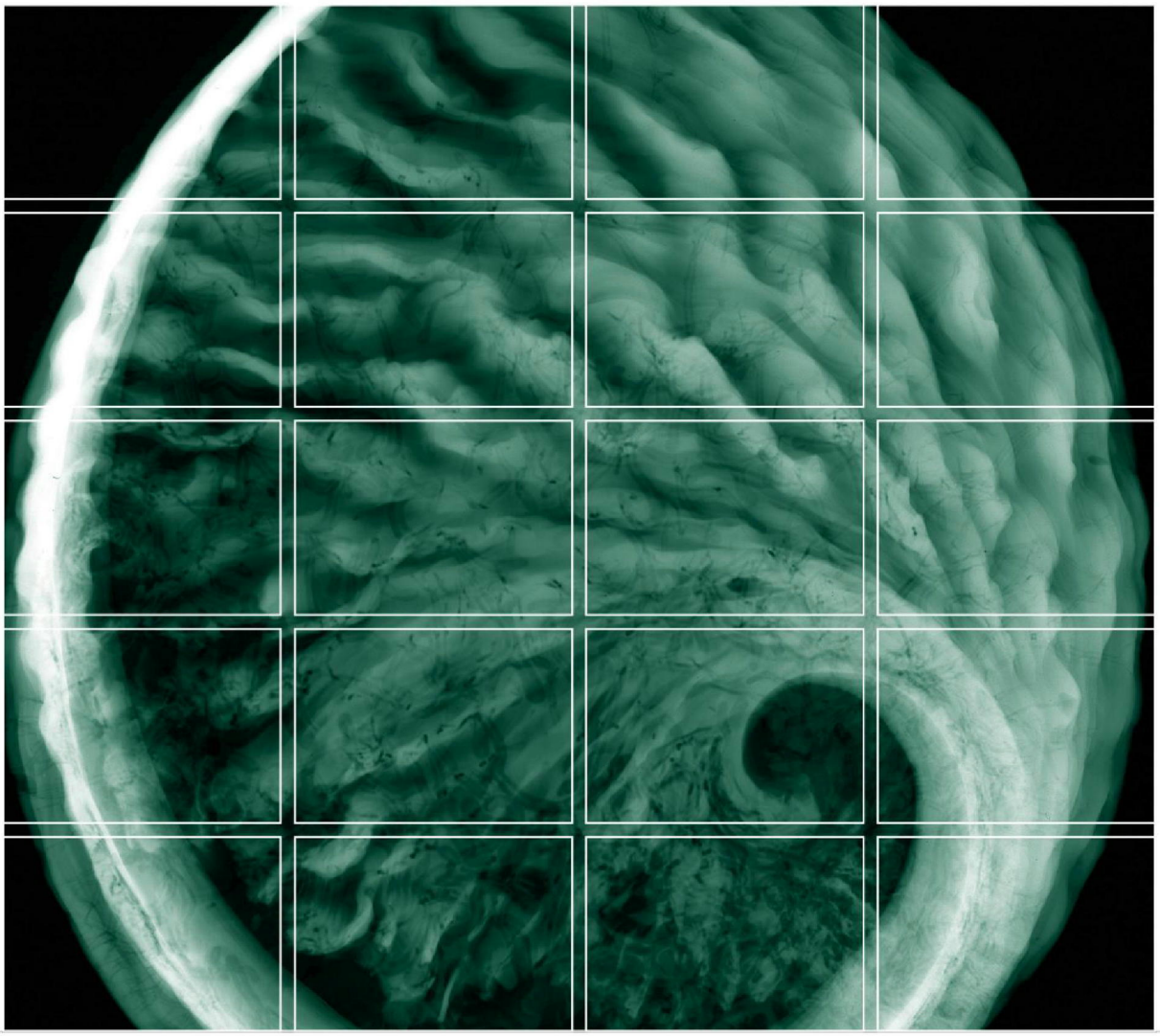

# Unexpected Finds Protocol

Legacy Property c/- Group
Development Services Pty Ltd

Caddens Hill Stage 7, 191 Caddens Road, Caddens, NSW, 2747

15 March 2019

Project No.: 0498320

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*The business of sustainability*

ERM

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## CONTENTS

# 1. INTRODUCTION

ERM Services Australia Pty Ltd (ERM) was commissioned by Legacy Property c/- Group Development Services Pty Ltd (GDS) to prepare an Unexpected Finds Protocol (UFP) for the parcel of land identified as Caddens Stage 7, 191 Caddens Road, Caddens, NSW, 2747 (the site).

This UFP has been developed as part of the construction planning for implementation during site works primarily associated with excavation and civil activities. It has been prepared to ensure appropriate management of natural soils / fill which may contain undefined levels of asbestos and chemical contamination should they be encountered during site works.

The Unexpected Finds Protocol has been provided to address DA17/1157 issued by Penrith City Council Condition 22 of the consent, stating:

*'An Unexpected Finds Protocol (the Protocol) is to be developed by an appropriately qualified environmental consultant. Prior to the issue of the Construction Certificate, the Protocol is to be submitted to Council for approval. If Council is not the certifying authority for this development, the report is required to be provided to Penrith City Council for approval.*

*The Protocol is to address, at a minimum, the management of any contamination found on the site during the demolition, remediation, excavation and construction phases of the development, including at minimum, contaminated soils, groundwater, buried building materials, asbestos, odour and staining.*

*The above Protocol is to be complied with at all times during all stages of the development.'*

Historically, land use on the site has comprised agricultural activities, including orchards and market gardens. The site currently comprises a residence, four sheds, orchards and an open paddock area. Two of these sheds are near the residence in the north west of the property, with the remaining two sheds located in the north east. There is miscellaneous surface debris near the residence and sheds, including old vehicles, drums, machinery, farming equipment and cardboard. Due to the history of the site, and discoveries of asbestos and chemical contamination during previous environmental investigations, there is potential for previously unidentified contamination to be present on-site. These materials may require additional assessment or management. It is imperative that the potential for such material to impact site workers and the remainder of the site is minimised during remedial and construction works.

As both asbestos and chemical contamination has been identified on the site, this UFP is to be implemented to cover all possible potential contamination scenarios. Potential contamination on the site which may exist outside the scope of the past environmental investigations will be managed through the following UFP. This will include the areas beneath site structures, which were inaccessible during the environmental site assessment (JBS&G, 54023-109960 Rev 0), and will require further investigation post demolition.

# 2. REVIEW OF PREVIOUS DOCUMENTS

**JBS&G (August 2017) *Environmental Site Assessment: 20 Weema Street and 191-205 Caddens Road, Caddens, NSW.* Ref: 54023-109960 Rev 0**

The site forms part of a larger development within Caddens, with environmental site assessments (ESAs) completed on the surrounding properties previously. A consolidated ESA was required to support an application Penrith City Council for future redevelopment of the land consistent with the current R1 – General Residential (Penrith LEP 2010) zoning.

The scope of this assessment comprised:

- a desktop review to identify potential areas of environmental concern and associated contaminants of potential concern;
- the development and documentation of a conceptual site model;
- intrusive sampling; and,
- preparation of an ESA report.

The desktop review identified that the main historical land use of the site was for agricultural purposes since the late 1940's, specifically grazing, orchards and market gardens. The residence was constructed in the late 1970's with additional sheds constructed in the 1980's. The surrounding properties appear to have been similarly utilised for agricultural purposes, with an increase in residential estates recently.

Potential areas of environmental concern (AECs) identified from the historical land use of the site include:

- Potential fill to level areas
- Potential impacts associated with storage and use of fuel oil and solvents / machinery
- Pesticide and herbicide storage and application
- Hazardous building materials
- Landfilling with soils and wastes derived from site activities

The intrusive sampling program targeted 24 locations, with samples analysed for a combination of the potential contaminants of concern identified based on the areas of environmental concern. During the sampling event, the investigation area was mainly unsealed ground covered by grass or orchards, with small exposed or vegetated (shrub) areas. Surficial ACM was observed at one test pit location, adjacent to a large areas of piled corrugated ACM sheeting. Minor hydrocarbon-like odours and surface staining was observed at test pit locations TP15 and TP17.

Analysis results were compared against the *Residential A – garden/accessible soil* health and environmental criteria within the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environment Protection Council (NEPC 2013).
All results were below the adopted site criteria, except for TRH in the surface soils at two test pit locations (TP15 and TP17). TP15 was located adjacent to diesel aboveground storage tanks (ASTs) and TP17 was beside a stored drum of waste oil. One exceedance of the ecological investigation level (EIL) for zinc was detected in surface soils at TP16. However, as the exceedance was only slightly higher than the EIL, and no other elevated zinc concentrations were detected on the site, it was considered that the exceedance did not pose an unacceptable risk to future human or ecological receptors.

The ESA concluded that no contamination which would preclude the residential development of the site had been identified, subject to the appropriate removal of surficial, stained soils (near TP15 and TP17) and ACM.

**JBS&G (August 2018) *Remedial Action Plan for 191-205 Caddens Road, Caddens, NSW.* Ref: 54023-117622**

This RAP was developed to satisfy the requirements of Penrith City Council, and to address the contamination identified within the ESA (JBS&G, 2017).

Three areas require remediation to make the site suitable for the future proposed land use:

- TP15

  The surface soils in this test pit were identified to exceed the adopted site criteria for TRH. Staining was noted to cover an area of <1m$^2$, with the depth of impact thought to be 0.1m below the surface. Approximately 0.1m$^3$ is expected to require management.

- TP17

  The surface soils in this test pit were identified to exceeds the adopted site criteria for TRH. Staining was noted to cover an area of approximately 2m$^2$, with the depth of impact thought to be 0.1m below the surface. Approximately 0.2m$^3$ is expected to require management.

- ACM

  Corrugated asbestos sheeting was visually identified laid on polystyrene boxes in the north-eastern portion of the site, and one fragment on an access track in the north west. The asbestos poses more an aesthetic issue than a health risk, with management through disposal required prior to the site being utilised for the proposed land use.

The remediation methodology to address the identified contamination is outlined below:

- Excavation of oil/hydrocarbon impacted soils at TP15 and TP17;
- Final extent of excavation will be directed by the Environmental Consultant, noting that removal is required to be validated via inspection/sampling of the resultant walls and base;
- A waste classification report will be provided for the excavated stockpiled materials;
- Prior to removal of the ACM, an exclusion zone with asbestos warning signage shall be established and the materials removed by an appropriately licensed asbestos removal contractor;
- The contractor is require to provide evidence of disposal for all impacted materials removed from the site;
- All ground surfaces are required to be reinstates after removal of the impacted materials, with suitable site-won soils.

At the completion of the management works, a validation report will be prepared for the site by the Environmental Consultant in general accordance with the NSW EPA (2011) 'Guidelines for Consultants Reporting on Contaminated Site', documenting the works as completed.

It is considered that if all the procedures in the RAP are sufficiently followed, the Site can be made suitable for the proposed residential land use.

# 3. CURRENT ENVIRONMENTAL CONDITIONS

Groundwater:

Groundwater within the Bringelly Shale is located within a deep regional confined aquifer. During the ESA, registered groundwater bore information was obtained from the NSW office of water database on 19 July 2017. A review of the registered bore information indicated that there were no bores located within a 500m radius of the site.

Based on the conceptual site model (CSM) and understanding of the site's historical use, limited potential for widespread or gross contamination, and regional hydrogeological conditions, investigation of groundwater was considered unnecessary to meet the objectives of the ESA.

Known Fill Material:

Test pits during the ESA (JBS&G, 2017) were extended until interception with natural material. Fill material on site comprised brown silty sand and clayey silt topsoils to a maximum depth of 0.7m below ground level (bgl), overlying natural brown clays or sandy clays and finally weathered sandstone. The maximum test pit depth was 1.4m bgl, with the majority of test pits, and hence natural material, < 1.0m bgl. This indicates that any unexpected finds within the assessed site area (not including site structure footprints) will be < 1.4m bgl. However no subsurface contamination was identified within fill soils during the ESA.

Data Gap Areas:

The shed and house structures remain data gaps as the footprints were inaccessible during the ESA (JBS&G, 2017). There is the potential for unexpected finds beneath these structures, which are recommended to be assessed as data gaps post demolition, and prior to development works commencing on the site.

# 4. TYPICAL FEATURES OF 'UNEXPECTED FINDS'

The main features of an Unexpected Find is to establish a site protocol to guide site works to identify any sources of potential contamination. Typically this would include visual observations of:

- Material containing anthropogenic artefacts such as rubble, plastics, metal etc.;
- Material with an obvious unnatural odour, i.e. fuel, solvent, burnt odour;
- Material that is noticeably stained in colour;
- Materials that have an offensive odour (ie hydrocarbons or organic decay);
- Excavations that un-expectantly encounter groundwater;
- Asbestos or suspected asbestos containing material;
- Material with fibres visible; and,
- Any material that has evidently been dumped at the site.

Unexpected finds on the site will typically be uncovered during bulk excavating works with an increased risk when accessing materials within the fill profile of the site (indicated by JBS&G as the top 1.4m (maximum). During these works ERM recommend supervision during the removal of the overlying fill by an experienced earthworks supervisor to suitably separate the different soil profiles encountered.

# 5. IMPLEMENTATION OF THE PROTOCOL

## 5.1 General

Prior to the commencement of any excavation or construction works onsite, an occupational health and safety induction should be attended by all site staff. The aim and importance of the UFP and how it is to be implemented should be discussed at this time. Responsibility for its implementation will be assigned to the Principal Contractor which will be the civil company awarded the works.

Monitoring of environmental issues will be undertaken on a daily basis. If an unexpected find is revealed during site works, the following protocol is to be followed.

## 5.2 Implementation Process

1. Cease disturbance of the affected portion of the site and evacuate the immediate area.
2. Contact the Principal Contractor and the Contractors Environmental Representative (CER).
3. Principal Contractor and CER to conduct an assessment of the location and extent of the unexpected find.
4. High risk areas should be isolated and secured against unintended access.
5. Temporary encapsulation (sealing) of the high risk area to ensure no airborne spread of contamination occurs may be appropriate. This may involve clean soil, plastic sheeting, etc.
6. Dust should be prevented by wetting the soil and drainage controls should be arranged where there is a potential for runoff to occur (runoff should be minimised).
7. Warning signs should be placed in the vicinity.
8. If the Principal Contractor and CER considers that the material warrants further investigation, the area is to be barricaded to provide an exclusion zone.
9. If necessary, environmental controls should be established to minimise the potential for migration of contaminants from the impacted area.
10. Principal Contractor to complete UFP form (refer to Section 4.0) and issue to all relevant stakeholders.
11. Further visual assessment and sample collection and analysis undertaken by a qualified environmental consultant. If necessary, samples will be sent to a NATA registered laboratory.
12. Evaluation of analytical data with respect to specific health screening levels to be undertaken. Contaminated soil incident report amended with final classification of soils, including whether the soils are suitable for the proposed land use, need to be remediated or disposed of offsite to a suitably licensed facility. If soils are suitable to remain on-site and/or the area is found to be clean, a work instruction will be provided by the CER to this effect. A waste classification letter must be provided prior to any offsite disposal.
13. If the material is subsequently found to contain asbestos, an appropriately licensed contractor will be employed to remove it.
14. Affected areas will be reopened for earthworks following a clearance of the location and issuance of a report by CER.

## 5.3 Notes

1. Any suspected asbestos containing material should be left in place and not disturbed. The CER will organise appropriate environmental professionals for further investigation purposes.
2. It is essential that material of differing compositions not be mixed.
3. All sampling for validation, waste classification or characterisation purposes will be carried out in accordance with the following documents:
   - Contaminated Sites: Sampling Design Guidelines (NSW EPA, 1995);
   - National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1) (NEPC, 2013);
   - Contaminated Sites: Guidelines for Assessing Service Station Sites (NSW EPA, 1994);
   - Waste Classification Guidelines (NSW EPA, 2014).
4. Any unexpected finds encountered should be listed on a UFP register, which should include the action taken and the status of the unexpected find. A suitable register is included in Section 5.0.
5. Once an unexpected find has been identified and a UFP form filled in the Principal Contractor and CER should liaise with the client as to the appropriate means of managing the situation. This should include discussions around the handling, treatment and disposal of material, OH&S considerations and how the affected area will be validated and reopened for works.
6. Prior to closing out an unexpected find it will be important to ensure the appropriate documentation is obtained, such as: photographs, the UFP form, waste classification letter(s) and a validation report or letter.
7. A UFP form should be completed on each day of the remedial works as part of the daily site records. This will ensure that the process is being undertaken even if no unexpected finds are encountered. The form should include the name, company and the position of the person undertaking the field observations.

# 6. UNEXPECTED FINDS PROTOCOL FORM

*To be completed by the Site Controller/Environmental Representative*

**SITE:**

**PERSONNEL ON-SITE:**

**DATE:**

**DAILY SUMMARY:**

| | | | | | |
|---|---|---|---|---|---|
| **1.** | Suspect material encountered during daily activities: | YES | ☐ | NO | ☐ |
| | (if YES, compete 2 to 5) | | | | |
| **2.** | CER contacted: | YES | ☐ | NO | ☐ |
| **3.** | UFP Reference Number | | | | |
| | (label occurrences sequentially 1, 2, 3, etc.). | | | | |

**DESCRIPTION OF MATERIAL ENCOUNTERED:**

| | | | | | |
|---|---|---|---|---|---|
| **4.** | Asbestos or suspected ACM present: | YES | ☐ | NO | ☐ |
| **5.** | Brief written description of material: | | | | |
| **6.** | Material isolated: | YES | ☐ | NO | ☐ |
| **7.** | Location of contaminated material (incl. field sketch/map if required): | | | | |
| **8.** | Photographs taken: | YES | ☐ | NO | ☐ |

**NAME:** **SIGNATURE:**

## 7. UNEXPECTED FINDS REGISTER

| UNEXPECTED FINDS REGISTER | | | | | | |
|---|---|---|---|---|---|---|
| **UFP No.** | **Date Found** | **Suspect Material** | **Description** | **Recorded on UFP Form** | **Action Taken** | **Status** |
| | | | | YES ☐ NO ☐ | | |
| | | | | YES ☐ NO ☐ | | |
| | | | | YES ☐ NO ☐ | | |
| | | | | YES ☐ NO ☐ | | |
| | | | | YES ☐ NO ☐ | | |
| | | | | YES ☐ NO ☐ | | |