 6: Current street view of 79 Trafalgar Street.

Photograph 7: Current rear view of 79 Trafalgar Street.

Photograph 8: Current rear view of 79 Trafalgar Street.

Photograph 9: Current view of locality of zinc and TRH F2 impacted soils identified in 2018 PSI.

Photograph 10: Compressed timber board construction lean-to attached to metal shed.

APPENDIX D – PLANNING CERTIFICATES

GEORGES RIVER COUNCIL

PLANNING CERTIFICATE ISSUED UNDER SECTION 10.7(2) and 10.7(5)
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Our Reference:	**PL2018/2001**
Your Reference:	**53280988**
Date of Issue:	**19/09/2018**

S Property
Po Box 447
SOUTHBANK VIC 3205

Property Number:	**34804**
Property Address:	**77 Trafalgar Street PEAKHURST NSW 2210**
Legal Description:	**Lot 228 DP 36317**

This planning certificate should be read in conjunction with the relevant Local Environmental Plan listed under Names of Relevant Planning Instruments and DCPs. This is available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information.

The information contained in this certificate relates only to the lot described on page 1 of this certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

This certificate is provided pursuant to Section 10.7(2) and 10.7(5) of the Act. At the date of this certificate, the subject land may be affected by the following matters.

1. Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

The following environmental planning instruments apply to the carrying out of development on the land:

Local Environmental Plans

Hurstville Local Environmental Plan 2012

State Environmental Planning Policies

The following State Environmental Planning Policies apply:

No. 19 - Bushland in Urban Areas
No. 21 - Caravan Parks
No. 30 - Intensive Agriculture
No. 33 - Hazardous and Offensive Development
No. 50 - Canal Estate Development
No. 55 - Remediation of Land
No. 62 - Sustainable Aquaculture
No. 64 - Advertising and Signage
No. 65 - Design Quality of Residential Apartment Development
No. 70 - Affordable Housing (Revised Schemes)
SEPP (Housing for Seniors or People with a Disability) 2004
SEPP (Building Sustainability Index: BASIX) 2004
SEPP (State Significant Precincts) 2005
SEPP (Mining, Petroleum Production and Extraction Industries) 2007
SEPP (Miscellaneous Consent Provisions) 2007
SEPP (Infrastructure) 2007
SEPP (Exempt and Complying Development Codes) 2008
SEPP (Affordable Rental Housing) 2009
SEPP (State and Regional Development) 2011
SEPP (Education Establishments and Child Care Facilities) 2017
SEPP (Vegetation in non-rural areas) 2017

Deemed State Environmental Planning Policies (Regional Environmental Plan)

The Greater Metropolitan Regional Environmental Plan 2 - Georges River Catchment.

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Secretary has notified the

council that the making of the proposed instrument has been deferred indefinitely or has not been approved):

The following proposed environmental planning instruments that have been the subject of community consultation or on public exhibition under the Act, apply to the carrying out of development on the land:

On 31 October 2017, the NSW Department of Planning and Environment placed the draft SEPP (Environment) on community consultation.

On 27 October 2017, the NSW Department of Planning and Environment placed the proposal to repeal State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007 on community consultation.

On 10 November 2017, the NSW Department of Planning and Environment placed the draft SEPP (Seniors Housing) on community consultation.

On 20 June 2018, the NSW Department of Planning and Environment placed an amendment to the SEPP (Exempt and Complying Development Codes) 2008 on community consultation

(3) The name of each development control plan that applies to the carrying out of development on the land:

The following development control plans apply to the carrying out of development on the land:

Hurstville Development Control Plan No. 1.

(4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environment planning instrument

2. Zoning and land use under relevant LEPs

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described).

(a) the identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Area") or by reference to a number (such as "Zone No 2 (a)"),

(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent,

(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent,

(d) the purposes for which the instrument provides that development is prohibited within the zone,

Zone R3 Medium Density Residential under Hurstville Local Environmental Plan 2012

2 Permitted without consent
Home occupations

3 Permitted with consent
Animal boarding or training establishments; Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Car parks; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Home-based child care; Home businesses; Home industries; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Recreation facilities (indoor); Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Shop top housing; Water recycling facilities; Water reticulation systems

4 Prohibited
Any development not specified in item 2 or 3

(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,

There are no development standards applying to the land which fix minimum land dimensions for the erection of a dwelling house under the Hurstville Local Environmental Plan 2012.

(f) whether the land includes or comprises critical habitat,

The land does not include or comprise critical habitat under any environmental planning instrument.

(g) whether the land is in a conservation area (however described),

The land is not located within a conservation area under the provisions of the Hurstville Local Environmental Plan 2012.

(h) whether an item of environmental heritage (however described) is situated on the land.

The land does not contain a heritage item under the Hurstville Local Environmental Plan 2012.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:
(a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

(b) a Precinct Plan (within the meaning of the 2006 SEPP), or

(c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act, the particulars referred to in clause 2(a)-(h) in relation to that land (with a reference to "the instrument" in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

The State Environmental Planning Policy (Sydney Region Growth Centres) 2006 does not identify land within the Georges River Local Government Area as a growth centre and therefor the policy does not apply.

3. Complying Development

(1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

(2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

(3) If the Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on that land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Housing Code
Complying development under the Housing Code may be carried out on the land.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Rural Housing Code
Complying development under the Rural Housing Code does not apply as the land is not zoned RU1 Primary Production, RU2 Rural Landscape, RU3 Forestry, RU4 Primary Production Small Lots, RU6 Transition and R5 Large Lot Residential.

Greenfield Housing Code
Complying development under the Greenfield Housing Code does not apply to Georges River Council Local Government Area.

Housing Alterations Code
Complying development under the Housing Alterations Code may be carried out on the land.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

General Development Code
Complying development under the General Development Code may be carried out on the land.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial Alterations Code may be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Alterations) Code may be carried out on the land.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities Code may be carried out on the land.

Subdivision Code
Complying development under the Subdivision Code may be carried out on the land.

Demolition Code
Complying development under the Demolition Code may be carried out on the land.

Fire Safety Code
Complying development under the Fire Safety Code may be carried out on the land.

Disclaimer: The information above addresses matters raised in Clause 1.17A (1) (c) to (e), (2), (3), and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure that you comply with any other requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 is invalid.

NOTE: Council does not have sufficient information to ascertain the extent to which complying development under the Codes may be carried out on the land. A restriction to carrying out complying development applies to the land, but may not apply to all of the land.

4. Coastal Protection – Repealed (03/04/2018)

4A. Coastal Protection– Repealed (03/04/2018)

4B Annual Charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works.

In relation to a coastal council - whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Note: "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the Local Government Act 1993".

No, according to Council's records the owner (or previous owner) of the land has not consented in writing to the land being subject to annual charges for coastal protection

services relating to existing coastal protection works (within the meaning of section 553B of the LG Act 1993).

5. Mine subsidence

Whether or not the land is proclaimed to be mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961

The land is not in an area proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

6. Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

(a)Division 2 of Part 3 of the Roads Act 1993?

The land is not affected by road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993.

(b) any environmental planning instrument?

The land is not affected by any road widening or road realignment under the provisions of any environmental planning instrument.

(c) any resolution of the Council?

The land is not affected by any road widening or road realignment under any resolution of the Council.

7. Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:
(a) adopted by the council that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)?

The property is affected by the following Council policy:

Airspace operations - The objective of this clause is to protect airspace around airports. (Refer Clause 6.9, Hurstville Local Environmental Plan 2012 or Clause 6.5, Kogarah Local Environmental Plan 2012).

(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate or any other risk (other than flooding)?

Council has not been notified of any policies adopted by other public authorities that restricts development of this land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

7A. Flood related development controls information

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

No. Development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is not subject to flood related development controls.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

No. Development on the land or part of the land for any other purpose is not subject to flood related development controls.

Note 1: Words and expressions in this clause have the same meanings as in the standard instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

Note 2: The answers above do not imply that the development referred to is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No environmental planning instrument or proposed environmental planning instrument referred to in clause 1, makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

9. Contributions plans

The name of each contribution plan applying to the land:

Hurstville Section 94 Development Contributions Plan 2012.

Georges River Council Section 94A Contributions Plan 2017.

9A Biodiversity certified land

If the land is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016, a statement to that effect.

Note. *Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.*

Council has not been notified by the NSW Office of Environment and Heritage, that the subject land is biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016.*

10. Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage).

Note. *Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.*

Council has not been notified by the Chief Executive of the Office of Environment and Heritage, that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016.*

10A. Native vegetation clearing set asides

If the land contains a set aside area under section 60ZC of the Local Land Services Act 2013, a statement to that effect (but only if the council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section).

Council has not been notified by the Local Land Services that the land contains a set aside area nor is the land registered in the public register under section 60ZC of the Local Land Services Act 2013.

11. Bush fire prone land

If any of the land is bushfire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.
If none of the land is bush fire prone land, a statement to that effect.
The Land is not shown to be bushfire prone land in Council records.

12. Property Vegetation Plans

If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The provisions of the *Native Vegetation Act 2003*, do not apply to the Georges River Council area.

13. Orders Under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if Council has been notified of the order).
The Council has not been notified of an order under the Act in respect of tree(s) on the land.
Council has not verified whether any order has been made of which it has not been notified. The applicant should make its own inquiries in this regard if this is a matter of concern.

14. Directions under Part 3A

If there is direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act that does not have effect, a statement to that effect identifying the provision that does not have effect.
There is no direction by the Minister in force under section 75P (2) (c1) of the *Environmental Planning and Assessment Act 1979*..

15. Site compatibility certificates and conditions for seniors housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

(a) a statement of whether there is a current site compatibility certificate (seniors housing) of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(i) the period for which the certificate is current, and
(ii) that a copy may be obtained from the head office of the Department, and

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

(a) Council is not aware of the issue of any current Site Compatibility Certificate (Seniors Housing) in respect of proposed development on the land.

(b) No terms of a kind referred to in Clause 18(2) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004, have been imposed as a condition of consent to a Development Application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department.

Council is not aware of the issue of any valid Site Compatibility Certificate (Infrastructure), in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

(1) A Statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department of Planning.

(2) A statement setting out any terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

(1) Council is not aware of the issue of any current Site Compatibility Certificate (Affordable Rental Housing), in respect of proposed development on the land.

(2) No terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009, have been imposed as a condition of consent to a Development Application in respect of the land.

18. Paper subdivision information

(1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

There is no development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

(2) The date of any subdivision order that applies to the land.

There is no subdivision order applying to the land.

(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. Site Verification Certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

***Note:** A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

(b) The date on which the certificates ceases to be current (if any), and
(c) That a copy may be obtained from the head office of the Department of Planning and Infrastructure.

There are no current site verification certificates applying to the subject land.

20. Loose-fill asbestos insulation

A statement if the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the Loose-Fill Asbestos Insulation Register maintained by the Secretary of NSW Fair Trading.

The land to which this certificate relates has not been identified in the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation. Contact NSW Fair Trading for more information.

21. Affected building notices and building product rectification orders

(1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land.

Council is not aware of any affected building notice in force in respect of the land

(2) A statement of:

(a) whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with.

Council is not aware of any building product rectification order that is in force in respect of the land and has not been fully complied with.

(b) whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.

Council is not aware of any notice of intention to make a building product rectification order that has been given in respect of the land and is outstanding.

(3) In this clause:
affected building notice has the same meaning as in Part 4 of the Building Products (Safety) Act 2017.
building product rectification order has the same meaning as in the Building Products (Safety) Act 2017.

Any Other Prescribed Matter

Note: The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued?

The land has not been identified as significantly contaminated land within the meaning of the Contaminated Land Management Act 1997. (Enquiries should be directed to the NSW Environmental Protection Authority).

(b) that the land which the certificate is the subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not subject to a management order within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(c) that the land which the certificate relates is subject of an approved voluntary management proposal within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an approved voluntary management proposal within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(d) that the land which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an ongoing maintenance order within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(e) that the land which the certificate relates is subject of a site audit statement within the meaning of that Act – if a copy of such a statement has been provided at any time to the local authority issuing the certificate?

Council has not been provided with a site audit statement, within the meaning of the Act, for this land.

NOTE
This information is provided pursuant to section 10.7 (2) of the Environmental Planning and Assessment (EPA) Act 1979 as prescribed by Schedule 4 of the EPA Regulations 2000 and is applicable as of the date of this certificate.

Additional matters pursuant to Section 10.7(5) of the Environmental Planning and Assessment Act 1979

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the *Environmental Planning and Assessment Act 1979*.

Additional Information Pursuant to Section 10.7(5)

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the Act:

1. Adjacent to a heritage item or heritage conservation area

Is the land within the vicinity of a heritage item or heritage conservation area?

The land is shown in Council's records as not being adjacent to a heritage item or heritage conservation area. However, the subject land may be contained within a Heritage Conservation Area or listed as a Heritage Item. Please refer to Questions 2(g) and 2(h) in Part 2 of the Planning Certificate for confirmation or otherwise.

2. State Heritage Item

Does the land contain a State heritage item under the Heritage Act 1977?

The land does not contain a State Heritage item under the *Heritage Act 1977*.

3. Stormwater Drain

Is the land affected by a stormwater drain?

Yes. Council's Asset register indicates that the land may be affected by a Council stormwater drain. You are advised to contact Council's drainage engineers for further information.

4. Planning agreements

Is the land affected by a Planning Agreement?

The land is not subject to a Planning Agreement, which is a voluntary agreement providing for a public purpose through a monetary contribution or provision of works and pursuant to s7.4 to s7.10 of the Environmental Planning and Assessment Act 1979.

5. Georges River Council Studies, Polices and Plans

Are there any studies, policies or plans or drafts (which have been placed on public exhibition) which affect the land?

The following studies, policies or plans or draft studies, policies or plans (which have been placed on public exhibition) affect the land:

Information on the studies, policies or plans or draft studies, policies or plans is provided on the Georges River Council website www.georgesriver.nsw.gov.au

- Hurstville City Centre Masterplan 2004
- Hurstville Public Domain Plan 2007
- Hurstville City Centre Transport Management and Accessibility Plan (TMAP) 2013
- Hurstville City Centre Urban Design Strategy (June 2018)
- Kogarah North Urban Design Strategy (November 2017)
- Georges River Employment Lands Study
- Draft Guidelines for Places of Public Worship

Note: Please note that Council provides this information in good faith. Council does not accept any liability in respect of such advice. The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

Meryl Bishop
Director - Environment and Planning

GEORGES RIVER COUNCIL

PLANNING CERTIFICATE ISSUED UNDER SECTION 10.7(2) and 10.7(5)
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Our Reference:	**PL2018/2000**
Your Reference:	**53281122**
Date of Issue:	**19/09/2018**

S Property
Po Box 447
SOUTHBANK VIC 3205

Property Number:	**34806**
Property Address:	**79 Trafalgar Street PEAKHURST NSW 2210**
Legal Description:	**Lot 227 DP 36317**

This planning certificate should be read in conjunction with the relevant Local Environmental Plan listed under Names of Relevant Planning Instruments and DCPs. This is available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information.

The information contained in this certificate relates only to the lot described on page 1 of this certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

This certificate is provided pursuant to Section 10.7(2) and 10.7(5) of the Act. At the date of this certificate, the subject land may be affected by the following matters.

1. Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

The following environmental planning instruments apply to the carrying out of development on the land:

Local Environmental Plans

Hurstville Local Environmental Plan 2012

State Environmental Planning Policies

The following State Environmental Planning Policies apply:

No. 19 - Bushland in Urban Areas
No. 21 - Caravan Parks
No. 30 - Intensive Agriculture
No. 33 - Hazardous and Offensive Development
No. 50 - Canal Estate Development
No. 55 - Remediation of Land
No. 62 - Sustainable Aquaculture
No. 64 - Advertising and Signage
No. 65 - Design Quality of Residential Apartment Development
No. 70 - Affordable Housing (Revised Schemes)
SEPP (Housing for Seniors or People with a Disability) 2004
SEPP (Building Sustainability Index: BASIX) 2004
SEPP (State Significant Precincts) 2005
SEPP (Mining, Petroleum Production and Extraction Industries) 2007
SEPP (Miscellaneous Consent Provisions) 2007
SEPP (Infrastructure) 2007
SEPP (Exempt and Complying Development Codes) 2008
SEPP (Affordable Rental Housing) 2009
SEPP (State and Regional Development) 2011
SEPP (Education Establishments and Child Care Facilities) 2017
SEPP (Vegetation in non-rural areas) 2017

Deemed State Environmental Planning Policies (Regional Environmental Plan)

The Greater Metropolitan Regional Environmental Plan 2 - Georges River Catchment.

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Secretary has notified the

council that the making of the proposed instrument has been deferred indefinitely or has not been approved):

The following proposed environmental planning instruments that have been the subject of community consultation or on public exhibition under the Act, apply to the carrying out of development on the land:

On 31 October 2017, the NSW Department of Planning and Environment placed the draft SEPP (Environment) on community consultation.

On 27 October 2017, the NSW Department of Planning and Environment placed the proposal to repeal State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007 on community consultation.

On 10 November 2017, the NSW Department of Planning and Environment placed the draft SEPP (Seniors Housing) on community consultation.

On 20 June 2018, the NSW Department of Planning and Environment placed an amendment to the SEPP (Exempt and Complying Development Codes) 2008 on community consultation

(3) The name of each development control plan that applies to the carrying out of development on the land:

The following development control plans apply to the carrying out of development on the land:

Hurstville Development Control Plan No. 1.

(4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environment planning instrument

2. Zoning and land use under relevant LEPs

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described).

(a) the identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Area") or by reference to a number (such as "Zone No 2 (a)"),

(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent,

(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent,

(d) the purposes for which the instrument provides that development is prohibited within the zone,

Zone R3 Medium Density Residential under Hurstville Local Environmental Plan 2012

2 Permitted without consent
Home occupations

3 Permitted with consent
Animal boarding or training establishments; Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Car parks; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Home-based child care; Home businesses; Home industries; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Recreation facilities (indoor); Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Shop top housing; Water recycling facilities; Water reticulation systems

4 Prohibited
Any development not specified in item 2 or 3

(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,

There are no development standards applying to the land which fix minimum land dimensions for the erection of a dwelling house under the Hurstville Local Environmental Plan 2012.

(f) whether the land includes or comprises critical habitat,

The land does not include or comprise critical habitat under any environmental planning instrument.

(g) whether the land is in a conservation area (however described),

The land is not located within a conservation area under the provisions of the Hurstville Local Environmental Plan 2012.

(h) whether an item of environmental heritage (however described) is situated on the land.

The land does not contain a heritage item under the Hurstville Local Environmental Plan 2012.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:
(a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

(b) a Precinct Plan (within the meaning of the 2006 SEPP), or

(c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act, the particulars referred to in clause 2(a)-(h) in relation to that land (with a reference to "the instrument" in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

The State Environmental Planning Policy (Sydney Region Growth Centres) 2006 does not identify land within the Georges River Local Government Area as a growth centre and therefor the policy does not apply.

3. Complying Development

(1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

(2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

(3) If the Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on that land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Housing Code
Complying development under the Housing Code may be carried out on the land.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Rural Housing Code
Complying development under the Rural Housing Code does not apply as the land is not zoned RU1 Primary Production, RU2 Rural Landscape, RU3 Forestry, RU4 Primary Production Small Lots, RU6 Transition and R5 Large Lot Residential.

Greenfield Housing Code
Complying development under the Greenfield Housing Code does not apply to Georges River Council Local Government Area.

Housing Alterations Code
Complying development under the Housing Alterations Code may be carried out on the land.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

General Development Code
Complying development under the General Development Code may be carried out on the land.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial Alterations Code may be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Alterations) Code may be carried out on the land.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities Code may be carried out on the land.

Subdivision Code
Complying development under the Subdivision Code may be carried out on the land.

Demolition Code
Complying development under the Demolition Code may be carried out on the land.

Fire Safety Code
Complying development under the Fire Safety Code may be carried out on the land.

Disclaimer: The information above addresses matters raised in Clause 1.17A (1) (c) to (e), (2), (3), and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure that you comply with any other requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 is invalid.

NOTE: Council does not have sufficient information to ascertain the extent to which complying development under the Codes may be carried out on the land. A restriction to carrying out complying development applies to the land, but may not apply to all of the land.

4. Coastal Protection – Repealed (03/04/2018)

4A. Coastal Protection– Repealed (03/04/2018)

4B Annual Charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works.

In relation to a coastal council - whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Note: "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the Local Government Act 1993".

No, according to Council's records the owner (or previous owner) of the land has not consented in writing to the land being subject to annual charges for coastal protection

services relating to existing coastal protection works (within the meaning of section 553B of the LG Act 1993).

5. Mine subsidence

Whether or not the land is proclaimed to be mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961

The land is not in an area proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

6. Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

(a)Division 2 of Part 3 of the Roads Act 1993?

The land is not affected by road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993.

(b) any environmental planning instrument?

The land is not affected by any road widening or road realignment under the provisions of any environmental planning instrument.

(c) any resolution of the Council?

The land is not affected by any road widening or road realignment under any resolution of the Council.

7. Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:
(a) adopted by the council that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)?

The property is affected by the following Council policy:

Airspace operations - The objective of this clause is to protect airspace around airports. (Refer Clause 6.9, Hurstville Local Environmental Plan 2012 or Clause 6.5, Kogarah Local Environmental Plan 2012).

(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate or any other risk (other than flooding)?

Council has not been notified of any policies adopted by other public authorities that restricts development of this land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

7A. Flood related development controls information

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

No. Development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is not subject to flood related development controls.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

No. Development on the land or part of the land for any other purpose is not subject to flood related development controls.

Note 1: Words and expressions in this clause have the same meanings as in the standard instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

Note 2: The answers above do not imply that the development referred to is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No environmental planning instrument or proposed environmental planning instrument referred to in clause 1, makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

9. Contributions plans

The name of each contribution plan applying to the land:

Hurstville Section 94 Development Contributions Plan 2012.

Georges River Council Section 94A Contributions Plan 2017.

9A Biodiversity certified land

If the land is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016, a statement to that effect.

Note. *Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.*

Council has not been notified by the NSW Office of Environment and Heritage, that the subject land is biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016.*

10. Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage).

Note. *Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.*

Council has not been notified by the Chief Executive of the Office of Environment and Heritage, that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016.*

10A. Native vegetation clearing set asides

If the land contains a set aside area under section 60ZC of the Local Land Services Act 2013, a statement to that effect (but only if the council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section).

Council has not been notified by the Local Land Services that the land contains a set aside area nor is the land registered in the public register under section 60ZC of the Local Land Services Act 2013.

11. Bush fire prone land

If any of the land is bushfire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.
If none of the land is bush fire prone land, a statement to that effect.
The Land is not shown to be bushfire prone land in Council records.

12. Property Vegetation Plans

If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The provisions of the *Native Vegetation Act 2003*, do not apply to the Georges River Council area.

13. Orders Under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if Council has been notified of the order).
The Council has not been notified of an order under the Act in respect of tree(s) on the land.
Council has not verified whether any order has been made of which it has not been notified. The applicant should make its own inquiries in this regard if this is a matter of concern.

14. Directions under Part 3A

If there is direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act that does not have effect, a statement to that effect identifying the provision that does not have effect.
There is no direction by the Minister in force under section 75P (2) (c1) of the *Environmental Planning and Assessment Act 1979*..

15. Site compatibility certificates and conditions for seniors housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

(a) a statement of whether there is a current site compatibility certificate (seniors housing) of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(i) the period for which the certificate is current, and
(ii) that a copy may be obtained from the head office of the Department, and

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

(a) Council is not aware of the issue of any current Site Compatibility Certificate (Seniors Housing) in respect of proposed development on the land.

(b) No terms of a kind referred to in Clause 18(2) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004, have been imposed as a condition of consent to a Development Application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department.

Council is not aware of the issue of any valid Site Compatibility Certificate (Infrastructure), in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

(1) A Statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department of Planning.

(2) A statement setting out any terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

(1) Council is not aware of the issue of any current Site Compatibility Certificate (Affordable Rental Housing), in respect of proposed development on the land.

(2) No terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009, have been imposed as a condition of consent to a Development Application in respect of the land.

18. Paper subdivision information

(1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

There is no development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

(2) The date of any subdivision order that applies to the land.

There is no subdivision order applying to the land.

(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. Site Verification Certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

***Note:** A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

(b) The date on which the certificates ceases to be current (if any), and
(c) That a copy may be obtained from the head office of the Department of Planning and Infrastructure.

There are no current site verification certificates applying to the subject land.

20. Loose-fill asbestos insulation

A statement if the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the Loose-Fill Asbestos Insulation Register maintained by the Secretary of NSW Fair Trading.

The land to which this certificate relates has not been identified in the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation. Contact NSW Fair Trading for more information.

21. Affected building notices and building product rectification orders

(1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land.

Council is not aware of any affected building notice in force in respect of the land

(2) A statement of:

(a) whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with.

Council is not aware of any building product rectification order that is in force in respect of the land and has not been fully complied with.

(b) whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.

Council is not aware of any notice of intention to make a building product rectification order that has been given in respect of the land and is outstanding.

(3) In this clause:
affected building notice has the same meaning as in Part 4 of the Building Products (Safety) Act 2017.
building product rectification order has the same meaning as in the Building Products (Safety) Act 2017.

Any Other Prescribed Matter

Note: The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued?

The land has not been identified as significantly contaminated land within the meaning of the Contaminated Land Management Act 1997. (Enquiries should be directed to the NSW Environmental Protection Authority).

(b) that the land which the certificate is the subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not subject to a management order within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(c) that the land which the certificate relates is subject of an approved voluntary management proposal within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an approved voluntary management proposal within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(d) that the land which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an ongoing maintenance order within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(e) that the land which the certificate relates is subject of a site audit statement within the meaning of that Act – if a copy of such a statement has been provided at any time to the local authority issuing the certificate?

Council has not been provided with a site audit statement, within the meaning of the Act, for this land.

NOTE
This information is provided pursuant to section 10.7 (2) of the Environmental Planning and Assessment (EPA) Act 1979 as prescribed by Schedule 4 of the EPA Regulations 2000 and is applicable as of the date of this certificate.

Additional matters pursuant to Section 10.7(5) of the Environmental Planning and Assessment Act 1979

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the *Environmental Planning and Assessment Act 1979*.

Additional Information Pursuant to Section 10.7(5)

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the Act:

1. Adjacent to a heritage item or heritage conservation area

Is the land within the vicinity of a heritage item or heritage conservation area?

The land is shown in Council's records as not being adjacent to a heritage item or heritage conservation area. However, the subject land may be contained within a Heritage Conservation Area or listed as a Heritage Item. Please refer to Questions 2(g) and 2(h) in Part 2 of the Planning Certificate for confirmation or otherwise.

2. State Heritage Item

Does the land contain a State heritage item under the Heritage Act 1977?

The land does not contain a State Heritage item under the *Heritage Act 1977*.

3. Stormwater Drain

Is the land affected by a stormwater drain?

Council's Asset register indicates that the land is not affected by a Council stormwater drain. However an exhaustive search of all Council records, including archival records, has not been undertaken. You are advised that further investigations, at the owner's expense, may be necessary to confirm the presence of any underground stormwater drain.

4. Planning agreements

Is the land affected by a Planning Agreement?

The land is not subject to a Planning Agreement, which is a voluntary agreement providing for a public purpose through a monetary contribution or provision of works and pursuant to s7.4 to s7.10 of the Environmental Planning and Assessment Act 1979.

5. Georges River Council Studies, Polices and Plans

Are there any studies, policies or plans or drafts (which have been placed on public exhibition) which affect the land?

The following studies, policies or plans or draft studies, policies or plans (which have been placed on public exhibition) affect the land:

Information on the studies, policies or plans or draft studies, policies or plans is provided on the Georges River Council website www.georgesriver.nsw.gov.au

- Hurstville City Centre Masterplan 2004
- Hurstville Public Domain Plan 2007
- Hurstville City Centre Transport Management and Accessibility Plan (TMAP) 2013
- Hurstville City Centre Urban Design Strategy (June 2018)
- Kogarah North Urban Design Strategy (November 2017)
- Georges River Employment Lands Study
- Draft Guidelines for Places of Public Worship

Note: Please note that Council provides this information in good faith. Council does not accept any liability in respect of such advice. The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

Meryl Bishop
Director - Environment and Planning

APPENDIX E – HISTORICAL LAND TITLE EXTRACTS

SEARCH REPORT

NSW LAND REGISTRY SERVICES RECORDS BRANCH

11th September 2018

Subject land: Lots 227 and 228 in DP 36317

77-79 Trafalgar Street, Peakhurst

Ownership:

From 5/8/1903 to 5/11/1945 - Frederick William Johnson of Marrickville, Baker

From 5/11/1945 to 5/5/1952 - The Council of the Municipality of Hurstville

From 5/5/1952 to date - The Housing Commission of New South Wales (Present owner)

Leases; NIL

SAI Global

per R. Williamson

(c.) **New South Wales.** [CERTIFICATE OF TITLE.]

No. of Application 11169

Register Book, Vol. 1482 Folio 120

CANCELLED M

Frederick William Johnson of Marrickville Baker, applicant in primary application numbered 11169 is now the proprietor of an estate in fee simple subject nevertheless to the reservations and conditions if any contained in the Grant hereinafter referred to and also subject to [illegible] hereon in That piece of land situated in the Municipal District of Marrickville Parish of St George and County of Cumberland containing fifty four acres [illegible] and one quarter perches or thereabouts Commencing on the Eastern side of Belmore Road at its intersection with Marrickville River and bounded thence on the North by that River [illegible] Easterly One thousand [illegible] and ninety eight feet [illegible] M. Field on the East by [illegible] of the [illegible] and a [illegible] line being a line [illegible] along an old fence bearing Southerly [illegible] One thousand [illegible] hundred and [illegible] feet to [illegible] of Section [illegible] on [illegible] plan numbered 1702 on the South by [illegible] Lot [illegible] feet [illegible] to Belmore Road aforesaid and on the West by said Road bearing Northerly One thousand [illegible] hundred and fifty one feet [illegible] inches to the point of commencement [illegible] the said Parish deposited in the Department of Lands being the land originally granted [illegible] (Portion [illegible] and fifty eight of Parish) to [illegible] by Crown Grant dated the fourteenth day of September one thousand eight hundred and thirty seven. [illegible]

In Witness whereof I have hereunto signed my name and affixed my seal this Fifth day of August One thousand nine hundred and three

Signed the 5th day of August 1903 } in the presence of [illegible]

[signature]

Deputy Registrar General

Notification referred to

Amongst the reservations and conditions contained in the Grant above referred to are the following namely:— Reservations of [illegible] Governor of [illegible]

[signature]

Deputy Registrar General

No. [illegible] NOTICE OF [illegible] under the Local Government Act 1919 [illegible] land [illegible] (including 1912) has become vested in the Council of the Municipality of Marrickville [illegible] contracts [illegible] or other [illegible]
Produced 13th September 19[illegible] and entered [illegible] November 19[illegible]
at [illegible] o'clock in the [illegible]noon.

[signature]

Registrar General.

No. [illegible] TRANSFER dated [illegible] February 19[illegible]
from the said [illegible]
[illegible]
[illegible]
[illegible] of the land within described
Produced [illegible] February 19[illegible] and entered [illegible] May 19[illegible]
at [illegible] o'clock in the [illegible]noon.
[illegible]
[signature]
REGISTRAR GENERAL

C.T. PRODUCED 16. 8. 1948
BY STATE CROWN SOLICITOR

[redacted]

CATE OF TITLE

PROPERTY ACT, 1900

13424-089

NEW SOUTH WALES

Appln. No.11169

Prior Title Vol.6991 Fol. 77

Vol. 13424 Fol. 89

EDITION ISSUED

11 10 1977

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

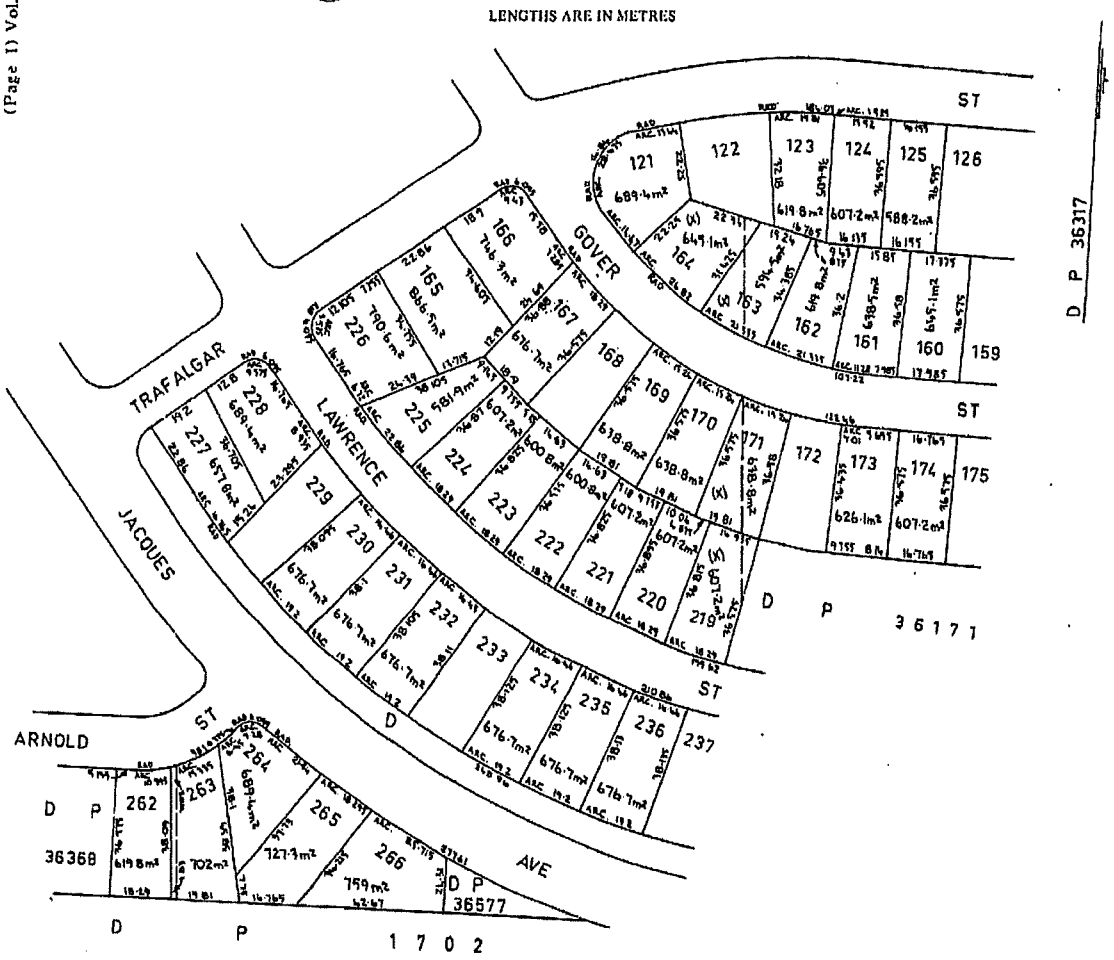
CANCELLED

Registrar General.

(Page 1) Vol. 13424 Fol. 89

PLAN SHOWING LOCATION OF LAND SEE AUTO FOLIO

LENGTHS ARE IN METRES



P935488

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 227 in Deposited Plan 36317 at Peakhurst in the Municipality of Hurstville Parish of St.George and County of Cumberland being part of Portion 258 granted to James Wilshire on 14-9-1837. EXCEPTING THEREOUT the mines and deposits specified in section 141 Public Works Act, 1912.

FIRST SCHEDULE

THE HOUSING COMMISSION OF NEW SOUTH WALES.

SECOND SCHEDULE

NIL.

GRN

XC

Vol. 13424 Fol. 89

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar General
	NATURE	NUMBER	DATE		

SECOND SCHEDULE (continued)

INSTRUMENT			PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
NATURE	NUMBER	DATE						

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

[redacted]ICATE OF TITLE

PROPERTY ACT, 1900

13424-90

NEW SOUTH WALES

Vol. 13424 Fol. 90

Appln. No.11169

Prior Title Vol.6991 Fol. 77

EDITION ISSUED

11 10 1977

13424 Fol. 90

(Page 1) Vol.

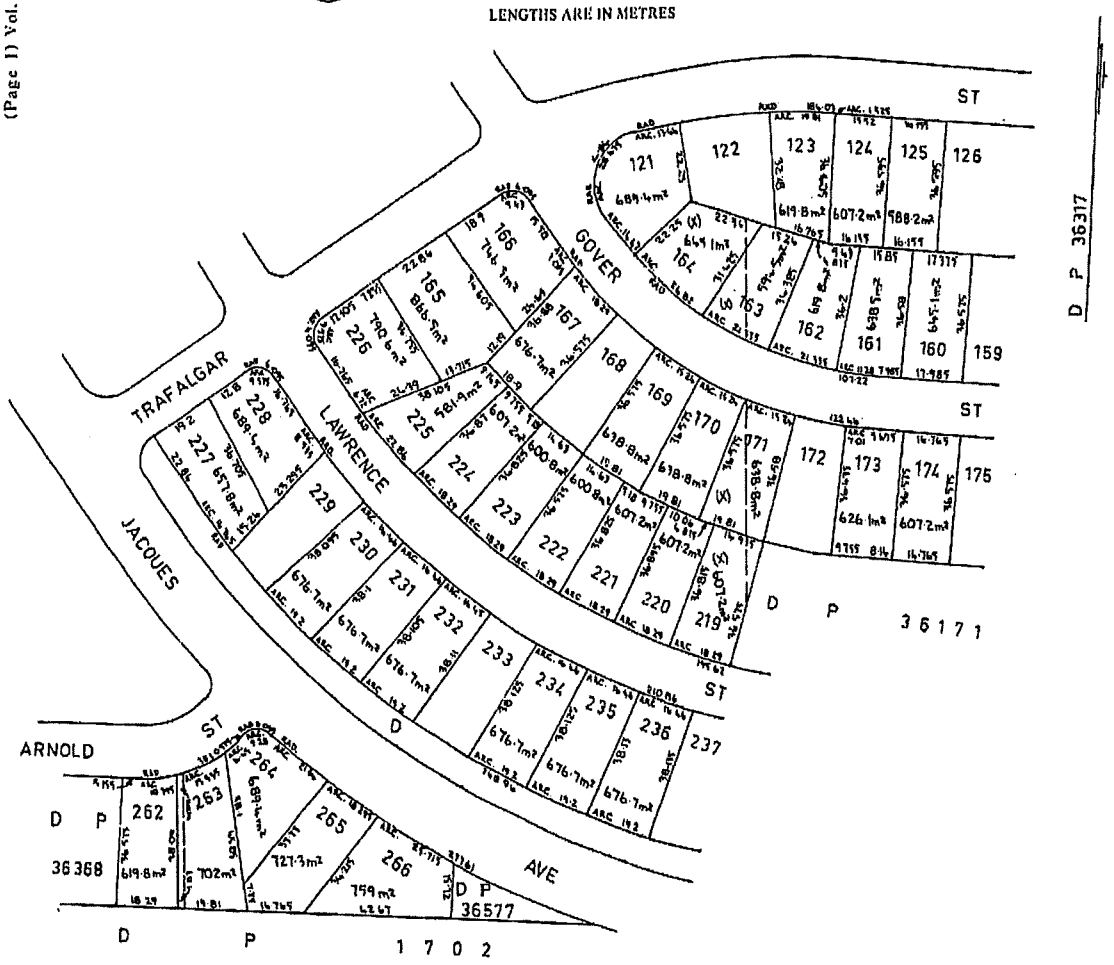
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

CANCELLED

Registrar General.

PLAN SHOWING LOCATION OF LAND SEE ABOVE PLAN

LENGTHS ARE IN METRES



P935488

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 228 in Deposited Plan 36317 at Peakhurst in the Municipality of Hurstville Parish of St.George and County of Cumberland being part of Portion 258 granted to James Wilshire on 14-9-1837. EXCEPTING THEREOUT the mines and deposits specified in section 141 Public Works Act, 1912.

FIRST SCHEDULE

THE HOUSING COMMISSION OF NEW SOUTH WALES.

SECOND SCHEDULE

NIL.

GRN

XC

Vol. 13424 Fol. 90

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar General
	NATURE	NUMBER	DATE		

SECOND SCHEDULE (continued)

INSTRUMENT			PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
NATURE	NUMBER	DATE						

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
8/9/2018 4:41PM

FOLIO: 227/36317

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 13424 FOL 89

Recorded	Number	Type of Instrument	C.T. Issue
21/8/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/11/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

jennfib PRINTED ON 8/9/2018

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
8/9/2018 4:41PM

FOLIO: 228/36317

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 13424 FOL 90

Recorded	Number	Type of Instrument	C.T. Issue
21/8/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/11/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

jennfib PRINTED ON 8/9/2018

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 227/36317

SEARCH DATE	TIME	EDITION NO	DATE
10/9/2018	11:37 AM	-	-

VOL 13424 FOL 89 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 227 IN DEPOSITED PLAN 36317
AT PEAKHURST
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP36317

FIRST SCHEDULE

THE HOUSING COMMISSION OF NEW SOUTH WALES

SECOND SCHEDULE (1 NOTIFICATION)

1 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

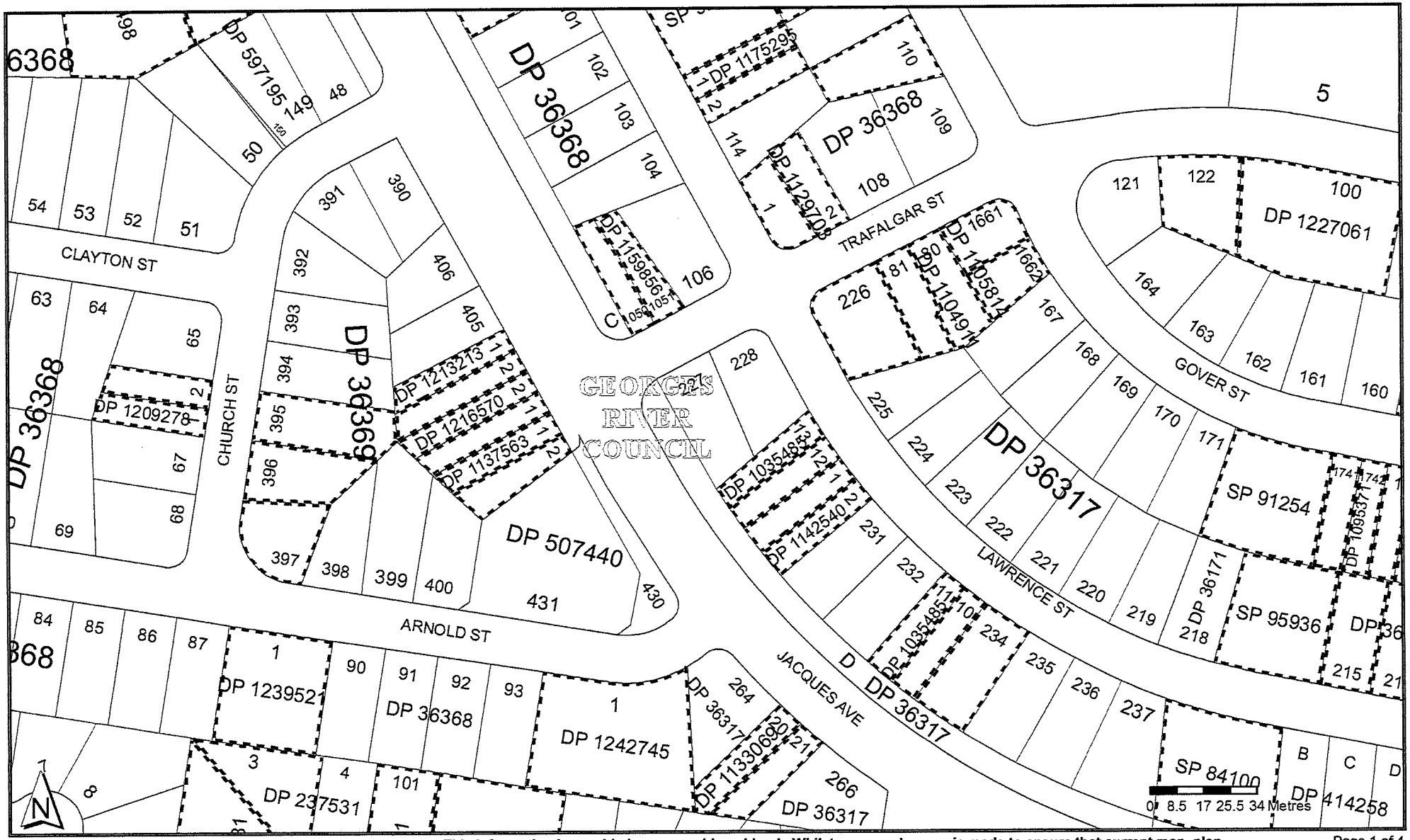
jennfib PRINTED ON 10/9/2018

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 227 DP 36317

Ref : NOUSER

Locality : PEAKHURST
Parish : ST GEORGE
LGA : GEORGES RIVER
County : CUMBERLAND



This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps

APPENDIX F – BOREHOLE LOGS

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530 (2984A) / 2834	**BOREHOLE NO.: BH 101**
Project: 77-79 Trafalgar Street, Peakhurst	Date : September 13, 2018	
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: ET	Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
	S1/S2/S3 @ 0.2 m		SILTY CLAY: dark brown, medium plasticity, trace of gravel, metal, glass PID = 0.0 ppm FILL	CL		D
	S4 @ 0.5 m	0.5	GRAVELLY CLAY: orange brown with dark brown, medium plasticity, trace of shale gravel	CL		D
			HAND AUGER REFUSAL AT 0.55 m			
		1.0				
		1.5				
		2.0				
		2.5				

D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)
S - jar sample

Contractor: STS
Equipment: Hand Auger
Hole Diameter (mm): 100
Angle from Vertical (°):
Drill Bit: V/Spiral/Two Prong

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530 (2984A) / 2834	**BOREHOLE NO.: BH 102**
Project: 77-79 Trafalgar Street, Peakhurst	Date : September 13, 2018	
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: ET	Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown with light grey and orange brown, medium to high plasticity, trace of gravel, glass	CL/CH		M
	S5 @ 0.2 m S6 @ 0.3 m		PID = 0.0 ppm FILL			
			SILTY CLAY: dark brown, medium plasticity	CL		M
			OLD TOPSOIL			
		0.5	GRAVELLY CLAY: dark brown/orange brown, low plasticity, some shale gravel	CL		M-D
			HAND AUGER DISCONTINUED AT 0.5 m			
		1.0				
		1.5				
		2.0				
		2.5				

D - disturbed sample U - undisturbed tube sample B - bulk sample

WT - level of water table or free water N - Standard Penetration Test (SPT)

S - jar sample

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS

Equipment: Hand Auger

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: V/Spiral/Two Prong

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530 (2984A) / 2834	**BOREHOLE NO.: BH 103**
Project: 77-79 Trafalgar Street, Peakhurst	Date : September 13, 2018	
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: ET	Sheet 1 of 1

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
			SILTY CLAY: dark brown, medium plasticity, occasional gravel, plastic	CL		M
	S7 @ 0.2 m		PID = 0.0 ppm			
	S8 @ 0.3 m		FILL			
			GRAVELLY CLAY: dark brown/orange brown, medium plasticity, some shale gravel	CL		M
		0.5	HAND AUGER DISCONTINUED AT 0.4 m			
		1.0				
		1.5				
		2.0				
		2.5				

D - disturbed sample U - undisturbed tube sample B - bulk sample

WT - level of water table or free water N - Standard Penetration Test (SPT)

S - jar sample

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS

Equipment: Hand Auger

Hole Diameter (mm): 100

Angle from Vertical (^{o}):

Drill Bit: V/Spiral/Two Prong

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530/2984B-2324D-E	**BOREHOLE NO.: BH 104**
Project: 77-79 Trafalgar Street, Peakhurst	Date : August 28, 2019	Sheet 1 of 1
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: CR	

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
	S9 @ 0-0.2 m EIL1 @ 0-0.3 m		TOPSOIL/FILL: SILTY CLAY: dark brown, medium plasticity	CL		D
	S10,S11,S12 @ 0.5 m EIL2 @ 0.5-0.7 m	0.5	SILTY CLAY: orange brown with light grey, medium to high plasticity	CL/CH		D-M
	S13 @ 1.0 m	1.0	SILTY CLAY: light grey with orange brown, medium to high plasticity, trace of shale gravel	CL/CH		D-M
	S14 @ 1.2 m EI3 @ 1.5-1.6 m	1.5	WEATHERED SHALE: orange brown/dark brown with light grey, clay seams		EXTREMELY LOW STRENGTH	D
		2.0 2.5	AUGER REFUSAL AT 1.8 M ON WEATHERED SHALE			

D - disturbed sample U - undisturbed tube sample B - bulk sample
WT - level of water table or free water N - Standard Penetration Test (SPT)
S - jar sample

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS
Equipment: Edson RP70
Hole Diameter (mm): 100
Angle from Vertical (°):
Drill Bit: Spiral

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530/2984B-2324D-E	**BOREHOLE NO.: BH 105**
Project: 77-79 Trafalgar Street, Peakhurst	Date : August 28, 2019	Sheet 1 of 1
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: CR	

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
	S15 @ 0-0.2 m		TOPSOIL/FILL: SILTY CLAY: dark brown, medium plasticity	CL		D-M
	S16 @ 0.4 m	0.5	SILTY CLAY: orange brown with light grey, medium to high plasticity	CL/CH		M
	S17 @ 0.8 m	1.0	SILTY CLAY: light grey with orange brown, medium to high plasticity, trace of shale gravel	CL/CH		M M-D
	S18 @ 1.2 m	1.5	WEATHERED SHALE: light grey with orange brown/dark brown, clay seams		EXTREMELY LOW STRENGTH	D
		2.0 2.5	AUGER REFUSAL AT 1.5 M ON WEATHERED SHALE			

D - disturbed sample U - undisturbed tube sample B - bulk sample

WT - level of water table or free water N - Standard Penetration Test (SPT)

S - jar sample

Contractor: STS

Equipment: Edson RP70

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: Spiral

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530/2984B-2324D-E	**BOREHOLE NO.: BH 106**
Project: 77-79 Trafalgar Street, Peakhurst	Date : August 28, 2019	Sheet 1 of 1
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: CR	

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
	S19 @ 0-0.2 m		TOPSOIL/FILL: SILTY SANDY CLAY: dark brown with dark grey, fine grained, low plasticity, occasional gravel	CL		M
		0.5				
	S20 @ 0.6 m		SILTY CLAY: orange brown/red brown with light grey, medium to high plasticity	CL/CH		M
		1.0				
	S21 @ 1.1 m		SILTY CLAY: light grey with orange brown, medium to high plasticity, trace of shale gravel	CL/CH		M-D
		1.5				
	S22 @ 1.7 m		WEATHERED SHALE: dark grey with light grey and orange brown, clay seams		EXTREMELY LOW STRENGTH	D
		2.0				
		2.5	BOREHOLE DISCONTINUED AT 2.5 M ON WEATHERED SHALE			

D - disturbed sample U - undisturbed tube sample B - bulk sample

WT - level of water table or free water N - Standard Penetration Test (SPT)

S - jar sample

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS

Equipment: Edson RP70

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: Spiral

SMEC Testing Services Pty Ltd

GEOTECHNICAL LOG - NON CORE BOREHOLE

Client: NSW Land & Housing Corporation	Project: 10530/2984B-2324D-E	**BOREHOLE NO.: BH 107**
Project: 77-79 Trafalgar Street, Peakhurst	Date : August 28, 2019	Sheet 1 of 1
Location: Refer to Drawing No. 19/2236	Logged: JK Checked By: CR	

WATER TABLE	SAMPLES	DEPTH (m)	DESCRIPTION OF DRILLED PRODUCT (Soil type, colour, grain size, plasticity, minor components, observations)	SYMBOL	CONSISTENCY (cohesive soils) or RELATIVE DENSITY (sands and gravels)	MOISTURE
	S23 @ 0-0.2 m		TOPSOIL: SILTY CLAY: dark brown, medium plasticity	CL		D-M
	S24 @ 0.4 m	0.5	SILTY CLAY: orange brown with light grey, medium to high plasticity	CL/CH		M
	S25 @ 0.8 m	1.0	SILTY CLAY: light grey with orange brown, medium to high plasticity, trace of shale gravel	CL/CH		M M-D
	S26 @ 1.4 m	1.5 2.0 2.5	WEATHERED SHALE: dark grey with light grey and orange brown, clay seams		EXTREMELY LOW STRENGTH	D
			BOREHOLE DISCONTINUED AT 2.5 M ON WEATHERED SHALE			

D - disturbed sample U - undisturbed tube sample B - bulk sample

WT - level of water table or free water N - Standard Penetration Test (SPT)

S - jar sample

NOTES: See explanation sheets for meaning of all descriptive terms and symbols

Contractor: STS

Equipment: Edson RP70

Hole Diameter (mm): 100

Angle from Vertical (°):

Drill Bit: Spiral

APPENDIX G – CHAIN OF CUSTODY DOCUMENTATION

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1827233**

Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: etrujillo@stsgeo.com.au	E-mail	: ALSEnviro.Sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 10530-2984A/0099D	Page	: 1 of 3
Order number	: E-2018-465	Quote number	: EB2017SMETES0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 13-Sep-2018 14:35	Issue Date	: 14-Sep-2018
Client Requested Due Date	: 19-Sep-2018	Scheduled Reporting Date	: **19-Sep-2018**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 16.0
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample S3 has been forwarded to ALS Brisbane as per COC request.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - S-05 TRH/BTEXN/8 Metals	SOIL - S-12 OC/OP Pesticides	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-19 TRH/BTEXN/PAH/Ph/OC/OP/PCB/8 metals
ES1827233-001	13-Sep-2018 00:00	S1	✓	✓				✓
ES1827233-002	13-Sep-2018 00:00	S2	✓		✓			
ES1827233-003	13-Sep-2018 00:00	S4	✓		✓	✓		
ES1827233-004	13-Sep-2018 00:00	S5	✓	✓				✓
ES1827233-005	13-Sep-2018 00:00	S6	✓		✓	✓		
ES1827233-006	13-Sep-2018 00:00	S7	✓	✓				✓
ES1827233-007	13-Sep-2018 00:00	S8	✓		✓	✓		
ES1827233-009	22-Aug-2018 00:00	TB01					✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-05T TRH/BTEXN/8 Metals (Total)
ES1827233-008	13-Sep-2018 00:00	RB01	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EP080: TRH Volatiles/BTEX							
TB01	Soil Glass Jar - Unpreserved	05-Sep-2018	05-Sep-2018	13-Sep-2018	×	----	----

Requested Deliverables

EDWIN TRUJILLO

- *AU Certificate of Analysis - NATA (COA)	Email	etrujillo@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	etrujillo@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	etrujillo@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	etrujillo@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	etrujillo@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	etrujillo@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	etrujillo@stsgeo.com.au

INVOICES (ACCOUNTS)

- A4 - AU Tax Invoice (INV)	Email	accounts@smectesting.com.au

SMEC TESTING ALL RESULTS

- *AU Certificate of Analysis - NATA (COA)	Email	enquiries@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enquiries@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enquiries@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enquiries@stsgeo.com.au
- A4 - AU Tax Invoice (INV)	Email	enquiries@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	enquiries@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	enquiries@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	enquiries@stsgeo.com.au

...sis: Brisbane → S3
...ed By / Date: Asbestos →
...nquished By / Date: Newcastle
...note / Courier:
... By PO / Internal Sheet

FV 13-9-18

CHAIN OF CUSTODY RECORD

Page

STS GeoEnvironmental Pty Ltd   Job No: 10530-2984A/0099D   Order No: E-2018-465
PO Box 6989 (postal)
4/1 Cowpasture Place (office), Wetherill Park NSW 2164
Telephone: (02) 9756 2166   Fax: (02) 9756 1137
E-Mail: etrujillo@stsgeo.com.au   Contact: Edwin Trujillo

Laboratory: ALS Laboratory Group - Sydney Environmental Division
277-289 Woodpark Road, SMITHFIELD NSW 2164
Telephone: (02) 8784 8555   Fax: (02) 8784 8500   Contact: Jacob Waugh

STS GeoEnvironmental Pty Ltd
Geotechnical and Environmental Solutions

Environmental Division
Sydney
Work Order Reference
ES1827233

Telephone : + 61-2-8784 8555

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	S19	S-18	S-5	S-12	W-5	NEPM Asbestos
1	S1	1	1	13-September-2018		soil		X					X
2	S2	1	-	13-September-2018		soil				X			
—	S3	1	-	13-September-2018		soil	Please forward to ALS Brisbane			X			
3	S4	1	-	13-September-2018		soil				X	X		
4	S5	1	1	13-September-2018		soil		X					X
5	S6	1	-	13-September-2018		soil				X	X		
6	S7	1	1	13-September-2018		soil		X					X
7	S8	1	-	13-September-2018		soil				X	X		
8	RB01	4	-	13-September-2018		water						X	
9	TB01	1	-	13-September-2018		soil			X				
TOTAL		13	3					3	1	5	3	1	3

Released by STS GeoEnvironmental
EdwinTrujillo
Signed:
Date: 13-Sep-18
Time: 13:30:00 PM

Received by: JUSTIN
Signed: [signature]
Date: 13/9/18
Time: 2.35pm

CoC Number: 10530-2984A- COC1
Your quotation: STS Geo 2017-2018 (EN/222/17)
Preliminary results by: Thursday 20 September 2018
Final results by: Thursday 20 September 2018

Standard Detection Limits Apply, Standard Turnaround Required on Results

PLEASE FORWARD S3 TO ALS BRISBANE

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1822530**

Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services EB
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: etrujillo@stsgeo.com.au	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 10530-2984A/0099D	Page	: 1 of 2
Order number	: E-2018-465	Quote number	: EB2017SMETES0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 18-Sep-2018 09:30	Issue Date	: 18-Sep-2018
Client Requested Due Date	: 24-Sep-2018	Scheduled Reporting Date	: **24-Sep-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.2°C - Ice present
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- *Samples were originally received by ALS Sydney on 13/09 and have been forwarded to ALS Brisbane for analysis. Temperature on arrival in ALS Brisbane has been noted above.
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - S-05 TRH/BTEXN/8 Metals
EB1822530-001	13-Sep-2018 00:00	S3	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

EDWIN TRUJILLO		
- *AU Certificate of Analysis - NATA (COA)	Email	etrujillo@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	etrujillo@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	etrujillo@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	etrujillo@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	etrujillo@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	etrujillo@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	etrujillo@stsgeo.com.au
INVOICES (ACCOUNTS)		
- A4 - AU Tax Invoice (INV)	Email	accounts@smectesting.com.au
SMEC TESTING ALL RESULTS		
- *AU Certificate of Analysis - NATA (COA)	Email	enquiries@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enquiries@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enquiries@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enquiries@stsgeo.com.au
- A4 - AU Tax Invoice (INV)	Email	enquiries@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	enquiries@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	enquiries@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	enquiries@stsgeo.com.au

...: Brisbane → S3
... By / Date: Asbestos →
... quished By / Date: Newcastle
... / Courier:
[illegible]
... By PO / Internal Sheet

FV 13-9-18

Environmental Division Brisbane
Work Order Reference
EB1822530

Telephone : + 61-7-3243 7222

CHAIN OF CUSTODY RECORD

STS GeoEnvironmental Pty Ltd — Job No: 10530-2984A/0099D — Order No: E-2018-465
PO Box 6989 (postal)
4/1 Cowpasture Place (office), Wetherill Park NSW 2164
Telephone: (02) 9756 2166 — Fax: (02) 9756 1137
E-Mail: etrujillo@stsgeo.com.au — Contact: Edwin Trujillo

Laboratory: ALS Laboratory Group - Sydney Environmental Division
277-289 Woodpark Road, SMITHFIELD NSW 2164
Telephone: (02) 8784 8555 — Fax: (02) 8784 8500 — Contact: Jacob Waugh

STS GeoEnvironmental Pty Ltd
Geotechnical and Environmental Solutions

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	S19	S-18	S-5	S-12	W-5	NEPM Asbestos
1	S1	1	1	13-September-2018		soil		X					X
2	S2	1	-	13-September-2018		soil				X			
—	S3	1	-	13-September-2018		soil	Please forward to ALS Brisbane			X			
3	S4	1	-	13-September-2018		soil				X	X		
4	S5	1	1	13-September-2018		soil		X					X
5	S6	1	-	13-September-2018		soil				X	X		
6	S7	1	1	13-September-2018		soil		X					X
7	S8	1	-	13-September-2018		soil				X	X		
8	RB01	4	-	13-September-2018		water						X	
9	TB01	1	-	13-September-2018		soil			X				
TOTAL		13	3					3	1	5	3	1	3

1

Released by STS GeoEnvironmental: EdwinTrujillo — Date: 13-Sep-18 — Time: 13:30:00 PM
Signed:

Received by: JUSTIN — Date: 13/9/18 — Time: 2.35pm
Signed: [signature]

CoC Number: 10530-2984A- COC1
Your quotation: STS Geo 2017-2018 (EN/222/17)
Preliminary results by: Thursday 20 September 2018
Final results by: Thursday 20 September 2018

Standard Detection Limits Apply, Standard Turnaround Required on Results

PLEASE FORWARD S3 TO ALS BRISBANE

CHAIN OF CUSTODY RECORD

STS GeoEnvironmental Pty Ltd
PO Box 6989 (postal)
14/1 Cowpasture Place (office), Wetherill Park NSW 2164
Fax: (02) 9756 1137
Telephone: (02) 9756 2166
E-Mail: cridley@stsgeo.com.au
Contact: Craig Ridley

Job No: 10530(2984B)/ 2365D-R

Order No: E-2019-379

STS GeoEnvironmental Pty Ltd
Geotechnical and Environmental Solutions

Laboratory: SGS Laboratory Group - Sydney Environmental Division
Unit 16, 33 Maddox Street, Alexandria NSW 2015
Telephone: +612 8594 04 00
Fax:
Contact:

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	CL17	ASBESTOS NEPM	CL10	CA5	TOC	pH (CaCl2)	BTEX	HOLD
1	S9	1	1	28-August-2019				X	X						
2	S10	1	1	28-August-2019						X					
3	S11	1	-	28-August-2019						X					
4	S13	1	1	28-August-2019						X					
8	S14	1	1	28-August-2019											X
5	S15	1	1	28-August-2019				X	X						
6	S16	1	1	28-August-2019						X					
7	S17	1	1	28-August-2019						X					
	S18	1	1	28-August-2019											X
8	S19	1	1	28-August-2019				X	X						
9	S20	1	1	28-August-2019						X					
	S21	1	1	28-August-2019											X
10	S22	1	1	28-August-2019						X					
11	S23	1	1	28-August-2019				X	X						
12	S24	1	1	28-August-2019						X					
	S25	1	1	28-August-2019											X
13	S26	1	1	28-August-2019						X					
14	EIL1	1	-	28-August-2019							X	X	X		
TOTAL															

ANALYSIS

Released by STS GeoEnvironmental
Craig Ridley
Signed:
Date: 29-Aug-19
Time: 10:50

Received by: DINESH - K
Signed:
Date: 29/08/19
Time: 1415

CoC Numbe 10530 (2984B) COC1

Your quotation: STS G_NC7GL6

Preliminary results by:

Final results by: 5-Sep-19

PLEASE ENSURE INTER-LAB ANALYSIS USE SAME TEST METHODS

Standard Detection Limits Apply, Standard Turnaround Required on Results

SGS EHS Alexandria Laboratory

SE197031 COC
Received: 29 – Aug – 2019

CHAIN OF CUSTODY RECORD

STS GeoEnvironmental Pty Ltd
PO Box 6989 (postal)
14/1 Cowpasture Place (office), Wetherill Park NSW 2164
Fax: (02) 9756 1137
Telephone: (02) 9756 2166
E-Mail: cridley@stsgeo.com.au
Contact: Craig Ridley

Job No: 10530(2984B)/ 2365D-R
Order No: E-2019-379

STS GeoEnvironmental Pty Ltd
Contact Geotechnical and Environmental Solutions

Laboratory: SGS Laboratory Group - Sydney Environmental Division
Unit 16, 33 Maddox Street, Alexandria NSW 2015
Telephone: +612 8594 04 00
Fax:

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	CL17	ASBESTOS NEPM	CL10	CAS	TOC	pH (CaCl2)	BTEX	HOLD
15	EIL2	1	-	Date sampled							X	X	X		
16	EIL3	1	-	Date sampled							X	X	X		
17	Trip Spike	1	-	Date sampled										X	
18	Trip Blank	1	-	Date sampled										X	
TOTAL								4	4	9	3	3	3	2	4

ANALYSIS

Released by STS GeoEnvironmental: Craig Ridley
Signed:
Date: 29-Aug-19
Time:

Received by: DINESH IK
Signed:
Date: 29/08/19
Time: 1415

CoC Numbe 10530(2984B) COC1

Your quotation: STS G_NC7GL6

Preliminary results by:

Final results by: 5-Sep-19

Standard Detection Limits Apply, Standard Turnaround Required on Results

PLEASE ENSURE INTER-LAB ANALYSIS USE SAME TEST METHODS

STS GEOENVIRONMENTAL PTY LIMITED

Po Box 6989, Wetherill Park, 2164
Tel : (02) 9756 2166, Fax : (02) 9756 1137, Email : enquiries@stsgeo.com.au
Website : www.stsgeo.com.au, ABN : 61 162 976 543

Purchase From
SGS
Unit 16, 33 Maddox Street
Alexandria
NSW 2015
Attention To : N/A

Deliver To
STS GeoEnvironmental
PO Box 6989
Wetherill Park
NSW 2164
Attention To :

Purchase Order

P. O. No#	E-2019-379
Date	28/08/2019
Project No	10530 (2984B)
STS No.	2365D-R
Delivery Date	5/09/2019

Item No	Description	Quantity	Unit Price	Amount
1	Analysis as per COC Results due 05/09/2019			

Sub Total	$0.00
0	$0.00
0	$0.00
Invoice Total	**$0.00**
Freight	
Amount Paid	
Balance Due	**$0.00**

Comments

Issued By

SAMPLE RECEIPT ADVICE

SE197031

CLIENT DETAILS

Contact	Craig Ridley
Client	STS GEOENVIRONMENTAL PTY LTD
Address	PO BOX 6989 WETHERILL PARK NSW 2164
Telephone	61 2 9756 2166
Facsimile	61 2 9756 1137
Email	cridley@stsgeo.com.au
Project	**10530(2984B)/2365D-R**
Order Number	**E-2019-379**
Samples	18

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 29/8/2019
Report Due	Thu 5/9/2019
SGS Reference	**SE197031**

SUBMISSION DETAILS

This is to confirm that 18 samples were received on Thursday 29/8/2019. Results are expected to be ready by COB Thursday 5/9/2019. Please quote SGS reference SE197031 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	18 Soil
Date documentation received	29/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

4 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

SAMPLE RECEIPT ADVICE

SE197031

CLIENT DETAILS

Client STS GEOENVIRONMENTAL PTY LTD

Project 10530(2984B)/2365D-R

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	TOC in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	S9	29	14	26	11	-	10	11	7
002	S10	-	-	26	-	-	10	11	7
003	S11	-	-	26	-	-	10	11	7
004	S13	-	-	26	-	-	10	11	7
005	S15	29	14	26	11	-	10	11	7
006	S16	-	-	26	-	-	10	11	7
007	S17	-	-	26	-	-	10	11	7
008	S19	29	14	26	11	-	10	11	7
009	S20	-	-	26	-	-	10	11	7
010	S22	-	-	26	-	-	10	11	7
011	S23	29	14	26	11	-	10	11	7
012	S24	-	-	26	-	-	10	11	7
013	S26	-	-	26	-	-	10	11	7
014	EIL1	-	-	-	-	2	-	-	-
015	EIL2	-	-	-	-	2	-	-	-
016	EIL3	-	-	-	-	2	-	-	-
017	Trip Spike	-	-	-	-	-	-	11	-
018	Trip Blank	-	-	-	-	-	-	11	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE197031

CLIENT DETAILS

Client STS GEOENVIRONMENTAL PTY LTD

Project 10530(2984B)/2365D-R

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Elements in Soil/Waste
001	S9	-	2	9	1	1	-	7
002	S10	-	-	-	1	1	-	7
003	S11	-	-	-	1	1	-	7
004	S13	-	-	-	1	1	-	7
005	S15	-	2	9	1	1	-	7
006	S16	-	-	-	1	1	-	7
007	S17	-	-	-	1	1	-	7
008	S19	-	2	9	1	1	-	7
009	S20	-	-	-	1	1	-	7
010	S22	-	-	-	1	1	-	7
011	S23	-	2	9	1	1	-	7
012	S24	-	-	-	1	1	-	7
013	S26	-	-	-	1	1	-	7
014	EIL1	13	-	-	-	1	1	-
015	EIL2	13	-	-	-	1	1	-
016	EIL3	13	-	-	-	1	1	-
018	Trip Blank	-	-	-	-	1	-	-

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1927530**

Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG RIDLEY	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: cridley@stsgeo.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 10530(2984B)/2365D-R	Page	: 1 of 2
Order number	: E-2019-380	Quote number	: EB2017SMETES0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 29-Aug-2019 11:51	Issue Date	: 30-Aug-2019
Client Requested Due Date	: 05-Sep-2019	Scheduled Reporting Date	: **05-Sep-2019**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 11.3'C - Ice Bricks present
Receipt Detail	: ESKY	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES1927530-001	28-Aug-2019 00:00	S12	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

CRAIG RIDLEY		
- *AU Certificate of Analysis - NATA (COA)	Email	cridley@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	cridley@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	cridley@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	cridley@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	cridley@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	cridley@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	cridley@stsgeo.com.au
INVOICES (ACCOUNTS)		
- A4 - AU Tax Invoice (INV)	Email	accounts@smectesting.com.au
SMEC TESTING ALL RESULTS		
- *AU Certificate of Analysis - NATA (COA)	Email	enquiries@stsgeo.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enquiries@stsgeo.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enquiries@stsgeo.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enquiries@stsgeo.com.au
- A4 - AU Tax Invoice (INV)	Email	enquiries@stsgeo.com.au
- Chain of Custody (CoC) (COC)	Email	enquiries@stsgeo.com.au
- EDI Format - ENMRG (ENMRG)	Email	enquiries@stsgeo.com.au
- EDI Format - ESDAT (ESDAT)	Email	enquiries@stsgeo.com.au

OS0919

CHAIN OF CUSTODY RECORD

STS GeoEnvironmental Pty Ltd
PO Box 6989 (postal)
14/1 Cowpasture Place (office), Wetherill Park NSW 2164
Telephone: (02) 9756 2166 Fax: (02) 9756 1137
E-Mail: cridley@stsgeo.com.au Contact: Craig Ridley

Job No: 10530(2984B)/ 2365D-R

Order No: E-2019-380

STS GeoEnvironmental Pty Ltd
Geotechnical and Environmental Solutions

Laboratory: ALS Laboratory Group - Sydney Environmental Division
277-289 Woodpark Road, SMITHFIELD NSW 2164
Telephone: (02) 8784 8555 Fax: (02) 8784 8500 Contact: Jacob Waugh

Laboratory number	Sample number	jar/ bottle	bag	Date sampled	Composite number	Sample type	Comments	ANALYSIS S-26
1	S12	1		28-August-2019		soil		X
TOTAL								

Environmental Division Sydney
Work Order Reference
ES1927530

Telephone : +61-2-8784 8555

Released by STS GeoEnvironmental Craig Ridley Signed:	Date: 29-Aug-19	Time:
Received by: FAST Signed:	Date: 29/8/19	Time: 11.50

CoC Number: 10530(2984B) - COC1

Your quotation: STS Geo 2017-2018 (EN/222/18)

Preliminary results by:

Final results by: 5-Sep-19

Standard Detection Limits Apply, Standard Turnaround Required on Results

ES1927530

APPENDIX H – ANALYTICAL LABORATORY REPORTS

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1827233**	Page	: 1 of 15
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 10530-2984A/0099D	Date Samples Received	: 13-Sep-2018 14:35
Order number	: E-2018-465	Date Analysis Commenced	: 14-Sep-2018
C-O-C number	: ----	Issue Date	: 19-Sep-2018 19:07
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 9		
No. of samples analysed	: 9		

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. 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*
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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 Contact 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.

- EP071: Results of sample S7 have been confirmed by re-extraction and re-analysis.
- 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.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- 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
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) 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.
- 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)				Client sample ID	S1	S2	S4	S5	S6
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827233-001	ES1827233-002	ES1827233-003	ES1827233-004	ES1827233-005
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content	----	1.0	%		----	9.8	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		8.3	----	9.3	17.6	11.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	No	----
Asbestos Type	1332-21-4	-	--		-	----	----	-	----
Sample weight (dry)	----	0.01	g		363	----	----	400	----
APPROVED IDENTIFIER:	----	-	--		C.OWLER	----	----	C.OWLER	----
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	----	----	<0.0004	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	----	----	<0.001	----
ø Asbestos Containing Material	1332-21-4	0.1	g		<0.1	----	----	<0.1	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		<0.01	----	----	<0.01	----
ø Weight Used for % Calculation	----	0.0001	kg		0.363	----	----	0.400	----
ø Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	----	----	<0.0004	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	8	8	11	10
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		15	16	13	10	12
Copper	7440-50-8	5	mg/kg		76	84	64	15	17
Lead	7439-92-1	5	mg/kg		96	143	48	36	25
Nickel	7440-02-0	2	mg/kg		12	12	8	7	6
Zinc	7440-66-6	5	mg/kg		194	168	81	23	16
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	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<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
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S1	S2	S4	S5	S6
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827233-001	ES1827233-002	ES1827233-003	ES1827233-004	ES1827233-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC	58-89-9	0.05	mg/kg		<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
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<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
^ Total Chlordane (sum)	----	0.05	mg/kg		<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
alpha-Endosulfan	959-98-8	0.05	mg/kg		<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
Dieldrin	60-57-1	0.05	mg/kg		<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
Endrin	72-20-8	0.05	mg/kg		<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
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<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
Endrin aldehyde	7421-93-4	0.05	mg/kg		<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
4.4`-DDT	50-29-3	0.2	mg/kg		<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
Methoxychlor	72-43-5	0.2	mg/kg		<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
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<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
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<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
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S1	S2	S4	S5	S6
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827233-001	ES1827233-002	ES1827233-003	ES1827233-004	ES1827233-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<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
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<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
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S1	S2	S4	S5	S6
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827233-001	ES1827233-002	ES1827233-003	ES1827233-004	ES1827233-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	<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
^ 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									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S1	S2	S4	S5	S6
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00	13-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827233-001	ES1827233-002	ES1827233-003	ES1827233-004	ES1827233-005
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		118	----	----	105	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		121	----	107	95.1	81.1
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		115	----	114	89.0	71.2
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		72.7	----	----	73.4	----
2-Chlorophenol-D4	93951-73-6	0.5	%		74.3	----	----	73.0	----
2.4.6-Tribromophenol	118-79-6	0.5	%		71.8	----	----	69.3	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		78.9	----	----	77.1	----
Anthracene-d10	1719-06-8	0.5	%		82.8	----	----	82.4	----
4-Terphenyl-d14	1718-51-0	0.5	%		86.4	----	----	84.9	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		82.5	79.6	94.1	88.6	82.8
Toluene-D8	2037-26-5	0.2	%		96.9	88.0	106	101	75.8
4-Bromofluorobenzene	460-00-4	0.2	%		108	87.0	105	94.9	84.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S7	S8	TB01	----	----
			Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	22-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1827233-006	ES1827233-007	ES1827233-009	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**32.6**	**18.9**	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Sample weight (dry)	----	0.01	g	**192**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**C.OWLER**	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	----	----	----	----
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	----	----	----	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	----	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	**0.192**	----	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**47**	**32**	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**17**	**17**	----	----	----
Copper	7440-50-8	5	mg/kg	**47**	**29**	----	----	----
Lead	7439-92-1	5	mg/kg	**137**	**84**	----	----	----
Nickel	7440-02-0	2	mg/kg	**23**	**8**	----	----	----
Zinc	7440-66-6	5	mg/kg	**378**	**161**	----	----	----
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	----	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	TB01	----	----
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	22-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827233-006	ES1827233-007	ES1827233-009	--------	--------
					Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
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		**0.07**	<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		**0.07**	<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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	TB01	----	----
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	22-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827233-006	ES1827233-007	ES1827233-009	--------	--------
					Result	Result	Result	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
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	----	----	----	----
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	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	TB01	----	----
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	22-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827233-006	ES1827233-007	ES1827233-009	--------	--------
					Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		**100**	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**710**	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**600**	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**1410**	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		**230**	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**950**	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		**410**	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**1590**	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		**230**	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**73.5**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S7	S8	TB01	----	----
				Client sampling date / time	13-Sep-2018 00:00	13-Sep-2018 00:00	22-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827233-006	ES1827233-007	ES1827233-009	--------	--------
					Result	Result	Result	----	----
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.05	%		118	64.6	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		87.4	63.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		75.5	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		72.7	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		77.7	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		78.1	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		80.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		85.5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		82.0	92.5	91.5	----	----
Toluene-D8	2037-26-5	0.2	%		88.2	104	104	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		86.0	99.0	102	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	----	----	----	----
				Client sampling date / time	13-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1827233-008	--------	--------	--------	--------	
				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	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	----	----	
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ **Total Xylenes**	----	2	µg/L	<2	----	----	----	----	
^ **Sum of BTEX**	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	----	----	----	----
				Client sampling date / time	13-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1827233-008	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**112**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**113**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**107**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	S1 - 13-Sep-2018 00:00	Mid brown sandy-clay soil
EA200: Description	S5 - 13-Sep-2018 00:00	Mid brown sandy-clay soil
EA200: Description	S7 - 13-Sep-2018 00:00	Mid brown sandy-clay soil

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
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

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1827233**	Page	: 1 of 15
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 10530-2984A/0099D	Date Samples Received	: 13-Sep-2018
Order number	: E-2018-465	Date Analysis Commenced	: 14-Sep-2018
C-O-C number	: ----	Issue Date	: 19-Sep-2018
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 9		
No. of samples analysed	: 9		

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. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1932301)									
ES1827229-001	Anonymous	EA055: Moisture Content	----	0.1	%	5.6	5.7	0.00	No Limit
ES1827229-012	Anonymous	EA055: Moisture Content	----	0.1	%	12.3	10.6	14.8	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1937878)									
ES1826997-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES1827262-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	11	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	29	25.7	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	26	9.28	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	22	10.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	59	75	23.8	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1937879)									
ES1826997-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1827262-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1932480)									
ES1827229-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1827229-011	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1932479)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1932479) - continued									
ES1827229-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1827229-011	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1932479) - continued									
ES1827229-011	Anonymous	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1932479)									
ES1827229-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1827229-011	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1932479) - continued									
ES1827229-011	Anonymous	EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1932478)									
ES1827229-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
ES1827229-011	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1932478)									
ES1827229-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1932478) - continued									
ES1827229-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1827229-011	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1932463)									
ES1827233-001	S1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1932477)									
ES1827229-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1827229-011	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1934369)									
ES1827233-002	S2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EW1803724-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1932463)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1932463) - continued									
ES1827233-001	S1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1932477)									
ES1827229-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1827229-011	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1934369)									
ES1827233-002	S2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EW1803724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1932463)									
ES1827233-001	S1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 1934369)									
ES1827233-002	S2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EW1803724-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1936016)									
ES1827208-010	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 1936016) - continued									
ES1827208-010	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES1827282-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.008	0.007	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.008	0.008	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1932583)									
ES1827144-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1827275-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0002	0.0002	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1934135)									
ES1826735-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	80	80	0.00	No Limit
ES1827154-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1934135)									
ES1826735-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	100	100	0.00	No Limit
ES1827154-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1934135)									
ES1826735-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	3	3	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	31	32	3.79	0% - 50%
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	15	16	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	7	7	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	10	8	18.7	No Limit
ES1827154-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1937878)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.8	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.7	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	91.7	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.0	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.7	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	100	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1937879)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	76.0	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1932480)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	94.0	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 1932479)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.7	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.1	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.6	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	81.4	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.9	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	76.7	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	100	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.5	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	92.3	54	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1932479)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1932479) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	59	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	62	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	81.9	54	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	76.1	67	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.5	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	76.0	72	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	79.1	68	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	77.9	68	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	69	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	76	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	81.2	64	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	70	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	69	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	76.6	66	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	68	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	62	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.9	68	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.3	65	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	76.6	41	123
EP075(SIM)A: Phenolic Compounds (QCLot: 1932478)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	84.9	71	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	83.7	72	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	75.4	71	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	72.7	67	127
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	70.0	54	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	81.7	68	126
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	78.1	66	120
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	80.1	70	120
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	83.7	70	116
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	68.8	54	114
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	69.9	60	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	23.0	10	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1932478)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	87.8	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	82.1	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	81.6	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	81.2	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	84.1	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	84.9	77	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1932478) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	83.4	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	83.7	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	85.1	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	90.2	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	85.6	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.8	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	81.7	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	81.4	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	79.0	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	81.2	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1932463)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.6	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1932477)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	104	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	101	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	104	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934369)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	95.1	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1932463)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	92.8	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1932477)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	96.9	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	94.1	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	116	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934369)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	102	68	128
EP080: BTEXN (QCLot: 1932463)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.6	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.4	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	88.5	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	92.0	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.8	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	81.4	63	119
EP080: BTEXN (QCLot: 1934369)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	102	67	121

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1934369) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	103	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	105	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	105	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	63	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1936016)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.6	82	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.4	84	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.8	86	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.5	83	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.4	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.2	84	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.6	79	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1932583)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.1	77	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1932416)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	97.3	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.7	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	103	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934135)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	81.8	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1932416)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	81.6	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	97.4	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	91.5	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934135)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	83.5	75	127
EP080: BTEXN (QCLot: 1934135)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	94.2	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	91.8	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.2	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	93.6	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	91.1	72	122

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1934135) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.5	70	120

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1937878)							
ES1826997-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	99.6	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	111	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1937879)							
ES1826997-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	76.1	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1932480)							
ES1827229-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	86.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1932479)							
ES1827229-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	83.8	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.0	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	79.8	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	80.6	70	130
		EP068: Endrin	72-20-8	2 mg/kg	86.4	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	100	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1932479)							
ES1827229-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	81.8	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	72.1	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	72.5	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	72.4	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	97.3	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1932478)							
ES1827229-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.7	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	92.7	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 1932478) - continued							
ES1827229-001	Anonymous	EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	91.9	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	98.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	54.3	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1932478)							
ES1827229-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.8	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1932463)							
ES1827233-001	S1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	105	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1932477)							
ES1827229-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	87.8	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	102	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	112	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934369)							
ES1827233-002	S2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	95.5	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1932463)							
ES1827233-001	S1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	105	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1932477)							
ES1827229-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	94.9	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	110	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	108	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934369)							
ES1827233-002	S2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	70	130
EP080: BTEXN (QCLot: 1932463)							
ES1827233-001	S1	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	96.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	95.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	95.7	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	95.2	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	70.0	70	130
EP080: BTEXN (QCLot: 1934369)							
ES1827233-002	S2	EP080: Benzene	71-43-2	2.5 mg/kg	98.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	88.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.0	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	87.8	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 1934369) - continued							
ES1827233-002	S2	EP080: ortho-Xylene	95-47-6	2.5 mg/kg	88.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	81.1	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1936016)							
ES1827208-011	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.7	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	98.0	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	105	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	97.6	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	102	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.6	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	97.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1932583)							
ES1827233-008	RB01	EG035T: Mercury	7439-97-6	0.01 mg/L	92.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934135)							
ES1826735-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	78.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934135)							
ES1826735-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	82.6	70	130
EP080: BTEXN (QCLot: 1934135)							
ES1826735-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	86.4	70	130
		EP080: Toluene	108-88-3	25 µg/L	87.9	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	90.0	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	88.7	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	87.4	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	81.2	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1827233**	Page	: 1 of 9
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR EDWIN TRUJILLO	Telephone	: +61-2-8784 8555
Project	: 10530-2984A/0099D	Date Samples Received	: 13-Sep-2018
Site	: ----	Issue Date	: 19-Sep-2018
Sampler	: ----	No. of samples received	: 9
Order number	: E-2018-465	No. of samples analysed	: 9

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved						
TB01	17-Sep-2018	05-Sep-2018	**12**	17-Sep-2018	05-Sep-2018	**12**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved						
TB01	17-Sep-2018	05-Sep-2018	**12**	17-Sep-2018	05-Sep-2018	**12**
EP080: BTEXN						
Soil Glass Jar - Unpreserved						
TB01	17-Sep-2018	05-Sep-2018	**12**	17-Sep-2018	05-Sep-2018	**12**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	2	22	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055)							
S2	**13-Sep-2018**	**----**	----	----	**14-Sep-2018**	27-Sep-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
S1, S4, S5, S6, S7, S8	**13-Sep-2018**	**----**	----	----	**14-Sep-2018**	27-Sep-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag: Separate bag received (EA200)							
S1, S5, S7	**13-Sep-2018**	**----**	----	----	**17-Sep-2018**	12-Mar-2019	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag: Separate bag received (EA200N)							
S1, S5, S7	**13-Sep-2018**	**----**	----	----	**17-Sep-2018**	12-Mar-2019	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S1, S2, S4, S5, S6, S7, S8	**13-Sep-2018**	**18-Sep-2018**	12-Mar-2019	✓	**18-Sep-2018**	12-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S1, S2, S4, S5, S6, S7, S8	**13-Sep-2018**	**18-Sep-2018**	11-Oct-2018	✓	**19-Sep-2018**	11-Oct-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
S1, S5, S7	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**18-Sep-2018**	27-Oct-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
S1, S4, S5, S6, S7, S8	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**18-Sep-2018**	27-Oct-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
S1, S4, S5, S6, S7, S8	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**18-Sep-2018**	27-Oct-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S1, S5, S7	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Oct-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S1, S5, S7	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S1	**13-Sep-2018**	**14-Sep-2018**	27-Sep-2018	✓	**14-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
S1, S2, S4, S5, S6, S7, S8	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
TB01	**22-Aug-2018**	**17-Sep-2018**	05-Sep-2018	×	**17-Sep-2018**	05-Sep-2018	×
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
S1	**13-Sep-2018**	**14-Sep-2018**	27-Sep-2018	✓	**14-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
S1, S2, S4, S5, S6, S7, S8	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
TB01	**22-Aug-2018**	**17-Sep-2018**	05-Sep-2018	×	**17-Sep-2018**	05-Sep-2018	×
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S1	**13-Sep-2018**	**14-Sep-2018**	27-Sep-2018	✓	**14-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
S2, S4, S5, S6, S7, S8	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)							
TB01	**22-Aug-2018**	**17-Sep-2018**	05-Sep-2018	×	**17-Sep-2018**	05-Sep-2018	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T)							
RB01	**13-Sep-2018**	**18-Sep-2018**	12-Mar-2019	✓	**18-Sep-2018**	12-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)							
RB01	**13-Sep-2018**	**----**	----	----	**14-Sep-2018**	11-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
RB01	**13-Sep-2018**	**14-Sep-2018**	20-Sep-2018	✓	**17-Sep-2018**	24-Oct-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
RB01	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
RB01	**13-Sep-2018**	**14-Sep-2018**	20-Sep-2018	✓	**17-Sep-2018**	24-Oct-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
RB01	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
RB01	**13-Sep-2018**	**17-Sep-2018**	27-Sep-2018	✓	**17-Sep-2018**	27-Sep-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	22	9.09	10.00	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	18	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	5	**40.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1822530**	Page	: 1 of 5
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services EB
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 10530-2984A/0099D	Date Samples Received	: 18-Sep-2018 09:30
Order number	: E-2018-465	Date Analysis Commenced	: 18-Sep-2018
C-O-C number	: ----	Issue Date	: 21-Sep-2018 17:00
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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. 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*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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 Contact 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.

- EG005T (Total Metals by ICP-AES) : Unable to report Cadmium LCS as the target value is less than the limit of reporting.
- EG005T (Total Metals) Sample EB1822530-001(DG_B2_BH109_2.0) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EP071: Poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S3	----	----	----	----
				Client sampling date / time	13-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1822530-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content									
Moisture Content	----	1.0	%		**35.3**	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		**8**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		**1**	----	----	----	----
Chromium	7440-47-3	2	mg/kg		**14**	----	----	----	----
Copper	7440-50-8	5	mg/kg		**90**	----	----	----	----
Lead	7439-92-1	5	mg/kg		**100**	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**13**	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**179**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
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	----	----	----	----
^ **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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S3	----	----	----	----
				Client sampling date / time	13-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1822530-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN - Continued									
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**65.6**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**65.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**73.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1822530**	Page	: 1 of 5
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR EDWIN TRUJILLO	Contact	: Customer Services EB
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 10530-2984A/0099D	Date Samples Received	: 18-Sep-2018
Order number	: E-2018-465	Date Analysis Commenced	: 18-Sep-2018
C-O-C number	: ----	Issue Date	: 21-Sep-2018
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1937688)									
EB1822530-001	S3	EA055: Moisture Content	----	0.1	%	35.3	35.5	0.535	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1937686)									
EB1822530-001	S3	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	16	12.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	13	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	16	68.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	90	93	3.34	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	100	# 122	20.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	179	195	9.00	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1937685)									
EB1822530-001	S3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1937683)									
EB1822530-001	S3	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1937684)									
EB1822530-001	S3	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1937683)									
EB1822530-001	S3	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1937684)									
EB1822530-001	S3	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 1937683)									
EB1822530-001	S3	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1937686)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	114 mg/kg	100	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
EG005T: Chromium	7440-47-3	2	mg/kg	<2	17.7 mg/kg	118	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	50.6 mg/kg	106	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	109	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	13.7 mg/kg	110	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	117 mg/kg	108	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1937685)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	88.2	78	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937683)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	77.7	72	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937684)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	310 mg/kg	96.4	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	490 mg/kg	99.8	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937683)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	77.6	70	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937684)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	450 mg/kg	98.5	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	320 mg/kg	101	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 1937683)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.8	69	118
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	82.8	73	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	87.1	73	115
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	88.6	75	115
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	75	115
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	79.8	71	113

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1937686)							
EB1822540-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	85.1	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	98.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1937685)							
EB1822540-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	91.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937683)							
EB1822540-001	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	70.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937684)							
EB1822540-001	Anonymous	EP071: C10 - C14 Fraction	----	310 mg/kg	# 60.4	70	130
		EP071: C15 - C28 Fraction	----	490 mg/kg	# 30.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937683)							
EB1822540-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	71.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937684)							
EB1822540-001	Anonymous	EP071: >C10 - C16 Fraction	----	450 mg/kg	# 42.1	70	130
		EP071: >C16 - C34 Fraction	----	320 mg/kg	# 37.1	70	130
EP080: BTEXN (QCLot: 1937683)							
EB1822540-001	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	86.9	70	130
		EP080: Toluene	108-88-3	2 mg/kg	89.5	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1822530**	Page	: 1 of 5
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR EDWIN TRUJILLO	Telephone	: +61-7-3243 7222
Project	: 10530-2984A/0099D	Date Samples Received	: 18-Sep-2018
Site	: ----	Issue Date	: 21-Sep-2018
Sampler	: ----	No. of samples received	: 1
Order number	: E-2018-465	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1822530--001	S3	**Lead**	7439-92-1	20.2 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	EB1822540--001	Anonymous	**C10 - C14 Fraction**	----	60.4 %	70-130%	**Recovery less than lower data quality objective**
EP080/071: Total Petroleum Hydrocarbons	EB1822540--001	Anonymous	**C15 - C28 Fraction**	----	30.2 %	70-130%	**Recovery less than lower data quality objective**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EB1822540--001	Anonymous	**>C10 - C16 Fraction**	----	42.1 %	70-130%	**Recovery less than lower data quality objective**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EB1822540--001	Anonymous	**>C16 - C34 Fraction**	----	37.1 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055)							
S3	**13-Sep-2018**	**----**	----	----	**18-Sep-2018**	27-Sep-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S3	**13-Sep-2018**	**19-Sep-2018**	12-Mar-2019	✓	**19-Sep-2018**	12-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S3	**13-Sep-2018**	**19-Sep-2018**	11-Oct-2018	✓	**19-Sep-2018**	11-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S3	**13-Sep-2018**	**18-Sep-2018**	27-Sep-2018	✓	**19-Sep-2018**	27-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
S3	**13-Sep-2018**	**18-Sep-2018**	27-Sep-2018	✓	**19-Sep-2018**	27-Sep-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S3	**13-Sep-2018**	**18-Sep-2018**	27-Sep-2018	✓	**19-Sep-2018**	27-Sep-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1927530**	Page	: 1 of 6
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG RIDLEY	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 10530(2984B)/2365D-R	Date Samples Received	: 29-Aug-2019 11:51
Order number	: E-2019-380	Date Analysis Commenced	: 30-Aug-2019
C-O-C number	: ----	Issue Date	: 04-Sep-2019 15:07
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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 Contact 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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	S12	----	----	----	----
			Client sampling date / time	28-Aug-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1927530-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**13.6**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**70**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**15**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**24**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**43**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**5**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**110**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S12	----	----	----	----
				Client sampling date / time	28-Aug-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1927530-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ **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	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**82.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**88.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**79.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**102**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**94.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**104**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**103**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	S12	----	----	----	----
				Client sampling date / time	28-Aug-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1927530-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**97.7**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1927530**	Page	: 1 of 7
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG RIDLEY	Contact	: Customer Services ES
Address	: 14/1 Cowpasture Place Wetherill Park NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 10530(2984B)/2365D-R	Date Samples Received	: 29-Aug-2019
Order number	: E-2019-380	Date Analysis Commenced	: 30-Aug-2019
C-O-C number	: ----	Issue Date	: 04-Sep-2019
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2558378)									
ES1927361-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	43	40	7.38	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	26	27	5.54	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	36	7.73	No Limit
ES1927403-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	3	4	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	155	150	3.54	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	44	50	13.5	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	14	9.76	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	451	435	3.56	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	395	368	6.98	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	1090	1010	7.10	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2558381)									
ES1927363-002	Anonymous	EA055: Moisture Content	----	0.1	%	14.0	13.1	6.69	0% - 20%
ES1927497-001	Anonymous	EA055: Moisture Content	----	0.1	%	19.1	18.6	2.86	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2558377)									
ES1927361-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1927403-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.5	0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2556518)									
ES1927562-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2556518) - continued									
ES1927562-001	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.7	0.6	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.2	1.1	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.2	1.2	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.7	0.7	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.8	0.7	20.8	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.7	0.7	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	6.9	5.5	22.6	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.0	0.8	18.1	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2555884)									
ES1927361-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1927530-001	S12	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2556517)									
ES1927562-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	120	160	22.7	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2555884)									
ES1927361-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1927530-001	S12	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2556517)									
ES1927562-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	140	170	20.5	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	150	200	27.7	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 2555884)									
ES1927361-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 2555884) - continued									
ES1927530-001	S12	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2558378)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	109	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	104	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	94.8	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	106	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	110	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	106	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2558377)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.1	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2556518)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	94.8	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	97.6	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	99.8	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.6	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.1	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	88.3	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	96.4	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.3	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	90.9	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.0	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.0	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	96.6	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	96.2	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.6	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	96.8	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.2	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2555884)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556517)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	98.4	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	99.0	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	89.6	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2555884)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2555884) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	82.9	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2556517)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.1	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	97.6	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	88.4	63	131
EP080: BTEXN (QCLot: 2555884)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	98.1	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.4	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.6	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	91.0	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.8	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	88.7	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2558378)							
ES1927361-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	70.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	83.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	75.8	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	86.8	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	90.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	83.8	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	85.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2558377)							
ES1927361-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	78.4	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2556518)							
ES1927562-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.5	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	94.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2555884)							
ES1927361-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	81.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556517)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556517) - continued							
ES1927562-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	92.9	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	96.2	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	90.8	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2555884)							
ES1927361-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	76.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2556517)							
ES1927562-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	94.3	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	91.5	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	94.1	52	132
EP080: BTEXN (QCLot: 2555884)							
ES1927361-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	83.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	85.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	89.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.2	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	88.2	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1927530**	Page	: 1 of 4
Client	: **SMEC TESTING SERVICES PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG RIDLEY	Telephone	: +61-2-8784 8555
Project	: 10530(2984B)/2365D-R	Date Samples Received	: 29-Aug-2019
Site	: ----	Issue Date	: 04-Sep-2019
Sampler	: ----	No. of samples received	: 1
Order number	: E-2019-380	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
S12	**28-Aug-2019**	**----**	----	----	**02-Sep-2019**	11-Sep-2019	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S12	**28-Aug-2019**	**02-Sep-2019**	24-Feb-2020	✓	**02-Sep-2019**	24-Feb-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S12	**28-Aug-2019**	**02-Sep-2019**	25-Sep-2019	✓	**03-Sep-2019**	25-Sep-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S12	**28-Aug-2019**	**02-Sep-2019**	11-Sep-2019	✓	**03-Sep-2019**	12-Oct-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
S12	**28-Aug-2019**	**02-Sep-2019**	11-Sep-2019	✓	**03-Sep-2019**	12-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP080)							
S12	**28-Aug-2019**	**30-Aug-2019**	11-Sep-2019	✓	**02-Sep-2019**	11-Sep-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071)							
S12	**28-Aug-2019**	**02-Sep-2019**	11-Sep-2019	✓	**03-Sep-2019**	12-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP080)							
S12	**28-Aug-2019**	**30-Aug-2019**	11-Sep-2019	✓	**02-Sep-2019**	11-Sep-2019	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S12	**28-Aug-2019**	**30-Aug-2019**	11-Sep-2019	✓	**02-Sep-2019**	11-Sep-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Craig Ridley	Manager	Huong Crawford
Client	STS GEOENVIRONMENTAL PTY LTD	Laboratory	SGS Alexandria Environmental
Address	PO BOX 6989 WETHERILL PARK NSW 2164	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 9756 2166	Telephone	+61 2 8594 0400
Facsimile	61 2 9756 1137	Facsimile	+61 2 8594 0499
Email	cridley@stsgeo.com.au	Email	au.environmental.sydney@sgs.com
Project	**10530(2984B)/2365D-R**	SGS Reference	**SE197031 R0**
Order Number	**E-2019-379**	Date Received	29 Aug 2019
Samples	18	Date Reported	05 Sep 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

Ly Kim Ha
Organic Section Head

Shane McDermott
Inorganic/Metals Chemist

Yusuf Kuthpudin
Asbestos Analyst

Parameter	Units	LOR	Sample Number: SE197031.001 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S9	SE197031.002 Soil 28 Aug 2019 S10	SE197031.003 Soil 28 Aug 2019 S11	SE197031.004 Soil 28 Aug 2019 S13
VOC's in Soil Method: AN433 Tested: 30/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**110**	**92**	**96**	**91**
d8-toluene (Surrogate)	%	-	**121**	**113**	**104**	**124**
Bromofluorobenzene (Surrogate)	%	-	**91**	**98**	**91**	**104**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 30/8/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**110**	**92**	**96**	**91**
d8-toluene (Surrogate)	%	-	**121**	**113**	**104**	**124**
Bromofluorobenzene (Surrogate)	%	-	**91**	**98**	**91**	**104**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Units	LOR	Sample Number: SE197031.001 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S9	SE197031.002 Soil 28 Aug 2019 S10	SE197031.003 Soil 28 Aug 2019 S11	SE197031.004 Soil 28 Aug 2019 S13
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 30/8/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 30/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**86**	**88**	**88**	**90**
2-fluorobiphenyl (Surrogate)	%	-	**86**	**82**	**80**	**80**
d14-p-terphenyl (Surrogate)	%	-	**88**	**88**	**86**	**88**
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	-	-
Alpha BHC	mg/kg	0.1	<0.1	-	-	-
Lindane	mg/kg	0.1	<0.1	-	-	-
Heptachlor	mg/kg	0.1	<0.1	-	-	-
Aldrin	mg/kg	0.1	<0.1	-	-	-
Beta BHC	mg/kg	0.1	<0.1	-	-	-
Delta BHC	mg/kg	0.1	<0.1	-	-	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	-	-
o,p'-DDE	mg/kg	0.1	<0.1	-	-	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	-	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	-	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	-	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	-	-
p,p'-DDE	mg/kg	0.1	<0.1	-	-	-
Dieldrin	mg/kg	0.2	<0.2	-	-	-
Endrin	mg/kg	0.2	<0.2	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.001 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S9	SE197031.002 Soil 28 Aug 2019 S10	SE197031.003 Soil 28 Aug 2019 S11	SE197031.004 Soil 28 Aug 2019 S13
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	<0.1	-	-	-
o,p'-DDT	mg/kg	0.1	<0.1	-	-	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	-	-
p,p'-DDD	mg/kg	0.1	<0.1	-	-	-
p,p'-DDT	mg/kg	0.1	<0.1	-	-	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	-	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	-	-
Methoxychlor	mg/kg	0.1	<0.1	-	-	-
Endrin Ketone	mg/kg	0.1	<0.1	-	-	-
Isodrin	mg/kg	0.1	<0.1	-	-	-
Mirex	mg/kg	0.1	<0.1	-	-	-
Total CLP OC Pesticides	mg/kg	1	<1	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**85**	-	-	-
OP Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Dichlorvos	mg/kg	0.5	<0.5	-	-	-
Dimethoate	mg/kg	0.5	<0.5	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	-	-
Fenitrothion	mg/kg	0.2	<0.2	-	-	-
Malathion	mg/kg	0.2	<0.2	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	-	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	-	-
Methidathion	mg/kg	0.5	<0.5	-	-	-
Ethion	mg/kg	0.2	<0.2	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	-	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	-	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**86**	-	-	-
d14-p-terphenyl (Surrogate)	%	-	**88**	-	-	-
PCBs in Soil Method: AN420 Tested: 30/8/2019						
Arochlor 1016	mg/kg	0.2	<0.2	-	-	-
Arochlor 1221	mg/kg	0.2	<0.2	-	-	-
Arochlor 1232	mg/kg	0.2	<0.2	-	-	-
Arochlor 1242	mg/kg	0.2	<0.2	-	-	-
Arochlor 1248	mg/kg	0.2	<0.2	-	-	-
Arochlor 1254	mg/kg	0.2	<0.2	-	-	-
Arochlor 1260	mg/kg	0.2	<0.2	-	-	-
Arochlor 1262	mg/kg	0.2	<0.2	-	-	-
Arochlor 1268	mg/kg	0.2	<0.2	-	-	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**85**	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.001 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S9	SE197031.002 Soil 28 Aug 2019 S10	SE197031.003 Soil 28 Aug 2019 S11	SE197031.004 Soil 28 Aug 2019 S13
TOC in Soil Method: AN188 Tested: 5/9/2019						
Total Organic Carbon	%w/w	0.05	-	-	-	-
Organic Matter (calc)*	%w/w	0.1	-	-	-	-
pH in soil (1:5) Method: AN101 Tested: 5/9/2019						
pH (CaCl2)*	pH Units	0.1	-	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 4/9/2019						
Exchangeable Sodium, Na	mg/kg	2	-	-	-	-
Exchangeable Sodium, Na	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-	-	-
Exchangeable Potassium, K	mg/kg	2	-	-	-	-
Exchangeable Potassium, K	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-	-	-
Exchangeable Calcium, Ca	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-	-	-
Exchangeable Magnesium, Mg	cmol (+)/kg	0.02	-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-	-	-
Cation Exchange Capacity	cmol (+)/kg	0.02	-	-	-	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 30/8/2019						
Arsenic, As	mg/kg	1	**78**	**22**	**36**	**4**
Cadmium, Cd	mg/kg	0.3	**4.8**	**0.4**	**0.7**	<0.3
Chromium, Cr	mg/kg	0.5	**20**	**13**	**12**	**4.5**
Copper, Cu	mg/kg	0.5	**50**	**57**	**17**	**31**
Nickel, Ni	mg/kg	0.5	**8.1**	**2.9**	**3.0**	**2.1**
Lead, Pb	mg/kg	1	**150**	**26**	**29**	**16**
Zinc, Zn	mg/kg	2	**580**	**110**	**81**	**32**
Mercury in Soil Method: AN312 Tested: 30/8/2019						
Mercury	mg/kg	0.05	**0.14**	<0.05	<0.05	<0.05
Moisture Content Method: AN002 Tested: 30/8/2019						
% Moisture	%w/w	0.5	**15**	**14**	**14**	**9.9**

Parameter	Units	LOR	Sample Number: SE197031.001 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S9	SE197031.002 Soil 28 Aug 2019 S10	SE197031.003 Soil 28 Aug 2019 S11	SE197031.004 Soil 28 Aug 2019 S13
Fibre Identification in soil Method: AN602 Tested: 3/9/2019						
FibreID						
Asbestos Detected	No unit	-	No	-	-	-
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	-	-	-
Gravimetric Determination of Asbestos in Soil Method: AN605 Tested: 3/9/2019						
Total Sample Weight*	g	1	**427**	-	-	-
ACM in >7mm Sample*	g	0.01	<0.01	-	-	-
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	-	-	-
AF/FA in <2mm Sample*	g	0.0001	<0.0001	-	-	-
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	-	-	-
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	-	-	-
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	-	-	-
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	-	-	-
Fibre Type*	No unit	-	-	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.005 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S15	SE197031.006 Soil 28 Aug 2019 S16	SE197031.007 Soil 28 Aug 2019 S17	SE197031.008 Soil 28 Aug 2019 S19
VOC's in Soil Method: AN433 Tested: 30/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**102**	**86**	**85**	**90**
d8-toluene (Surrogate)	%	-	**119**	**105**	**108**	**103**
Bromofluorobenzene (Surrogate)	%	-	**93**	**94**	**97**	**93**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 30/8/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**102**	**86**	**85**	**90**
d8-toluene (Surrogate)	%	-	**119**	**105**	**108**	**103**
Bromofluorobenzene (Surrogate)	%	-	**93**	**94**	**97**	**93**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Units	LOR	Sample Number: SE197031.005 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S15	SE197031.006 Soil 28 Aug 2019 S16	SE197031.007 Soil 28 Aug 2019 S17	SE197031.008 Soil 28 Aug 2019 S19
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 30/8/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**76**	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 30/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**92**	**88**	**90**	**90**
2-fluorobiphenyl (Surrogate)	%	-	**88**	**80**	**78**	**82**
d14-p-terphenyl (Surrogate)	%	-	**90**	**88**	**86**	**88**
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	-	<0.1
Alpha BHC	mg/kg	0.1	<0.1	-	-	<0.1
Lindane	mg/kg	0.1	<0.1	-	-	<0.1
Heptachlor	mg/kg	0.1	<0.1	-	-	<0.1
Aldrin	mg/kg	0.1	<0.1	-	-	<0.1
Beta BHC	mg/kg	0.1	<0.1	-	-	<0.1
Delta BHC	mg/kg	0.1	<0.1	-	-	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	-	-	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	-	-	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	-	-	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	-	-	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	-	-	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	-	-	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	-	-	<0.1
Dieldrin	mg/kg	0.2	<0.2	-	-	<0.2
Endrin	mg/kg	0.2	<0.2	-	-	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE197031.005 Soil 28 Aug 2019 S15	SE197031.006 Soil 28 Aug 2019 S16	SE197031.007 Soil 28 Aug 2019 S17	SE197031.008 Soil 28 Aug 2019 S19
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	<0.1	-	-	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	-	-	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	-	-	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	-	-	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	-	-	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	-	-	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	-	-	<0.1
Methoxychlor	mg/kg	0.1	<0.1	-	-	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	-	-	<0.1
Isodrin	mg/kg	0.1	<0.1	-	-	<0.1
Mirex	mg/kg	0.1	<0.1	-	-	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	-	-	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**97**	-	-	**109**
OP Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Dichlorvos	mg/kg	0.5	<0.5	-	-	<0.5
Dimethoate	mg/kg	0.5	<0.5	-	-	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	-	<0.5
Fenitrothion	mg/kg	0.2	<0.2	-	-	<0.2
Malathion	mg/kg	0.2	<0.2	-	-	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	-	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	-	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	-	-	<0.2
Methidathion	mg/kg	0.5	<0.5	-	-	<0.5
Ethion	mg/kg	0.2	<0.2	-	-	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	-	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	-	-	<1.7
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**88**	-	-	**82**
d14-p-terphenyl (Surrogate)	%	-	**90**	-	-	**88**
PCBs in Soil Method: AN420 Tested: 30/8/2019						
Arochlor 1016	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	-	-	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	-	-	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	-	-	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**97**	-	-	**109**

Parameter	Units	LOR	Sample Number: SE197031.005 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S15	SE197031.006 Soil 28 Aug 2019 S16	SE197031.007 Soil 28 Aug 2019 S17	SE197031.008 Soil 28 Aug 2019 S19
TOC in Soil Method: AN188 Tested: 5/9/2019						
Total Organic Carbon	%w/w	0.05	-	-	-	-
Organic Matter (calc)*	%w/w	0.1	-	-	-	-
pH in soil (1:5) Method: AN101 Tested: 5/9/2019						
pH (CaCl2)*	pH Units	0.1	-	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 4/9/2019						
Exchangeable Sodium, Na	mg/kg	2	-	-	-	-
Exchangeable Sodium, Na	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-	-	-
Exchangeable Potassium, K	mg/kg	2	-	-	-	-
Exchangeable Potassium, K	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-	-	-
Exchangeable Calcium, Ca	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-	-	-
Exchangeable Magnesium, Mg	cmol (+)/kg	0.02	-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-	-	-
Cation Exchange Capacity	cmol (+)/kg	0.02	-	-	-	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 30/8/2019						
Arsenic, As	mg/kg	1	**23**	**3**	**3**	**6**
Cadmium, Cd	mg/kg	0.3	**0.4**	<0.3	<0.3	**0.3**
Chromium, Cr	mg/kg	0.5	**16**	**10**	**6.0**	**10**
Copper, Cu	mg/kg	0.5	**22**	**16**	**13**	**23**
Nickel, Ni	mg/kg	0.5	**5.1**	**0.9**	<0.5	**8.9**
Lead, Pb	mg/kg	1	**77**	**17**	**15**	**260**
Zinc, Zn	mg/kg	2	**65**	**5.5**	**4.2**	**120**
Mercury in Soil Method: AN312 Tested: 30/8/2019						
Mercury	mg/kg	0.05	**0.06**	<0.05	<0.05	<0.05
Moisture Content Method: AN002 Tested: 30/8/2019						
% Moisture	%w/w	0.5	**19**	**17**	**10**	**19**

Parameter	Units	LOR	Sample Number: SE197031.005 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S15	SE197031.006 Soil 28 Aug 2019 S16	SE197031.007 Soil 28 Aug 2019 S17	SE197031.008 Soil 28 Aug 2019 S19
Fibre Identification in soil Method: AN602 Tested: 3/9/2019						
FibreID						
Asbestos Detected	No unit	-	No	-	-	No
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	-	-	<0.01
Gravimetric Determination of Asbestos in Soil Method: AN605 Tested: 3/9/2019						
Total Sample Weight*	g	1	**425**	-	-	**457**
ACM in >7mm Sample*	g	0.01	<0.01	-	-	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	-	-	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	-	-	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	-	-	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	-	-	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	-	-	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	-	-	<0.001
Fibre Type*	No unit	-	-	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.009 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S20	SE197031.010 Soil 28 Aug 2019 S22	SE197031.011 Soil 28 Aug 2019 S23	SE197031.012 Soil 28 Aug 2019 S24
VOC's in Soil Method: AN433 Tested: 30/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**83**	**84**	**83**	**91**
d8-toluene (Surrogate)	%	-	**92**	**106**	**53**	**106**
Bromofluorobenzene (Surrogate)	%	-	**87**	**98**	**91**	**96**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 30/8/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**83**	**84**	**83**	**91**
d8-toluene (Surrogate)	%	-	**92**	**106**	**53**	**106**
Bromofluorobenzene (Surrogate)	%	-	**87**	**98**	**91**	**96**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Units	LOR	Sample Number: SE197031.009 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S20	SE197031.010 Soil 28 Aug 2019 S22	SE197031.011 Soil 28 Aug 2019 S23	SE197031.012 Soil 28 Aug 2019 S24
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 30/8/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 30/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**88**	**88**	**86**	**90**
2-fluorobiphenyl (Surrogate)	%	-	**76**	**78**	**82**	**80**
d14-p-terphenyl (Surrogate)	%	-	**88**	**86**	**90**	**90**
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	-	-	<0.1	-
Alpha BHC	mg/kg	0.1	-	-	<0.1	-
Lindane	mg/kg	0.1	-	-	<0.1	-
Heptachlor	mg/kg	0.1	-	-	<0.1	-
Aldrin	mg/kg	0.1	-	-	<0.1	-
Beta BHC	mg/kg	0.1	-	-	<0.1	-
Delta BHC	mg/kg	0.1	-	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	-	-	<0.1	-
o,p'-DDE	mg/kg	0.1	-	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	-	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	-	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	-	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	-	-	<0.1	-
p,p'-DDE	mg/kg	0.1	-	-	<0.1	-
Dieldrin	mg/kg	0.2	-	-	<0.2	-
Endrin	mg/kg	0.2	-	-	<0.2	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE197031.009 Soil 28 Aug 2019 S20	SE197031.010 Soil 28 Aug 2019 S22	SE197031.011 Soil 28 Aug 2019 S23	SE197031.012 Soil 28 Aug 2019 S24
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019 (continued)							
o,p'-DDD	mg/kg	0.1		-	-	<0.1	-
o,p'-DDT	mg/kg	0.1		-	-	<0.1	-
Beta Endosulfan	mg/kg	0.2		-	-	<0.2	-
p,p'-DDD	mg/kg	0.1		-	-	<0.1	-
p,p'-DDT	mg/kg	0.1		-	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1		-	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1		-	-	<0.1	-
Methoxychlor	mg/kg	0.1		-	-	<0.1	-
Endrin Ketone	mg/kg	0.1		-	-	<0.1	-
Isodrin	mg/kg	0.1		-	-	<0.1	-
Mirex	mg/kg	0.1		-	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1		-	-	<1	-
Surrogates							
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-		-	-	**109**	-
OP Pesticides in Soil Method: AN420 Tested: 30/8/2019							
Dichlorvos	mg/kg	0.5		-	-	<0.5	-
Dimethoate	mg/kg	0.5		-	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5		-	-	<0.5	-
Fenitrothion	mg/kg	0.2		-	-	<0.2	-
Malathion	mg/kg	0.2		-	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2		-	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2		-	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2		-	-	<0.2	-
Methidathion	mg/kg	0.5		-	-	<0.5	-
Ethion	mg/kg	0.2		-	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2		-	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7		-	-	<1.7	-
Surrogates							
2-fluorobiphenyl (Surrogate)	%	-		-	-	**82**	-
d14-p-terphenyl (Surrogate)	%	-		-	-	**90**	-
PCBs in Soil Method: AN420 Tested: 30/8/2019							
Arochlor 1016	mg/kg	0.2		-	-	<0.2	-
Arochlor 1221	mg/kg	0.2		-	-	<0.2	-
Arochlor 1232	mg/kg	0.2		-	-	<0.2	-
Arochlor 1242	mg/kg	0.2		-	-	<0.2	-
Arochlor 1248	mg/kg	0.2		-	-	<0.2	-
Arochlor 1254	mg/kg	0.2		-	-	<0.2	-
Arochlor 1260	mg/kg	0.2		-	-	<0.2	-
Arochlor 1262	mg/kg	0.2		-	-	<0.2	-
Arochlor 1268	mg/kg	0.2		-	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1		-	-	<1	-
Surrogates							
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-		-	-	**109**	-

Parameter	Units	LOR	Sample Number: SE197031.009 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S20	SE197031.010 Soil 28 Aug 2019 S22	SE197031.011 Soil 28 Aug 2019 S23	SE197031.012 Soil 28 Aug 2019 S24
TOC in Soil Method: AN188 Tested: 5/9/2019						
Total Organic Carbon	%w/w	0.05	-	-	-	-
Organic Matter (calc)*	%w/w	0.1	-	-	-	-
pH in soil (1:5) Method: AN101 Tested: 5/9/2019						
pH (CaCl2)*	pH Units	0.1	-	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 4/9/2019						
Exchangeable Sodium, Na	mg/kg	2	-	-	-	-
Exchangeable Sodium, Na	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-	-	-
Exchangeable Potassium, K	mg/kg	2	-	-	-	-
Exchangeable Potassium, K	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-	-	-
Exchangeable Calcium, Ca	cmol (+)/kg	0.01	-	-	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-	-	-
Exchangeable Magnesium, Mg	cmol (+)/kg	0.02	-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-	-	-
Cation Exchange Capacity	cmol (+)/kg	0.02	-	-	-	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 30/8/2019						
Arsenic, As	mg/kg	1	**6**	**5**	**16**	**69**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	**0.5**
Chromium, Cr	mg/kg	0.5	**11**	**4.4**	**12**	**9.3**
Copper, Cu	mg/kg	0.5	**17**	**23**	**13**	**16**
Nickel, Ni	mg/kg	0.5	**4.3**	**7.9**	**4.4**	**1.9**
Lead, Pb	mg/kg	1	**30**	**21**	**27**	**20**
Zinc, Zn	mg/kg	2	**20**	**69**	**26**	**10**
Mercury in Soil Method: AN312 Tested: 30/8/2019						
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content Method: AN002 Tested: 30/8/2019						
% Moisture	%w/w	0.5	**21**	**12**	**20**	**19**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE197031.009 Soil 28 Aug 2019 S20	SE197031.010 Soil 28 Aug 2019 S22	SE197031.011 Soil 28 Aug 2019 S23	SE197031.012 Soil 28 Aug 2019 S24
Fibre Identification in soil Method: AN602 Tested: 5/9/2019							
FibreID							
Asbestos Detected	No unit	-		-	-	No	-
SemiQuant							
Estimated Fibres*	%w/w	0.01		-	-	<0.01	-
Gravimetric Determination of Asbestos in Soil Method: AN605 Tested: 5/9/2019							
Total Sample Weight*	g	1		-	-	**458**	-
ACM in >7mm Sample*	g	0.01		-	-	<0.01	-
AF/FA in >2mm to <7mm Sample*	g	0.0001		-	-	<0.0001	-
AF/FA in <2mm Sample*	g	0.0001		-	-	<0.0001	-
Asbestos in soil (>7mm ACM)*	%w/w	0.01		-	-	<0.01	-
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001		-	-	<0.001	-
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001		-	-	<0.001	-
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001		-	-	<0.001	-
Fibre Type*	No unit	-		-	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.013 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S26	SE197031.014 Soil 28 Aug 2019 EIL1	SE197031.015 Soil 28 Aug 2019 EIL2	SE197031.016 Soil 28 Aug 2019 EIL3
VOC's in Soil Method: AN433 Tested: 30/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	-	-	-
Toluene	mg/kg	0.1	<0.1	-	-	-
Ethylbenzene	mg/kg	0.1	<0.1	-	-	-
m/p-xylene	mg/kg	0.2	<0.2	-	-	-
o-xylene	mg/kg	0.1	<0.1	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	-	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**96**	-	-	-
d8-toluene (Surrogate)	%	-	**57**	-	-	-
Bromofluorobenzene (Surrogate)	%	-	**100**	-	-	-
Totals						
Total Xylenes	mg/kg	0.3	<0.3	-	-	-
Total BTEX	mg/kg	0.6	<0.6	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 30/8/2019						
TRH C6-C10	mg/kg	25	<25	-	-	-
TRH C6-C9	mg/kg	20	<20	-	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**96**	-	-	-
d8-toluene (Surrogate)	%	-	**57**	-	-	-
Bromofluorobenzene (Surrogate)	%	-	**100**	-	-	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	-	-	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.013 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S26	SE197031.014 Soil 28 Aug 2019 EIL1	SE197031.015 Soil 28 Aug 2019 EIL2	SE197031.016 Soil 28 Aug 2019 EIL3
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 30/8/2019						
TRH C10-C14	mg/kg	20	<20	-	-	-
TRH C15-C28	mg/kg	45	<45	-	-	-
TRH C29-C36	mg/kg	45	<45	-	-	-
TRH C37-C40	mg/kg	100	<100	-	-	-
TRH C10-C36 Total	mg/kg	110	<110	-	-	-
TRH C10-C40 Total (F bands)	mg/kg	210	<210	-	-	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	-	-	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	-	-	-
TRH >C16-C34 (F3)	mg/kg	90	<90	-	-	-
TRH >C34-C40 (F4)	mg/kg	120	<120	-	-	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 30/8/2019						
Naphthalene	mg/kg	0.1	<0.1	-	-	-
2-methylnaphthalene	mg/kg	0.1	<0.1	-	-	-
1-methylnaphthalene	mg/kg	0.1	<0.1	-	-	-
Acenaphthylene	mg/kg	0.1	<0.1	-	-	-
Acenaphthene	mg/kg	0.1	<0.1	-	-	-
Fluorene	mg/kg	0.1	<0.1	-	-	-
Phenanthrene	mg/kg	0.1	<0.1	-	-	-
Anthracene	mg/kg	0.1	<0.1	-	-	-
Fluoranthene	mg/kg	0.1	<0.1	-	-	-
Pyrene	mg/kg	0.1	<0.1	-	-	-
Benzo(a)anthracene	mg/kg	0.1	<0.1	-	-	-
Chrysene	mg/kg	0.1	<0.1	-	-	-
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-	-	-
Benzo(a)pyrene	mg/kg	0.1	<0.1	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	-	-	-
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	-	-	-
Benzo(ghi)perylene	mg/kg	0.1	<0.1	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	-	-	-
Total PAH (18)	mg/kg	0.8	<0.8	-	-	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	-	-	-
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**90**	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	**80**	-	-	-
d14-p-terphenyl (Surrogate)	%	-	**90**	-	-	-
OC Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	-	-	-	-
Alpha BHC	mg/kg	0.1	-	-	-	-
Lindane	mg/kg	0.1	-	-	-	-
Heptachlor	mg/kg	0.1	-	-	-	-
Aldrin	mg/kg	0.1	-	-	-	-
Beta BHC	mg/kg	0.1	-	-	-	-
Delta BHC	mg/kg	0.1	-	-	-	-
Heptachlor epoxide	mg/kg	0.1	-	-	-	-
o,p'-DDE	mg/kg	0.1	-	-	-	-
Alpha Endosulfan	mg/kg	0.2	-	-	-	-
Gamma Chlordane	mg/kg	0.1	-	-	-	-
Alpha Chlordane	mg/kg	0.1	-	-	-	-
trans-Nonachlor	mg/kg	0.1	-	-	-	-
p,p'-DDE	mg/kg	0.1	-	-	-	-
Dieldrin	mg/kg	0.2	-	-	-	-
Endrin	mg/kg	0.2	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE197031.013 Soil 28 Aug 2019 S26	SE197031.014 Soil 28 Aug 2019 EIL1	SE197031.015 Soil 28 Aug 2019 EIL2	SE197031.016 Soil 28 Aug 2019 EIL3
OC Pesticides in Soil Method: AN420 Tested: 3/9/2019 (continued)						
o,p'-DDD	mg/kg	0.1	-	-	-	-
o,p'-DDT	mg/kg	0.1	-	-	-	-
Beta Endosulfan	mg/kg	0.2	-	-	-	-
p,p'-DDD	mg/kg	0.1	-	-	-	-
p,p'-DDT	mg/kg	0.1	-	-	-	-
Endosulfan sulphate	mg/kg	0.1	-	-	-	-
Endrin Aldehyde	mg/kg	0.1	-	-	-	-
Methoxychlor	mg/kg	0.1	-	-	-	-
Endrin Ketone	mg/kg	0.1	-	-	-	-
Isodrin	mg/kg	0.1	-	-	-	-
Mirex	mg/kg	0.1	-	-	-	-
Total CLP OC Pesticides	mg/kg	1	-	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-
OP Pesticides in Soil Method: AN420 Tested: 30/8/2019						
Dichlorvos	mg/kg	0.5	-	-	-	-
Dimethoate	mg/kg	0.5	-	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	-	-	-
Fenitrothion	mg/kg	0.2	-	-	-	-
Malathion	mg/kg	0.2	-	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	-	-
Bromophos Ethyl	mg/kg	0.2	-	-	-	-
Methidathion	mg/kg	0.5	-	-	-	-
Ethion	mg/kg	0.2	-	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	-	-
Total OP Pesticides*	mg/kg	1.7	-	-	-	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-
PCBs in Soil Method: AN420 Tested: 30/8/2019						
Arochlor 1016	mg/kg	0.2	-	-	-	-
Arochlor 1221	mg/kg	0.2	-	-	-	-
Arochlor 1232	mg/kg	0.2	-	-	-	-
Arochlor 1242	mg/kg	0.2	-	-	-	-
Arochlor 1248	mg/kg	0.2	-	-	-	-
Arochlor 1254	mg/kg	0.2	-	-	-	-
Arochlor 1260	mg/kg	0.2	-	-	-	-
Arochlor 1262	mg/kg	0.2	-	-	-	-
Arochlor 1268	mg/kg	0.2	-	-	-	-
Total PCBs (Arochlors)	mg/kg	1	-	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.013 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: S26	SE197031.014 Soil 28 Aug 2019 EIL1	SE197031.015 Soil 28 Aug 2019 EIL2	SE197031.016 Soil 28 Aug 2019 EIL3
TOC in Soil Method: AN188 Tested: 5/9/2019						
Total Organic Carbon	%w/w	0.05	-	**8.5**	**2.5**	**0.28**
Organic Matter (calc)*	%w/w	0.1	-	**15**	**4.4**	**0.5**
pH in soil (1:5) Method: AN101 Tested: 5/9/2019						
pH (CaCl2)*	pH Units	0.1	-	**5.7**	**4.6**	**3.9**
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 4/9/2019						
Exchangeable Sodium, Na	mg/kg	2	-	**150**	**250**	**570**
Exchangeable Sodium, Na	cmol (+)/kg	0.01	-	**0.66**	**1.1**	**2.5**
Exchangeable Sodium Percentage*	%	0.1	-	**2.5**	**7.0**	**51.1**
Exchangeable Potassium, K	mg/kg	2	-	**610**	**320**	**130**
Exchangeable Potassium, K	cmol (+)/kg	0.01	-	**1.6**	**0.83**	**0.34**
Exchangeable Potassium Percentage*	%	0.1	-	**5.9**	**5.5**	**7.0**
Exchangeable Calcium, Ca	mg/kg	2	-	**4000**	**2100**	**100**
Exchangeable Calcium, Ca	cmol (+)/kg	0.01	-	**20**	**10**	**0.51**
Exchangeable Calcium Percentage*	%	0.1	-	**75.1**	**68.8**	**10.6**
Exchangeable Magnesium, Mg	mg/kg	2	-	**530**	**350**	**190**
Exchangeable Magnesium, Mg	cmol (+)/kg	0.02	-	**4.4**	**2.8**	**1.5**
Exchangeable Magnesium Percentage*	%	0.1	-	**16.5**	**18.7**	**31.3**
Cation Exchange Capacity	cmol (+)/kg	0.02	-	**26**	**15**	**4.9**
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 30/8/2019						
Arsenic, As	mg/kg	1	**3**	-	-	-
Cadmium, Cd	mg/kg	0.3	<0.3	-	-	-
Chromium, Cr	mg/kg	0.5	**3.3**	-	-	-
Copper, Cu	mg/kg	0.5	**34**	-	-	-
Nickel, Ni	mg/kg	0.5	**2.0**	-	-	-
Lead, Pb	mg/kg	1	**10**	-	-	-
Zinc, Zn	mg/kg	2	**16**	-	-	-
Mercury in Soil Method: AN312 Tested: 30/8/2019						
Mercury	mg/kg	0.05	<0.05	-	-	-
Moisture Content Method: AN002 Tested: 30/8/2019						
% Moisture	%w/w	0.5	**13**	**15**	**16**	**10**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE197031.013 Soil 28 Aug 2019 S26	SE197031.014 Soil 28 Aug 2019 EIL1	SE197031.015 Soil 28 Aug 2019 EIL2	SE197031.016 Soil 28 Aug 2019 EIL3
Fibre Identification in soil Method: AN602 Tested: 5/9/2019							
FibreID							
Asbestos Detected	No unit	-		-	-	-	-
SemiQuant							
Estimated Fibres*	%w/w	0.01		-	-	-	-
Gravimetric Determination of Asbestos in Soil Method: AN605 Tested: 5/9/2019							
Total Sample Weight*	g	1		-	-	-	-
ACM in >7mm Sample*	g	0.01		-	-	-	-
AF/FA in >2mm to <7mm Sample*	g	0.0001		-	-	-	-
AF/FA in <2mm Sample*	g	0.0001		-	-	-	-
Asbestos in soil (>7mm ACM)*	%w/w	0.01		-	-	-	-
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001		-	-	-	-
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001		-	-	-	-
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001		-	-	-	-
Fibre Type*	No unit	-		-	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.017 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Spike	Sample Number: SE197031.018 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Blank
VOC's in Soil Method: AN433 Tested: 30/8/2019				
Monocyclic Aromatic Hydrocarbons				
Benzene	mg/kg	0.1	[105%]	<0.1
Toluene	mg/kg	0.1	[108%]	<0.1
Ethylbenzene	mg/kg	0.1	[107%]	<0.1
m/p-xylene	mg/kg	0.2	[108%]	<0.2
o-xylene	mg/kg	0.1	[108%]	<0.1
Polycyclic VOCs				
Naphthalene	mg/kg	0.1	-	<0.1
Surrogates				
d4-1,2-dichloroethane (Surrogate)	%	-	**96**	**99**
d8-toluene (Surrogate)	%	-	**94**	**104**
Bromofluorobenzene (Surrogate)	%	-	**89**	**98**
Totals				
Total Xylenes	mg/kg	0.3	-	<0.3
Total BTEX	mg/kg	0.6	-	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 30/8/2019				
TRH C6-C10	mg/kg	25	-	-
TRH C6-C9	mg/kg	20	-	-
Surrogates				
d4-1,2-dichloroethane (Surrogate)	%	-	-	-
d8-toluene (Surrogate)	%	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-
VPH F Bands				
Benzene (F0)	mg/kg	0.1	-	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	-	-

Parameter	Units	LOR	Sample Number: SE197031.017 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Spike	Sample Number: SE197031.018 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Blank
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 3/9/2019				
TRH C10-C14	mg/kg	20	-	-
TRH C15-C28	mg/kg	45	-	-
TRH C29-C36	mg/kg	45	-	-
TRH C37-C40	mg/kg	100	-	-
TRH C10-C36 Total	mg/kg	110	-	-
TRH C10-C40 Total (F bands)	mg/kg	210	-	-
TRH F Bands				
TRH >C10-C16	mg/kg	25	-	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	-	-
TRH >C16-C34 (F3)	mg/kg	90	-	-
TRH >C34-C40 (F4)	mg/kg	120	-	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 2/9/2019				
Naphthalene	mg/kg	0.1	-	-
2-methylnaphthalene	mg/kg	0.1	-	-
1-methylnaphthalene	mg/kg	0.1	-	-
Acenaphthylene	mg/kg	0.1	-	-
Acenaphthene	mg/kg	0.1	-	-
Fluorene	mg/kg	0.1	-	-
Phenanthrene	mg/kg	0.1	-	-
Anthracene	mg/kg	0.1	-	-
Fluoranthene	mg/kg	0.1	-	-
Pyrene	mg/kg	0.1	-	-
Benzo(a)anthracene	mg/kg	0.1	-	-
Chrysene	mg/kg	0.1	-	-
Benzo(b&j)fluoranthene	mg/kg	0.1	-	-
Benzo(k)fluoranthene	mg/kg	0.1	-	-
Benzo(a)pyrene	mg/kg	0.1	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-
Dibenzo(ah)anthracene	mg/kg	0.1	-	-
Benzo(ghi)perylene	mg/kg	0.1	-	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	-	-
Total PAH (18)	mg/kg	0.8	-	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	-	-
Surrogates				
d5-nitrobenzene (Surrogate)	%	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-
OC Pesticides in Soil Method: AN420 Tested: 3/9/2019				
Hexachlorobenzene (HCB)	mg/kg	0.1	-	-
Alpha BHC	mg/kg	0.1	-	-
Lindane	mg/kg	0.1	-	-
Heptachlor	mg/kg	0.1	-	-
Aldrin	mg/kg	0.1	-	-
Beta BHC	mg/kg	0.1	-	-
Delta BHC	mg/kg	0.1	-	-
Heptachlor epoxide	mg/kg	0.1	-	-
o,p'-DDE	mg/kg	0.1	-	-
Alpha Endosulfan	mg/kg	0.2	-	-
Gamma Chlordane	mg/kg	0.1	-	-
Alpha Chlordane	mg/kg	0.1	-	-
trans-Nonachlor	mg/kg	0.1	-	-
p,p'-DDE	mg/kg	0.1	-	-

Parameter	Units	LOR	Sample Number: SE197031.017 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Spike	Sample Number: SE197031.018 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Blank
OC Pesticides in Soil Method: AN420 Tested: 3/9/2019 (continued)				
Dieldrin	mg/kg	0.2	-	-
Endrin	mg/kg	0.2	-	-
o,p'-DDD	mg/kg	0.1	-	-
o,p'-DDT	mg/kg	0.1	-	-
Beta Endosulfan	mg/kg	0.2	-	-
p,p'-DDD	mg/kg	0.1	-	-
p,p'-DDT	mg/kg	0.1	-	-
Endosulfan sulphate	mg/kg	0.1	-	-
Endrin Aldehyde	mg/kg	0.1	-	-
Methoxychlor	mg/kg	0.1	-	-
Endrin Ketone	mg/kg	0.1	-	-
Isodrin	mg/kg	0.1	-	-
Mirex	mg/kg	0.1	-	-
Total CLP OC Pesticides	mg/kg	1	-	-
Surrogates				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-
OP Pesticides in Soil Method: AN420 Tested: 2/9/2019				
Dichlorvos	mg/kg	0.5	-	-
Dimethoate	mg/kg	0.5	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	-
Fenitrothion	mg/kg	0.2	-	-
Malathion	mg/kg	0.2	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-
Bromophos Ethyl	mg/kg	0.2	-	-
Methidathion	mg/kg	0.5	-	-
Ethion	mg/kg	0.2	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-
Total OP Pesticides*	mg/kg	1.7	-	-
Surrogates				
2-fluorobiphenyl (Surrogate)	%	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-

Parameter	Units	LOR	Sample Number: SE197031.017 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Spike	Sample Number: SE197031.018 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Blank
PCBs in Soil Method: AN420 Tested: 3/9/2019				
Arochlor 1016	mg/kg	0.2	-	-
Arochlor 1221	mg/kg	0.2	-	-
Arochlor 1232	mg/kg	0.2	-	-
Arochlor 1242	mg/kg	0.2	-	-
Arochlor 1248	mg/kg	0.2	-	-
Arochlor 1254	mg/kg	0.2	-	-
Arochlor 1260	mg/kg	0.2	-	-
Arochlor 1262	mg/kg	0.2	-	-
Arochlor 1268	mg/kg	0.2	-	-
Total PCBs (Arochlors)	mg/kg	1	-	-
Surrogates				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-
TOC in Soil Method: AN188 Tested: 5/9/2019				
Total Organic Carbon	%w/w	0.05	-	-
Organic Matter (calc)*	%w/w	0.1	-	-
pH in soil (1:5) Method: AN101 Tested: 5/9/2019				
pH (CaCl2)*	pH Units	0.1	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 4/9/2019				
Exchangeable Sodium, Na	mg/kg	2	-	-
Exchangeable Sodium, Na	cmol (+)/kg	0.01	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-
Exchangeable Potassium, K	mg/kg	2	-	-
Exchangeable Potassium, K	cmol (+)/kg	0.01	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-
Exchangeable Calcium, Ca	cmol (+)/kg	0.01	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-
Exchangeable Magnesium, Mg	cmol (+)/kg	0.02	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-
Cation Exchange Capacity	cmol (+)/kg	0.02	-	-

Parameter	Units	LOR	Sample Number: SE197031.017 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Spike	Sample Number: SE197031.018 Sample Matrix: Soil Sample Date: 28 Aug 2019 Sample Name: Trip Blank
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 4/9/2019				
Arsenic, As	mg/kg	1	-	-
Cadmium, Cd	mg/kg	0.3	-	-
Chromium, Cr	mg/kg	0.5	-	-
Copper, Cu	mg/kg	0.5	-	-
Nickel, Ni	mg/kg	0.5	-	-
Lead, Pb	mg/kg	1	-	-
Zinc, Zn	mg/kg	2	-	-
Mercury in Soil Method: AN312 Tested: 4/9/2019				
Mercury	mg/kg	0.05	-	-
Moisture Content Method: AN002 Tested: 30/8/2019				
% Moisture	%w/w	0.5	-	<0.5
Fibre Identification in soil Method: AN602 Tested: 5/9/2019				
FibreID				
Asbestos Detected	No unit	-	-	-
SemiQuant				
Estimated Fibres*	%w/w	0.01	-	-
Gravimetric Determination of Asbestos in Soil Method: AN605 Tested: 5/9/2019				
Total Sample Weight*	g	1	-	-
ACM in >7mm Sample*	g	0.01	-	-
AF/FA in >2mm to <7mm Sample*	g	0.0001	-	-
AF/FA in <2mm Sample*	g	0.0001	-	-
Asbestos in soil (>7mm ACM)*	%w/w	0.01	-	-
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	-	-
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	-	-
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	-	-
Fibre Type*	No unit	-	-	-

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) **Method: ME-(AU)-[ENV]AN122**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Exchangeable Sodium, Na	LB182224	mg/kg	2		111%
Exchangeable Sodium, Na	LB182224	cmol (+)/kg	0.01	<0.01	NA
Exchangeable Sodium Percentage*	LB182224	%	0.1		NA
Exchangeable Potassium, K	LB182224	mg/kg	2		97%
Exchangeable Potassium, K	LB182224	cmol (+)/kg	0.01	<0.01	NA
Exchangeable Potassium Percentage*	LB182224	%	0.1		NA
Exchangeable Calcium, Ca	LB182224	mg/kg	2		103%
Exchangeable Calcium, Ca	LB182224	cmol (+)/kg	0.01	<0.01	NA
Exchangeable Calcium Percentage*	LB182224	%	0.1		NA
Exchangeable Magnesium, Mg	LB182224	mg/kg	2		102%
Exchangeable Magnesium, Mg	LB182224	cmol (+)/kg	0.02	<0.02	NA
Exchangeable Magnesium Percentage*	LB182224	%	0.1		NA
Cation Exchange Capacity	LB182224	cmol (+)/kg	0.02	<0.02	NA

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB182149	mg/kg	0.05	<0.05	0%	111%	90%

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB182141	%w/w	0.5	1 - 19%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Hexachlorobenzene (HCB)	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB182137	mg/kg	0.1	<0.1	0%	112%	112%
Aldrin	LB182137	mg/kg	0.1	<0.1	0%	114%	106%
Beta BHC	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB182137	mg/kg	0.1	<0.1	0%	104%	99%
Heptachlor epoxide	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB182137	mg/kg	0.2	<0.2	0%	93%	100%
Endrin	LB182137	mg/kg	0.2	<0.2	0%	103%	121%
o,p'-DDD	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB182137	mg/kg	0.1	<0.1	0%	95%	92%
Endosulfan sulphate	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Total CLP OC Pesticides	LB182137	mg/kg	1	<1	0%	NA	NA

Surrogates

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OC Pesticides in Soil Method: ME-(AU)-[ENV]AN420 (continued)

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB182137	%	-	95%	1%	102%	84%

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB182137	mg/kg	0.5	<0.5	0%	78%	85%
Dimethoate	LB182137	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB182137	mg/kg	0.5	<0.5	0%	92%	82%
Fenitrothion	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB182137	mg/kg	0.2	<0.2	0%	82%	84%
Parathion-ethyl (Parathion)	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB182137	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB182137	mg/kg	0.2	<0.2	0%	76%	79%
Azinphos-methyl (Guthion)	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Total OP Pesticides*	LB182137	mg/kg	1.7	<1.7	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB182137	%	-	74%	2%	86%	84%
d14-p-terphenyl (Surrogate)	LB182137	%	-	84%	0%	90%	82%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB182137	mg/kg	0.1	<0.1	0%	108%	111%
2-methylnaphthalene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB182137	mg/kg	0.1	<0.1	0%	119%	114%
Acenaphthene	LB182137	mg/kg	0.1	<0.1	0%	122%	117%
Fluorene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB182137	mg/kg	0.1	<0.1	0%	120%	119%
Anthracene	LB182137	mg/kg	0.1	<0.1	0%	109%	113%
Fluoranthene	LB182137	mg/kg	0.1	<0.1	0%	115%	110%
Pyrene	LB182137	mg/kg	0.1	<0.1	0%	119%	116%
Benzo(a)anthracene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&j)fluoranthene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(k)fluoranthene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB182137	mg/kg	0.1	<0.1	0%	120%	112%
Indeno(1,2,3-cd)pyrene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(ah)anthracene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB182137	mg/kg	0.1	<0.1	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=0	LB182137	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR	LB182137	TEQ (mg/kg)	0.3	<0.3	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	LB182137	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Total PAH (18)	LB182137	mg/kg	0.8	<0.8	0%	NA	NA
Total PAH (NEPM/WHO 16)	LB182137	mg/kg	0.8	<0.8			

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB182137	%	-	84%	0 - 2%	84%	88%
2-fluorobiphenyl (Surrogate)	LB182137	%	-	74%	2 - 3%	86%	84%
d14-p-terphenyl (Surrogate)	LB182137	%	-	84%	0 - 2%	90%	82%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PCBs in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arochlor 1016	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1221	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1232	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1242	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1248	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1254	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1260	LB182137	mg/kg	0.2	<0.2	0%	92%	91%
Arochlor 1262	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1268	LB182137	mg/kg	0.2	<0.2	0%	NA	NA
Total PCBs (Arochlors)	LB182137	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB182137	%	-	95%	1%	98%	89%

pH in soil (1:5) Method: ME-(AU)-[ENV]AN101

Parameter	QC Reference	Units	LOR	DUP %RPD	LCS %Recovery
pH (CaCl2)*	LB182447	pH Units	0.1	1%	NA

TOC in Soil Method: ME-(AU)-[ENV]AN188

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Organic Carbon	LB182489	%w/w	0.05	<0.05	19 - 23%	91%	NA
Organic Matter (calc)*	LB182489	%w/w	0.1	<0.1			

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB182145	mg/kg	1	<1	23 - 43%	96%	56%
Cadmium, Cd	LB182145	mg/kg	0.3	<0.3	0%	102%	82%
Chromium, Cr	LB182145	mg/kg	0.5	<0.5	1 - 5%	109%	93%
Copper, Cu	LB182145	mg/kg	0.5	<0.5	8%	93%	75%
Nickel, Ni	LB182145	mg/kg	0.5	<0.5	11 - 14%	92%	95%
Lead, Pb	LB182145	mg/kg	1	<1	9 - 23%	91%	18%
Zinc, Zn	LB182145	mg/kg	2	<2.0	0 - 1%	96%	841%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB182137	mg/kg	20	<20	0%	88%	100%
TRH C15-C28	LB182137	mg/kg	45	<45	0%	75%	128%
TRH C29-C36	LB182137	mg/kg	45	<45	0%	75%	128%
TRH C37-C40	LB182137	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB182137	mg/kg	110	<110	0%	NA	NA
TRH C10-C40 Total (F bands)	LB182137	mg/kg	210	<210	0%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH >C10-C16	LB182137	mg/kg	25	<25	0%	88%	123%
TRH >C10-C16 - Naphthalene (F2)	LB182137	mg/kg	25	<25	0%	NA	NA
TRH >C16-C34 (F3)	LB182137	mg/kg	90	<90	0%	75%	73%
TRH >C34-C40 (F4)	LB182137	mg/kg	120	<120	0%	85%	NA

VOC's in Soil Method: ME-(AU)-[ENV]AN433

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB182139	mg/kg	0.1	<0.1	0%	83%	67%
Toluene	LB182139	mg/kg	0.1	<0.1	0%	85%	86%
Ethylbenzene	LB182139	mg/kg	0.1	<0.1	0%	86%	76%
m/p-xylene	LB182139	mg/kg	0.2	<0.2	0%	85%	77%
o-xylene	LB182139	mg/kg	0.1	<0.1	0%	85%	77%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB182139	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB182139	%	-	113%	7 - 15%	103%	91%
d8-toluene (Surrogate)	LB182139	%	-	110%	3 - 13%	89%	94%
Bromofluorobenzene (Surrogate)	LB182139	%	-	128%	4 - 12%	81%	76%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes	LB182139	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX	LB182139	mg/kg	0.6	<0.6	0%	NA	NA

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB182139	mg/kg	25	<25	0%	81%	85%
TRH C6-C9	LB182139	mg/kg	20	<20	0%	78%	80%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB182139	%	-	113%	7 - 15%	103%	91%
d8-toluene (Surrogate)	LB182139	%	-	110%	3 - 13%	89%	94%
Bromofluorobenzene (Surrogate)	LB182139	%	-	128%	4 - 12%	81%	76%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB182139	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB182139	mg/kg	25	<25	0%	78%	89%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1 M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is referenced to Rayment and Lyons, 2011, sections 15D3 and 15N1.-
AN188	The organic material in the soil sample is oxidised with chromic acid in the presence of excess sulfuric acid, without external heat being applied. The excess dichromate ion is determined by titration with standard ammonium iron (II) sulfate solution and the amount of oxidised material is calculated from the quantity of dichromate reduced. Referenced to NEPM 105 and AS1289.1.1.1.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

STATEMENT OF QA/QC PERFORMANCE

SE197031 R0

CLIENT DETAILS

Contact	Craig Ridley
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Project	**10530(2984B)/2365D-R**
Order Number	**E-2019-379**
Samples	18

LABORATORY DETAILS

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SGS Reference	**SE197031 R0**
Date Received	29 Aug 2019
Date Reported	05 Sep 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Surrogate	VOC's in Soil	2 items
	Volatile Petroleum Hydrocarbons in Soil	2 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	3 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	18 Soil
Date documentation received	29/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

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SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
EIL1	SE197031.014	LB182224	28 Aug 2019	29 Aug 2019	25 Sep 2019	02 Sep 2019	25 Sep 2019	04 Sep 2019
EIL2	SE197031.015	LB182224	28 Aug 2019	29 Aug 2019	25 Sep 2019	02 Sep 2019	25 Sep 2019	04 Sep 2019
EIL3	SE197031.016	LB182224	28 Aug 2019	29 Aug 2019	25 Sep 2019	02 Sep 2019	25 Sep 2019	04 Sep 2019

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182353	28 Aug 2019	29 Aug 2019	27 Aug 2020	03 Sep 2019	27 Aug 2020	05 Sep 2019
S15	SE197031.005	LB182353	28 Aug 2019	29 Aug 2019	27 Aug 2020	03 Sep 2019	27 Aug 2020	05 Sep 2019
S19	SE197031.008	LB182353	28 Aug 2019	29 Aug 2019	27 Aug 2020	03 Sep 2019	27 Aug 2020	05 Sep 2019
S23	SE197031.011	LB182353	28 Aug 2019	29 Aug 2019	27 Aug 2020	03 Sep 2019	27 Aug 2020	05 Sep 2019

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182353	28 Aug 2019	29 Aug 2019	24 Feb 2020	03 Sep 2019	24 Feb 2020	05 Sep 2019
S15	SE197031.005	LB182353	28 Aug 2019	29 Aug 2019	24 Feb 2020	03 Sep 2019	24 Feb 2020	05 Sep 2019
S19	SE197031.008	LB182353	28 Aug 2019	29 Aug 2019	24 Feb 2020	03 Sep 2019	24 Feb 2020	05 Sep 2019
S23	SE197031.011	LB182353	28 Aug 2019	29 Aug 2019	24 Feb 2020	03 Sep 2019	24 Feb 2020	05 Sep 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S10	SE197031.002	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S11	SE197031.003	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S13	SE197031.004	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S15	SE197031.005	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S16	SE197031.006	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S17	SE197031.007	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S19	SE197031.008	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S20	SE197031.009	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S22	SE197031.010	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S23	SE197031.011	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S24	SE197031.012	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019
S26	SE197031.013	LB182149	28 Aug 2019	29 Aug 2019	25 Sep 2019	30 Aug 2019	25 Sep 2019	04 Sep 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S10	SE197031.002	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S11	SE197031.003	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S13	SE197031.004	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S15	SE197031.005	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S16	SE197031.006	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S17	SE197031.007	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S19	SE197031.008	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S20	SE197031.009	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S22	SE197031.010	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S23	SE197031.011	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S24	SE197031.012	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
S26	SE197031.013	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
EIL1	SE197031.014	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
EIL2	SE197031.015	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
EIL3	SE197031.016	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019
Trip Blank	SE197031.018	LB182141	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	04 Sep 2019	02 Sep 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S10	SE197031.002	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S11	SE197031.003	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S13	SE197031.004	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S15	SE197031.005	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S16	SE197031.006	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019

HOLDING TIME SUMMARY

SE197031 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S17	SE197031.007	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S19	SE197031.008	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S20	SE197031.009	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S22	SE197031.010	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S23	SE197031.011	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S24	SE197031.012	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S26	SE197031.013	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S10	SE197031.002	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S11	SE197031.003	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S13	SE197031.004	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S15	SE197031.005	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S16	SE197031.006	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S17	SE197031.007	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S19	SE197031.008	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S20	SE197031.009	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S22	SE197031.010	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S23	SE197031.011	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S24	SE197031.012	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S26	SE197031.013	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S10	SE197031.002	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S11	SE197031.003	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S13	SE197031.004	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S15	SE197031.005	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S16	SE197031.006	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S17	SE197031.007	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S19	SE197031.008	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S20	SE197031.009	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S22	SE197031.010	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S23	SE197031.011	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S24	SE197031.012	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019
S26	SE197031.013	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	02 Sep 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S10	SE197031.002	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S11	SE197031.003	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S13	SE197031.004	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S15	SE197031.005	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S16	SE197031.006	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S17	SE197031.007	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S19	SE197031.008	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S20	SE197031.009	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S22	SE197031.010	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S23	SE197031.011	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S24	SE197031.012	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S26	SE197031.013	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
EIL1	SE197031.014	LB182447	28 Aug 2019	29 Aug 2019	04 Sep 2019	04 Sep 2019	05 Sep 2019	05 Sep 2019
EIL2	SE197031.015	LB182447	28 Aug 2019	29 Aug 2019	04 Sep 2019	04 Sep 2019	05 Sep 2019	05 Sep 2019
EIL3	SE197031.016	LB182447	28 Aug 2019	29 Aug 2019	04 Sep 2019	04 Sep 2019	05 Sep 2019	05 Sep 2019

HOLDING TIME SUMMARY

SE197031 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
EIL1	SE197031.014	LB182489	28 Aug 2019	29 Aug 2019	25 Sep 2019	05 Sep 2019	25 Sep 2019	05 Sep 2019
EIL2	SE197031.015	LB182489	28 Aug 2019	29 Aug 2019	25 Sep 2019	05 Sep 2019	25 Sep 2019	05 Sep 2019
EIL3	SE197031.016	LB182489	28 Aug 2019	29 Aug 2019	25 Sep 2019	05 Sep 2019	25 Sep 2019	05 Sep 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S10	SE197031.002	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S11	SE197031.003	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S13	SE197031.004	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S15	SE197031.005	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S16	SE197031.006	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S17	SE197031.007	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S19	SE197031.008	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S20	SE197031.009	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S22	SE197031.010	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S23	SE197031.011	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S24	SE197031.012	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019
S26	SE197031.013	LB182145	28 Aug 2019	29 Aug 2019	24 Feb 2020	30 Aug 2019	24 Feb 2020	04 Sep 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S10	SE197031.002	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S11	SE197031.003	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S13	SE197031.004	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S15	SE197031.005	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S16	SE197031.006	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S17	SE197031.007	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S19	SE197031.008	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S20	SE197031.009	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S22	SE197031.010	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S23	SE197031.011	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S24	SE197031.012	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019
S26	SE197031.013	LB182137	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	03 Sep 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S10	SE197031.002	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S11	SE197031.003	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S13	SE197031.004	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S15	SE197031.005	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S16	SE197031.006	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S17	SE197031.007	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S19	SE197031.008	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S20	SE197031.009	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S22	SE197031.010	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S23	SE197031.011	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S24	SE197031.012	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S26	SE197031.013	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
Trip Spike	SE197031.017	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
Trip Blank	SE197031.018	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S9	SE197031.001	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S10	SE197031.002	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S11	SE197031.003	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S13	SE197031.004	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S15	SE197031.005	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S16	SE197031.006	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019

HOLDING TIME SUMMARY

SE197031 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S17	SE197031.007	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S19	SE197031.008	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S20	SE197031.009	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S22	SE197031.010	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S23	SE197031.011	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S24	SE197031.012	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
S26	SE197031.013	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
Trip Spike	SE197031.017	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019
Trip Blank	SE197031.018	LB182139	28 Aug 2019	29 Aug 2019	11 Sep 2019	30 Aug 2019	09 Oct 2019	05 Sep 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	S9	SE197031.001	%	60 - 130%	85
	S15	SE197031.005	%	60 - 130%	97
	S19	SE197031.008	%	60 - 130%	109
	S23	SE197031.011	%	60 - 130%	109

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	S9	SE197031.001	%	60 - 130%	86
	S15	SE197031.005	%	60 - 130%	88
	S19	SE197031.008	%	60 - 130%	82
	S23	SE197031.011	%	60 - 130%	82
d14-p-terphenyl (Surrogate)	S9	SE197031.001	%	60 - 130%	88
	S15	SE197031.005	%	60 - 130%	90
	S19	SE197031.008	%	60 - 130%	88
	S23	SE197031.011	%	60 - 130%	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	S9	SE197031.001	%	70 - 130%	86
	S10	SE197031.002	%	70 - 130%	82
	S11	SE197031.003	%	70 - 130%	80
	S13	SE197031.004	%	70 - 130%	80
	S15	SE197031.005	%	70 - 130%	88
	S16	SE197031.006	%	70 - 130%	80
	S17	SE197031.007	%	70 - 130%	78
	S19	SE197031.008	%	70 - 130%	82
	S20	SE197031.009	%	70 - 130%	76
	S22	SE197031.010	%	70 - 130%	78
	S23	SE197031.011	%	70 - 130%	82
	S24	SE197031.012	%	70 - 130%	80
	S26	SE197031.013	%	70 - 130%	80
d14-p-terphenyl (Surrogate)	S9	SE197031.001	%	70 - 130%	88
	S10	SE197031.002	%	70 - 130%	88
	S11	SE197031.003	%	70 - 130%	86
	S13	SE197031.004	%	70 - 130%	88
	S15	SE197031.005	%	70 - 130%	90
	S16	SE197031.006	%	70 - 130%	88
	S17	SE197031.007	%	70 - 130%	86
	S19	SE197031.008	%	70 - 130%	88
	S20	SE197031.009	%	70 - 130%	88
	S22	SE197031.010	%	70 - 130%	86
	S23	SE197031.011	%	70 - 130%	90
	S24	SE197031.012	%	70 - 130%	90
	S26	SE197031.013	%	70 - 130%	90
d5-nitrobenzene (Surrogate)	S9	SE197031.001	%	70 - 130%	86
	S10	SE197031.002	%	70 - 130%	88
	S11	SE197031.003	%	70 - 130%	88
	S13	SE197031.004	%	70 - 130%	90
	S15	SE197031.005	%	70 - 130%	92
	S16	SE197031.006	%	70 - 130%	88
	S17	SE197031.007	%	70 - 130%	90
	S19	SE197031.008	%	70 - 130%	90
	S20	SE197031.009	%	70 - 130%	88
	S22	SE197031.010	%	70 - 130%	88
	S23	SE197031.011	%	70 - 130%	86
	S24	SE197031.012	%	70 - 130%	90
	S26	SE197031.013	%	70 - 130%	90

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	S9	SE197031.001	%	60 - 130%	85
	S15	SE197031.005	%	60 - 130%	97

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	S19	SE197031.008	%	60 - 130%	109
	S23	SE197031.011	%	60 - 130%	109

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	S9	SE197031.001	%	60 - 130%	91
	S10	SE197031.002	%	60 - 130%	98
	S11	SE197031.003	%	60 - 130%	91
	S13	SE197031.004	%	60 - 130%	104
	S15	SE197031.005	%	60 - 130%	93
	S16	SE197031.006	%	60 - 130%	94
	S17	SE197031.007	%	60 - 130%	97
	S19	SE197031.008	%	60 - 130%	93
	S20	SE197031.009	%	60 - 130%	87
	S22	SE197031.010	%	60 - 130%	98
	S23	SE197031.011	%	60 - 130%	91
	S24	SE197031.012	%	60 - 130%	96
	S26	SE197031.013	%	60 - 130%	100
	Trip Spike	SE197031.017	%	60 - 130%	89
	Trip Blank	SE197031.018	%	60 - 130%	98
d4-1,2-dichloroethane (Surrogate)	S9	SE197031.001	%	60 - 130%	110
	S10	SE197031.002	%	60 - 130%	92
	S11	SE197031.003	%	60 - 130%	96
	S13	SE197031.004	%	60 - 130%	91
	S15	SE197031.005	%	60 - 130%	102
	S16	SE197031.006	%	60 - 130%	86
	S17	SE197031.007	%	60 - 130%	85
	S19	SE197031.008	%	60 - 130%	90
	S20	SE197031.009	%	60 - 130%	83
	S22	SE197031.010	%	60 - 130%	84
	S23	SE197031.011	%	60 - 130%	83
	S24	SE197031.012	%	60 - 130%	91
	S26	SE197031.013	%	60 - 130%	96
	Trip Spike	SE197031.017	%	60 - 130%	96
	Trip Blank	SE197031.018	%	60 - 130%	99
d8-toluene (Surrogate)	S9	SE197031.001	%	60 - 130%	121
	S10	SE197031.002	%	60 - 130%	113
	S11	SE197031.003	%	60 - 130%	104
	S13	SE197031.004	%	60 - 130%	124
	S15	SE197031.005	%	60 - 130%	119
	S16	SE197031.006	%	60 - 130%	105
	S17	SE197031.007	%	60 - 130%	108
	S19	SE197031.008	%	60 - 130%	103
	S20	SE197031.009	%	60 - 130%	92
	S22	SE197031.010	%	60 - 130%	106
	S23	SE197031.011	%	60 - 130%	53 ①
	S24	SE197031.012	%	60 - 130%	106
	S26	SE197031.013	%	60 - 130%	57 ①
	Trip Spike	SE197031.017	%	60 - 130%	94
	Trip Blank	SE197031.018	%	60 - 130%	104

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	S9	SE197031.001	%	60 - 130%	91
	S10	SE197031.002	%	60 - 130%	98
	S11	SE197031.003	%	60 - 130%	91
	S13	SE197031.004	%	60 - 130%	104
	S15	SE197031.005	%	60 - 130%	93
	S16	SE197031.006	%	60 - 130%	94
	S17	SE197031.007	%	60 - 130%	97
	S19	SE197031.008	%	60 - 130%	93
	S20	SE197031.009	%	60 - 130%	87

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	S22	SE197031.010	%	60 - 130%	98
	S23	SE197031.011	%	60 - 130%	91
	S24	SE197031.012	%	60 - 130%	96
	S26	SE197031.013	%	60 - 130%	100
d4-1,2-dichloroethane (Surrogate)	S9	SE197031.001	%	60 - 130%	110
	S10	SE197031.002	%	60 - 130%	92
	S11	SE197031.003	%	60 - 130%	96
	S13	SE197031.004	%	60 - 130%	91
	S15	SE197031.005	%	60 - 130%	102
	S16	SE197031.006	%	60 - 130%	86
	S17	SE197031.007	%	60 - 130%	85
	S19	SE197031.008	%	60 - 130%	90
	S20	SE197031.009	%	60 - 130%	83
	S22	SE197031.010	%	60 - 130%	84
	S23	SE197031.011	%	60 - 130%	83
	S24	SE197031.012	%	60 - 130%	91
	S26	SE197031.013	%	60 - 130%	96
d8-toluene (Surrogate)	S9	SE197031.001	%	60 - 130%	121
	S10	SE197031.002	%	60 - 130%	113
	S11	SE197031.003	%	60 - 130%	104
	S13	SE197031.004	%	60 - 130%	124
	S15	SE197031.005	%	60 - 130%	119
	S16	SE197031.006	%	60 - 130%	105
	S17	SE197031.007	%	60 - 130%	108
	S19	SE197031.008	%	60 - 130%	103
	S20	SE197031.009	%	60 - 130%	92
	S22	SE197031.010	%	60 - 130%	106
	S23	SE197031.011	%	60 - 130%	53 ①
	S24	SE197031.012	%	60 - 130%	106
	S26	SE197031.013	%	60 - 130%	57 ①

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result
LB182224.001	Exchangeable Sodium, Na	mg/kg	2	0
	Exchangeable Potassium, K	mg/kg	2	0
	Exchangeable Calcium, Ca	mg/kg	2	0
	Exchangeable Magnesium, Mg	mg/kg	2	0

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB182149.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB182137.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	95

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB182137.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB182137.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB182137.001		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	84
		2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB182137.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	95

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result
LB182489.001	Total Organic Carbon	%w/w	0.05	<0.05

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB182145.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB182137.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB182139.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	113
		d8-toluene (Surrogate)	%	-	110
		Bromofluorobenzene (Surrogate)	%	-	128

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued) — Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB182139.001	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB182139.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	113

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182149.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE197041.007	LB182149.024	Mercury	mg/kg	0.05	0.02031265310	0.0376987312	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182141.011	% Moisture	%w/w	0.5	12	12	38	1
SE197046.004	LB182141.030	% Moisture	%w/w	0.5	4.1	3.4	57	19

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197045.003	LB182137.033		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0	200	0
			Lindane	mg/kg	0.1	<0.1	0	200	0
			Heptachlor	mg/kg	0.1	<0.1	0	200	0
			Aldrin	mg/kg	0.1	<0.1	0	200	0
			Beta BHC	mg/kg	0.1	<0.1	0	200	0
			Delta BHC	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.148	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197045.003	LB182137.033		Dichlorvos	mg/kg	0.5	<0.5	0.01	200	0
			Dimethoate	mg/kg	0.5	<0.5	0.16	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0.01	200	0
			Fenitrothion	mg/kg	0.2	<0.2	0	200	0
			Malathion	mg/kg	0.2	<0.2	0	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0.01	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	0.06	200	0
			Methidathion	mg/kg	0.5	<0.5	0.01	200	0
			Ethion	mg/kg	0.2	<0.2	0	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0.01	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.42	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.46	30	0

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182137.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
SE197045.003	LB182137.033		Naphthalene	mg/kg	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.02	200	0
			Anthracene	mg/kg	0.1	<0.1	0.01	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.02	200	0
			Pyrene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.01	200	0
			Chrysene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.01	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.01	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.01	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.47	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.42	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.46	30	0

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197045.003	LB182137.033	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197045.003	LB182137.033		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.148	30	1

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.016	LB182447.029	pH (CaCl2)*	pH Units	0.1	3.9	3.9	33	1

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.014	LB182489.004	Total Organic Carbon	%w/w	0.05	8.5	6.7	31	23
SE197103.005	LB182489.016	Total Organic Carbon	%w/w	0.05	1.79065657291	.4826435555	33	19

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182145.014	Arsenic, As	mg/kg	1	5	3	56	43
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	4.4	4.5	41	1
		Copper, Cu	mg/kg	0.5	23	25	32	8
		Nickel, Ni	mg/kg	0.5	7.9	9.2	36	14
		Lead, Pb	mg/kg	1	21	19	35	9
		Zinc, Zn	mg/kg	2	69	69	33	0
SE197041.007	LB182145.024	Arsenic, As	mg/kg	1	5.35694527706	.7659203772	46	23
		Cadmium, Cd	mg/kg	0.3	0.00571524730	.1465258940	200	0
		Chromium, Cr	mg/kg	0.5	6.06607557925	.7655322789	38	5
		Copper, Cu	mg/kg	0.5	27.1140125579	4.937747777	32	8
		Nickel, Ni	mg/kg	0.5	21.2624785704	9.1054938864	32	11
		Lead, Pb	mg/kg	1	16.8371186068	3.4293598464	37	23
		Zinc, Zn	mg/kg	2	73.4717024789	3.9127196093	33	1

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182137.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE197045.003	LB182137.034		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182139.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182139.015	Monocyclic	o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.4	9.0	50	7
			d8-toluene (Surrogate)	mg/kg	-	10.6	10.3	50	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.8	9.4	50	4
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE197045.002	LB182139.029	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.0	8.6	50	15
			d8-toluene (Surrogate)	mg/kg	-	10.6	9.4	50	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	8.4	50	12
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE197031.010	LB182139.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.4	9.0	30	7
			d8-toluene (Surrogate)	mg/kg	-	10.6	10.3	30	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.8	9.4	30	4
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE197045.002	LB182139.029		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.0	8.6	30	15
			d8-toluene (Surrogate)	mg/kg	-	10.6	9.4	30	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	8.4	30	12
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182224.002	Exchangeable Sodium, Na	mg/kg	2	NA	72.68	80 - 120	111
	Exchangeable Potassium, K	mg/kg	2	NA	238.12	80 - 120	97
	Exchangeable Calcium, Ca	mg/kg	2	NA	692	80 - 120	103
	Exchangeable Magnesium, Mg	mg/kg	2	NA	134.2	80 - 120	102

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182149.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	111

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182137.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	112
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	114
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	104
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	93
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	103
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	95
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	102

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182137.002		Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	78
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	92
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2	60 - 140	82
		Ethion	mg/kg	0.2	1.5	2	60 - 140	76
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182137.002		Naphthalene	mg/kg	0.1	4.3	4	60 - 140	108
		Acenaphthylene	mg/kg	0.1	4.8	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.9	4	60 - 140	122
		Phenanthrene	mg/kg	0.1	4.8	4	60 - 140	120
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	109
		Fluoranthene	mg/kg	0.1	4.6	4	60 - 140	115
		Pyrene	mg/kg	0.1	4.7	4	60 - 140	119
		Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	120
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182137.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	92

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182489.002	Total Organic Carbon	%w/w	0.05	0.30	0.325	80 - 120	91

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182145.002	Arsenic, As	mg/kg	1	320	336.32	79 - 120	96
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	102
	Chromium, Cr	mg/kg	0.5	38	35.2	80 - 120	109
	Copper, Cu	mg/kg	0.5	340	370.46	80 - 120	93
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	92
	Lead, Pb	mg/kg	1	98	107.87	79 - 120	91

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182145.002		Zinc, Zn	mg/kg	2	290	301.27	80 - 121	96

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182137.002		TRH C10-C14	mg/kg	20	35	40	60 - 140	88
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	75
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	75
	TRH F Bands	TRH >C10-C16	mg/kg	25	35	40	60 - 140	88
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	75
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182139.002	Monocyclic	Benzene	mg/kg	0.1	4.2	5	60 - 140	83
	Aromatic	Toluene	mg/kg	0.1	4.3	5	60 - 140	85
		Ethylbenzene	mg/kg	0.1	4.3	5	60 - 140	86
		m/p-xylene	mg/kg	0.2	8.5	10	60 - 140	85
		o-xylene	mg/kg	0.1	4.2	5	60 - 140	85
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.3	10	70 - 130	103
		d8-toluene (Surrogate)	mg/kg	-	8.9	10	70 - 130	89
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.1	10	70 - 130	81

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB182139.002		TRH C6-C10	mg/kg	25	74	92.5	60 - 140	81
		TRH C6-C9	mg/kg	20	62	80	60 - 140	78
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.1	10	70 - 130	81
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	49	62.5	60 - 140	78

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182149.004	Mercury	mg/kg	0.05	0.32	0.14	0.2	90

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.004		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	112
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	106
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	99
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	100
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	121
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	92
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.13	-	84

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.004		Dichlorvos	mg/kg	0.5	1.7	<0.5	2	85
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.7	<0.5	2	82
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.7	<0.2	2	84
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.6	<0.2	2	79
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	6.6	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	82

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.004	Naphthalene	mg/kg	0.1	4.4	<0.1	4	111
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.6	<0.1	4	114
		Acenaphthene	mg/kg	0.1	4.7	<0.1	4	117
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.8	<0.1	4	119

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.004		Anthracene	mg/kg	0.1	4.5	<0.1	4	113
			Fluoranthene	mg/kg	0.1	4.4	<0.1	4	110
			Pyrene	mg/kg	0.1	4.7	<0.1	4	116
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.5	<0.1	4	112
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	4.5	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	4.7	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	4.6	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	37	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	82

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.004		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	91
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	89

TOC in Soil

Method: ME-(AU)-[ENV]AN188

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197103.011	LB182489.022	Total Organic Carbon	%w/w	0.05	2.6	1.49358700994	-	-

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182145.004	Arsenic, As	mg/kg	1	110	78	50	56 ④
		Cadmium, Cd	mg/kg	0.3	46	4.8	50	82
		Chromium, Cr	mg/kg	0.5	66	20	50	93
		Copper, Cu	mg/kg	0.5	88	50	50	75
		Nickel, Ni	mg/kg	0.5	55	8.1	50	95
		Lead, Pb	mg/kg	1	160	150	50	18 ④
		Zinc, Zn	mg/kg	2	1000	580	50	841 ⑤

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182137.033		TRH C10-C14	mg/kg	20	40	<20	40	100
			TRH C15-C28	mg/kg	45	51	<45	40	128
			TRH C29-C36	mg/kg	45	51	<45	40	128
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	140	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	49	<25	40	123
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	49	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	73
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182139.004	Monocyclic	Benzene	mg/kg	0.1	3.4	<0.1	5	67
		Aromatic	Toluene	mg/kg	0.1	4.3	<0.1	5	86
			Ethylbenzene	mg/kg	0.1	3.8	<0.1	5	76
			m/p-xylene	mg/kg	0.2	7.7	<0.2	10	77
			o-xylene	mg/kg	0.1	3.9	<0.1	5	77
		Polycyclic	Naphthalene	mg/kg	0.1	3.8	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.1	11.0	10	91
			d8-toluene (Surrogate)	mg/kg	-	9.4	12.1	10	94
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	9.1	10	76
		Totals	Total Xylenes	mg/kg	0.3	12	<0.3	-	-
			Total BTEX	mg/kg	0.6	23	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE197031.001	LB182139.004		TRH C6-C10	mg/kg	25	79	<25	92.5	85
			TRH C6-C9	mg/kg	20	64	<20	80	80
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.1	11.0	10	91
			d8-toluene (Surrogate)	mg/kg	-	9.4	12.1	10	94
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	9.1	-	76
		VPH F	Benzene (F0)	mg/kg	0.1	3.4	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	56	<25	62.5	89

MATRIX SPIKE DUPLICATES

SE197031 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

QC Sample	Sample Number	Parameter	Units	LOR

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**10530(2984B)/2365D-R**
Order Number	**E-2019-379**
Samples	4

LABORATORY DETAILS

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SGS Reference	**SE197031 R0**
Date Received	29 Aug 2019
Date Reported	05 Sep 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

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Inorganic/Metals Chemist

Yusuf Kuthpudin
Asbestos Analyst

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE197031.001	S9	Soil	427g Clay, Sand, Soil, Rocks, Plant Matter	28 Aug 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE197031.005	S15	Soil	425g Clay, Sand, Soil, Rocks, Plant Matter	28 Aug 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE197031.008	S19	Soil	457g Clay, Sand, Soil, Rocks	28 Aug 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE197031.011	S23	Soil	458g Clay, Sand, Soil, Rocks	28 Aug 2019	No Asbestos Found Organic Fibres Detected	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 3/9/2019

PARAMETER	UOM	LOR	S9 SOIL - 28/8/2019 SE197031.001	S15 SOIL - 28/8/2019 SE197031.005	S19 SOIL - 28/8/2019 SE197031.008	S23 SOIL - 28/8/2019 SE197031.011
Total Sample Weight*	g	1	**427**	**425**	**457**	**458**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type*	No unit	-	-	-	-	-

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service.
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.