



Remediation Strategy Report

Site: Aneurin Crescent

Prepared For: Merthyr Valley Homes

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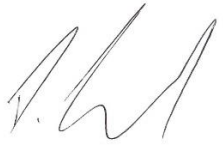
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Drawing 01 Proposed Site Layout

SECTION 1 Introduction and Proposed Development

1.1 Introduction

Merthyr Valley Homes (the Client) is proposing the development of land located off Aneurin Crescent, Merthyr Tydfil.

Terra Firma (Wales) 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 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.

- Removal of Asbestos Containing Materials from site soils

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.

Geotechnical and Geo-environmental Report: Proposed Residential Development, Aneurin Crescent, Merthyr Tydfil – Report Ref 14925 – Terra Firma Wales Limited

1.4 Roles and Responsibilities

Table 1.1 Roles and Responsibilities

Role	Organisation
Client	Merthyr Valley Homes
Local Authority	Merthyr Tydfil County Borough Council
Geotechnical & Geoenvironmental Consultant	Terra Firma Wales Ltd
Validator	Terra Firma Wales 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 Terra Firma (Wales) 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 geo-environmental and geotechnical consultants. Terra Firma (Wales) Limited does not provide legal advice and the advice of lawyers may be required.

It is not within the scope of Terra Firma (Wales) 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 Terra Firma Wales Ltd 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 to the north of Aneurin Crescent. The site centres on an approximate National Grid Reference of 305780 205400, occupying a plan area of approximately 0.17 Hectares.

The site is currently designated as public open space bound to the east and west by Jowett Avenue and Wheatley Place respectively. Greenwood Close Sheltered Housing is located immediately to the north and Aneurin Crescent to the south. The local area largely comprises residential housing.

The site elevation is approximately 210m AOD and steeply slopes down towards the west.

The site location can be seen on **Figure 2.1** along with the proposed site layout on **Drawing 01***.

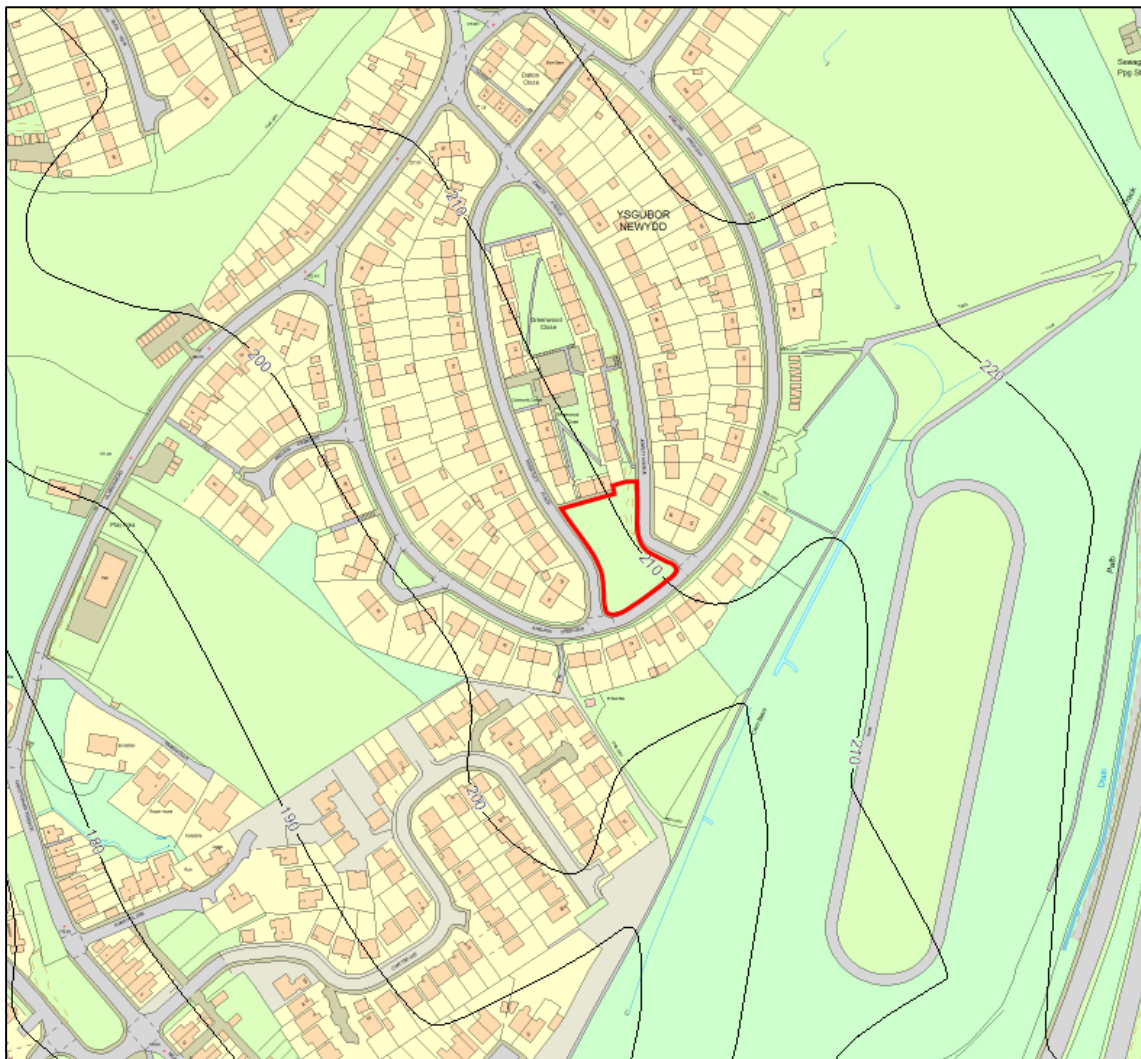


Figure 2.1 Site Location

2.2 Site History Summary

The site has remained undeveloped field land or in later years designated as public open space. By 1951 historical map evidence shows the development of residential housing to the east, west and south of the site.

2.3 Geology and Ground Conditions

The 1:10560 scale geological map of the area (SO00NE) was consulted for geology underlying the site. The site is shown to be underlain by the South Wales Lower Coal Measures Formation which is Carboniferous in age. The rocks comprise mudstone, sandstone and siltstone with seatearth and coal.

Superficial deposits are recorded as Till with an anticipated thickness of 2.00m.

Made ground associated with the development of adjacent residential housing may be encountered at the site.

The ground conditions encountered during the site investigation can in general be summarised as shown in **Table 2.1**.

Table 2.1 Summary of Ground Conditions

Depth (m)			Thickness (m)	Stratum
0.00	-	0.2/0.4	0.2/0.4	MADE GROUND: Grass over soft dark brown slightly sandy clayey SILT
0.2/0.4	-	0.2/1.0	0.25/0.6	Soft brown slightly gravelly clayey SILT
0.2/1.0	-	17.0/17.2	16.0/17.0	Firm to stiff brown slightly sandy slightly gravelly CLAY
17.0/17.2		>30.0	unproven	Mudstone

2.4 Radon

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

2.5 Hydrogeology and Hydrology

The Envirocheck Report records the nearest surface water feature to locate 66m southeast. This feature comprises an inland river (Nant Cwm Blacks) within the Cynon, Ely, Rhondda catchment.

The topography of the site slopes steeply down towards the west.

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.

The bedrock deposits beneath the site have an aquifer designation of 'Secondary A'. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. Superficial deposits are designated as unproductive strata.

The Envirocheck Report does not place the site within a groundwater source protection zone.

There is no recorded groundwater abstraction point within 250m of the site.

2.6 Identified Contamination

2.6.1 Made Ground Soils

Asbestos in the form of Chrysotile was identified in one sample from trial pit TP05 at 0.20m depth. Asbestos quantification recorded a total mass of 0.027% comprising board fragments. Potentially respirable fibre analyses recorded a null result ruling out the effectiveness and appropriateness of an asbestos risk assessment.

2.6.2 Natural Soils

No contaminants of concern were encountered in natural strata.

2.6.3 Ground Gasses

Ground gas monitoring was undertaken by Terra Firma Wales Ltd as part of a subsequent investigation and ground gas risk assessment at the site.

The findings of assessment categorised the site to have a gas characteristic situation 1 (CS1).

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
Made Ground	Inhalation of asbestos fibres	Construction workers, maintenance workers, neighbouring site users and future 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 Made Ground Soils

4.2.1 Protection of Construction & Maintenance Workers and Passers-by or Neighbouring Site Users

The potential production of soil dust containing asbestos containing materials (ACM) during construction works presents a risk to construction and maintenance workers as well as passers-by or adjacent site users through inhalation of dust and fibres.

A selection of mitigating measures is presented below to disrupt the contaminant pathway to the receptor.

- Dust suppression and measures to dampen the material
- Suitable PPE for site workers

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

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

4.2.2 Protection of Future Site Users (Residents)

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

The site investigation confirmed the presence of ACM within TP05 at 0.2m. Laboratory testing confirmed that only ACM, was present and no respirable fibres were recorded. As such it is recommended that an area 5m x 5m is excavated to 0.6m depth in the area of TP05. The excavated soils should be litter picked under the supervision of an asbestos specialist. Any identified ACM should be removed and disposed using best practice techniques before being removed from site.

Prior to replacing the excavated materials, soil samples should be taken to confirm the removal of the ACM and possible remnant fibres. Providing the materials are confirmed as clean following removal of the ACM, they can be replaced and accepted as suitable for use.

Validation of the works will be required.

SECTION 5 Validation of Remedial and Mitigating Measures

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

- Removal of ACM

5.1 Removal of ACM

Photographic records should be taken during the asbestos litter pick to be included in a validation report.

Any identified ACM should be recorded prior to removal from site. This should be accompanied by a waste consignment note to include within the validation report.

Following the litter pick, 10 samples should be taken of the excavated material to confirm that the asbestos contamination has been removed successfully. The results of the testing should be included within the validation report.

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, 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. Excavated soils in the remedial area should be placed on a polythene sheet to prevent cross contamination.

If possible, and if levels allow, and 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 CO₂ 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 authorised person. A waste transfer note must accompany each load and records should be maintained for inspection if required

DRAWINGS



Job Number:
14925

Job Title:
Aneurin Crescent

Drawing Title:
Proposed Site Layout

Drawing Number:
01

Scale:
Not To Scale





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