

Larry Cook Consulting Pty Ltd

(ABN 27 159 132 055)

PO Box 8146 TUMBLUMBI NSW 2261
Office: 02 4340 0193 Mobile: 0428 884645 Email: larrycookconsulting@gmail.com

S. Glasson & K. Ticehurst
107 Matcham Road
MATCHAM NSW 2250

8th February 2019
REF: 19013-A

Re: Targeted Environmental Investigation
Lot 2 in DP561283, No. 2 Collingwood Drive Matcham – J. & V. Ryan
Lot 11 in DP576336, No. 24 Collingwood Drive Matcham – N. Graham
Lot 12 in DP576336, No. 14 Collingwood Drive Matcham – Mr. & Mrs. Ursino
Lot 13 in DP576336, 107 Matcham Rd Matcham – S. Glasson & K. Ticehurst

1. INTRODUCTION AND BACKGROUND

Larry Cook Consulting Pty Ltd was commissioned as independent environmental consultants in January 2019 by the owners of the abovementioned properties identified as lots 2, 11, 12 and 13 to test in-situ soil for potential contamination (herein referred to as the Site).

Central Coast Council contacted the owners in December 2018 requesting a preliminary environmental assessment of the Site, more particularly the potential for any contamination that may be associated with past land use activities, in particular orchards.

This letter report provides the results of targeted testing of the in-situ soil on the Site, based on the results of soil sampling and laboratory analysis in accordance with the National Environmental Protection Measures (2013) and the Guidelines for Consultants Reporting on Contaminated Sites (OEH; 2011)

2. OBJECTIVES

This assessment aims to identify the potential for on-site soil contamination associated with past land use. The objectives of this Targeted Environmental Investigation (TEI) were to:

- Document the available Site history;
- Identify potential on and off-site sources of contamination (past and present);
- Identify potential contamination types;
- Document the Site condition;
- Delineate and describe the underground storage tanks;
- Provide a preliminary assessment of potential Site contamination; and
- Assess the need for further investigations, if any.

3. SCOPE OF WORK

The scope of work for the Targeted Environmental Investigation included the review, assessment and reporting of the following data;

- Review of information held on the property;

- Review of publicly available data (including aerial photographs, geological plans, topographical maps and other resource maps as available);
- Review of information held by State Government Departments (EPA);
- Review of relevant information held by Central Coast Council;
- Review of literature sources describing environmental issues at sites in NSW;
- On-site inspection (walk-over) of the premises and surrounding areas;
- Visual assessment of any potential hazardous materials;
- A photographic record of present site conditions;
- Review of locally available information on the site sources from the local Council and residents (if available);
- Discussion with relevant parties (if available) and local EPA/Council officials (if available);
- Selected (targeted) soil sampling, laboratory analysis and assessment against relevant guidelines; and
- Data assessment and reporting.

4. SITE DESCRIPTION

A lot plan and the locations of the soil samples is presented in **Figure 1**. The key features required to identify the Site are summarised below in **Table 1**.

| Table 1 Site Identification | | | | |
|--|-----------------------------|------------------------------|------------------------------|------------------------|
| Street Address | 2 Collingwood Drive Matcham | 24 Collingwood Drive Matcham | 14 Collingwood Drive Matcham | 107 Matcham Rd Matcham |
| Title Identifier | Lot 2 in DP561283 | Lot 11 in DP576336 | Lot 12 in DP576336 | Lot 13 in DP576336 |
| Site Use | Rural-residential | Rural-residential | Rural-residential | Rural-residential |
| Site Area | Approx. 2.01 ha | Approx. 2.05 ha | Approx. 2.02 ha | Approx. 2.04 ha |
| Local Government Area | Central Coast Council | | | |

5. SURROUNDING LAND USES

The current activities and operations on adjacent properties and the surrounding area are summarised in **Table 2**

| Table 2: Surrounding Landuse | |
|------------------------------|-------------------|
| Direction | Landuse |
| North: | Rural Residential |
| East: | Rural Residential |
| South: | Rural Residential |
| West: | Rural Residential |

6. SITE HISTORY

Discussions with local land owners, general knowledge of the historic land use, general history of development in the area and observations of the topography, and natural ground slope indicates that the Site has remained rural to rural-residential since at least the oldest aerial photo coverage in 1954.

The Site is presently partly developed with single dwellings located on parcels of land each approximately 2 hectares in area. There is no evidence of any significant surface contamination.

7. SOIL LANDSCAPE

The reader is referred to the *Soil Landscapes of the Gosford-Lake Macquarie 1:100,000 Sheet* Report (Murphy, 1993). The soils beneath the Site are grouped with the Erina soil landscape which is developed on undulating rises overlying the Terrigal Formation and Narrabeen Group sedimentary rocks in this area.

8. SITE HISTORY

8.1 Sources of Information

The sources of information that were available for the historical Site assessment are listed below:

- Central Coast Council – Section 149
- Former Gosford City Council – Planning Certificate
- NSW Department of Lands Spatial Information eXchange (SIX Maps);
- DPI Water Groundwater Bore Records Search;
- NSW OEH register of EPA Licences;
- NSW OEH list of registered Remediation or Investigation site Orders;
- Safe Work NSW - Search for on-site Licences to keep dangerous goods;
- Land Property Information (LPI) - Historical Aerial Photographs;

- Multiple site visits conducted in 2015, 2016 and 2017; and
- Interviews and discussions with local residents where possible.

8.2 EPA Records

A search of the NSW EPA register of Environmental Protection Notices under sections 58 and 60 of the Contaminated Land Management Act 1997 (CLM Act) was conducted in November 2016 to assess the potential for contaminated land in the area.

In summary;

- The search did NOT identify any records of notices in the area.
- The subject site is NOT declared to be in an 'investigation' or 'remediation' area, nor is it subject to an 'investigation' or 'remediation' order under the Contaminated Land Management Act, 1997.

8.3 Public Register of POEO licenses

A search of the public register of licenses issued under the Protection of the Environment Operations Act 1997 (POEO) did NOT identify any licenses or prosecutions regarding the Site.

8.4 Safe Work NSW

Safe Work NSW does not hold any records related to the Site.

8.5 Local Consent Authority

Central Coast Council is the local consent authority. It is understood that the Section 149(2) and (5) Planning Certificate does not list any impediments relating to contaminated lands.

8.6 Resident Interviews

Informal interviews with local residents in the area provided further anecdotal evidence to support description of the site history. Anecdotal evidence indicates that apart from historically clearing in the local area, small pockets of small-scale agriculture were undertaken on some, but not all, properties. Anecdotal evidence indicates that green produce was grown in the area, in particular green beans (string beans). It is noted that green beans were a popular crop in the district until about 1986 when government regulations permitted the importation of frozen beans into Australia. The layout of the Site has not changed significantly since that time.

8.7 Aerial Photographs

Recent discussions with Council's environmental officer and review of available aerial photos over the district for the years 1961, 1966, 1971, 1976 and 1991 reveals that little agricultural activity is noted on the Site. The exception is the 1954 aerial coverage which reveals a relatively small area within the Site comprising parallel crop rows which were almost certainly green produce, likely green beans.

However, the small scale and relatively poor resolution/contrast of the 1954 aerial photo coverage makes it very difficult to delineate the actual location and the property. In this regard, the soil investigations were designed so that the subject agricultural area would be covered.

9. PREVIOUS ENVIRONMENTAL INVESTIGATIONS

It is understood that the Site has not been the subject of any previous environmental assessments apart from wastewater management plans (WMPs) recently prepared for each of lots 2, 11, 12 and 13.

10. POTENTIALLY CONTAMINATED SOIL

Given the land use history of the Site, there is considered to be low potential for the presence of contaminated soils on the Site. The reference to agricultural activities suggested that there is potential for the presence of residual levels of pesticides, herbicides and heavy metals. The site inspection and anecdotal evidence did not indicate any above ground or below ground storage tanks (USTs).

The rationale for this is the possible presence of pest and disease control associated with growing green produce in the 1940s and 1950s. There is no evidence that these activities extended into the 1960s on the Site.

Based on the site history documented in this investigation and assessment, the site inspections and information provided by the local residents, the following areas of potential environmental concern are listed below in **Table 3**.

| Potential Contaminants | Historical Activities | Dispersion Mechanism & Areas of Environmental Concern (AEC) |
|---------------------------------|---|--|
| Pesticides including Herbicides | Pest and disease control including weeds. | Potential residual pesticides including herbicides associated with the spraying of crops |
| Heavy Metals | General historical landuse. | Residual levels in soils |

11. SOIL SAMPLING

11.1 Objectives

A site-specific sampling program was developed with the objective of assessing potential soil contamination at the Areas of Environmental Concern (AEC) identified during the site history review, namely the cleared areas on the Site that could have been used to grow crops. Soil samples were selected to assess soil conditions at the AEC targets on the Site.

Soil samples were selected for analysis based on the stratigraphic conditions, land use and as to provide an understanding of potential contamination vertically and laterally.

11.2 Sampling Procedure

Sample locations were excavated manually using a hand-operated auger and spot excavations. Soil descriptions and site coordinates were recorded in the field. Soil logging procedures followed a systematic and standardised format providing a classification of the soil group based on particle size and structure. Field tests and observations were conducted to distinguish between soil composition, condition, and structure.

All soil samples were collected in accordance with industry standard QA/QC procedures. A minimum 0.5 kg sample was collected at designated sample locations and depths with disposable sterile nitrile gloves and placed directly into sterile glass containers and bags (for asbestos identification). Sample containers were individually labelled with identification numbers, dates, and location clearly marked on the container. Samples were submitted to the project laboratory accompanied by Chain of Custody (COC) documentation.

Sample equipment was washed down and decontaminated between sample sites to prevent potential cross contamination.

11.3 Soil Sampling

A program of soil sampling was conducted by Larry Cook Consulting (Environmental Consultant Chris Freestone) during the site inspection on 24th January 2019. A total of 14 soil test holes were excavated across the Site. The locations of the test excavations are shown in **Figure 1**

Soil samples collected from the soil test holes consisted of discreet soil samples representative of the upper 0.20 to 0.30 m part of the in-situ soil profile.

A register of the 15 soil samples with a general soil description are provided in **Table 4**.

| Table 4 Summary Details - Soil Samples | | |
|---|------------------------------|--|
| Lot/DP | Samples | General Soil Description |
| Lot 2 DP561283 | 2.1 2.2 2.3 2.4 | Silty Sandy Loam Colluvium. Brown to pale brown to in parts yellow-brown. Minor grit in parts (small fragments highly weathered sandstone to 2 mm). Abundant amounts of organic material. Dry and loose. |
| Lot 11 DP576336 | 11.1 11.2 11.3 11.4 | |
| Lot 12 DP576336 | 12.1 12.2 12.3 12.4 | |
| Lot 13 DP576336 | 13.1 13.2 13.3 | |

12. SOIL TESTING

A total of 10 primary soil samples was submitted to Envirolab Services (ELS), a NATA accredited testing laboratory and tested/analysed for:

- pH
- Electrical Conductivity (EC)
- OC/OP Pesticides;
- 8 Heavy Metals (Mercury, Cadmium, Lead, Arsenic, Total Chromium, Copper, Nickel and Zinc).

13. NATIONAL ENVIRONMENT PROTECTION MEASURE

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM 1999) is made under the national Environment Protection Council Act 1994. The NEPM 1999 was amended in 2103 (16th May 2013).

The NSW EPA has endorsed the National Environment Protection (Assessment of Site Contamination) Amendment Measure (2013) 'Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater'. The NEPM provides a framework for the use of investigation and screening levels for soil, soil gas and groundwater. The framework is predicted on a matrix of human health, ecological and groundwater investigation and screening levels in conjunction with guidance for specific Contaminants of Concern (COC). The investigation levels and screening levels in the NEPM are the concentrations of a COC above which further appropriate investigation and evaluation would be required.

The guidelines are described as follows:

Health Investigation Levels (HILs)

Levels listed for a range of metal and organic substances applicable to assessing human health risk via all relevant pathways of exposure.

Health Screening Levels (HSLs).

For BTEX, TRH and naphthalene compounds applicable to assessing human health risk via the inhalation and direct contact pathways.

Ecological Investigation Levels (EILs)

Levels for selected metal and organic substances applicable for assessing risk to terrestrial ecosystems.

Ecological Screening levels (ESLs)

Levels for BTEX, Total Petroleum Hydrocarbons (TPH) and benzo(a)pyrene compounds applicable for assessing the risk to terrestrial systems.

Groundwater Investigation Levels (GILs)

Levels for a broad range of metal and organic substances. The investigation levels are the concentrations of Contaminants of Concern (COC) in groundwater above which further investigation or a response is required. This applies to 'point of extraction' or 'point of use' respectively.

The investigation levels are based on the Australian Water Quality guidelines and Australian Drinking Water guidelines and are applicable for assessing human health and ecological risk from direct contact (including consumption) with the groundwater.

The adopted investigation levels include the ANZECC 2000 Investigations Levels for fresh water. It is noted that, for many of these compounds, these guidelines provide low reliability 'conservative' criteria and could be utilised as trigger levels for any further assessment.

Petroleum Hydrocarbon Management Limits (Management Limits)

Applicable to TRH compounds only. The NEPM states that these Management Limits are applicable as screening levels following an evaluation of human and ecological risks and risks to groundwater resources. The Management Limits are relevant for operating sites where significant sub-surface leakage of Total Petroleum Hydrocarbons (TPH) compounds has occurred and when decommissioning industrial and commercial sites.

Levels are provided for soil and groundwater in the NEPM for four (4) types of land uses:

- A Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.**
- B Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
- C Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
- D Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.

Given the subject site is rural-residential the appropriate soil assessment criteria for this investigation is **Residential A**. In general, the NEPM recommend site conditions be compared against the guidelines in a staged manner, firstly to assess for exceedances of the HSL's and the need for a Health Risk

Assessment prior to assessment against the ESL's and consideration of potential migration or exposure pathways, followed by an assessment of the physical and aesthetic suitability of the medium.

14. QUALITY ASSURANCE & QUALITY CONTROL

14.1 Data Quality Objectives

Data Quality Objectives (DQO) are required to define the quality and quantity of data needed to support management decisions. The process for establishing DQO's is documented by Australian Standard: AS 4482.1-2005 and referenced by the National Environment Protection (Assessment of the Site Contamination) Measure (NEPC 2013) and the Guidelines for the NSW Site Auditor Scheme, 2nd ed (NSW DEC, 2006). The DQO's for the investigation were to obtain sufficient representative data to allow a high quality environmental assessment of:

1. The location, nature, and degree of soil and groundwater contamination at selected sampling locations (if any);
2. The risks posed to human health and the environment, including potential future users of the site;
3. The requirements for any further investigative works; and
4. To a standard consistent with generally accepted and current professional consulting practice for such an investigation.

The assessment was conducted to a standard consistent with generally accepted and current professional consulting practice for such an investigation. The evaluation criteria (Decision Rules) adopted for the investigation are summarised in **Table 5**.

| Table 5 Data Quality Objectives | |
|--|--|
| DQO | Evaluation Criteria |
| Documentation completeness | Completion of field records, chain of custody documentation, laboratory test certificates from NATA-accredited laboratories. |
| Data comparability | Use of appropriate techniques for the sampling, storage and transportation of samples. Use of NATA accredited laboratory using NEPM procedures |
| Data representativeness | Adequate sampling coverage of all areas of environmental concern at the site, and selection of representative samples |
| Precision and accuracy for sampling and analysis | Use properly trained and qualified field personnel and Achieve laboratory QC criteria. |

14.2 Field Quality Assurance & Quality Control

The Quality Assurance and Quality Control (QA/QC) protocols used during the field investigations are documented in **Table 6**.

| Table 6 Field QA/QC | |
|--------------------------------|---|
| Protocol | Description |
| Sampling Team | Site personnel comprised only professionally qualified environmental scientists and occupational hygienists trained in conducting asbestos surveys and site contamination investigations. |
| Sample Equipment | All sample equipment decontaminated between sample sites. Disposable equipment including gloves changed between each sample. |
| Field Screening | Visual and manual inspection of sample materials for potential contamination |
| Chain of Custody Forms | All samples were logged and transferred under appropriately completed Chain of Custody Forms. |

14.3 Laboratory Quality Assurance & Quality Control

Analysis and testing of soil samples was conducted by Envirolab, West Chatswood. Envirolab is NATA approved for the selected analysis. Laboratory QA/QC results are detailed in the laboratory report contained in **Appendix A**.

14.4 Quality Assurance & Quality Control Discussion

A summary of the Data Quality performance is provided in **Table 7**.

| Table 7 Data Quality Objectives and Criteria | | |
|---|---|---------------|
| DQO | Evaluation Criteria | Status |
| Documentation completeness | Completion of field records, chain of custody documentation, laboratory test certificates from NATA-registered laboratories. | ✓ |
| Data comparability | Use of appropriate techniques for the sampling, storage and transportation of samples. Use of NATA certified laboratory using NEPM procedures. Comparison with previous site information. | ✓ |

| Table 7 Data Quality Objectives and Criteria | | |
|--|---|--------|
| DQO | Evaluation Criteria | Status |
| Data representativeness | Good sampling coverage of all areas of environmental concern at the site, and selection of representative samples from each sampling location. Targeting Areas of Environmental Concern for contaminants of concern. | ✓ |
| Precision and accuracy for sampling and analysis | Use properly trained and qualified field personnel. Appropriate sampling and field techniques. Achieve laboratory QC criteria. | ✓ |

The project laboratory is NATA accredited and the Practical Quantitation Limits (PQL) were within the acceptable levels for the investigation criteria. The laboratory certificate of analysis provided in **Appendix A** indicate that for the samples collected during the scope of works, sampling techniques, transport procedures and laboratory analysis were satisfactory.

The QA/QC indicators either all complied with the required standards, or showed variations that would have no significant effect on the quality of the data or the conclusions of this assessment. It is therefore concluded that, for the purposes of this study, the QA/QC results are valid and the quality of the ***data is acceptable for use in this assessment.***

15. ANALYTICAL RESULTS

Laboratory results are summarised in **Table 8**. A copy of the laboratory certificate and Chain of Custody (COC) documentation are provided in **Appendix A**. Laboratory QA/QC results are also detailed in the laboratory report in **Appendix A**.

The NSW EPA has endorsed the National Environment Protection (Assessment of Site Contamination) Amendment Measure (2013) 'Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater'. The guidelines provide Health Investigation Levels (HILs), Health Screening Levels (HSLs) and Ecological screening levels (ESLs). Levels are provided for soil and groundwater in the NEPM for four (4) types of land uses:

- A Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
- B Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
- C Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
- D Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.

Given the subject site is rural-residential, the appropriate soil assessment criteria for this investigation is considered to be **NEPM A with garden/accessible soil**. In general the NEPM recommend site conditions be compared against the guidelines in a staged manner, firstly to assess for exceedances of the HSL's and the need for a Health Risk Assessment prior to assessment against the ESL's and consideration of potential migration or exposure pathways, followed by an assessment of the physical and aesthetic suitability of the medium.

The following points summarise the soil test results:

- Soil test results for OC/OP Pesticides were all below the method detection limits and therefore the NEPM guideline values;
- Trace levels of copper (Cu), lead (Pb), zinc (Zn), nickel (Ni) and chromium (Cr) were recorded in the samples but are all significantly less than the NEPM guideline values. All other results were less than the method detection limits.

In summary, the laboratory report from the AEC targeted soil investigation shows that concentrations of tested analytes (including asbestos) were all below the adopted Soil Investigation Level guidelines for **NEPM A with garden/accessible soil**.

OC/OP Pesticides

Laboratory analysis of 10 soil samples targeting AEC returned levels of OC/OP Pesticides all below the Limit of Reporting (LOR) and less than the relevant NEPM Health and Soil Investigation Level guidelines.

Heavy Metals

Laboratory analysis of the 10 soil samples targeting AEC returned trace levels of copper (Cu), lead (Pb), zinc (Zn), nickel (Ni) and chromium (Cr) were recorded in the samples but are all significantly less than the NEPM guideline values

Concentrations of arsenic (As), cadmium (Cd) and mercury (Hg) were all below the LOR and therefore less than the NEPM Health and Soil Investigation Level guidelines.

16. CONCLUSION

- Soil test results are all below the **Residential A** NEPM guidelines values.
- There is no evidence of significant contamination.
- The site investigations and a review of the history of the Site conclude that the soil tested is natural in-situ colluvial soil which, based on the laboratory testing, is suitable for residential development with open spaces.
- There is no evidence of industrial, farming or commercial activities on the Site that could lead to any risk of significant contamination.

17. CLOSURE

Should the reader have any queries regarding this letter report, please do not hesitate to contact Larry Cook Consulting on 4340 0193 for further information or assistance.

Yours sincerely

A handwritten signature in black ink that reads "Larry Cook". The signature is written in a cursive, flowing style.

Larry Cook (BSc, MSc)
Environmental Consultant & Hydrogeologist
Larry Cook Consulting

APPENDIX A

Laboratory Certificate of Analysis and COC Documentation



CERTIFICATE OF ANALYSIS 210674

Client Details

| | |
|------------------|------------------------------------|
| Client | Larry Cook Consulting |
| Attention | Larry Cook |
| Address | PO Box 8146, Tumbi Umbi, NSW, 2261 |

Sample Details

| | |
|---|-----------------------------|
| Your Reference | <u>Larry Cook - Matcham</u> |
| Number of Samples | 10 Soil |
| Date samples received | 01/02/2019 |
| Date completed instructions received | 01/02/2019 |

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

| | |
|---|------------|
| Date results requested by | 08/02/2019 |
| Date of Issue | 08/02/2019 |
| NATA Accreditation Number 2901. This document shall not be reproduced except in full. | |
| Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with * | |

Results Approved By

Giovanni Agosti, Group Technical Manager
Jeremy Faircloth, Organics Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

Client Reference: Larry Cook - Matcham

| Organochlorine Pesticides in soil | | | | | | |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-1 | 210674-2 | 210674-3 | 210674-4 | 210674-5 |
| Your Reference | UNITS | 11.2 | 11.3 | 12.1 | 12.2 | 12.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date extracted | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 05/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor Epoxide | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-Chlordane | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-chlordane | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan I | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDE | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 |
| Dieldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 |
| Surrogate TCMX | % | 93 | 94 | 89 | 102 | 92 |

Client Reference: Larry Cook - Matcham

| Organochlorine Pesticides in soil | | | | | | |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-6 | 210674-7 | 210674-8 | 210674-9 | 210674-10 |
| Your Reference | UNITS | 13.1 | 13.2 | 2.1 | 2.2 | 2.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date extracted | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor Epoxide | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-Chlordane | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-chlordane | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan I | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dieldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Surrogate TCMX | % | 91 | 92 | 92 | 82 | 86 |

Client Reference: Larry Cook - Matcham

| Organophosphorus Pesticides | | | | | | |
|-----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-1 | 210674-2 | 210674-3 | 210674-4 | 210674-5 |
| Your Reference | UNITS | 11.2 | 11.3 | 12.1 | 12.2 | 12.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date extracted | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 05/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyrifos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyrifos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Surrogate TCMX | % | 93 | 94 | 89 | 102 | 92 |

| Organophosphorus Pesticides | | | | | | |
|-----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-6 | 210674-7 | 210674-8 | 210674-9 | 210674-10 |
| Your Reference | UNITS | 13.1 | 13.2 | 2.1 | 2.2 | 2.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date extracted | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyrifos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyrifos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Surrogate TCMX | % | 91 | 92 | 92 | 82 | 86 |

Client Reference: Larry Cook - Matcham

| Acid Extractable metals in soil | | | | | | |
|---------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-1 | 210674-2 | 210674-3 | 210674-4 | 210674-5 |
| Your Reference | UNITS | 11.2 | 11.3 | 12.1 | 12.2 | 12.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Arsenic | mg/kg | <4 | <4 | <4 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 19 | 22 | 14 | 14 | 13 |
| Copper | mg/kg | 15 | 21 | 6 | 6 | 10 |
| Lead | mg/kg | 10 | 10 | 11 | 8 | 9 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 5 | 5 | 3 | 4 | 3 |
| Zinc | mg/kg | 17 | 25 | 27 | 12 | 11 |

| Acid Extractable metals in soil | | | | | | |
|---------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-6 | 210674-7 | 210674-8 | 210674-9 | 210674-10 |
| Your Reference | UNITS | 13.1 | 13.2 | 2.1 | 2.2 | 2.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 05/02/2019 | 07/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Arsenic | mg/kg | <4 | <4 | <4 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 11 | 9 | 20 | 17 | 16 |
| Copper | mg/kg | 10 | 7 | 6 | 3 | 8 |
| Lead | mg/kg | 18 | 12 | 11 | 9 | 10 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 2 | 2 | 3 | 3 | 3 |
| Zinc | mg/kg | 10 | 11 | 16 | 18 | 19 |

Client Reference: Larry Cook - Matcham

| Misc Inorg - Soil | | | | | | |
|--|----------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-1 | 210674-2 | 210674-3 | 210674-4 | 210674-5 |
| Your Reference | UNITS | 11.2 | 11.3 | 12.1 | 12.2 | 12.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| pH 1:5 soil:water | pH Units | 6.0 | 5.9 | 6.3 | 6.0 | 5.8 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 32 | 73 | 53 | 42 | 34 |

| Misc Inorg - Soil | | | | | | |
|--|----------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-6 | 210674-7 | 210674-8 | 210674-9 | 210674-10 |
| Your Reference | UNITS | 13.1 | 13.2 | 2.1 | 2.2 | 2.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| pH 1:5 soil:water | pH Units | 5.9 | 5.9 | 5.8 | 6.0 | 6.1 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 30 | 30 | 30 | 52 | 58 |

Client Reference: Larry Cook - Matcham

| Moisture | | | | | | |
|-----------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-1 | 210674-2 | 210674-3 | 210674-4 | 210674-5 |
| Your Reference | UNITS | 11.2 | 11.3 | 12.1 | 12.2 | 12.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Moisture | % | 15 | 17 | 17 | 18 | 15 |

| Moisture | | | | | | |
|-----------------|-------|------------|------------|------------|------------|------------|
| Our Reference | | 210674-6 | 210674-7 | 210674-8 | 210674-9 | 210674-10 |
| Your Reference | UNITS | 13.1 | 13.2 | 2.1 | 2.2 | 2.3 |
| Date Sampled | | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 |
| Type of sample | | Soil | Soil | Soil | Soil | Soil |
| Date prepared | - | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 | 05/02/2019 |
| Date analysed | - | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 | 06/02/2019 |
| Moisture | % | 19 | 21 | 14 | 14 | 15 |

Client Reference: Larry Cook - Matcham

| Method ID | Methodology Summary |
|-------------------|---|
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours. |
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT. |
| Org-008 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |

Client Reference: Larry Cook - Matcham

| QUALITY CONTROL: Organochlorine Pesticides in soil | | | | | | | Duplicate | | Spike Recovery % | |
|--|-------|-----|---------|------------|---|------------|------------|-----|------------------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-4 | [NT] |
| Date extracted | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| Date analysed | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| HCB | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| alpha-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 98 | [NT] |
| gamma-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| beta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 103 | [NT] |
| Heptachlor | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 90 | [NT] |
| delta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Aldrin | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 80 | [NT] |
| Heptachlor Epoxide | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 92 | [NT] |
| gamma-Chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| alpha-chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Endosulfan I | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| pp-DDE | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 101 | [NT] |
| Dieldrin | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 111 | [NT] |
| Endrin | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 101 | [NT] |
| pp-DDD | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 81 | [NT] |
| Endosulfan II | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| pp-DDT | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Endrin Aldehyde | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Endosulfan Sulphate | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | 89 | [NT] |
| Methoxychlor | mg/kg | 0.1 | Org-005 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Surrogate TCMX | % | | Org-005 | 82 | 1 | 93 | 94 | 1 | 108 | [NT] |

Client Reference: Larry Cook - Matcham

| QUALITY CONTROL: Organophosphorus Pesticides | | | | | | Duplicate | | Spike Recovery % | | |
|--|-------|-----|---------|------------|---|------------|------------|------------------|------------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-4 | [NT] |
| Date extracted | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| Date analysed | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| Azinphos-methyl (Guthion) | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Bromophos-ethyl | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Chlorpyriphos | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 97 | [NT] |
| Chlorpyriphos-methyl | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Diazinon | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Dichlorvos | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 97 | [NT] |
| Dimethoate | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Ethion | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 100 | [NT] |
| Fenitrothion | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 110 | [NT] |
| Malathion | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 83 | [NT] |
| Parathion | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 102 | [NT] |
| Ronnel | mg/kg | 0.1 | Org-008 | <0.1 | 1 | <0.1 | <0.1 | 0 | 95 | [NT] |
| Surrogate TCMX | % | | Org-008 | 82 | 1 | 93 | 94 | 1 | 95 | [NT] |

Client Reference: Larry Cook - Matcham

| QUALITY CONTROL: Acid Extractable metals in soil | | | | Duplicate | | | | Spike Recovery % | | |
|--|-------|-----|------------|------------|---|------------|------------|------------------|------------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-3 | [NT] |
| Date prepared | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| Date analysed | - | | | 05/02/2019 | 1 | 05/02/2019 | 05/02/2019 | | 05/02/2019 | [NT] |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | 1 | <4 | <4 | 0 | 108 | [NT] |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | 1 | <0.4 | <0.4 | 0 | 105 | [NT] |
| Chromium | mg/kg | 1 | Metals-020 | <1 | 1 | 19 | 20 | 5 | 108 | [NT] |
| Copper | mg/kg | 1 | Metals-020 | <1 | 1 | 15 | 12 | 22 | 109 | [NT] |
| Lead | mg/kg | 1 | Metals-020 | <1 | 1 | 10 | 11 | 10 | 99 | [NT] |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | 1 | <0.1 | <0.1 | 0 | 103 | [NT] |
| Nickel | mg/kg | 1 | Metals-020 | <1 | 1 | 5 | 6 | 18 | 103 | [NT] |
| Zinc | mg/kg | 1 | Metals-020 | <1 | 1 | 17 | 17 | 0 | 103 | [NT] |

| QUALITY CONTROL: Acid Extractable metals in soil | | | | Duplicate | | | | Spike Recovery % | | |
|--|-------|-----|------------|-----------|---|------------|------------|------------------|------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 7 | 05/02/2019 | 05/02/2019 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 7 | 07/02/2019 | 07/02/2019 | | [NT] | [NT] |
| Arsenic | mg/kg | 4 | Metals-020 | [NT] | 7 | <4 | <4 | 0 | [NT] | [NT] |
| Cadmium | mg/kg | 0.4 | Metals-020 | [NT] | 7 | <0.4 | <0.4 | 0 | [NT] | [NT] |
| Chromium | mg/kg | 1 | Metals-020 | [NT] | 7 | 9 | 12 | 29 | [NT] | [NT] |
| Copper | mg/kg | 1 | Metals-020 | [NT] | 7 | 7 | 7 | 0 | [NT] | [NT] |
| Lead | mg/kg | 1 | Metals-020 | [NT] | 7 | 12 | 11 | 9 | [NT] | [NT] |
| Mercury | mg/kg | 0.1 | Metals-021 | [NT] | 7 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Nickel | mg/kg | 1 | Metals-020 | [NT] | 7 | 2 | 3 | 40 | [NT] | [NT] |
| Zinc | mg/kg | 1 | Metals-020 | [NT] | 7 | 11 | 12 | 9 | [NT] | [NT] |

Client Reference: Larry Cook - Matcham

| QUALITY CONTROL: Misc Inorg - Soil | | | | Duplicate | | | | Spike Recovery % | | |
|--|----------|-----|-----------|------------|---|------------|------------|------------------|------------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-4 | [NT] |
| Date prepared | - | | | 06/02/2019 | 3 | 06/02/2019 | 06/02/2019 | | 06/02/2019 | [NT] |
| Date analysed | - | | | 06/02/2019 | 3 | 06/02/2019 | 06/02/2019 | | 06/02/2019 | [NT] |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 3 | 6.3 | 6.1 | 3 | 103 | [NT] |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | 3 | 53 | 50 | 6 | 100 | [NT] |

| QUALITY CONTROL: Misc Inorg - Soil | | | | Duplicate | | | | Spike Recovery % | | |
|--|----------|-----|-----------|-----------|----|------------|------------|------------------|------|------|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 10 | 06/02/2019 | 06/02/2019 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 10 | 06/02/2019 | 06/02/2019 | | [NT] | [NT] |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 10 | 6.1 | 6.1 | 0 | [NT] | [NT] |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | [NT] | 10 | 58 | 58 | 0 | [NT] | [NT] |

Result Definitions

| | |
|-------------|---|
| NT | Not tested |
| NA | Test not required |
| INS | Insufficient sample for this test |
| PQL | Practical Quantitation Limit |
| < | Less than |
| > | Greater than |
| RPD | Relative Percent Difference |
| LCS | Laboratory Control Sample |
| NS | Not specified |
| NEPM | National Environmental Protection Measure |
| NR | Not Reported |

Quality Control Definitions

| | |
|--|--|
| Blank | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| Duplicate | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| Matrix Spike | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| LCS (Laboratory Control Sample) | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| Surrogate Spike | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

To: Envirolab Services Pty Ltd
 12 Ashley Street
 Chatswood NSW 2147

CHAIN OF CUSTODY

Date: 31.1.19 Page: 1 of 1

| REPORT TO: Larry Cook | | ANALYSIS REQUIRED | |
|-----------------------|-------------|-------------------|----------|
| Client Sample ID | Sample Date | Matrix | |
| 1 | 11.2 | Soil | PH EC |
| 2 | 11.3 | | PSICIDES |
| 3 | 12.1 | | METALS |
| 4 | 12.2 | | |
| 5 | 12.3 | | |
| 6 | 13.1 | | |
| 7 | 13.2 | | |
| 8 | 2.1 | | |
| 9 | 2.2 | | |
| 10 | 2.3 | | |

COMPANY: Larry Cook Consulting
 ADDRESS: PO Box 8146
 TUMBI UMBI NSW 2261

INVOICE TO: Larry Cook
 COMPANY: Larry Cook Consulting
 ADDRESS: PO Box 8146
 TUMBI UMBI NSW 2261

Telephone: 0428 884645
 Email: larrycookconsulting@gmail.com

ENVIROLAB
 Envirolab Services
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9970 6200

Job No: 20677
 Date Received: 1/2/19
 Time Received: 18:59
 Received by: [Signature]
 Tests: Geo/Asbestos
Cooking - Job/Asbestos
Security - Job/Asbestos

| | | | | |
|------------|------------------|-----------|--------------|-----------|
| Project ID | Relinquished By: | Date/Time | Received By: | Date/Time |
| MATCHMAN | Larry Cook | 1.2.19 | Kevin Wj | 1/2/19 |
| | Relinquished By: | Date/Time | Received By: | Date/Time |
| | | | | |
| | Relinquished By: | Date/Time | Received By: | Date/Time |
| | | | | |

Comments:

FIGURES



| | | | |
|--|--|--|---|
| <p><i>Larry Cook Consulting</i> PO Box 8146 Tumbi Umbi NSW 2261 Ph 02 4340 0193</p> | <p>Environmental Assessment Lots 2, 11, 12 & 13 Collingwood Drive/Matcham Road Matcham Lot Plan</p> | | <p>Scale: As shown</p> <p style="text-align: center;">FIGURE 1</p> |
|--|--|--|---|