



# Remediation Strategy Report

Site: Land off Kelvedon Street, Newport

Prepared For: MVR Solutions Limited

Issue Date: May 2026

Job No: 13203

**REPORT TITLE** : **Remediation Strategy Report: Proposed Residential Development, Land off Kelvedon Street, Newport**

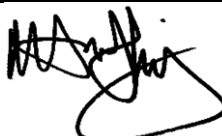
**JOB NUMBER** : **13203**

**DATE** : **May 2026**

**REPORT REFERENCE** : **RS-28052026-13203-01**

### Document Revision Record

| Issue | Date       | Revision Details |
|-------|------------|------------------|
| 01    | 28/05/2026 | First Issue      |
|       |            |                  |
|       |            |                  |

|          | Name                                            | Signature                                                                             |
|----------|-------------------------------------------------|---------------------------------------------------------------------------------------|
| Prepared | <b>Ben Walder</b><br>BSc, PGd, FGS              |   |
| Checked  | <b>Michael Watkins</b><br>MEng, CGeol FGS       |   |
| Approved | <b>Gwyn Lake</b><br>BSc (Hons). PhD, CGeol, FGS |  |

## TABLE OF CONTENTS

|                                                                                                |           |
|------------------------------------------------------------------------------------------------|-----------|
| <b>SECTION 1 Introduction and Proposed Development</b>                                         | <b>1</b>  |
| 1.1 Introduction                                                                               | 1         |
| 1.2 Objectives                                                                                 | 1         |
| 1.3 Previous Investigations and Assessments                                                    | 2         |
| 1.4 Roles and Responsibilities                                                                 | 2         |
| 1.5 Limitations and Exceptions of Investigation                                                | 2         |
| 1.6 Quality Assurance                                                                          | 2         |
| <b>SECTION 2 Site Characteristics</b>                                                          | <b>3</b>  |
| 2.1 Site Location and Description                                                              | 3         |
| 2.2 Site History Summary                                                                       | 3         |
| 2.3 3                                                                                          |           |
| Geology and Ground Conditions                                                                  | 3         |
| 2.4 Radon                                                                                      | 4         |
| 2.5 Hydrogeology and Hydrology                                                                 | 4         |
| 2.6 Identified Contamination                                                                   | 4         |
| 2.6.1 Soils                                                                                    | 4         |
| 2.6.2 Ground Gas                                                                               | 6         |
| 2.6.3 Hydrocarbon Vapours                                                                      | 6         |
| <b>SECTION 3 Sources of Contamination Requiring Remediation</b>                                | <b>7</b>  |
| <b>SECTION 4 Proposed Remedial and Mitigating Measures</b>                                     | <b>8</b>  |
| 4.1 General                                                                                    | 8         |
| 4.2 Protection of Construction & Maintenance Workers and Passers-by or Neighbouring Site Users | 8         |
| 4.3 Protection of Future Site Users (Residents and Visitors)                                   | 8         |
| 4.3.1 Hydrocarbon Vapours                                                                      | 9         |
| 4.4 Protection of Construction Materials (Potable Water Supply Pipes)                          | 9         |
| <b>SECTION 5 Validation of Remedial and Mitigating Measures</b>                                | <b>10</b> |
| 5.1 Imported Soil Validation                                                                   | 10        |
| 5.2 Capping System                                                                             | 11        |
| 5.3 Potable Water Supply Pipes                                                                 | 12        |
| 5.4 Validation Report                                                                          | 12        |
| 5.5 Hydrocarbon Vapour Protection System                                                       | 12        |
| <b>SECTION 6 Working Practices</b>                                                             | <b>13</b> |
| 6.1 Protection of Construction Workers                                                         | 13        |
| 6.2 Protection of the Environment                                                              | 13        |
| 6.3 Management & Disposal of Soils                                                             | 14        |

## Tables

|                                                       |    |
|-------------------------------------------------------|----|
| Table 1.1 Roles and Responsibilities                  | 2  |
| Table 2.1 Summary of Ground Conditions                | 4  |
| Table 2.2 Contaminants of Concern: 2021 Investigation | 4  |
| Table 3.1 Summary of Significant Pollutant Linkages   | 7  |
| Table 5.1 Validation Criteria                         | 10 |

## Figures

|                                 |   |
|---------------------------------|---|
| Figure 1.1 Proposed Site Layout | 1 |
| Figure 2.1 Site Location        | 3 |

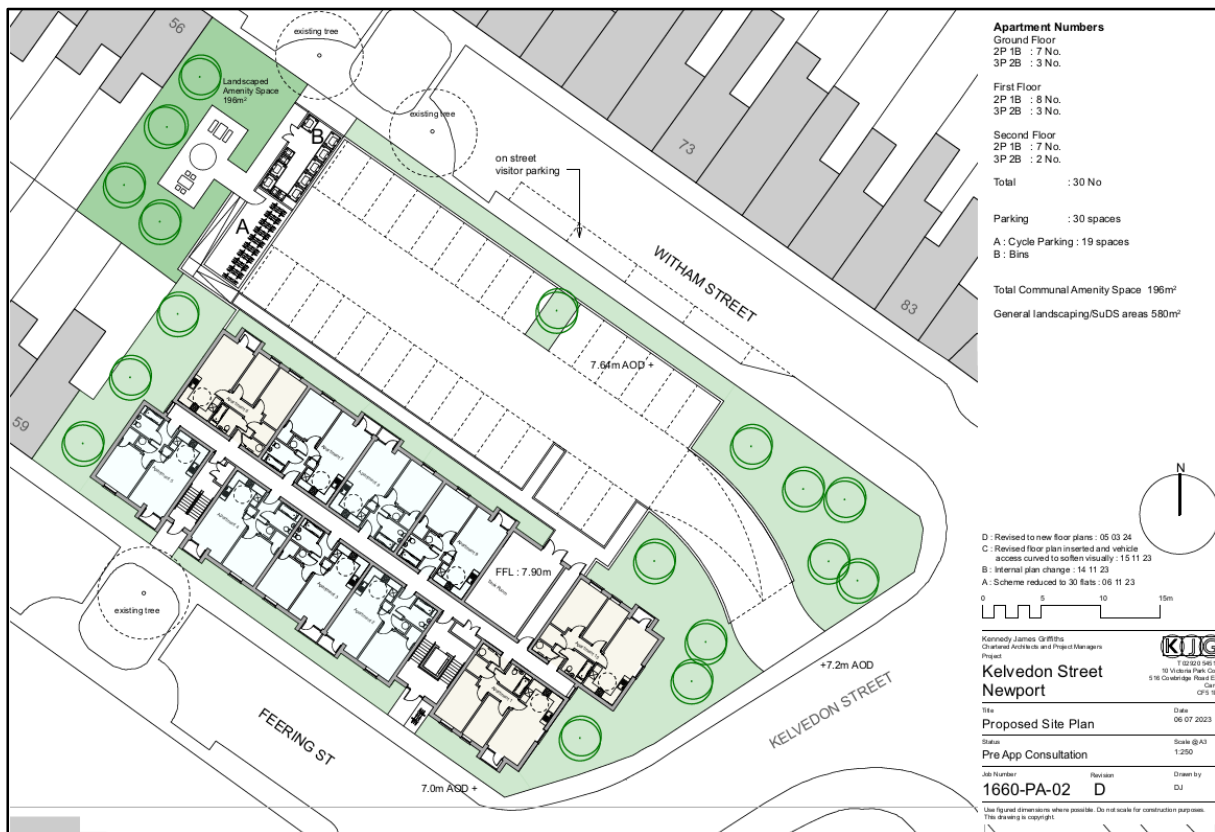
## Annexes

|                                            |
|--------------------------------------------|
| ANNEX A Imported Material Declaration Form |
|--------------------------------------------|

## SECTION 1 Introduction and Proposed Development

### 1.1 Introduction

MVR Solutions Limited (the Client) is proposing the construction of a new residential development at land located on the corner of Kelvedon Street and Feering Street in Newport, NP19 0DT. The proposed development will consist of a three-storey apartment block containing 30 residential units and associated infrastructure including access road, car parking, SuDS, and shared soft landscaping. The development does not include private gardens. The proposed layout can be seen in **Figure 1.1**.



**Figure 1.1 Proposed Site Layout**

TFW Group Limited have been commissioned by the Client to prepare a Remediation Strategy report for the site.

Previous investigations and assessments have identified that remediation of contamination is required for the development. This report presents a Remediation Strategy for the site based on these previous investigations and assessments.

### 1.2 Objectives

The objective of the Remediation Strategy is to detail the remedial steps that are likely to be required to render the site fit for its intended use.

In summary, the following remediation requirements have been identified and are covered in detail in this report.

- Capping of the site.
- Installation of suitable potable water pipes.
- Installation of hydrocarbon vapour protection to buildings

### 1.3 Previous Investigations and Assessments

The Remediation Strategy is based on the findings of previous investigations and assessments. This report shall be read in conjunction with the following documents.

- TFW Group Ltd. December 2024 Geotechnical and Geoenvironmental Report: Proposed Residential Development, Land off Kelvedon Street, Newport. Reference 13203-GGR-01.
- TFW Group Ltd. May 2026 Tier 2 & Tier 3 Geoenvironmental and Geotechnical Report: Proposed Residential Development, Land off Kelvedon Street, Newport. Reference T2&T3GGR-181225-1320-03

### 1.4 Roles and Responsibilities

**Table 1.1 Roles and Responsibilities**

| Role                                       | Organisation          |
|--------------------------------------------|-----------------------|
| Client                                     | MVR Solutions Limited |
| Local Authority                            | Newport City Council  |
| Geotechnical & Geoenvironmental Consultant | TFW Group Ltd         |
| Validator                                  | TFW Group Ltd         |

### 1.5 Limitations and Exceptions of Investigation

This report has been prepared for the sole internal reliance of the Client and its design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of TFW Group Limited. If an unauthorised third party comes into possession of this report, they rely on it at their peril and the authors owe them no duty of care and skill. The report represents the findings and opinions of experienced geoenvironmental and geotechnical consultants. TFW Group Limited does not provide legal advice and the advice of lawyers may be required.

It is not within the scope of TFW Group Limited to:

- Provide Method Statements and Risk Assessments for the site remediation, preparation and development.
- Design, assess or install utility service trench fill and pipes for potable water supply beneath the site.

### 1.6 Quality Assurance

The quality and environmental aspects of the assessment and investigation comply with UKAS Accredited ISO 9001:2015 and ISO 14001:2015 standards.

## SECTION 2 Site Characteristics

The following subsection information has been summarised from previous investigation and assessments listed in **Section 1.3**.

### 2.1 Site Location and Description

The development site is irregular in shape and locates off Kelvedon Street, Newport, NP19 0DW. The site centres on an approximate National Grid Reference of 332250, 187730, occupying a plan area of approximately 0.26 Hectares.

The site is currently derelict land with thick vegetation growth throughout the site, with areas of small-scale fly tipping present.

Site boundaries are defined by a steel fence in all directions apart from the northwest, wherein the site abuts against residential dwellings.

The site sits within a predominantly residential area with some industrial units 20-50m to the southwest. The river Usk is present 200m to the southwest

The site elevation is approximately 7m AOD and is level.

The site location can be seen on **Figure 2.1**.



Figure 2.1 Site Location

### 2.2 Site History Summary

### 2.3 Geology and Ground Conditions

The 1:50,000 scale British Geological Map of the area (Sheet 249) and 1:10,000 map (Sheet STY38NW) was consulted for geology underlying the site. The site is shown to be underlain by Mudstone rock. Ground conditions encountered at the site are summarised in **Table 2.1**.

**Table 2.1 Summary of Ground Conditions**

| Depth (m)   |   |           | Thickness (m) | Stratum                                                                                                         |
|-------------|---|-----------|---------------|-----------------------------------------------------------------------------------------------------------------|
| 0.00        | - | 0.30/1.20 | 0.30-1.20     | <b>MADE GROUND</b> – Gravelly <b>CLAY</b>                                                                       |
| 0.30/1.20   | - | 6.00      | 5.70          | Very soft and soft <b>CLAY</b>                                                                                  |
| 6.00        | - | 10.50     | 4.50          | Firm <b>CLAY</b>                                                                                                |
| 10.50       | - | 13.55     | 2.90          | Stiff and very stiff sandy <b>CLAY</b>                                                                          |
| 10.50/13.55 | - | >35.00    | >21.45        | Extremely weak to strong <b>MUDSTONE</b> with interbedded limestone conglomerates. <b>ST MAUGHANS FORMATION</b> |

## 2.4 Radon

No radon protective measures are required for new developments on the investigation site.

## 2.5 Hydrogeology and Hydrology

Superficial deposits beneath the site have an aquifer designation of unproductive strata.

The bedrock deposits beneath the site have an aquifer designation of secondary aquifer – A.

Deeper groundwater flow within the underlying bedrock will be controlled by the strata dip and any fractures or bedding planes within the rock units.

The hydraulic gradient will be at its steepest during periods of heavy rainfall and aquifer recharge.

It is anticipated that the groundwater is in hydrological continuity with the Usk catchment.

The site does not locate within a groundwater source protection zone.

The nearest groundwater abstraction point is located 391m northeast, operated by Pirelli Cables.

The nearest surface water feature locates 203m west and comprises of the river Usk.

## 2.6 Identified Contamination

### 2.6.1 Soils

Contaminants of concern are those that were found to exceed their residential without plant uptake threshold level.

Contaminants identified are summarised in **Table 2.2**, along with an interpretation of the likely contamination source. Where applicable, the contaminant, source relationship is based on the inferences made in the preliminary conceptual site model.

**Table 2.2 Contaminants of Concern**

| Location | Depth   | Contaminant                                                                        | Source                                        |
|----------|---------|------------------------------------------------------------------------------------|-----------------------------------------------|
| TP01     | 0.1-0.2 | Lead, <b>trichloroethene</b> , dibenz(a,h)Anthracene                               | S1 – Past use as a dry cleaners and warehouse |
| TP03     | 0.1-0.2 | Acenaphthene, carbazole, benzo[a]anthracene, benzo[b]fluoranthene, benzo[a]pyrene, |                                               |

|       |         |                                                                                                                                                                                                                              |                                                  |
|-------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|       |         | dibenz(a,h)Anthracene, (SVOC TIC) 9H-Xanthene, (SVOC TIC), benzo[a]pyrene, (SVOC TIC), dibenzothiophene, (SVOC TIC) Picene                                                                                                   | S2 – Made ground soils left over from demolition |
| TP04  | 0.1-0.2 | Lead, acenaphthene, dibenzofuran, carbazole, benzo[a]anthracene, benzo[b]fluoranthene, benzo[a]pyrene, dibenz(a,h)Anthracene, (SVOC TIC) 9H-Xanthene, (SVOC TIC) Dibenzothiophene, (SVOC TIC) Perylene, (SVOC TIC) Picene    |                                                  |
| TP05  | 0.1-0.2 | Benzo[b]fluoranthene, benzo[a]pyrene<br>Dibenz(a,h)Anthracene, (SVOC TIC), benzo[e]pyrene                                                                                                                                    |                                                  |
| TP201 | 0.1     | Arsenic                                                                                                                                                                                                                      |                                                  |
| TP201 | 0.4     | Arsenic, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene                                                                                                                                                         |                                                  |
| TP202 | 0.1     | Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene                                                                                                                                              |                                                  |
| TP202 | 0.5     | Arsenic, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene                                                                                                                                     |                                                  |
| TP203 | 0.2     | <b>Naphthalene</b> , benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)Pyrene, dibenzo(ah)anthracene, asbestos                                                                            |                                                  |
| TP203 | 0.4     | <b>Naphthalene</b> , benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene                                                                                                               |                                                  |
| TP204 | 0.3     | <b>Naphthalene</b> , benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)Pyrene, dibenzo(ah)anthracene                                                                                      |                                                  |
| TP204 | 0.5     | <b>Naphthalene</b> , benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene                                                                                                               |                                                  |
| TP205 | 0.1     | Benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene.                                                                                                                                   |                                                  |
| TP205 | 0.6     | Benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene.                                                                                                                                                                 |                                                  |
| BH01  | 0.2     | Aromatic EPH >C16-C21, <b>vinyl chloride, trichloroethene, 2-Methylnaphthalene</b> , dibenzofuran, carbazole, benzo[a]anthracene, bis(2-ethylhexyl)Phthalate, benzo[b]fluoranthene, bthienzo[a]pyrene, dibenz(a,h)Anthracene |                                                  |
| BH02  | 0.7     | <b>Vinyl chloride, cis 1,2-Dichloroethene, trichloroethene</b> , benzo[b]fluoranthene, benzo[a]pyrene, dibenz(a,h)Anthracene                                                                                                 |                                                  |
| BH03  | 0.3     | Lead, <b>trichloroethene, naphthalene 2-Methylnaphthalene</b> , dibenzofuran, carbazole Benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[a]pyrene, dibenz(a,h)Anthracene                                            |                                                  |
| BH03  | 2.3     | <b>Vinyl chloride, trans 1,2-Dichloroethene, cis 1,2-dichloroethene, trichloroethene</b>                                                                                                                                     |                                                  |
| BH04  | 0.4     | <b>Vinyl Chloride, 1,1-dichloroethene, trans 1,2, dichloroethene, cis 1,2-Dichloroethene, benzene, trichloroethene</b>                                                                                                       |                                                  |
| RC01  | Water   | Copper, <b>cis 1,2-Dichloroethene, trichloroethene, tetrachloroethene</b>                                                                                                                                                    |                                                  |
| BH01  | Water   | Copper, nickel, <b>cis 1,2-Dichloroethene, trichloroethene, tetrachloroethene</b>                                                                                                                                            |                                                  |
| BH03  | Water   | Nickel, <b>cis 1,2-Dichloroethene, trichloroethene, tetrachloroethene</b>                                                                                                                                                    |                                                  |
| RBH01 | Water   | Copper, <b>tetrachloroethene</b>                                                                                                                                                                                             |                                                  |
| RBH02 | Water   | Copper, zinc                                                                                                                                                                                                                 |                                                  |

## **2.6.2 Ground Gas**

The site is classified as CS1, requiring no special ground gas protection mitigation.

## **2.6.3 Hydrocarbon Vapours**

There is a potential risk to the occupants of the proposed building from the intrusion of hydrocarbon vapours.

### SECTION 3 Sources of Contamination Requiring Remediation

The summary of the refined conceptual site model is presented in **Table 3.1** and based on findings of previous investigations and assessments, detailing significant pollutant linkages requiring remediation or mitigation.

**Table 3.1 Summary of Significant Pollutant Linkages**

| Source                                  | Pathway                                                                                                                                                                      | Receptor                                                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| S1 – Made ground<br>S2 – Past site uses | P1 - Direct soil and dust ingestion<br>P3 - Dermal contact<br>P4 - Inhalation of dust and vapours<br>P9 - Plant uptake<br>P10 – Horizontal and vertical migration of vapours | R1 - Construction and maintenance workers<br>R2 - Future site users (residents)<br>R3 – Passers-by or neighbouring site users |

## **SECTION 4 Proposed Remedial and Mitigating Measures**

### **4.1 General**

Based on the finding of previous investigations and assessments and the identified pollutant linkages the following remedial measures have been devised for the site.

Specific validation requirements for the proposed remedial measures are discussed in the following section.

### **4.2 Protection of Construction & Maintenance Workers and Passers-by or Neighbouring Site Users**

The potential production of soil dust containing contaminants during construction works presents a risk to construction and maintenance workers as well as passers-by or adjacent site users through inhalation pathways.

As good practice, construction workers should adhere to good site management, COSHH, good standards of hygiene and appropriate health & safety on site, with personal protection equipment (PPE) and dust suppression where appropriate.

It is therefore essential that the contractor puts in place adequate measures to ensure the safety of all workers.

If during the development works any other unexpected ground conditions or evidence of contamination is found, inspection by a geoenvironmental engineer should be made, and any required testing or investigation carried out prior to continuation of works.

Prior to disposal off-site of excavated materials, soils should be carefully handled to prevent transfer of contamination to clean materials.

**These measures should be detailed in the contractor's Risk Assessment and Method Statements as well as the contractor's Construction Management Plan.**

If during the development works any other unexpected ground conditions or evidence of contamination is found, inspection by a geo-environmental engineer should be made, and any required testing or investigation carried out prior to continuation of works.

### **4.3 Protection of Future Site Users (Residents and Visitors)**

Future site users will be potentially at risk from direct soil and dust ingestion, dermal contact and inhalation of dust from soils containing contaminants, during excavation of made ground soils while undertaking gardening activities.

It is considered that removal of the impacted soils from across the whole site would not be economically viable, and the site must instead be capped.

The capping should consist of the proposed buildings and areas of hardstanding such as access roads and driveways. In gardens and soft landscaped areas the capping should consist of 600mm suitable topsoil and subsoil, and due to the presence of such high concentrations of contamination, a double no dig barrier over a capillary break/drainage layer. The soils should also be physically suitable and contain no 'sharps' as defined in BS8332:2015 Specification for Topsoil and BS8601:2013 Specification for Subsoil and Requirements for Use.

**Validation of the capping system and imported materials will be required.**

Clean material should also be placed along service runs.

### 4.3.1 Hydrocarbon Vapours

Due to the potential risk from hydrocarbon contamination within the soils beneath the site, it is recommended that a hydrocarbon vapour barrier is installed within the buildings.

With respect to volatile organic compounds encountered at the site, hydrocarbon vapour protection elements should be selected based on guidelines presented in CIRIA C748:2014. In addition, NHBC guidance may also need to be adopted depending on the requirements of the proposed development guarantor.

It is recommended that a specialist consultant is retained to prepare a risk assessed hydrocarbon vapour protection system Verification Plan for the proposed development. The Verification Plan will specify the membrane and describe the reasons for its use. The maximum allowable permeation rates of the critical chemicals should be determined from the risk assessment and should be specified and used to demonstrate that there is no unacceptable risk (this should include permeation rates at joints). A summary of the risk assessment should be reported within the verification plan.

The Verification Plan also details the step-by-step process and requirements to allow for the completion of a Validation Report. TFW Group Ltd offer Verification and Validation services.

### 4.4 Protection of Construction Materials (Potable Water Supply Pipes)

Potable water supply pipes are at risk of degradation when in contact with made ground soils containing contaminants.

**It is recommended that a Potable Water Supplier should complete an assessment in accordance with UK Water Industry Research guidance; Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR Report Ref: 10/WM/03/21. The assessment should determine the selection of Water Supply Pipe material.**

## SECTION 5 Validation of Remedial and Mitigating Measures

The following remedial measures will require verification and inclusion within a Validation Report:

- Capping system (importation of soils and installation).
- Potable water supply pipe (assessment and installation).

### 5.1 Imported Soil Validation

Importation of soils will be required to provide a capping layer of clean material in soft landscaped and garden areas. Where possible site won soils should be used provided, they are chemically suitable.

All imported soils, aggregate or stone that are not virgin quarry stone should be validated as suitable for use. Imported materials exempt from validation testing should be accompanied by a transfer note. Transfer notes should be retained and submitted for inclusion within the Validation Report upon completion of the works.

The provider should supply a laboratory analysis report to confirm that the soil/aggregate/stone is suitable for use. Depending on the source and available test data, it may be prudent to independently sample and analyse the materials (if practical) prior to being brought to site.

Sampling and analysis of the soil/aggregate/stone once imported will be required in addition to any taken at source.

In accordance with publication 'Requirements for the Chemical testing of Imported Materials for Various End Uses and Validation of Cover Systems' the number of representative samples required for analysis is dependent on the volume of each source soil. For a volume between 20m<sup>3</sup> and 250m<sup>3</sup> four samples should be taken. For a volume greater than 250m<sup>3</sup>, 4 samples per 250m<sup>3</sup> should be taken. Where quantities exceed 1000m<sup>3</sup> appropriate sampling scheme should be agreed with the CLO/EHO.

As per the aforementioned document "It is strongly recommended that, before importing any material to site, the intended sampling regime for that material is discussed and agreed in advance with the Local Authority LPA/CLO/EHO"

For the importation of soils to site the Imported Materials Declaration Form should be completed. A copy of the form can be found in **Annex A**.

The imported soils should be stockpiled on site and all samples should be analysed for the determinants listed in **Table 5.1**.

The soils should also be physically suitable and contain no 'sharps' as defined in BS8332:2015 Specification for Topsoil and BS8601:2013 Specification for Subsoil and Requirements for Use.

**Table 5.1 Validation Criteria**

| Determinand      | Units | Guideline Value (Residential without plant uptake) | Source |
|------------------|-------|----------------------------------------------------|--------|
| <b>Inorganic</b> |       |                                                    |        |
| Arsenic          | mg/kg | 40                                                 | 1      |
| Boron            | mg/kg | 11000                                              | 1      |
| Cadmium          | mg/kg | 85                                                 | 1      |
| Chromium III     | mg/kg | 910                                                | 1      |
| Chromium VI      | mg/kg | 6                                                  | 1      |
| Copper           | mg/kg | 7100                                               | 1      |

|                                                                 |       |              |   |
|-----------------------------------------------------------------|-------|--------------|---|
| Lead                                                            | mg/kg | 310          | 2 |
| Mercury                                                         | mg/kg | 56           | 1 |
| Nickel                                                          | mg/kg | 180          | 1 |
| Selenium                                                        | mg/kg | 430          | 1 |
| Zinc                                                            | mg/kg | 40000        | 1 |
| Cyanide                                                         | mg/kg | 8*           | 3 |
| Asbestos                                                        | %     | Non Detected | - |
| <b>Organics – Phenol &amp; PAH</b>                              |       |              |   |
| Phenol                                                          | mg/kg | 120          | 1 |
| Naphthalene                                                     | mg/kg | 2900         | 4 |
| Acenaphthylene                                                  | mg/kg | 3000         | 4 |
| Acenaphthene                                                    | mg/kg | 2800         | 4 |
| Flourene                                                        | mg/kg | 1300         | 4 |
| Phenanthrene                                                    | mg/kg | 31000        | 4 |
| Anthracene                                                      | mg/kg | 1500         | 4 |
| Fluoranthene                                                    | mg/kg | 3700         | 4 |
| Pyrene                                                          | mg/kg | 11           | 4 |
| Benzo(a)anthracene                                              | mg/kg | 30           | 4 |
| Chrysene                                                        | mg/kg | 3.9          | 4 |
| Benzo(b)fluoranthene                                            | mg/kg | 110          | 4 |
| Benzo(k)fluoranthene                                            | mg/kg | 3.2          | 4 |
| Benzo(a)pyrene                                                  | mg/kg | 45           | 4 |
| Indeno(123cd)pyrene                                             | mg/kg | 0.31         | 4 |
| Dibenzo(ah)anthracene                                           | mg/kg | 360          | 4 |
| Benzo(ghi)perylene                                              | mg/kg | 2900         | 4 |
| <b>Organics – TPH</b>                                           |       |              |   |
| PH C5 – C6 Aliphatic                                            | mg/kg | 42           | 4 |
| PH C6 – C8 Aliphatic                                            | mg/kg | 100          | 4 |
| PH C8 – C10 Aliphatic                                           | mg/kg | 27           | 4 |
| PH C10 – C12 Aliphatic                                          | mg/kg | 130          | 4 |
| PH C12 – C16 Aliphatic                                          | mg/kg | 1100         | 4 |
| PH C16 – C21 Aliphatic                                          | mg/kg | 65000        | 4 |
| PH C21 – C35 Aliphatic                                          | mg/kg | 65000        | 4 |
| PH C5 – C7 Aromatic                                             | mg/kg | 370          | 4 |
| PH C7 – C8 Aromatic                                             | mg/kg | 860          | 4 |
| PH C8 – C10 Aromatic                                            | mg/kg | 47           | 4 |
| PH C10 – C12 Aromatic                                           | mg/kg | 250          | 4 |
| PH C12 – C16 Aromatic                                           | mg/kg | 1800         | 4 |
| PH C16 – C21 Aromatic                                           | mg/kg | 1900         | 4 |
| PH C21 – C35 Aromatic                                           | mg/kg | 1900         | 4 |
| 1 - LQM/CIEH Suitable For Use Level (S4UL) 2015                 |       |              |   |
| 2 - Defra Category 4 Screening Level (Provisional value)        |       |              |   |
| 3 - Environment Agency CLEA v1.06 Derived Value (Now withdrawn) |       |              |   |
| 4 - S4UL threshold based on 1% soil organic matter              |       |              |   |

## 5.2 Capping System

Once the imported soils have been tested and laboratory analysis has confirmed they are suitable they can be placed in soft landscaped and garden areas. The presence of the capillary break should be inspected prior to the laying of the no-dig barrier. Once placement of the no-dig barrier, and 600mm of clean material in the soft landscaped and garden areas has been completed verification of the capping thickness should be undertaken.

Validation of the capping system will comprise photographic evidence clearly showing the thickness and depth of individual strata. Photographic evidence of the no dig barrier and drainage layer/capillary break must also be provided.

Based on the area of proposed landscaping, it is recommended that 3No. areas of the site be validated as prescribed. A validation report including a description of the works undertaken, validation photographs and chemical validation test results shall be presented upon completion.

### 5.3 Potable Water Supply Pipes

A copy of the potable water supply pipe assessment, along with evidence of the water supply pipe installation, should be retained for inclusion in the Validation Report.

Photographic evidence of the installation shall be provided by the **groundworker** for inclusion in the Validation Report.

The potable water supplier responsible for signing off the installation of the potable water pipework should provide a report of their visit for inclusion in the validation report.

### 5.4 Validation Report

Following completion of the works a verification report should be compiled demonstrating the completion and effectiveness of the works set out in the Remediation Strategy.

The Verification Report should include, but not limited to, the following:

1. A record of any areas where made ground is removed (service runs, under roads etc).
2. If made ground is disposed of off-site, a record of the volume removed, from which areas and details of the receiving landfill. Transfer tickets should be retained.
3. If excavated made ground is to be retained on site the CL:AIRE materials management plan should be provided.
4. A record of the number of imported soil sources and their respective volumes
5. Details of the source and supplier of all imported soils
6. Chemical test certificates for imported soils where available from the provider
7. Chemical test data for all imported soils as sampled at source (if possible) and on site
8. Details of the source and volume of any imported stone/aggregate

### 5.5 Hydrocarbon Vapour Protection System

**Verification hydrocarbon vapour protection system design and installation needs to be carried out in accordance with CIRIA publication C735:2014.**

Early engagement with a suitably qualified and experienced consultant, preferably during the project design stage, is paramount to achieve this verification process. It will be necessary for a Hydrocarbon Vapour Protection System Verification Plan to be prepared to detail the verification methodology. To satisfactorily Validate the hydrocarbon vapour protection system installation, the 'Verification Plan' methodology is to be followed as prescribed and documented in a Validation Report.

Verification of the hydrocarbon vapour protection system installation is to be carried out by an experienced, qualified, trained, and independent verifier. Documents demonstrating the above shall be included in the Validation Report.

Validation of installed hydrocarbon vapour protection systems by an independent third party will be required upon completion of the development. Validation may only be achieved if processes prescribed in the Verification Plan are undertaken.

## **SECTION 6 Working Practices**

### **6.1 Protection of Construction Workers**

In order that construction workers are protected during site works across the site the following should be adhered to:

1. Compliance with health and safety regulations
2. Provision of Method Statements and Risk Assessments
3. Compliance with Control of Substances Hazardous to Health (COSHH) Assessment
4. Good level of Personal Protection Equipment (PPE)
5. Good level of hygiene by site workers
6. Dust suppression measures
7. Emergency contingencies should be defined prior to commencement of site works

### **6.2 Protection of the Environment**

During the remediation and construction periods, there is a risk to the environment and adjacent sites from de-watering, excavations, moving contaminated soil, tank and pipework removal, drainage misconnections, discharges of perched groundwater to local surface waters or the ground, runoff from construction materials and/or exposed ground, wheel washing and oil or chemical spills.

A drainage plan should be devised, identifying manholes to prevent pollutants accidentally reaching surface water sewers. Temporary drainage measures may need to be put in place.

The contractor(s) must also strictly adhere to the Pollution Prevention Guidelines for Working at Construction and Demolition Sites (PPG6). This publication gives both advice and guidelines which should be followed with regards to the planning and preparation of site works, site drainage, delivery and storage of construction materials, the management of waste, good housekeeping in particular to prevent runoff of silt and other fines into nearby water courses, refuelling, concrete and what to do in the event of an emergency.

Within the documentation prepared by the contractor(s), the following information should be provided, but not limited to:

- Project Description
- Key participants/contractor(s)
- Technical procedures
- Phasing of works and approximate timescales
- Site plans to scale
- Details of consents or license needed
- Health and Safety, COSHH Assessment, Method Statements and Risk Assessments
- Emergency contingencies

In addition, the following precautions should also be taken.

- All potential chemicals and associated risks and emergency procedures for spills/leaks should be considered in the site risk assessment and the details provided to all site employees.
- Any potential pollutant materials or chemicals/detergents used on site should be adequately stored in suitable containers, with clear labelling.
- Any oil or hazardous substance containers and associated pipe works should be enclosed within a bund.
- Care taken during delivery of materials, with correct supervision and labelling detailing the substance and its quantities.
- All delivery drivers should be informed of procedures and restrictions.

- Any materials on delivery should be covered to ensure there is no spillage.
- Any detergents, paints, chemicals etc should not be allowed to be discharged into surface drains or water courses.
- Washing out and cleaning of concrete/cement plant should be carried out in a contained area with adequate measures to collect all run-off water.
- Security and prevention of vandalism, especially of oil drums/containers.

### **6.3 Management & Disposal of Soils**

During site works excavations of the made ground are anticipated.

All materials excavated should be managed and stored appropriately in a controlled manner to ensure protection of site construction workers and neighbouring site users, and to prevent the transfer of contamination to other areas of the site.

If possible, and if levels allow, any excavated made ground should be retained on site and relocated beneath areas of hardstanding. This would provide the most sustainable approach and avoid landfill and haulage fees, disruption and aggravation of local residents caused by haulage lorries, and would avoid unnecessary CO<sub>2</sub> emissions.

Any movement and transfer of materials on site should be documented in materials management plan, in accordance with 'CL:AIRE Definition of Waste: Development Industry Code of Practice (DoW CoP)'.

Alternatively, excavated made ground may be disposed of at landfill. Prior to disposal classification of the material will need to be completed in accordance with Environment Agency protocol detailed in 'Technical Guidance WM3 – Waste Classification - Guidance on the Classification and Assessment of Waste'.

A contaminated land specialist should supervise and document any earthworks on site.

Waste transfer and disposal must be undertaken by an authorized person. A waste transfer note must accompany each load, and records should be maintained for inspection if required.

**ANNEX A**  
**Imported Material Declaration Form**

## IMPORTED MATERIALS DECLARATION FORM

|                                                                                                                                                                                              |                                                                  |                          |                                                                                                                                                              |                                                |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------|
| <b>1.</b>                                                                                                                                                                                    | <b>Planning Permission Number</b>                                | <b>2.</b>                | <b>Development Address</b>                                                                                                                                   |                                                |                          |
|                                                                                                                                                                                              |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| <b>3.</b>                                                                                                                                                                                    | <b>Proposed use(s) of ALL imported material(s)</b>               | <b>4.</b>                | <b>Description of material imported</b>                                                                                                                      | <b>British Standard Certification supplied</b> |                          |
|                                                                                                                                                                                              |                                                                  |                          |                                                                                                                                                              | <b>Yes</b>                                     | <b>No</b>                |
| <input type="checkbox"/>                                                                                                                                                                     | Engineering use/works (e.g. backfill, sub formation, foundation) | <input type="checkbox"/> | Topsoil                                                                                                                                                      | <input type="checkbox"/>                       | <input type="checkbox"/> |
| <input type="checkbox"/>                                                                                                                                                                     | Domestic Garden use (inc. crop growing)                          | <input type="checkbox"/> | Subsoil                                                                                                                                                      | <input type="checkbox"/>                       | <input type="checkbox"/> |
| <input type="checkbox"/>                                                                                                                                                                     | Landscaping (play areas, communal areas, roadside)               | <input type="checkbox"/> | Aggregate                                                                                                                                                    | <input type="checkbox"/>                       | <input type="checkbox"/> |
| <input type="checkbox"/>                                                                                                                                                                     | Other <i>Please specify</i>                                      | <input type="checkbox"/> | Quarry stone                                                                                                                                                 | <input type="checkbox"/>                       | <input type="checkbox"/> |
|                                                                                                                                                                                              |                                                                  |                          | Other ( <i>Please specify</i> ) _____                                                                                                                        | <input type="checkbox"/>                       | <input type="checkbox"/> |
| <b>5.</b>                                                                                                                                                                                    | <b>Origin of Imported Material(s)</b> <input type="checkbox"/>   |                          |                                                                                                                                                              |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | Greenfield Site ( <i>Please specify</i> ) _____                  |                          |                                                                                                                                                              |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | Brownfield Site ( <i>Please specify</i> ) _____                  |                          |                                                                                                                                                              |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | Recycling / Process supplier ( <i>Please specify</i> ) _____     |                          |                                                                                                                                                              |                                                |                          |
|                                                                                                                                                                                              | Other ( <i>Please specify</i> ) _____                            |                          |                                                                                                                                                              |                                                |                          |
| <b>6.</b>                                                                                                                                                                                    | <b>Volume(s) of Material to be Imported</b>                      | <b>7.</b>                | <b>No of samples taken (per source)</b>                                                                                                                      |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | Less than 20m <sup>3</sup>                                       | <input type="checkbox"/> | 2-3                                                                                                                                                          |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | Between 20m <sup>3</sup> - 100m <sup>3</sup>                     | <input type="checkbox"/> | 4-6                                                                                                                                                          |                                                |                          |
| <input type="checkbox"/>                                                                                                                                                                     | More than 100m <sup>3</sup>                                      | <input type="checkbox"/> | More than 6 ( <i>please specify</i> ) (NB: All analyses (where applicable) must be subject to MCERTS accreditation <sup>(1)</sup> at a certified laboratory) |                                                |                          |
| <b>8.</b>                                                                                                                                                                                    | <b>Suitability of Use</b>                                        |                          |                                                                                                                                                              |                                                |                          |
| Confirmation that soil imported does not contain any evidence of Japanese Knotweed stems, leaves and rhizomes. YES <input type="checkbox"/> NO <input type="checkbox"/>                      |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Confirmation the imported soil does not contain any unprocessed / unsorted demolition waste YES <input type="checkbox"/> NO <input type="checkbox"/>                                         |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Confirmation that the soil imported does not contain contaminated or potentially contaminated by chemical or radioactive substances YES <input type="checkbox"/> NO <input type="checkbox"/> |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Confirmation that the soils imported is suitable for use for the intended purpose on site YES <input type="checkbox"/> NO <input type="checkbox"/>                                           |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Signed:.....Date:.....                                                                                                                                                                       |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Name:.....Position:.....                                                                                                                                                                     |                                                                  |                          |                                                                                                                                                              |                                                |                          |
| Company Name and Address                                                                                                                                                                     |                                                                  |                          |                                                                                                                                                              |                                                |                          |



**Terra Firma (Wales) Ltd.** 5 Deryn Court, Wharfedale Road, Pentwyn, Cardiff CF23 7HA  
**Tel:** 029 2073 5354 **Fax:** 029 2073 5433 **Email:** [info@terrafirmawales.co.uk](mailto:info@terrafirmawales.co.uk) [www.terrafirmawales.co.uk](http://www.terrafirmawales.co.uk)