NATIONAL GRID ELECTRICITY TRANSMISSION

# Outline Asbestos Management Plan



DECEMBER 04, 2018

wsp

# Peak District East

## Outline Asbestos Management Plan

NATIONAL GRID ELECTRICITY TRANSMISSION

REV 01

CONFIDENTIAL

PROJECT NO.: 70019952

DATE: JANUARY 2019

WSP UK LTD

WWW.WSP.COM

*Quality Management*

| ISSUE/REVISION | FIRST ISSUE | REVISION 1 | REVISION 2 | REVISION 3 |
|---|---|---|---|---|
| Remarks | Draft for comment | | | |
| Date | 14/01/2019 | | | |
| Prepared by | Iain Macdonald | | | |
| Checked by | Christian McKenzie | | | |
| Authorised by | Christian McKenzie | | | |
| Signature | | | | |
| Project number | 70019952 | | | |
| Report number | 70019952 | | | |
| File reference | 70019952 | | | |

*Signatures*

*Prepared by*

Iain Macdonald

Associate Director

*Reviewed by*

Christian McKenzie

Associate Director

This report was prepared by WSP UK for the account of National Grid Electricity Transmission. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP UK's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. WSP UK accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

The original of the technology-based document sent herewith has been authenticated and will be retained by WSP for a minimum of ten years. Since the file transmitted is now out of WSP's control and its integrity can no longer be ensured, no guarantee may be given to by any modifications to be made to this document.

# OUTLINE ASBESTOS MANAGEMENT PLAN

14/01/2019

## CLIENT

National Grid Electricity Transmission

## CONSULTANT

Christian McKenzie
No. 8, First Street
Manchester
M15 4RP
www.wsp.com

## REGISTERED ADDRESS

WSP UK Limited

WSP House, 70 Chancery Lane, London, WC2A 1AF

1 EXECUTIVE SUMMARY .....6
1.1 Name and Address of site ..... 6
1.2 location and Site History ..... 6
1.3 Current Site Use ..... 6
1.4 Introduction..... 7
1.5 Purpose ..... 7
1.6 Current Asbestos Site Information ..... 7
1.7 Limitations ..... 7
2 INTRODUCTION.....9
2.1 Appointment and Brief..... 9
3 COMPETENCE .....10
4 ASBESTOS CONTROLS .....11
4.1 Identified Asbestos containing soils and Debris ..... 11
4.1.1 Zone 1: Trans Pennine Trail Soil Dataset (2016-2018) Summary of Asbestos Identified in Soils & Analytical data ..... 11
4.1.2 Zone 2: Wogden Foot Soil Dataset (2016-2018) Summary of Asbestos Identified in Soils & Analytical data ..... 13
4.1.3 Zone 3 Alternate Trail Soil Dataset (2016-2018) Summary of Asbestos Identified in Soils & Analytical data ..... 13
4.1.4 Asbestos Identified During Walk Over Of Exisiting and Proposed Trial Locations ..... 14
4.1.5 LIMIT OF QUANTIFICATION OF ASBESTOS AND DEFINITION OF 'TRACE ASBESTOS' AS APPLIED TO SOIL AND C&D MATERIALS AND THEIR PRACTICAL IMPLICATIONS..... 15
4.2 General ..... 16

4.3 Characterisation of Work - Compliance with Regulation 3 of CAR ..... 16

4.4 Risk Assessment - Compliance with Regulation 6 of CAR ..... 22

4.5 Plans of Work (Method statement) - Compliance with Regulation 7 of CAR ..... 24

4.6 LICENSING OF WORK WITH ASBESTOS – COMPLIANCE WITH REGULATION 8 OF CAR 25

4.7 NOTIFICATION OF WORK WITH ASBESTOS – COMPLIANCE WITH REGULATION 9 OF CAR 25

4.8 Information, Instruction and Training - Compliance with Regulation 10 of CAR ..... 26

4.9 Prevention or Reduction of Exposure to Asbestos - Compliance with Regulation 11 of CAR ..... 29

4.10 Use of Control Measures - Compliance with Regulation 12 of CAR ..... 31

4.11 Maintenance of Control Measures - Compliance with Regulation 13 of CAR ..... 31

4.12 Provision and Cleaning of Protective Clothing - Compliance with Regulation 14 of CAR ..... 32

4.13 Arrangements to Deal with Accidents and Incidents - Compliance with Regulation 15 of CAR ..... 32

4.14 Prevention or Reduction of the Spread of Asbestos – Compliance with Regulation 16 of CAR ..... 35

4.15 Cleanliness of Premises and Plant – Compliance with regulation 17 of CAR ..... 36

4.16 Designated Areas – Compliance with regulation 18 of CAR ..... 38

4.17 Air Monitoring - Compliance with Regulation 19 of CAR ..... 38

4.18 Washing and changing facilities – compliance with regulation 23 of CAR ..... 39

**4.19 Storage and Labelling of Asbestos Waste – Compliance with regulation 24 of CAR** ..... 39

5 INFORMATION TO BE PROVIDED BY THE CONTRACTOR FOR REVIEW .....40

6 SUMMARY OF THIS ASBESTOS MANAGEMENT PLAN .....41

**6.1 On-site Resources** ..... 41

7 SITE ESTABLISHMENT & GENERAL HEALTH & SAFETY REQUIREMENTS ....43

**7.1 Introduction** ..... 43

**7.2 Health & Safety Plan** ..... 43

**7.3 Environmental Management Plan** ..... 43

**7.4 Site Waste Management Plan** ..... 43

**7.5 Incidence Response Plan** ..... 43

**7.6 Management of Asbestos** ..... 44

**7.7 Traffic Safety and Management** ..... 44

**7.8 Site Mobilisation & Set Up requirements for duration of works** ..... 44

**7.8.1 Mobilisation** ..... 44

**7.8.2 Site Segregation & Signage** ..... 45

**7.8.3 Decontamination Signage/ Units** ..... 45

**7.8.4 Transit Routes** ..... 45

**7.8.5 Specific Training and Inductions** ..... 46

**7.8.6 Safety Meetings** ..... 46

**7.8.7 Spill Response PLan** ..... 47

**7.8.8 Personal Protective Equipment (PPE) & Respiratory Protective Equipment (RPE)** ..... 47

**7.8.9 Waste Storage and Handling** ..... 47

8 MANAGEMENT OF ASBESTOS CONTAMINATED SOILS ..... 48

8.1 **Permit to Dig** ..... 48

8.2 **Site Access Control** ..... 48

8.3 **Supervision & Monitoring of Works** ..... 49

8.4 **Horizontal and Vertical Extent of Excavation** 49

8.5 **Soil Disturbance Techniques** ..... 49

8.6 **Excavation Equipment and Placement of the Excavator** ..... 51

8.7 **Direction to Prevent Spread of Contamination** ..... 51

8.8 **Storm Water & Surface Water Run Off Management** ..... 52

8.9 **Monitoring of Stockpiles** ..... 52

8.10 **Air Monitoring** ..... 52

8.11 **Dust Control/Emissions Control Measures** .... 53

8.12 **Soil Wetting or Stabilizing** ..... 53

8.13 **Wind Direction & Speed** ..... 54

8.14 **Cover Layers** ..... 54

8.15 **Equipment Decontamination** ..... 54

8.16 **Personnel Decontamination** ..... 54

8.17 **Inspections of Vehicles** ..... 54

8.18 **Visual Inspections of Transit Routes** ..... 54

8.19 **Emergencies and Unforeseen Disturbances of Asbestos** ..... 54

9 INFORMATION TO BE PROVIDED BY THE CONTRACTOR FOR REVIEW ..... 57

10 LIMITATIONS ..... 58

## Appendices

A DRAWINGS

B RECORD OF ASBESTOS BRIEFINGS

# 1 EXECUTIVE SUMMARY

## 1.1 NAME AND ADDRESS OF SITE

Peak District East. Trans Pennine Trail, Windle Edge, Dunford Bridge, Yorkshire, S36 4TF.

## 1.2 LOCATION AND SITE HISTORY

A site location plan is presented in Drawing PDD-33492-LAY-073 in Appendix A. The route extends from the Woodhead Tunnel in Dunford Bridge, east following the general path of the Trans Pennine Trail. The route corridor measures approximately 2 100 m (east to west) by 205m (north to south covering an area of approximately 43 Ha. National Grid Reference SE 15825 02379.

There are several historical land uses within the route corridor that are potentially contaminative. The Environment Agency (EA), the British Geological Survey (BGS) / Department for Environment, Food and Rural Affairs (DEFRA) and Local Authority records do not indicate the presence of any historic (or active) landfill sites within the route corridor, or within 200 metres of the boundary. However, there are suspected infilled landfills, heaps and tips within the route corridor, which are likely to be the result of historical mining activity and the railway and sidings that formerly crossed the site. A former railway line was recorded on site in earliest available mapping (1854) oriented east to west along the route of the present Trans Pennine Trail connecting to the Woodhead tunnel at Dunford Bridge. The railway was dismantled by 1987.

The area now known as Wogden Foot historically contained a large area of rail sidings and associated structures. These features are shown on historical maps up to 1951, but are no longer present on mapping from 1962. Historical maps indicate this area to be subject to land raising between 1891 and 1948.

There are four quarries from sandstone and ganister mining in the route corridor, and the potential for contamination resulting from the operation of the National Grid SEC compound.

## 1.3 CURRENT SITE USE

The site is located around the Trans Pennine Trail in the Peak District National Park.

A National Grid SEC (sealing end compound) is located at the western end of the route corridor, adjacent to the Trans Pennine Trail car park. The River Don passes through the centre of the route corridor, to the north of the trail. The Trans Pennine Trail forms the central axis of the route corridor and extends from a car park at Dunford Bridge to the east passing south of Wogden Foot.

The trail is a publicly accessible tarmac surfaced pedestrian and cycle path. Along the trail, on either side of the River Don, the site use is predominantly agricultural land (grazing animals). Wogden Foot, a Local Wildlife Site, is located to the south of the River Don, at the eastern end of the route corridor.

This area is not given special legal protection, although designation as a Local Wildlife site is a material consideration within planning applications.

A wastewater treatment compound, operated by Yorkshire Water, is located along the northern boundary of the route corridor.

Land use surrounding the route corridor is predominantly agricultural, with some areas of residential housing. The Peak District National Park is located to the south and west of the route corridor, and reservoirs are present to the west and northwest of the route corridor.

## 1.4 INTRODUCTION

Asbestos Containing Materials (ACMs) have been identified within the made ground across the site. An Asbestos Management Plan/Strategy (AMP) is therefore required to facilitate safe and suitable ground disturbance works associated with the following key stages:

## 1.5 PURPOSE

This AMP outlines the requirements for the safe management of asbestos containing soils during the proposed groundworks to be carried out at the site.

It is intended to clarify the Health and Safety considerations and constraints on the site wide civil works and subsequent management and re-use of the site made ground material, to ensure that safe systems of work are implemented by the Contractor in line with the Control of Asbestos Regulations 2012 (CAR).

This plan may also be used as an aid to audit contractor documentation including training requirements and working procedures

This AMP addresses the safe handling and management of the made ground materials with respect to asbestos risk only. Information on non-asbestos contaminants and geotechnical suitability are to be addressed by the Contractor.

For clarification, this asbestos management plan is not a waste management plan, a remediation strategy or a specification document.

## 1.6 CURRENT ASBESTOS SITE INFORMATION

This asbestos management plan has been prepared with full consideration of the findings regarding the locations and amounts of reported asbestos contamination within soils and made ground contained in the WSP report *Visual Impact Provision: Interpretive Geo-Environmental Report (WSP Ref. No. PDD – 33492-REP-013)* dated November 2018.

## 1.7 LIMITATIONS

No ground assessment can purport to identify all ACMs that may be present within the site. It should be noted that the locations in which trial pits have been undertaken represent only a small area of the total area and should therefore only be used as a guide as to the likely extent of asbestos present. It is not uncommon therefore for additional ACMs to be discovered during earthwork programmes. Consequently, as a precautionary measure, it is required that any contractor disturbing any made ground at the site provides suitable and sufficient risk assessments and method statements for the potential disturbance of

low level asbestos contamination and an escalation procedure should higher risk bulk ACMs be encountered; such as clearly identifiable original form asbestos insulating board, asbestos insulation, asbestos coating and friable bulk asbestos that's original form is not identifiable.

WSP cannot be held liable for the content of information found in third party reports that may be referenced in this strategy document.

# 2 INTRODUCTION

## 2.1 APPOINTMENT AND BRIEF

WSP understands that National Grid Energy Transmission proposes to undertake groundworks at the site to relocate overhead power lines to below ground. It is further understood that it is the intention to re-use asbestos contaminated arisings by treating them with chemicals that will enhance their stability when backfilling cable trenches.

The east peak site has been split into 3 zones that are illustrated on Drawing PDD-33492-LAY-075A-D

- Zone 1: Trans Pennine Trail. The full extent of the TPT, from the Wogden Foot area in the east, to Dunford Bridge in the west. The area also includes the existing SEC, at the westernmost extent of the WSP surveyed area.
- Zone 2: Wogden Foot. Indicative works area, including the proposed location of the new sealing end compound, and laydown areas, and
- Zone 3: Alternative Trail. This area extends from the Dunford Bridge car park, past the water treatment works and then along the northern banks of the River Don. It culminates at a proposed bridge crossing, on the northern extents of Wogden Foot.

As part of the soil testing undertaken, asbestos has been identified and therefore poses a potential risk to those personnel involved in activities associated with the outlined scope of works that may disturb the ground.

The information within this document has been produced to specifically allow safe working during any ground disturbance works undertaken at the site associated with the aforementioned scope of works.

The Contractor, shall provide all necessary on-site support to manage the asbestos risk with respect to any ground disturbance works which will be undertaken during the course of the works.

This document highlights the overarching arrangements related to asbestos for the site, the proposed works and defines the processes to be implemented, with respect to asbestos only.

The provisions of this document are mandatory for all site personnel who may be involved in any ground disturbance work.

All relevant site personnel will be given a briefing prior to the commencement of any work activities (to be recorded in Appendix C). There will be a Principal Contractor and Contractor induction that will incorporate the requirements of this document.

Task specific Risk Assessments and Method Statements (RAMS) will be designed on a task specific basis. All asbestos RAMS will be reviewed by a competent Asbestos Specialist.

# 3 COMPETENCE

Any reference in this document to competence, competent persons or competent employees is a reference to a person who has received adequate information, instruction and training for the task being done and can demonstrate an adequate and up-to-date understanding of the work, required control measures and appropriate law.

Any person undertaking work beneath existing or demolished structures, or with soil and C&D materials contaminated with asbestos will be an employee, or a self-employed person, who has received adequate information, instruction aand training relevant to the type of project being undertaken.

In addition, a competent person will also be able to demonstrate that they have sufficient practical experience to apply this knowledge effectively.

Evidence of competence for any persons or organisations working on this project shall be documented and made available to National Grid Electricity Transmission or it's approved representatives on request at any stage of the project lifecycle.

# 4 ASBESTOS CONTROLS

## 4.1 IDENTIFIED ASBESTOS CONTAINING SOILS AND DEBRIS

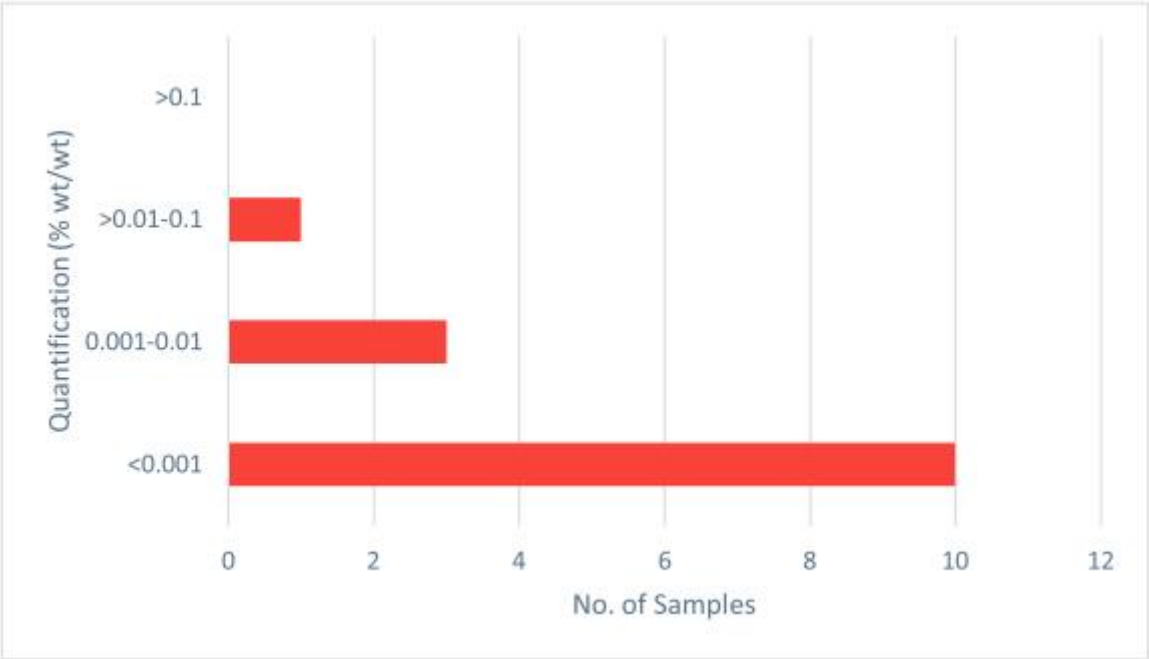
This section summarises the asbestos findings for each zone. These findings should not be seen as exhaustive, there is potential for other ACMs to be uncovered within areas of made ground.

### 4.1.1 *ZONE 1: TRANS PENNINE TRAIL SOIL DATASET (2016-2018) SUMMARY OF ASBESTOS IDENTIFIED IN SOILS & ANALYTICAL DATA*

| Depth (mbgl) | Number of Soil Samples Scheduled for Asbestos Analysis | Number of Soil Samples Where Asbestos Fibres Detected |
|---|---|---|
| 0.0 – 0.2 | 30 | 9 |
| 0.2 – 1.0 | 57 | 3 |
| >1.0 | 28 | 2 |

Asbestos fibres were confirmed within 14 of the 115 No. samples collected within this part of the site, across the two phases of ground investigation works. The asbestos detections are illustrated on Drawings PDD-33492-LAY-076A-D. Nine of the 14 No. detections were reported in near surface soil samples, collected within 200 mm of ground level.

Where asbestos fibres were identified within a sample, full PCOM quantification was completed, and the results of the quantification are summarised below.




Four of the 14 No. samples scheduled for quantification reported asbestos concentrations thatexceeded the analytical limit of detection of 0.001% wt/wt. Seven of the samples contained fibre bundles in soil, and six samples contained loose asbestos fibres. The remaining sample contained ACM debris.

Nine of the soils contained chrysotile fibres (white asbestos), and six samples contained crocidolite fibres (blue asbestos).

Two of the samples exceeded the relevant GAC, as summarised in WSP's interpretive report WSP Visual Impact Provision: Interpretative Geo-Environmental Report 2018 Table 5.3 and illustrated on Drawing PDD-33492-LAY-076B. A full summary of the asbestos quantification results for thisdataset is presented within Table E.1 of the above referenced interpretive report.

Zone 1 Asbestos GQRA Results

| Sample Location | Sample Depth (mbgl) | Fibres Identified | Quantification (% wt/wt) | GAC |
|---|---|---|---|---|
| HP403 | 0.1 | Crocidolite | 0.0113 | 0.001 |
| HP418SR | 0.0 – 0.1 | Chrysotile, Crocidolite | 0.0087 | 0.001 |

### 4.1.2 *ZONE 2: WOGDEN FOOT SOIL DATASET (2016-2018) SUMMARY OF ASBESTOS IDENTIFIED IN SOILS & ANALYTICAL DATA*

| Depth | Number of Soil Samples Scheduled for Asbestos Analysis | Number of Soil Samples Where Asbestos Fibres Detected |
|---|---|---|
| 0.0 – 0.2 | 38 | 2 |
| 0.2 – 1.0 | 13 | 1 |
| >1.0 | 13 | 0 |

Asbestos fibres were confirmed within three of the 64 No. samples collected within Wogden Foot across the two phases of ground investigation works. Fragments of suspected asbestos containing materials were also reported at 2.6 mbgl in trial pit TP125, during the 2016 ground investigation.

The three asbestos detections are illustrated on Drawings PDD-33492-LAY-076C-D. Two of the three detections were reported in near surface soil samples, collected within 200 mm of ground level. However, PCOM quantification confirmed that asbestos concentrations within these three samples were below the analytical limit of detection (0.001% wt/wt).

Two of the samples contained chrysotile fibres, either as loose fibres in soil or as ACM debris. The third sample (from trial pit TP125) contained loose crocidolite fibres.

None of the 64 No. samples collected in Wogden Foot exceeded the relevant GAC for asbestos. A full summary of the asbestos quantification results for this dataset is presented within Table E.2 of the above referenced interpretive report.

### 4.1.3 *ZONE 3 ALTERNATE TRAIL SOIL DATASET (2016-2018) SUMMARY OF ASBESTOS IDENTIFIED IN SOILS & ANALYTICAL DATA*

There were no visual observations of asbestos fibres or ACM debris during the soil sampling works along the alternate TPT route. However, three fragments of suspected asbestos cement were identified on the alternate trail during the RMS bulk sampling works, north of the River Don (near the Twin culvert). Two of the samples were confirmed as being asbestos cement, containing chrysotile fibres.

The combined soils dataset for the alternate trail comprises a total of 40 No. samples, collected from 19 No. exploratory hole locations excavated during the 2016 and 2018 ground investigations. The sample locations are illustrated on Drawings PDD-33492-LAY-074A-D, and the depth profiles of the samples are detailed below.

| Depth | Number of Soil Samples Scheduled for Asbestos Analysis | Number of Soil Samples Where Asbestos Fibres Detected |
|---|---|---|
| 0.0 – 0.2 | 14 | 1 |
| 0.2 – 1.0 | 14 | 2 |
| >1.0 | 12 | 0 |

Asbestos fibres were confirmed within three of the 40 No. samples collected within this part of the site, across the two phases of ground investigation works. The asbestos detections are illustrated on Drawings PDD-33492-LAY-076A-C.

Only one of the three detections was reported in the near surface (within 200 mm of ground level). PCOM quantification confirmed that fibre concentrations within all three asbestos containing soils were below the analytical limit of detection (0.001% wt/wt).

Two of the samples contained loose chrysotile fibres, and the remaining samples contained loose crocidolite fibres.

A full summary of the asbestos quantification results for this dataset is presented within the WSP report entitled Visual Impact Provision: Supplementary Ground Investigation Vactual Report 2018 and the Factual Ground Investigation WSP November 2016.

Asbestos fibres were confirmed within three of the 40 No. samples collected along the alternate TPT, but only within one shallow / surficial sample. Asbestos quantification results were all below the limit of detection (0.001% wt/wt), and none of the samples exceeded the relevant GAC. However, the RMS bulk sampling works confirmed the presence of asbestos cement debris along the proposed route of the alternate trail. Asbestos removal works are therefore recommended in this part of the site, prior to the use of the alternate trail by the general public.

### 4.1.4 *ASBESTOS IDENTIFIED DURING WALK OVER OF EXISITING AND PROPOSED TRIAL LOCATIONS*

In addition to the ground investigations undertaken, as detailed above, investigations were undertaken to identify any bulk asbestos containing materials to surfaces areas along the existing trial and also the proposed trail. Three instances of asbestos containing materials were identified during the course of the investigation, as detailed below.

| Location | Description | Sample Reference | Asbestos Identication |
|---|---|---|---|
| Existing trail – Location 005 – SE16876, BNG 02523<br><br>Elevation 283m | Asbestos Cement | 62100737/MC001 | Chrysotile |
| Proposed trail – Location 011 – SE16553, BNG 02484<br><br>Elevation 285m | Asbestos Cement | 62100737/MC002 | Chrysotile |
| Proposed trail – Location 011 – SE16507, BNG 02482<br><br>Elevation 284m | Asbestos Cement | 62100737/MC004 | Chrysotile |

Further information on the materials identified can be found within the Bulk Sampling Report within appendix D of the WSP Visual Impact Provision: Interpretative Geo-Environmental Report 2018.

### 4.1.5 *LIMIT OF QUANTIFICATION OF ASBESTOS AND DEFINITION OF 'TRACE ASBESTOS' AS APPLIED TO SOIL AND C&D MATERIALS AND THEIR PRACTICAL IMPLICATIONS*

CAR2012 applies to all materials where asbestos is present in more than trace amounts.

Analysis of soil and/or C&D materials in accordance with the Blue Book1 method requires prior identification analysis by the asbestos identification method described in HSG248. The limit of quantification of the Blue Book method is given as 0.001% asbestos w/w, based on a practical limit of detection of 0.0001%.

For samples of soil and C&D materials where no fragments of ACM are isolated and fewer than three asbestos fibres are identified during detailed and extended identification and gravimetric analysis procedures combined, the mass concentration of asbestos fibre is likely to be many orders of magnitude below 0.0001% w/w and will be taken to mean 'trace asbestos fibre contamination'.

In such circumstances, therefore, on the basis of potential risk from exposure to such trivial concentrations of asbestos in the external environment is likely to be very low to negligible, it is practical to conclude that such material, whilst containing very few isolated asbestos fibres, is not strictly speaking and ACM that falls under the definition of asbestos in CAR2012.

It is practical to conclude, therefore, that whilst containing isolated or trace asbestos fibres or isolated (exceptional) or random (odd, unusual or unexpected) individual pieces of ACM, work on sites affected by such soil and/or C&D materials might fall outside the scope of CAR2012, though this will be dependent on what is considered reasonably practicable in each case, assuming that a suitable and sufficient investigation and assessment of the site has been carried out.

In practice, however, samples of soil and C&D materials recovered from brownfield sites may exhibit a wide range of concentrations of asbestos contamination. Due consideration should be given, therefore, to the interpretation of any such trace concentrations confirmed in samples in the wider context, where other samples are found to contain much higher concentrations of asbestos. Judgements on the nature, degree and significance of contamination should never be made on the basis of individual samples of asbestos alone.

1 This 'Blue Book' method describes the quantification of the mass of asbestos in soil, construction materials and products, or associated materials, using a gravimetric method for ACM and fibre bundles, plus dispersion and fibre counting for free fibres using Phase Contrast Microscopy, including calculations for the concentration of Total Fibres and Regulatory Fibres as counted using Annex 1 of HSG248, as appropriate. This so-called 'Blue Book' method is suitable for quantifying asbestos in these materials for the purpose of evaluating potential human health risk functions and to inform waste classification of discarded materials.

## 4.2 GENERAL

In all circumstances where work of any nature is to be undertaken at a site, there is a need to assess the potential for human health exposure risks to those who may be involved directly or indirectly with the project programme.

All employers have a duty to provide a safe working environment for their employees and this requires them to assess and manage any potential asbestos risk. The key issues to be assessed are as follows:

- Is there a risk of asbestos being present at the site?
- Is there a risk of any release of asbestos fibres into the air?
- Is there a risk of any such release exceeding the Workplace Exposure Limit?

It is anticipated that specific work tasks/activities encompassed within the following key stages will involve, or will potentially involve, working with ACMs and/or asbestos contaminated made ground material:

## 4.3 CHARACTERISATION OF WORK - COMPLIANCE WITH REGULATION 3 OF CAR

Work with asbestos includes any work that is liable to disturb asbestos on or in the land or in construction and demolition materials, including the excavation, conveying, loading, processing etc. of soil and construction and demolition materials contaminated with asbestos fibres or ACMs, as well as any ancillary work and any supervision of such work.

### 3.1.1 Deciding if the work is Licensable

First and foremost, employers need to consider whether the proposed work on soil or C&D materials contaminated by asbestos meets the criteria set out in the definition of licensed work in CAR Regulations 2(1)(a) and (b). If it does, a licence will be required in all cases.

The nature of the form of asbestos and ACMs encountered on a brownfield site will have implications for the application of the licensing regime set out in CAR 2012. The position regarding ACMs in soils is that work will be licensed if it involves material described as 'clearly identifiable' 'original form' asbestos coatings (excluding textured decorative coatings), and almost certainly licensed if it involves:

- material/debris described as asbestos insulation, or
- material/debris described as asbestos insulating board (AIB).

Original form' ACMs, can occur on brownfield sites as a result of illegal dumping of asbestos that has been removed from buildings during refurbishment or prior to demolition. Asbestos in this form may have been tipped on the surface of the site, or it may have been buried. It may be contained in UN-approved waste packaging, or not. Either way, the key factor is that the material is clearly identifiable as asbestos coatings (as defined in regulation 2), thermal insulation or insulating board products that were used in construction.

Guidance in ACoP L143 states that, debris containing asbestos is also covered by the Regulations. If the debris contains raw asbestos, asbestos coating, asbestos insulation or AIB, even where it is not fulfilling its original purpose, i.e. the asbestos materials may no longer be coating or insulating anything, a Licensed Asbestos Removal Contractor is required to carry out the work, unless it does not meet the conditions in the definition of licensed work in regulation 2(1).

It is given fact that any ACMs that are encountered in the ground mixed in soil, or entrained in C&D materials, will not be fulfilling their original purpose.

For materials contaminated with all other ACMs, the decision on whether the work on the material is licensed or not will be dependent, in most circumstances, on the potential degree of exposure to airborne fibres caused by the work activity. Again, where the exposure to asbestos of employees from working on these ACMs is unlikely to be sporadic and of low intensity (SALI) and where the risk assessment cannot clearly demonstrate that the control limit will not be exceeded, the work will be licensed work.

The potential airborne fibre release from fragments of fibrous materials and/or dispersed debris that may originally have been asbestos insulation or AIB and which occur in soil and C&D materials, is likely to be lower, possibly even by several orders of magnitude than airborne fibre releases from equivalent ACMs encountered in buildings. It does not automatically follow, therefore, that work on soil and C&D materials contaminated by such fibrous debris will always be licensed work.

Justification for this position is provided on the basis that the materials may be intrinsically bound up in wetted host materials and work on the material would not meet the requirements of regulations 2(1)(a) and (b) regarding licensed work.

Specifically, this is likely to be the case where the ACM is considered to be loose fibrous asbestos 'debris', where exposure to asbestos of employees is SALI and where the risk assessment can clearly demonstrate that the control limit will not be exceeded.

Conversely, such a position would not be expected to apply in the case of work on clearly identifiable insulation or AIB, where the potential risk is likely to be much greater and where the exposure to asbestos

of employees is unlikely to be SALI and where the risk assessment cannot clearly demonstrate that the control limit will not be exceeded.

'Clearly identifiable original form' is taken to mean that it is possible for a trained and competent person to identify the type of material presumed to be ACM from its appearance in situ on site.

It may be possible to state that a material is clearly identifiable as a coating if, for example, it is found to be attached to a substrate where it is possible to conclusively state that the material was likely to have served as a surface coating as may typically have been used for fire protection purposes or as heat and/or sound insulation.

Likewise, a material is clearly identifiable as insulation if, for example, it is found to be attached to a pipe or vessel where it is possible to conclusively state that the material was likely to have been used for thermal insulation.

For a material to be clearly identifiable as asbestos insulating board (AIB), consideration would have to be taken of the nature and form of the material as encountered. A large intact sheet of material that bore the typical characteristics of AIB would be more readily 'clearly identifiable 'original form' AIB than small broken fragments of asbestos sheet material.

It is unlikely that the determination of whether a material is clearly identifiable original form asbestos coating, asbestos insulation or AIB can be made solely on the basis of a laboratory analysis of a small sample, as the material will not be in context.

Whilst presumptions regarding the form of material may be made on site, the presence of asbestos in all suspected ACMs must be confirmed by laboratory identification.

It should be noted that the type of asbestos fibre present is not a factor for consideration when determining whether work is licensed or not.

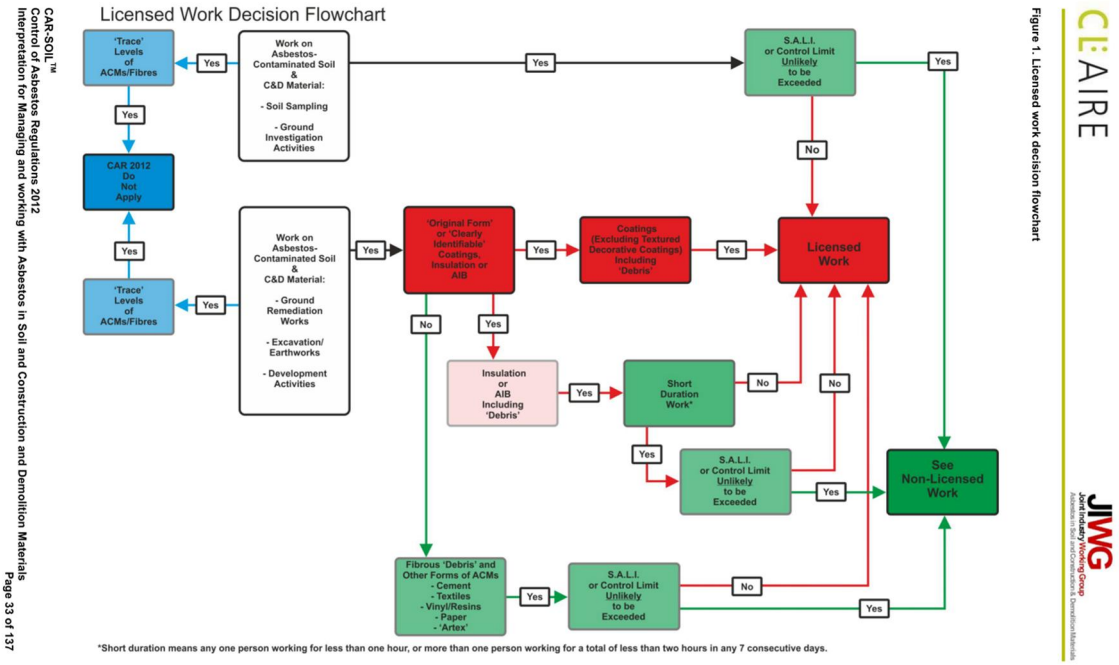



Figure 1: Licensed work decision flowchart

CARSOIL provides further guidance for assessment based on the quanitification of asbestos fibres within soils and these may be used in the Work Category Assessment Decision support tool that is available for free download on the link below; the file needs to be unzipped before use.

https://www.claire.co.uk/component/phocadownload/category/36-asbestos-in-soil?download=549:jiwg-dst-work-categories-decision-support-tool

For the purposes of definition of quantities, reference is made to the following mass concentration descriptors in the Work Category Assessment Decision Support Tool:

- Large - 0.1% wt/wt
- Moderate - 0.05% wt/wt to <0.1% wt/wt
- Low - 0.01% wt/wt to <0.05% wt/wt
- Very Low - 0.001% wt/wt to <0.01% wt/wt

These mass concentrations relate to the amount of asbestos fibre estimated to be present in selected ACM/fibre type as a mass percentage of the host matrix material, detected in samples submitted for quantification analysis.

The highest concentration of asbestos sampled and quantified on the site is 0.206% and refers to asbestos cement debris withing the soil sample. If the work involves large or moderate quantities of loose dispersed fibrous asbestos 'debris' and/or asbestos sheeting/board 'debris', it is likely that the work would be NNLW,

provided that the Control Limit/STEL will not be exceeded. This would apply to debris comprising material of uncertain/original use that may not be positively described as being asbestos coating, insulation or AIB.

Note that it is imperative to consider the extent of contamination found to be present in individual samples in the context of that which may be found to be present and distributed over the wider site in assessing the overall degree of contamination present.

For the purposes of the assessment of the degree of distribution of asbestos contamination over the wider site, reference is made to the following descriptors in the JIWG Work Category Assessment Decision Support Tool:

- No visible contamination by ACMs
- Occasional/random occurrences of visible contamination by ACMs
- Sporadic/random occurrences of visible contamination by ACMs
- Moderate levels of visible contamination by ACMs
- Moderate/frequent occurrences of visible contamination by ACMs
- Gross/very frequent occurrences of visible contamination by ACMs

https://www.claire.co.uk/component/phocadownload/category/36-asbestos-in-soil?download=575:jiwg-receptor-ranking-dst-final-version-2-1

For notifiable non-licensed work, the Principal Contractor is required to ensure that mandatory actions are complied with, in addition to the other relevant requirements of CAR before work commences.

The additional mandatory actions include the following:

- Notification to HSE (ASBNNLW1)
- Restricting Access: the area of work must be designated as an asbestos area (Regulation 18 CAR 2012)
- Appropriate Medical & Record Keeping: personnel must not carry out NNLW unless they have already undertaken medical examinations. The Contractor must keep exposure records/health records of those personnel who undertake NNLW for 40 years

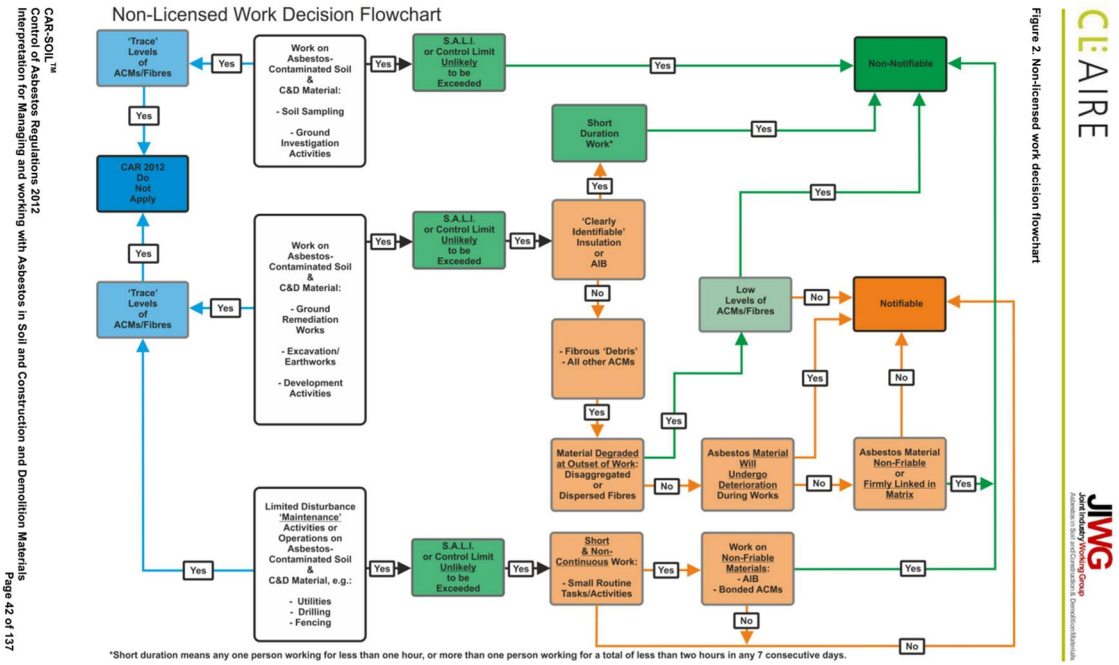



Figure 2: Non-licensed work decision flowchart

For clarification:

- ‘Degraded’ means the material is damaged or in poor ‘as found’ condition. Broken fragments of ACM do not constitute degraded material, if they are intact and the fragments are in good condition;
- ‘Deterioration’ during removal constitutes the materials’ matrix being destroyed or broken while the asbestos containing soil (ACS) is being worked with; and
- ‘Debris’ as referenced in CAR.

Apart from clearly identifiable asbestos coatings, insulation and AIB, work on all other asbestos materials including asbestos cement products, textured decorative coatings, textiles, paper, gaskets and many others generally does not require a licence, but the workers must be trained and competent, and appropriate measures must be used to eliminate asbestos exposure or reduce it to as low as is reasonably practicable.

Where circumstances arise that have not been addressed in the Plan of Work, e.g. when the work being carried out is NLW or NNLW and licensed materials are encountered, work should not restart until a new Plan of Work is drawn up or until the existing plan is amended. This may mean that the work may have to continue to be carried out by a different (licensed) contractor, if a LARC has not already been engaged to undertake the work.

## 4.4 RISK ASSESSMENT - COMPLIANCE WITH REGULATION 6 OF CAR

Prior to the commencement of any works where there is a potential for ACMs to be disturbed (disturbance of the made ground), an assessment of risk is required. The person undertaking the Risk Assessment must be competent to do so in line with Regulation 10 of CAR.

The person that carries out the risk assessment must:

- carry it out in time to comply with the Regulations and enable appropriate precautions to be taken before work begins;
- make sure the assessment is job-specific and considers the full scope of the work;
- establish the extent of potential risks and who could be affected;
- identify the steps taken to remove the risk or, if that is not possible, to reduce the risk;
- record significant findings in writing (electronic or paper);
- communicate significant findings to employees and anyone else who could be affected in an understandable way, as appropriate, to minimise risks to them or to take appropriate precautions to reduce/remove the risk before work begins;
- review the assessment regularly and update it as required.

Suitable and Sufficient Risk Assessment

To be suitable and sufficient, the risk assessment should include:

- for non-licensed work, a statement of why the work meets the criteria for non-licensed rather than licensed work, and whether it is NNLW;
- a description of the work being carried out and the expected scale and duration;
- a description of the type(s) of asbestos and results of any survey, investigation or analysis or a statement that the assumption is that the asbestos is not chrysotile alone;
- a description of the nature of the asbestos and its distribution, type and condition.
- A description of work including type and duration;

Details of expected exposures should be recorded and include:

- data on the concentration of asbestos fibres likely to be present, including the source for this information;
- whether they are liable to exceed the control limit and the number of people likely to be affected;
- the level of expected exposure, so that suitable personal protective equipment (PPE) and respiratory protective equipment (RPE) can be selected;
- whether anyone other than employees may be exposed, and their expected exposures;
- whether intermittent higher exposures may arise and their expected frequency and duration;
- any results already available from air monitoring carried out in similar circumstances and/or during similar types of work activity.

The steps to take to control exposure to the lowest level reasonably practicable should also be recorded, e.g.:

- the type of controlled wetting and method of application;
- the use of low intensity work methods;
- using local exhaust ventilation (LEV) – if applicable.

The risk assessment should also include:

- the steps taken to control asbestos releases into the environment, e.g. the use of controlled demarcation zones, or external reinforced enclosures with negative pressure; together with entry and exit procedures (if special circumstances require this);
- where it is not considered practicable to use enclosures, which may be in the majority of cases on open land, the risk assessment should set out in detail why this is justified, as well as provide clear advice on what action to take if there is an accidental release;
- details of the personal decontamination procedures for personnel, including using personal hygiene units where appropriate;
- details of the procedures for transferring and removing waste from site, including contaminated tools and equipment;
- details of the decontamination procedures for any plant and vehicles involved in the
- works and which are at risk of becoming contaminated by asbestos;
- procedures for the selection, provision, use and decontamination or disposal of PPE/RPE;
- procedures for dealing with emergencies;
- any other information relevant to safe working practices, such as other significant non-asbestos hazards like working around heavy plant, machinery and vehicles or working in excavations;
- measures to keep the other (non-asbestos) workers and the general public away from the asbestos work area(s);
- management arrangements for ensuring that risks are adequately controlled during work.

The findings of the risk assessment as detailed above are all deemed to be significant and must be recorded, as required by regulation 6(1)(b), and available on site always.

Reviewing assessments

The Principal Contractor should review risk assessments as part of the ongoing management of their health and safety systems to make sure they are still relevant and reflect any lessons learned from what has gone well and what has not. A competent person should conduct the review. A specific review should take place if:

- methods used to control fibre release change;
- there is doubt about the efficiency of control measures;
- there is a significant change in the type of work, amount of asbestos or method of work;
- the results of air monitoring indicate the exposure levels to be higher than previously assessed.

Where monitoring of exposure levels, or other information gathered during the course of work indicates that the initial assessment was wrong about either the duration of the task or nature of the materials:

- immediately review the assessment and control measures and whether the nature and
- extent of the exposure means that the work should be done using different methods and equipment;
- review whether the work needs to be done by a licensed contractor;
- record any changes made to the risk assessment (the revised assessment must be available on site at all times).

## 4.5 PLANS OF WORK (METHOD STATEMENT) - COMPLIANCE WITH REGULATION 7 OF CAR

The plan is the record of how senior managers/directors want the job to be done. Its main purpose is to guide site work and an up-to-date copy must always be on site. It also demonstrates that they have considered the significant risks and how to address them.

Work must not take place unless a copy of the Plan of Work is readily available on site. Employees must be informed of the contents of the plan and be instructed on the work methods and controls to use. A copy should also be kept at the head office, so management can effectively monitor performance. Access to general procedures should also be available at site level, either as paper copies or electronically. The plan should be kept updated to reflect any subsequent changes to the work.

The Plan of Work must also be shown to anyone who needs to see it, including those carrying out inspections of the works and/or air monitoring. It should also be available on request to employees, safety representatives and other elected representatives of employee health and safety, as well as others who may be affected by the work.

In order for a Plan of Work to be deemed suitable and sufficient it must include, as a minimum:

- the nature and probable duration of the work;
- the number of people involved in the work;
- the address and location where the work is to be carried out;
- the methods to be used to prevent or reduce exposure to asbestos, e.g. prevention and control measures and arrangements for the handling and disposal of asbestos waste;
- the type of equipment, including PPE and RPE, used for:
    - protecting and decontaminating those carrying out the work;
    - protecting other people present at or near the worksite.
    - the nature and probable duration of works;
    - the method(s) to be used to prevent or reduce exposure to asbestos, permit to dig etc;
    - the supervision & monitoring of the works;
    - type of equipment used for protection and decontamination of those employees carrying out works and the equipment used;
    - detailed excavation/soil disturbance techniques;

- detailed site layout showing location of ACMs, location of welfare and any areas of restricted access and/or respirator zones, site access/egress controls, and traffic routes;
- a full list of organisations, contacts and telephone numbers.

The Principal Contractor shall ensure, so far as is reasonably practicable, that the work to which the plan of work relates is carried out in accordance with that plan of work and any subsequent written changes to it.

## 4.6 LICENSING OF WORK WITH ASBESTOS – COMPLIANCE WITH REGULATION 8 OF CAR

Before any work on Licensed ACMs commences an employer must hold a HSE licence for working with asbestos. This must be in line with the application and notification requirements.

It may be judged at the outset that the site works will fall under the Notifiable Non-Licensed Works category and therefore a Licence to work with asbestos is not required. However a Licensed asbestos removal contractor may be engaged during specific phases of the works to provide additional competence.

A Licensed Contractor must be engaged at the site should a review of existing risk assessments and working methods indicate a change of work category from NNLW to Licensable work, triggers for this may include the following:

- Higher than expected airborne fibre levels generated when making proper use of control measures, i.e. the Control Limit or STEL is likely to be breached.
- When bulk ACM in the form of Coatings are encountered.
- When bulk ACM are discovered that include, Insulation or Insulating Board in anything other than very small quantities

## 4.7 NOTIFICATION OF WORK WITH ASBESTOS – COMPLIANCE WITH REGULATION 9 OF CAR

Prior to undertaking licensed work, the appropriate enforcing authority must be notified with details of the proposed work at least 14 days before work starts. This enables the enforcing authority to assess the proposals for carrying out work with asbestos and, if appropriate, to inspect the site either before or during the work.

Although the requirement is to notify the relevant enforcing authority office in writing at least 14 days before any licensed work begins, the enforcing authority may allow a shorter period, e.g. in an emergency where there is a serious risk to the health and safety of any person. This shorter period is known as a 'waiver' or ‘dispensation’.

It is highly unlikely, however, that waivers would be granted for most types of activities on soil and C&D materials contaminated with asbestos covered by this guidance. Such activities are usually longer-term, well-planned activities. Waivers would probably only be considered by the enforcing authority in

exceptional circumstances, e.g. or emergency clear up after a flood, clear up of unintended releases of ACMs, etc.

Since most, if not all, of the types of activities on soil and C&D materials contaminated with asbestos covered by this guidance would be classed under the category 'construction' which includes remediation, the relevant enforcing authority will be the Health and Safety Executive.

The Licensed Asbestos Removal Contractor must inform the enforcing authority in writing if there are changes to the work that might affect the particulars of the notification.

Normally each individual licensed job should be notified to the enforcing authority. However, a single notification of licensed asbestos work may be submitted to the enforcing authority for work likely to be regularly repeated on the same site. If there are several distinct sites, a separate notification is required for each of them. Any other subsequent work not covered in the original notification will need to be separately notified.

For Notifiable Non-licensed Work - Employers who plan to carry out NNLW must notify the work using the online notification form for notifying HSE. Notification must be made before the work begins.

Notifications must only be made using the online notification form ASB NNLW1 at:

https://extranet.hse.gov.uk/lfserver/external/asbnnlw1

NOTES

- there is no stipulated minimum prior notice period, but they should notify before work starts;
- work may proceed once notification has been submitted, no permission for work to proceed is required;
- an acknowledgment PDF copy of your notification will be provided electronically and should be kept with other documentation (such as the Plan of Work) relating to the activity;
- for a long-term project of work involving multiple jobs in one localised area the whole project should be notified once;
- Licensed asbestos contractors are required to notify both licensed and NNLW work.
- there is further guidance on the online notification form itself.

The decision as to whether to notify particular NNLW or not may in certain cases depend entirely on the condition of the ACM on site and will be a matter of judgement and opinion. A person with sufficient experience and knowledge, who has been trained according to regulation 10, and who will be able to show their decision was reasonable, should make the decision.

## 4.8 INFORMATION, INSTRUCTION AND TRAINING - COMPLIANCE WITH REGULATION 10 OF CAR

It must be ensured that the following information, instruction and training are provided to all persons involved in the infrastructure, building and post development control phases, where they are involved in the disturbance and/or movement of made ground or the placement of cover layer or the installation of suitable and sufficient perimeter segregation barriers:

- Significant findings of risk assessment and site investigations;
- An increased awareness of the nature and properties of asbestos and its effects on health;
- Familiarity with the types, uses and likely occurrences of asbestos in soils;
- An understanding of how to avoid the risks from asbestos by understanding:
    - Where to obtain information on asbestos in soils prior to commencing work;
    - What to do if suspicious materials are discovered;
    - How to use appropriate workplace precautions, including the risk assessments and training requirements under CAR 2012;
    - How to seek advice on workplace precautions, in respect of the risks of asbestos;
    - How to undertake work activities in a safe manner and without risk to themselves or others.
- An awareness of the general legislation in relation to Health & Safety and asbestos in particular;
- Procedures following unintentional contact with Asbestos Containing Materials;
- An understanding of the appropriate emergency arrangements; and
- The relevant Control Limit.

Groundworkers engaged at the site must have been in receipt of asbestos awareness training that will have covered the following topics:

- An increased awareness of the nature and properties of asbestos and its effects on health;
- Familiarity with the types, uses and likely occurrences of asbestos in soils;
- An understanding of how to avoid the risks from asbestos by understanding:
    - Where to obtain information on asbestos in soils prior to commencing work;
    - What to do if suspicious materials are discovered;
    - How to use appropriate workplace precautions, including the risk assessments and training requirements under CAR 2012;
    - How to seek advice on workplace precautions, in respect of the risks of asbestos;

In addition to asbestos awareness, for those engaged in non-licensed asbestos works, the following topics will be covered:

- RPE inspection, fitting, usage and limitations
- Personal decontamination techniques
- Control measures to reduce fibre release.
- Procedures to be followed when working in asbestos areas (no smoking, eating, drinking)
- Waste handling
- Relevant RAMS to which they are working.
- Specific training for any plant being utilised.
- Emergency procedures following discovery or disturbance of bulk asbestos in the form of insulation, insulating board and coating (or visibly identifiable debris from those products.

For Licensable work, training in accordance with Regulation 10 must have been undertaken in accordance with the licensed contractors' own policies and procedures.

It is also recognised that contamination of land by a potentially wide range of other substances in addition to asbestos may be an important consideration on any particular site. Asbestos risks, therefore, cannot be considered in isolation and appropriate levels of training, skills and practical experience may have to be available to cover such additional contamination risks.

Training for Supervisors, Managers and Directors

- To help employers comply with their legal duties under the Regulations, additional training, at an appropriate level, should be given to supervisors, managers and directors, so that they can effectively carry out their role on site. This should include:
- their responsibilities for directing, supervising and monitoring all aspects of work on site, including health and safety, particularly the importance of making sure employees and others follow the procedures, controls and preventative measures set out in the Plan of Work and risk assessment;
- the importance of the supervisor being on site at all key stages of the work (witnessing the smoke test, if applicable, ensuring that the personal hygiene facilities are fully operational before work starts, ensuring signs and barriers are correctly erected, carrying out daily checks) to ensure that it is done safely;
- how to produce and implement plans of work that set out the appropriate procedures, controls and preventative measures based on the assessment, including how and when to update plans of work;
- how and when to notify the appropriate enforcing authorities that work is taking place and about situations where re-notification is necessary;
- how to deal with situations where the methods set out in the Plan of Work cannot be followed, due to a change in circumstances and a revision to the plan is needed;
- the application of suitable emergency procedures if controls fail;

Information and instruction for non-employees

Employers who are working with asbestos on contaminated sites have a duty to make sure, so far as is reasonably practicable, that adequate information and instruction is given to those persons not employed by them, who may be working on site and could be affected by the work. The information provided should include details of:

- the location(s) where work is taking place, so people can avoid it/them;
- possible risks from rearranging thoroughfares and fire exits as a result of the work;
- any other information to help people avoid risks from the disturbance of ACMs caused by the work being done.

Evidence of the above training is to be retained on-site for the duration of the works.

NOTE: There is no legal requirement for employees to be issued with or possess a certificate of training before they can work with asbestos. Many external training providers, however, issue trainees with certificates to indicate completion of a training course. A certificate is not proof of competency to do the job, but where issued, a certificate is an indication that training has been received and may be kept as part of an individual's training record.

## 4.9 PREVENTION OR REDUCTION OF EXPOSURE TO ASBESTOS - COMPLIANCE WITH REGULATION 11 OF CAR

There is a requirement to prevent the exposure of employees to asbestos so far as is reasonably practicable. If it is not possible to prevent exposure, this must be reduced by methods other than Respiratory Protective Equipment (RPE).

Non-licensed work should be carried out using the most effective low intensity method or combination of low intensity methods which minimises fibre release and so reduces exposure to the lowest levels reasonably practicable. Low intensity methods may be coupled with the use of controlled wetting using atomiser sprays as appropriate, in order to further reduce exposure levels and to prevent the potential spread of asbestos.

The use of Control Measures will be determined by the outcome of the risk assessment developed by the Principal Contractor however, measures are likely to include:

- All persons to undertake excavation work in closed cabin excavators;
- All persons to undertake movement of materials in closed cabin vehicles;
- Tool box talk prior to commencement of works;
- Provision of a competent person on site to act as a watching brief to visually assess made ground materials for asbestos materials;
- Asbestos exclusion area and subsequent relocation areas to be quarantined from the rest of the site utilising a suitable and sufficient segregation and wind reduction barrier;
- Excavation areas to be quarantined from the rest of site using barrier tape and warning signs where required;
- Appropriate fibre suppressant methods for wetting down materials during excavation and subsequent movement of materials. Studies have demonstrated that the addition of 10% of water to soil or suitable suppressant decreases the risk of the potential release of asbestos in to the air by a factor of between 2 and 10. Locations commonly identified on sites as having this potential are excavations, intrusive hole locations, spoil, areas where any hard surfacing is removed, vehicle routes passing between soft ground and hard standing, open skips and muddied boots and clothing;
- Decontamination procedures;
- Adoption of suitable PPE/RPE;
- Waste handling procedures; and,
- Emergency procedures.

In addition to the above Control Measures, the risk assessment should highlight the need for Personal and Respiratory Protective Equipment (RPE & PPE) during work with ACMs:

- P3 high efficiency particulate filtered respirators in accordance with HSE guidance note HSG53; and,
- Type 5/6 Coveralls or equivalent coverall suitable for working with asbestos fibres i.e. resistant to penetration by dust and fibres.

The number of both employees and others who might be exposed to asbestos at any one time must be kept to as low as reasonably practicable.

In addition to the use of Control Measures, CAR2012 requires that the effectiveness of these Controls Measures to be continually assessed to ensure their suitability.

Maintaining and decontaminating equipment and plant contaminated with asbestos

Where there is a risk of asbestos fibre release or spread of asbestos, all decontamination and maintenance of equipment contaminated with asbestos must be done under controlled conditions. This should be done by a trained, competent person, in accordance with a written risk assessment and the Plan of Work.

When an item of asbestos control plant (such as air extraction equipment, class 'H' vacuum cleaner (BS 8520-3:2009)) that has been used in relation to any work on asbestos-contaminated soil and/or C&D materials, e.g. for controlling fibre levels in enclosures or for personal decontamination, or other decontamination or control tasks on site), needs to be stripped down, it should be carried out within an asbestos work area, permanently set aside, which is under negative pressure and which is connected to a dedicated personal hygiene facility by an airlock system. Where this work is done on site, it must be done inside an enclosure.

There may also be an issue regarding large non-asbestos control plant and vehicles used for handling contaminated soils in bulk – these should be cleaned and maintained in such a way that those carrying out the work are not exposed to asbestos.

To establish how contaminated equipment and plant is may require the help of an accredited asbestos analyst, especially if there has been an excessive amount of disturbance of the ACM or disturbance of asbestos coatings, insulation and/or AIB, as well as significantly damaged asbestos cement.

The release of asbestos fibres during decontamination of plant and vehicles may be effectively controlled by carrying out an initial visual inspection to ensure that wheels, tracks etc. are free from visible fragments which should be manually picked and double-bagged.

The person carrying out the visual inspection should be competent and have appropriate training, PPE and face-fitted RPE.

Further decontamination may be achieved by the use of a class 'H' vacuum cleaner (BS 8520-3:2009), or by washing down. This will be dependent on the type of equipment used.

When wet methods are employed for decontamination of plant and equipment contaminated with asbestos, due consideration should be made of the possibility that asbestos contamination may be spread from plant and equipment to the surrounding environment.

Robust measures should be designed and implemented to reduce the potential for the spread of asbestos and to ensure that compliance is maintained with respect to any conditions imposed on the work site designed to avoid pollution of any watercourses and/or the public surface water sewage system.

Likewise, when wet methods are employed for decontamination of vehicles that may be contaminated with asbestos prior to them leaving site onto the public road network, appropriate systems should be put in place to ensure that washings are contained and dealt with appropriately in order to reduce the potential for the spread of asbestos.

Practical guidance on the decontamination of asbestos-contaminated vehicles and plant has been produced by the Health and Safety Executive for Northern Ireland (HSENI).

## 4.10 USE OF CONTROL MEASURES - COMPLIANCE WITH REGULATION 12 OF CAR

The Principal Contractor will be responsible for outlining and implementing procedures to ensure that all reasonable steps are taken to ensure control measures are properly utilised or applied and are not made less effective by other work practices or other plant/machinery. These procedures should include:

- Regular checks;
- Prompt action when a problem/issue is identified.

As an integral part of the general duties imposed by regulation 12(2), every employee should in particular:

- Use control measures as intended;
- Follow carefully all the procedures set out in the Risk Assessment and Plan of Work;
- Maintain a clean workplace;
- Eat, drink and smoke only in designated areas;
- Report any defects concerning control measures to the appropriate nominated person(s).

## 4.11 MAINTENANCE OF CONTROL MEASURES - COMPLIANCE WITH REGULATION 13 OF CAR

The Principal Contractor will be responsible for outlining and implementing procedures to ensure all equipment to be utilised, as documented in the Plan of Work, should be maintained in an efficient state, in efficient working order, in good repair and in a clean condition and maintained in a good working order.

In addition the Principal Contractor will outline procedures to ensure that any safe systems of work, supervisory protocols and any other measures are reviewed at suitable intervals and revised if necessary.

Employers must draw up maintenance procedures for all control measures and PPE. These should also cover the equipment used for cleaning, washing and changing facilities and the controls used to prevent the spread of contamination. The procedures should make it clear which control measures require maintenance, when and how to carry this out and who is responsible for doing it.

In particular, maintenance is required for:

- enclosures (if required), including any reinforcing/protection measures, e.g. scaffolding, close-boarding;
- air extraction equipment, e.g. Negative Pressure Units;
- dust suppression equipment, e.g. low pressure sprays, airless sprays, high-efficiency diffusers;
- personal decontamination/hygiene facilities; fixed and/or mobile;
- equipment and systems used for decontamination of plant and equipment, including vehicles;
- class ‘H’ vacuum cleaner (BS 8520-3:2009);

- disposable and non-disposable RPE, including storage.

## 4.12 PROVISION AND CLEANING OF PROTECTIVE CLOTHING - COMPLIANCE WITH REGULATION 14 OF CAR

The Contractor will be responsible for outlining and implementing measures to ensure that any protective clothing provided is disposed of as asbestos waste and removed from the premises in a sealed container labelled as a product containing asbestos.

## 4.13 ARRANGEMENTS TO DEAL WITH ACCIDENTS AND INCIDENTS - COMPLIANCE WITH REGULATION 15 OF CAR

The Principal Contractor will be responsible for outlining and implementing measures to ensure that in the event of an incident involving the unplanned release of asbestos at the workplace, immediate steps can be taken to mitigate effects of the event and inform any person(s) other than persons in designated area who may be affected.

The clean-up of any release that leads to potential exposures at or above the control limit or that are not sporadic and low intensity, e.g. releases of asbestos lagging, loose fill, asbestos coatings (not textured coatings) or large-scale releases of AIB must be done by a licensed contractor.

Uncontrolled releases of asbestos in contaminated soil and C&D materials may potentially arise in a variety of circumstances. Such an uncontrolled release might be construed to be a situation where the controlled collection of samples, or a controlled earthworks or remediation operation, leads to asbestos-contaminated material being spilled in an area not subject to asbestos controls and where it is highly desirable to undertake immediate clean-up in order to minimise the spread of asbestos fibres and reduce the potential for employees and members of the public to be exposed.

The clean-up of asbestos materials where the fibres are firmly linked in a matrix and that are essentially in good condition (i.e. mostly intact), e.g. asbestos cement, bitumen products, papers, textiles etc. will probably not require a LARC. Similarly, clean-up of small-scale release of AIB where it is in relatively discrete pieces and undamaged will probably not require a LARC.

The HSE's Asbestos Essentials guidance contains details of suitable methods to follow when carrying out remedial clean-up and decontamination for a number of different asbestos materials found in/on buildings. Although Asbestos Essentials specifically does not describe methods specific to soil and/or C&D materials, other than on fly tipped waste, it may serve as a useful basis for the development of appropriate and case-material-specific procedures to be followed in external settings.

Asbestos Essentials task sheet "A38: How to deal with fly tipped asbestos waste" provides an outline of safe working methods which might be applied to deal with an uncontrolled release in the external environment, subject to the risk assessment determining that such work is Non-Licensed Work.

Task sheet A38 also points to additional guidance that should be followed in such circumstances, including:

- a0: advice on non-licensed work with asbestos, Introduction to 'Asbestos essentials' task sheets;
- em6: personal protective equipment (PPE);
- em8: personal decontamination; and
- em9: disposal of asbestos waste.

What to do if there is a release

In all cases, where there has been an uncontrolled release of asbestos materials into the workplace, the following steps shall be adopted:

- warn people who may be affected;
- exclude people from the area, who are not needed to deal with the release;
- identify the cause of the uncontrolled release;
- regain adequate control as soon as possible.

In particular employers must make sure that:

- anyone in the work area affected who is not wearing PPE, including RPE, leaves that area immediately;
- arrangements are made to decontaminate anyone who is contaminated;
- any clothing or PPE is decontaminated or disposed of as contaminated waste;
- measures are taken to contain and reduce fibre release.

For any employee who was not wearing adequate RPE or has been potentially exposed to asbestos fibres in an incident, a note that the exposure has occurred must be made on that employee's health record. If the employee does not have a health record, the note must be made on that employee's personal record.

How to clean up after a release

If contamination is severe, the work is most likely going to be licensed work. Consequently, a LARC and an accredited asbestos analyst should be employed to thoroughly clean and check the area respectively. When cleaning up after a release, the employer must make sure that:

- the contaminated area is thoroughly cleaned of visible debris or ground that may have become contaminated by asbestos fibres;
- employees doing this work wear appropriate PPE, including RPE;
- employees use equipment and procedures appropriate for the task and have appropriate training and expertise;
- supervisors or managers make a careful check to make sure the work has been properly carried out;
- checks are made to make sure the area is thoroughly cleaned and safe for normal work operations to recommence.
- only those people essential for carrying the work are allowed into the affected area (other than emergency services).

For non-licensed work, detailed guidance on the general principles to be followed in order to prevent/minimise exposure while working with asbestos is available in Asbestos Essentials and for licensed work in the licensed contractors' guide, HSG247.

If contamination is severe, the work is most likely going to be licensed work.
Consequently, a LARC and an accredited asbestos analyst should be employed to thoroughly clean and check the area respectively. When cleaning up after a release, the employer must make sure that:

- the contaminated area is thoroughly cleaned of visible debris or ground that may have become contaminated by asbestos fibres;
- employees doing this work wear appropriate PPE, including RPE;
- employees use equipment and procedures appropriate for the task and have appropriate training and expertise;
- supervisors or managers make a careful check to make sure the work has been properly carried out;
- checks are made to make sure the area is thoroughly cleaned and safe for normal work operations to recommence.
- only those people essential for carrying the work are allowed into the affected area (other than emergency services).

Accidents, incidents or emergencies involving licensed work

Most of the information below is primarily aimed at LARCs working on e.g. soil remediation projects on sites where other construction-related activities are being undertaken. In order to ensure consistency, LARCs would be expected to integrate their own asbestos control measures etc. with general emergency procedures in place on the wider site.

When carrying out any licensed work on e.g. soil remediation projects, employers must have prepared procedures to put into effect if there is an accident, incident or emergency, which could put people at risk, because asbestos is present.

Employers must also make sure information about emergency procedures is given to anyone who may be affected, including employees, others and the emergency services. Employers should give employees enough information and instruction to properly protect themselves. This should include procedures for:

- raising the alarm;
- evacuation of enclosures and asbestos areas – and these drills should be tested and practised at regular intervals;
- communicating within and between asbestos work areas;
- contacting the emergency services;
- personal decontamination;
- clean-up of unintended asbestos releases.

There needs to be sufficient resources and equipment on or near the site to enable swift, safe and effective clean-up of unintended asbestos releases.

Employers need to take account of the need to integrate procedures with general emergency precautions for the wider work site and plan for any additional risks, e.g. not hearing alarms because of RPE and the siting of enclosures.

Employers must ensure employees are given enough information and instruction about the prepared procedures and arrangements if there is an emergency or a fire.

This should include:

- details of the nature of the emergency alarms and/or systems;
- details of the communications systems, including how to raise the alarm;
- the location and means of escape to and from the area of the emergency.

Knowing the location and safe means of escape from an asbestos enclosure or work area on a complex remediation/construction site will be particularly important if the work area (or personal

decontamination /hygiene facility) is located in a part of the site where other significant hazards may be present, e.g. large excavations, water bodies, heavy plant and equipment, dangerous structures, etc..

Contacting the emergency services

For licensed work, there should be arrangements in place for contacting the emergency services if they are needed, e.g. in the event of a fire affecting the asbestos enclosure/work area, a collapse of earthworks, employees being overcome by noxious gases, the discovery of unexploded ordnance, etc..

If there is an incident, accident or other emergency, employers must ensure sufficient information is available to the relevant accident and emergency services so they can prepare their own response procedures and precautionary measures. This includes:

- communication arrangements on site;
- the type, condition and location of the asbestos;
- details of relevant hazards;
- arrangements for evacuation;
- decontamination procedures;
- the asbestos clean-up procedure.

For licensed work, pre-planned procedures, hazard information, drills, and special warning or communication systems will not be required if the quantity or the condition of the asbestos in the workplace presents only a slight risk to the health of employees.

## 4.14 PREVENTION OR REDUCTION OF THE SPREAD OF ASBESTOS – COMPLIANCE WITH REGULATION 16 OF CAR

Employers should select and use work methods that will reduce the disturbance and release of asbestos fibres to minimise the risk of spread of asbestos from the controlled work area to other areas, e.g. by using low intensity methods, wherever possible, and by using appropriate dust suppression and decontamination techniques.

If ACMs are collected from the surface of a site, all asbestos waste should be bagged or wrapped promptly after removal and the waste should be removed from the work area regularly.

The Principal Contractor will be responsible for outlining and implementing measures to ensure any plant or equipment, vehicles and ancillary equipment etc. which is used in connection with works on or in the close proximity of the contaminated material is thoroughly decontaminated prior to moving to other areas on site or for disposal.

Any equipment utilised, which by its nature cannot be thoroughly decontaminated should be cleaned so far as reasonably practicable and then suitably wrapped or otherwise sealed to prevent release of asbestos fibres.

The outer surface of the wrapping or seal should be thoroughly decontaminated before the plant or equipment is moved for use elsewhere on site or for disposal. Such plant or equipment should not be unwrapped or unsealed other than in a manner which complies with the duties to prevent or reduce exposure, and to prevent or reduce the spread of asbestos.

Static Air Sampling/air monitoring

Air monitoring to reduce risks from spread of asbestos is required to:

- measure the prevailing concentration of asbestos fibres in the work area prior to work on asbestos commencing, to provide a baseline against which subsequent monitoring results may be compared, this is called background sampling;
- measure background fibre levels inside any enclosure when the asbestos work is complete, to ensure that it has been thoroughly cleaned and decontaminated before dismantling; when the asbestos work is licensed, this will be clearance sampling;
- measure background fibre levels outside any enclosure, particularly when the enclosure is adjacent to other, non-asbestos work areas or close to occupied premises or areas
- where the public or others may be in close proximity; this is called leak testing;
- ensure that the residual fibre concentrations are below the limit of quantification or the background level after work on asbestos has been completed; this is often termed reassurance sampling;
- near-source static sampling, to assess the release and spread of asbestos fibre concentrations near sources (e.g. work without an enclosure, near activities which involve disturbance of asbestos in soil or C&D materials);
- far-source / perimeter sampling conducted around the perimeter of the site where there may be other workers, public access or residential and commercial buildings.

Further guidance on air sampling/monitoring during work with asbestos is provided in HSG248

## 4.15 CLEANLINESS OF PREMISES AND PLANT – COMPLIANCE WITH REGULATION 17 OF CAR

The Principal Contractor will be responsible for outlining and implementing measures to ensure any plant or equipment, vehicles and ancillary equipment etc that are used in connection with the works are kept in a clean state.

To aid the process of cleaning and to prevent the spread of asbestos working methods and equipment must be chosen to prevent the build-up of asbestos containing materials on surfaces and within the working area(s).

Where ACMs are being removed from the surface of a site, e.g. by hand-picking, asbestos waste should be wetted, if deemed necessary, and transferred directly into approved and suitable asbestos waste bulk bags as workers remove asbestos materials.

Where soil and C&D materials contaminated with asbestos are being removed from site, they should be handled as little as possible. Wherever practicable, they should be excavated and placed directly into the appropriate waste receptacle, such as a polythene-lined skip or approved asbestos waste bulk bags.

Procedures for cleaning premises and plant will need to take account of the need for cleaning following an accidental and uncontrolled release of asbestos.

Further Measures

Procedures will need to be set up for cleaning:

- working areas, including transit and waste routes;

- plant and equipment;
- personal decontamination/hygiene facilities.

Dustless methods of cleaning should be always be used. This includes, wherever practicable, providing dedicated Class 'H' (BS 8520-3:2009) vacuum cleaning equipment fitted with suitable tools.

Procedures for cleaning should make clear:

- the items and areas to be cleaned;
- how often they need to be cleaned;
- the cleaning methods, which should not create dust;
- any special precautions which need to be taken during cleaning, including the low-dust technique to be used, and the measures to take to reduce the spread of dust.
- Dry manual brushing, sweeping or compressed air must not be used to remove asbestos dust.

Care should be taken if wet methods are used for the decontamination of plant and equipment, such that the spread of asbestos is minimised.

Procedures for cleaning premises and plant will need to take account of the need for cleaning following an accidental and uncontrolled release of asbestos.

Clean up when work finishes

When work with soil and C&D materials contaminated with asbestos comes to an end, the surface of the work area should be thoroughly cleaned to remove all visible traces of ACMs and asbestos debris and a thorough visual inspection carried out.

Where the work is licensed and has been conducted inside an external enclosure, then the four-stage clearance procedure (as set out in L143) will not normally have to be carried out prior to the enclosure being dismantled.

In such circumstances, a certificate for reoccupation will not need to be issued, although checks will still have to be made to ensure that the work has been completed satisfactorily (this may include reassurance sampling). A Statement of Cleanliness will need to be issued.

Where licensed work is done outdoors and not inside an enclosure, then clearance air sampling will not be needed, although it may be desirable to undertake reassurance sampling. In such situations, a Statement of Cleanliness should be issued.

Clearance air sampling is not required for non-licensed work, although it may be desirable to undertake reassurance sampling. A written Statement of Cleanliness will be required for the asbestos work area.

## 4.16 DESIGNATED AREAS – COMPLIANCE WITH REGULATION 18 OF CAR

This regulation requires employers to make sure that areas where asbestos work is being carried out are separated, clearly marked, and restricted to those required to work in the area. It also requires the employer to provide suitable facilities for employees to eat and drink.

Asbestos Area – this is an area where any employee would be liable to exposed to asbestos.

Respirator Zone – this is an area where the risk assessment cannot clearly demonstrate that the control limit will not be exceeded.

The employer must not permit any employee, other than an employee who is required for work purpose to be in an area designated as an asbestos area or a respirator zone.

Work in Respirator Zones may only be carried out by Licensed Contractor or suitably trained and equipped trades working under their direct control and supervision.

Work in Asbestos Areas that are not respirator zones must only be undertaken by trained competent staff.

Designated areas must be segregated and marked with suitable notices as asbestos areas and/ or respirator zones including notices that PPE/RPE must be worn.

The initial assessment is that areas of the site that involve movement or excavation of made ground shall be designated Asbestos Areas. The designation will only change to Respirator Zone if bulk ACM in the form of identifiable asbestos coatings, asbestos insulation or asbestos insulating board are encountered or where air monitoring shows that a Control Limit or Short Term Exposure limit is, or is liable to be exceeded. At this point works must cease and the risk assessment re-evaluated.

## 4.17 AIR MONITORING - COMPLIANCE WITH REGULATION 19 OF CAR

CAR 2012 states that air monitoring should be undertaken to ensure the following:

- Confirmation that the RPE chosen is appropriate for the tasks undertaken;
- Confirmation that the appropriate control limit and or anticipated fibre levels are not exceeded;
- Check the validity and effectiveness of the control measures implemented to reduce the concentration of asbestos in air;

The Principal Contractor should instruct a UKAS accredited laboratory to provide representative on-site analytical air monitoring during stages of the work that will involve disturbance of ACMs identified or presumed to contain ACMs, such as excavation of made ground material/monitoring of the stockpiled material and activities as part of the subsequent relocation to a designated area(s) on site, activities involved in the placing of any cover systems onto the made ground material, in situ or following relocation to a designated area(s) on site and activities involved with the installation of suitable and sufficient perimeter segregation barriers. The findings of the Risk Assessment will determine when, where and how often the monitoring will be required.

In addition, representative on site analytical monitoring should be undertaken at periodic intervals following the placing of any cover systems. The findings of the Risk Assessment will determine when, where and how often the monitoring will be required.

In order to fulfil the requirements of these regulations, an experienced and qualified person familiar with monitoring techniques should determine the location of air monitoring equipment. In any case, personal (assessment) monitoring should be undertaken to persons within the immediate work area and adjacent to where disturbance works are being undertaken. This strategy may be changed at any time depending on results obtained from these tests. Additionally, reassurance monitoring should be carried out around the perimeter of the designated work areas and the site boundary to ensure no elevated fibre levels are being released from the site during the works and to provide reassurance to local stakeholders. It is reasonably practicable to expect that a proportion of air tests undertaken at the site boundary should be sampled and analysed so that a low LOQ is achieved, for example 0.001 f/ml to provide added reassurance for local stakeholders; however it must be borne in mind that this will limit the number of air tests that can be carried out daily per analyst on site

## 4.18 WASHING AND CHANGING FACILITIES – COMPLIANCE WITH REGULATION 23 OF CAR

The Principal Contractor will be responsible for outlining and implementing measures to ensure that adequate washing, changing and storage facilities are provided.

## 4.19 STORAGE AND LABELLING OF ASBESTOS WASTE – COMPLIANCE WITH REGULATION 24 OF CAR

The Principal Contractor will be responsible for outlining and implementing measures to ensure that any asbestos containing material is disposed of as asbestos waste and removed from the site in a sealed container labelled as a product containing asbestos.

# 5 INFORMATION TO BE PROVIDED BY THE CONTRACTOR FOR REVIEW

The Contractor should provide the following documentation for review by WSP prior to commencement of the project:

- The proposed master programme or a summary thereof showing the sequence and timing of the principal parts of the Works, including details regarding sequencing of excavations and subsequent movement of materials, locations of designated relocation area(s) working shift patterns, and the overall completion date;
- Sub-Contractors and Suppliers, if any, that are likely to come into contact with the made ground on site;
- Include names of individual operatives and personnel, provide copies of any current medical certificates and asbestos training records for those who are expected to work or be involved in in the disturbance of asbestos impacted materials (including managers and those responsible for managing/ overseeing the works);
- A suitable and sufficient Plan of Work/ Method Statements in accordance with CAR 2012;
- A suitable and sufficient Asbestos Risk Assessment in accordance with CAR 2012; and
- A toolbox talk programme for all personnel involved in the disturbance of asbestos impacted materials on the site.

Following completion of the project the following documentation should be made available to WSP:

- Detailed plans inclusive of GPS co-ordinates highlighting areas where asbestos has been capped including build up, and areas where asbestos has been removed;
- Asbestos project completion pack. The pack, as a minimum, should contain the following information:
    - Executive summary;
    - Summary of asbestos remedial works;
    - Summary of analytical data;
    - Key project photographs;
    - Airborne fibre monitoring certificates;
    - Asbestos waste consignments notes;

# 6 SUMMARY OF THIS ASBESTOS MANAGEMENT PLAN

In conformance with statutory Health and Safety requirements and specifically Regulation 11 of the Control of Asbestos Regulations ‘’Prevention or Reduction of Exposure to Asbestos”, the basic arrangements for managing asbestos risk will include the following:

- Site Specific Awareness training & bespoke induction;
- Issue of a Permit to Dig;
- Safe Systems of Work and supporting Risk Assessments;
- Control Measures and details of PPE & RPE;
- Airborne fibre Monitoring Strategy (Personal exposure monitoring and Static air tests);
- Emergencies and unforeseen disturbances of asbestos;
- Waste Storage and Handling;
- Re-use and processing of waste, and
- Full time provision of competent and asbestos specialist resources.

## 6.1 ON-SITE RESOURCES

In terms of the proposed works it is noted that the operations as currently planned primarily comprise civil works operations with no formal asbestos removal/stripping operations planned.

Given the nature and extent of the asbestos encountered to date, it is considered that the use of competent personnel is appropriate for all ground disturbance works associated with the .

Any reference to competence, competent persons is a reference to a person or employee who has received adequate information, instruction and training for the task being done and can demonstrate an adequate and up to date understanding of the work, required control measures and appropriate law.

A competent person undertaking work on or with materials contaminated with asbestos ordinarily will be personnel who have received adequate information, instruction and training relevant to the type of project being undertaken.

A competent person will be able to demonstrate that they have sufficient practical experience to apply this knowledge effectively.

In the event that suspect materials, high risk visible bulk ACMs or hot spots of asbestos contamination are encountered during ground disturbance works then works in that area will be halted and the on-site resource and working procedures reassessed.

The asbestos supervision and labour necessary for the satisfactory completion of the associated ground disturbance works will be supplied by the Contractor, which may include but not limited to the following:

- An on-site Asbestos Consultant to perform analytical air monitoring, undertake watching brief and offer on-site advice and guidance. Minimum qualifications for the consultant shall be the BOHS proficiency certificates P402, P403 and P404.
- Licensed Asbestos Supervisor – Minimum of 5 years’ experience with experience of working on previous asbestos contaminated land sites ;

- Licensed Asbestos Operative – Minimum of 2 years' experience with experience of working on previous asbestos contaminated land sites;

# 7 SITE ESTABLISHMENT & GENERAL HEALTH & SAFETY REQUIREMENTS

## 7.1 INTRODUCTION

When determining the most appropriate site establishment and general Health and Safety procedures to comply with the AMP the Contractor should as a minimum include the following information in their assessment:

## 7.2 HEALTH & SAFETY PLAN

The management of Health and Safety to site operatives and third parties will be of paramount importance during the project works. When preparing the Health and Safety Plan the Contractor, in addition to the standard requirements of the Health & Safety Plan, should consider the implications of asbestos risk on the following key issues:

- Fencing off areas of earthworks to prohibit public or unauthorised access;
- Potential exposure to asbestos contaminated soils;
- Dust, vapour and nuisance issues;
- Mud and debris;
- Traffic; and
- Moving plant and machinery.

## 7.3 ENVIRONMENTAL MANAGEMENT PLAN

The Contractor should consider the implications of asbestos contaminated materials when developing and preparing the required Environmental Management Plan.

## 7.4 SITE WASTE MANAGEMENT PLAN

The Contractor should consider asbestos containing materials in the preparation of the Site Waste Management Plan.

## 7.5 INCIDENCE RESPONSE PLAN

The Contractor should, as a minimum, provide procedures as part of the Incident Response Plan to address the following foreseeable asbestos incidents/occurrences:

- Spillage of asbestos contaminated materials on highways within the site;
- The occurrence of elevated dust levels, within the site;

- Encountering suspected asbestos or asbestos based material.

## 7.6 MANAGEMENT OF ASBESTOS

The safe handling and disposal of waste asbestos is controlled under various statutes. The primary legislation being the Health and Safety at Work Etc Act 1974 and the Environmental Protection Act 1990. Under the above statutes the following supporting Regulations including ACOP and Guidance must be adhered to:

- Health and Safety at Work Etc Act 1974;
- Construction (Design & Management) Regulations (CDM2015)
- Environmental Protection Act 1990.
- Control of Asbestos Regulations (CAR2012); including CL:AIRE CAR SOIL guidance on interpretation of CAR for soils and made ground, and CIRIA C765 Good Practice Site Guidance
- Management of Health and Safety at Work Regulations 1999;
- The Hazardous Waste (England and Wales) Regulations 2016;
- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009.

## 7.7 TRAFFIC SAFETY AND MANAGEMENT

In light of the asbestos risk presented across the site, the contractor traffic management plan will need to include all reasonable measures to ensure that no mud or other material is deposited on local and site roads. As a minimum it should include:

- All traffic leaving the designated transition area must pass through a wheel decontamination process;
- Vehicular and Plant wash down facilities shall be used as necessary to prevent the migration of asbestos contaminated materials.
- All vehicles associated with the movement of materials will be covered during transiting process;
- The Contractor will provide appropriate signage to ensure that site traffic is suitably directed and informed and if appropriate, speed limit(s) should be set on-site and for its hauliers on highways in the vicinity of the site and take appropriate measures to ensure compliance with any such speed limit.

## 7.8 SITE MOBILISATION & SET UP REQUIREMENTS FOR DURATION OF WORKS

Over and above normal procedures and protocols for site mobilisation/set-up, the following control measures should be implemented as part of this project:

### 7.8.1 *MOBILISATION*

The extent and nature of mobilisation activities should be commensurate with the project scope and site specific conditions. As an integral part of this process the Contractor should conduct the following asbestos related activities:

- Establish personal hygiene and decontamination stations inclusive of vehicle and plant decontamination stations/wash-down facilities;
- Establish roadway and traffic controls inclusive of project transit routes.

### 7.8.2 *SITE SEGREGATION & SIGNAGE*

The Contractor should provide suitable and sufficient means to segregate the project work areas, inclusive of asbestos contaminated areas and agreed transit route(s) from the remainder of the site. The segregation barrier should display suitable and sufficient signage.

As a minimum, the barrier should fulfil the following functions:

- Prevent unauthorised access by site personnel and third parties; and
- Act as a visual screen.
- As a minimum the appropriate signage should be utilised to indicate:
- Relevant contact details;
- Details relating to PPE/RPE to be utilised when entering area;
- Authorised personnel only; and
- Asbestos work area.

### 7.8.3 *DECONTAMINATION SIGNAGE/ UNITS*

When considering the placement of the decontamination facilities inclusive of personnel washing stations, vehicle and plant decontamination stations/wash down facilities on the site, the Contractor, wherever reasonably practicable, should ensure that these facilities are set up adjacent to excavation/disturbance areas to facilitate suitable and sufficient access and egress to the asbestos work areas/ asbestos excavation/disturbance areas.

The decontamination facilities utilised should be in accordance with current Health and Safety Regulations/Guidance and CAR 2012 and as a minimum:

- Be suitable for the number of personnel expected to use the site;
- Contain hand washing facilities suitable to allow thorough washing of the forearms with mixer taps (combined hot and cold water) which can be operated by elbow or feet;
- Make available an area to place/ store/ dispose of disposable overalls and RPE;
- Encompass clean and dirty areas clearly defined; and
- Contain a ‘foot activated’ boot washing facility for the use of all site personnel and visitors at the ‘dirty’ entrance to the decontamination facilities.

### 7.8.4 *TRANSIT ROUTES*

In the development of transit routes, the Contractor should review for conformance with any existing transportation plan and the routes should be compared to site conditions to avoid unnecessary disturbances of asbestos-contaminated soil and usage by other site vehicular and pedestrian traffic.

### 7.8.5 *SPECIFIC TRAINING AND INDUCTIONS*

Only qualified and competent persons shall come into contact with asbestos (Asbestos Project Manager, Asbestos Analyst/Consultant and Licensed Asbestos Removal Contractors only). As part of the mobilisation, the Contractor shall ensure that all personnel, including supervisors, receive the site-specific asbestos induction and task specific training. Over and above generic Health & Safety training and inductions, the training and inductions will include, as a minimum, the following:

- General asbestos awareness (UKATA, IATP);
- Overview of the asbestos historical data/information and risk;
- Overview of measures implemented across the site to manage the risk;
- Personnel who will be involved in any ground disturbance works shall receive a more in-depth site specific asbestos awareness induction that will include sections on:
    - Safety arrangements to be adhere to whilst working on site;
    - How to identify asbestos within the ground;
    - Controls and notifications to be followed when visible asbestos debris/materials that may contain asbestos is identified;
    - The nature of operations that could result in exposure to asbestos;
    - Spill prevention and contamination reduction techniques;
    - Proper use, handling and disposal of personal protective equipment (PPE);
    - Best management practices for the establishment of work zones and storm water control,
    - Engineering controls and other measures to prevent contact with asbestos contaminated soils;
    - Personnel decontamination procedures;
    - Emergency procedures;
    - Equipment and plant decontamination procedures; and
    - Vehicular movement controls.

The Awareness Training is site specific and does not include the prescriptive requirements of Regulation 10 (CAR 2012). All personnel should have records of attending. No person shall be allowed to work on site until they have completed the site induction and training.

### 7.8.6 *SAFETY MEETINGS*

Daily safety meetings should be conducted prior to the start of each work day. These meetings should focus primarily on the safe completion of the work plan for the day, as well as safe work practices and contingencies associated with the scheduled tasks. Other topics may be discussed as deemed appropriate by site Health and Safety personnel. New work or different site conditions should be discussed in individual toolbox talks or specific meetings. As a minimum, it is recommended that daily safety meetings include and confirm the following:

- Establishment of work zones;
- Permit to Dig issued by the Contractor;
- Transit routes and site access;
- Equipment mobilisation;

- Dust and particulate emissions control with particular emphasis on weather/ground conditions and wind speed and/or direction;
- Water source and weather proofing, and
- Fencing and demarcating of work areas as required.

### 7.8.7 *SPILL RESPONSE PLAN*

A spill response plan should be developed to provide a systematic and controlled response to an asbestos-contaminated soil spill that could adversely impact human health or the environment. The plan should not only include response actions for spills that occur with the immediate ground works area, but should also include response actions for spills that occur during transportation within the site. The spill response plan should be implemented in addition to the other protective measures described within this document and the site incident response plan.

### 7.8.8 *PERSONAL PROTECTIVE EQUIPMENT (PPE) & RESPIRATORY PROTECTIVE EQUIPMENT (RPE)*

In addition to standard construction industry PPE, all site personnel working in the areas of made ground of the site (including the Client's Representative, if one is assigned) must be 'face fit tested' to ensure that the respirator, required for work on site, is providing adequate personal protection. If a mask is found to be ineffective for any personnel during the face fit process then a different type mask will need to be supplied, repeating the 'face-fit' procedure. Additionally, Type 5/6 (particle type) disposable coveralls and suitable gloves will be required to be worn within the asbestos excavation/disturbance areas.

### 7.8.9 *WASTE STORAGE AND HANDLING*

The Contractor should ensure that as a minimum any asbestos skips used on site shall be in good condition (no holes present at the base), stored on an area of hard-standing or on a suitably prepared area, including an impermeable liner, away from any surface drainage and/or sensitive water bodies. All skips must be appropriately labelled and stored in accordance with the labelling system. All asbestos skips should have lockable covers and should be locked as a minimum at the end of the working shift.

All asbestos waste will be double bagged in UN approved asbestos waste sacks (red inner clear outer) and stored in a demarked lockable waste skip or removed from site immediately. If required, for example if licensable asbestos materials are identified on site, an attending licensed asbestos contractor will be required and shall be responsible for all the asbestos waste during the works including the transfer from excavation/disturbance areas to skip and should be arranged and planned for in a unexpected situation. All disposable RPE (if applicable), PPE or materials used to clean tools (wet wipes) will be deemed as hazardous waste in this circumstance.

Any suspect samples taken for analysis will be collected in suitable receptacles and treated as asbestos until analysis is complete.

All water utilised in accordance with the asbestos works should be classified as asbestos contaminated water and therefore should remain on site within the made ground where possible.

The location of any asbestos contaminated soils (all made ground) that have been identified and placed on site should be recorded for future use of the site.

# 8 MANAGEMENT OF ASBESTOS CONTAMINATED SOILS

In all circumstances where work of any nature is to be undertaken at the site, there is a need to assess the potential for human health exposure risks to occur to those who may be involved directly or indirectly with the investigation process.

When determining the most appropriate work methods to comply with the AMP the Contractor should as a minimum include the following information in their assessment.

## 8.1 PERMIT TO DIG

No ground disturbance works shall be undertaken without first receiving a Permit to Dig. This Permit shall be issued by the Site Manager. This permit shall state explicitly the working arrangements for the particular task with respect to asbestos risk and the mitigating controls:

- Asbestos site briefing;
- No access to areas other than permitted work area;
- Use suitable RPE and PPE when undertaking ground disturbance works;
- Maintaining that ground materials are kept damp; and
- Task specific RAMS.

If any potential asbestos contamination arises during the works where the asbestos specialist is not present onsite, all ground works shall be halted and the asbestos specialist called.

## 8.2 SITE ACCESS CONTROL

Every attempt should be made by the Contractor to prevent unauthorised site access. Key site personnel should be responsible for limiting access to the work site and only authorised personnel should be allowed on site in accordance with the project Health and Safety plan. All personnel should sign in and out as they enter and leave designated excavation/disturbance areas.

At no time should vehicle traffic be allowed on surfaces where surface samples have shown positive test results or where visible asbestos is present. This excludes equipment that is to remain off road throughout the project. The off-road equipment may travel on soils that do have surface contamination subject to the following conditions:

- No movement of vehicles or plant is allowed on any area of known hot spot asbestos contamination during the excavation or earthmoving activities;
- Prior to movement of vehicles and plant equipment in the area, the established access route must be clearly demarcated in the field using flagging, tape, stakes, signs, etc. The access route will be assessed prior to use and monitored throughout for visible asbestos materials and debris;
- Where possible rubber-tired vehicles and plant equipment shall be used to the maximum extent feasible;
- Vehicles entering the area shall avoid causing the release of fugitive dust;
- Vehicle operators shall be observant by driving in a slow, cautious manner; and
- Vehicle access routes may be required to be wetted as needed to make the ground surface damp so that fugitive dust is not generated when driven on. Determination if wetting is required is based on a case-by-case basis by the asbestos specialist or qualified personnel.

## 8.3 SUPERVISION & MONITORING OF WORKS

All soil disturbance works shall be supervised by an asbestos specialist to ensure, as far as reasonably practicable, where visible suspect asbestos materials are unearthed works are stopped and corrective action taken. This may include some localised asbestos removal by the selected licensed asbestos contractor.

The licensed asbestos removal contractor (LARC) will be responsible for undertaking any hot spot removal and performing any localised decontamination procedure where plant and equipment may have come into contact with significant levels of asbestos contamination.

## 8.4 HORIZONTAL AND VERTICAL EXTENT OF EXCAVATION

During the ground disturbance works, only soil which will be disturbed as part of the specification of works for the project must be removed and appropriately managed as part of this project. There is no requirement that the complete extent of asbestos contamination be identified nor removed.

As a result of this project, asbestos-contaminated soil may be left in situ. Leaving undisturbed asbestos-contaminated soil in place is acceptable as long as there is no demonstrated exposure pathway.

Where known or suspected asbestos-contaminated soil is being left in place, it is recommended that a written record, with a surveyed or GPS diagram, be made which identifies the areas of known or potential contamination.

Following the removal of asbestos-contaminated soil from the ground disturbance area, appropriate controls should be implemented consistent with this section to prevent the disturbance of asbestos-contaminated soil remaining in the excavation area but not identified for immediate removal. This should include the areas being continually assessed and wetted where required in order to protect on-site personnel and prevent disturbance and emissions.

When appropriate and as determined by the asbestos consultant or qualified site personnel, personnel entering the excavation area should wear appropriate PPE/RPE. Air monitoring will be conducted in accordance with Section 3.14 and all efforts should be made to prevent the disturbance of remaining asbestos-contaminated soil.

## 8.5 SOIL DISTURBANCE TECHNIQUES

Ground disturbance activities should be conducted in a manner that minimizes soil handling in order to minimize potential asbestos fibre release and dust emissions. Asbestos fibre release and dust emission is most likely to occur at the point of excavation, when pushing or moving soils around and at the dumping point (where a large surface area of soil is exposed), with the latter two activities presenting the greatest chance for asbestos fibre release. Therefore, the staging of soil should be avoided whenever practicable (e.g., excavate the soil and load it directly into vehicle), and dumping of soil should be done in a careful and controlled manner with misting to control fibre release and dust generation.

Adequate wetting of soil should have already occurred before commencing soil disturbance. The key to wetting is to conduct good pre-excavation wetting, such as letting the water soak into the soil. Evenly moist soil throughout will provide the most efficient use of water and the greatest emissions control, with minimal hassle and cross-contamination potential. In contrast, drenching the soil with a fire hose may result in using large amounts of water with very little emission control benefit.

Each area of the site may present somewhat unique circumstances, however as a minimum the excavation/disturbance of asbestos contaminated soils across the site should generally be consistent with the protocols described below:

- The excavation/disturbance area should be suitably segregated inclusive of appropriate warning signage from the remainder of the site;
- Approximately twenty-four hours in advance of soil disturbing activities, the excavation/disturbance area should be adequately wetted to prevent any visible dust emissions that may be generated during mobilisation and site setup;
- If surface wetting is conducted, it should be done in such a manner as to prevent generation of dust, run-off or splattering;
- During actual soil/ground disturbing activities, water should be applied to the site of the disturbance as appropriate to suppress any visible emissions;
- Adequate dust control protocols should be maintained throughout the course of the soil disturbance works;
- It is recommended that ground disturbance works be undertaken by heavy equipment to minimize dust emissions at the point of removal or subsequent handling;
- Utilising equipment appropriate to the site conditions (i.e. excavator, mini excavator, backhoe, etc.), soil excavation/disturbance should proceed within the designated excavation/disturbance area;
- Excavation equipment should be fitted with a spray bar or equivalent system to provide an emissions barrier during soil disturbance activities;
- Additional hand wetting may be utilised as long as no dust, run-off or splattering results;
- Once each dump has been executed within the disposal container, the excavator should return the bucket to a closed position prior to returning to the specific area undergoing removal/disturbance activities;
- Vehicle and plant operators to have windows closed during any excavation/disturbance activities;
- Excavation of asbestos-contaminated soil must not overreach the bounds of wetting.
- Excavation should be conducted in lifts small enough to ensure that disturbed soil remains adequately wet. Over reaching is one of the biggest problems encountered during asbestos-contaminated soil removal, and can be avoided by adequately pre-wetting the site before commencing soil disturbance.
- Throughout the entire loading process, water should be applied to suppress any visible emissions that might occur;
- The excavation bucket should not be filled to more than 2/3 its normal capacity so as to minimize spillage;
- While the excavation equipment operator is loading the disposal container, the walls of the container should act as the wind break barrier until the load is covered and ready for transportation. During the process of loading the container, the excavation equipment operator should lower the bucket as close as possible to the interior of the container before dumping, and dump the load slowly to allow adequate misting;
- Generally, removal of asbestos-contaminated soil should begin at one edge of the excavation/disturbance area and proceed across to the opposite edge of the planned excavation;
- Once the disposal vehicle has been loaded to a safe level for transportation to the deposition area, it should be covered prior to movement across the site. The asbestos specialist or trained personnel will inspect the vehicle before leaving the transition area;
- The dump point is probably the most critical emissions point. The load should be tipped or unloaded in a sufficient manner to reduce emissions;

- An asbestos specialist, must be in attendance to monitor the excavation/disturbance area under active disturbance;
- Should any area under active disturbance prove too large for adequate stabilization of asbestos-contaminated soil, the excavation/disturbance area should be reduced;
- All asbestos-contaminated soil that is not being actively disturbed should be adequately stabilized in order to prevent the spread of contamination.
- If at any time significant visible emissions are observed, all soil disturbance activities should immediately cease until such time as the work practices are altered so as to prevent further visible emissions. Occurrences of visible emissions should be recorded in the site record.
- Each excavation should be monitored and visually inspected by the asbestos specialist and or qualified site personnel during removal activities. If subsurface anomalies are encountered (such as unexpected debris or materials), all work should stop and the site manager informed. Work should then proceed only when directed by the site manager in conjunction with other qualified site personnel.
- During excavation of asbestos contaminated soils, an independent analyst shall perform both personal and static perimeter air monitoring for airborne asbestos fibres. These shall be performed at least twice daily (morning and afternoon) during works. The independent analyst shall consider factors such as prevailing weather conditions (wind, rain etc.), amount and form of asbestos present and proximity of site workers and the general public when determining the actual number, frequency and locations of sampling points; and
- Air monitoring will be conducted in accordance with current HSE Regulations and Guidance by a UKAS accredited organisation.

## 8.6 EXCAVATION EQUIPMENT AND PLACEMENT OF THE EXCAVATOR

Equipment to be used for soil disturbance activities will vary depending on the site-specific conditions. Equipment appropriate to topography, soil type and other field conditions should be used. Before leaving the excavation/disturbance area, all excavation equipment should be decontaminated.

Site access controls should be established for each individual and primary excavation/disturbance area in accordance with the procedures described in this Section. These controls should allow for the incorporation of a contamination reduction zone to be utilised for the dry decontamination of heavy equipment (buckets, tires and tracks) between excavation/disturbance areas if needed.

Every attempt should be made to keep the excavation equipment on clean or non-contaminated soil. In the event the excavator must be placed onto asbestos-contaminated soil, the following or equivalent engineering controls should be implemented to avoid contamination:

- Use an alternate (rubber tired) excavator;
- Utilise suitable and sufficient decontamination/wash down procedures prior to vehicles and or plant equipment leaving asbestos contaminated areas; and
- Equipment should be decontaminated in line with CAR 2012.

## 8.7 DIRECTION TO PREVENT SPREAD OF CONTAMINATION

The excavation protocols should include control for any asbestos-contaminated soil, which might fall from excavation equipment. Asbestos-contaminated soil falling within the excavation/disturbance area

should fall only on the contaminated portion of the excavation/disturbance area or should be removed by the equipment operator prior to completion of the remaining excavation/disturbance area. The excavator and load station should be moved as required to complete multiple excavation/disturbance areas.

When feasible, excavated asbestos-contaminated soil should be directly loaded into the beds of trucks that will transport the soil across site. Further information on acceptable techniques for handling and disposal practices should be documented. The beds of the vehicles will be washed out and inspected at the end of every working shift.

## 8.8 STORM WATER & SURFACE WATER RUN OFF MANAGEMENT

The Contractor will need to consider that all storm water and surface water run-off from the work areas should be classified as asbestos contaminated water and therefore adequately contained or collected to prevent spread to other areas on the site. Any collected or contained water should be decontaminated by means of a filtration system (HEPA) or recycled and reutilised as part of the asbestos project works.

## 8.9 MONITORING OF STOCKPILES

Where excavated materials are designated for disposal or storage, they shall be stockpiled and managed in a safe manner within an area agreed by the Contractor. The stockpiles shall be subject to static perimeter atmospheric fibre monitoring to ensure there is no significant fibre release to the surrounding environment. This monitoring shall be carried out on a daily basis until the stockpiles have been removed from site. The independent analyst shall determine the extent of monitoring dependant on various factors including, size of stockpile(s), nature and amount of asbestos present, prevailing weather conditions etc.

If any fibre levels are identified in excess of 0.01f/cm3 the Contractor will inform IEC Ltd immediately and appropriate remedial measures agreed and implemented.

## 8.10 AIR MONITORING

During the excavation/disturbance of asbestos-contaminated soil, the asbestos consultant should collect air samples to assist in determining the adequacy of engineering and environmental controls employed at the site. In addition, personal air monitoring should be performed during project work activities.

Air samples will be collected inside each excavation/disturbance area. It is suggested that a minimum of four air samples be collected per day inside each regulated excavation/disturbance area and that sampling points be located on personnel or equipment in the excavation/disturbance area, or both. The goal of the air monitoring is to collect information regarding worst-case emissions by collecting samples as close to the area of soil disturbance as possible.

Perimeter (excavation/disturbance area) static air samples should cover all four points of the compass and should be located as close as possible to the point of excavation and loading activities. In all cases the sample points must be located to capture the worst-case emissions during that particular activity. The sample locations should not be fixed, and should be changed as necessary to keep pace with the point of excavation and loading. Additional “floating” samples may be needed to monitor worst-case emissions as prevailing wind direction shifts. All perimeter sample locations will be determined by the analyst and the Contractor.

Personnel air monitoring samples may also be used as a point of operation excavation/disturbance area sample, and may be used in conjunction with, or in place of, perimeter samples. For instance, in the event that ambient air samplers cannot be placed within close proximity to the excavation/disturbance area, personnel air monitoring samples will provide a more representative view of conditions in the excavation/disturbance area.

Random but frequent static air monitoring will be conducted along the designated transit route(s). In addition, personnel air monitoring will be conducted on those operatives involved with the transportation of the asbestos contaminated materials across the site.

Exposure measurements will be retained to validate the current risk assessment which does not anticipate exposure levels to exceed the current control limit of 0.1f/cm3 over a 4 hour period (TWA).

Static perimeter (site) monitoring will be undertaken daily in areas where other occupying parties may be affected by the project works. Furthermore, as this type of perimeter monitoring will be greatly influenced by the weather a daily site condition report will be formulated. This will give more credence to the monitoring if the wind direction, speed and ground conditions (wet, dry, muddy, dusty) are reported alongside the monitoring results.

Static air monitoring may also be carried out within site cabins and welfare facilities to ensure asbestos contamination has not spread via site footwear or other means.

This strategy may be changed at any time depending on results obtained from these tests.

In the event of an elevated reading all asbestos related site works is to cease until further investigations have been conducted and the site manager and other relevant safety personnel provide clearance for works to recommence.

## 8.11 DUST CONTROL/EMISSIONS CONTROL MEASURES

Dust generated during soil disturbance activities presents a potential impact to air quality. Soils contaminated with asbestos present an even greater threat and pose a risk to human health and the environment. Accordingly, dust suppression and emissions controls are critical elements of asbestos-contaminated soil removal activities.

Whenever soil disturbance activities are conducted on site a qualified site personnel and/or asbestos specialist will be in attendance to monitor for any visible emissions generated by the disturbance activities. In addition, the personnel in attendance within the excavation/disturbance area(s) will monitor the moisture of the asbestos-contaminated soil being disturbed to ensure that it is adequately wet. If visible emissions are observed during the disturbance process, work practices should be reviewed and modified by the qualified site personnel and asbestos specialist.

Potential dust emissions from stockpiled soils should be mitigated by the application of water or stabilizing agents, and/or by covering with tarps or other appropriate cover material.

## 8.12 SOIL WETTING OR STABILIZING

A continuous water supply (i.e. water truck, water tanks and spray hose, etc.) should be available at all times during soil disturbance activities.

## 8.13 WIND DIRECTION & SPEED

Wind direction and wind speed should be considered and assessed during ground disturbance activities.

## 8.14 COVER LAYERS

Where practical suitable and sufficient cover layers should be utilised across the site and maintained for the duration of the project.

## 8.15 EQUIPMENT DECONTAMINATION

Suitable and sufficient equipment decontamination procedures should be designed and implemented across the site to prevent the migration of asbestos contaminated materials across the site.

## 8.16 PERSONNEL DECONTAMINATION

Suitable and sufficient personnel decontamination procedures should be designed and implemented across the site to prevent the migration of asbestos contaminated materials across the site.

## 8.17 INSPECTIONS OF VEHICLES

A suitable and sufficient inspection regime of site vehicles should be designed and implemented across the site to prevent the migration of asbestos contaminated materials across the site.

## 8.18 VISUAL INSPECTIONS OF TRANSIT ROUTES

A suitable and sufficient inspection regime of the transit routes should be designed and implemented across the site to prevent the migration of asbestos contaminated materials across the site.

## 8.19 EMERGENCIES AND UNFORESEEN DISTURBANCES OF ASBESTOS

General emergencies and first aid will be in compliance with the Principal Contractor site health and safety rules.

Where suspect materials are unearthed works shall cease and the work area made safe. The Contractor and Asbestos Consultant shall determine the course of action that may include the involvement of a Licenced Asbestos Removal Contractor for remediation and validation.

Sufficient resource shall be available on site to enable works to be undertaken in a safe and controlled way. However, the table on the following page outlines the escalation process for dealing with an unforeseen asbestos emergency, such as elevated air monitoring and/or uncontrolled release or fibres/contamination.

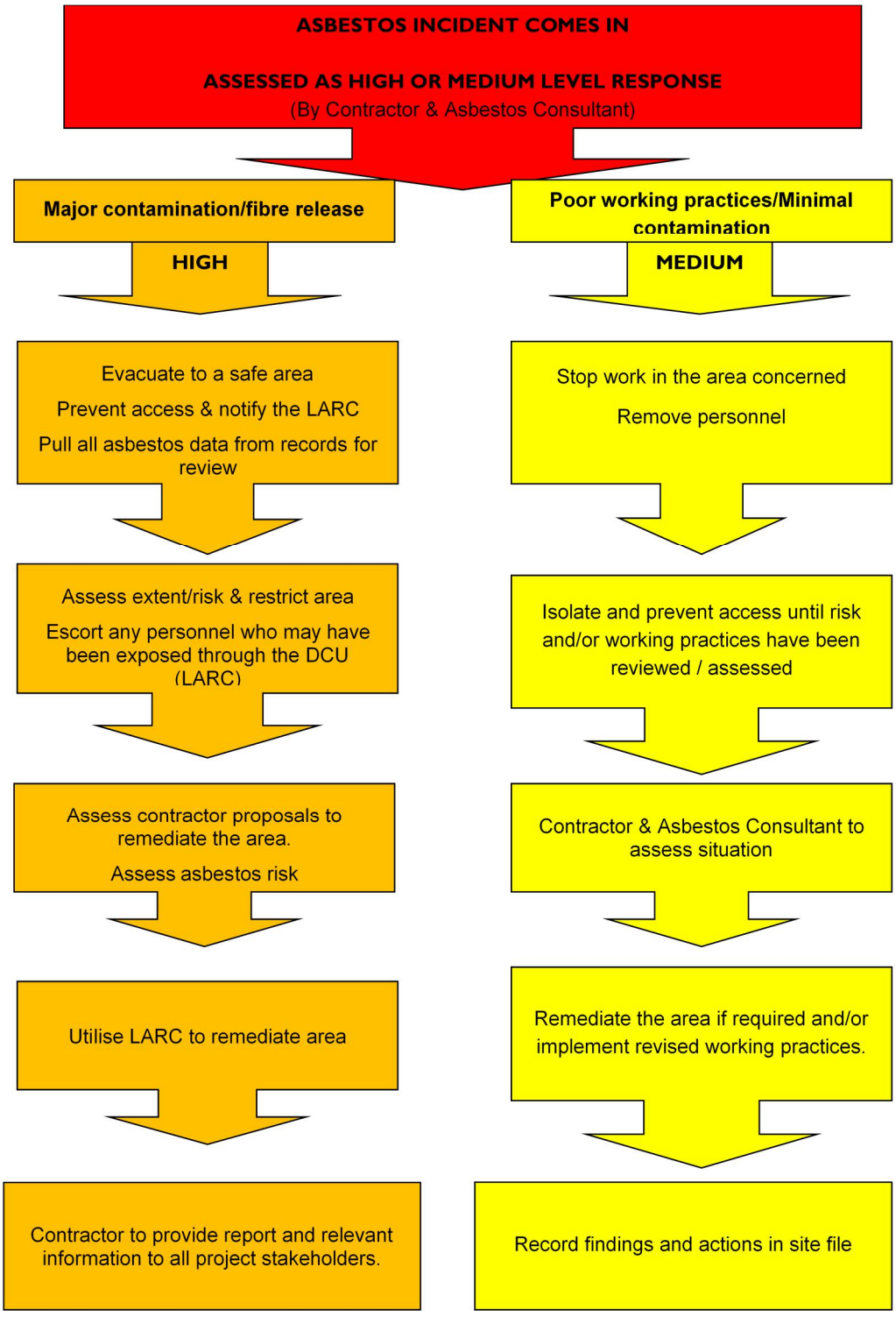
Where bulk asbestos containing materials have been identified procedures must be in place to ensure that these areas are not accessed until remediation of the location can be undertaken. The area should be clearly identified and visible on site and its location communicated to all those working on the site.

Where materials within these areas are to be excavated and stored on site until potential reuse procedures must be put in place to mitigate any potential disturbance of asbestos materials and potential contamination of adjacent grounds. Materials should be stored on an impermeable base layer e.g. Visqueen or similar and stockpiles should be covered or capped. Suitable methods to keep the materials wetted during transportation around site should be implemented and care taken not to allow for materials to 'cross contaminate' as the materials are moved.

Should these ground materials remain on site as filled around foundations following the completion of works then records must be kept of the location of these materials within the sites Health and Safety File.

As a result of the information provided to date it is deemed that the following management procedure is suitable for the activities currently planned on site. This AMP will be updated and communicated as and when new information becomes apparent and when the conditions and activities on site change. There is no requirement for further decontamination procedures other than those described.

An example decision flow chart is illustrated on the following page.


ASBESTOS INCIDENT COMES IN
ASSESSED AS HIGH OR MEDIUM LEVEL RESPONSE
(By Contractor & Asbestos Consultant)
Major contamination/fibre release
HIGH
Poor working practices/Minimal contamination
MEDIUM
Evacuate to a safe area
Prevent access & notify the LARC
Pull all asbestos data from records for review
Stop work in the area concerned
Remove personnel
Assess extent/risk & restrict area
Escort any personnel who may have been exposed through the DCU (LARC)
Isolate and prevent access until risk and/or working practices have been reviewed / assessed
Assess contractor proposals to remediate the area.
Assess asbestos risk
Contractor & Asbestos Consultant to assess situation
Utilise LARC to remediate area
Remediate the area if required and/or implement revised working practices.
Contractor to provide report and relevant information to all project stakeholders.
Record findings and actions in site file

# 9 INFORMATION TO BE PROVIDED BY THE CONTRACTOR FOR REVIEW

The Contractor should provide the following documentation for review by WSP prior to commencement of the project:

- The proposed master programme or a summary thereof showing the sequence and timing of the principal parts of the Works, including details regarding sequencing of excavations and subsequent movement of materials, locations of designated relocation area(s) working shift patterns, and the overall completion date;
- Sub-Contractors and Suppliers, if any, that are likely to come into contact with the made ground on site;
- Include names of individual operatives and personnel, provide copies of any current medical certificates and asbestos training records for those who are expected to work or be involved in in the disturbance of asbestos impacted materials (including managers and those responsible for managing/ overseeing the works);
- A suitable and sufficient Plan of Work/ Method Statements in accordance with CAR 2012;
- A suitable and sufficient Asbestos Risk Assessment in accordance with CAR 2012; and
- A toolbox talk programme for all personnel involved in the disturbance of asbestos impacted materials on the site.

Following completion of the project the following documentation should be made available to WSP:

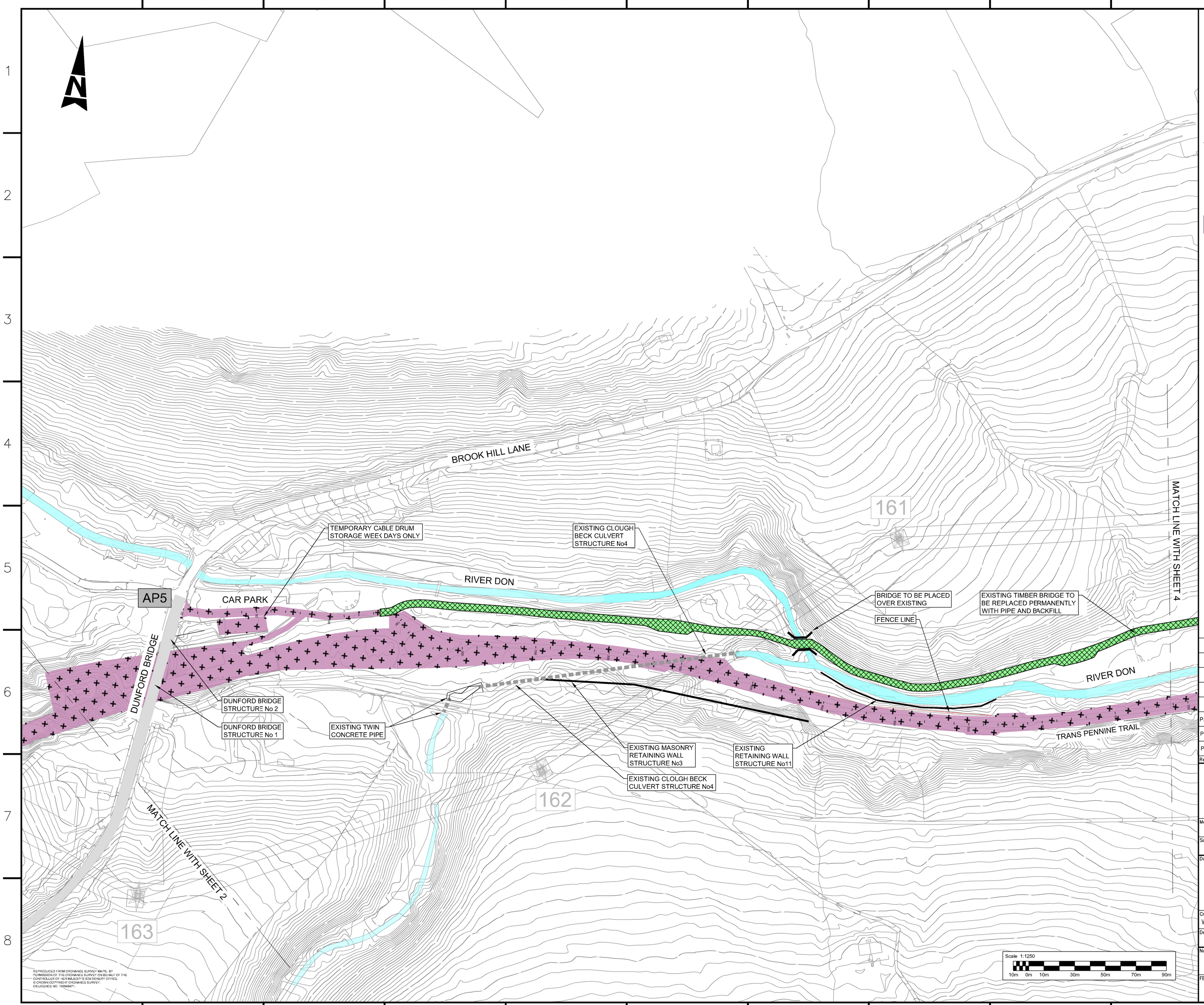
- Detailed plans inclusive of GPS co-ordinates highlighting areas where asbestos has been capped including build up, and areas where asbestos has been removed;
- Asbestos project completion pack. The pack, as a minimum, should contain the following information:
    - Executive summary;
    - Summary of asbestos remedial works;
    - Summary of analytical data;
    - Key project photographs;
    - Airborne fibre monitoring certificates;
    - Asbestos waste consignments notes;

# 10 LIMITATIONS

No ground assessment can purport to identify all ACMs that may be present within the site. It should be noted that the locations in which trial pits have been undertaken represent only a small area of the total area and should therefore only be used as a guide as to the likely extent of asbestos present. It is not uncommon therefore for additional ACMs to be discovered during earthwork programmes. Consequently, as a precautionary measure, it is recommended that any contractor disturbing any made ground at the site provides suitable and sufficient risk assessments and method statements for the potential disturbance of ACMs.

WSP cannot be held liable for the content of information found in third party reports that may be referenced in this strategy document.

# A DRAWINGS




REPRODUCED FROM ORDNANCE SURVEY MAPS, BY PERMISSION OF THE ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT AND DATABASE RIGHTS. ORDNANCE SURVEY LICENCE NO. 100044971

NOTES

1. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

KEY

- TRANS PENNINE TRAIL DIVERSION, PRIOR TO OPENING TO PEDESTRIANS, TRACK WILL BE ACCESSED BY CONSTRUCTION VEHICLES FOR A SHORT DURATION.
- INDICATIVE WORKS AREA INVOLVING POTENTIAL GIL / LAYDOWN AREA / ACCESS ROAD
- 162 — PYLON TO BE REMOVED AT A LATER STAGE
- AP5 — ACCESS POINT
- TEMPORARY BRIDGE

DRAFT
WORK IN PROGRESS

CONFIDENTIAL

| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| P3 | TPT DIVERSION AMENDED AND NORTHERN ROUTE ADDED | PH | RR | RR | 08/12/17 |
| P2 | CHAINAGE ADDED, SWATH AMENDED | WE | GN | RR | 04/08/17 |
| P1 | FIRST ISSUE | WE | GN | RR | 28/07/17 |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | – | 400KV OHL |

Scheme Name: VISUAL IMPACT PROVISION – WORK PACKAGE 1
PEAK DISTRICT NATIONAL PARK

Document Title:

FIGURE 2.1
CONSTRUCTION WORKS BOUNDARY
DURING UNDERGROUNDING PHASE
SHEET 3 OF 6

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| W.EASTWOOD | 28/07/17 | G.NIDHISH | 28/07/17 | R.RAVEENDRAN | 28/07/17 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| D.SPURR | 2D DRAWING | 1:1250 | A1 | 3 OF 6 | P3 |

National Grid Document Number:
PDD-33491-LAY-038

FEED Document Number:

AP7

160

159

MATCH LINE WITH SHEET 3

MATCH LINE WITH SHEET 5

RIVER DON

TRANS PENNINE TRAIL

EXISTING LONG GRAIN CULVERT STRUCTURE No6

EXISTING LONG GRAIN CULVERT STRUCTURE No6

EXISTING RETAINING WALL STRUCTURE No11

EXISTING RETAINING WALL STRUCTURE No11

Scale 1:1250

10m 0m 10m 30m 50m 70m 90m

REPRODUCED FROM ORDNANCE SURVEY MAPS, BY PERMISSION OF THE ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT ORDNANCE SURVEY. OS LICENCE NO. 100048471.

NOTES

1. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.

KEY

TRANS PENNINE TRAIL DIVERSION, PRIOR TO OPENING TO PEDESTRIANS, TRACK WILL BE ACCESSED BY CONSTRUCTION VEHICLES FOR A SHORT DURATION.

INDICATIVE WORKS AREA INVOLVING POTENTIAL GIL / LAYDOWN AREA / ACCESS ROAD

162 PYLON TO BE REMOVED AT A LATER STAGE

DRAFT
WORK IN PROGRESS

CONFIDENTIAL

| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| P3 | TPT DIVERSION AMENDED AND NORTHERN ROUTE ADDED | PH | RR | RR | 08/12/17 |
| P2 | CHAINAGE ADDED, SWATH AMENDED | WE | GN | RR | 04/08/17 |
| P1 | FIRST ISSUE | WE | GN | RR | 28/07/17 |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | – | 400KV OHL |

Scheme Name: VISUAL IMPACT PROVISION – WORK PACKAGE 1
PEAK DISTRICT NATIONAL PARK

Document Title:

FIGURE 2.1
CONSTRUCTION WORKS BOUNDARY
DURING UNDERGROUNDING PHASE
SHEET 4 OF 6

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| W.EASTWOOD | 28/07/17 | G.NIDHISH | 28/07/17 | R.RAVEENDRAN | 28/07/17 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| D.SPURR | 2D DRAWING | 1:1250 | A1 | 4 OF 6 | P3 |

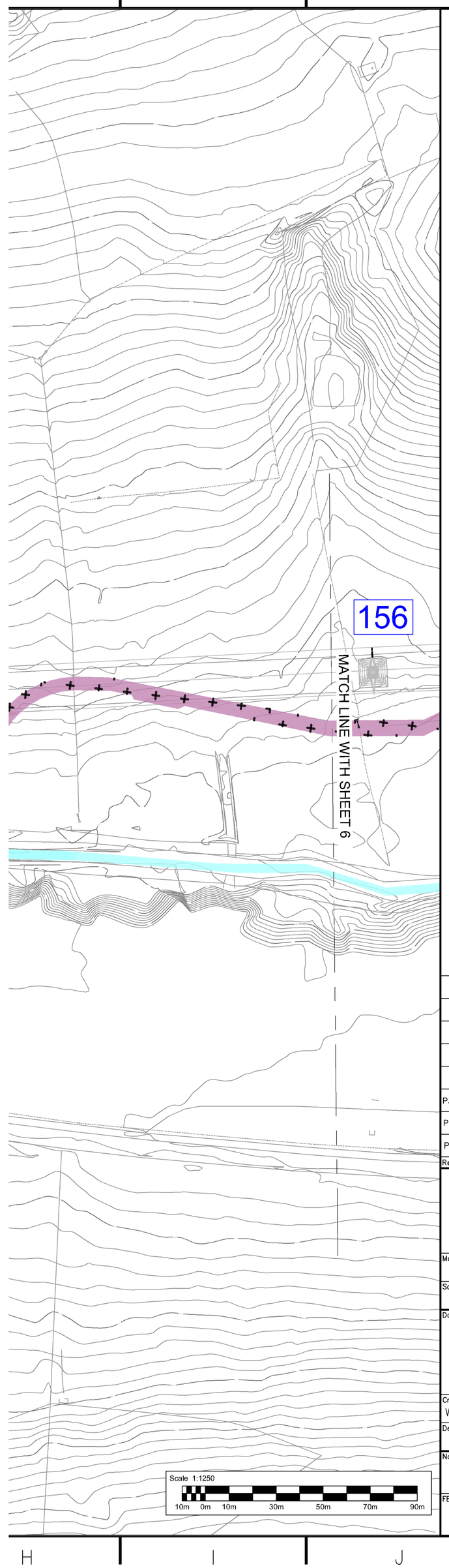
National Grid Document Number:

PDD-33491-LAY-039

FEED Document Number:




REPRODUCED FROM ORDNANCE SURVEY MAPS, BY PERMISSION OF THE ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT ORDNANCE SURVEY. 0S LICENCE NO. 100046971.




NOTES

1. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE STATED.
2. LIGHT VEHICULAR ACCESS TO 154A WILL BE REQUIRED VIA THE TRANS PENNINE TRAIL ON ONE OCCASION ONLY, FOR EARTHING WORKS.

KEY

- TRANS PENNINE TRAIL DIVERSION, PRIOR TO OPENING TO PEDESTRIANS, TRACK WILL BE ACCESSED BY CONSTRUCTION VEHICLES FOR A SHORT DURATION.
- INDICATIVE WORKS AREA INVOLVING POTENTIAL GIL / LAYDOWN AREA / ACCESS ROAD
- 156 — PYLON TO BE RETAINED
- 162 — PYLON TO BE REMOVED
- 157R — NEW PYLON
- LOCATION OF TEMPORARY BRIDGE
- PEDESTRIAN ACCESS WITH CONTROLLED CONSTRUCTION TRAFFIC MOVEMENT

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

DRAFT
WORK IN PROGRESS

CONFIDENTIAL

| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| P3 | TPT DIVERSION AMENDED AND NORTHERN ROUTE ADDED | PH | RR | RR | 08/12/17 |
| P2 | CHAINAGE ADDED, SWATH AMENDED | WE | GN | RR | 04/08/17 |
| P1 | FIRST ISSUE | WE | GN | RR | 28/07/17 |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | – | 400KV OHL |

Scheme Name: VISUAL IMPACT PROVISION – WORK PACKAGE 1
PEAK DISTRICT NATIONAL PARK

Document Title:

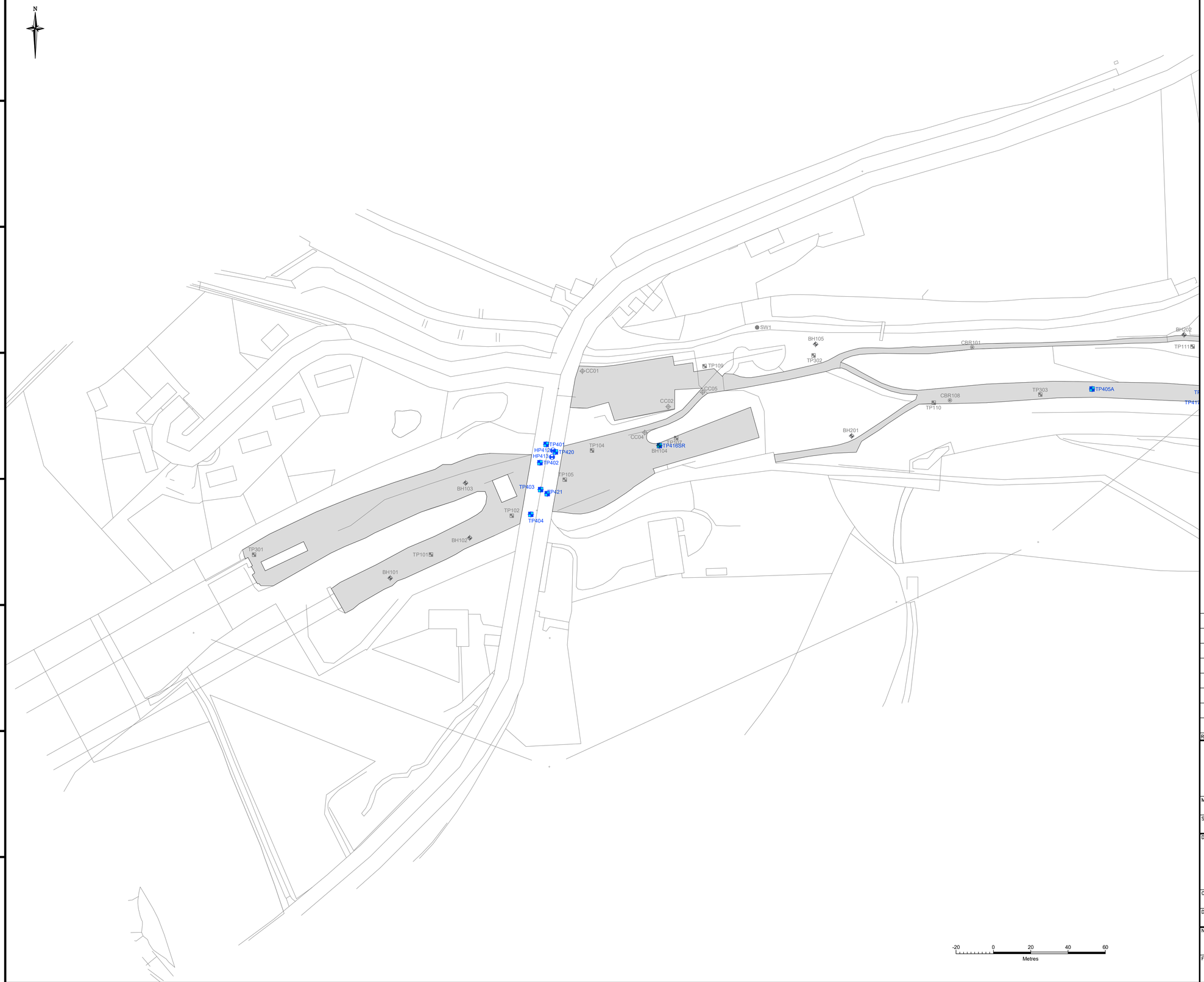
FIGURE 2.1
CONSTRUCTION WORKS BOUNDARY
DURING UNDERGROUNDING PHASE
SHEET 5 OF 6

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| W.EASTWOOD | 28/07/17 | G.NIDHISH | 28/07/17 | R.RAVEENDRAN | 28/07/17 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| D.SPURR | 2D DRAWING | 1:1250 | A1 | 5 OF 6 | P3 |

National Grid Document Number:
PDD–33491–LAY–040

FEED Document Number:




KEY

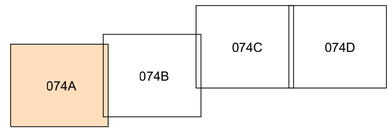
EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION
- CC — CONCRETE CORED LOCATION

EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| | | | | | |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

SITE LAYOUT & EXPLORATORY HOLE PLAN
SHEET 1 OF 4

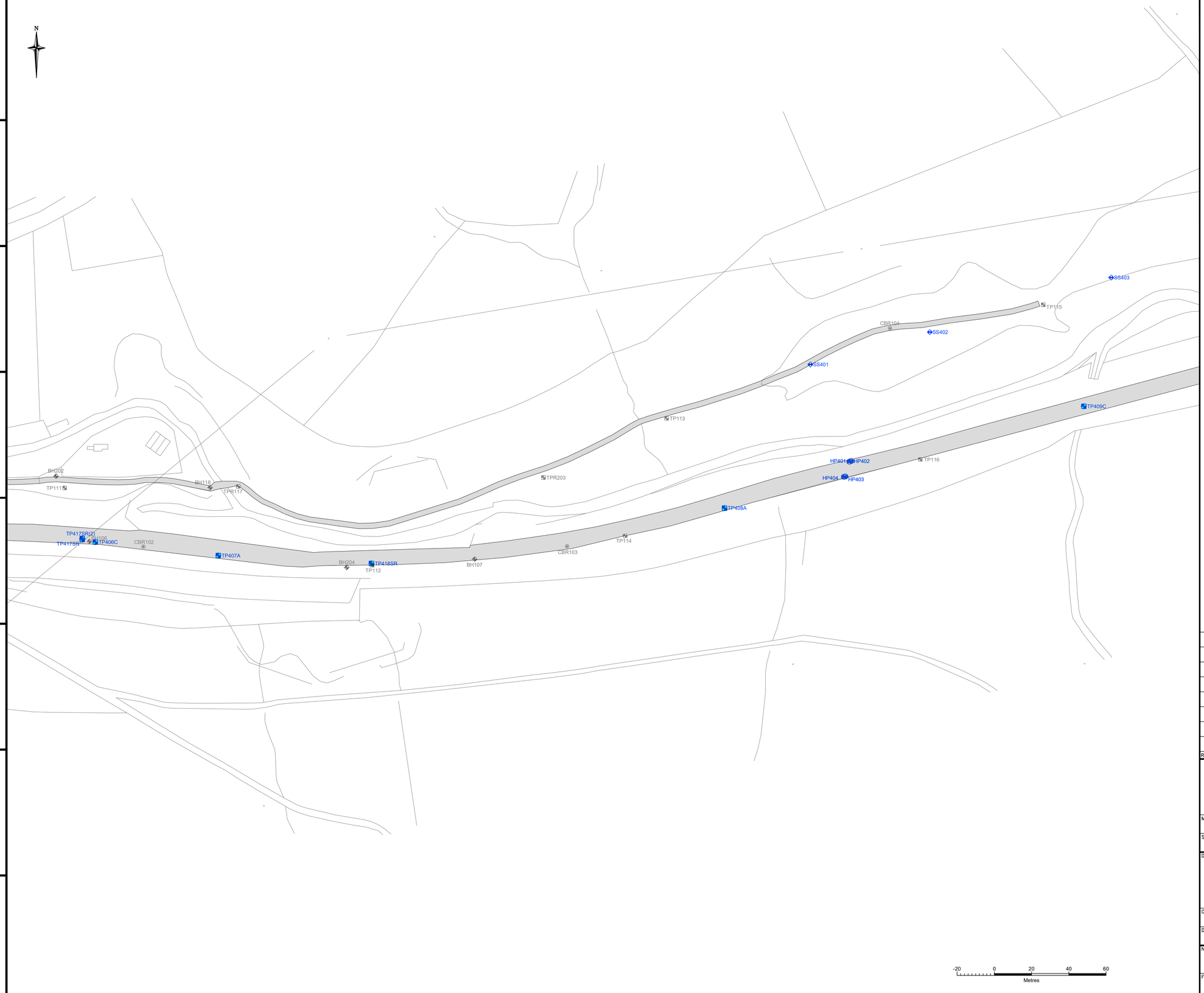
| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| NB | 30/10/2018 | SE | 30/10/2018 | SE | 30/10/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 1 OF 4 | |

National Grid Document Number:

PDD-33492-LAY-074A

FEED Document Number:




KEY

EXPLORATORY LOCATIONS 2016

TP TRIAL HOLE LOCATION

BH BOREHOLE LOCATION

CBR CALIFORNIA BEARING RATIO LOCATION

EXPLORATORY LOCATIONS 2018

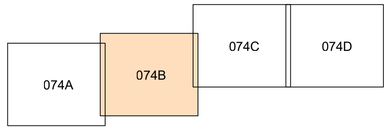
SS SHALLOW SOIL SAMPLE

HP HAND DUG PIT

TP TRIAL PIT

HARDSTANDING PATH / TRAIL

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| | | | | | |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

SITE LAYOUT & EXPLORATORY HOLE PLAN
SHEET 2 OF 4

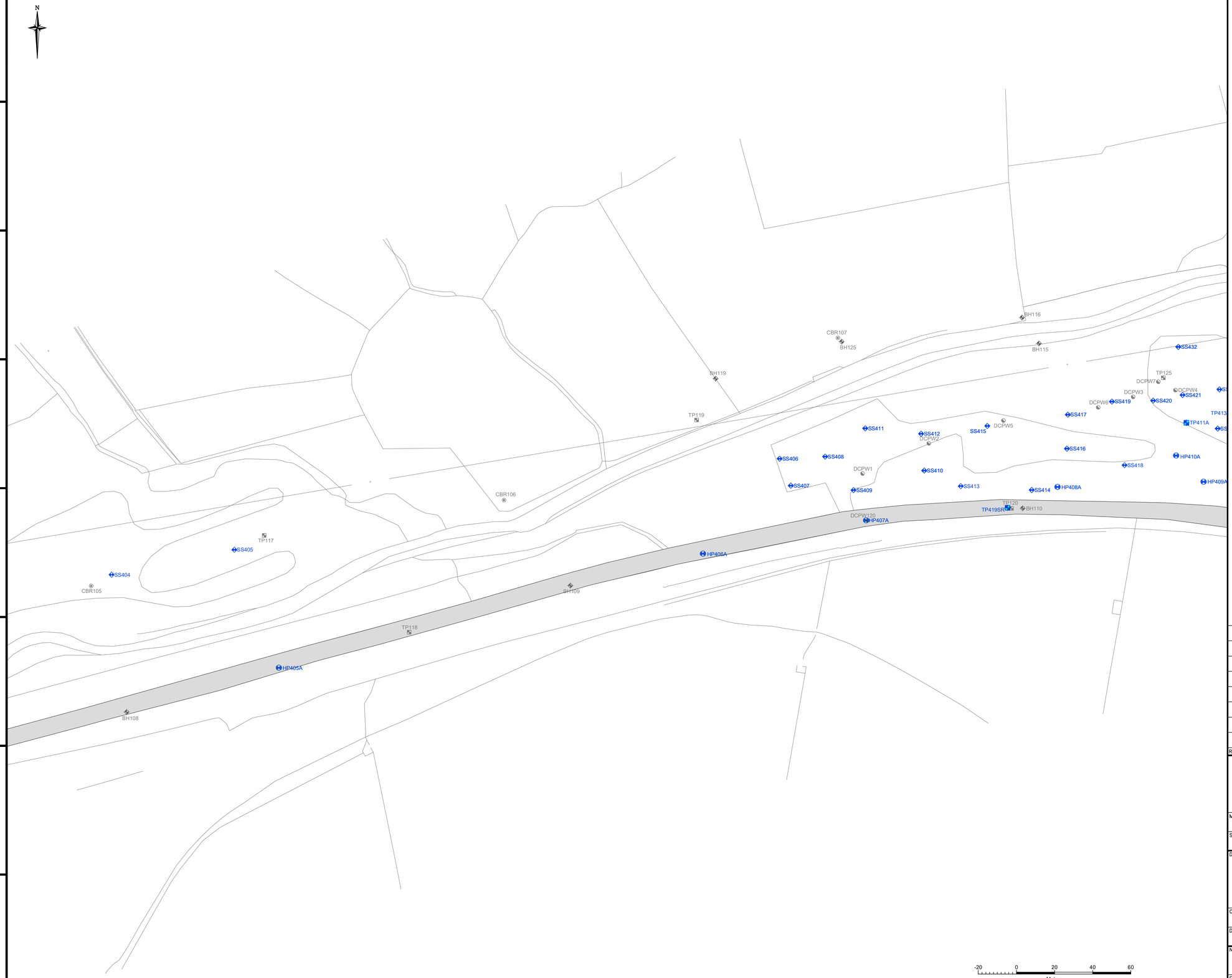
| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| NB | 30/10/2018 | SE | 30/10/2018 | SE | 30/10/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 2 OF 4 | |

National Grid Document Number:

PDD-33492-LAY-074B

FEED Document Number:




KEY

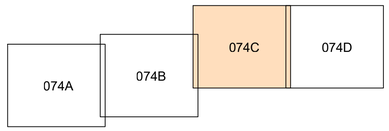
EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION
- DCPW — DYNAMIC CONE PENETROMETER LOCATION

EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| | | | | | |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

SITE LAYOUT & EXPLORATORY HOLE PLAN
SHEET 3 OF 4

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| NB | 30/10/2018 | SE | 30/10/2018 | SE | 30/10/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 3 OF 4 | |

National Grid Document Number: PDD-33492-LAY-074C

FEED Document Number:

-20 0 20 40 60
Metres

KEY

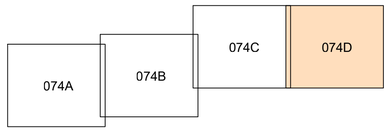
EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION
- DCPW — DYNAMIC CONE PENETROMETER LOCATION
- ERT — ELECTRICAL RESISTIVITY TRANSECT LOCATION

EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

SITE LAYOUT & EXPLORATORY HOLE PLAN
SHEET 4 OF 4

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| NB | 30/10/2018 | SE | 30/10/2018 | SE | 30/10/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 4 OF 4 | 2 |

National Grid Document Number:

PDD-33492-LAY-074D

FEED Document Number:

| TP104 | |
|---|---|
| Year | 2016 |
| Depth (mBGL) | 0.60-0.70m |
| Crocidolite (blue) asbestos Loose fibres in soil | <0.001% |

| TP109 | |
|---|---|
| Year | 2016 |
| Depth (mBGL) | 0.05-0.25m |
| Chrysotile (white) asbestos Loose fibres in soil | <0.001% |

| HP413 | |
|---|---|
| Year | 2018 |
| Depth (mBGL) | 0.2m |
| Benzo(a)pyrene | 137 |

| TP102 | |
|---|---|
| Year | 2016 |
| Depth (mBGL) | 0.45m |
| Lead | 2,140 |

-20 0 20 40 60
Metres

KEY

EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION
- CC — CONCRETE CORED LOCATION

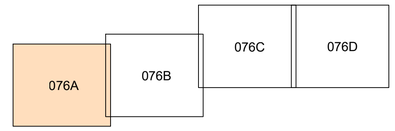
EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

| Screening Criteria | |
|---|---|
| Determinand | GAC (mg/kg) |
| Lead | 808 |
| Benzo(a)pyrene | 11 |
| Loss on ignition | 20% |

= Where Asbestos detection exceeds GAC

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

HUMAN HEALTH GQRA
SHEET 1 OF 4

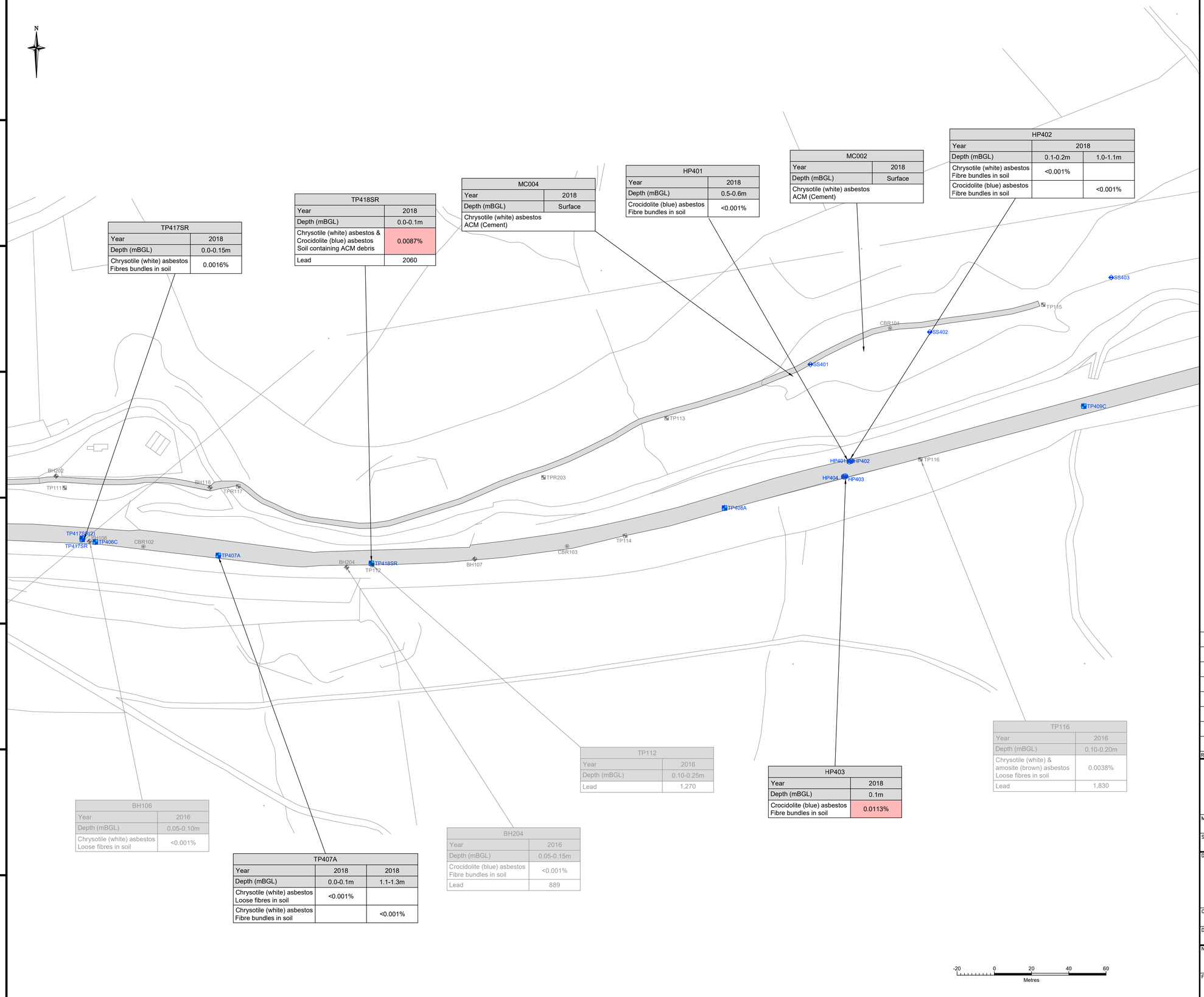
| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| CEW | 14/11/2018 | GJW | 14/11/2018 | GJW | 14/11/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 1 OF 4 | |

National Grid Document Number:

PDD-33492-LAY-076A

FEED Document Number:




KEY

EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION

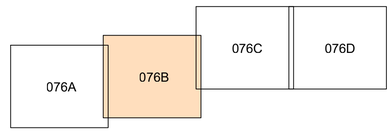
EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

| Screening Criteria | |
|---|---|
| Determinand | GAC (mg/kg) |
| Lead | 808 |
| Benzo(a)pyrene | 11 |
| Loss on ignition | 20% |

= Where Asbestos detection exceeds GAC

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|
| 2 | Updated With 2018 Exploratory Locations | NB | SE | SE | 30/10/2018 |

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

HUMAN HEALTH GQRA
SHEET 2 OF 4

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| CEW | 14/11/2018 | GJW | 14/11/2018 | GJW | 14/11/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 2 OF 4 | |

National Grid Document Number:

PDD-33492-LAY-076B

FEED Document Number:

| BH115 | | |
|---|---|---|
| Year | 2016 | |
| Depth (mBGL) | 0.05-0.10m | 0.90-1.00m |
| Chrysotile (white) asbestos Loose fibres in soil | <0.001% | |
| Crocidolite (blue) asbestos Loose fibres in soil | | <0.001% |

| TP125 | |
|---|---|
| Year | 2016 |
| Depth (mBGL) | 0.05-0.20m |
| Crocidolite (blue) asbestos Loose fibres in soil | <0.001% |

| TP117 | |
|---|---|
| Year | 2016 |
| Depth (mBGL) | 0.20-0.30m |
| Chrysotile (white) asbestos Loose fibres in soil | <0.001% |

| TP419SR | |
|---|---|
| Year | 2018 |
| Depth (mBGL) | 0.3-0.4m |
| Chrysotile (white) asbestos Loose fibres in soil | <0.001% |

| HP408A | |
|---|---|
| Year | 2018 |
| Depth (mBGL) | 0.5m |
| Chrysotile (white) asbestos Soil containing ACM debris | <0.001% |

| HP410A | |
|---|---|
| Year | 2018 |
| Depth (mBGL) | 0.5-1.0m |
| Lead | 2580 |

| MC001 | |
|---|---|
| Year | 2018 |
| Depth (mBGL) | Surface |
| Chrysotile (white) asbestos ACM (Cement) | |

-20 0 20 40 60
Metres

KEY

EXPLORATORY LOCATIONS 2016

TP TRIAL HOLE LOCATION

BH BOREHOLE LOCATION

CBR CALIFORNIA BEARING RATIO LOCATION

DCPW DYNAMIC CONE PENETROMETER LOCATION

EXPLORATORY LOCATIONS 2018

SS SHALLOW SOIL SAMPLE

HP HAND DUG PIT

TP TRIAL PIT

HARDSTANDING PATH / TRAIL

| Screening Criteria | |
|---|---|
| Determinand | GAC (mg/kg) |
| Lead | 808 |
| Benzo(a)pyrene | 11 |
| Loss on ignition | 20% |

= Where Asbestos detection exceeds GAC

KEY TO DRAWING SHEETS

076A 076B 076C 076D

| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

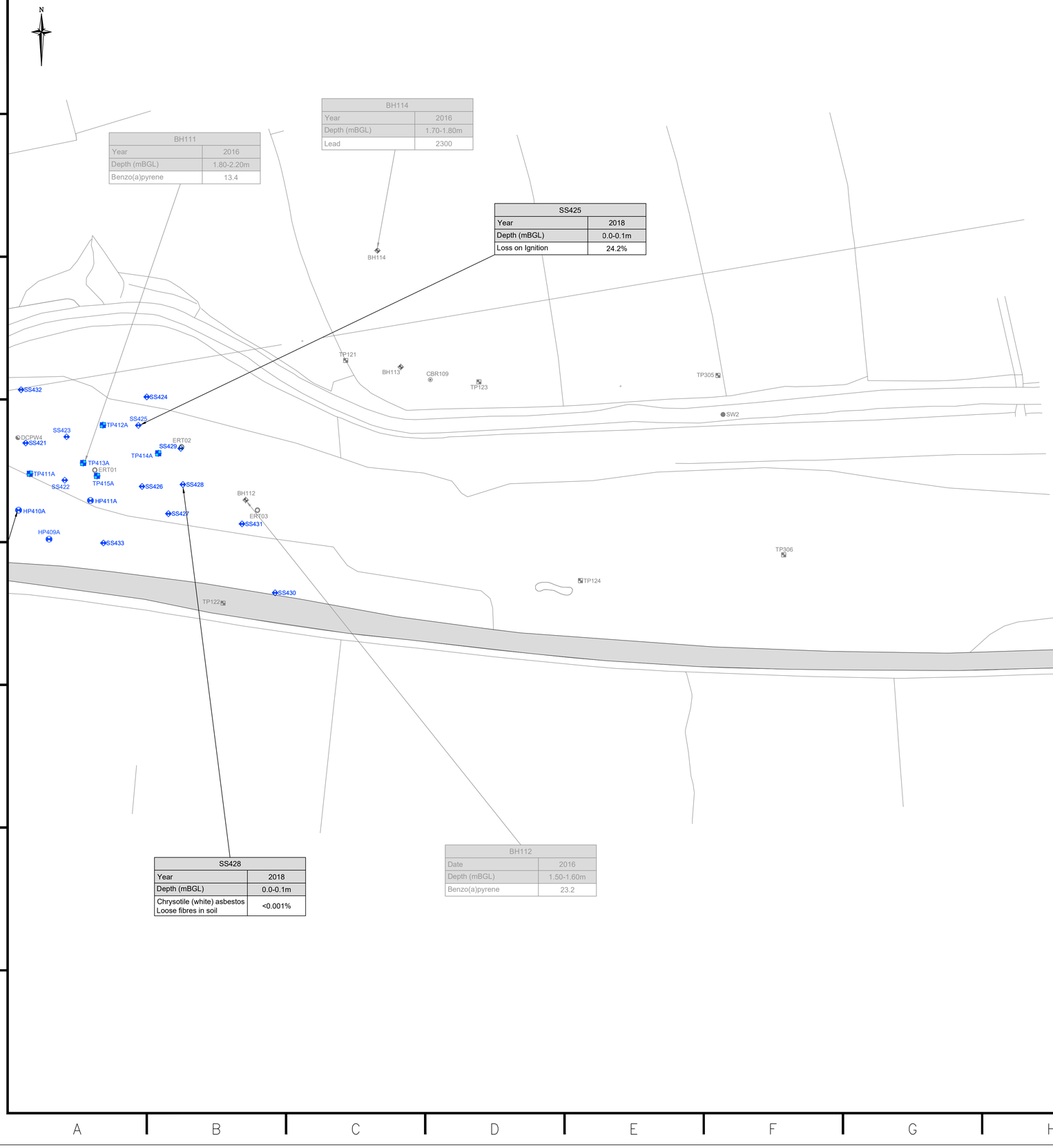
HUMAN HEALTH GQRA
SHEET 3 OF 4

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| CEW | 14/11/2018 | GJW | 14/11/2018 | GJW | 14/11/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 3 OF 4 | |

National Grid Document Number: PDD-33492-LAY-076C

FEED Document Number:




KEY

EXPLORATORY LOCATIONS 2016

- TP — TRIAL HOLE LOCATION
- BH — BOREHOLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- CBR — CALIFORNIA BEARING RATIO LOCATION
- DCPW — DYNAMIC CONE PENETROMETER LOCATION
- ERT — ELECTRICAL RESISTIVITY TRANSECT LOCATION

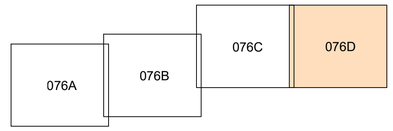
EXPLORATORY LOCATIONS 2018

- SS — SHALLOW SOIL SAMPLE
- HP — HAND DUG PIT
- TP — TRIAL PIT
- HARDSTANDING PATH / TRAIL

| Screening Criteria | |
|---|---|
| Determinand | GAC (mg/kg) |
| Lead | 808 |
| Benzo(a)pyrene | 11 |
| Loss on ignition | 20% |

= Where Asbestos detection exceeds GAC

KEY TO DRAWING SHEETS




| Rev | Description | Cre'd | Chk'd | App'd | Date |
|---|---|---|---|---|---|

nationalgrid

| Master Scheme No: | Sub-Scheme No: | Site: |
|---|---|---|
| 33492 | | 275kV OHL |

Scheme Name: VISUAL IMPACT PROVISION PEAK EAST

Document Title:

HUMAN HEALTH GQRA
SHEET 4 OF 4

| Created by: | Date: | Checked by: | Date: | Approved by: | Date: |
|---|---|---|---|---|---|
| CEW | 14/11/2018 | GJW | 14/11/2018 | GJW | 14/11/2018 |

| Development Eng: | Document Type: | Scale: | Format: | Sheet(s): | Rev: |
|---|---|---|---|---|---|
| GJW | PLAN | 1:1000 | A1 | 4 OF 4 | |

National Grid Document Number:

PDD-33492-LAY-076D

FEED Document Number:

# B RECORD OF ASBESTOS BRIEFINGS

The undersigned have received a site induction, been made aware of the Site Rules, and risks associated with the site works. The Asbestos Project Manager will inform all site staff of any significant changes made to any site operations and safety aspects of the site works. It is requested that staff inform the Site Manager of any allergies or medical conditions. Any breach of the rules set out in this document may result in immediate dismissal from the site.

| Date | Name | Specialism | Signature | Asbestos Induction Y/N | Comments |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |