

Risk Assessment & Method Statement for Geoenvironmental Survey

Replacement Dwelling Pine Lodge
Stainborough Lane, Hood Green
Barnsley

for

Mr D Green

H19104

January 2020

**Risk Assessment & Method Statement for Geoenvironmental
Survey**

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Mr D Green

Revision	Date of issue	Comments	Prepared By	Checked By
0	13/01/2020	FINAL	JR	JR

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1.0 Introduction

1.1 Commission

Patrick Parsons Limited (PP) have been requested by Mr D Green (the client) to provide a risk assessment and method statement for a proposed ground investigation ahead of the proposed construction of a replacement dwelling at the site.

This document is classified as an active document and can be amended at any point subject to any changes or unforeseen issues encountered during the works. Upon identification of a new risk or issue the PP site engineer shall provide all PP subcontractors with a revised toolbox talk covering these risks. New risks will be documented at the rear of this document to include all relevant information.

1.2 Objectives

The purpose of the proposed ground investigation is to establish the nature of any underlying coal seams and potential historic mine workings together with identification of any recorded and unrecorded mine entries across the site to inform the proposed redevelopment.

2.0 Scope of Works

The proposed intrusive ground investigation will comprise 2 days of rotary open hole drilling to drill 6 no. boreholes to a maximum depth of 30.0m below existing ground level (begl). subsequent to these works, shallow surface excavation is to be undertaken by means of a mechanical excavator over 2 days within accessible areas of the site to determine the presence of historic mine entries.

2.1 Programme of Work

Site working hours will be 08:00 to 17:00.

The work duration is anticipated to be 2 days commencing on 14/01/2020 (boreholes) with a date for the subsequent excavation works yet to be confirmed.

2.2 Contact Information

Key Contact	Company	Contact	Contact Details
PP	Project Director Project Manager Supervising Engineer	Andy Coverdale Jonathan Roberts Jonathan Roberts/Andrea Chaverra	0191 261 9000 07968 401 371 07717 294 587
Client / Site Contact	Mr David Green	D Green	07590 807153
Sub-contractors	Cape Site Services Ltd	Simon Cape	01226 725050
Sub-contractors	Plant Hire - TBC	TBC	
Services	Gas Electricity Water supply Sewerage BT Virgin media	<i>Northern Gas Network</i> <i>Northern Power Grid</i> <i>Yorkshire Water</i> <i>Yorkshire Water</i> <i>BT Plant</i> <i>Virgin Media</i>	<i>0800 111 999</i> <i>0800 375 675</i> <i>0800 573 553</i> <i>0800 573 553</i> <i>0800 917 3993</i> <i>0345 454 1111</i>
Local A&E Hospital	Barnsley Hospital	Gawber Road, Barnsley, Yorkshire, S75 2EP	01226 730 000
Local Police & Fire Service			999 or 101
Environment Agency			0370 850 6506
Site Address Pine Lodge Stainborough Lane, Hood Green, Barnsley, S75 3EZ Site NGR 431755mE, 402755mN			

3.0 Method Statement: The Site Investigation

3.1 Working Area

The site is located within the demise of the existing Pine Lodge dwelling, southwest of Barnsley town centre and comprises an derelict former single storey dwelling with associated areas of macadam hardstanding, an access road and large areas of soft landscaping.

3.2 Car Parking

On-site vehicle parking is available. Equipment required for the ground investigation will be either a trailer or lorry mounted drilling rig and associated compressor, water bowser and van together with a wheeled backhoe excavator.

3.3 Access, Egress and Securing Work Areas

The site entrance is off Stainborough Lane.

3.4 Protecting the Public

The site is fenced and secure and any members of the public will be excluded from entering the immediate areas of investigation. If any member of the public encroaches onto the site, or specifically within 10m of any investigation plant, the plant operator will be told to cease works immediately and to secure the exploratory hole position (e.g. lower tools over the open exploratory holes). The PP Supervising Engineer will approach the member of the public and will politely request that they leave the area immediately.

3.5 Welfare Facilities

Welfare facilities are not available on site and have not been allowed for due to the short duration of these works. The nearest available facilities are Asda supermarket in Worsborough S70 5AU, approximately 4 miles.

3.6 Avoidance of Services

No copies of statutory services drawings have been provided for our use. However, earlier surveying and tracing of underground utilities has been undertaken by PP representatives ahead of any intrusive investigation. The routes of all live underground services apparatus within the areas of the site under investigation have been confirmed using a currently calibrated Cable Avoidance Tool (CAT) equipment and marked out on the site.

PP are not responsible for damage to services (private or statutory) which have not previously been identified to us prior to the works or which are within incorrect locations than those indicated, and which cannot be detected by the methods proposed below.

The minimum stand-off distances to services provided in Appendix B shall be adhered to.

Prior to intrusive works commencing, the proposed locations will be checked using the available information provided to determine potential underground services. The proposed locations will also be checked for services with a currently calibrated Cable Avoidance Tool (CAT) equipment. Locations deemed to be free of underground services apparatus will be chosen before exploratory holes commence. If there is any doubt as to the presence or not of a service, then the observed minimum stand-off distances in Appendix B shall be observed

and a hand dug starter pit shall be excavated to the full depth of 1.2m. The Supervising Engineer will measure the hand dug inspection pit to ensure that is taken to a minimum 1.2m depth and then base of the pit will be re-scanned using the CAT to clear the position for services. If any doubt remains as to the presence of buried services, then the exploratory hole shall be relocated to a safer position which is considered to be clear of services.

STOP! Condition

Under no circumstances, including pressure from any third parties (e.g. client, landowners, contractors, colleagues, regulators etc.) shall the PP Supervising Engineer continue with any exploratory hole if any reasonable doubt remains as to the presence of services in a proposed exploratory hole location. If the Supervising Engineer comes under any such pressure or has any doubts about the presence of services they shall **STOP!** any works in this area and shall discuss their concerns immediately with the Project Manager (or their regional Team Leader if the Project Manager is unavailable) who will in turn speak to any conflicting third parties to agree a resolution and a satisfactory area to relocate the exploratory hole position(s). The relocated position will then be checked for services in the manner already described.

If any information about an unforeseen hazard, such as services, is revealed on site that was not highlighted in the RAMS then a site-specific live risk assessment for any affected tasks shall be undertaken by the PP Supervising Engineer and recorded in Section 6 of this document. If any doubt remains as to the safety of the works, then no works shall progress in such areas until an agreed plan of mitigation has been agreed with the Project Manager.

3.7 Site Safety Inductions

All contractor personnel and any subcontractors of our contractors that are employed by PP to undertake the investigation works will be:

- Inducted on site by the PP Supervising Engineer prior to the start of the works
- Briefed on all safety issues applicable or pertinent to the site or proposed works
- Advised of the residual risks remaining on site and the minimum PPE required
- Advised of any precautions and mitigation measures which may be required throughout the works

At the end of the site safety induction, the PP Supervising Engineer must obtain the signature of each Supervisor from the subcontractor(s) on the form in Section 7.0 to ensure that we have evidence of induction. The site signed hard copy (or a scanned electronic copy) of this signed RAMS must be returned to the office for filing.

If any third party subcontractor employed by others on site are carrying out works in the ground or in the vicinity of our ground investigation works, then the PP Supervising Engineer shall liaise with their supervisor to ascertain the nature of the third party works to ensure that there are no conflicts of the respective works being carried out simultaneously between the two parties. If the third party works involve work below ground, then the PP Supervising Engineer shall enquire as to whether they have adequate information on below ground services to avoid damage or disruption to services and that their personnel are not at risk. It should be noted that this process is explicitly to foster improved safety of all site works and that PP will bear no responsibility and have no liability for any damage or loss, whether direct or indirect, which results from damage or disruption to underground services, from the negligent actions of any such third party that are not employed directly or indirectly by PP or whom the client has not asked PP to supervise.

When working on operational sites, PP will be working under the client's or main contractor's site health and safety plan or protocol and PP staff and subcontractors will be expected to attend a site safety briefing and induction process conducted by the client or main contractor prior to commencement of our works.

All PP supervisory staff will have their own first aid kit. In case of an emergency, first aid on site will be provided by the designated first aider on site or by the PP supervisory staff.

All plant movements will be supervised by PP supervisory staff.

3.8 Rotary Boreholes

Rotary borehole drilling will be undertaken using a tracked/wheeled rotary rig with a top hammer and will be delivered and collected from site on a low loader as close to the positions as possible. Boreholes are to be drilled using water flush. All boreholes will be backfilled with arisings and cement/bentonite upon completion and made safe at the surface.

A proposed exploratory hole location plan is included as **Appendix D**.

3.9 Trial Pit and Surface Excavations

Excavations will be undertaken using a wheeled JCB 3CX backhoe excavator or similar tracked type of machine to excavate through the surface shallow soils. Excavations will be limited to a 1200mm bucket width with a straight edged bucket and limited to <1m depth. Personnel entry into any excavations is prohibited. Excavations will immediately be backfilled with arisings following completion. Arisings will be reinstated in shallow drafts and lightly compacted with the machine bucket. Due to bulking, a small raised mound will be left over each trial pit to account for future settlement.

No excavator movements will be allowed without supervision by PP. If the Supervising Engineer needs to leave a working area, during an excavation, the operator will be instructed to make the area safe and power down until supervision is re-established.

Should any members of the public or unauthorised persons encroach on the work area then all works will cease until they have retreated to a safe distance. The machine will place its bucket within the excavation until unauthorised persons have left/ been removed from the area. Only once the PP Supervising Engineer is satisfied shall works recommence.

4.0 Risk Assessment

4.1 Risk Scoring

Severity	Severity Rating	Probability	Probability Rating
Extreme – Multiple Deaths	5	Probable	5
High – Single death or multiple injuries	4	Highly likely	4
Moderate – RIDDOR injury	3	Likely	3
Slight – minor, NON-RIDDOR injury	2	Possible	2
Negligible – no injury likely	1	Unlikely	1

The Severity Rating describes the outcome of being exposed to the hazards present. The Risk Score is calculated by multiplying the Severity Rating by the Probability Rating, this is then categorised using the table below.

Risk Score (= Severity Rating X Probability Rating)	Actions
9-25	Install controls in advance to reduce risk rating
6-8	Prioritise and control as far as reasonably practical
1-5	No further action required, review continually on site

Site Specific Risks

Task • Hazard	Severity Rating	Probability Rating	Initial Risk Score	Control Measures	Probability Rating with Control Measures	Residual Risk Score
Boreholes • Striking live services • Incorrect manual handling • Exposure to contaminated soil, soil dusts and asbestos fibres • Moving plant Exposure to hazardous ground gases	5	3	15	• Follow SOP003 – Avoidance of services • Follow SOP005 – Small sites manual handling • Follow SOP006 – Precautions for asbestos • Erect barriers around moving plant, when required • Supervising Engineer to ensure safe plant movements • Use appropriate flush medium (rotary boreholes) and have gas analyser available for use to check borehole gases during drilling, if required	1	5
Trial pit & surface excavations • Striking live services • Incorrect manual handling • Exposure to contaminated soil, soil dusts and asbestos fibres • Undermining services/structures • Risk of collapse of ground	5	3	15	• Follow SOP003 – Avoidance of services • Follow SOP005 – Small sites manual handling • Follow SOP006 – Precautions for asbestos • Follow SOP002 – Trial pitting	1	5
Driving to and from sites • Road traffic accident	5	3	15	• PPL driving policy to be adhered to • Regular breaks to be taken throughout journey	1	5

Task • Hazard	Severity Rating	Probability Rating	Initial Risk Score	Control Measures	Probability Rating with Control Measures	Residual Risk Score
Working on sites - Slips, trips and falls - Site traffic accident - Using hand tools/equipment	2	3	6	- All staff to be made aware of works being undertaken - All staff to keep a safe working distance from the water - All unauthorised staff to stay clear from undergoing works - Erection of barriers around excavations - Specified PPE to be worn by all personnel always - Ensure tools and equipment are fully maintained and serviced and currently calibrated where required	2	4
Exposure to noise Hearing impairment	2	4	8	Use PPE provided	2	4
Public access, site traffic and plant movements - Site traffic accidents - Dangers to public	2	3	6	- Use PPE provided - Supervising Engineer (SE) to cease plant movements if member of public comes within 50m of working areas - SE to ask public to stay at a safe distance (>50m) from work area - Fence off working areas, if significant public access - SE to control all plant movements about the site	2	4
Exposure to biological hazards - Pigeon excrement - Weil's disease - Discarded needles - Viruses/bacteria	4	2	8	Use PPE provided and site welfare facilities for personal hygiene	1	4

PPE

Safety Boots	High Viz Clothing	Hard Hat	Overalls	Dust Mask
✓	✓	✓	✓	☐
Safety/Goggles/ Glasses/Visors	Gloves	Ear Defenders	Harness	VOC Mask
☐	✓	✓	☐	☐
Other				
☐				

General Comments/Notes

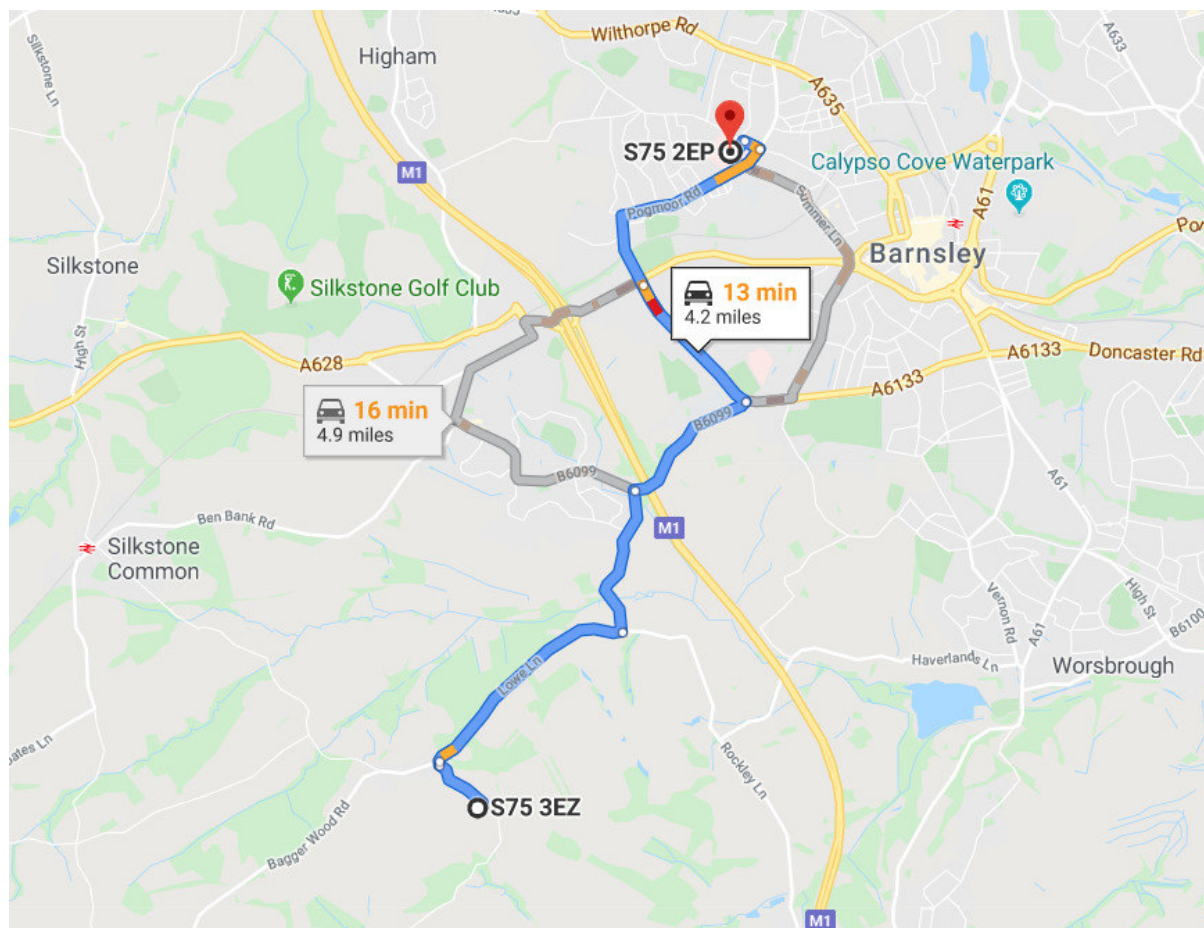
Safety Boots, Hi Viz clothing, Hard hat, overalls and ear defenders are all mandatory.

Safety glasses and dust mask to be used as required.

5.0 Accident and Emergency Hospital Location Plan

Barnsley Hospital Gawber Road, Barnsley, Yorkshire, S75 2EP

Tel. 01226 730000



6.0 Unforeseen Hazard and Toolbox Talk Table

This form is to be completed on site when unforeseen circumstances become apparent to the PP supervisory staff on mobilisation of the fieldwork, e.g. cattle in field. The PP Supervising Engineer should complete this section in the field in handwriting, using the risk assessment protocol in section 4.0 above, and implement the agreed control measures prior to commencing the work elements that are affected.

Severity Rating	Probability Rating	Risk Score (= SR x PR)	Control Measures	Probability Rating with Control Measures	Residual Risk Score
e.g. Other contractors works within PPL work areas 3	e.g. Possible 2	e.g. 6	e.g. Other contractors works duration 1 day. No PPL entry until works complete and authorisation to enter/work permit is granted provided by the client. Contractor Toolbox Talk given by: PP Supervising Engineer Signature, Date	1	3

7.0 Patrick Parsons Subcontractor Induction Sign-off

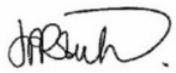
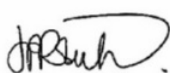
Supervisor's Name	Company	Signature	Certificates Checked?	Date

Appendix A

Fieldworks Authorisation

FIELDWORKS AUTHORISATION

Project Name: Replacement Dwelling Pine Lodge Stainborough Lane, Hood Green, Barnsley		Fieldwork Date(s) to/from: 14 th to 15 th January 2020 (boreholes) Shallow Surface Excavations – Dates TBC	
Project Number: H19104			
Client: Mr D Green			
Work shall only commence once the machine/plant operators are fully satisfied that the following precautions have been undertaken by the PP Supervising Engineer.			
1: PRECAUTIONS TO BE TAKEN BEFORE WORK			
	Yes	No	Initial
Has the PP Project Manager adequately described the site specific risks highlighted in these RAMS?	Y		JR
Has a scaled exploratory hole location plan been provided?	Y		JR
Have the exploratory hole positions observed the PP minimum standoff distances for services?	Y		JR
Are scaled service plans available and have they been checked?	Gas	Live underground services apparatus comprise electricity & water mains only. Locations & routes are known.	JR
	Electricity		JR
	Water		JR
	Drainage		JR
	BT/Comms		JR
	Other	N/A	
Have you been provided with a currently calibrated CAT and Genny?	Y		JR
Are 1.2m deep hand dug services inspection pits required?		N	JR
Is there danger of collapsing or undermining adjacent structures or services?		N	JR
Will excavation support be necessary?		N	JR
Will anyone enter the supported excavation?		N	JR
Could gas enter the excavation?	Y	Gas Alarm to be used at drilling rig	JR
Will tree roots be damaged?		N	JR
3: AUTHORISATION TO WORK AND CONFIRMATION OF PRECAUTIONS			
a) Work Authorisation I confirm that I have given the Supervising Engineer the information that they require to undertake the works safely on behalf of PP.		b) Confirmation of Acceptance I agree that I have had adequate instruction from the Project Manager on all aspects of the works and associated health and safety risks and I am happy to supervise the works safely on behalf of PP.	

PP Project Manager	PP Supervising Engineer
Name: J Roberts	Name: Andrea Chaverra Valencia
Signed: 	Signed: 
Date: 13/01/2020	Date: 13/01/2020

Note: Should you arrive on site and identify an unforeseen hazard(s) that have not been highlighted in this RAMS, please complete as fully as possible a risk assessment for each new hazard using the form within section 6.0.

Appendix B

Minimum Stand-off Distances

MINIMUM STAND-OFF DISTANCES

Overhead Electricity Lines					
Voltage	<33kV	66kV	132kV	275kV	450kV
Minimum clearance (m) for fixed height plant (distance from top of vehicle to line or conductor)	0.8	1.0	1.4	2.4	3.1
Minimum horizontal safety distance from line (m) ¹	Wood Pole 8.0	Wood Pole 8.0	Wood Pole 8.0 Metal Tower 11.0	Metal Tower 14.0	Metal Tower 16.0
Buried Electrical Cables					
Voltage	<33kV		>33kV		
Minimum horizontal safety distance for machine excavations (m) ²	3		7		

Gas Pipelines³				
System Pressure	Low	Medium	Intermediate ^{3,4}	High ^{3,4}
Minimum horizontal distance for machine excavations (m) ³	3.0	7.0	7.0	7.0
Minimum horizontal safety distance for boreholes (m) ⁵	15	15	15	15

Note: for medium and high pressure gas mains where lighter drilling methods (i.e. window sampling) are being used, reduced stand-off distances discussed directly with the local utility provider

BT (cables and fibre optics)⁶	
Minimum horizontal safety distance for excavations near buried cables by Mechanical means	3m (in stiff cohesive soils) 7m (in unstable soils (e.g. wet loose sands))
Minimum horizontal safety distance for boreholes	12m

Water & Sewage⁷	
Minimum horizontal safety distance for machine excavations	Variable subject to pipe diameter and depth 4.5 - 8.5m

Other Pipelines and Cables⁸	
Minimum horizontal safety distance for machine excavations near buried cables	Undertake Linesearch & Cadent Searches https://www.linesearchbeforeudig.co.uk/ https://www.beforeyoudig.nationalgrid.com/login.aspx?ReturnUrl=%2f
Minimum horizontal safety distance for boreholes	Undertake Linesearch & Cadent Searches https://www.linesearchbeforeudig.co.uk/ https://www.beforeyoudig.nationalgrid.com/login.aspx?ReturnUrl=%2f

Notes

- Distances quoted include additional 2m to those quoted in *Energy Networks Association, Technical Specification 43-8 Issue 3, 2004 Overhead Line Clearances (with amendment 1, 2004)*
- UK Power Networks, Excavating Near Electricity Cables, DSR 01 014 v7, July 2018*
- Distances quoted include additional 2m to those quoted in *National Grid, Excavating Safely – Avoid Injury when working near gas pipes, T/PR/DP1 Part 2. SPN219. 11/07 and Institution of Gas Engineers & Managers, Safety Recommendations IGE/SR/18 Edition 2 Communication 1678, Safe working practices to ensure the integrity of gas pipelines and associated installations*. Additional stand off or movement of location to that shown may be required from this apparatus subject to depth of excavations and stability of prevailing ground conditions.
- Irrespective of minimum safety distance given for intermediate and high pressure gas mains, liaison with local provider must be undertaken to allow them to mark/peg out the line of their apparatus before/during works so that accurate measurement of safety distance from the line of the apparatus can be made. Once the pipeline position has been determined as above, the provider the provider may allow working within the default 15m safety distance subject to physical exposure of the pipe. This is to be agreed on a job-specific basis with the local provider.
- Distances given are for piling/boring rigs. Any drilling within this distance to be discussed with local provider at an early stage. Limit based on vibration potential and pipe construction material.
- Distances quoted include additional 2m to those quoted in *BT Special Requirements When Working in the Vicinity of Openreach Apparatus v7, February 2017*.
- Distances quoted include an additional 2m to those quoted in *Sewers for Adoption 6th Ed., A design and construction guide for developers, Table 2.1. Local operators*. Additional safety distance should be considered subject to ground conditions and depths (i.e. deep excavations in loose wet sands) which could cause loss of support and damage to pipes.
- Linesearch and Cadent Eagles (National Grid (Electricity and Gas)) searches will highlight other apparatus in or near to the site. Information requests could take 3-4 weeks. Local contact info will be provided and enquiries will need to be made with relevant suppliers on safety distances for excavations and boreholes.
- Where excavations are required to be deep (i.e. trial pits) then greater distances will be needed and discussion with National Grid, or the local provider prior to works.

Appendix C

Patrick Parsons SOPs



MR J ROBERTS

REG NO: **03094416** EXPIRES END: **October 2023**

The registered holder of this card holds the construction qualifications listed on the reverse



Tel: 0344 994 4777 www.cscs.uk.com
Registration No: 03094416

Engineering Services related Degree
Health, Safety, Environmental or Quality Related Degree

Cards issued by CSCS do not confirm the holder's right to work in the UK.
The cardholder has demonstrated knowledge of Health and Safety awareness as laid out
in the CSCS Scheme Requirements.

THIS IS TO CERTIFY THAT

Jonathan Roberts

Completed an asbestos awareness in-house
training course on 19/03/2018



Edward Charlton
Associate Director

Standard Operating Procedure 002 - Trial Pitting

This form is produced by Patrick Parsons Limited to provide guidance on an operation which falls outside the remit of the Quality Management System or Health & Safety Policy and should be carried out with due diligence to ensure no risk to employees, subcontractors or other persons.

Description:

To define the procedure by which trial pits and trenches are excavated in open ground without man entry and sampled in a safe manner. This procedure applies to trial pits up to a depth of 4.5 metres which are excavated and backfilled in the same day.

Activity:

1.0 DEFINITIONS

Trial Pits and Trenches are machine dug excavations for the purpose of strata logging, observations, in-situ testing and sampling and inspection of buried structure and foundations.

The Logger shall be an experienced person who has undergone appropriate training in safety and technical training. The Supervising Engineer (SE) may in some circumstances be the same person.

2.0 RESPONSIBILITIES

The SE is responsible for:

- Inducting the site investigation team including all subcontractors on the proposed works and site specific RAMS documentation and mitigation measures required.
- The setting out of each trial pit at the location required by the Contract documentation.
- Obtaining services drawings.
- The identification and avoidance of buried services at each trial pit location in accordance with **SOP003-Avoidance of Services**.
- The avoidance of overhead or adjacent obstructions and ensuring that the excavations do not destabilise or compromise in any way the performance or integrity of underground services and adjacent structures.
- General site, safety and environmental management.
- Check by inspection that the machine operator holds the requisite Skill Card (Construction Plant Competence Scheme/CPCS) and that his machine has an appropriate test certificate (Lifting Operations and Lifting Equipment Regulations/ LOLER).
- Issuing instructions to the SE, if you are not doing the logging. These instructions may be varied as the pitting progresses, depending on and / or as a result of conditions encountered during excavation.
- Checking for underground voids (mineworkings, natural voids, cellars etc).

The SE shall be responsible for

- Ensuring that the control measures specified in the RAMS documentation are implemented, and advising the SE of any change in conditions which may require those measures to be varied.
- The identification and avoidance of buried services at each trial pit location
- The supervision of the machine operator.
- Carrying out whatever sampling and testing is required within the contract and for providing a geotechnical description of the strata encountered.
- Ensuring samples are accurately and properly labelled and stored correctly.
- The safe construction of trial pits ensuring that adjacent property, ground or services are not affected by the digging of the pits.
- The pitting site is kept tidy and soil is properly placed.

- The backfilling of the pits in a controlled and safe manner such that the backfilled pit does not present a hazard and reinstatement of the site and access routes used.
The machine operator shall ensure:
- The safe and environmentally sound condition and operation of the equipment.
- Safely moving between trial pit locations and the safe excavation of the trial pits.

Approach:

3.0 PROCEDURES

3.1 Pre-requisites

The SE shall issue on-site instructions as pitting proceeds based on the contract requirements. The pits shall be dug at the locations indicated by the SE. The pits shall be numbered precisely and logically as outlined by the SE.

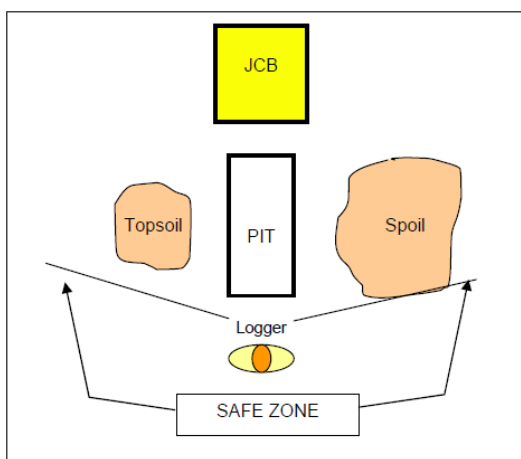
The SE shall be in attendance throughout the work and shall supervise the safe manoeuvring of the machine between exploratory positions. It is essential that an initial briefing occurs between the SE and the machine operator to agree a signalling system and method of working. The machinery will be set up in a manner that is safe for operating personnel and the general public; this may necessitate the provision of fencing, especially in public open space areas where the works area may not be secure. The vicinity will be checked for any other safety, health and environmental hazards (particularly where identified in the Project RAMS).

3.2 Excavation

Equipment and spoil arisings shall be placed so as not to present a hazard to the operatives or the general public. All spoil shall be heaped at least 1 m from the edge of the pit; greater distances maybe required for deeper pits. The surface material, be it topsoil, turf, ballast, tarmac or concrete, shall be heaped in separate piles to avoid mixing where possible. The spoil should be placed so as not to cause contamination of any water courses. Any natural soils arising shall be placed in a different pile to avoid any potential cross contamination from the made ground arisings.

The drawing below presents the typical safe arrangement of equipment, spoil materials and SE.

Trial pits shall be excavated and backfilled in one shift. In the event that a pit has not been completed by the end of a shift or is left unattended, it shall be securely fenced. The area shall be left safe and tidy to the satisfaction of the SE.



Whilst excavation proceeds the stability of the excavation walls shall be assessed by the SE. If there is any doubt over the stability of the walls, such that instability shall cause surface settlement which might jeopardise the safety of personnel, equipment, services or property, the excavation shall be terminated and the pit backfilled.

NO PERSON SHALL ENTER THE PIT UNDER ANY CIRCUMSTANCES.

All situ testing shall be undertaken on relatively undisturbed blocks of soil arisings at the ground surface.

The SE shall:

- Agree an appropriate method with the driver to confirm stop and continue of works.
- Only approach the pit from the short sides when the excavator arm is at rest and the driver is aware of your approach.
- Instruct the driver to only move the excavator arm once you are clear of the excavation area.
- Approach the edge of the excavation with caution and check its stability.
- Not lean over the edge of the excavation.
- Not stay at the edge of the excavation any longer than necessary.
- Not use the bucket as a working platform, or for entry over or into any excavations.

3.3 Records, Sampling and Testing

Particular attention should be given to groundwater. A water inflow should be recorded either as a seepage or as an entry and the rate of flow, horizon and depth of entry noted.

- Seepage is where the quantity of water is insufficient to sample.
- Entry is a larger inflow of water where it will be possible to measure water level after a certain time and sample the liquid. The water level change over a period of time should be recorded.

A minimum of two clear photographs shall be taken of each excavation; one of the pit faces and a second of the spoil. The photographs should be downloaded to the appropriate job folder on the server.

3.4 Services

On occasion unrecorded and/ or undetectable services may be struck during the course of the works. Should such a situation occur then the safety of all staff, sub-contractors and the general public must be dealt with first.

Remove everyone to a safe area as appropriate, immediately inform the owner of the affected apparatus and inform the project manager for further instruction in accordance with **SOP003 – Avoidance of Services**.

3.5 Completion

On completion, the pit will either be backfilled with arisings in shallow drafts or reinstated with imported material as appropriate in a similar manner. Materials shall be replaced in the pit in the same order that they were excavated. Backfilling shall be carried out in layers, each layer being tamped by the bucket of the excavator. The pit shall be properly reinstated so that no depression is left; a certain amount of mounding may be required to achieve this in the longer term to allow for future settlement. The surrounding areas shall be left reasonably clean and cleared of any debris particularly gravel or cobble sized constituents. Any excess spoil shall be removed to the site collection point, if appropriate.

4.0 REFERENCES (Forms, Guidance, etc)

Standards: BS5930 2015

Circulation: (Please tick)	All PPL staff		All technical staff	
Other (Please state)				
Raised by:		Position:		
Reviewed by:		Position:		
Issued by:		Position:		Date:

Standard Operating Procedure 003 – Avoidance of Services

This form is produced by Patrick Parsons Limited (PPL) to provide guidance on an operation which falls outside the remit of the Quality Management System or Health & Safety Policy and should be carried out with due diligence to ensure no risk to employees, subcontractors or other persons or property.

Description:

To define procedures to be implemented in respect of all ground investigation/ earthmoving works and excavations carried out by Patrick Parsons Limited or its subcontractors

Activity:

1.0 DEFINITIONS

The Project Manager/ Supervising Engineer may be the same person.

2.0 RESPONSIBILITIES

When undertaking fieldwork of any form (Geoenvironmental, Civils, M&E or Structures disciplines) it shall be the responsibility of the Supervising Engineer (SE) completing works on behalf of PPL to ensure that protection and safety of all staff, subcontractors and the general public is maintained at all times from works which may interfere with, or disrupt live services (buried or overhead). The SE shall supervise all ground disturbance work and shall ensure that all intrusive works are carried out at the statutory safety distances from the identified service and to ensure that all site personnel are aware of the location of both buried and overhead services. All PPL employees responsible for excavations should have a valid CAT certificate, or should be able to demonstrate their competence in the use of such equipment

It is the responsibility of every SE supervising ground disturbance work on a PPL site to adhere to the following rules and follow the principles of the most recent advice issued by the HSE when working near underground services (Ref. HS(G)47) and overhead services (Ref. HSE GS6).

Approach:

3.0 PROCEDURES

Causing damage to buried and overhead services, is a major area of risk to PPL. Whilst such incidences are covered by our insurance policies, the effectiveness of our performance in this area has a great impact on our insurance premium and reputation. In turn, this effects the competitiveness of PPL and can affect our reputation. All this is quite apart from the inherent dangers to personnel associated with accidentally damaging buried services.

3.1 Background Searches

Services can include suppliers such as; electricity, lighting, gas, water, telephone, fibre optic communication links, TV cables, oil/ petroleum pipelines, sewerage, ducts and field drains. In addition, there are many private suppliers these days such as AGAS (Gas Pipelines), EPN Networks (Electricity), Aquila (Electricity) etc. It is therefore important to ask the local authority as well as the national utilities if they are aware of other suppliers in the area. Many companies sign up to web-based searches who can provide reports on whether a site is affected by their plant. It is important to obtain such reports on all projects involving intrusive investigation. Line Search Before You Dig (www.linesearchbeforeyoudig.co.uk) is one company which provides such information. Other common sources of useful information in relation to buried services in particular may include existing or former site staff or aerial imagery such as Google Earth © which can help to identify potential services such as electricity pylons or

excavation activities.

Prior planning of an investigation in relation to live services must always be undertaken. Scrutiny of all available service documentation must be requested from our clients in the first instance. Clients have a duty to provide information on buried services (and other hazards) present within their site. They cannot opt out of this duty. However, they can ask PPL to make enquiries on their behalf, in which case this would result in a legitimate charge to the client, but PPL would then take responsibility for the identification of these services. Similarly, where gaps exist in provided information then PPL may be required to obtain copies of our own plans or commission a specialist utilities surveying company following agreement with the client. This information shall be used to position exploratory holes remote from identified services and to design the route of plant movement and external works in relation to overhead services. This is the first level of safety and should be undertaken prior to all intrusive or external works. Site walkover surveys as part of desk studies must include notes on services found within a site which may be useful for future ground investigation work.

A common misconception is that all services are generally within 1.2m of surface. Ground levels can change over time and following development which can result in services being present at much greater depths. Sewer pipes, culverts and tunnels etc. can all occur at any depth.

3.2 Prior to Breaking Ground

Following selection of investigation locations remote from known services as defined above, the SE shall conduct a visual inspection of the surrounding area to confirm the location of services identified on plans (i.e. manhole covers, marker posts, trenches, overhead lines etc.). The SE shall also be vigilant for tell-tale signs of potential services such as surface scars, linear depressions, unusual gaps in hedgerows or woodland, street lighting columns, or evidence of domestic service entries to buildings. Where possible and appropriate, the lifting of service covers should be undertaken to confirm the orientation of services with plans. Any investigation locations along the potential line of such services (i.e. between service covers) shall be moved to a new location remote from that services and any others shown on service drawings. **The SE shall undertake service scanning using a Cable Avoidance Tool (CAT) at all exploratory locations and along the line of known or suspected buried services to confirm their location in relation to the proposed investigation location.** Some services may not be detectable using a CAT alone (i.e. street lighting or plastic services (such as gas or water)). A Genny shall be used in conjunction with the CAT to locate any conductive services which cannot be detected with the CAT alone. All features identified within close proximity to the exploratory position should be marked on the ground with marker paint and recorded as accurately as possible on plans. The proposed exploratory hole should then be scanned in the same manner as above until a suitable location free of known or suspected services is found.

In situations where a position is deemed to be free of known services from available plans but unusual signals are detected with the CAT and Genny, then careful excavation of a hand dug pit shall be excavated to 1.2m depth and a further CAT and Genny scan should take place. If unusual signals are still detected or if they intensify at that depth, then the investigation location should be moved unless other mitigating information indicates otherwise, e.g. hand dug pit exposes only natural previously undisturbed soil.

PLEASE NOTE: It is not the intention for PPL staff or its sub-contractors to excavate to specifically expose the location of live services due to the inherent unacceptable risks associated with undertaking such work. Such works may need to be undertaken by specialist contractors or the owner of the plant concerned where severe restrictions are present.

3.3 Overhead Plant

Failure to 'look up' during investigations is a common problem when undertaking the works we do. It is essential that all staff consider and are aware of the presence of these services prior to attending site. In all situations, understanding the nature of the overhead service may have a significant impact on the type of plant used in any investigation. The minimum clearance required, not only to excavate safely adjacent to overhead lines, but also safe access and working height clearance beneath an overhead service and the investigation plant and equipment must be considered. This should also take account of any situations which may inadvertently exceed the minimum safety distance such as, a slope or mound beneath the lines or unstable ground beneath plant which could indirectly affect the integrity of the lines.

The SE as part of the initial health and safety site briefing, shall make all site personnel aware of these restrictions and agree the appropriate route for plant to take to maintain safety from overhead lines.

For all buried and overhead services, site staff shall maintain the minimum applicable statutory safety distance appropriate to the plant concerned.

3.4 Restricted Work Areas

In situations where no services are anticipated but a service is suspected, or when a work area is confined or if permission to move an exploratory position is not granted, then the exact location of the service must be established by hand digging a services inspection pit. During excavation, care must be taken to ensure that any suspected cables or pipes are not disturbed or damaged. The use of insulated excavation equipment should be used wherever possible with all personnel adopting the appropriate PPE including, but not limited to gloves and safety glasses. The inspection pit should be excavated in shallow drafts with continued scanning using a CAT throughout the full depth of the pit and at the base before commencement of works. The pit should be excavated to a minimum depth of 1.2m, but deeper where reasonably practicable with the equipment used. Should services be found in the pit the SE must inform the Site Foreman or the PPL Project Manager (PM). The orientation of the service should be noted and recorded and the location moved or abandoned subject to restrictions.

Probing ahead from the base of a minimum 1.2m depth services inspection pit is extremely dangerous and can only proceed once the SE has agreed that the investigation is clear of services. All services located must be charted and noted in the daily record sheets. If services information from separate drawings is consolidated onto one drawing for ease of reference, a list of all services that the draughtsman has checked must be stated on the drawing to eliminate errors of assumption and confusion.

3.5 Additional Procedures for Gas or Oil Pipelines

Prior permission must be obtained from the relevant supply company before carrying out any operations within a site containing major services such as oil and gas pipelines. The appropriate safety distance specific to that service must be confirmed and an appropriate risk assessment completed before works can commence. The pipeline owner may require specific precautions to be taken such as their own staff confirming the location and wayleave for each service. In every case, regard shall be made to avoid the setting up of equipment above such pipelines and protection at cross over points shall be considered where heavy investigation equipment is involved.

3.6 Action if Damage Occurs

1. If a service is damaged during the course of our works, the utility provider must be informed immediately and the SE must inform the PM immediately.
2. All personnel and where safe to do so, shall be moved to a safe area.
3. In the case of water, gas and electricity, there may be immediate danger. The area of a works should be

cordoned off and if the damaged service is in a secure excavation, the excavation should be evacuated immediately and cordoned off.

4. In the case of a gas escape, all motorised (electric or combustion engine) plant must be switched off. Urgent action to prevent a possible explosion should be taken by warning passers-by not to use matches or smoke and remove from the scene other possible causes of ignition, e.g. loose electrical connections to traffic light batteries, sparks from starter motor or vehicles, etc.

4.0 REFERENCES (Forms, Guidance, etc)

BDA : Health and Safety Manual for Land Drilling 2015 'A Code of Safe Drilling Practice'

HSE Guidance Note 47 'Avoiding Danger from Underground Services'

HSE Guidance Note GS6 'Avoiding Danger from Overhead Powerlines'

Reference should also be made to the site specific risk assessment and method statement (RAMS) and any other pertinent information.

Circulation: (Please tick)	All PPL staff		All technical staff	
	All support staff		Structural team	
	Civil team		Environment & Energy team	
	Building Services team		Building Consultancy team	
Other (Please state)				
Raised by:		Position:		
Reviewed by:		Position:		
Issued by:		Position:		Date:

Standard Operating Procedure 005 – Small Sites Manual Handling

This form is produced by Patrick Parsons Limited to provide guidance on an operation which falls outside the remit of the Quality Management System or Health & Safety Policy and should be carried out with due diligence to ensure no risk to employees, subcontractors or other persons.

Description:

It is Patrick Parsons responsibility to provide guidance to all employees regarding lifting and moving loads manually, as this is one of the most common causes of injury at work. There is no safe weight limit for manual handling operations though it is Patrick Parsons responsibility to find alternatives.

Activity:

1.0 DEFINITIONS

Lifting and moving loads manually is one of the most common causes of injury at work. 56,00 Work related MSD cases in construction per year.

2.0 RESPONSIBILITIES

Top Tips:

- Plan and prepare for deliveries
- Find out how much commonly used items weigh
- Use simple aids
- Do not try to handle items heavier than 100kg or use teams of more than 4 people

When you have to manually handle loads, you must consider:

Task - How often, how much twisting or bending is needed?

Individual – Capability? male or female? old or young? experienced or inexperienced?

Load – How heavy? Good grip? Bulky? Heavier at one end?

Environment – Hot, cold, uneven floor, windy, stairs?

Some Solutions:

General Handling

- Simple aids on site - sack trucks, trolleys



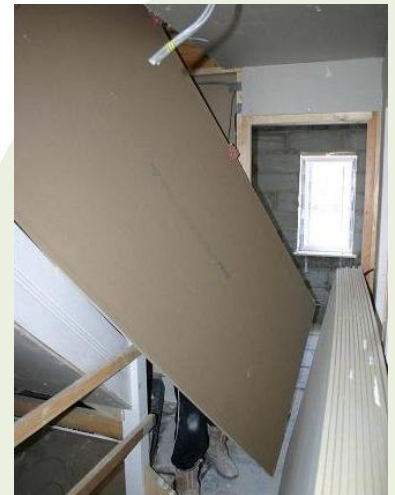
Masonry Units/ Blocks

- Specify/order blocks that weigh less than 20kg
 - Store blocks where they will not get wet (and increase their weight)
 - Arrange work so that lifting over shoulder height is not carried out
 - Deliver blocks as close to the point of laying as possible
-
- Do not carry them up ladders
 - Raise spot boards to a comfortable working height
 - Adjust scaffold platform to be at a height to allow the bricklayer to work between their knees and chest (if hop up used make sure that edge protection is provided on the main scaffold that takes account of this)



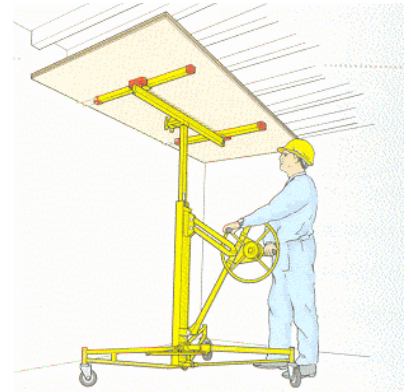
Panel Products e.g. Plasterboard

- Much more difficult to manoeuvre (and risky) in windy conditions
- 8'x4' boards of 15mm thickness are all over 25kg and some 'special' boards can be up to 50kg
- It is possible to select smaller boards which are lighter and more manoeuvrable



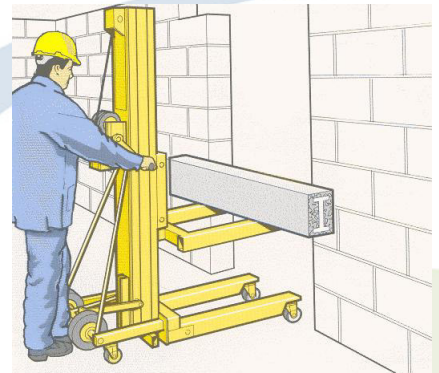
Plasterboard

- Don't remove handrails/banisters to move boards up stairs as this creates a fall risk
- Use aids to hold and position boards



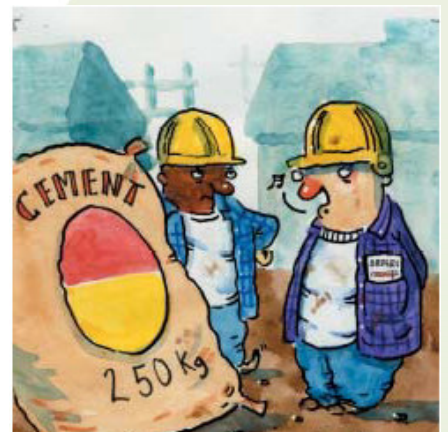
Heavy Lintels

- In this case there were 150 lintels each weighing 115 kg. The firm calculated each lift needed a team of 5 which was not physically possible! They identified that a lift truck could be used.
- An alternative is to specify lightweight steel lintels where possible.



Bagged Aggregate

- Order materials in smaller unit weights (max. 25kg) so that they can be more easily handled....OR
- Order the materials in such large unit weights that they can only be handled mechanically.



Hazardous Manual Handling

- Do not try to manually handle items that weigh over 100kg
- Do not try to use manual handling teams of more than 4 people.



Approach:

3.0 PROCEDURES

4.0 REFERENCES (Forms, Guidance, etc)

Circulation: (Please tick)	All PPL staff		All technical staff	
Other (Please state)				
Raised by:		Position:		
Reviewed by:		Position:		
Issued by:		Position:		Date:

Standard Operating Procedure - Precautions for Asbestos

This form is produced by Patrick Parsons Limited to provide guidance on an operation which falls outside the remit of the Quality Management System or Health & Safety Policy and should be carried out with due diligence to ensure no risk to employees, subcontractors, other building users or site occupiers.

Description;

Asbestos Containing Materials (ACMs) which are in good condition are unlikely to pose a risk. However, if they are disturbed, asbestos fibres may be released into the air and can cause serious lung disease if they are inhaled. This document provides procedures for staff to adopt to guard against exposure while conducting a building survey or ground investigation.

Activity:

1.0 DEFINITIONS

‘Invasive work’ is work that investigates areas not normally accessible for normal occupation and maintenance activities.

‘Ground investigation’ is a physical examination by intrusive investigation of soil, groundwater and gases that may be present in, on or under the ground surface.

2.0 RESPONSIBILITIES

It is the responsibility of the Project/Site Manager to:

- Carry out a risk assessment before site work commences that addresses the risk of Asbestos Containing Materials (ACMs) being present and degree to which invasive work is required;
- ensure that site staff undertaking invasive work or conducting ground investigation have attended an asbestos awareness course or be working under the supervision of an engineer who has received asbestos awareness training;
- ensure a suitable asbestos refurbishment survey has been carried out if the work is likely to be invasive within buildings or structures.

It is the responsibility of PPL’s appointed site supervisor to:

- Follow all health and safety guidance and RAMS documents provided by their employer;
- take reasonable care for the health and safety of their own self and of other persons who may be affected by their acts or omissions at work.

3.0 PROCEDURES

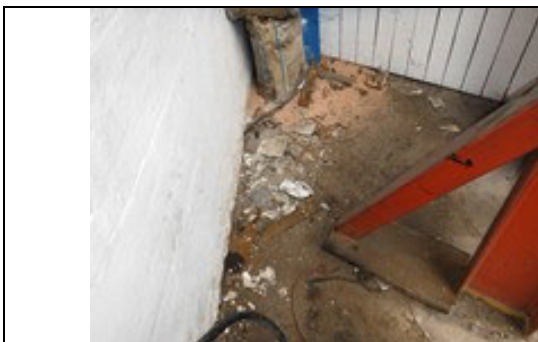
ACMs may be present in any building or on any site with buildings (existing or previous) that were constructed before 2000 as a complete ban on the use of asbestos only came into force in 1999. Higher risk ACMs are asbestos insulation (lagging), spray coatings and insulating board. These materials were commonly used from the 1950s up to 1980. In most cases, they may only be worked on by a licensed asbestos removal contractor unless the work is extremely minor and of short duration.

Being aware of the presence of ACMs is the best way to avoid accidental disturbance of asbestos and exposure to asbestos fibres. The Control of Asbestos Regulations 2012 require employers to identify the presence of asbestos before any building, maintenance, demolition or other work begins. Asbestos survey reports should be consulted before carrying out a building survey. In the absence of an asbestos report, asbestos should be presumed to be present.

3.1 Building Surveys - Precautions

Particular care should be taken when inspecting parts of the building which are not normally accessed for normal occupation or maintenance activities. The following factors should be born in mind when undertaking a survey:

- Buildings constructed or refurbished from 1950s to 1980s are likely to contain asbestos;
- the asbestos register should be consulted before commencing the investigation;
- asbestos management surveys (formerly type 2 surveys) are unlikely to identify all ACMs;
- be particularly careful in plant rooms, risers, ceiling voids and floor voids.



Broken Asbestos Insulating board debris
on floor of workshop

3.2 Building Surveys – Emergency Procedures

If asbestos debris is discovered or suspected to be present in an occupied area, then:

- **Stop work immediately.**
- The area should be sealed off until the exact nature of the material is ascertained.
- Inform those around you and the site representative to ensure everyone leaves the area where asbestos is suspected.
- You must ASSUME the material to be asbestos until you have confirmation that the material is not or does not contain asbestos.
- If your clothing has become contaminated, discard outer clothing / overalls as contaminated waste and shower as soon as possible.
- Defer any further works which may result in exposure until the material has been sampled and tested and results are available.
- Patrick Parsons can provide support by assessing the degree of contamination, organise reassurance air testing and arrange decontamination works.

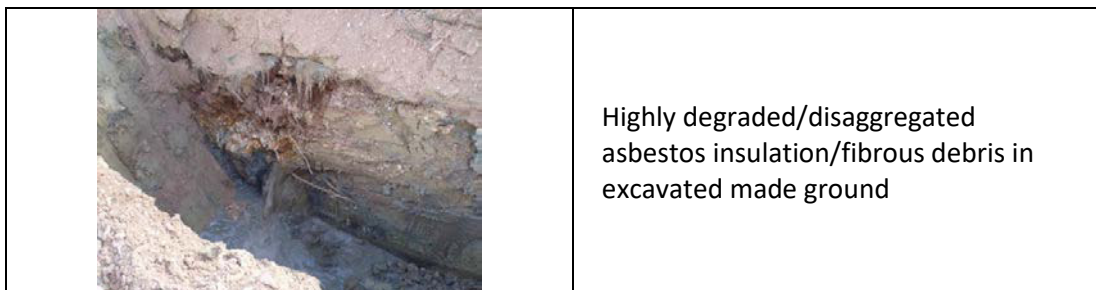
3.3 Ground Investigation - Precautions

Before carrying out a ground investigation involving the potential disturbance of asbestos in soil or construction and demolition materials, the project manager should first undertake a desk top risk assessment for the area of land to determine if it is likely to contain asbestos and, if so, the location, distribution, type and condition of the asbestos.

Typically, the following information should be collated, reviewed and assessed as a means of developing the risk assessment for ACMs that might be expected to be present on, in, or under the land:

- Previous site/ground contamination investigation reports.
- Drawings and information about past and current uses.
- Site walkover notes, photographs and observations if available.
- Drawings and information about past and current uses.
- Layout of underground site services.
- Previous development history of the site, by reference to historical maps and aerial photographs, local historical records, environmental reports and anecdotal information.
- Mineral extraction and landfilling records.

Additional vigilance for ACMs will be needed on sites which may have had a district heating system with insulated pipework or commercial / industrial sites where ACM products were manufactured or installed.



3.4 Ground Investigation – Procedures

If it is considered that asbestos is likely to be encountered during a ground investigation, then the following mitigating measures should be put in place as per the 2008 British Drilling Association (BDA) 'Guidance for safe intrusive activities on contaminated or potentially contaminated land' procedures:

- Provision of decontamination unit (red sites only)
- Disposable workwear (mandatory on red sites)
- Respiratory protective equipment (RPE) to be available on yellow sites and on red sites where risk assessment does not require mandatory wearing of RPE (N.B. face fit testing is mandatory for RPE).
- Damping down dry soils to prevent fibre release prior to investigation activity.
- Plant and equipment to be decontaminated before leaving site.
- For sites which have been declared asbestos contaminated, work will not proceed without appropriate controls in place.

If loose, friable or unbounded suspected ACMs are excavated from a trial pit or found within a soil sample, the following action should be taken;

- Stop work **immediately**.
- The area should be cordoned off to prevent accidental disturbance and further dispersal of the suspect material.
- You must ASSUME the material to be Asbestos until you have confirmation that the material is not asbestos.
- A risk assessment should be carried out by (or reviewed by) a competent person, taking into account the type and quantity of material and other exposure factors. A suitable algorithm is available at: <Z:\Environment & Energy\Library\Asbestos\Decision Tools\JIWG DST work categories FINAL version 2 protected July 2016 - UPLOADED.xlsm>.
- Site supervising engineers should call their project manager to run the algorithm if they cannot access it.
- The risk assessment will inform the decision making process and determine the controls that should be in place if the work is to proceed.
- If the material is friable and may give rise to sporadic and low intensity asbestos exposure, the work may become notifiable non-licensable work and it may need to be carried out by a licensed contractor.

If the suspected ACM is bonded with cement, vinyl or other non-licensable product, the work may continue however the following action shall be taken:

- Excavated suspected ACMs must be protected against accidental disturbance or movement which could extend their presence on site.
- A sample shall be taken into a sealed container marked as “suspected asbestos” and submitted for laboratory analysis to confirm the presence of asbestos.
- If ACMs remain in the excavated spoil after sampling, the spoil should be carefully placed back in the excavation/exploratory hole and the suspected ACM contaminated soil shall be covered with soil that has no visible suspect ACMs. The engineer shall record the position of the excavation/exploratory hole for future reference and the depth of the backfilled spoil containing the suspected ACMs.
- Further sampling may need to be carried out to verify the full extent and condition of the ACM material within the ground so that a comprehensive remediation strategy can be prepared.
- A guide for carrying out a statistically meaningful sampling strategy is provided within Appendix 7 of: <Z:\Environment & Energy\Library\Asbestos\Guidance\HSG 248 THE ANALYST GUIDE DOCUMENT FOR CONSULTATION October 2015.pdf>

Patrick Parsons can provide support by:

- Assessing whether a licensed contractor is required;
- arranging removal by a licensed contractor;
- assessment of the contractor’s RAMS and
- providing personnel and boundary air monitoring.

Further Information:

4.0 REFERENCES (Forms, Guidance, etc.)

Managing and working with asbestos: Control of Asbestos Regulations 2012. Approved Code of Practice and guidance L143 (Second edition) 2013 ISBN:9780717666188 www.hse.gov.uk/pubns/books/l143.htm

Control of Asbestos Regulations 2012 Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance 2016 ISBN 978-1-905046-30-0
<http://www.claire.co.uk/projects-and-initiatives/asbestos-in-soil>

Decision Support Tool for the Characterisation of Work Activities Involving Asbestos in Soil and Construction and Demolition Materials in accordance with the Control of asbestos Regulations 2012, Version 2, July 2016
 ISBN 978-1-905046-28-7 <http://www.claire.co.uk/projects-and-initiatives/asbestos-in-soil?showall=&start=6>

DRAFT ANALYST GUIDE HSG 248 12 October 2015
<http://webcommunities.hse.gov.uk/connect.ti/asbestos.licensing/view?objectId=590885>

The Hazardous Waste (England and Wales) Regulations 2005 SI 2005/894 The Stationery Office 2005
 ISBN 978 0 11 072685 4 http://www.legislation.gov.uk/ukxi/2005/894/pdfs/ukxi_20050894_en.pdf

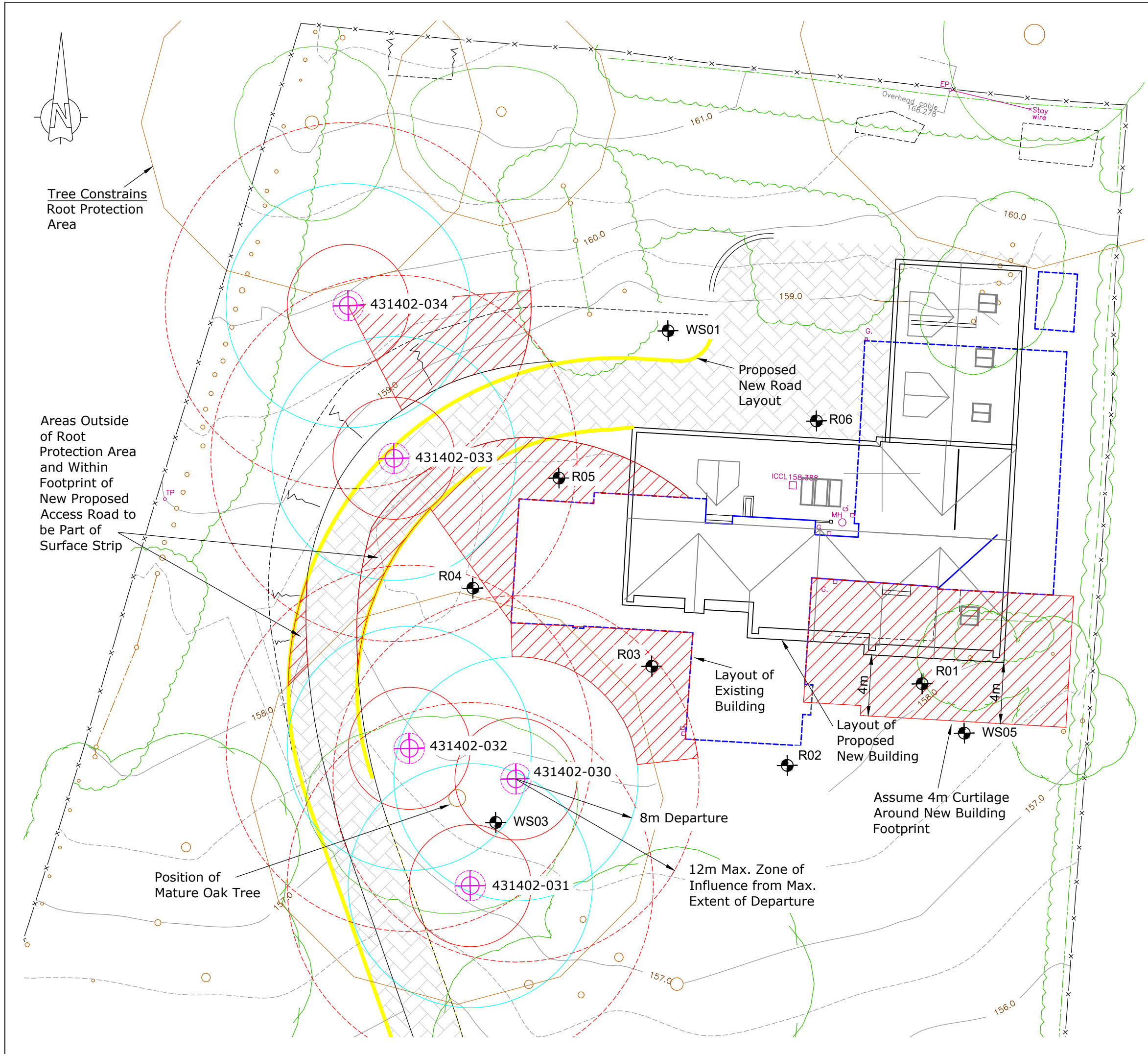
Guidance for Safe Intrusive Activities on Contaminated or Potentially Contaminated Land 2008. The British Drilling Association (BDA) <http://www.britishdrillingassociation.co.uk/Publications/Guidance-For-Safe-Intrusive-Activities-On-Contaminated-Or-Potentially-Contaminated-Land-6>

Reference should also be made to the site specific risk assessments.

Circulation: (Please tick)	All PPL staff		All technical staff	
	All support staff		Structural team	
	Civil team		Environment & Energy team	
	Building Services team		Building Consultancy team	
Other (Please state)				
Raised by:			Position:	
Reviewed by:			Position:	
Issued by:		Position:		Date:

Appendix D

Proposed Exploratory Hole Location Plan



GENERAL NOTES

- 1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.
- 1.2. DO NOT SCALE FROM THIS DRAWING.

LEGEND

- WS01 MINI PERCUSSIVE BOREHOLE WITH MONITORING WELL
- R01 ROTARY OPEN BOREHOLE
- 431402-030 APPROXIMATE LOCATION OF HISTORICAL MINE ENTRY (SHAFT) WITH SHAFT REFERENCE FROM COAL AUTHORITY RECORDS (SHAFT ASSUMED 2M IN DIAMETER)
- MINE SHAFT ZONE OF INFLUENCE
- 8M DEPARTURE FROM CENTRE OF MINE SHAFT
- MINE SHAFT ZONE OF INFLUENCE FROM EDGE OF DEPARTURE ZONE
- HATCHED AREAS DENOTE PROPOSED AREAS OF SURFACE STRIP ACCESSIBLE PRIOR TO DEMOLITION

P1	INITIAL ISSUE.	09.01.20 RDV
Rev.	Amendments	Date By

Revisions



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Project
**REPLACEMENT DWELLING AT
PINE LODGE, STAINBOROUGH
LANE, HOOD GREEN, BARNSELY**

Drawing
**PRE DEMOLITION - PROPOSED
AREAS OF INTRUSIVE
INVESTIGATION**

Scales 1:250 @ A3 At original size A3

Drawn ACV
Date DEC 2019
Checked JR

Status **PRELIMINARY**

Drawing No. **H19104-704** Rev. **P1**

UK locations:

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