REMEDIAL STRATEGY REPORT

Dakota Hotel
Manchester Airport

Reference	**6338-JPG-XX-XX -RP-G-0605-S2-P01**
Date	**September 2024**
Author	**DMH**

5 John Charles Way
LEEDS
LS12 6QA

Tel: 0113 263 1155
admin@jpg.group
www.jpg.group



CONTENTS

Confidentiality Statement

Document History

1.0 Introduction **1**

2.0 Purpose of this Remedial Strategy **1**

3.0 Location **1**

4.0 Site Description **1**

5.0 Previous Reports **2**

6.0 Summary of the Proposed Development **2**

7.0 Summary of Environmental Risk Assessment **2**

7.1 Unexpected Contamination 3

8.0 Importation of Materials **4**

9.0 Threshold Criteria for Imported Materials **7**

10.0 Validation Report **8**

APPENDICES

Appendix A Figures & Drawings

Figure 1 - Site Location Plan
Figure 2 - Aerial Photograph

KPP Architects. Proposed Site Plan. Dakota Hotel, Land off Enterprise Way, Wythenshawe. Drawing Ref: L051-KPP-XX-EX.00-D-A-003001, Rev: C01 (Construction). Dated May 2024.

Appendix B Yorkshire and Lincolnshire Pollution Advisory Council. Verification Requirements for Cover Systems. Technical Guidance for Developers, Landowners and Consultants. Version 4.1 – June 2021

CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

Evans Dakota Hotels Limited
Millshaw
LEEDS
LS10 1AB

This report has been prepared for the use and reliance of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

Revision	Date	Revision Details	Status	Author(s)	Approved
P01	20.09.2024	First Issue	Information	DMH	RJM

1.0 INTRODUCTION

JPG (Leeds) Limited has been instructed by Evans Dakota Hotels Limited to prepare a remedial strategy report for the proposed commercial hotel development off Enterprise Way immediately northeast of Manchester Airport.

2.0 PURPOSE OF THIS REMEDIAL STRATEGY

The purpose of this remedial strategy report is to provide details of the remedial measures which are required to be protective of controlled waters and human health.

3.0 LOCATION

The site is located to the east of Junction 5 of the M56, approximately 500m to the northeast of Terminal 2, Manchester Airport. The approximate centre of the site is located at NGR 381961 386038.

A site location plan is provided as Figure 1 in Appendix A.

4.0 SITE DESCRIPTION

The site has an area of approximately 1.22 hectares (ha) and comprises an irregular shaped relatively level parcel of land. It measures approximately 110m along its north to south axis and 140m along its east to west axis. Vehicular access to the site is off Bailey Lane from the northwest.

Most of the site is covered with bitmac and crushed stone, with smaller areas of concrete hardstanding.

A shallow embankment, approximately 2m high, runs along the southeastern, southwestern and northwestern boundaries of the site.

Mature and semi-mature trees are located along the northeastern boundary of the site.

Most of site is bound by a wooden fence, except for the entrance off Bailey Lane which comprises herras fencing secured with a combination lock. An additional fence/gate with a combination lock is located inside the site, close to the entrance off Bailey Lane.

A water house (wooden box) and water tap (live) were noted in the northern part of the site.

Bailey Lane is located immediately beyond the northwestern boundary beyond which are units occupied by the Razorblue Group and Etrop Grange Hotel.

Woodland and houses are located beyond the site to the northeast. A roundabout is located beyond the site to the southeast and Enterprise Way is beyond the site to the southwest.

Land beyond Enterprise Way to the southwest and to the west beyond Bailey Lane are currently being developed.

An aerial photograph of the site is included as Figure 2 in Appendix A.

5.0 PREVIOUS REPORTS

JPG have completed a desk study report, factual ground investigation report and an interpretative report for the site, these are referenced below:

- JPG (Leeds) Limited. Geoenvironmental Desk Study Report. Dakota Hotel, Manchester Airport. Report Ref: 6338-JPG-XX-XX-RP-G-0601-S2-P02. Dated February 2024.
- JPG (Leeds) Limited. Factual Report on Geoenvironmental Ground Investigation. Dakota Hotel, Manchester Airport. Report Ref: 6338-JPG-XX-XX-RP-G-0603-S2-P01. Dated May 2024.
- JPG (Leeds) Limited. Interpretative Report on a Geoenvironmental and Geotechnical Ground Investigation. Dakota Hotels, Manchester Airport. Report Ref: 6338JPG-XX-XX-RP-G-0604-S2-P01. Dated May 2024.

6.0 SUMMARY OF THE PROPOSED DEVELOPMENT

The proposed development comprises a seven-storey hotel building with associated car parking, electrical charging points, service yard and landscaping.

A plan of the proposed development has been provided by the client. This is referenced below, and a copy is provided in Appendix A.

- KPP Architects. Proposed Site Plan. Dakota Hotel, Land off Enterprise Way, Wythenshawe. Dated May 2024.

7.0 SUMMARY OF ENVIRONMENTAL RISK ASSESSMENT

Based on the results of the chemical analysis and hazardous ground gas monitoring, no potential sources of contamination have been identified.

Mitigation Measures

Although no potential sources of contamination have been identified on the site, consideration should be given to implementing the following mitigation measures to be protective of development and maintenance workers.

Development and Maintenance Workers

- Site workers involved in groundworks should use appropriate PPE, i.e. overalls and gloves. Appropriate health and safety measures, e.g. washing hands prior to eating or drinking, should also be enforced.
- Site workers involved in groundworks should take the necessary measures to ensure that all works in excavations and confined spaces are carried out in accordance with best practice in order to prevent exposure to potentially hazardous ground gases.
- During development of the site, all workers should remain vigilant to the possible risk of encountering areas of potentially contaminated material. Should potentially contaminated material be encountered, site management should be informed. Further testing may then be required to assess the risk to health and safety of the site workers and the environment.
- All employers involved in works at the site should produce an appropriate method statement and risk assessment, to which all employees should comply, e.g. working in confined spaces. Reference should also be made to the appropriate HSE and other guidance for working on contaminated and potentially contaminated sites.

Buildings and Services

It is recommended that concrete should be designed to Aggressive Chemical Environment for Concrete (ACEC) Design Sulphate Class DS-1 and ACEC Class AC-1.

7.1 Unexpected Contamination

During development of the site, all workers should remain vigilant to the possible risk of encountering areas of unexpected potentially contaminated material. Should unexpected potentially contaminated material be encountered, site management should be informed. Further testing may then be required to assess the risk to health and safety of the site workers and the environment.

Any excavated potentially contaminated materials should be placed on a layer of visqueen and covered with a layer of visqueen to prevent the release of dust and leaching of potential contaminants.

Chemical analysis of the material may then be required to assess the risk to health, e.g. site workers, site end-users and controlled waters.

Chemical analysis may also be required in order to determine the waste classification of the material should consideration be given to disposal off-site.

8.0 IMPORTATION OF MATERIALS

Materials proposed to be imported onto site for use as general fill, or soil cover for soft landscaping should be subject to the guidance provided in the following document, a copy of which is presented in Appendix B:

- Yorkshire and Lincolnshire Pollution Advisory Council. Verification Requirements for Cover Systems. Technical Guidance for Developers, Landowners and Consultants. Version 4.1 – June 2021.

The guidance provides four broad classifications for materials, these are summarised below:

- Virgin Quarried Material.
- Crushed hardcore, stone and brick.
- Greenfield/Manufactured.
  - Greenfield – if it can be demonstrated that it has not been developed and that no past contaminative uses have occurred on the site.
  - Manufactured – from a commercial company who manufacture material by mixing or blending mineral soils (subsoil or sand) with an organic amendment (compost).
- Brownfield/Screened.
  - Brownfield – material from a donor site that has previously been developed.
  - Screened – material from a company who deal with skip/demolition waste which is screened for unsuitable material, i.e. bricks, wood, plastic etc.
- In addition, the testing requirements for bulk fill, i.e. naturally occurring materials imported from donor sites in accordance with a Materials Management Plan (MMP), have been included.

Table 1 below provides the testing requirements/documentation required for each material type. The testing requirements/documentation required below applies to each material source.

Table 1 - Testing Requirements for Imported Materials

Type	Number of Samples	Testing Schedule	Assessment Criteria
Virgin Quarried Material	1 or 2 depending on the type of stone utilised, to confirm the inert nature of the material	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se and Zn). Water soluble sulphate pH	Table 2
Crushed Hardcore, Stone, Brick	Minimum 1 per 500m^3	Standard metals/metalloids (as above) PAH (16 USEPA speciation). Asbestos. Total TPH. Water soluble sulphate pH Any additional analysis dependant on the history of the donor site.	
Greenfield/ Manufactured Soils	Minimum 3, or 1 per 250m^3 (whichever is greater)	Standard metals/metalloids (As above). PAH (16 USEPA speciation). Asbestos. Water soluble sulphate pH Soil Organic Matter (SOM).	
Brownfield/ Screened Soils	Minimum 6 or 1 per 100m^3 (whichever is greater)	Standard metals/metalloids (As above). PAH (16 USEPA speciation). Speciated TPH (TPHCWG). Asbestos. Water soluble sulphate pH SOM Any additional analysis dependant on the history of the donor site.	
Bulk Fill - Naturally occurring materials imported from donor sites in accordance with an MMP.	Minimum 1 per 1,000m^3	Standard metals/metalloids (as above) Phenol, PAH (16 USEPA speciation), Speciated TPH (TPHCWG). Asbestos. Water soluble sulphate pH	

Samples should be tested at source prior to being imported onto the site. This is to avoid the costly exercise of re-excavating unsuitable material and the possibility of cross-contamination.

Where the material is provided by a commercial company, testing certificates will normally be accepted on the provision that it (i) relates to the actual material being imported to the site and the type and amount of analysis is compliant with Tables 1 and 2, and (ii) the certificates are less than two months old.

In addition to the above, if bulk fill materials (e.g. naturally occurring soils) are proposed to be imported onto site, the contractor must provide sufficient evidence, i.e. chemical analysis certificates and appropriate waste classification certificates, to confirm that the material cannot be classified as 'hazardous'.

Dependent on the volume anticipated for importation, these materials would need to be registered under an appropriate permit/exemption or transferred under an MMP in accordance with the CL:AIRE (Contaminated Land: Applications in Real Environments) Definition of Waste Code of Practice (DoWCoP).

If processed recycled materials manufactured in accordance with the Waste and Resources Action Programme (WRAP) protocol are proposed to be imported onto site, the contractor must provide sufficient evidence, i.e. written confirmation of WRAP compliance and appropriate waste classification certificates, to confirm that the material cannot be classified as 'hazardous' and has been recovered appropriately.

If processed recycled aggregates (e.g. Class 6 material) originating from a non-WRAP compliant source are proposed to be imported onto site, the contractor must provide sufficient evidence, i.e. chemical analysis certificates and appropriate waste classification certificates, to confirm that the material cannot be classified as 'hazardous'. Dependent on the volume anticipated for importation, non-WRAP compliant materials would need to be registered under a U1 exemption or through an environmental permit.

If a naturally occurring product (e.g. quarried stone) is imported onto the site then this would not be classified as a waste, hence a waste classification report would not be required, however, chemical analysis results would be required for this material in accordance with Tables 1 and 2.

Materials for use as general fill and soil cover layers in areas of soft landscaping (which are intended to promote plant growth) should also be subject to a visual/olfactory inspection.

It must be ensured that materials are free from obvious contamination, i.e. hydrocarbons (odours), invasive plant species (e.g. Japanese Knotweed) and unsuitable materials, i.e. glass, asbestos containing materials, brick, tarmac, plastic, or timber. In the case of cover materials, it must also be ensured that they will provide a suitable growing medium.

There may also be a requirement for the analysis of imported topsoil (in accordance with BS3882:2015) to assess whether it is suitable for its intended purpose.

9.0 THRESHOLD CRITERIA FOR IMPORTED MATERIALS

It is recommended that the threshold concentrations for potential contaminants in Table 2 are adopted for imported materials.

Table 2 - Threshold Concentrations for Imported Materials

Potential Contaminant	Threshold Criteria (mg/kg)
Arsenic	640 (1)
Cadmium	190 (1)
Chromium	1,700 (2)
Hexavalent Chromium	33 (1)
Copper	2,200 (2)
Lead	999 (2)
Mercury	1,100 (1)
Nickel	335 (2)
Selenium	975 (2)
Zinc	360 (2)
Phenol	440 (1)
Acenaphthene	999 (2)
Acenaphthylene	2,499 (2)
Anthracene	2,499 (2)
Benz(a)anthracene	170 (1)
Benzo(a)pyrene	35 (1)
Benzo(b)fluoranthene	44 (1)
Benzo(k)fluoranthene	999 (2)
Benzo(ghi)perylene	2,499 (2)
Chrysene	350 (1)
Dibenz(ah)anthracene	3.5 (1)
Flouranthene	2,499 (2)
Flourene	2,499 (2)
Indeno(123-cd) pyrene	500 (1)
Naphthalene	190 (1)
Phenanthrene	2,499 (2)
Pyrene	2,499 (2)
Asbestos	Not Present
TPH C5 to C10 (Includes Toluene, Ethylbenzene & Xylene)*	500*
TPH >C10 to C35 (Includes many of the 16-PAHs)*	999*

Notes
***Speciated criteria is not required as the threshold criteria is lower than the threshold criteria for each individual speciated value.**

(1) Suitable for Use Level (S4UL) based on 1% SOM
(2) Hazardous Waste Threshold Criteria determined using HazWasteOnline^{tm} - These threshold criteria have been calculated for individual contaminants based on a worst-case species scenario. Where these are lower than their respective S4UL concentration, the lower threshold concentration has been specified.

10.0 VALIDATION REPORT

On completion of the remedial works, a validation report shall be produced for submission to the Local Authority. This will provide documentary evidence that the works have been undertaken in accordance with the remedial strategy and that the general requirements and objectives have been achieved.

The validation report shall include all relevant site records, test results, including plans showing pertinent information.

The Contractor shall provide copies of all waste transfer notes of potentially contaminated materials exported off site and materials imported onto the site, together with the relevant certificates of analysis. Duty of care documentation shall be submitted with the validation report.

Appendix A Figures & Drawings



Figure 1 – Site Location Plan	
Site	**Dakota Hotel, Manchester Airport**
Client	**Evans Dakota Hotels Limited**
Job Number	**6338**
Scale	**NTS**

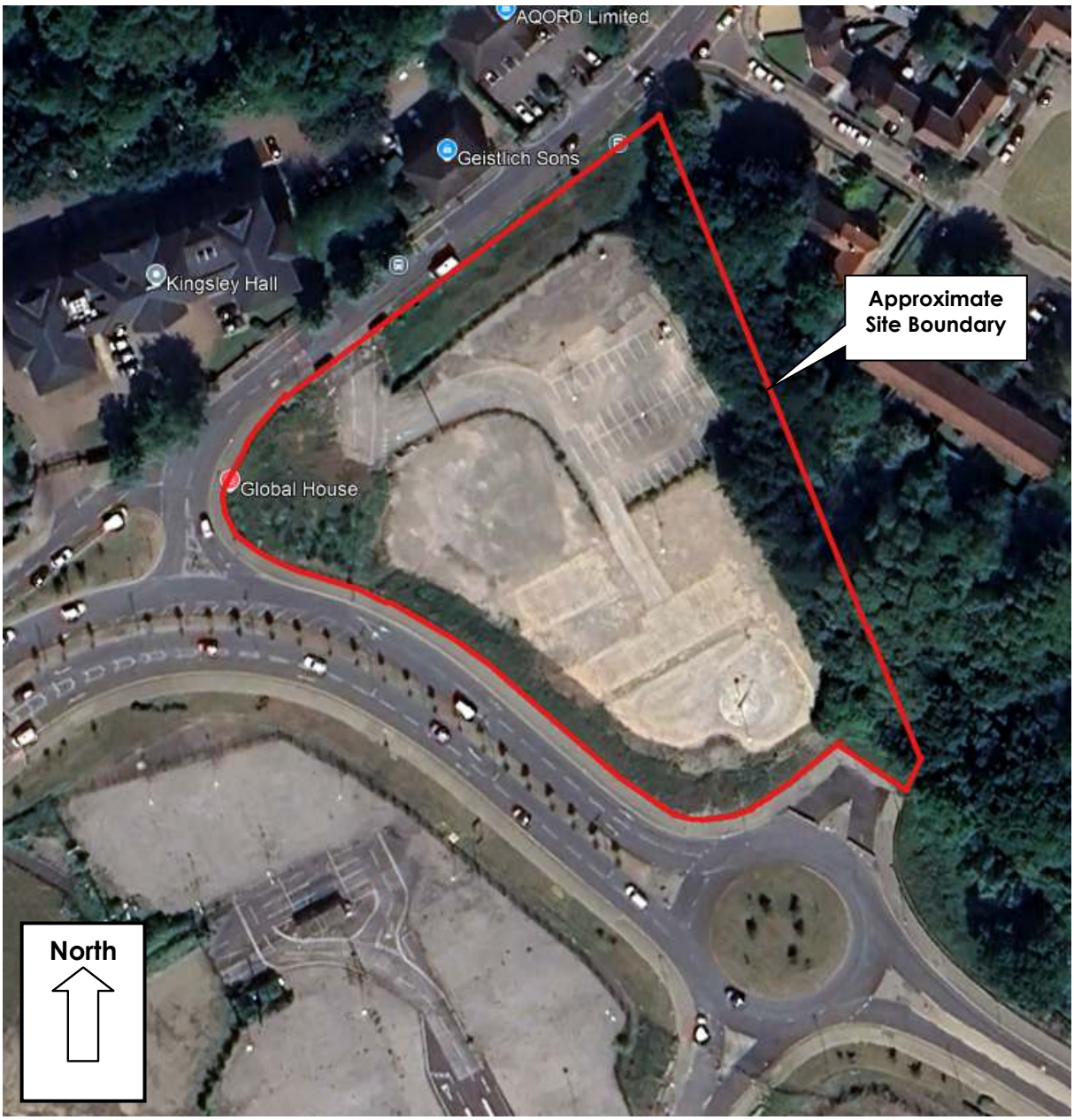


Figure 2 – Aerial Photograph	
Site	**Dakota Hotel, Manchester Airport**
Client	**Evans Dakota Hotels Limited**
Job Number	**6338**
Scale	**NTS**

Notes:

This drawing is the sole copyright of KPP Architects Ltd and reproduction in any form is forbidden unless permission is obtained in writing.

Do not scale from this drawing. Any descrepancies on site should be brought to the attention of KPP Architects Ltd.

Work and materials must comply with the current building regulations and codes of practice and be read in conjunction with building specifications and other sub-contractors information. All materials are to be installed in strict accordance with the recommendations of the manufacturers.

NORTH

REFER TO PWP PROPOSALS FOR FULL DETAILS & SPECIFICATION ON SOFT LANDSCAPING

REFER TO KPP DWG 3002 FOR PROPOSED EXTERNAL FINISHES. CONSTRUCTION BUILD-UP OF EXTERNAL FINISHES TO BE READ IN CONJUNCTION WITH JPG INFORMATION

TO BE READ IN CONJUNCTION WITH PROPOSED LEVEL INFORMATION FROM JPG

DASHED LINE DENOTES UNADOPTED FOUL DRAIN AS PER MAG AS BUILT RECORDS FOR ENTERPRISE WAY CONSTRUCTION WORKS. HATCH DENOTES PROPOSED EASEMENT ON PLAN FOR FUTURE ADOPTION FOLLOWING CONNECTION INTO DRAIN FROM PROPOSAL. REFER TO SLIT TRENCH / GPR SURVEYS FOR FURTHER DETAILS ON LOCATION / DEPTH OF DRAIN & TO JPG DRAWINGS FOR PROPOSED CONNECTION DETAILS

BLUE DOT DENOTES APPROX. EXISTING BUS STOP LOCATION. TO BE UPGRADED WHERE POSSIBLE TO TFGM STANDARDS. DETAILS TO BE AGREED

BLUE DOT DENOTES APPROX. EXISTING BUS STOP LOCATION. TO BE UPGRADED WHERE POSSIBLE TO TFGM STANDARDS. DETAILS TO BE AGREED

BLUE HATCH DENOTES PROPOSED RESURFACING OF EXISTING CARRIAGEWAY & PEDESTRIAN FOOTWAY. FULL DETAILS TO BE CONFIRMED THROUGH S278 APPLICATION. TO INCLUDE TACTILE CROSSING TO EITHER SIDE OF NEW ENTRANCE

2.4m HIGH ACOUSTIC FENCING. REFER TO KPP DWG 3003 & 3004 FOR FULL DETAILS

EXISTING TREES TO BE REMOVED IN LINE WITH ARBORICULTURIST REPORT. REFER TO JCA DOCUMENT FOR FURTHER INFORMATION

130 TOTAL PARKING SPACES INC:
8No. DISABLED PARKING SPACES (Inc. 2No. EV SPACES)
10No. EV CAR CHARGING SPACES (Inc. 2No. ACC. SPACES)

DK

METAL SLIDING GATE TO MATCH ADJACENT FENCING. REFER TO KPP DWG 3003 & 3004 FOR FULL DETAILS

SERVICE ENTRANCE

SERVICE YARD

10No. EV CAR CHARGING SPACES

8No. DISABLED PARKING SPACES (Inc. 2no. EV)

ENTRANCE BARRIER. REFER TO KPP DWG 3003 & 3004 FOR FURTHER DETAILS

SLIDING GATE. REFER TO KPP DWG 3003 & 3004 FOR FURTHER DETAILS

NEW DIRECTIONAL SIGNAGE TO SEGREGATE CARS & SERVICE VEHICLES

STOP

5NO. DUAL EV CHARGING POSTS - REFER TO M&E SPECIFICATION FOR DETAILS

CROSSING

ENTRANCE BARRIER. REFER TO KPP DWG 3003 & 3004 FOR FURTHER DETAILS

NEW ROAD MARKINGS IN ACCORDANCE WITH JPG DETAILS

PROPOSED SUB STATION. REFER TO SUB STATION DRAWING FOR DETAILS

CONDENSER COMPOUND. REFER TO KPP DWG 3003 & 3004 FOR FULL DETAILS OF FENCING.

ENTRANCE

CAR DROP OFF ZONE

PEDESTRIAN ACCESS PATH

BAILEY LANE

CYCLE STORE. REFER TO KPP DRAWING 3005 FOR DETAILS

EXTERNAL TERRACE. REFER TO KPP DRAWING 4042 FOR FURTHER DETAILS

REFER TO KPP DRAWING 4039 FOR FURTHER DETAILS OF WIND WALL

REFER TO KPP DRAWING 4040 FOR FURTHER DETAILS OF VEHICULAR ENTRANCE CANOPY

PEDESTRIAN ACCESS PATH

LOW HEIGHT TIMBER KNEE RAIL FENCE. REFER TO KPP DWG 3003 & 3004 FOR FULL DETAILS

ENTERPRISE WAY

LOW HEIGHT TIMBER KNEE RAIL FENCE. REFER TO KPP DWG 3003 & 3004 FOR FULL DETAILS

C01	CONSTRUCTION ISSUE	JH	.	23.08.24
Rev	Description	By	Chkd	Date

Client

EVANS DAKOTA HOTELS LTD.

Project Title

DAKOTA HOTEL
LAND OFF ENTERPRISE WAY
MANCHESTER AIRPORT

Drawing Title

PROPOSED SITE PLAN

KPP ARCHITECTS
Lodge House
12 Town Street
Horsforth, Leeds LS184RJ
T : +44 (0) 113 2390460
E : architects@kpp-leeds.co.uk
W : www.kpp-leeds.co.uk

Scale	Size	Date	Drawn	Checked
1:250	A1	MAY '24	JH	.

Status

CONSTRUCTION

KPP Job No: **2019-08** Rev: **C01**

Project Originator Level Type Role Class Number

L051-KPP-XX-EX.00-D-A-003001

Appendix B Yorkshire and Lincolnshire Pollution Advisory Council. Verification Requirements for Cover Systems. Technical Guidance for Developers, Landowners and Consultants. Version 4.1 – June 2021











VERIFICATION REQUIREMENTS FOR COVER SYSTEMS

Technical Guidance for Developers, Landowners and Consultants

Yorkshire and Lincolnshire Pollution Advisory Group

Version 4.1 – June 2021

The purpose of this guidance is to promote consistency and good practice for development on land affected by contamination. The Local Authorities in Yorkshire, Lincolnshire, the North East of England, East Anglia, Greater Manchester and St Helens who have adopted this guidance are shown below:















































































Contents

Introduction *1*

The Process of Verification *1*

Overview Flowchart *2*

Key Points *3*

KP1: Source of Material **3**

KP2: Characterisation of Material **3**

KP3: Suitability of Material **5**

KP5: Verification of Required Depth **6**

KP6: Reporting **6**

Appendix 1a – Sampling & Testing Matrix *8*

Appendix 1b – Questions to Ask Your Soil Supplier Relating to Soil Quality *9*

Appendix 2 – Checklist for Verification Reports *10*

Appendix 3 – Examples of Good Quality Photographs *11*

Disclaimer

This guidance is intended to serve as an informative and helpful source of advice. YALPAG will review this guidance every three years, but readers must note that legislation, guidance and practical methods are inevitably subject to change and therefore should be aware of current UK policy and best practice. This note should be read in conjunction with prevailing legislation and guidance, as amended, whether mentioned here or not. Where legislation and documents are summarised this is for general advice and convenience, and must not be relied upon as a comprehensive or authoritative interpretation. Ultimately it is the responsibility of the person/company involved in the development or assessment of land to apply up-to-date working practices to determine the contamination status of a site and the remediation and verification requirements.

Acknowledgments

YALPAG would like to thank North Lincolnshire Council, Leeds City Council, City of Bradford Metropolitan District Council, Barnsley Metropolitan Borough Council, Rotherham Metropolitan Borough Council, Wakefield Council, and Tameside Metropolitan Borough Council, for producing this guidance.

YALPAG would also like to acknowledge Liverpool City Council's Contaminated Land Team, Coopers Consulting Engineers for allowing us to use their guidance document and photographs and WSP Environmental Ltd for also donating photographs.

Consultation

39 Local Authorities and 6 Environmental Consultants were consulted over a four week period in 2010 during the production of the initial guidance. At that time, consultation comments were considered by the review panel and a number of revisions were made to the guidance to reflect these comments.

49 Local Authorities and 25 Environmental Consultants were consulted in 2021, during the production of this version [4.1] of the guidance. Consultation comments were considered by the review panel and a number of revisions were made to the guidance to reflect these comments.

Introduction

This guidance has been produced to help developers ensure that they can demonstrate that material brought onto a development site for gardens or areas of soft landscaping are suitable for use and do not present harm to people, the environment and/or property. It is intended to improve the quality of reports submitted to Local Authorities on this matter and to give contractors/consultants a point of reference to obtain approval for such work from their client. This guidance does not cover the geotechnical suitability of soils or materials, chemical suitability that does not affect human health e.g. sulphates, or importing soils contaminated with invasive (or injurious) plants.

The verification of cover systems should be an integral part of the remediation project and agreed between developers and regulators at an early stage in the project.

UK guidelines for remediation verification are set out within Land Contamination Risk Management[1] (LCRM) and the document on Verification of Remediation of Land Contamination[2]. This guidance note should be considered as supplementary advice in conjunction with these documents.

This guidance relates to the remediation of land contamination by using cover systems; however, the verification of the quality of imported material is equally important in other situations, such as raising levels for flood prevention or general landscaping works. This guidance could also be used in such instances.

The Process of Verification

Implementation plans for remedial works should always be site specific. Where a cover system and potentially, excavation, is the main remedial method or a component of an overall site remediation, specific goals will need to be set that are linked directly to the risk management strategy for the site in question.

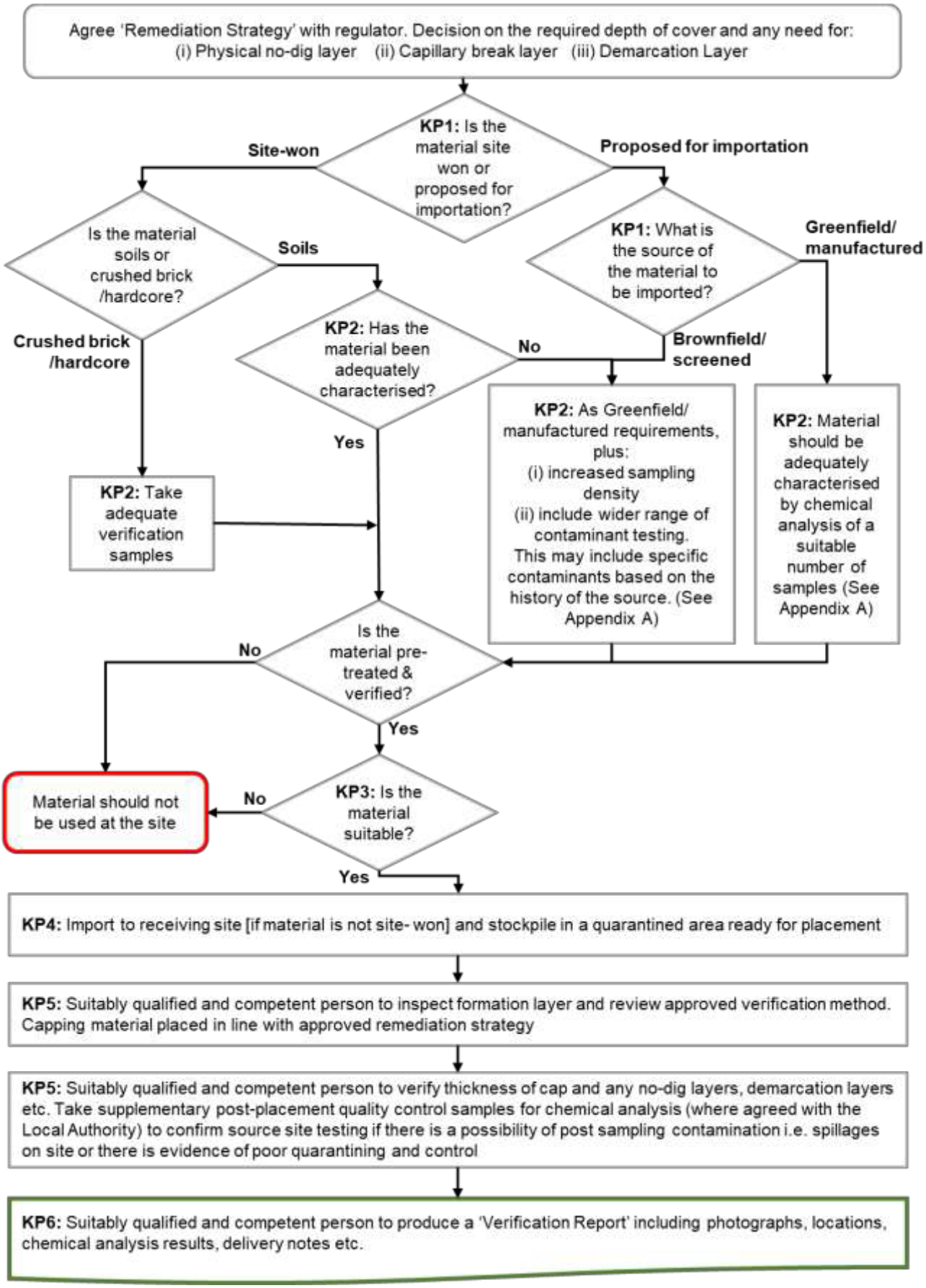
For cover and containment systems, verification will normally depend upon the provision of defensible measurements, observations and records. Critical factors to be considered are:

- What should be measured?
- When should they be measured?
- Where measurements need to be taken, what is the appropriate monitoring regime i.e. number and frequency of samples?
- Statistical constraints on sampling.

National Planning Policy Framework (NPPF) states that “planning policies and decisions should ensure that after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990”. The Verification Report is a key document to demonstrate compliance with NPPF, and the responsibility rests with the developer/applicant to submit the required Verification Report to complete the remediation and to discharge any planning conditions.

[1] Land Contamination Risk Management, Environment Agency, Oct 2020
[2] Verification of Remediation of Land Contamination. Environment Agency, Feb 2010

Overview Flowchart



Key Points

KP1: Source of Material

Material can be sourced from site won material i.e. crushed brick/hardcore or site-won soils from existing open or landscaped areas. In the interest of sustainability, Local Authorities promote the use of such site-won material providing that they are suitable for the intended end use of the site.

Alternatively, material can be sourced from other developments and commercial companies. Dependent on the source of the material it can be classified as either from a 'Greenfield/Manufactured' or 'Brownfield/Screened' source.

Broadly speaking material can be classified as follows:

Greenfield – Where documentary evidence is provided confirming that the source site has not been developed and that no past contaminative uses have occurred. Should evidence not be provided or approved by the Local Authority, please note that the source would be expected to be assessed as though it were a brownfield source.

Manufactured – from a commercial company who manufacture material by mixing or blending mineral soils (subsoil or sand) with an organic amendment (compost). If other soil component sources are used, documentary evidence should be provided confirming that the source site has not been developed and that no past contaminative uses have occurred. Should documentary evidence not be provided or approved by the Local Authority, please note that the source would be expected to be assessed as though it were a brownfield source.

Brownfield – material from a donor site that has previously been developed

Screened – material from a company who deal with skip/demolition waste which is screened for unsuitable material i.e. bricks, wood, plastic etc.

KP2: Characterisation of Material

It is essential that material is suitable for its intended use. Documentary evidence of the source of the material should be provided to the Local Authority. This may include desk study or site investigation reports. A defensible method is required to ensure the verification proposals are site specific and that the level of sampling reflects the need to ensure that imported material are suitable for their intended use.

Due to the diminishing supply of suitable Greenfield topsoil sources it has been found that the chemical quality of Greenfield sources is less reliable in certain areas. As a result the recommended analytical rate for the intended use of the development may vary between Local Authorities [see **Appendix 1a**].

When should this be done?

Sampling of material should be undertaken as early as possible i.e. prior to placement [for site won material] and prior to importation [for imported material]. This is to avoid the costly exercise of re-excavating unsuitable material and the possibility of cross contamination. Where the assessor has confidence that the material is of sufficient quality (i.e. tested by supplier, used previously) it is acceptable to test the material on site. Although, if it is deemed unsuitable it would have to be either removed off site or pre-treated at the cost and time of the developer. It is recommended that some verification samples are also taken once this material has been delivered to site to confirm suitability for use. Soils can become contaminated during transportation or when stockpiled on site.

What about certificates from commercial suppliers?

Where the material is provided by a commercial company, certificates or other industry Quality Protocol compliance i.e. WRAP, DoWCoP, will normally be accepted. This is on the proviso that it: (i) relates to the actual material being imported to the site and the type and amount of analysis is in line with what is prescribed in Appendix 1a; and, (ii) the certificates are less than two months old.

It is recommended that some additional verification samples are taken once this material has been delivered to site. Soils can become contaminated during transportation or when stockpiled on site.

Extreme caution should be given to importing material that has been recycled from demolition or skip waste as they could easily be contaminated e.g. asbestos containing materials. Please refer to "questions you should be asking your supplier" in **Appendix 1b** and include the responses in your report.

British Standard

Imported soils should be as specified in BS 3882:2015 for topsoil and BS8601:2013 for subsoil as 'suitable for their intended purpose'. Both British Standards relate mostly to nutrient content of topsoil and phytotoxic contamination and they do not consider contaminants that pose a risk specifically to human health. Soils should be tested for contaminants that are considered to pose a risk to human health in addition to those specified in the relevant British Standards to ensure that they are suitable for their intended use.

Initial screening

A visual / olfactory inspection of the material should be carried out by a suitably qualified and competent person to ensure that:

- It is a suitable growing medium;
- It is free from obvious contamination i.e. staining/free product etc.;
- It has not come from areas where Japanese Knotweed or other invasive or injurious plants, as specified by the Environment Agency, are suspected to have been growing;
- It is not odorous (could be considered a statutory nuisance);
- It is free from unsuitable material i.e. bricks, brick ties, timber and glass etc.); and,
- There are no visible signs of asbestos containing material (ACMs).

Testing schedule & number of samples

Chemical testing will normally be required on any materials that are to be used as cover material, even where this includes first generation quarried material. This should be carried out by a suitably qualified and competent person.

Appendix 1a explains in detail the sampling and testing requirements for a typical residential development. These are only guidelines and it may be necessary to deviate away from them depending on local and site-specific factors. It is recommended that the developer discusses any deviation with the Local Authority.

The following criteria sets out the requirements for sampling and testing:

- **Virgin Quarried Material** sampling needs to be 1 or 2 samples depending on the type of stone utilised, to confirm the inert nature of the material. Testing to include standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn).

- **Crushed Hardcore, Stone, Brick (excluding asphalt)** a minimum of 1 sample per 500m^3. Testing to include standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, total TPH. Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).

- **Greenfield/ Manufactured Soils** a minimum of 3 samples or, dependent on source and receptor, between 1 per 50m^3 and 1 per 250m^3. Testing to include standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, pH and soil organic matter (SOM) (or calculated from total organic carbon (TOC)).

- **Brownfield/ Screened Soils** a minimum of 6 samples or dependent on source and receptor, between 1 per 50m^3 and 1 per 100m^3. Standard metals/ metalloids (as above), PAH (16 USEPA speciation), TPH (CWG banded), asbestos, pH and SOM (or calculated from TOC). Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).

The assessment criteria need to be UK based, e.g. LQM S4ULs, Defra C4SLs or other similarly derived GACs.

KP3: Suitability of Material

Based on the characterisation of material above, the material should be either deemed suitable or unsuitable. Obviously unsuitable material should not be used (unless it is treated to reduce levels of contaminants below agreed target levels i.e. bioremediation – this would have to be agreed and included within the Remediation Strategy) and an alternative source of material should be sought by the developer. If the material is considered suitable it can be imported (if not site won) and stockpiled in a suitably quarantined area [refer to **KP4**].

KP4: Stockpiling & Quarantining of Material

It is essential that the 'suitable' material is either placed in its intended area straight away i.e. soft/landscaped areas or stockpiled in a suitable quarantine area to prevent on-site contamination.

In the event that an assessor finds material has been stored in an unsuitable area, samples should be taken to confirm that no cross contamination has occurred (including a visual/olfactory check of the material). The material should then be suitably quarantined or placed at its intended location immediately.

KP5: Verification of Required Depth

In line with the agreed Remediation Strategy, it is important to establish that the required depth has been achieved and is consistent across the site. There are two main ways to achieve this:

Depth testing in situ – small trial pit excavated to allow measurement of its depth by standardised tape measure or measuring staff.

Topographical surveys – accurate survey of the base and final formation layer height to establish the depth of cover.

Specific Local Authority Policy

Please check with the local Contaminated Land Officer to establish:

- Which type of method for testing depth is accepted; and,
- The number of verification areas per property, plot, landscaped area or garden area (some Local Authorities recommend at least 2 per plot for residential developments).

Important Note: Where demarcation, physical no-dig and capillary break layers exist they should be verified for their thickness and presence during the time of their installation. Details of the demarcation layer should be agreed with the Contaminated Land Officer prior to placement. This will include the design, type and strength of the geotextile separator or visual warning membrane. The verification of depth and confirmation of such layers should be carried out by a suitably qualified and competent person.

KP6: Reporting

The purpose of verification documentation is to provide transparent reasoning why the remediation was required, a methodology about how it was to be undertaken and proof that the specified works have been undertaken and to provide confirmation that the site is "suitable for its intended use".

The document is utilised not only to satisfy conditions of planning permissions but also is to be kept on record by the Local Authority should queries be raised during the lifetime of the development and to confirm to future purchasers that the site is suitable for use.

National Planning Policy Framework (NPPF) states that "planning policies and decisions should ensure that after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990". The Verification Report is a key document to demonstrate compliance with NPPF, and the responsibility rests with the developer/applicant to submit the required Verification Report to complete the remediation and to discharge any planning conditions.

It is also essential that other supporting documentation is included within a report carried out by a suitably qualified and competent person e.g. laboratory analysis results, delivery tickets for material, certificates for imported material (or if unavailable, documented evidence of the source of the Greenfield material), trial pit logs etc. A checklist has been included in **Appendix 2** to give an idea on what information should be recorded.

Additionally, any reporting should include details of any measures required to maintain the cover system integrity in the future e.g. successive construction phases (management plans) and longer term (restrictive covenants on title deeds).

Photographic evidence for validating the depth of cover

The Local Authority ideally would recommend the following programme of photographs to be taken of the placement of inert cover:

- Photographs of any stockpiles and quarantine areas
- Proof that the depth of inert cover has been installed
- Proof of the quality of the material to be used as inert cover
- Proof there is a geotextile separator and visual warning membranes if used between the underlying material and suitable for use soils.
- Proof of the method of placement and different layers if appropriate
- Proof of the completed project
- Inclusion of background features which will aid locating the photograph
- Inclusion of site identification boards within the photos which show the date, position taken i.e. corner of plot 3 and the site name.
- Inclusion of photographs of site stockpiles and quarantine areas.

The presence of good quality photographs is essential to prove beyond doubt that the remediation has been done as specified both by method and position, and that the images have been taken from the specific area stated.

Refer to **Appendix 3** for examples of good photographic evidence.

Appendix 1a – Sampling & Testing Matrix

Type	Number of Samples	Testing Schedule	Assessment Criteria
	Please note that these guidelines apply to a typical residential development, and relaxation of the guidelines or more stringent requirements may apply dependent on local and site specific factors. Therefore, <u>all parameters need to be agreed with the Local Authority</u>.		
Virgin Quarried Material	1 or 2 depending on the type of stone utilised, to confirm the inert nature of the material.	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn)	The assessment criteria need to be UK based, e.g. LQM S4ULs, Defra C4SLs or other similarly derived GACs.
Crushed Hardcore, Stone, Brick (excluding asphalt)	Minimum 1 per 500m^3	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, total TPH. Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).	
Greenfield/ Manufactured Soils	Minimum 3 Dependent on source and receptor, between 1 per 50m^3 and 1 per 250m^3	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, pH and soil organic matter (SOM) (or calculated from total organic carbon (TOC)).	
Brownfield/ Screened Soils	Minimum 6 Dependent on source and receptor, between 1 per 50m^3 and 1 per 100m^3	Standard metals/ metalloids (as above), PAH (16 USEPA speciation), TPH (CWG banded), asbestos, pH and SOM (or calculated from TOC). Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).	

Appendix 1b – Questions to Ask Your Soil Supplier Relating to Soil Quality

- What is the source of the material (refer to KP1)? If the source is Greenfield, can they provide evidence of this?
- Will all of the material be coming from the same source?
- Are you satisfied that the material is a suitable growing medium for the proposed end use?
- Has the supplier used an appropriate sampling protocol to ensure a representative sample is analysed? What volume of soil is represented by the analysis and does it comply with Appendix 1a?
- Does the testing include analysis of contaminants identified in Appendix 1a?
- Does the laboratory conducting the analysis have UKAS and MCERTS accreditation for the tests they are carrying out?
- Does the material comply with relevant waste regulations?
- Can I have a copy of the whole analysts report and does it include an interpretive section?
- Will the provided certificate be dated within the last 2 months?

Appendix 2 – Checklist for Verification Reports

Example only. Not to be considered as typical minimum requirements. Additional information should be included for non-cover systems aspects of the remediation i.e. gas protection measures etc.

Site Details	
Site Name / location	
Developer name	
Development use	
Plot No / description of landscaped area (inc plan of inspection areas)	
National Grid Reference	
Inspection visit date	
Supporting Evidence	
Description of remediation (as per agreed Remediation Method Statement including depths / thickness checks, topographical readings)	
Material tracking information (including way tickets etc.)	
Name of groundwork's remediation contractor	
Name of supervising environmental consultant	
Site Specific chemical analysis results	
Verification Photographs (inc. remarks)	
Recommendations	
Pass/fail	
If material fails, how will this be managed i.e. removed, treated	
Detail any further remedial works and/or inspection	
Signed off	

Failure to provide any of the above information may prevent planning conditions from being discharged.

Appendix 3 – Examples of Good Quality Photographs



© Coopers Consulting Engineers

Photograph 1:
Depth check of inert cover within area of public open space. Physical break layer and topsoil visible.



© WSP

Photograph 2:
Depth check of inert cover with Site & Location Information Board.



© Coopers Consulting Engineers

Photograph 3:
Depth check of inert cover within areas of front gardens.



© Coopers Consulting Engineers

Photograph 4:
Depth check of inert cover within areas of front gardens.



© Coopers Consulting Engineers

Photograph 5:
Depth check of inert cover within rear gardens. Taut string line spans across excavation.



© Coopers Consulting Engineers

Photograph 6:
Depth check of inert cover within rear gardens. Taut string line spans across excavation.



© Coopers Consulting Engineers

Photograph 7:
Shows the spatial location of the verification pit.



© Coopers Consulting Engineers

Photograph 8: Excavation within public open space and verification pit showing the presence of a remediation break layer at the base, a crushed sandstone inert fill overlain by topsoil.



© Coopers Consulting Engineers

Photograph 9: Inert crushed sandstone being delivered. The spatial area of the remediation can be observed from these photographs (old terrace housing).



© Coopers Consulting Engineers

Photograph 10: Inert crushed sandstone being delivered with visible remediation break layer. The spatial area of the remediation can be observed from these photographs (traffic lights).



© Coopers Consulting Engineers

Photograph 11:
Shows the remediation of the rear garden, with a significant depth (1.0m) of inert cover. This photograph has been stitched to form a panoramic photograph and hence there is slight distortion



© Coopers Consulting Engineers

Photograph 12:
Shows the remediation of the rear garden, with a significant depth (1.0m) of inert cover. Remediation break layer visible at the base of the excavation.

5 John Charles Way
LEEDS
LS12 6QA

Tel: 0113 263 1155
admin@jpg.group
www.jpg.group

