



Professional, Efficient Solutions

APPROVED SITE INVESTIGATIONS LTD
DUCHY BUSINESS CENTRE
WILSON WAY
POOL
REDRUTH
CORNWALL
TR15 3RT

Tel: (01209) 204744 Fax: (01209) 204766
Email: admin@asiconsultancy.co.uk
Web: www.asiconsultancy.co.uk

PHASE 3 SITE REMEDIATION STRATEGY

SITE: THE CHALET
HOMEFIELD
CROFTHANDY
ST. DAY
REDRUTH
CORNWALL
TR16 5JB

CLIENT: MR S. WICKS
HOMEFIELD
CROFTHANDY
ST. DAY
REDRUTH
CORNWALL
TR16 5JB

Our Ref: A1150 - P3/JW

Client Ref: PA15/10999

Date: 19th April 2017

OS Grid Ref: SW 7363/4203

Index

| | | |
|-----|---|------|
| 1. | Introduction | P.3 |
| 2. | Remedial Implementation | P.4 |
| 3. | Supervision | P.4 |
| 4. | Dealing With Contaminated Soil | P.4 |
| 5. | Procedures For Soil Management | P.4 |
| 6. | Areas Intended For Driveways, Parking Bays, Patios or Similar Hard Surfaced Areas (example: pavements, concrete, decking, paving slabs, tarmac) | P.5 |
| 7. | Areas Intended For Soft Landscaping - Lawn | P.6 |
| 8. | Water Supply Pipes | P.7 |
| 9. | Suggested Geotextiles | P.7 |
| 10. | Health & Safety Procedures | P.7 |
| 11. | Site Monitoring Procedures | P.7 |
| 12. | Conclusions & Recommendations | P.8 |
| 13. | Notes | P.9 |
| 14. | Annexes: | P.10 |
| | Annex 1: Site Plan | |
| | Annex 2: Additional Information | |

1. Introduction

Following instruction from Mr S. Wicks, ASI was commissioned to produce a Phase 3 site remediation strategy report for the following site:

Site locality: The Chalet, Homefield, Crofthandy, St. Day, Redruth, Cornwall.
End-use: Replacement dwelling with onsite parking and amenity areas.

To comply with government set recommendations on the safe development of contaminated land, this report has been compiled to provide a site remediation strategy to ensure that contaminants are either removed, treated or contained. Previous reporting information produced for the client in relation to land contamination at the site locality is as follows:

- Phase 1 Contaminated Land Survey, ref: A1150, dated 09th March 2016
- Phase 2 Soil Analysis Investigation, ref: A1150/P2/S/JW, dated 27th October 2016

Conclusions from the Phase 2 Soil Analysis Investigation identified an elevated heavy metal content within the ground horizon at the site locality, with the risk of contamination being attributed to mine waste within the site area.

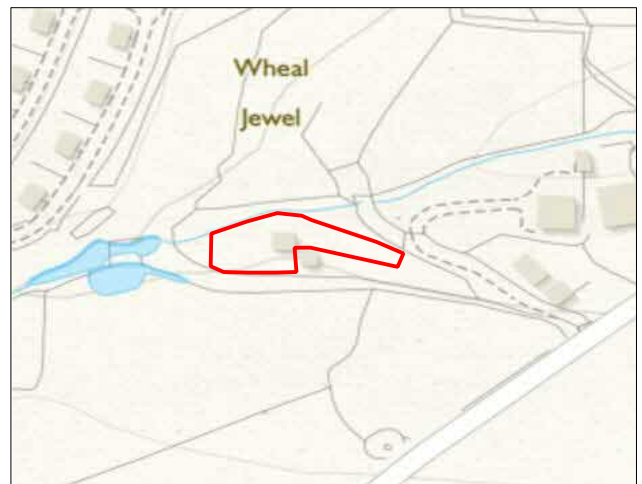
The primary risk identified at the property would be to end-users of the site via potential exposure to heavy metal concentrations within areas of open land, consequently presenting a possible contamination risk through the consumption of home grown produce, dermal and inhalation pathways. Therefore appropriate remedial measures must now be undertaken to break contamination pathways.

Please present this report to the Local Authorities Planning and Building Control departments for their records.

Map & Street Plan Showing Location Of Site



OS Licence: 100045900 Crown copyright 2016



OS Licence: 100045900 Crown copyright 2017

2. Remedial Implementation

We have listed the remedial practices to be applied at the site within the report sections listed below. Please note that any alteration to the remediation strategy should be brought to the attention of ourselves and relevant parties involved with the site development prior to any changes being implemented.

Please refer to Annex 1 Site Plan at the rear of this report for the site remediation scheme references selected for the development.

3. Supervision

A suitably qualified member of staff or the client should be selected to act as site supervisor to implement the recommendations of this remediation strategy. It will be the responsibility of the site supervisor to keep an accurate record of all site activity. This can be in the form of photographic evidence and a works daybook. A record must be kept by the site supervisor with regards to the movement and certification of soil, or other relevant materials required for the site, with all documentation to be retained for future reference.

4. Dealing with Contaminated Soil

Excavated subsoil material created through the construction process will be removed via a licensed haulier and disposed of at an accredited waste disposal site such as the Wheal Jane Mine/Clemmows Valley Tailings Dam Project. Accurate records of soil movements and certification must be retained by the site supervisor for future reference.

5. Procedures for Soil Management

1. Dust must be kept to a minimum to reduce the likelihood of windblown contamination, if necessary by employing the use of a water bowser or similar dust suppression equipment.

2. If contaminated soil is to be moved or stored on site in preparation for transportation, it must be separated from the underlying ground horizon by use of a geotextile/strong polythene sheet. If storage of the soil is assumed to be for a period of time, containment measures must be put into practice, such as covering of the soil heap by either a geotextile or a similar product until such time as it is ready to be moved.

6. Areas Intended For Driveways, Parking Bays, Patios or Similar Hard Surfaced Areas (example: brickwork, concrete, decking, paving slabs, tarmac)

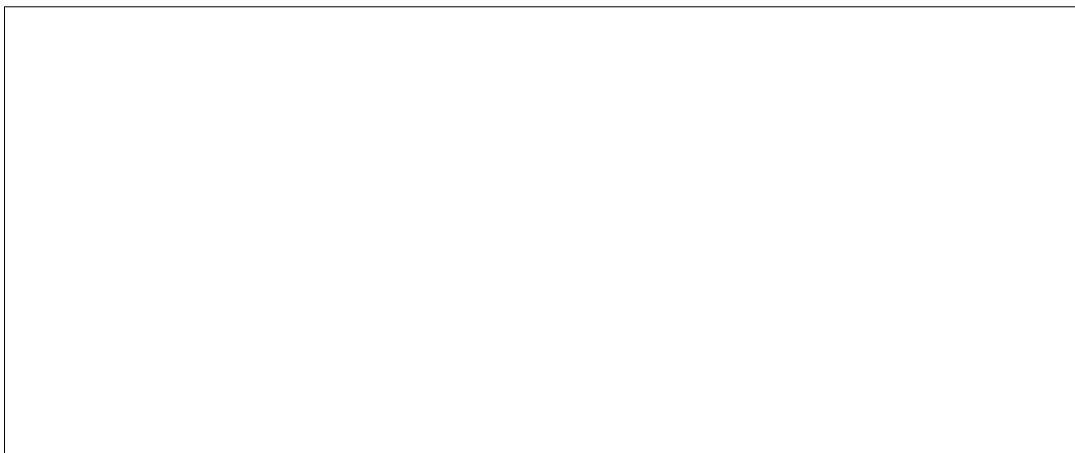
1. Areas set aside for hard standing, such as car parking bays, pavements, patio features, decking, or similar hard surfaced areas will require overlaying of the following types of hard standing materials:

| | | |
|--------------|---|---------------------------------|
| Paviours | - | see below (points 2 & 4) |
| Concrete | - | minimum thickness 0.10m (100mm) |
| Decking | - | see below (points 3 & 4) |
| Paving slabs | - | see below |
| Tarmac | - | minimum thickness 0.10m (100mm) |

2. Geotextile ground cover must be utilised to underlie areas intended for paving slabs and paviours with an overlying layer of 3/4 dust aggregate/sand blinding to a minimum depth of 0.10m (100mm). All surfacing materials must then be cemented into place.

3. Geotextile ground cover must be utilised to underlie areas intended for decking, with an overlying cover of 0.15m (150mm) minimum depth of gravel or hardcore.

4. Geotextile ground cover should overlap by a minimum of 0.50m (500mm) to ensure a secure fitting over the ground horizon. The use of geotextile does not need to be incorporated for other permanent hard surfacing areas



8. Water Supply Pipes

We would advise the installation of contaminant resistant PE/barrier water supply pipes set within secure ducting for all potable water. Consultation with an accredited supplier should be sought to advise the correct grade of water service pipe required for the site.

9. Suggested Geotextiles

In amenity areas, it would be advisable to install a high visibility geotextile ground cover such as orange or white where possible.

- Lotrak 1800 a woven polypropylene geotextile (black) .
- Lotrak Alarm 18 Woven Geotextile high visibility geotextile (orange).
- Terram 1000 heat-bonded non-woven geotextile (white).

Please see Annex 2 for additional information.

10. Health & Safety Procedures

Typical pathway contamination derived from this site would be via inhalation, ingestion and dermal contact with soil, necessitating the need for onsite washing facilities.

- Workers should be made aware of the risks of handling soils and possible risks of dust inhalation.
- Site washing facilities must be made available with hot and cold running water, soap and towels to be provided for site workers.
- Gloves, dust masks and general PPE should be worn on site.
- Where at all possible, the risk to the general public must be minimised, for instance by using fencing to secure the site.
- General HSR should be adhered to at all times.

11. Site Monitoring Procedures

During the course of the remedial works programme, a site inspection will need to be undertaken to verify that the specifications as outlined within this report are being suitably carried out. Please advise ASI of the works time table so that we may arrange an inspection. The site visit will contribute to the Phase 4 site verification and completion report.

12. Conclusions & Recommendations

The remediation scheme outlines remedial methods that can be utilised for the safe development of the specified site areas (see Annex 1: Site Plan). Upon completion of the remedial works, a Phase 4 verification report will need to be undertaken to finalise the works and to satisfy the local authorities that the site is safe for end-users. This will involve liaising with the appointed site supervisor for documentary evidence of the remediation process.

The Phase 4 verification report can only be satisfactorily completed, if documentary evidence of clean soil certification, haulier tickets etc (where necessary) are provided. In addition, a site visit will need to be undertaken by ourselves upon completion to ensure that all areas have been satisfactorily remediated.

We have no further recommendations to make regarding this site.

13. Notes

1. This report relates to the area defined on the attached plan and the form and extent of development outlined herein for this specific property and should not be taken as suitable for any other form or extent of development within the boundaries of this property without further consultation with Approved Site Investigations Ltd.
2. The report should not be used in any way in connection with adjacent properties.
3. It is the clients responsibility when utilising external suppliers and hauliers to ensure that all imported soil to the site (where required) has been certified clean and fit for purpose, with the correct accompanying analytical documentation. Approved Site Investigations Ltd cannot be held liable for any discrepancies.
4. Approved Site Investigations Ltd cannot be held liable for any alterations to the remediation scheme following development of the property.
5. This report is confidential to the named client(s) and we have no liability toward any person not party to commissioning this report.
6. This report may not be reproduced, resold, or distributed to third parties without our prior permission other than to directly facilitate the sale or development of the property concerned.
7. Unless otherwise expressly stated, nothing in this report shall create or confer any rights or other benefits pursuant to the Contracts (Rights of Third Parties) Act 1999 in favour of any person other than the person commissioning this report.
8. The design, layout & format of this report is copyright 2017 Approved Site Investigations Ltd (ASI) and may not be reproduced without written consent.



Approved Site Investigations Ltd

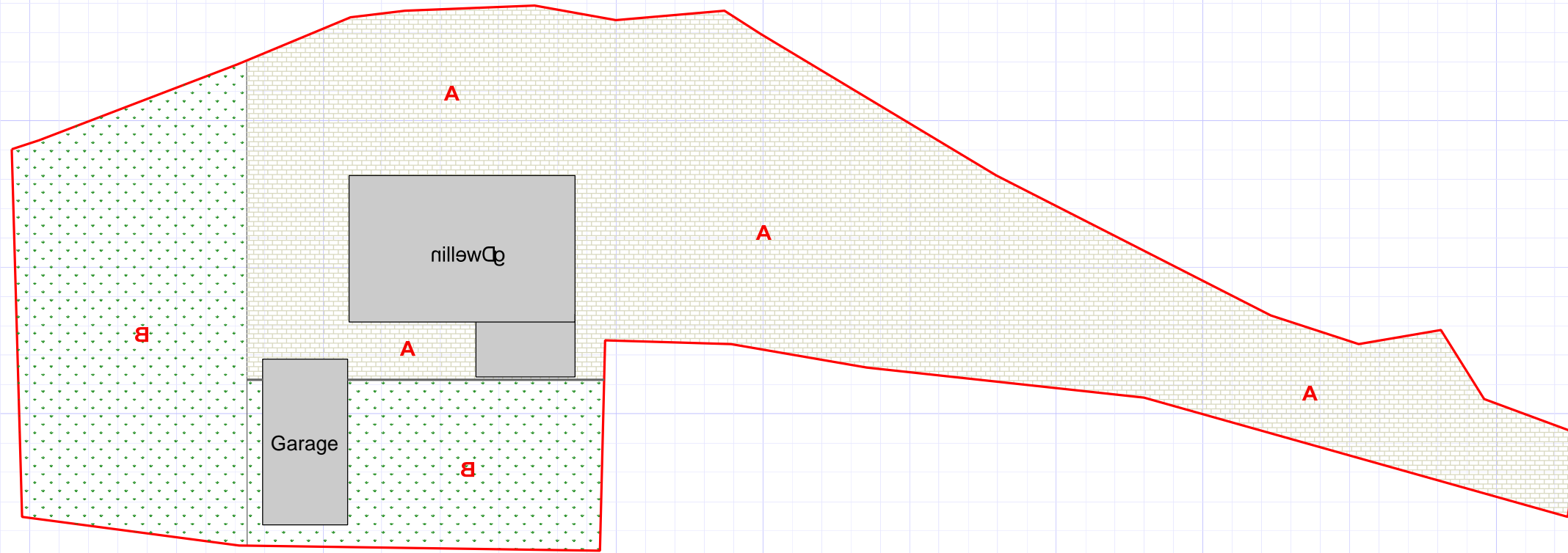
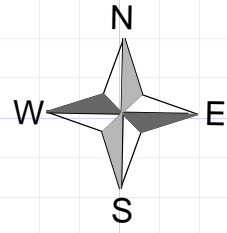
Verified by:
Mr. J.R Williamson (Managing Director),
HND (Industrial Mining Geology), Dip CSM

14. ANNEXES

Annex 1: Site Plan

Annex 2: Additional Information

Annex 1: Plan



Legend

Site boundary

Zone A: Remediation zone (brick pattern)

Zone B: Remediation zone (green dotted pattern)

Legend

| | |
|--|--------------------------|
| | Site boundary |
| | Zone A: Remediation zone |
| | Zone B: Remediation zone |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

LOCATION

THE CHALET
HOMFIELD
CROFTHANDY
ST. DAY
REDRUTH
CORNWALL
TR16 5JB

ARE APPROXIMATE PLEASE NOTE REMEDIATION ZONES
MODIFICATION AND MAY BE SUBJECT TO M



| | |
|--------|---|
| DATE: | 2017 0th April |
| TITLE: | Remediation Plan 2100000000 Ref: PA1 |
| SIZE: | A3 |
| SCALE: | 1/1000 |
| REV: | JW |
| SHEET: | 1 |

Annex 2: Additional Information

General Information on Geotextiles

Geotextiles are porous fabrics which when used in association with soil have the ability to separate, filter, reinforce, protect, or drain. Typically made from polypropylene or polyester, geotextile fabrics come in three basic forms: woven (looks like mail bag sacking), needle punched (looks like felt), or heat bonded (looks like ironed felt). Geotextile products vary considerably and choosing the correct type is important, we would advise consultation with suppliers.

Contact Information & General Manufactures of Geotextile Products

| | |
|----------------------------|--------------------------------|
| Lotrak 1800 (standard) | Don & Low Ltd - (01307) 452200 |
| Terram 1000 (standard) | Terram Ltd - (01495) 757722 |
| Alarm 18 (high visibility) | WTB Geotechnics 0845 600 5505 |

Local Suppliers

We recommend Carters Packaging Ltd, Wilson Way, Pool, Redruth, Cornwall, TR15 3QN for the following materials:

Turf reinforcement mesh manufactured by Tenax: 640g, 2m by 30m roll size
Geotextile ground cover: Premium grade, manufactured by Tenax/Tildnet (105 gsm)
Ground securing pegs

Office: (01209) 612333
Email: sales@carterspackaging.com

Additional suppliers

Jewsons (Redruth) 01209 213030

Cornish Fixings Co (Redruth) 01209 211694

Reference Documents

British Standards Institution (2001) BS 10175 2001 Investigation of Contaminated Sites: Code of Practice.

C. Paul Nathanail & R. Paul Bardos (2007). Reclamation of Contaminated Land

Cover System Guidance (BRE)

CLR 11 Model Procedures for the Management of Land Contamination

Local Authority Publication (2003) Guidance on the Redevelopment of Potentially Contaminated Sites

Department of the Environment (1994) CLR Report No3, 'Documentary Research on Industrial Sites'.

Department of the Environment, Industry Profiles.

Department for Environment, Food & Rural Affairs (2002) CLR Report No7, 'Assessment of Risks to Human Health from Land Contamination'.

Department for Environment, Food & Rural Affairs (2002) Soil Guideline Values (SGV's)

Environment Agency R&D Project Record P5-044. Guidance on Monitoring the Operational and Post-Remediation Performance of Remedial Techniques

PPS23 Planning & Pollution Control



ASI Core Services:

- ✔ Non Interpretive Environmental Reports
- ✔ Contaminated Land Surveys (Phase 1)
- ✔ Soil & Water Analysis Reports (Phase 2)
- ✔ Land Remediation Reports (Phase 3)
- ✔ Site Verification & Completion Reports (Phase 4)
- ✔ Drilling & Ground Profiling Investigations
- ✔ Trenching & Foundation Inspections
- ✔ Shaft & Mining Feature Securing Works
- ✔ Historic Mine Searches (arranged upon request)

Our client commitment is to provide you with:

Professional, efficient solutions.

To liaise with you at each step of your project.

Provide competitive pricing tailored to your site requirements.

Please contact us for further information on:

Tel: 01209 204744

Fax: 01209 204766

Email: admin@asiconsultancy.co.uk

Website: <http://www.asiconsultancy.co.uk>