
**Proposed Residential Development,
Glan Gors, Wrexham.**

Environmental Implementation Plan

Stage 1 – Ground Contamination

Prepared For:
Pennaf Housing Group and Wrexham County Borough Council

Report Prepared By:
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Document Approval Record

	Name	Signature	Date	Position
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1.0 INTRODUCTION

Bay Associates Consulting Ltd (BA) have been instructed by Pennaf Housing Group to develop the Remediation Strategy, Implementation Plan and Verification reports for the proposed redevelopment of land known as Glan Gors, off Anthony Eden drive, Wrexham. The site location is shown in Appendix A.

The development proposal comprises 8No flats and 15No low rise residential units with gardens, adoptable highway and footway access and associated landscaping.

This report is part of a staged assessment of the site, set out below are the preceding investigations and reports/responses which have informed this staged assessment to date

The following studies were undertaken by Wrexham County Borough Council as part of a Stage 2 Contamination Assessment Reports undertaken over land to the north of the study area which was a former landfill know as Bala Road Landfill. These reports included:

- Former Landfill Sites Stage 2 Contamination Assessment – Bala Road – commissioned by Wrexham County Borough Council. Oct 2007. Smith Grant LLP. Report R786-R27(BalaS2)(Final Rev1)
- Former Landfill Sites Stage 2 Contamination Assessment – Bala Road – commissioned by Wrexham County Borough Council. Oct 2007. Smith Grant LLP. Report R786-R54(BalaS2 Add)
- Former Landfill Sites Stage 2 Contamination Assessment – Review and Update of Previous B20(c) Investigation Works Under Part IIA Bala Road – commissioned by Wrexham County Borough Council. Oct 2012. Smith Grant LLP. Report R1661-R10(V2)

The investigations of the Bala Road landfill were undertaken as part of a Part 2A assessment into former landfills but provided useful information on the potential study site characteristics which formed part of the Bala Road Landfill and informed the site specific desk study and intrusive investigation works undertaken by E-geo Solutions Ltd,

- Stage 1 Desk Study and Preliminary Ground Contamination Risk Assessment - Land at Glan Gors, Anthony Eden Drive, Wrexham, LL13 8TH – Commissioned by Bay Associates Nov 2012 E-geo Solutions Ltd Report E0500S1.P1.R1
- Intrusive Geotechnical and Geo Environmental Ground investigation - land at Glan Gors, Anthony Eden Drive. – Commissioned by Bay Associates August 2013 E-geo Solutions Ltd Report E0500.S1.P2.R1.V5

Upon completion of the intrusive and interpretive investigations Bay Associates have developed in consulation with Wrexham's contaminated land team the following document.

- Proposed Residential Development, Glan Gors, Wrexham.
Detailed Remediation Strategy On behalf of Pennaf Housing Group and Wrexham County Borough Council. - Rev / December 2013

This report sets out the detailed Remediation Strategy (in accordance with CLR 11), which justifies the remediation/mitigation options chosen, indicates the scientific and technical bases of the chosen remediation type as well as indication of site management, site phasing and required licenses.

2.0 REPORT OBJECTIVE

In accordance with 'Model Procedures for the Management of land Contamination' - Contaminated Land Report 11 (CLR 11), the objective of the report is to set out the Implementation Plan, which will translate the remediation strategy into a clear set of remediation activities for the site. This plan will indicate all aspects of design, preparation, implementation and verification.

Due to programme requirements it is intended that the implementation plan will be set out and delivered in two stages.

- 1) Stage 1 - Ground contamination
- 2) Stage 2 - Ground Gas

This report will set out stage 1 - Ground contamination and translate the ground contamination section of the detailed enabling works strategy to include the design, preparation, implementation and verification. The stage 1 Report implementation and verification will be set out and delivered utilising CL:AIRE Definition of waste: Development industry code of practice

3.0 SUMMARY OF REMEDIATION STRATEGY

3.1 Summary of Ground Conditions

The general stratigraphic sequence at the site is:

- Black topsoil.
- Made Ground – dark brown very silty fine to coarse sand and gravel with some to much plastic sheet, bags, glass bottles and gravel, cloth, metal wire, ash gravel, and cobbles of sandstone.
- Silt – dark and light grey slightly sandy clayey SILT.
- Peat – dark brown to black silty slightly clayey PEAT (in parts).
- Alluvium – brown slightly sandy clayey SILT and medium brown very silty fine SAND.
- Glacial Till – dark brown sandy silty CLAY with much fine to coarse gravel and some cobbles

The strata and depths encountered during the investigation were:

Stratum	Description	Depth to base m range (average)
Topsoil	Dark brown silty sandy topsoil	0.10
Made Ground	Loose dark brown very silty fine to coarse sand and gravel with some to much plastic sheet, bags, glass bottles and gravel, cloth, metal wire, ash gravel, and cobbles of sandstone	1.10 – 1.70 (1.50) (2.70m at BD3)
Silt	Very soft to soft dark and light grey slightly sandy clayey SILT	1.90 -2.10 (2.00)
Peat	Very soft dark brown to black silty slightly clayey PEAT (in parts)	1.70 – 3.00 (2.50) (BD1S, BS2, BH 1only)
Alluvium	Soft brown slightly sandy clayey SILT and loose to medium dense medium brown very silty fine SAND with silt partings	8.90 – 10.2 (9.40)
Glacial Till	Stiff dark brown sandy silty CLAY with some to much fine to coarse gravel and some cobbles	17m +

3.2 Summary of Groundwater

Groundwater was encountered in the trial pits and boreholes at the depths shown on the table below:

TP/BH No.	Water encountered	Comment	TP/BH No.	Water encountered	Comment
TP1	0.80	Rapid inflow	BD3S	1.70	Damp
TP2	1.00	Rapid inflow	BH 1	3.00	Medium inflow rising to 1.60 (20 min)
TP3	1.10	Rapid inflow	BH 2	5.50	Slow inflow rising to 3.60 (20 min)
TP4	0.90	Moderate inflow	BH 3	4.00	Slow inflow rising to 3.80 (20 min)
BD1S	1.20	Slight seepage			
BD2S	1.90	Slight seepage			
BS2	2.00	Damp			

Perched groundwater was encountered in the made ground in trial pits at depths of 0.80m to 1.10m, and in the shallow boreholes at depths of 1.20m to 1.90m. Subsequent monitoring in the shallow boreholes indicated the perched water standing at depths of 0.98m to 1.36m.

Shallow groundwater in the alluvial deposits was encountered at depths of 3.00m in BH 1 (rising to 1.60m in 20 minutes), 5.50m in BH 2 (rising to 3.60m in 20 minutes) and 4.00m in BH 3 (rising to 3.80m in 20 minutes)

Monitoring of the installations was undertaken during gas monitoring and water sampling with water levels shown in table below:

TP/BH No.	Water encountered	Comment	TP/BH No.	Water encountered	Comment
TP1	0.80	Rapid inflow	BD3S	1.70	Damp
TP2	1.00	Rapid inflow	BH 1	3.00	Medium inflow rising to 1.60 (20 min)
TP3	1.10	Rapid inflow	BH 2	5.50	Slow inflow rising to 3.60 (20 min)
TP4	0.90	Moderate inflow	BH 3	4.00	Slow inflow rising to 3.80 (20 min)
BD1S	1.20	Slight seepage			
BD2S	1.90	Slight seepage			
BS2	2.00	Damp			

3.3 Summary of Contamination Source

The results of the investigations, analysis of ground samples and waters and monitoring for ground gasses have identified the following:

- Very isolated occurrence of very slightly elevated concentrations of arsenic and lead in the made ground (BD2S – 0.70m).
- Isolated occurrence of elevated concentrations of petroleum hydrocarbons within the made ground (BS1 – 0.4m, BS3 – 1.70m, BD3S, BD3S – 0.90m)
- Very isolated occurrence of asbestos fibres (amosite) but with no detectable mass (TPSS2 and TPSS4)
- Slightly elevated concentrations of benzo (a)pyrene across the site
- Elevated concentrations of calcium, manganese and PAH in the perched water in the made ground

- Elevated concentrations of arsenic, calcium, manganese, potassium, ammoniacal nitrogen and PAH in the shallow groundwater in the alluvial deposits below the site
- Occasional elevated concentrations of methane across the site
- Elevated concentrations of carbon dioxide in the majority of locations across the site with depleted oxygen concentrations

The investigation involved sampling at discrete locations although the type of made ground encountered across the site was similar at all sampling locations. The screening analysis was based on a typical suite of tests, based on the initial conceptual model and to fall within an available budget. However it is possible that other substances may be present or that elevated concentrations of chemical parameters and gasses may be encountered between sampling locations.

3.4 Ground Contamination

3.4.1 Remediation Options Appraisal

A remediation option appraisal within the detailed remediation strategy considered that due to the nature of material in the made ground Civil engineering methods of remediation would be the most appropriate.

Civil engineering techniques remain the most widely used remedial method of brown field re-development although they are often not the most cost effective. The pressures of the development programme are often the drivers for employing a civil engineering remedial technique as the treatment timescales are significantly reduced.

Typically these methods are:

- Full excavation and disposal: This would result in full depth removal of contaminated ground across the site with disposal to suitable land fill. The resulting level change would require the import of suitable clean material to achieve accessible development levels.
- Capping Layers: Provision of suitable capping layers to remove the pathway with the contaminants with the soil. Capping layers can consist of hard forms such as building footprints, roads, footpaths and hard landscaping or soft landscaping of suitable composition and thickness.

3.4.2 Capping Strategy

The overall objective of the capping strategy is to break the exposure pathway between contaminants of concern and receptor in this case humans. Normal construction hard standings and building footprints will provide the majority of the barrier layers. with garden areas receiving a minimum of 1000mm of validated clean inert material with perimeter landscaping receiving 600mm of validated clean inert material Minimum 200mm of validated topsoil to be included within the capping depth

Drawing 6503-122 – Capping plan in Appendix B sets out the proposed capping strategy for the site with capping form/type and make up identified in Table 1 below.

Drawings 6503- 8, 9 & 10 in Appendix B sets out the residential garden capping levels at both formation and finished level.

Residential garden capping will comprise

- 800mm of clean inert general fill, it is proposed to utilise a general fill material in accordance with Specification for highway works series 600 class 2C or 2D stony or silty cohesive. This general fill material will be partially won on-site from underlying natural subsoil, the use of existing ground means that the placement of capping layer should not impact significantly on existing gas regimes and pathways and will not create addition horizontal migration.
- 200mm of clean inert Multi-purpose Topsoil to BS 3882:2007.

Ground to receive Engineering finishes will be placed to Formation level to achieve the design requirement of 5% CBR

Within soft landscaping areas an orange geotextile separation/identification layer will be proved to identify to future activities a demarcation zone between the existing made ground and clean capping

Within Residential garden areas the contractor will be required to validate formation and finished levels to ensure correct depth of capping. Refer to table 2 below.

Site Location	Capping strategy
Buildings and Footprint	Screed, insulation, Gas protection (See section 5.2) for details Beam and Block Flooring minimum 200mm Clear void.
Driveways and Parking Bays	40mm Thin Surface Course 60mm Dense Binder AC 225 Type 1 Sub base
Carriageway	40mm Thin Surface Course 60mm Dense Binder DBM50 100mm Dense Base DBM50 150 Type 1 Sub base
Footpaths	20mm Dense AC 6 Surface course 40mm Dense Binder AC 20 200 type 1 Sub base
Garden Paths	40mm Flagstones 40mm sand 100mm Type 1 sub base
Gardens	18 Number Residential Gardens 200mm Validated* Clean inert imported topsoil in accordance with BS 3882:2007 800mm validated clean inert imported Fill – Class 2C and 2D in accordance with the specification for highway works Series 600 table 6/1 Total depth to be validated* PAGeotechnical Bioliner Orange - OSA * Refer to section 3.3.3 below
Landscaping	200mm Validated* Clean inert imported topsoil in accordance with BS 3882:2007 400mm validated clean inert site won and imported Fill – Class 2C or 2D in accordance with the specification for highway works Series 600 table 6/1 Total Depth to be validated* * Refer to section 3.3.3 below

Table 1 – Capping Strategy

3.4.3 Capping Validation.

The following Validation details were set out within the remediation strategy.

	Capping Material	
	Topsoil	Subsoil
Type	Multi-purpose Topsoil to BS 3882:2007	Class 2C and 2D in accordance with the specification for highway works
Certification	BS 3882:2007 Declaration of analysis Analysis Certificate Sampling protocol	Series 600 table 6/1
Testing Regime	1 No per 100m ³ per source	1 No per 200m ³ per source
Chemical Composition	Suite 1 - pH, arsenic, cadmium, chromium (hexavalent and total), lead, copper, nickel, zinc, boron, mercury, selenium, sulphide, sulphur, sulphate, PAH, cyanide (total, free, complex), thiocyanate, phenol, and total petroleum hydrocarbons as a screen (FCC) and TPHCWG (Wrexham) Note where source is unknown samples to analyzed for PCB;s and Asbestos screen	Suite 1 - pH, arsenic, cadmium, chromium (hexavalent and total), lead, copper, nickel, zinc, boron, mercury, selenium, sulphide, sulphur, sulphate, PAH, cyanide (total, free, complex), thiocyanate, phenol, and total petroleum hydrocarbons as a screen (FCC) and TPHCWG (Wrexham) Note where source is unknown samples to analysed for PCB;s and Asbestos screen
Thickness	200mm	800mm
Depth Validation	5 No spot levels to be taken on top of subsoil. Locations to be garden corners and centre 1 No Finished Garden level to be taken in centre.	5 No spot levels to be taken at formation following placement of marking layer. Locations to be garden corners and centre

Table 2 - Validation and testing strategy for capping

4.0 CL:AIRE – Definition of Waste – Development industry code of practice

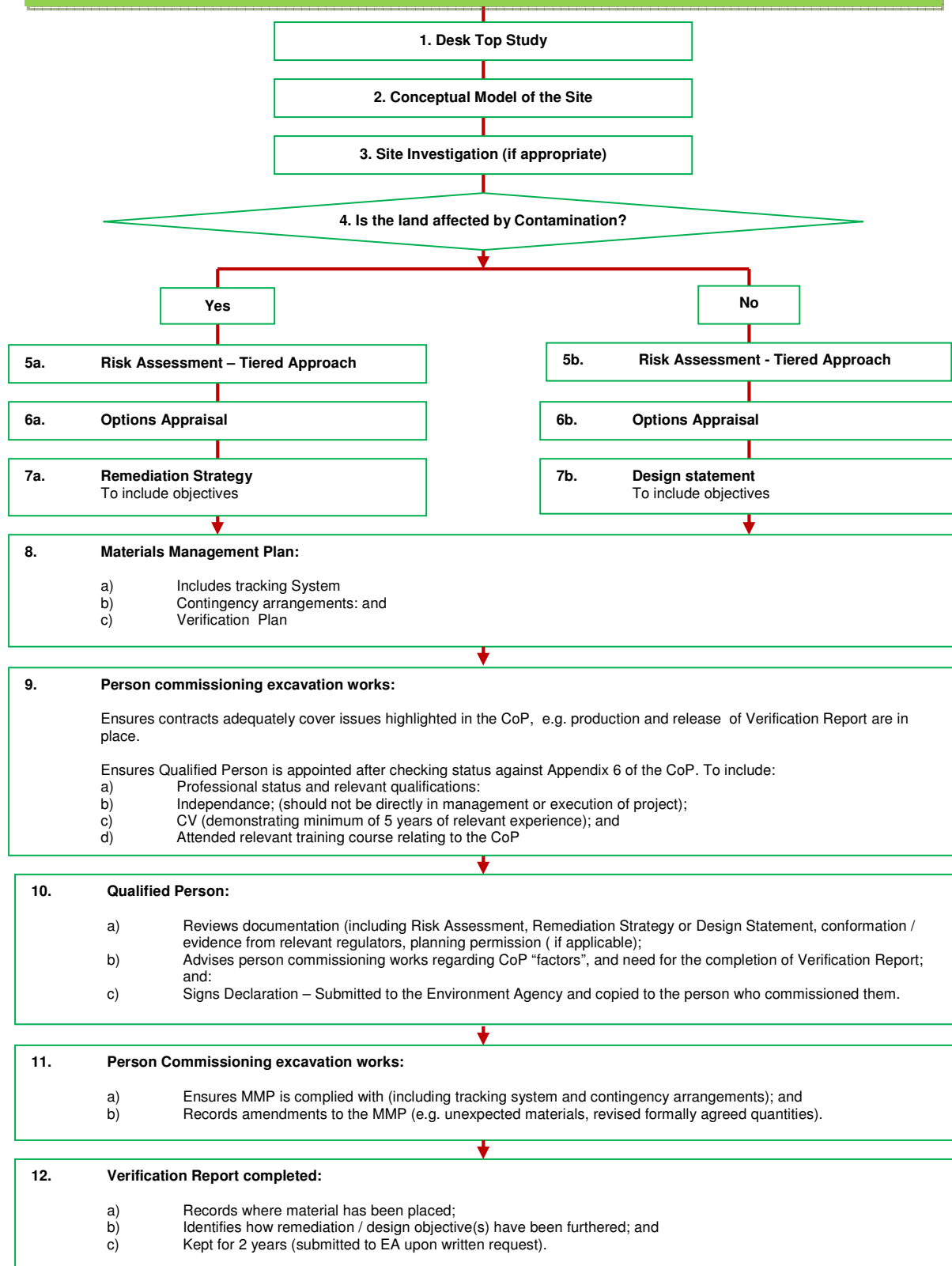
Following appointment of Keepmoat as the contractor for the proposed development and subsequent consultations with specialist remediation contractor ADM regeneration Ltd the implementation stage of the remediation works will be delivered utilising CL:AIRE code of practice (CoP) The summary of processes required to comply with this CoP are outlined in Fig 1 below.

An initial design team meeting with Keepmoat, Bay Associates and ADM regeneration was held on the 24th March 2014 to discuss the scheme and set out how the remediation phase would be delivered utilising reports completed and agreed to date along with delivery and input required to procure the implementation of the remediation strategy utilising the CoP.

It is considered that CoP Processes completed to date includes items 1- 4 and 5A - 7A these set out the processes required up to and including the development of the remediation strategy which has been completed and part summarised above. To complete the CoP summary of process the following further work is required and processes 8 - 12 are addressed In conjunction with the remediation contractor as set out below.

FIG 1

**DEFINITION OF WASTE: DEVELOPMENT INDUSTRY CODE OF PRACTICE
SUMMARY OF PROCESS**



4.1 CoP 8 - Materials Management Plan

The materials Management plan has been developed by the specialist remediation contractor ADM regeneration in conjunction with Bay Associates to set out the systems necessary to implement the remediation strategy. The Materials Management plan is a standalone live document that is set out with its own supporting information and is set out in Appendix C and includes the following

- i) Tracking System
- ii) Contingency Arrangements
- iii) Verification Plan

The following documents are included within Appendix C

- Schedule of drawings submitted with MMP
- Materials Management Plan
- Glan Gors MMP supporting documents Supporting documents ref 1-7
- Pollution Control - Risk Assessments and Method statements

These documents along with Documents referenced to above have formed the basis of the submission to the Qualified Person for sign off.

4.2 CoP 9 - Person Commissioning Excavation works

Keepmote are the main contractor responsible for commissioning excavation works and in conjunction with Bay Associates have ensured that adequate contractual arrangements are in place to comply with the CoP.

A number of locally based qualified persons, registered as such on the CL:AIRE website have been identified and approached regarding fulfilling this role for this project. It is considered that registration as a qualified person on the CL:AIRE site provides the necessary due diligence to comply with Item 9 of the CoP summary of process

4.3 CoP 10 - Qualified Person Details and Appointment

The Qualified person to be appointed is

Martin Dyer - QP registration No 250
E3P Ltd
Head Office
City Heliport Business Park
Eccles • Manchester • M30 7RU
0161 707 9612 (Manchester)
0203 397 9087 (London)
0131 564 1756 (Edinburgh)

A qualified person declaration was completed and submitted on 15th April 2014 to Natural Resources Wales. This completed declaration can be seen in Appendix D

4.4 CoP 11- Person commissioning excavation works.

Keepmoat Ltd are commissioning the excavation works to be completed by ADM regeneration. Keepmoat site manager is to insure that the MMP is complied with and in conjunction with Bay Associates will ensure amendments to the MMP are made as required.

The MMP will become an item agenda during monthly progress meetings to ensure all updates are conveyed to the design team.

4.5 CoP 12 - Verification Report

Details of the verification plan are set out within the MMP

This section of the document will be completed upon completion of the works and will set out the following.

- Records where records will be placed
- Identifies how remediation /design Objectives have been furthered

5.0 Pollution Prevention

A remediation method statement has been provided by the ADM regeneration which sets out the methodology for dealing with the following

- Site Set up and welfare facilities
- Maintenance of road Cleanliness
- Dust Suppression
- General Excavation Works
- Movement of Site vehicles
- Prevention of surface run off

This document forms part of the MMP submission for sign of by the qualified person and can be found in Appendix C

6.0 Health and Safety Procedures

Remediation risk assessments have been provided by ADM Regeneration as follows

- Underground Services
- Excavators
- Excavations
- Quick Hitch
- Dumpers
- Articulated vibratory rollers
- Manual Handling

These documents form part of the contractual and CDM obligations with keepmote.

7.0 Site Wide Verification Report

The verification report as set out under the CL:AIRE CoP will provide verification of the Stage 1 – implementation works associated with ground contamination. This verification plan along with the Stage 2 – implementation/Verification plan associated with ground gas will form the nucleus of the overall site wide verification that will be submitted to discharge planning condition 12

This site wide verification plan will in accordance with CLR 11 and consultation with the local Authority the verification Plan and Report, set out the data gathering requirements necessary to demonstrate that the remediation/mitigation undertaken meets the site remediation criteria.

The verification plan will be completed upon completion of all works that impact on the ground and will collate the evidence to demonstrate that all works have been carried out in accordance with the remediation strategy and implementation plan. This will include:

- Summary of desk study, site investigation report and remediation strategy.
- Details of who carried out the work.
- Details and justification of any changes from original remediation strategy.
- Substantiating validation data that will include where appropriate:
 - Laboratory and *in-situ* test results.
 - Monitoring results for groundwater and gases.
 - Summary data plots and tables relating to clean-up criteria.
 - Plans showing treatment areas and details of any differences from the original remediation strategy.
 - Photographic and other media records.
 - Waste management details and records.
 - Validation of clean capping depths to gardens
 - Third party validation regarding gas protection installation.
 - Contractors individual plot records and photo's
 - WAC test certificates for waste off site
 - Waste disposal Tickets confirming waste disposal to authorised Facility
 - Plans, drawings and photo's as necessary
- • Confirmation that remediation objectives have been met.

This document is to be read in conjunction with the Material Management Plan (MMP) contained within Appendix C of this document

Appendix A

Site Location Plan

Site Location Plans

The site is located approximately 1.5km east of the centre of Wrexham, North Wales. The site location is shown on Figure 1 and is centred at Grid Reference 335197,349858. The site which covers an area of approximately 0.6ha (Figure 2) is located off Anthony Eden Drive. Situated between an area known as The Dunks and Cefn Park the site is surrounded by residential properties.

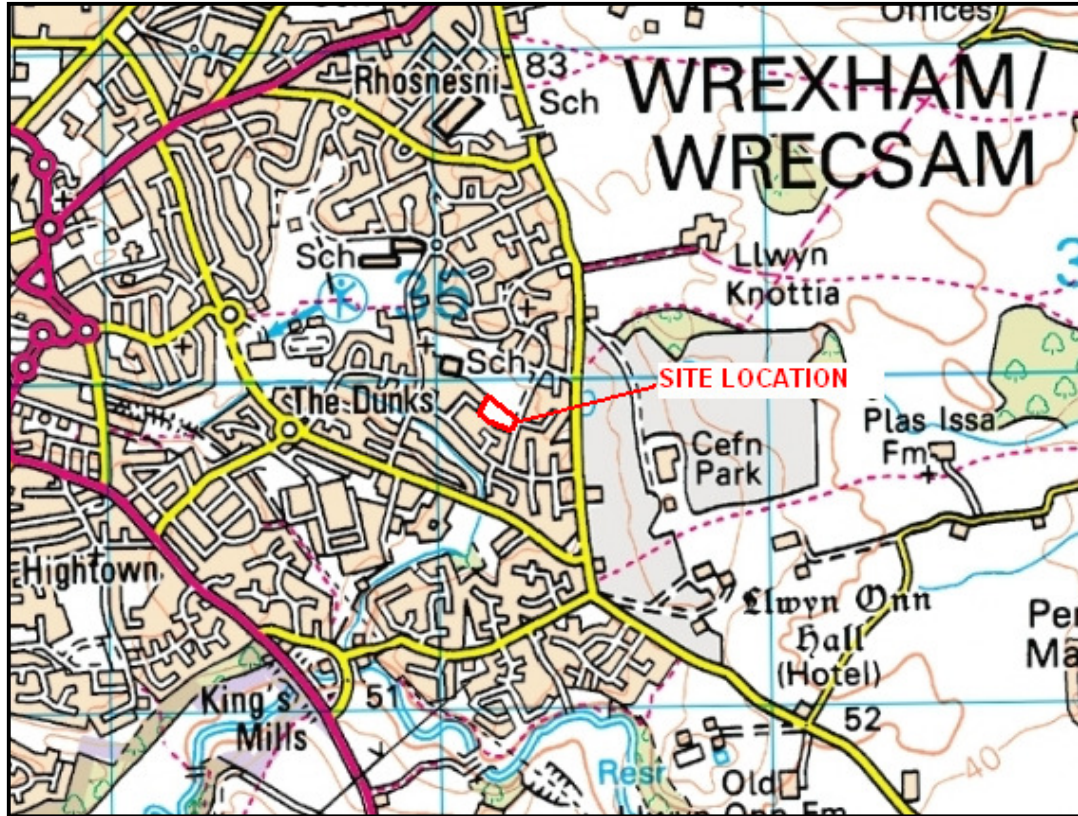


Fig 1

The extent of the site is shown on Figure 2. Access to the site is directly off Anthony Eden Drive to the east. The boundaries of the site are marked by a pathway to the north-west, south-west and south, Anthony Eden Drive to the east, and there is no boundary demarking the north-east boundary.

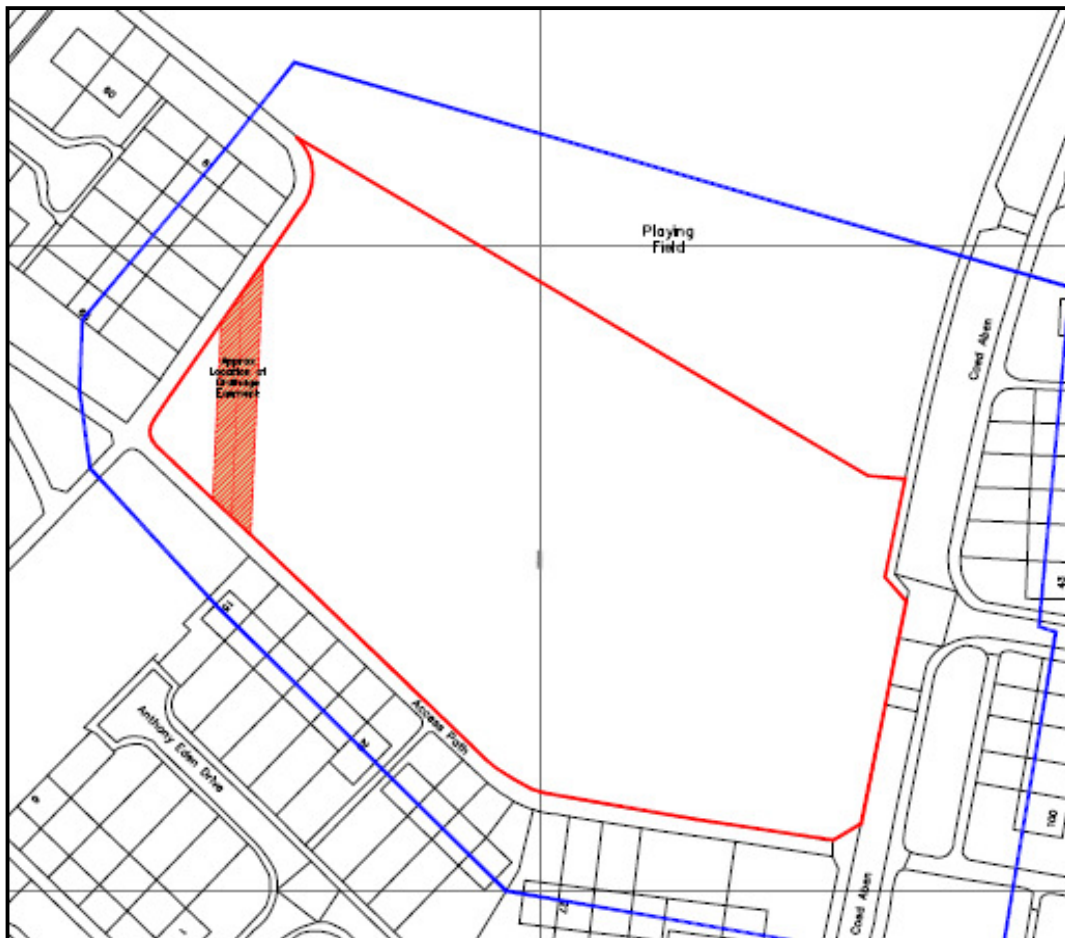


Figure 2 – Site Boundary (red)

Site Description and Topography

The site is an area of maintained green open space within a residential estate. It is used for recreational use and comprises a grassed relatively flat area of ground. An aerial photograph is shown as Figure 3. The ground surface within the site is generally level and slopes very gently from north-east to south-west from 58.90m aOD to 57.60m aOD. There are residential properties to the east, south and west to north-west. To the north-east is a further area of grassed open space used for informal recreational use.



Figure 3 – Aerial Photograph

Appendix B

Capping Strategy Drawings

Drawing 6503-122	Capping Plan
Drawings 6503- 8, 9 & 10	Residential
Gardens Capping Levels	

Notes:

0mm

50mm

A1

original sheet size

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KEY

FOOT PATHS = 860mm HARD CAPPING

CARRIAGEWAY = 950mm HARD CAPPING

BUILDING FOOTPRINT = 790mm HARD CAPPING

DRIVEWAY/PARKING BAYS = 850mm HARD CAPPING

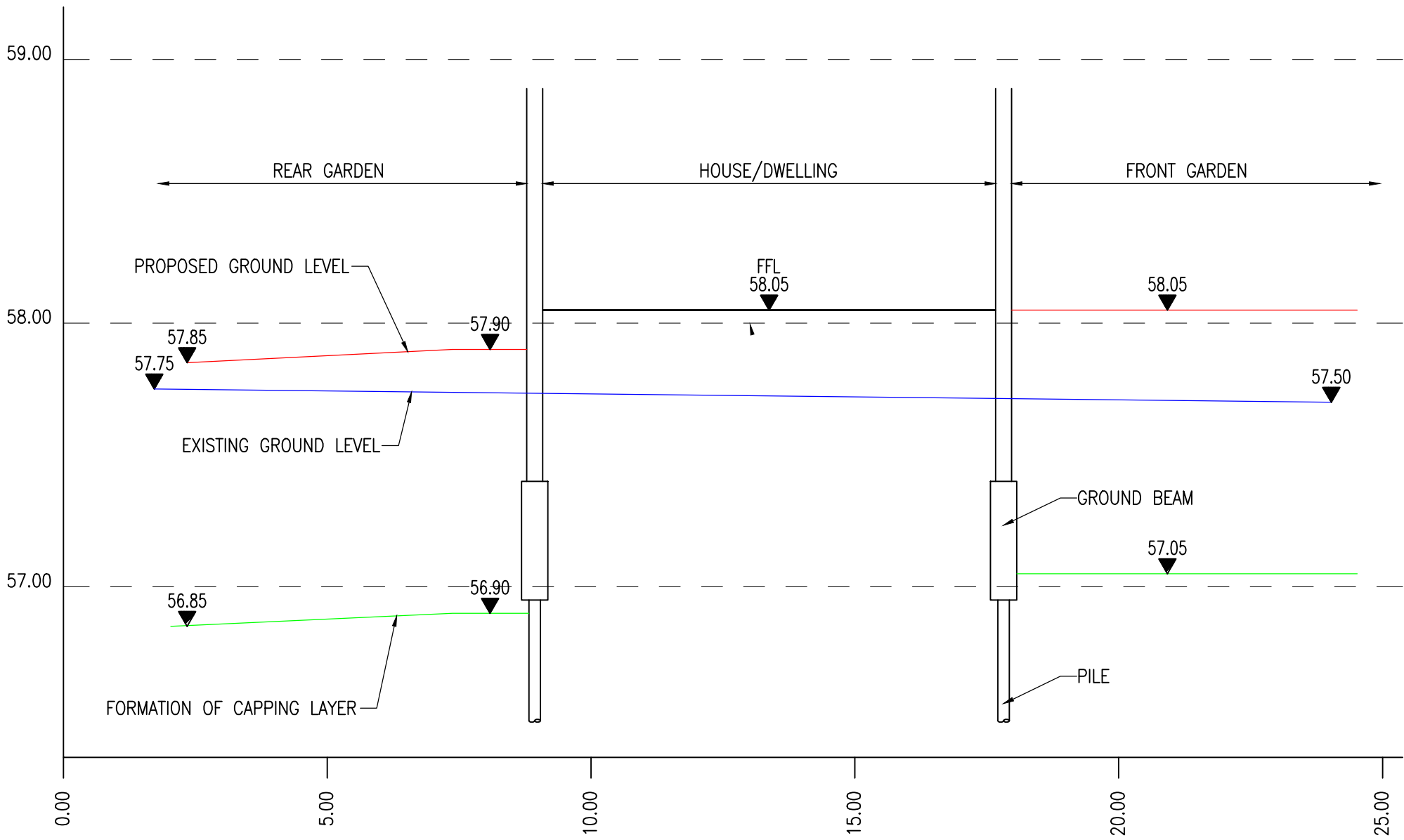
LANDSCAPING = 600mm SOFT CAPPING

GARDEN SPACES = 1000mm SOFT CAPPING

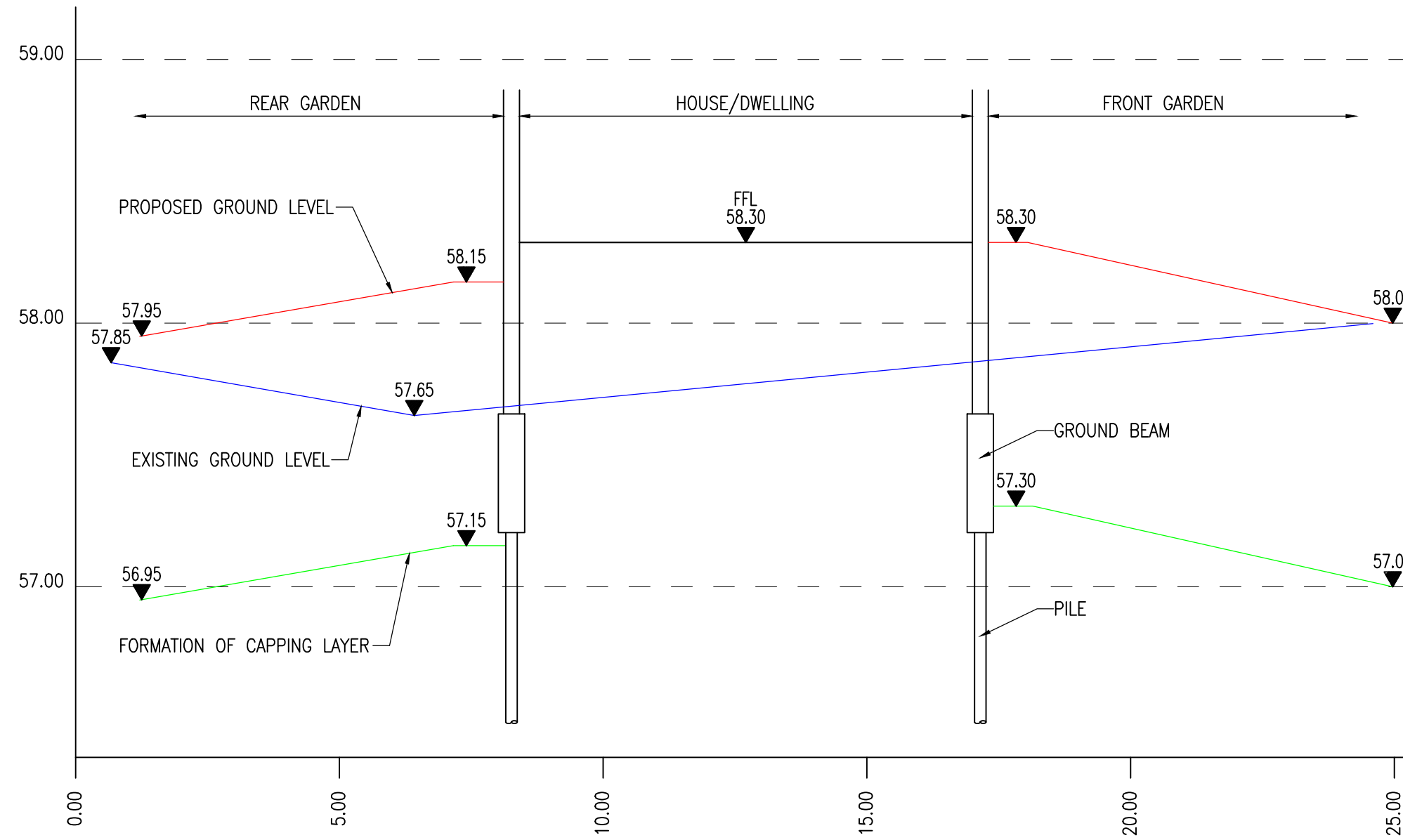
GARDEN PATHS = 210mm SOFT CAPPING

NOTE:--
REFER TO REMEDIATION STRATEGY FOR
DETAILS OF HARD CAPPING

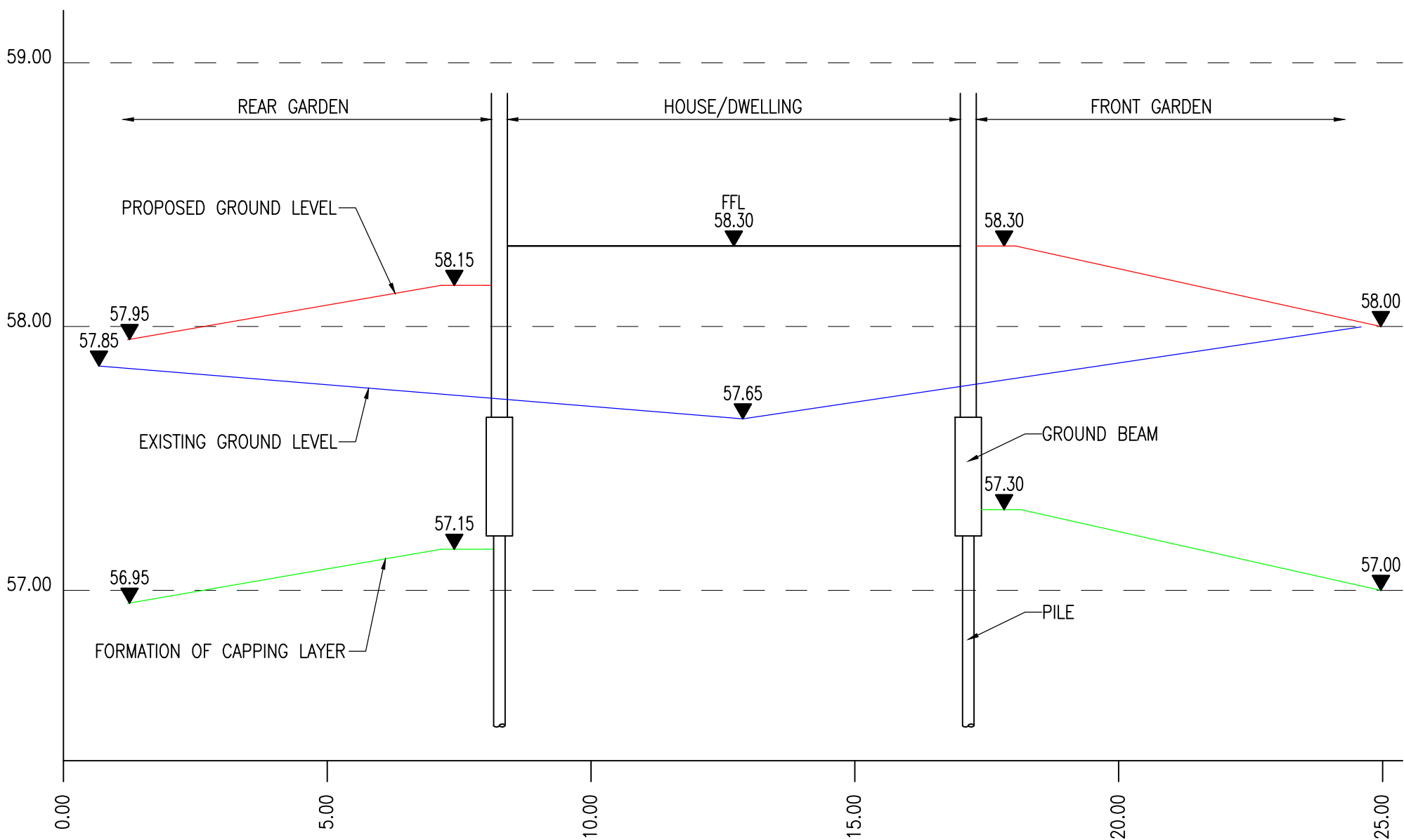
Rv Date By Ch Revisions	Client PENNAF HOUSING	Project RESIDENTIAL DEVELOPMENT GLAN GORS WREXHAM	Drawing Title CAPPING PLAN
Drawing Status TENDER ISSUE	Scale 1:200@A1	Date 06.12.13	Design By NL
Drawn By SO	Checked NL	Job No. 6503	Drawing No. 122
Rev /	Bay Associates Civil + Structural Engineers 21/22 Neptune Court, Vanguard Way, Cardiff, C F 2 4 5 P J	t:029 2045 1011 f:029 2037 4690 e:bay@bayassociates.co.uk w:www.bayassociates.co.uk	ice CARDIFF REDDITCH LONDON BAY CIVIL + STRUCTURAL



SECTION A-A PLOTS 1/2
(SCALE 1:100 HORIZONTALLY 1:500 VERTICALLY)



SECTION C-C PLOTS 5/6
(SCALE 1:100 HORIZONTALLY 1:500 VERTICALLY)



SECTION B-B PLOTS 3/4
(SCALE 1:100 HORIZONTALLY 1:500 VERTICALLY)



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NOTE:
ALLOWANCE SHOULD BE MADE TO REMOVE UP TO 1M OF SOFT LANDSCAPING WITHIN GARDEN AREAS AND REPLACE WITH 1M OF CLEAN INERT MATERIAL WHICH WILL INCLUDE MINIMUM OF 200mm TOPSOIL. POS TO BE 600mm INERT MATERIAL, 200mm TOPSOIL

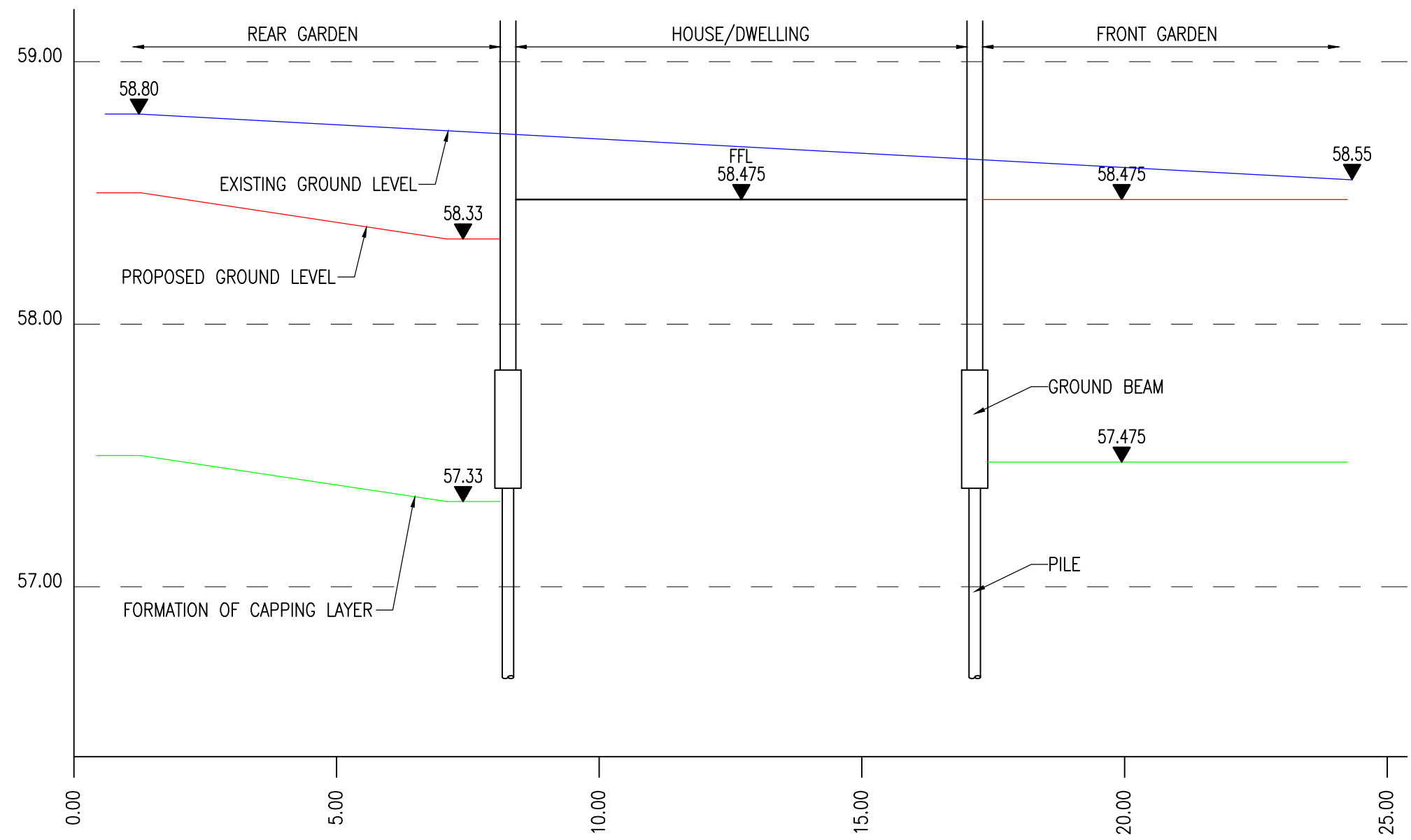
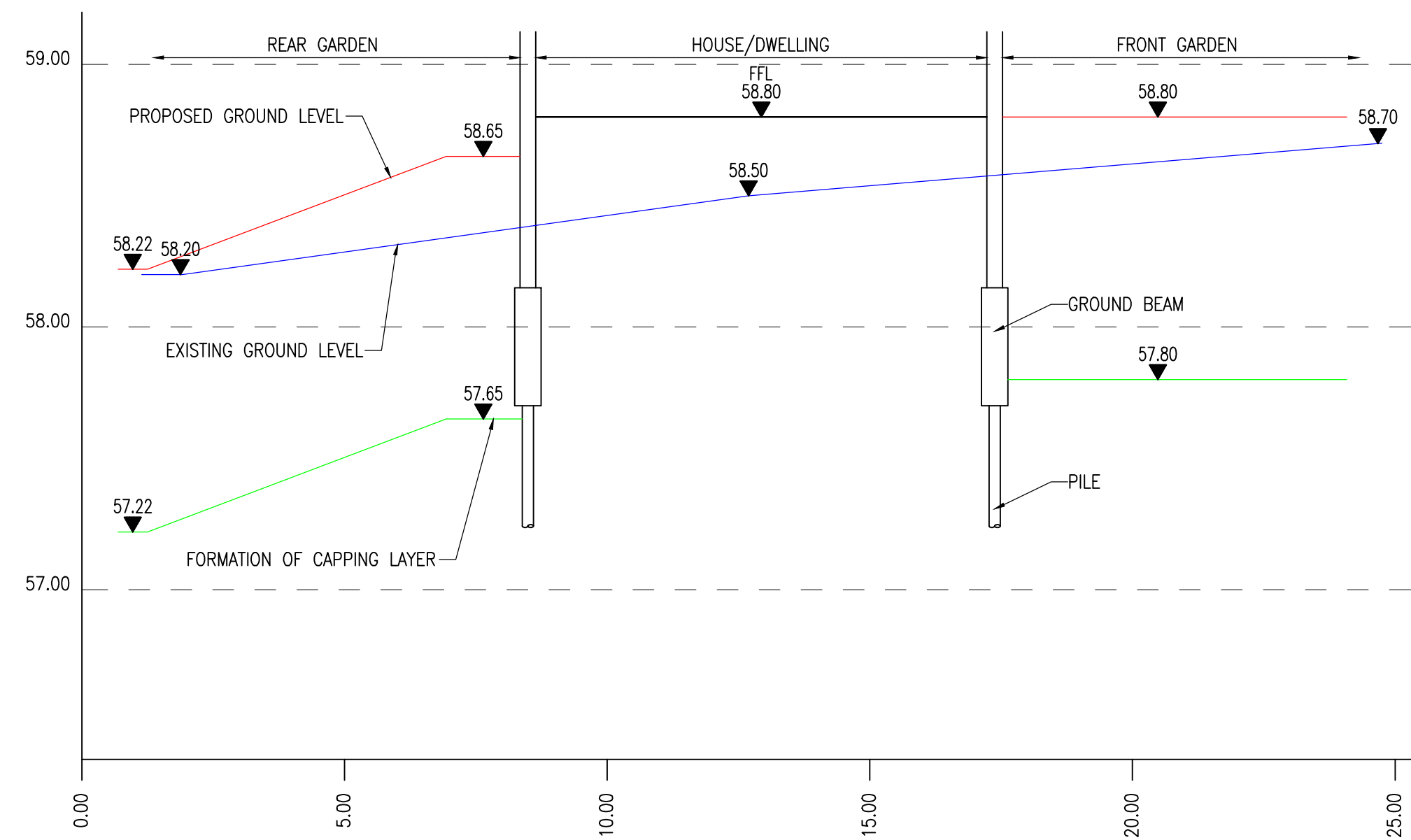
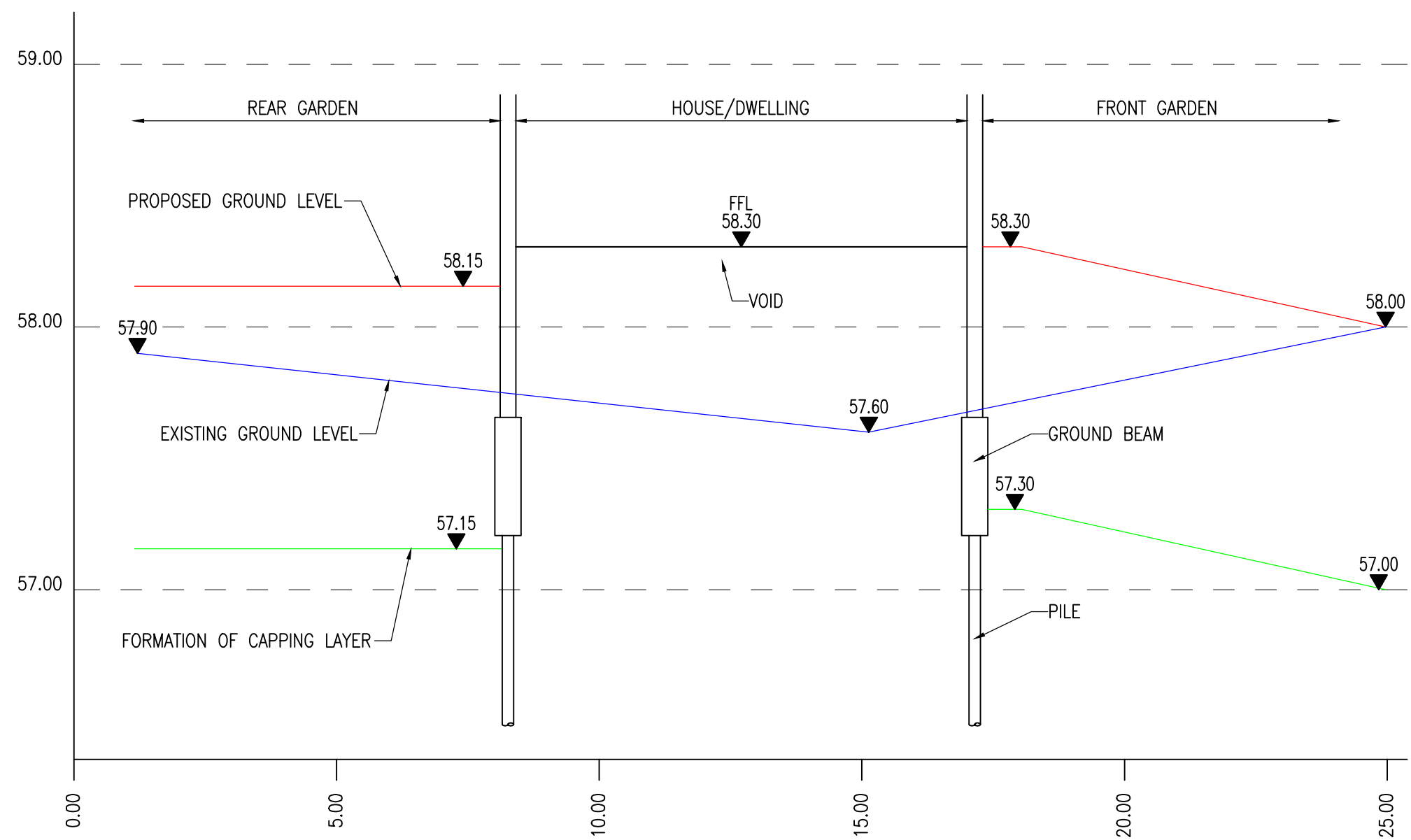
KEY:-

RED = PROPOSED GROUND LEVEL
BLUE = EXISTING GROUND LEVEL
GREEN = FORMATION LEVEL EXCAVATION

Rv	Date	By	Ch	Revisions	Client	Project	Drawing Title
					PENNAF HOUSING	RESIDENTIAL DEVELOPMENT GLAN GORS WREXHAM	RESIDENTIAL GARDENS PROPOSED CAPPING LEVELS SHEET 1 OF 3
					Drawing Status TENDER ISSUE	Scale AS SHOWN	Date 26.11.13
					Bay Associates Civil + Structural Engineers 21/22 Neptune Court, Vanguard Way, Cardiff, C F 2 4 5 P J t:029 2045 1011 f:029 2037 4690 e:bay@bayassociates.co.uk w:www.bayassociates.co.uk	Design By NL	Drawn By SO
						Job No: 6503	Drawing No: 008
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Notes:

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- GENERAL NOTES
1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
 2. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
 3. ALL LEVELS RELATE TO ORDNANCE DATUM UNLESS NOTED OTHERWISE.
 4. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
 5. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
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 7. THIS DRAWING IS COPYRIGHT© PROPERTY OF BAY ASSOCIATES.
 8. IF IN DOUBT, ASK.

NOTE:

ALLOWANCE SHOULD BE MADE TO REMOVE UP TO 1M OF SOFT LANDSCAPING WITHIN GARDEN AREAS AND REPLACE WITH 1M OF CLEAN INERT MATERIAL WHICH WILL INCLUDE MINIMUM OF 200mm TOPSOIL. POS TO BE 600mm INERT MATERIAL, 200mm TOPSOIL

KEY:-

RED = PROPOSED GROUND LEVEL

BLUE = EXISTING GROUND LEVEL

GREEN = FORMATION LEVEL EXCAVATION

Rv	Date	By	Ch	Revisions	Client	Project	Drawing Title
					PENNAF HOUSING	RESIDENTIAL DEVELOPMENT	RESIDENTIAL GAREDENS
							GLAN GORS
							WREXHAM
					Drawing Status	Scale	Job No.
					TENDER ISSUE	AS SHOWN	6503
					Bay Associates Civil + Structural Engineers	Date	Drawing No.
					21/22 Neptune Court, Vanguard Way, Cardiff, C F 2 4 5 P J	26.11.13	009
					t:029 2045 1011 f:029 2037 4690	Design By	Rev.
					e:bay@bayassociates.co.uk www.bayassociates.co.uk	NL SO NL	
						ice	
						CARDIFF	
						REDDITCH	
						LONDON	
						BAY	
						CIVIL + STRUCTURAL	



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NOTE:
ALLOWANCE SHOULD BE MADE TO REMOVE UP TO 1M OF SOFT LANDSCAPING
WITHIN GARDEN AREAS AND REPLACE WITH 1M OF CLEAN INERT MATERIAL
WHICH WILL INCLUDE MINIMUM OF 200mm TOPSOIL. POS TO BE 600mm
INERT MATERIAL, 200mm TOPSOIL

KEY:—

RED = PROPOSED GROUND LEVEL

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GREEN = FORMATION LEVEL EXCAVATION

Rv	Date	By	Ch	Revisions	Client	Project	Drawing Title						
					PENNAF HOUSING	RESIDENTIAL DEVELOPMENT GLAN GORS WREXHAM	RESIDENTIAL GARDENS PROPOSED CAPPING LEVELS SHEET 3 OF 3						
					Drawing Status	Scale	Date	Design By	Drawn By	Checked	Job No:	Drawing No.	Rev.
					TENDER ISSUE	AS SHOWN	26.11.13	NL	SO	NL	6503	0010	
					Boy Associates Civil + Structural Engineers 21/22 Neptune Court, Vanguard Way, Cardiff, CF24 5PJ t:029 2045 1011 f:029 2037 4690 e:boy@boyassociates.co.uk w:www.boyassociates.co.uk								
					  				CARDIFF ☒ REDDITCH ☐ LONDON ☐				
									 BAY ENGINEERING CIVIL + STRUCTURAL				

Appendix C

Schedule of drawings submitted with MMP
Materials Management Plan.

Glan Gors MMP supporting documents supporting
documents ref 1-7.

Pollution Control - Risk Assessments and Method
statements .

Schedule of Drawings (enclosed) for Reuse on Site of Origin – Glan Gors, Wrexham, LL12 9NU

Drg Ref.	Description	Originator	Scale/Drg size	Date
Figure 1	Site location plan	E-Geo Solutions Ltd/Bay Associates Consulting Ltd	NTS/A4	Aug 2013
Figure 2	Site Boundary Plan	E-Geo Solutions Ltd	NTS/A4	Aug 2013
Figure 3	Aerial Photograph of the Site	E-Geo Solutions Ltd	NTS/A4	Aug 2013
6503-131	Exploratory Holes Location Plan	Bay Associates Consulting Ltd	1:500 /A3	24.10.12
6503-121	Base of Made Ground Contours and Gas Readings Plan	Bay Associates Consulting Ltd	NTS/A1	04.07.13
C801.02	Topographical Site Survey	Ainsley Gommon Architecture Urban Design	1:250/A1	14.08.12
6503-SK-C-002	Existing Conceptual Site Model	Bay Associates Consulting Ltd	NTS/A3	11.07.13
6503-SK-C-003	Post Development Conceptual Site Model	Bay Associates Consulting Ltd	NTS/A3	12.07.13
6503-122	Cover Requirements Plan	Bay Associates Consulting Ltd	1:200/A1	06.12.13
6503-008	Sections of Soft Cover to Gardens	Bay Associates Consulting Ltd	Various/A1	26.11.13
C801.04L	Proposed Site Development Layout	Ainsley Gommon Architecture Urban Design	1:500/A3	03.05.12
6503-101 Rev B	Proposed Development Levels	Bay Associates Consulting Ltd	1:200/A3	16.10.12
6503-102	Proposed Drainage Layout	Bay Associates Consulting Ltd	1:200/A1	23.10.12
10309/001	Proposed development surface types and construction thicknesses	ADM Regeneration Ltd	1:200/A1	Apr 2014
10309/002	Cut/fill depths from existing to proposed remediated development formation (RDF) levels. (On ex-topographical survey base)	ADM Regeneration Ltd	1:200/A1	Apr 2014
10309/003	Cut/fill depths from existing to proposed remediated development formation RDF) levels. (On proposed	ADM Regeneration	1:200/A1	Apr 2014

	development layout base)	Ltd		
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Materials Management Plan (MMP) Form

This form should be completed once the lines of evidence have been marshalled in relation to suitability for use, certainty of use and quantity required. The answers to the questions posed within this form together with the supporting information will constitute the MMP and must be provided to the Qualified Person.

A Qualified Person may comment on draft versions of this MMP, but will not complete the Declaration until all of the relevant documents, demonstrating lines of evidence have been provided for each site.

Each question must be answered. If the question is not applicable please state this and provide a brief explanation.

1. Specify the scenario to which this MMP relates, as described in the CoP (1, 2, 3 or 4):

- 1. Reuse on the Site of Origin
- 2. Direct Transfer of clean naturally occurring soil and mineral materials
- 3. Cluster Project
- 4. Combination of any of the above - ✓

Reuse on Site of Origin and Direct Transfer of clean naturally occurring unpolluted soils

2. Organisation and name of person preparing this MMP (full address and contact details)

ADM Regeneration Ltd
Warrington Lane
Lymm
Warrington
WA13 0SA

John Coggins
Mob: 07873 327656
Email: john@admregen.co.uk

Document Control

Date issued	April 2014
Revision date	
Summary of revision 1	
Summary of revision 2	

Insert additional lines to the table above for any subsequent revisions.

Note - revisions to the MMP do not trigger an additional Declaration by a Qualified Person, unless an additional site is added to the project.

Revisions to the MMP must be recorded and summarised in the Document Control box above.

Site Details

3. Site / Project name(s)

Proposed Residential Development, Glan Gors, Wrexham, LL13 9NU

Landowners

4a. Name of Landowner(s) (full address and contact details) – Where excavated materials are arising from:

1. Site of origin:

Pennaf Housing Group,
72 Ffordd William Morgan,
St. Asaph Business Park,
St. Asaph,
Denbighshire,
LL17 0JD

Lorraine Taylor – Project Development Officer

Tel: - 01745 536 825

Email: Lorraine.Taylor@clwydalyn.co.uk

2. Direct Transfer Donor Site(s) for topsoil element of soft cover – to be advised of separately.

4b. Name of Landowner(s) (full address and contact details) – Where materials are to be reused:

1. As 4a – 1.

Summary and objectives

5a. Provide a brief description of the planned project and how excavated materials are to be reused within it.

[See attached document ref. 1](#)

General Plans and Schematics

6. Attach a location plan for the site(s) and a plan of the site(s) which identifies where different materials are to be excavated from, stockpile locations (if applicable), where materials are to be treated (if applicable) and where materials are to be reused.

Plan References:

[See full schedule attached of drawings enclosed for reuse on Site of Origin.](#)

[Drawings for Direct Transfer Donor and Receiver Site\(s\) to be provided subsequently.](#)

7. Attach a schematic of proposed materials movements. Where there is only one source area and one placement area briefly describe it below. For all other projects a schematic is required.

Schematic Reference: [See attached document ref. 2](#)

Parties Involved and Consultation – if more than one party please provide additional details for them and identify the location that they will be working e.g. where a site is zoned

8a. Main earthworks contractor(s) (full address and contact details) – Where excavated materials are arising from:

1. Site of Origin:

ADM Regeneration Ltd
Warrington Lane
Lymm
Warrington
WA13 0SA

Adam Matthews – Managing Director
Tel: 01925 756033
Mob: 07976 887579
Email: adam@admregen.co.uk

2. Direct Transfer Donor Site(s) for Topsoil – to be advised separately

8b. Main earthworks contractor(s) (full address and contact details) - Where materials are to be reused:

1. Site of Origin - as 8a-1

9. Treatment contractor(s) (full address and contact details) – for treatment on site of origin, or at a Hub site within a Cluster Project:

N/A

10. Where wastes and materials are to be transported between sites provide details of the transport contractor(s) (full address, contact details and waste carriers registration details (if applicable)):

Offsite disposal of excess Made Ground, general waste (i.e. timber, plastic, cloth, metal, etc) removed from excavated Made Ground to source underlying subsoil and any chemically impacted soils exceeding site acceptance criteria for retention on site beneath hard surfaces or soft cover. Import of topsoil – See attached document ref. 3.

11. For each site where materials are excavated and where materials are to be reused provide Local Authority contact details (full address and named contacts):

1. Reuse on Site of Origin:
Wrexham County Borough Council (WCBC),
Housing and Public Protection Department,
Ruthin Road,
Wrexham,
LL13 7TU

Mrs. Angela Guy – Contaminated Land Officer
Tel: 01978 315 733
Email: angela.guy@wrexham.gov.uk

2. Direct Transfer Donor Site(s) – import of topsoil to be advised separately

12a. For each site where materials are to be reused and for Hub Site locations provide Environment Agency contact details (full address and named contacts):

Natural Resources Wales
Clawdd Newydd
Ruthin
Denbighshire
LL15 2NL

Tel:
Email:

For all Cluster Projects: n/a

12b. Attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection to the proposals (see 3.37 of CoP)

EA references:

If the EA has not been consulted please explain why (see paragraph 3.39 of the CoP).

Lines of Evidence

There is no one single factor that can be used to decide that a substance or object is waste, or when it is waste at what point it ceases to be waste. As complete picture as possible has to be created. The following sections require completion to ensure the correct decision is made.

If a requested item is not relevant it is important for you to clearly state why this is so (e.g. no planning permission required because permitted development status exists).

Suitable for use criteria

13. Please describe or provide copies of the required specification(s) for the materials to be reused on each site.

Reference:

1. Sections 4, 5 & 6 of Stage 1 - Phase 2, Geotechnical and Geo-Environmental Ground Investigation of Land at Glan Gors, Wrexham, (Report Ref. No. E0500.S1.P2.R1V5 – dated 27-08-13) by e-Geo Solutions Ltd.

Where contamination is suspected or known to be present

14a. Please provide copies or relevant extracts from the risk assessment(s) that has been used to determine the specification for use on the site. **This must relate to the place where materials are to be used.** This must be in terms of (i) human health (ii) controlled waters and (iii) any other relevant receptors. If a risk assessment is not relevant for a particular receptor given the site setting please explain why below:

Reference:

1. Sections 6 of Stage 1 – Phase 2, Geotechnical and Geo-Environmental Ground Investigation of Land at Glan Gors, Wrexham, (Report Ref. No.E0500.S1.P2.R1V5 – dated 27.08.13)
2. Section 3.5 of Detailed Remediation Strategy for Proposed Residential Development, Glan Gors, Wrexham.(Report Ref. No. 6503 – dated December 2013) by Bay Associates Consulting Ltd

14b.Please attach any relevant documentation from the LA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)

LA references:

Letter and emailed letter from Wrexham County Borough Council (WCBC) to Bay Associates Consulting Ltd – dated 14th August and 9th October, 2013.

If the LA has not been consulted please explain why (see paragraph 3.39 of the CoP).

14c.Please attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 and Table 2 of the CoP)

EA references:

No specified correspondence provided, however Sections 5.6.16 – 6.5.28 of e-Geo Solutions Ltd's Phase 2 SI Report discusses the pollution of controlled waters and Section 6.16.1 concludes (in tabular form) that the risk to shallow and deep ground water is low and none respectively and to surface water is low to very low.

Section 6.0 of Bay Associates Ltd's Detailed Remediation Strategy states that a copy of e-Geo Solutions Ltd's Phase 2 SI Report had been copied to Natural Resources Wales and they had commented on one or two minor points that were subsequently addressed in the final (Version 5) site investigation report.

If the EA has not been consulted please explain why (see paragraph 3.39 of the CoP).

14d. Please attach any relevant documentation from any other regulators (if relevant) relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)

Other references: [n/a](#)

Where contamination is not suspected

15a. Please attach copies or relevant extracts from the Desk Top Study that demonstrates that there is no suspicion of contamination.

15b. Please attach copies or relevant extracts from the site investigation/testing reports that adequately characterise the clean materials to be used (if appropriate).

15c. Please attach copies of any other relevant information (if available) confirming that land contamination is not an issue.

Reference(s): [n/a](#)

Certainty of use

Various lines of evidence need to be provided to demonstrate that the materials are certain to be used. This includes:

- The production of this MMP
- An appropriate planning permission (or conditions that link with the reuse of the said materials)
- An agreed Remediation Strategy(ies)
- An agreed Design Statement(s)
- Details of the contractual arrangements

Please identify in the following sections what lines of evidence relate to the site(s) **where the materials are to be used**.

16a. Planning Permission(s) relating to the site where materials are to be reused

Please provide a copy of the relevant planning permission

Reference:

[Decision notice \(full\) to planning application Ref. No. P/2013/0840 granted 18.02.14 for residential development \(8 flats and 15 houses\) and construction of new access and roads.](#)

16b. Explain how the reuse of the excavated materials fits within the planning permission(s) for each site.

Stripping of topsoil, from over surface of site and either remove offsite, or retain on site as part of / below soft cover.

Excavation of Made Ground down to remediated development formation (RDF) and removal of all geotechnically and environmentally unsuitable materials (i.e. timber, plastic, metal, cloth, household waste, etc) and subsequent filling and remodelling of land form (placing and compacting Made Ground in layers). Excavating Made Ground beneath RDF, down to expose natural underlying alluvial sands in selected area of the site. Removal offsite as waste deleterious inclusions removed from Made Ground. Sourcing on site of naturally occurring silty/sands, for use as the 800mm/400mm thick subsoil element of the soft cover system, to all garden/landscaped areas of the proposed development. Export excess bulk fill materials to create the required development platform and import topsoil to complete the clean cover to soft end use areas of the proposed development.

16c. If planning permission is not required for any one site please explain why below e.g. permitted development, clean up of a chemical spill, surrender of an Environmental Permit, re-contouring within the existing permission:

n/a

Where contamination is suspected or is known to be present

17. Please provide a copy of any Remediation Strategy(ies) that have been agreed with relevant regulators.

Reference:

1. Detailed Remediation Strategy for Proposed Residential Development, Glan Gors, Wrexham, by Bay Associates Consulting Ltd. (Report Ref No. 6503 - dated December 2013)

Where contamination is not suspected

18. Please provide a copy of any Design Statement(s) that have been agreed (e.g. with the planning authority or in the case of permitted developments the client):

Reference:

n/a

Quantity of use

19. Please provide a break down of the excavated materials for each site and how much will be placed at each site or sub area of each site.

Where this is not specific to a single readily identifiable source refer to an annotated plan, schematic or attach a tabulated summary.

Reference(s):

[See attached document ref. 4 but also refer to responses to questions 6 and 7.](#)

20a. How has consolidation/compaction being considered in the above mass balance calculations?

[No actual percentage reduction in volume has been included for, however, as there is a net surplus of made ground excavated material, any reduction will similarly decrease the volume of Made Ground, this has to be disposed of offsite as waste.](#)

20b. How has loss due to treatment being considered in the above mass balance calculations (if applicable)?

[No chemical treatment involved, however, inclusions of timber, plastic, cloth, metal, etc., are to be removed from excavated ground and disposed of offsite as waste, prior to re-use of the Made Ground on site. The volume of inclusions is estimated to be relatively minimal, however it will reduce accordingly the excess Made Ground to be disposed of offsite as waste.](#)

20c. How has the addition of treatment materials being considered in the above mass balance calculations (if applicable)?

[n/a](#)

Note - An exact figure is not required but one that is reasonable in the circumstances and can be justified if challenged.

Contingency arrangements

Explain what is to happen in the following situations and identify the appropriate clauses in the contract(s) (Such clauses must be provided to the Qualified Person, preferably as a summary document): or

21a. What is to happen to, and who is to pay for out of specification materials?

Contract reference:

ADM Regeneration Ltd have contracted to reuse the excavated materials from the site of origin to provide a suitable development platform for the works as specified.

21b. What is to happen to, and who is to pay for any excess materials?

Contract reference:

Any excess materials arising during the remediation works in achieving remediated development formation levels are to be removed off site by ADM Regeneration Ltd at the Client's cost. Any subsequent arisings from the development of the site are to be removed from site by the Client also at their cost.

21c. What happens if the project programme slips in relation to excavated materials or materials under going treatment?

Contract reference:

Additional resources are to be employed by ADM Regeneration Ltd and/or extended working hours (subject to those allowed by the planning decision notice) will be actioned to achieve the agreed completion date of 7 weeks.

21d. Other identified risk scenarios for the project (relating to excavated materials)?

Contract reference:

Potential and previously unidentified chemical contamination that requires disposal off site as 'waste'.

The tracking system

22a. For all sites please describe the tracking system to be employed to monitor materials movements.

See attached document ref. 5

Where contamination is suspected or known to be present

State the procedures put in place to:

22b. Prevent contaminants not suitable for the treatment process being accepted – [n/a](#).

22c. Prevent cross contamination of materials not in need of treatment, wastes awaiting treatment and treated materials – [n/a](#).

22d. Demonstrate that materials that do not require treatment and successfully treated materials reach their specific destination – [see attached document ref. 5](#)

22e. Ensure that waste for off site disposal or treatment is properly characterised and goes to the correct facility – [see attached document ref. 5](#)

23. Please attach a copy of the tracking forms / control sheets that are to be used to monitor materials movements. To include transfer of loads on site into stockpiles prior to treatment (if applicable), stockpiled after treatment (if applicable), stockpiled awaiting use (as appropriate) and final placement.

Reference:

[See attached document ref. 6](#)

For Hub Sites within Cluster Projects & where materials need treatment before reuse

24. Please attach a copy of the Environmental Permit covering the treatment process. Or alternatively if the treatment is covered by a Mobile Plant Permit and associated Deployment Form, attach a copy of the EA agreement to the Deployment Form.

Permit reference / EA letter reference:

[n/a but a copy of the mobile permit for crushing operations granted by the Local Authority where the mobile crusher is normally kept by the registered owner/operator when not in use on site\(s\) will be included in the verification report.](#)

Records

25. Where, and in what form, are records to be kept?

[ADM Regeneration Ltd's offices \(details as previous\) – both paper and electronic copies of surveys to record cut/fill surfaces and volumes together with all other appropriate information listed in section 3.31 of the CoP Version 2.](#)

Note – records e.g. transfer notes, delivery tickets, Desk Top Study, Site Investigation, Risk Assessment(s), Verification Report(s) need to be kept for at least 2 years after the completion of the works and production of the Verification Report

Verification Plan

26. Provide or explain the Verification Plan which sets out how you will record the placement of materials and prove that excavated materials have been reused in the correct location and in the correct quantities within the development works.

Reference:

[See attached document ref. 7](#)

Document Ref. No. 1 (response to Qu. 5a)

Brief description of the Planned Project and how excavated materials are to be used within it.

The project covered by this MMP involves the construction by Pennaf Housing Group of 8 nr flats and 15 nr houses. The houses will have private front (minimal) and rear gardens. The associated external works shall comprise driveways, car parking spaces, adoptable roads and drainage works (including surface water retention below ground) and soft landscaped public open space area(s) around the periphery of the site. A new adopted cul de sac access road off Coed Abon will service the new development. The proposed development layout is illustrated at a scale of 1:500 on the enclosed Ainsley Gommon drawing (Ref. No. C801/04L) and at a scale of 1:200 on Bay Associates Ltd's drawing (Ref. No. 6503-121)

The site of the project is located approximately 1.5km east of the centre of Wrexham, North Wales at National Grid Ref 335197E, 349858N as shown on the enclosed drawing (ref Figure 1)

The site, which covers an area of approximately 0.6ha, is located off Coed Abon situated between an area known as the Dunks and Cefn Park and surrounded by residential properties. The extent of the site is shown on the enclosed drawing. (Ref. Figure 2) The site is bounded on the west and south by a pedestrian access path, to the east by some mature trees and a road (Coed Abon) and to the north by playing fields/open space.

The site is an area of maintained green open space (used for recreational purposes) and comprises a gently sloping grassed area of ground (58.90m AOD in the north to 57.6m AOD in the south). An aerial view of the site is enclosed. (Ref. Figure 3)

A topographical survey of the site was undertaken in August 2012 and a copy of this is enclosed at a scale of 1:250 detailing the existing ground levels and features present. (Ref No C801.02)

As part of their desktop study of the site, e-Geo Solutions Ltd undertook a review of the historical OS maps covering this area. (Ref No E0500.SI.P1.R1V2) The site area has remained undeveloped since 1874 with the exception of it being used as a landfill, with the only features on the maps (1899, 1912, 1937, 1960, 1968, 1989 and 1952) being a field boundary and drainage ditch crossing the southern boundary. The 1960 edition of the OS map shows residential properties around the site to the east, south and west.

Previous investigations have been undertaken (2007-1012) by Smith Grant LLP for Wrexham County Borough Council (WCBC) over land to the north of the site area which was a former landfill known as Bala Road Landfill. The investigations of the Bala Road Landfill were undertaken as part of a Part 2A assessment into former landfills, however, provided useful information on the potential site characteristics.

Intrusive site investigations have been undertaken on the site by e-Geo Solutions Ltd for Bay Associates Ltd on behalf of Pennaf Housing Group, in February 2013. (6nr trial pits, 3nr deep boreholes and 6nr window sample holes). Bay Associates Ltd's enclosed drawing (Ref. No. 6503-131) illustrates, at a scale of 1:500, the locations of these exploratory holes within the proposed development site.

This and the former Smith Grant LLP intrusive investigation have confirmed the following ground conditions to exist across the site:

A dark brown, silty sandy topsoil (0.1m-0.2m thick) to be present over the full extent of the surface of the site.

Made Ground to be present to depths of generally between 1.1m-1.7m bgl (but up to 2.7m in BD3) and comprising loose dark brown very silty fine to coarse sand and gravel with some to much plastic sheet, bags, glass bottles and gravel, cloth, metal wire, ash, gravel and cobbles of sandstone.

Underlying the Made Ground in places was, a very soft to soft dark and light grey slightly sandy clayey SILT at depths of between 1.9m-2.1m bgs locally up to 2.7m in BD2.

Very soft dark brown to black slightly clayey PEAT was present in three locations in the centre and south eastern parts of the site at depths of 1.6m-2.7m bgl and thicknesses of 0.3m-0.7m.

Alluvium in the form of soft brown slightly sandy clayey SILT and loose to medium dense medium brown very silty fine SAND with silt partings, was present beneath the site between the general depths from 1.2m-2.7m bgl to 8.9m-10.2m bgl.

Glacial till in the form of stiff dark brown sandy silty CLAY, underlies the alluvium at depths of 8.9m-10.2m bgl, up to 17m+ bgl.

Groundwater was encountered in trial pits and boreholes at depths of between 1.2m-5.5m bgl. Perched water was encountered in the Made Ground trial pits at depths of 0.8m-1.1m bgl and in the shallow boreholes at depths of 1.2m-1.5m bgl.

During examination of the ground strata by e-Geo Solutions Ltd, no obvious olfactory indications of hydrocarbons or unusual odours were noted and the perched water entering the trial pits was relatively clear with no obvious discolouration.

Subsequent chemical test data obtained for the Made Ground identified the following:

- Very isolated occurrence of very slightly elevated concentrations of arsenic and lead in the Made Ground (BD2S-0.7m)
- Isolated occurrence of elevated petroleum hydrocarbons within the Made Ground. (BS1-0.4m, BS3-1.7m and BD3S-0.9m)
- A very isolated occurrence of asbestos fibres (amosite) but with no detectable mass. (TPSS2 & TPSS4)
- Slightly elevated concentrations of benzo(a)pyrene across the site.

Based on the aforementioned contamination findings, Bay Associates Consulting Ltd produced a detailed Remediation Strategy document (Ref. No. 6503 - dated December, 2013). In this, they state that due to the slightly elevated concentrations of the aforementioned chemical determinands and the presence of very low concentrations of asbestos (in the form of free fibres of amosite) in the Made Ground, this material should not be used at or near to the surface of proposed 'soft' end use areas of the proposed residential development. To satisfy this, a minimum 1,000mm thickness of uncontaminated soil cover is to be placed over it in proposed garden locations and 600mm thickness over landscape/POS areas of the proposed development..

To achieve the proposed remediated development formation (RDF) across the site, a regulatory compliant solution (based on Bay Associates Ltd's Remediation Strategy) and satisfy both the environmental and geo-technical requirements for the development, the proposed excavation and re-use arrangements for the various materials present on the site, are as follows:

The existing topsoil is to be stripped from the grassed/vegetated areas of the site and dependent on the results of chemical testing, re-used either at surface or more probably below the soft cover, or removed off site as there is a surplus of material following the cut/fill operations to achieve the proposed RDF.

The Made Ground (predominantly granular in nature) in the area(s) of the site that have been identified to contain free fibres of asbestos in the soil matrix, is to be excavated under controlled conditions and placed at depth (>1m below final development levels) outside of the road footprint where the material should not be disturbed by subsequent drainage excavations. It is proposed that the Made Ground is excavated below the RDF to expose the underlying natural sandy sub soils beneath the area of the proposed road footprint, car parking and drives of the proposed development. This will facilitate the improvement of the bearing capacity/CBR %ages of the made ground, sourcing the silty sandy subsoil element of the soft cover and reduce the volume of material to be disposed of offsite. The silty sandy subsoil generated will be re-used as the 800mm/400mm thick subsoil element of the clean cover required for the 'soft' end use areas of the development.

The Made Ground present across the remainder of the site is to be excavated down to the RDF specified (to allow for the capping layer of 6F2 graded material to improve the CBR percentage(s) beneath the proposed road footprint, car parking areas and driveways of the proposed development). As there is no

artificially hard material on site to crush (i.e. concrete/brick, etc) to provide this layer, the material will have to be imported. The RDF is the proposed surface across the site prior to the construction thicknesses of roads, driveways, building foundation slabs and the chemically compliant, 1,000mm/600mm of soil cover to all 'soft' end use areas of the development. All of the Made Ground is granular in nature (as previously characterised) and is to be placed and compacted in layers to beneath road footprints, driveways and car parking areas, and nominally compacted to beneath building footprints designated for piling and soft end use areas of the development. Prior to re-use of the Made Ground, any significant deleterious inclusions in the form of timber, plastic, cloth, etc., are to be removed and stockpiled for disposal off site as waste.

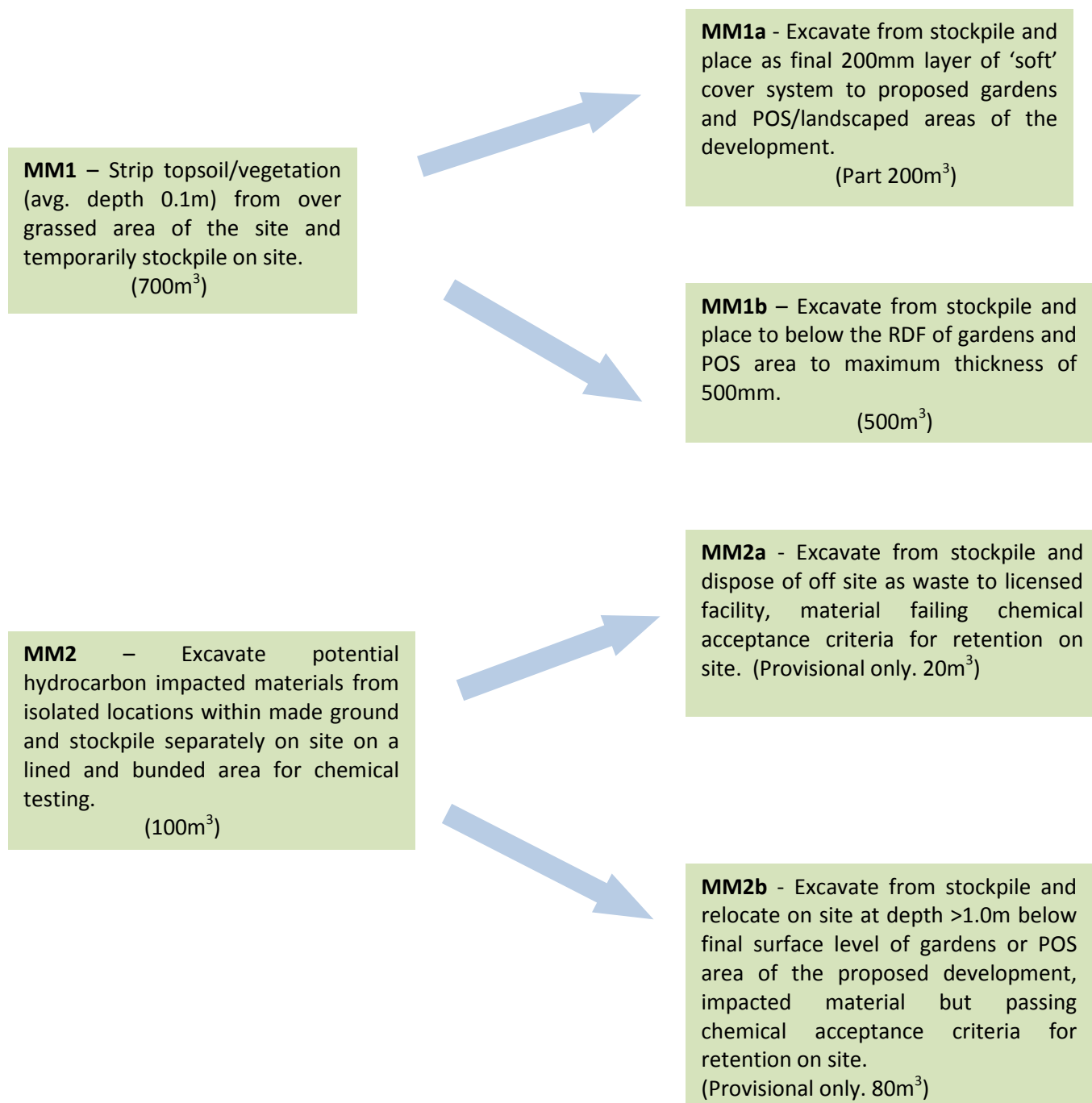
Earthwork modelling shows, that even after sourcing the subsoil element of the soft cover from on site, there is still a surplus of material to achieve the RDF. It is proposed that the surplus material is removed off site as waste. The foundations and drainage arisings excavated during the subsequent development phase(s) of the project will also have to be similarly removed off site. It is also likely that a proportion, if not all of the volume of the 200mm thick topsoil element of the soft cover may have to be imported under a direct transfer arrangement from a yet to be identified source/donor site.

It is anticipated that the demolition, remediation and preparatory earthworks phase should take approx 7 weeks to complete.

Full details of the various materials movements proposed, are illustrated on the schematics in supporting Document Ref. 2 and the detailed earthworks calculations and individual materials volumes are described and explained in supporting Document Ref. 4.

Document Ref. No. 2 (response to Qu. 7)

Schematic of Proposed Materials Movements.



MM3 – Excavate granular Made Ground from over proposed soft end use areas of the site down to RDF (est. 1,500m³) and over the area shown on Drg. Ref. No. 10309/001 to surface of underlying soils. (est. 5,300m³)

(6,800m³)

N.B. Due to traces of asbestos fibres detected at very low concentrations in the Made Ground at two locations, this material is to be excavated, hauled and placed under damp conditions and asbestos in air monitoring undertaken.

MM3a – Remove deleterious inclusions of timber, plastic, cloth, metalwork & domestic waste etc during excavation process and temporarily stockpile separately. (Minimal volume m³)

MM3aa – Haul place and compact granular Made Ground in layers to below all proposed hard surfaces of the proposed development up to the RDF. (4,866m³)

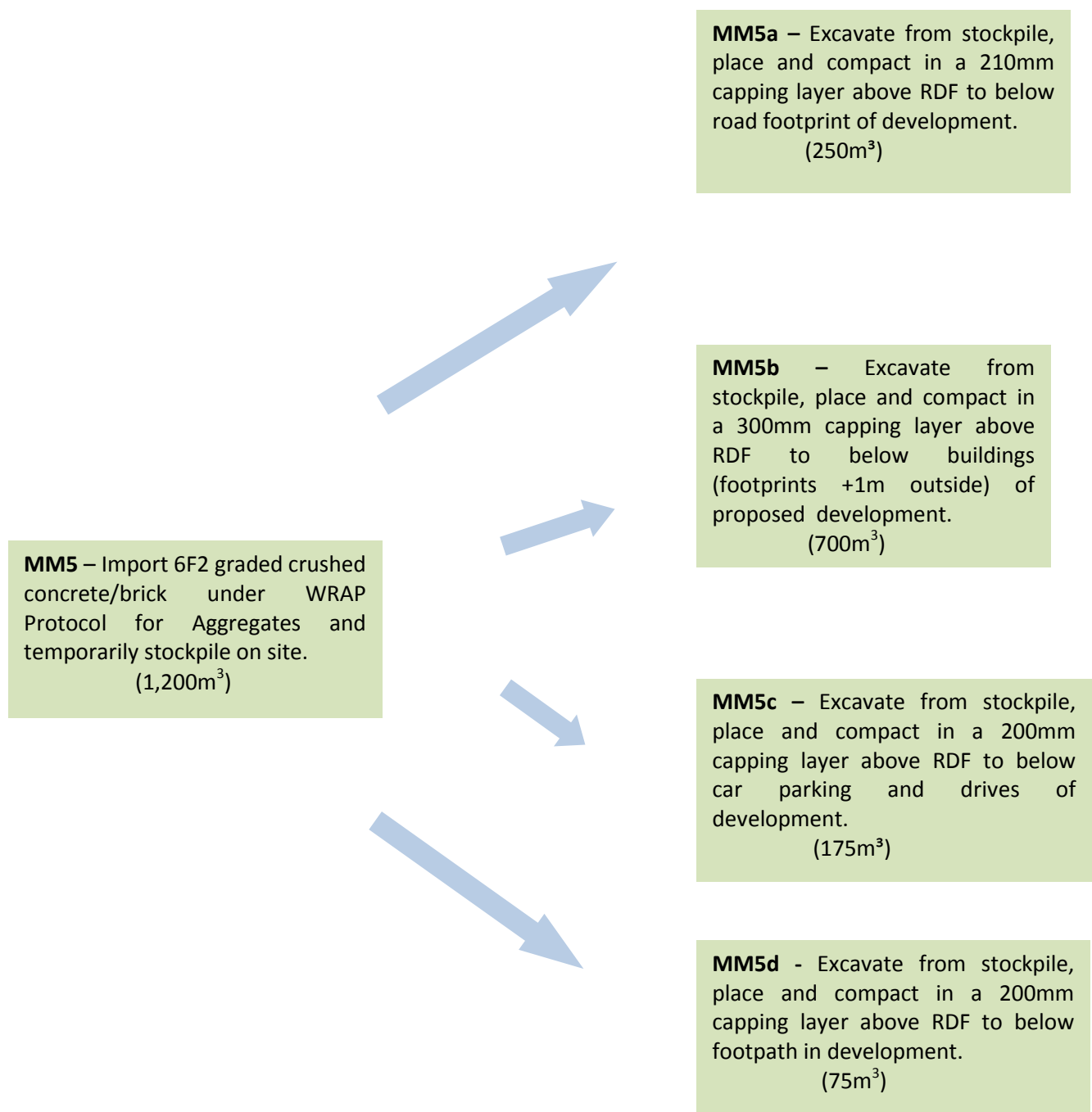
MM3ab – Load, haul & dispose of offsite as waste, excess Made Ground. (1,934m³)

MM3ac – Dispose of off site as waste, timber plastic, cloth, metalwork, domestic refuse, etc. (Minimal volume m³)

MM4 – Excavate natural sands/silts from beneath designated area to avg. 0.5m-1m depth following excavation of Made Ground avg. depth 1.7m from above and stockpile on site. (1,500m³)

MM4a – Excavate natural sands/silts from temporary stockpile and place as 800mm thick subsoil element of cover system to 200mm below ground levels over gardens of proposed development. (1,000m³)

MM4b – Excavate natural sands/silts from temporary stockpile and place as 400mm thick subsoil element of cover system to 200mm below ground levels over POS/landscaped areas of proposed development. (500m³)



MM6 - Import (by developer) topsoil from direct transfer donor site(s) and spread as final 200mm layer of 'soft' cover system to proposed gardens and POS/landscaped areas of development.
(Part 300m³)

MM7 – Excavate (by developer) for foundations and drainage during development phase(s) of project and temporarily stockpile on site.
(Actual volume is to be confirmed by the developer m³)



MM7a – Excavate arisings from stockpile(s) and export from site as waste and/or under direct transfer(s) to receiver site(s) if naturally occurring materials, depending on classification of materials.
(Actual volume is to be confirmed by the developer m³)

Document Ref. No. 3 (response to Qu. 10)

Details of Transport Contractor(s) and Waste Carrier(s)' Registration(s).

Proposed haulage contractor(s) are required for the export and import of the following materials, namely;

- Export off site, surplus Made Ground as waste, resulting from cut/fill operations to achieve the remediated development formation (RDF).
- Export off site, as waste, deleterious inclusions of plastic, timber, cloth, etc., removed from excavated Made Ground, prior to re-use on site.
- Export off site Made Ground arisings from foundations and drainage works during development phase either under direct transfer arrangement(s) if naturally occurring, or as waste if Made Ground.
- Potential export of chemically impacted soils (with hydrocarbons) as waste.
- Import of 6F2 graded crushed concrete/brick (for use as capping layer beneath proposed hard surfaces) under WRAP Protocol for Aggregates.
- Import of topsoil to site under direct transfer arrangement(s) from donor site(s).

Details of the haulage contractors for the above are unknown at present but full details shall be included in the verification report.

Document Ref. No. 4 (response to Qu. 19)

Breakdown of the excavated materials for the site and how much will be placed at each site or sub-area of each site (i.e. Individual Materials Movements (IMMs)).

Mass Balance Calculation

Refer to document ref No. 2 for schematic of materials movements (MM1-MM7 incl.) and the following enclosed drawings for mass balance calculation for the site:

- C801.02 – Topographical Site Survey (Ainsley Gommon Architecture)
- 6503-101 Rev B – Proposed Development Levels (Bay Associates Consulting Ltd)
- 10309/001 – Proposed development surface types and construction thicknesses. (ADM)
- 10309/002 & 003 – Cut/fill depths (from existing surface to proposed RDF levels) on topographical survey and development bases (ADM)

The cut/fill model for the site has been created from the existing ground levels (i.e. topsoil) surfaces covering the site) to remediated development formation (RDF). How the remediation formation levels relate to the final development levels, are as detailed below:

Area type within proposed development	Remediation formation level
Gardens & POS area (with 1000mm clean cover system)	1150mm below finished floor level (FFL) (i.e. 1000mm below final external ground level)
Landscaped/POS areas (with 600mm clean cover system)	750mm below FFL (i.e. 600mm below final external ground level)
Buildings (footprints + 1m outside)	840mm below FFL
Roads (Adoptable inc. footways)	650mm below finished road centreline levels (FRCLs)
Foot path	460mm below finished ground level
Car parking & drives	425mm below finished surface levels (FSLs).

Total site area = 6,800m² (Included area shown on Drg. Ref. No. 10309/001)

Total volume of cut = 3,660m³ (Distribution shown on Drg. Ref. No. 10309/002 & 003)

Total volume of fill = 26m³ (Distribution shown on Drg. Ref. No. 10309/002 & 003)

Net excess of material = 3,634m³

It is proposed to source all of the 800mm thick subsoil element of the soft cover layer to gardens and the 400mm thick subsoil element for the landscaped/ public open space (POS) area(s) of the development on site, from the natural sands and silts which underlie the Made Ground (MM4). As this material will be re-used above the RDF included in the cut/fill model, it will reduce the net surplus by the same amount.

Volume of subsoil required = (garden areas x 0.8m + POS/landscaped areas x 0.4m)

Area of gardens calculated in model to receive 800mm of subsoil = 1,245m²

Area of POS/landscaped areas calculated in model to receive 400mm of subsoil = 1,220m²

Total volume of subsoil to be sourced = 996m³ + 490m³ = 1,486m³, say 1,500m³ (MM4)

The extent of the proposed source area on site is outlined on Drg. Ref. No. 10309/001 and coincides with the extent of Made Ground to be excavated and re-engineered back in layers to the RDF to improve the bearing capacity beneath the road footprint, car parking areas and driveways of the development.

Typically, excavation depths into the natural soil will extend 0.5m-1.0m depth to source the 1,500m³ required.

By sourcing the 1,500m³ of subsoil required from on site, reduces the excess of material from 3,634m³ to 2,134m³.

The topsoil element of the proposed soft cover requires a volume of 2,465m² x 0.2m = 500m³. There is a topsoil covering of 0.1m-0.15m over the site. Assuming it is possible to strip a 100mm thickness, this would generate a possible 700m³ (MM1). No chemical testing has been undertaken to date of this material. Assuming though, that 200m³ (as shown in the Schematics in Doc. Ref. No. 2) is chemically suitable for re-use in the cover system (MM1a), this reduces the surplus of material to be removed off site further, to 1,934m³ and the topsoil import from 500m³ to 300m³ (MM6). The balance of the topsoil stripped from on site could be placed beneath the RDF of gardens and POS/landscaped areas of the development.

During the development phase(s), arisings will be generated from foundations and drainage excavations. It is proposed that these be removed from site as 'waste' if Made Ground or under a direct transfer arrangement to receiver site(s) if naturally occurring unpolluted soils (MM7a)

Irrespective of the cut volume calculated in the earthworks model to achieve the proposed RDF, significantly more Made Ground is to be excavated to ensure that the materials on site are re-used both environmentally and geo-technically in the optimum locations to suit the proposed development and the immediate environs.

From the exploratory holes logs across the site the average depth of Made Ground has been assessed to be 1.7m.

Estimated volume of Made Ground to excavate down to underlying natural soils =
 $3,500\text{m}^2 \times 1.7\text{m} = 6,000\text{m}^3$

Additional volume of Made Ground to excavate to RDF below gardens & landscape/POS
area = 1,500m³

Total volume of Made Ground to excavate = 7,500m³. Of this, 700m³ has already been characterised as topsoil, leaving 6,800m³ of granular Made Ground to excavate (MM3) (of

which an estimated 1,934m³ is surplus to requirements and is to be disposed of off site as waste.)

The remaining 4,866m³ of granular Made Ground is, after any plastic, timber, cloth, etc is removed, to be placed and compacted in layers to the RDF. As loose asbestos fibres have been detected in the Made Ground in two locations in very low concentrations (i.e. SS2 @ 0.4m and SS4 @ 0.5m), whilst this material is being excavated and placed (under dampened conditions), asbestos in air monitoring is to be undertaken to demonstrate the lack of any fibre release.

Of the 1,934m³ of material for off-site disposal, a notional 20m³ of this has been included in the Schematics as being impacted with hydrocarbons (MM2a).

A 6F2 graded crushed concrete/brick material is to be imported to site under the WRAP Protocol for Aggregates (MM5) and placed and compacted as a capping layer above the RDF beneath the road footprint (inc. footways) to a thickness of 210mm (MM5a), to building footprints +1m outside, to a thickness of 300mm (MM5b) and to car parking areas, driveways and the footpath, to a thickness of 200mm (MM5c & 5d). The total estimated volume required is 1,200m³

For further details of re-use of the various material types MM1 – MM7 inc., reference should be made to the schematic in supporting Document Ref. No. 2.

Document Ref. No. 5 (response to Qu. 22a, c, d and e)

a. Description of Tracking System to be employed to monitor material movements.

For the majority of materials to be excavated and moved, a simple tracking system is envisaged to be employed for the Glan Gors Site, Wrexham by ADM Regeneration Ltd. Primarily, tracking will be related to the visual characterisation of the material type excavated i.e. topsoil, potential hydrocarbon impacted soils, granular Made Ground with and without low concentrations of asbestos fibres, imported 6F2 graded concrete/brick, deleterious inclusions of plastic, timber, cloth, etc, naturally occurring silty/sandy soils and the subsequent removal/placement requirements. Within the granular Made Ground where low concentrations of asbestos have been detected (as loose fibres of amosite), this material it is to be kept damp to keep any potential fibre release to below occupational health thresholds when excavating and placing it. A copy of the material tracking form produced for this site is attached as document ref No 6.

To assist tracking of excavated materials within the site, a grid reference system (e.g. 15m x 15m) can be established on site to identify where each type of material has originated from and where they are reused on the site. Alternatively, reference will be made to the proposed development layout for the site and related to house plots/apartments (nrs. 1-23 inc.), road chainages or where within the POS/landscape area(s). Made Ground is to be excavated over the site to achieve the RDF, to expose the natural silty/sandy soils in the designated area, to facilitate the improvement of the bearing capacity of the made ground beneath the road, car parking areas and driveways and the on-site sourcing of subsoil for soft cover.

ADM Regeneration Ltd will be responsible for the setting out of the locations and RDF levels of the proposed development to enable the cut and fill operations to be undertaken and surveying them on completion for incorporation in the verification report to be produced by Bay Associates Consulting Ltd. Surveys of deeper excavations to source subsoil and remove any contamination and fill areas will be produced as work progresses on site.

Daily site records will be kept and photographs taken in support of the volume calculations from the survey information.

Materials will be directed for off site disposal, to temporary stockpile(s) or placement area(s) from the point of excavation as necessary to suit both geotechnical and environmental requirements i.e. excess Made Ground, deleterious inclusions and hydrocarbon impacted soils for off site disposal, imported 6F2 graded concrete/brick as structural capping to road footprints, drives and car parking areas and building footprints.

The only material (6F2 graded material is to be covered under the WRAP Protocol for Aggregates) envisaged at this stage to be imported to site under the MMP is topsoil.

d. Procedures in place to demonstrate that materials that do not require treatment and successfully treated materials reach their specific destination.

Any hydrocarbon impacted materials shall, in the first instance, be identified from visual and/or olfactory evidence, excavated and stockpiled separately for sampling and chemical testing. Depending on the results obtained the material shall be tracked on site if it is suitable for re-use or removal from site as waste with the requisite paperwork.

e. Procedures in place to ensure that waste for offsite disposal or treatment is properly characterised and goes to the correct facility.

The waste materials envisaged to be excavated and removed off site are the surplus Made Ground to achieve the RDF levels and any soils found to be impacted with hydrocarbons during the initial remediation and preparatory works and Made Ground arisings from foundations and drainage excavations during the subsequent development phase.

Document Ref. No. 6 (response to Qu. 23)

MATERIAL TRACKING FORM

SITE OF ORIGIN/DIRECT TRANSFER SITE/STF/HUB: _____ **DATE:** _____

LOCATION OF EXCAVATION: _____

GRID REF: _____ **OTHER:** _____

Excavated Material Classification Type:	
TOPSOIL/VEGETATION (SITE STRIPPED)	
GRANULAR MADE GROUND (WITH DELETERIOUS INCLUSIONS, PLASTIC, TIMBER, CLOTH, METALWORK, ETC)	
GRANULAR MADE GROUND (MINUS INCLUSIONS)	
GRANULAR MADE GROUND WITH ASBESTOS FIBRES	
HYDROCARBON IMPACTED SOILS	
PLASTIC, TIMBER, CLOTH, METALWORK, ETC	
NATURAL SAND/SILT (SUBSOIL)	
IMPORTED 6F2 GRADED CRUSHED CONCRETE/BRICK	
IMPORTED TOPSOIL	

PLACEMENT LOCATION:

GRID REF: _____ **OTHER:** _____

Survey Undertaken:	Details:
Photographs Taken:	YES / NO Number: Ref Nos:
Samples Taken:	YES / NO Number:
Chemical Testing Scheduled:	YES / NO Details:
Geotechnical Testing Scheduled:	YES / NO Details:
Comments:	

Document Ref. No. 7 (response to Qu. 26)

Verification Plan to record the placement of materials and prove that excavated materials have been reused in the correct location and in the correct quantities within the development works.

During the excavation and movement of materials on this project the following information is to be obtained/collated for subsequent inclusion in the Verification Report:

- Site surveys of topsoil strip, excavation and filling operations (on site of origin)
- Asbestos in air monitoring results (provided by specialist)
- Material treatment records (crushing/screening of artificially hard materials)
- Locations of any sampling and on site testing
- Geotechnical and chemical test results
- Haulage tickets relating to any movements of materials to receiver site(s) from site of origin and from donor site(s) to site of origin
- Consignment notes relating to movements of wastes to any offsite facilities/disposal sites
- Volumes of materials moved and amendments to original MMP
- Contingency measures

To demonstrate the excavated Made Ground materials are chemically/environmentally suitable for reuse on the site (with reference to the assessments previously undertaken by e-Geo Solutions Ltd and Bay Associates Consulting Ltd for placement beneath soft cover/hard surfaces, they will initially be inspected for visual and olfactory evidence of any organic contamination. During the excavation works, samples of any Made Ground suspected to be contaminated from visual or olfactory evidence will be taken and tested for Soil Organic Matter (SOM), Speciated PAH and TPHCWG banded Aliphatic/Aromatic split and validated against the values stated in Table 1 at the end of this document.

Representative samples of site sourced subsoil for use in the clean cover layer will be taken at a frequency of 1 per 200m³ and tested for the suite of chemical determinands listed in Table 12 of Bay Associates Consulting Ltd's Remediation Strategy (Ref. No. 6305 – dated December, 2013). Imported (and any site sourced) topsoil for use in the clean cover layer will be tested as detailed in Section 4.4 and Table 12 of the aforementioned detailed Remediation Strategy.

To demonstrate the excavated materials are geotechnically suitable for reuse beneath road footprints, plate load testing is to be undertaken to determine that minimum CBR values of 5% have been obtained at the sub-grade level. These tests will be undertaken by an independent accredited laboratory at a minimum of 25m centres along the line of the proposed road(s).

To confirm that no Made Ground is present within 1000mm of the proposed ground levels beneath garden and 600mm below POS/landscape areas, level surveys are to be undertaken. These shall ensure that a minimum 800mm/400mm of natural subsoil and 200mm of topsoil has been placed over any Made Ground present beneath gardens and the POS/landscape area. Beneath garden areas, a geo-textile (Bay Associates have specified in Table 11 of the Remediation Strategy, "PA Geotechnical Bioline Orange, or similar approved") is to be placed to separate/demarcate the interface between the underlying Made Ground and the subsoil cover layer.

In addition a woven fabric is also to be placed below the 6F2 capping layer placed beneath the road footprint, car parking areas and drives of the development.

If unanticipated ground/materials are encountered during the remediation works, ADM Regeneration Ltd are to initially stop any excavation and contact/seek further advice from Bay Associates Consulting Ltd. Any unanticipated grossly contaminated soil/fill should subsequently be placed in temporary stockpiles on visqueen sheeting and suitably covered and bunded.

Chemical analysis of at least 3 samples of the stockpiled material for an appropriate range of determinants is to be undertaken. On receipt of the results, Bay Associates Consulting Ltd will liaise with ADM Regeneration Ltd as to the most appropriate action to be taken for the materials in relation to the various chemical target concentrations stated for the site.

Table 1 – Remediation Targets

Determinand	Units	Under Hard Surface and >600mm of Soft Cover System	Pathway
PAH			
Naphthalene	mg/kg	8.7 ⁽¹⁾	2
Acenaphthylene	mg/kg	690 ^(1,2)	3 ⁽³⁾
Acenaphthene	mg/kg	850 ^(1,2)	1 ⁽³⁾
Fluorene	mg/kg	670 ^(1,2)	1 ⁽³⁾
Phenanthrene	mg/kg	380 ^(1,2)	3 ⁽³⁾
Anthracene	mg/kg	9500 ^(1,2)	3 ⁽³⁾
Fluoranthene	mg/kg	1300 ^(1,2)	3 ⁽³⁾
Pyrene	mg/kg	2700 ^(1,2)	3 ⁽³⁾
Benzo(a)Anthracene	mg/kg	550 ^(1,2)	3 ⁽³⁾
Chrysene	mg/kg	580 ^(1,2)	3 ⁽³⁾
Benzo(b/k)Fluoranthene	mg/kg	35 ^(1,2)	3 ⁽³⁾
Benzo(a)Pyrene	mg/kg	14 ^(1,2)	3 ⁽³⁾
Indeno(123-cd)Pyrene	mg/kg	38 ^(1,2)	3 ⁽³⁾
Dibenzo(a,h)Anthracene	mg/kg	15 ^(1,2)	3 ⁽³⁾
Benzo(ghi)Perylene	mg/kg	1200 ^(1,2)	3 ⁽³⁾
TPH C ₅ -C ₆ (aliphatic)	mg/kg	110	2
TPH C ₆ -C ₈ (aliphatic)	mg/kg	370	2
TPH C ₈ -C ₁₀ (aliphatic)	mg/kg	110	2
TPH C ₁₀ -C ₁₂ (aliphatic)	mg/kg	283	2
TPH C ₁₂ -C ₁₆ (aliphatic)	mg/kg	3000	1 ⁽³⁾
TPH C ₁₆ -C ₂₁ (aliphatic)	mg/kg	10,000	1 ⁽³⁾
TPH C ₂₁ -C ₃₅ (aliphatic)	mg/kg	10,000	1 ⁽³⁾
TPH C ₅ -C ₆ (aromatic)	mg/kg	280	2
TPH C ₆ -C ₈ (aromatic)	mg/kg	611	2
TPH C ₈ -C ₁₀ (aromatic)	mg/kg	151	2
TPH C ₁₀ -C ₁₂ (aromatic)	mg/kg	346	2
TPH C ₁₂ -C ₁₆ (aromatic)	mg/kg	593	1 ⁽³⁾
TPH C ₁₆ -C ₂₁ (aromatic)	mg/kg	770	1 ⁽³⁾
TPH C ₂₁ -C ₃₅ (aromatic)	mg/kg	1230	1 ⁽³⁾

Notes 1:

Main Exposure Pathways:

1 = Soil Ingestion. 2 = Vapour Inhalation (indoor). 3 = Dermal Contact and Ingestion. 4 = Dust Inhalation.

Abbreviations: GAC = General Assessment Criteria

- (I) The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. The Table utilises the Tier 1 values for aliphatic compounds for the volatile and semi volatile fractions (C₅-C₁₂) and the Tier 1 values for aromatic compound for the non volatile fractions (C₁₂-C₃₅). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.

Notes 2:

- ⁽¹⁾ Excludes matrices where free product is observed.
⁽²⁾ Assumes 10 x Tier 1 GAC for non volatile PAH screening criteria for residential garden and non separate phase with conservative TOC assessment of 2.5%.
⁽³⁾ No viable exposure pathway beneath hard standing and cover system.



REMEDIATION WORK METHOD STATEMENT

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1 INTRODUCTION

1.1 Health and Safety Policy

- 1.1.1 ADM Regeneration Limited's operations are executed at all times in such a way as to ensure, so far as is reasonably practicable, the health, safety and welfare of all its employees and all persons likely to be affected by its operations, including subcontractors, visitors and the public where appropriate.
- 1.1.2 ADM are committed to continual improvement in Health & Safety performance and will ensure that adequate resources are available, that appropriate safety training and instruction is provided by each company and that accident prevention is included in all relevant training programmes to ensure that legal obligations for Health & Safety are met.
- 1.1.3 Every employee has a responsibility for Health & Safety within the provisions of the Health & Safety at Work etc. Act 1974. It is therefore incumbent on all employees and sub-contractors to take reasonable care for their own safety and the safety of any others who may be affected by their acts or omissions. It is also essential for employees to co-operate with the Management of ADM in its arrangements to perform or comply with statutory safety obligations which includes adherence to the Safety Policy, which should be read in conjunction with the Health & Safety at Work etc. Act 1974.

1.2 Construction Phase Health and Safety Plan

- 1.2.1 This Method Statement should be read in conjunction with the Construction Phase Health and Safety Plan that can be found in Section 1 of the Health and Safety File.

1.3 Emergency Procedures

- 1.3.1 Details of emergency procedures and contact numbers will be displayed in a prominent position on site.

2 SITE SET UP AND WELFARE FACILITIES

2.1 Activity

2.1.1 Provision of welfare facilities and management of personnel on-site.

2.2 Objective

2.2.1 To prevent the spread of contaminants on and off site, to protect the workforce and the general public.

2.3 Resources

2.3.1 Personnel:

- Experienced and competent Supervisor.
- All personnel have a duty to maintain the cleanliness and safety of the site and welfare facilities.

2.4 Methodology

2.4.1 Site hours are 8am-6pm Monday to Friday and 8am to 1pm Saturday

2.4.2 Site Access is off Coed Aben, Glan Gors, Wrexham, LL13 9NU

2.4.3 Upon mobilisation to site ADM will establish their own welfare area within the Keepmoat compound.

2.4.4 Site setup to contain (as a minimum):

- Office, canteen, toilets, washing facilities & drying room.

2.4.5 A secure compound area will be set up with parking areas that shall be fenced off from the site by pedestrian barriers with a clearly marked walk way onto site.

2.4.6 At the edge of the compound area will be a lockable double skinned diesel storage tank to allow the refuelling of site plant. A spill protection kit will be attached to the fuel tank.

2.4.7 Eating, drinking and smoking are prohibited on site.

2.4.8 Full-time out of ours security will be established on-site.

2.4.9 Should any contamination issues become identified on the site then the welfare facilities will be refined.

2.5 Safety

2.5.1 The following personal protective equipment must be worn by all persons undertaking this operation:

- Safety helmet conforming to BS 5240 Part 1.
- Safety footwear.
- Hi vis vest/jacket/overalls.
- Eye protection where required.
- Ear protectors where required.
- Dust masks where appropriate.
- Gloves where appropriate

3 MAINTENANCE OF ROAD CLEANLINESS

3.1 Activity

3.1.1 Maintenance of road cleanliness.

3.2 Objective

3.2.1 To prevent the spread of contaminants on and off site, to protect the workforce and the general public.

3.3 Resources

- Experienced and competent Supervisor.
- Banksman.
- Wagon drivers.

3.4 Methodology

Other than the supply of plant and consumables it is not anticipated that there will be excessive plant movements on and off site. However, the following procedures are to be followed:

- Wagons will be loaded under the supervision of a banksman.
- Wagons will be inspected for debris and cleaned down before exiting site.
- Once loaded, the banksman will inspect the loading area for debris and any loose materials will be swept up and placed back within the excavation area.
- Where possible wagons to be loaded on existing hard standing and not in a location where they track over already remediated soils to reach loading area.
- Use of temporary haul roads to be assessed based on condition of existing ground.
- Should debris become an issue on public roads then a mobile sweeper will be deployed to clean roads and if this is not effective then a static wheel wash facility will be deployed to the site.
- During the operation of the site, a water bowser or similar will be regularly used to dampen down site haul roads to ensure that dust generation (general dust) does not become an issue.
- All vehicles travelling across site will not exceed the 10mph speed limit.

3.5 Safety

3.5.1 The following personal protective equipment must be worn by all persons undertaking this operation:

- Safety helmet conforming to BS 5240 Part 1.
- Safety footwear.
- Hi Vis vest/jacket/overalls.
- Gloves where appropriate.

4 DUST SUPPRESSION

4.1 Activity

4.1.1 Control of site dust.

4.2 Objective

4.2.1 To control the emanation of site dusts.

4.3 Resources

- Asbestos Awareness Trained Personnel.
- Experienced and Competent Supervisor.
- Water Bowser.
- Mobile Power Washer/Misting Systems (with possible PVA additive where deemed necessary).
- Site Asbestos Air Monitoring Equipment when required.

4.4 Methodology

4.4.1 This method statement should be read in conjunction with other method statements which have within them control measures to manage dust generation.

- During works a tractor/bowser, or mobile power washer (or similar) can be used on site when necessary, to undertake general damping down of soils and wetting down of concrete hardstand and demolition areas.
- A mobile pressure washer/misting system will be used in areas of excavations where dust generation is likely to be a problem.
- At 3 times during the day the site manager will undertake strategic monitoring along the boundaries for dust in air using a Casella Realtime dust monitor. Should there be a problem with dust generation and transmission beyond the site boundary then works leading to the generation will be suspended and areas damped down.
- In addition to this the site manager will also patrol the site boundaries and undertake visual monitoring of the site and boundaries to assess for the generation of dust. Should there be a problem with dust generation and transmission beyond the site boundary then works leading to the generation will be suspended and areas damped down.
- The visual and realtime monitoring of dust will be recorded on daily site record sheets.
- During the works asbestos in air monitoring will also be undertaken around the boundary and also personal monitoring of the workers.

4.5 Safety

4.5.1 The following personal protective equipment must be worn by all persons undertaking this operation:

- Safety helmet conforming to BS 5240 Part 1.
- Safety footwear.
- Hi Vis vest/jacket/overalls.
- Gloves where appropriate.
- PP3 Compliant Masks (face fitted), where deemed necessary.

5 GENERAL EXCAVATION WORKS

5.1 Activity

5.1.1 General principles for the excavation of soils across site.

5.2 Objective

5.2.1 To enable the safe execution of these works, to protect the workforce and the other site users in accordance with the Materials Management Plan.

5.3 Resources

- Experienced and competent Supervisor.
- Experienced and competent Banks man.
- Experienced and competent Plant Operatives holding relevant CITB/CSCS certification.
- Various 360° excavators.
- Load, Haul and Compaction plant.

5.4 Methodology

- Prior to commencement of the works, the Site Supervisor is to scan the proposed excavation areas for the location of live services.
- Mechanical excavators MUST NOT be used within the following distances from live gas mains: Low Pressure 0.5m, Medium Pressure 0.5m, Intermediate Pressure 3.0m.
- Mechanical excavators may only be used to remove or break hardstanding above other known live services.
- Hand dug pits shall be carefully excavated when required to locate underground services.
- All excavations below 1.2m depth are to have adequate 45° batters are to be maintained where possible. Any deep excavations are to be temporarily fenced off over night. Where it is not possible to maintain a batter, access is to be restricted by fencing. Entry into confined spaces is strictly prohibited.
- Like materials to be kept together and or stockpiled for future re-use i.e., disposal treatment, crushing etc.
- Should materials be suspected of being grossly contaminated, the site geo-environmental engineer will be contacted and these soils will be separated and stockpiled for further testing.
- The ADM MMP prescribes the appropriate procedures and testing methodologies.
- Works will initially commence with the stripping of grass and topsoil material that will be gathered to the entrance of the site and disposed from site.
- An initial box cut will then be undertaken from the entrance of the site heading back into the site beneath roads, plots, driveways and front gardens down to natural with the resultant soils stockpiled on the POS area and sealed in to prevent generation of dust. From this reduced level a portion of clean soils will then be excavated and stockpiled for use as subsoil.
- Following this works will then commence with the next box cut that will excavated and placed in the first cut. Prior to backfilling any oversize material will be removed together with any unsuitable materials before soils are then compacted in layers. This process will be repeated across the site under all roads, plots front gardens and driveways.
- The site will be trimmed to detailed reduced levels before being capped in a teram geotextile and the appropriate cover of crush material/susboils placed on gardens/plots/roads/driveways.

5.5 Safety

- 5.5.1 All operatives are to undergo a Site Safety Induction before commencing works on site. All personnel employed in the operations set out in the method statement are to undergo Tool Box Talks.
- 5.5.2 The following personal protective equipment must be worn by all operatives undertaking this operation:
- Safety helmet conforming to BS 5240 Part 1.
 - Safety footwear.
 - Hi Vis vest/jacket/overalls.
 - Gloves.
 - Safety glasses.

6 MOVEMENT OF SITE VEHICLES

6.1 Activity

6.1.1 Movement of vehicles around the site.

6.2 Objective

6.2.1 To ensure the safe movement of vehicles around the site and control the appropriate movement and direction of vehicles as they enter and leave the site.

6.3 Resources

- Experienced and competent Supervisor.
- Experienced and competent Banks man.
- Experienced and competent Plant Operatives holding relevant CITB/CSCS certification.
- Road Wagons.
- Load, Haul and Compaction plant.

6.4 Methodology

6.4.1 Only site plant will be allowed on-site. All other vehicles are to be parked within the designated parking area. All vehicles entering site are to report to the site office where they will be directed accordingly onto site.

6.4.2 All site wagons whilst on-site are to operate flashing beacons and observe the mandatory site speed limit of 10mph. All wagons are to be sheeted over before leaving site. A traffic management plan will be maintained on-site. As works progress across site this traffic management system will be augmented and communicated to wagon drivers. Signage and fencing will also be used to confirm the traffic management system on-site.

6.4.3 Wagons will be directed to loading / unloading areas and will be loaded under the supervision of a banksman who following completion of loading will inspect the tipper body sides to ensure that they are free of loose debris. Once the wagon has driven off, any debris on the floor will be carefully cleared away. Wagons will then be sheeted before leaving site. At no times are wagons to drive across site with their tipper body up.

6.4.4 Consignment/Waste transfer notes will be kept for materials collected or imported to site.

6.5 Safety

6.5.1 The following personal protective equipment must be worn by all persons undertaking this operation:

- Safety helmet conforming to BS 5240 Part 1.
- Safety footwear.
- Hi Vis vests.
- Gloves.

7 PREVENTION OF SURFACE RUNOFF

7.1 Activity

7.1.1 To prevent surface run off of waters and materials.

7.2 Objective

7.2.1 To ensure water, silts and possible contaminants do not leave the site.

7.3 Resources

7.3.1 Personnel:

- Experienced and competent Supervisor.
- All personnel have a duty to maintain the cleanliness and safety of the site and welfare facilities.

7.4 Methodology

- The potential for surface water runoff will be assessed with respect to the existing site topography.
- Where deemed necessary a cut off trench and/or bund will be constructed using the excavator.
- The trench will be profiled to channel water to a suitable location within the site.
- Daily inspection of the trench/bund will be undertaken by the site supervisor, in particular during days of heavy rainfall, to ensure the integrity of the system.
- Appropriate action to be taken to ensure channel is free flowing and the bund remains intact.
- During works consideration is to be given when relocating stockpiles in relation to cut off trenches and bund.
- Surface runoff is not anticipated on this site.

7.5 Safety

7.5.1 The following personal protective equipment must be worn by all persons undertaking this operation:

- Safety helmet conforming to BS 5240 Part 1.
- Safety footwear.
- Hi Vis vests.

8 DECLARATION

8.1.1 I hereby declare that I have read and have fully understood this method statement:

[illegible]



REMEDIATION RISK ASSESSMENTS

TABLE OF CONTENTS

1 RISK ASSESSMENT NOTES..... 1

2 UNDERGROUND SERVICES 2

2 EXCAVATORS..... 4

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4 QUICK HITCH (BUCKET/GRAB/SHEAR DETACHMENT)..... 6

5 DUMPERS..... 7

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7 MOBILE CRUSHER.....Error! Bookmark not defined.

8 MANUAL HANDLING 9

10 DECLARATION 10

1 RISK ASSESSMENT NOTES

Hazard – Something that has the potential to cause harm, ill health, injury, loss of product and/or damage to plant and property e.g. substances, machines, methods of work etc.

Risk – The likelihood of harm occurring and its severity (Severity x likelihood).

Risk Controls – Workplace precautions e.g. physical safeguards, containment of airborne contaminants, control of noise, safe systems of work, competency and personal protective equipment.

Risk Assessment – A careful examination of what in your work could cause harm to people to assess whether enough precautions have been taken or whether further control measures will be required to prevent harm. In some cases there may be unexpected or short temporary changes that require amendments to be made to risk assessment control measures. Examples could be a change in weather conditions or breakdown of heating. To avoid carrying out a new assessment the "Control Measures Required" section on the risk assessment form can be updated, to document any changes.

SEVERITY	RISK/LIKELIHOOD SCORE	LIKELIHOOD
EXTREME – MULTIPLE DEATHS	5	PROBABLE
HIGH – SINGLE DEATH OR MULTIPLE SERIOUS INJURY	4	VERY LIKELY
MODERATE – RIDDOR INJURY	3	LIKELY
SLIGHT – MINOR INJURY, NO LOST TIME	2	POSSIBLE
NIL – NO INJURY/NEAR MISS	1	NOT LIKELY

So Far as is Reasonably Practicable – Assessment of risk should be weighed against the time, effort involved, cost and difficulty of doing anything about it. The risk of not instituting safety measures or controls can be an option if the overall benefit in terms of reducing accidents or improving health and safety conditions is minimal compared with the time, effort, cost and inconvenience of introducing the measures.

Suitable and Sufficient Risk Assessment – The level of detail in a risk assessment should be broadly proportionate to the risk and should;

- Ensure all relevant hazards are addressed.
- Address what actually happens in workplace or during work.
- Ensure all groups affected are considered taking account of groups who are particularly at risk.
- Take account existing preventative or precautionary measures and identify further measures.

Assessment of Initial Risk Score – Assessment of the initial risk score will determine whether additional control measures and subsequent risk assessment will be required:

RISK SCORE	ACTIONS
9 – 25	PUT CONTROLS IN PLACE BEFORE COMMENCING TO REDUCE RISK RATING
6 – 8	PRIORITISE AND CONTROL AS FAR AS REASONABLY PRACTICABLE
1 – 5	NO FURTHER ACTION REQUIRED, REVIEW PERIODICALLY

Risk control Systems – Arrangements that ensure the workplace precautions are implemented and kept in place e.g. designation of responsibility, training, supervision, work equipment, maintenance, performance measurement, audit, briefing and control of contractors.

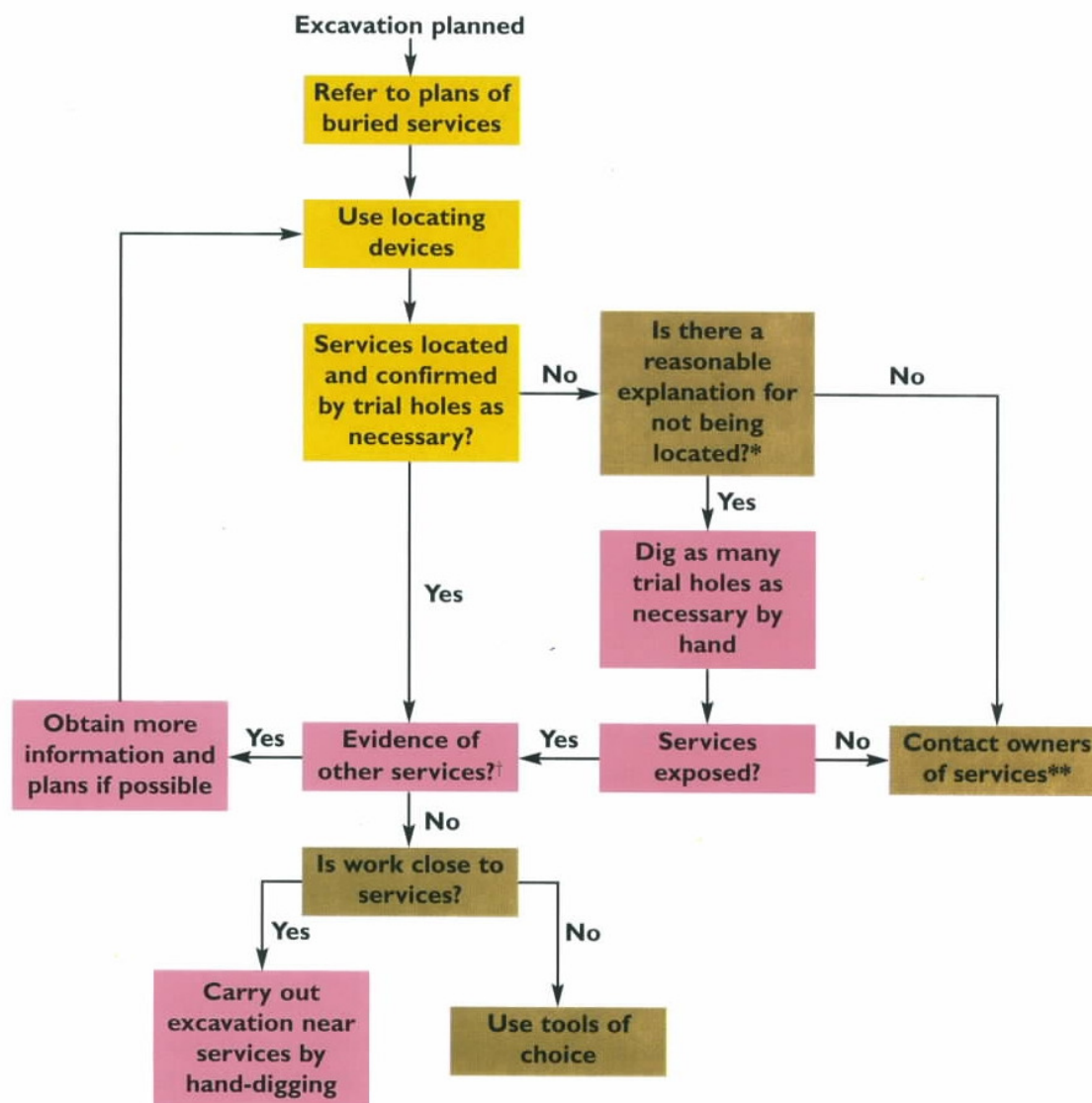
2 UNDERGROUND SERVICES

PART 1 GENERIC RISK ASSESSMENT																											
MAIN HAZARDS ARE: - Trench collapse. - Ingress of water. - Explosions caused by arcing or leaks from penetration/crushing of pipes by site equipment.		PERSONS/PROPERTY EXPOSED ARE: - Groundworkers. - Site personnel working adjacent to the dig site.																									
ASSESSMENT OF INITIAL RISK		Severity 4	x Likelihood 4 = Risk 16																								
CONTROL MEASURES REQUIRED: - Compliance with HSE Regulations HSG 47 (see flow chart below). - Contact with service providers to obtain plans. - Comprehensive service plans available in H & S file and displayed on site. - Adequately trained staff. - Cable and pipe locating services. - Trial holing. - Correct tools to minimise risk of penetration. - Hand digging to pre-agreed depth. - Mechanical excavators MUST NOT be used within the following distances from live gas mains: Low Pressure 0.5m, Medium Pressure 0.5m, Intermediate Pressure 3.0m. - Mechanical excavators may only be used to remove or break hardstanding above other known live services. (Further assistance can be found in the Risk Assessment for Excavations). - Toolbox talks to inform site staff of position of known services.		PPE: (tick if required) <table> <tr><td>Safety helmets</td><td>x</td></tr> <tr><td>Hi-Vis Jackets</td><td>x</td></tr> <tr><td>Safety footwear</td><td>x</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Dust masks</td><td>☐</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves</td><td>☐</td></tr> <tr><td>Protective overalls</td><td>☐</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>		Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves	☐	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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Harnesses	☐																										
Breathing apparatus	☐																										
PART 2 SITE SPECIFIC ASSESSMENT																											
ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE: SERVICES HAVE BEEN PRESENT ON SITE. THESE SERVICES SHOULD BE ASSUMED LIVE UNTIL ADVISED OTHERWISE BY THE SITE MANAGER		ADDITIONAL PERSONS/PROPERTY EXPOSED ARE: All site operatives																									
MAX No OF PEOPLE INVOLVED IN THE ACTIVITY: 2		FREQUENCY AND DURATION OF ACTIVITY: 7 weeks																									
ADDITIONAL CONTROL MEASURES REQUIRED: Hand dug trial holes to locate depth and location. Line of any cables to be clearly demarked.			LIST EXTRA PPE:																								
ASSESSMENT OF RESIDUAL RISK		Severity 4	x Likelihood 1 = Risk 4																								
PREPARED BY: ADAM MATTHEWS		DATE: 28/03/14																									
RECEIVED/REVIEWED AT SITE BY:		DATE:																									

Figure 2 Flow diagram

This flow diagram is intended to help give an understanding of the process **from referring to plans on site through to the start of excavation**, for example when excavating in a road or footway. However it:

- describes *only part* of the process; it does not, for example, describe planning the work, including reference to plans at the design stage;
- is a simplified picture and not a substitute for reading the text;
- is not a substitute for a suitable and sufficient risk assessment;
- does not take account of a number of other situations, eg cables embedded in concrete or those situations where resiting services is proposed.



* For example, could services be non-metallic pipes? Please refer to text for further information.

† In particular, visual evidence. Ensure that the presence of services, which may be unmarked on plans or for which no plans are available, has been considered, for example service connections.

** If there is visual evidence of services, but owners cannot be traced, despite all reasonable attempts to do so, any excavation could proceed but using hand-dug trial holes and proceeding with great care.

2 EXCAVATORS

PART 1		GENERIC RISK ASSESSMENT																									
<u>MAIN HAZARDS ARE:</u> - Crushing. - Overturning. - Striking personnel and property, services. - Less control on steep gradients. - Fire hazard (engine). - Fall from Height.		<u>PERSONS/PROPERTY EXPOSED ARE:</u> - Groundworkers. - Others operatives and visitors in vicinity of the works.																									
<u>ASSESSMENT OF INITIAL RISK</u>		Severity 4	x Likelihood 3 = Risk 12																								
<u>CONTROL MEASURES REQUIRED:</u> - Drivers to be trained and authorised. - Machines to be inspected daily by drivers with a weekly inspection log completed. - Faults to be reported immediately, particular attention must be made to fuel lines, cease work until rectified. - Drivers to remain alert to the presence of other vehicles and pedestrians. - Be alert for soft ground and other obstructions. - Ensure that all underground services are identified prior to excavating. - Keep a minimum 600 mm clearance for between counterweight and obstructions. - No person must enter the working radius of the machine without the drivers consent. - Do not slew bucket over personnel or vehicle cabins. - Do not exceed the manufacturers recommended bucket sizes or safe working loads. - Do not undercut the workface below a machine. - Do not allow passengers onto the machine unless it is designed to take them. - Ensure the vehicle is parked safely and keys removed before vacating it with no exiting from cab adjacent to an excavation. - Identify any dangers in site induction. - Machines to be maintained to appropriate levels (including engine noise). - Environment – spill kit &/or bunded fuel bowers to be made available when refuelling. - Ensure all grab rails, guard rails and foot plates in place before shuttering machine. - Maintain 3 points of contact when entering/exiting cab.		<u>PPE:</u> <table> <tr><td>Safety helmets</td><td>x</td></tr> <tr><td>Hi-Vis Jackets</td><td>x</td></tr> <tr><td>Safety footwear</td><td>x</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Dust masks</td><td>☐</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves</td><td>☐</td></tr> <tr><td>Protective overalls</td><td>☐</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>		Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves	☐	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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<u>ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE:</u>		<u>ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:</u>																									
<u>MAX No OF PEOPLE INVOLVED IN THE ACTIVITY:</u> 3		<u>FREQUENCY AND DURATION OF ACTIVITY:</u> Daily during site hours for approximately 7 weeks																									
<u>ADDITIONAL CONTROL MEASURES REQUIRED:</u>		<u>LIST EXTRA PPE:</u>																									
<u>ASSESSMENT OF RESIDUAL RISK</u>		Severity 4	x Likelihood 1 = Risk 4																								
<u>PREPARED BY: ADAM MATTHEWS</u>		<u>DATE:</u> 28/03/14																									
<u>RECEIVED/REVIEWED</u>		<u>DATE:</u>																									
<u>AT SITE BY:</u>																											

3 EXCAVATIONS

PART 1		GENERIC RISK ASSESSMENT																									
MAIN HAZARDS ARE: - Trench collapse. - Ingress of water. - Migratory gases. - Potential release of asbestos fibres. - Buried services and culverts. - People, vehicles and objects falling in. - Undermining of adjacent scaffolding, walls etc.		PERSONS/PROPERTY EXPOSED ARE: - Groundworkers. - Site personnel working adjacent to dig. - Plant operatives.																									
ASSESSMENT OF INITIAL RISK		Severity 3	x Likelihood 3 = Risk 9																								
CONTROL MEASURES REQUIRED: - Ensure "Permit to Dig" is completed and in operation if Principal Contractor uses them. - Adequate shoring or battering. - Inspection before each shift commences, assess as a confined space. - Erect protective barriers, guard rails, safety lighting and stops blocks if necessary. - Traffic routes to keep vehicles away from excavations. - Spoil and materials to be stacked away from excavation minimum 1.5m or depth of excavation if greater. - Provide safe means of access and egress. - Pumps available/sump holes dug in case of inundation. - Prior to excavation ensure underground services are located and marked. - Mechanical excavators MUST NOT be used within the following distances from live gas mains: Low Pressure 0.5m, Medium Pressure 0.5m, Intermediate Pressure 3.0m. - Mechanical excavators may only be used to remove or break hardstanding above other known live services. - Ensure work area is clearly defined. - Utilise a banksman if required. - Culverts and associated manhole covers are to be marked out with a minimum 2m standoff zone (unless otherwise specified). - Where asbestos fibres have been identified in Made Ground above the allowable concentration by volume, asbestos air monitoring and water sprinklers or misting systems with PVA additive will be utilised to control and monitor the release of potential fibres. - Operatives that may be directly exposed to dust with the potential of containing loose asbestos fibres shall be equipped with Personal Asbestos Air Monitoring Equipment and PP3 Compliant Masks (face fitted).		PPE: (tick if required) <table> <tr><td>Safety helmets</td><td>x</td></tr> <tr><td>Hi-Vis Jackets</td><td>x</td></tr> <tr><td>Safety footwear</td><td>x</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Respiratory Equipment</td><td>x</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves</td><td>☐</td></tr> <tr><td>Protective overalls</td><td>x</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>		Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Respiratory Equipment	x	Ear plugs	☐	Ear muffs	☐	Gloves	☐	Protective overalls	x	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE: SERVICES HAVE BEEN PRESENT ON SITE. . THESE SERVICES SHOULD BE ASSUMED LIVE UNTIL ADVISED OTHERWISE BY THE SITE MANAGER.		ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:																									
MAX No OF PEOPLE INVOLVED IN THE ACTIVITY: All site users		FREQUENCY AND DURATION OF ACTIVITY: Daily during site hours for approximately 7 weeks																									
ADDITIONAL CONTROL MEASURES REQUIRED: Identify live services prior to digging		LIST EXTRA PPE:																									
ASSESSMENT OF RESIDUAL RISK		Severity 3	x Likelihood 1 = Risk 3																								
PREPARED BY: ADAM MATTHEWS		DATE: 28/03/14																									
RECEIVED/REVIEWED AT SITE BY:		DATE:																									

4 QUICK HITCH (BUCKET/GRAB/SHEAR DETACHMENT)

PART 1		GENERIC RISK ASSESSMENT																									
<u>MAIN HAZARDS ARE:</u> Crushing due to detachment of bucket.		<u>PERSONS/PROPERTY EXPOSED ARE:</u> Site workers/Groundworkers.																									
<u>ASSESSMENT OF INITIAL RISK</u>		Severity 4	x Likelihood 2 = Risk 8																								
<u>CONTROL MEASURES REQUIRED:</u> - Operator must be trained and certified in use of Quick Hitch equipment. - Operators must identify and become familiar with the type of quick hitch device on excavator: - Manual. - Semi-automatic. - Fully automatic. - Operator must have full understanding of how to visually check when Quick Hitch is locked. - Clear quick hitch identification on machine. - Operating instructions located in machine cab. - Identify & use the correct insertion point for the manual safety pin where one is required. - Daily visual inspection of machine and quick hitch device prior to use. - Weekly inspections in accordance with LOLER Regs. 98. - When attachment complete check bucket is actually secure (e.g., shake, rattle, roll method).		<u>PPE: (tick if required)</u> <table> <tr><td>Safety helmets</td><td>✓</td></tr> <tr><td>Hi-Vis Jackets</td><td>✓</td></tr> <tr><td>Safety footwear</td><td>✓</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Dust masks</td><td>☐</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves (see below)</td><td>☐</td></tr> <tr><td>Protective overalls</td><td>☐</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>		Safety helmets	✓	Hi-Vis Jackets	✓	Safety footwear	✓	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves (see below)	☐	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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<u>ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE:</u>		<u>ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:</u>																									
<u>MAX No OF PEOPLE INVOLVED IN THE ACTIVITY:</u> 1		<u>FREQUENCY AND DURATION OF ACTIVITY:</u> Daily – every time a bucket requires changing.																									
<u>ADDITIONAL CONTROL MEASURES REQUIRED:</u> Driver to inspect on a daily basis and tick plant checklist daily.		<u>LIST EXTRA PPE:</u> Gloves for manual or semi-automatic devices																									
<u>ASSESSMENT OF RESIDUAL RISK</u>		Severity 4	x Likelihood 1 = Risk 4																								
<u>PREPARED BY:</u> ADAM MATTHEWS		<u>DATE:</u> 28/03/14																									
<u>RECEIVED/REVIEWED</u> <u>AT SITE BY:</u>		<u>DATE:</u>																									

5 DUMPERS

PART 1 GENERIC RISK ASSESSMENT																											
MAIN HAZARDS ARE: • Contact/ Impact. • Entanglement. • Overturning. • Overloading. • Speeding.		PERSONS/PROPERTY EXPOSED ARE: • Drivers. • Other site personnel.																									
ASSESSMENT OF INITIAL RISK		Severity 4	x																								
CONTROL MEASURES REQUIRED: • Drivers to be trained and authorised. • Machines to be inspected and maintained regularly. • Faults to be reported immediately, cease work until rectified. • Operate at a safe speed according to site conditions and speed limit. • Drivers to remain alert to the presence of other vehicles and pedestrians. • Never operate the machine controls away from the usual driving position. • Do not allow passengers onto the machine unless it is designed to take them. • Driver must ensure that no persons enter the crush zone between the dumper's body and bucket. • Driver must ensure that stop blocks are in place when tipping into an excavation. • Driver must dismount when being loaded (only for none cab dumpers). • Driver must ensure that no materials or personnel come into contact with the driveshaft if exposed. • Driver must use the seatbelt provided at all times. • Ensure the vehicle is parked safely and keys removed before vacating it. • Ensure site speed limits are installed and maintained. • Traffic route to keep away from excavations.		Likelihood 3	= Risk 12																								
		PPE: <table border="0"> <tr> <td>Safety helmets</td> <td>x</td> </tr> <tr> <td>Hi-Vis Jackets</td> <td>x</td> </tr> <tr> <td>Safety footwear</td> <td>x</td> </tr> <tr> <td>Eye protection</td> <td>☐</td> </tr> <tr> <td>Dust masks</td> <td>☐</td> </tr> <tr> <td>Ear plugs</td> <td>☐</td> </tr> <tr> <td>Ear muffs</td> <td>☐</td> </tr> <tr> <td>Gloves</td> <td>☐</td> </tr> <tr> <td>Protective overalls</td> <td>☐</td> </tr> <tr> <td>Gauntlets</td> <td>☐</td> </tr> <tr> <td>Harnesses</td> <td>☐</td> </tr> <tr> <td>Breathing apparatus</td> <td>☐</td> </tr> </table>		Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves	☐	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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Protective overalls	☐																										
Gauntlets	☐																										
Harnesses	☐																										
Breathing apparatus	☐																										
PART 2 SITE SPECIFIC ASSESSMENT																											
ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE:		ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:																									
MAX No OF PEOPLE INVOLVED IN THE ACTIVITY: 4		FREQUENCY AND DURATION OF ACTIVITY: Daily during site hours for approximately 7 weeks																									
ADDITIONAL CONTROL MEASURES REQUIRED: Clear haul routes are to be established, maintained and observed at all times.			LIST EXTRA PPE:																								
ASSESSMENT OF RESIDUAL RISK		Severity 4	x																								
		Likelihood 1	= Risk 4																								
PREPARED BY: ADAM MATTHEWS		DATE: 28/03/14																									
RECEIVED/REVIEWED AT SITE BY:		DATE:																									

6 ARTICULATED VIBRATORY ROLLERS

PART 1				GENERIC RISK ASSESSMENT																									
<u>MAIN HAZARDS ARE:</u> - Entanglement. - Crushing. - Impact.			<u>PERSONS/PROPERTY EXPOSED ARE:</u> - Groundworkers. - Roller Operators/Drivers.																										
<u>ASSESSMENT OF INITIAL RISK</u>		Severity 4	x	Likelihood 3	= Risk 12																								
<u>CONTROL MEASURES REQUIRED:</u> - Drivers to be trained and authorised. - Machines to be inspected and maintained regularly. - Faults to be reported immediately, cease work until rectified. - Repairs may only be carried out by competent persons. - Operate at a safe speed according to site conditions and speed limit. - Drivers to remain alert to the presence of other vehicles and pedestrians, particularly when reversing. - Never operate the machine controls away from the usual driving position. - Do not allow passengers onto the machine unless it is designed to take them. - Driver must ensure that no persons enter the crush zone between the rollers. - Driver must use the seatbelt provided at all times. - Driver to avoid edges and slopes. - Do not leave the machine unattended with the engine running. - Only re-fuel when the engine is shut down. - Do not smoke when re-fuelling or checking the battery. - Do not climb onto or off the machine when it is travelling. - When loading/unloading use strong and secure ramps. - Ensure the vehicle is parked safely with drums chocked and keys removed upon vacating it.					<u>PPE: (tick if required)</u> <table> <tr><td>Safety helmets</td><td>x</td></tr> <tr><td>Hi-Vis Jackets</td><td>x</td></tr> <tr><td>Safety footwear</td><td>x</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Dust masks</td><td>☐</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves</td><td>☐</td></tr> <tr><td>Protective overalls</td><td>☐</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>	Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves	☐	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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Harnesses	☐																												
Breathing apparatus	☐																												
PART 2				SITE SPECIFIC ASSESSMENT																									
<u>ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE:</u>			<u>ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:</u>																										
<u>MAX No OF PEOPLE INVOLVED IN THE ACTIVITY:</u> 1			<u>FREQUENCY AND DURATION OF ACTIVITY:</u> Daily during site hours for approximately 7 weeks																										
<u>ADDITIONAL CONTROL MEASURES REQUIRED:</u>					<u>LIST EXTRA PPE:</u>																								
<u>ASSESSMENT OF RESIDUAL RISK</u>		Severity 4	x	Likelihood 1	= Risk 4																								
<u>PREPARED BY:</u> ADAM MATTHEWS			<u>DATE:</u> 28/03/14																										
<u>RECEIVED/REVIEWED</u> <u>AT SITE BY:</u>			<u>DATE:</u>																										

7 MANUAL HANDLING

PART 1		GENERIC RISK ASSESSMENT																									
<u>MAIN HAZARDS ARE:</u> - Cuts and abrasions. - Crushing of limbs, fingers, toes. - Straining of muscles and joints. - Back and groin injuries.		<u>PERSONS/PROPERTY EXPOSED ARE:</u> All personnel.																									
<u>ASSESSMENT OF INITIAL RISK</u>		Severity 3	x Likelihood 3 = Risk 9																								
<u>CONTROL MEASURES REQUIRED:</u> - Due to the nature of the Construction industry, Manual Handling can be an almost continuous occurrence, with varied tasks, loads, environments and individuals. Therefore assessment must be a continuous process. - Assess the task, the individual, the load and the environment. - Assessments do not need to be recorded due to the fact that they can be readily repeated, unless there is an exception to this. - For those exceptions refer to detailed "Manual Handling Assessment" in Health and Safety File. - Manual Handling must be avoided wherever possible.		<u>PPE: (tick if required)</u> <table> <tr><td>Safety helmets</td><td>x</td></tr> <tr><td>Hi-Vis Jackets</td><td>x</td></tr> <tr><td>Safety footwear</td><td>x</td></tr> <tr><td>Eye protection</td><td>☐</td></tr> <tr><td>Dust masks</td><td>☐</td></tr> <tr><td>Ear plugs</td><td>☐</td></tr> <tr><td>Ear muffs</td><td>☐</td></tr> <tr><td>Gloves</td><td>x</td></tr> <tr><td>Protective overalls</td><td>☐</td></tr> <tr><td>Gauntlets</td><td>☐</td></tr> <tr><td>Harnesses</td><td>☐</td></tr> <tr><td>Breathing apparatus</td><td>☐</td></tr> </table>		Safety helmets	x	Hi-Vis Jackets	x	Safety footwear	x	Eye protection	☐	Dust masks	☐	Ear plugs	☐	Ear muffs	☐	Gloves	x	Protective overalls	☐	Gauntlets	☐	Harnesses	☐	Breathing apparatus	☐
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PART 2		SITE SPECIFIC ASSESSMENT																									
<u>ADDITIONAL SPECIFIC HAZARDS IDENTIFIED ARE:</u>		<u>ADDITIONAL PERSONS/PROPERTY EXPOSED ARE:</u>																									
<u>MAX No OF PEOPLE INVOLVED IN THE ACTIVITY:</u> 2		<u>FREQUENCY AND DURATION OF ACTIVITY:</u> Daily during site hours for approximately 7 weeks																									
<u>ADDITIONAL CONTROL MEASURES REQUIRED:</u>		<u>LIST EXTRA PPE:</u>																									
<u>ASSESSMENT OF RESIDUAL RISK</u>		Severity 3	x Likelihood 1 = Risk 3																								
<u>PREPARED BY:</u> ADAM MATTHEWS		<u>DATE:</u> 28/03/14																									
<u>RECEIVED/REVIEWED</u> <u>AT SITE BY:</u>		<u>DATE:</u>																									

8 DECLARATION

8.1.1 I hereby declare that I have read and have fully understood the above Risk Assessments:

[illegible]

Appendix C

Completed Qualified Person Declaration

Qualified Person Declaration

Please insert a cross in the appropriate box.

This Declaration relates to:

1. Site of Origin:

☒	Route A: Land affected by contamination or suspected of being affected by contamination.
☐	Route B: Land not suspected of being affected by contamination

2. Direct Transfer:

☐	Route A: Direct use of clean naturally occurring soils with elevated levels of naturally occurring substances on another development site
☐	Route B: Direct use of clean naturally occurring soils on another development site

3. Cluster Project:

☐	Cluster Project (including use of a fixed Soil Treatment Facility as a Hub site)
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Proposed Volumes

Volume of material intended to be reused (cubic metres): 8366
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Site name(s) and address(s) (please fill in as applicable)

Site of origin name and address: Proposed Residential Development, Glan Gors, Wrexham, LL13 9NU Receiver site(s) name(s) and Address(s) Proposed Residential Development, Glan Gors, Wrexham, LL13 9NU

Name and address of Developer(s) at Donor and Receiver site(s): Pennaf Housing Group, 72 Ffordd William Morgan, St. Asaph Business Park, St. Asaph, Denbighshire, LL17 0JD Lorraine Taylor – Project Development Officer Tel: - 01745 536 825 Email: Lorraine.Taylor@clwydalyn.co.uk Tel: 01925 839 500
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Name and address of Qualified Person: Mr Martin Dyer, E3P, Heliport Business Centre, Liverpool Road, Barton, Manchester, M30 7RU

Qualified Person Registration Number: 250

Local Authority name, address, lead contact name and contact details:

Wrexham County Borough Council (WCBC),
Housing and Public Protection Department,
Ruthin Road,
Wrexham,
LL13 7TU
Mrs. Angela Guy – Contaminated Land Officer
Tel: 01978 315 733
Email: angela.guy@wrexham.gov.uk

Environment Agency local office, lead contact and contact details:

Natural Resources Wales
Clawdd Newydd
Ruthin
Denbighshire
LL15 2NL

To: **Adam Matthews, ADM Regeneration Ltd,**

Declaration

Please insert a cross in the appropriate box.

- | | |
|----------|--|
| x | I confirm that I satisfy the Qualified Person requirements set out in Appendix 6 of the Definition of Waste: Development Industry Code of Practice to complete this Declaration. |
|----------|--|

I have reviewed the following documents in relation to development work to be carried out at the above site:

	The Materials Management Plan (MMP) dated April 2014 and prepared by Mr John Coggins of ADM regeneration Ltd.
	The risk assessment dated and prepared by: Phase 2, Geotechnical and Geo-Environmental Ground Investigation of Land at Glan Gors, Wrexham,(Report Ref. No. E0500.S1.P2.R1V5 – dated 27-08-13) by e-Geo Solutions Ltd. The Remediation Strategy/Design Statement covering the above site and prepared by: Detailed Remediation Strategy for Proposed Residential Development, Glan Gors, Wrexham.(Report Ref. No. 6503 – dated December 2013) by Bay Associates Consulting Ltd
	The following correspondence / documentation relating to the development and how that relates to the use of materials from: a) The Local Authority ; Letter and emailed letter from Wrexham County Borough Council (WCBC) to Bay Associates Consulting Ltd – dated 14th August and 9th October, 2013. b) Environment Agency Section 6.0 of Bay Associates Ltd’s Detailed Remediation Strategy states that a copy of e-Geo Solutions Ltd’s Phase 2 SI Report had been copied to Natural Resources Wales and they had commented on one or two minor points that were subsequently addressed in the final (Version 5) site investigation report. c) Other relevant environmental regulatory bodies associated with the development, e.g. Defra, Natural England, Countryside Council for Wales [list].

	The planning consent including planning conditions Decision notice (full) to planning application Ref. No. P/2013/0840 granted 18.02.14 for residential development (8 flats and 15 houses) and construction of new access and roads.
	Correspondence concerning the planning consent regarding the development from: a) The Local Authority; Letter and emailed letter from Wrexham County Borough Council (WCBC) to Bay Associates Consulting Ltd – dated 14th August and 9th October, 2013. b) Environment Agency; No specified correspondence provided, however Sections 5.6.16 – 6.5.28 of e-Geo Solutions Ltd's Phase 2 SI Report discusses the pollution of controlled waters and Section 6.16.1 concludes (in tabular form) that the risk to shallow and deep ground water is low and none respectively and to surface water is low to very low. Section 6.0 of Bay Associates Ltd's Detailed Remediation Strategy states that a copy of e-Geo Solutions Ltd's Phase 2 SI Report had been copied to Natural Resources Wales and they had commented on one or two minor points that were subsequently addressed in the final (Version 5) site investigation report. c) Other relevant environmental regulatory bodies N/A
	Planning consent is not required because [explain why]: N/A

I confirm that:

1. The MMP contains the information required:
2. The risk assessment assesses human health and environmental risks in relation to the proposed uses of all the materials in the MMP. The risk assessment concludes that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner; and
3. The Local Authority, the Environment Agency and other relevant environmental regulatory bodies have not objected to the proposed development / land remediation on the basis that the use of any material is likely to cause harm to human health or pollution of the environment. **[This confirmation should be given regardless of whether planning consent is required for the activity. Also see paragraph 3.37 of the CoP.]**

This Declaration has been made for the purposes of the Definition of Waste: Development Industry Code of Practice (Version 2, March 2011) and will be submitted to the Environment Agency under that CoP.

You are advised that if materials are not used in accordance with the MMP or risk assessment or if it is discovered that materials were not suitable for use, were used in excessive quantity or in such a manner as to harm human health or pollute the environment, the Environment Agency may conclude that those materials were discarded and were waste.

You are also reminded that a Verification Report must be prepared on completion of the work as set out in the Remediation Strategy / Design Statement covering the site and that this Verification Report must be provided to the Environment Agency upon request.

Signed: 

Name: MARTIN DYER
(Block Capitals)

Organisation: E3P

Date: 14th April 2014

This Declaration should be sent to:
Post: Environment Agency
Environmental Permitting Team
Quadrant 2, 99 Parkway Avenue
Parkway Business Park

For projects in Wales, please send declarations to:
Permit Receipt Centre, Natural Resources Wales
Ty Cambria
Cardiff
CF24 0TP

Sheffield
S9 4WF

Email: permitreceiptcentre@naturalresourceswales.gov.uk

Email: pssc@environment-agency.gov.uk with 'Qualified Person Declaration' in the subject line