

GEOSPHERE ENVIRONMENTAL

REPORT NUMBER: 7826,GI,RMS,JK,JD,13-12-23,V1

SITE: Elm Farm, Somersham Road, Little Blakenham,
Ipswich, Suffolk, IP8 4NF

DATE: 14/12/2023



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1. INTRODUCTION

Geosphere Environmental Ltd was appointed by Beechlake Developments Ltd, to provide a Remediation (and validation) Method Statement (RMS) for a proposed development at Elm Farm, Somersham Road, Little Blakenham, Ipswich, Suffolk, IP8 4NF.

A phased Ground Investigation at the site identified unsuitable concentrations of PAHs, hydrocarbons and asbestos within Made Ground soils in localised areas of the site (the southeast and southwest corners of the site.) These are detailed further in Section 2 of this report.

It was understood that the development is to comprise the phased clearance of existing structures, enabling construction of three residential dwellings with associated soft landscaping, car parking and private garden areas. The Proposed Development plans and available site data form the basis for the remedial plan and objectives and are provided within Appendix 3.

1.1 Objectives

The objective of this R(v)MS is to provide an economic and feasible methodology to break the identified contaminant source-pathway-receptor linkage, in line with current UK government guidelines.

The proposed methodology has the following key objectives:

- To limit direct and indirect exposure of the identified contamination to groundworkers and future residents; and

- To reduce the risk from the identified contamination to future planting in gardens and landscaped areas.

2. PREVIOUS REPORTS

The following reports are relevant to this RMS:

'A Phase I Contamination Assessment for a Residential Development at Elm Farm, Somersham Road, Little Blakenham' report ref: JAH/19.349/Phase1 produced by A F Howland Associates dated 29/10/2019.

'Phase 2 Ground Investigation at Elm Farm, Somersham Road, Little Blakenham, Ipswich, Suffolk, IP8 4NF', report ref: 7826,G1,JK,JD,08-12-23,V2 produced by Geosphere Environmental Ltd dated 08/12/2023.

It is recommended that the above reports are read in conjunction with this report where necessary. The conclusions of the previous reports are summarised below.

2.1 Phase 1 Desk Study

Based upon the findings of the report, potential onsite contaminative hazards included; Made Ground and PACMs from historical onsite development, potentially infilled land, and the historical use of the onsite structures. All the above were considered to be of low to moderate risk to site / potential receptors and an intrusive-based investigation was recommended.

2.2 Phase 2 Ground Investigations

Two phases of Ground Investigation have been undertaken at the site:

The first phase of Ground Investigation was undertaken in September 2023 and comprised the formation of seven windowless sampler boreholes ranging from 2.0mbgl to 3.0mbgl, and the installation of three monitoring wells together with six subsequent ground gas monitoring visits.

The second phase of site works were undertaken in November 2023 and comprised the excavation of thirteen trial pits to depths between 1.10 – 1.20mbgl.

Ground conditions were recorded to be reasonably consistent across the site, comprising Made Ground of variable composition, to a depth 1.00mbgl, underlain by superficial deposits (interpreted as Diamicton) to >3mbgl. Groundwater was not encountered during the intrusive investigation but was monitored at depths between 1.75mbgl and 2.75mbgl during subsequent monitoring visits.

Chemical analysis was carried out on a total of twenty-six soil samples and two groundwater samples.

The results indicated that elevated concentrations of aromatic hydrocarbons (>C16-C21) and some PAH congeners were present in the Made Ground, exceeded screening values in four samples from three locations – WS03 (E1, 0.1mbgl), WS06 (E1, 0.2mbgl and E2, 0.5mbgl) within the first phase of works and TP104 (E1, 0.2mbgl) within the second phase of works.

Asbestos was reported in the laboratory screening of the samples at one location, WS01 (E1, 0.1mbgl) and subsequent asbestos quantification analysis of this sample reports 0.323% asbestos content.

During the trial pitting works, a small number of pieces of timber were found in the trial pits surrounding WS03; these had an odour associated with treated timber.

Detectable concentrations of a small number of PAH congeners were reported at WS06 (E1, 0.2mbgl and E2, 0.5mbgl) in the north of the site, within the proposed residential development area, but these did not pose a significant hazard to end users in the reported concentrations or were within areas that are within the area considered as land use scenario "residential without plant uptake".

The soil quality within the central portion of the proposed redevelopment was indicated to be sufficient in consideration of the proposed land-use scenario and likely receptors; no remedial measures were determined necessary within the majority of the site redevelopment.

However, the near-surface soil quality (generally Made Ground) in the garden areas of Plots 1 and 3 of the proposed development was not sufficient for the proposed land use scenario without remedial measures.

The report also detailed a Discovery Strategy, recommended to be put in place during the construction phase of the development, in case any unexpected contamination should be encountered during the works.

3. PROPOSED SOIL REMEDIATION WORKS

3.1 Objectives of the Remediation

The objective of the overall remediation works is to provide an economic and feasible methodology, in line with current UK government guidelines, by breaking the source-pathway-receptor linkage and mitigating identified significant risks associated with former uses of the site.

The proposed scheme has the following key objective:

To limit the exposure of multiple contaminants, within the soils within soft landscaped areas, to end users (of the proposed residential properties) to an acceptable level.

3.2 Remedial Strategy Background

The remediation strategy aims to provide an integrated solution, aiming to remove risk from contaminated soils during development, but it should be noted that sensitivity to contamination is not consistent across the proposed development. The highest sensitivity is located where private soft landscaping / garden area is planned, whereas a lower sensitivity will be present across the remainder of the site which is proposed to be under hardstanding or soft landscaped areas understood to be associated with visual splay factors for traffic egressing. The latter is at the northern section of the scheme.

It is likely a significant volume of Made Ground and shallow soils will be removed (or reworked) concomitantly with the development of the site and construction of the proposed development. The requirements of this RMS utilise this, provide additional targeted requirements and will obtain verification data.

The Ground Investigations did not identify a significant hazard from soil quality within the "central garden area" (plot 2) of the development, or the northern soft landscaped area of site, but some PAH congeners, aromatic hydrocarbons (>C16-C21) and asbestos were identified within general poor quality Made Ground in the garden areas of plot 1 (western-most plot) and plot 3 (eastern-most plot).

As a result, no remedial and validation measures are determined as necessary within the northern area of the development scheme, subject to the Discovery Strategy and construction works.

3.2.1 Development scheme factors

It is understood that the rear garden areas, in particular of Plots 1 and 3, will require raising of final elevations in order to create level / disabled access to the rear gardens and associated factors. It is understood that some of the hard- and soft-landscaping areas of the gardens are required to be elevated by between 0.5 and 0.6m. The ground investigation report noted that this can be undertaken at a suitable

phase of the construction and must be of suitable (chemical) quality soils and / or aggregate as necessary and standard.

3.3 Remedial and Validation Strategy - Soil Cover System

The following key operations form the basis of the site works required to deliver the development site:

Private soft landscaping / garden areas: An over-arching approach is proposed, to deal with the hazard of unsuitable quality soils within the residential areas of Plots 1 and 3. This approach comprises creation of a "soil cover system" via:

- o (i) removal of existing Made Ground to ~600mm below finished ground level or raising of ground levels by ~600mm to finished ground level within any proposed soft landscaped areas; and
- o (ii) use of suitable quality soils for the above.

As outlined above, it is understood that the final / finished site elevations will be raised from the original sloping (north to south) site so that areas of flat amenity space can be created.

Where soft landscaped areas require soil removal-and-replaced or raised (with chemically suitable soil for the proposed residential end use), this will require validation / verification of these works. See below;

It is anticipated that replacement soils will need to be imported but site won soils could be used, provided they are chemically suitable. This may include the natural clay soils that are chemically suitable for use as, for example, subsoil. However, these should be generally devoid of anthropogenic materials often associated with construction works (i.e., fragments of brick, glass, metal etc.);

Validation testing of any imported (and re-used / site-won) material will be required to confirm chemical suitability to the most conservative guideline values (see below).

3.3.1 Anti-dig Membrane

Emplacement of a permeable "anti-dig" membrane between the 'clean' cover system of imported / emplaced soils and the underlying Made Ground soils will prevent (long term) natural and anthropogenic causes of mixing of them. The membrane should cover the base and sides of the excavations and sections of membrane should overlap by at least 300mm. Good practice includes temporarily anchoring the membrane up and over the sides of the excavation while the replacement soils are emplaced, then trimming the membrane to make good in advance of final soil / landscaping covering.

An example of a suitable membrane material or supplier can be provided to the Client upon request.

The emplacement of this membrane must be recorded (photographs) as part of the construction / landscaping process for inclusion within the validation / verification report.

3.4 Sampling of Imported and Emplaced Soils

Validation confirmation of depth, circa 600mm, of imported / emplaced suitable soils should be undertaken; This can be undertaken via a number of methods including:

- provision of soil quality data (normally laboratory analyses) of any soil to be imported to site, ideally in advance of import;
- Site visits and data collection (i.e., photographs, records) to document the excavations, soil import, depths, emplacement etc.;
- Hand-tool-excavation of validation pits to confirm soil cover system depth / thickness;
- Soil sampling within these works;
- Chemical analyses to assess / confirm soil suitability.

(If topsoil and subsoil has been imported or utilised a sample of each will be required.)

The results of the soil analyses of imported soils would be compared to current soil quality screening values for residential end-use scenarios, such as:

- The LQM/CIEH S4ULs for Human Health Risk Assessment;
- Defra/CL:AIRE Final C4SL for lead; and
- The EIC/AGS/CL:AIRE Generic Assessment Criteria (GAC).

The chemical criteria for imported and / or emplaced or re-used soils, that are to be used onsite, are based upon the industry-recognised soil quality values, summarised in Appendix 4.

Further to the above, soils used for backfilling should be compacted in layers to avoid subsequent settlement but not over-compacted to prevent root development or waterlogging. As a guide, but to be detailed by the landscape designers, soil cover systems can comprise a combination of suitable quality subsoils and topsoils. BS3882:2015 and BS8601:2013 provide guidance of the quality of these soils from the aspect of nutrient content and other quality factors. These are outside the scope of assessment here. The details provided below determine the quality requirements from a human health Risk Assessment aspect only.

Common practice is to allow for between 100 and 150mm of topsoil at surface to create a suitable growing media, underlain by the suitable quality soils that allow drainage.

All soils imported will require the following chemical analyses, upon soils, of a representative number of samples for the amount of soil to be imported:

- Metals screen - arsenic, cadmium, chromium, lead, mercury, selenium, boron (water soluble), copper, nickel, vanadium and zinc;

Organics screen – Total extractable hydrocarbons (EPH, C10-C40) or speciated total petroleum hydrocarbons (TPH) – with specific carbon banding; benzene, toluene, ethylbenzene and xylenes (BTEX); polyaromatic hydrocarbons (PAH) – USEPA 16 suite;
Inorganics screen - cyanide (total), sulphate (water soluble) and sulphate (total);
Others – asbestos screen, pH and TOC/SOM.

See Appendix 4, for a list of the soil quality screening concentrations for the various analytes, that are recommended as suitable for use for imported soil materials.

This soil sampling and analysis can sometimes be undertaken at the soil source, if consistent (i.e., British Sugar topsoils) and be acceptable to Third Parties or Stakeholders. It may be possible to then exclude part of the onsite sampling regime, subject to agreement. If a reliable or consistent source of suitable quality soil (top- and / or sub-soil) cannot be obtained or proven at source, then it will be necessary to sample the imported soils following delivery / emplacement.

Standard practice is to sample the soils after emplacement and prove the depth of emplacement, unless a particularly high-quality source of imported soil is utilised.

3.4.1 Sampling Frequency

For a frequency of soil sampling and analysis of imported soils, suitable guidance is the NHBC Standards regarding “Verification of cover systems – testing criteria for subsoil and topsoil”. In this instance, utilising the scheme of suggested frequency testing for chemical analysis of capping materials of unknown sources, for a site with one to five plots, the nominal sampling frequency is one - two tests per plot (with the suggested minimum total number of tests per site of each material used within the capping layer of three).

Suggested locations of the sampling points are provided on Drawing ref. 7826,G1/004/Rev0.

3.4.2 Photographs

As outlined above, photographs, including scales where possible, should be obtained during the validation phase, to indicate the depth of material removed / emplaced and the depth of soils that are either imported or relocated. These can be obtained following excavation, during or post membrane placement or during excavations, to undertake the validation.

3.4.3 Material Transfer Retention

All soils disposed of offsite must be subject to a suitable duty of care. “Waste transfer tickets” or waste transfer documentation should be retained, and versions obtained that are counter-signed by the receiving

facility. This helps prove that the waste soils were transferred to a suitably licenced facility. The tickets must have an applicable EWC code for the waste; this will normally be 17 05 03 or 17 05 04.

Imported soil (see overleaf) records must also be retained and be available for the Verification Report, to confirm the source(s).

3.5 Validation / Verification Completion Report

Following the remedial works detailed in Section 3.2 of this report, a Validation or Completion Report will be prepared that will detail:

- An account of the completed soil remediation works;
- Any variation from the agreed strategy;
- Details of the soil disposal – waste tickets and import records;
- Photographic records of the site work;
- Validation laboratory analysis results of imported / site-won soils emplaced in residential gardens;
- Certification provided with any imported soils;
- The requirements for any further environmental works.

The report will be issued to the Regulatory Authorities for their approval.

Depending upon the timing of the residential plot construction and Completion Report submission, written confirmation, from the principal contractor or Client, could be included that no further contaminated soils or anomalous soils were encountered during the ground works phase of development. If the groundworks have not been finished at the time of issue of the Completion Report, then this confirmation should be sent subsequently to the Local Authority once groundworks are completed. The Discovery Strategy for the development is reiterated in Section 4 of this report.

3.6 Other Risk Mitigation Measures

3.6.1 Potable Water pipes

As outlined in section 2.2 and detailed within the previous reports, there were localised detectable concentrations of PAHs and TPH within soils at a small number of locations. These have a limited potential to pose a risk to end users via permeating potable water pipes. The previous report recommended two initial options:

- Removal of all Made Ground or contaminated soil in the vicinity of the proposed routes of potable water pipes, appropriate recording of this and backfilling with clean soil / granular materials; this may also require pipe “wrapping” with geotextile; or
- Use of a “barrier” pipe and fittings throughout the development.

4. DISCOVERY STRATEGY

There is the possibility that other sources of contamination may be present on the site which were not encountered during the investigation. Should such contamination be identified or suspected during the site clearance or groundworks, these should be dealt with accordingly. Several options are available for handling this material, which include:

Having a suitably experienced Environmental Engineer on call, to assess any suspected contaminated material on the site;

Sampling of any suspected contaminated material should be undertaken for verification purposes;

If it is not feasible to keep the suspected material in-situ, then these should be removed and temporarily stored in a fenced area, whilst verification is undertaken. The storage area should be secured and contained, to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area;

If the suspected contaminated material is dry or is suspected to contain asbestos, the material should be covered to prevent airborne contamination in the form of dust or fibres;

Upon verification of the suspected contamination the impacted material may be either treated or removed from site following suitable waste management licensing or obtaining appropriate consents or agreements with relevant Regulatory Authorities;

All contaminated material to be removed from site, should be disposed of at a suitably licensed tip; and

Following excavation and removal, any open excavations or service trenches should be backfilled with soil that is suitable and certified as 'clean', (this may be either site-won or imported).

This Discovery Strategy is applicable during both the remedial works and the construction phase of the development. Should, for example, asbestos be identified in the excavation of a service run, then the above procedures should be followed.

5. MATERIALS CONSIDERATIONS

It may be possible and applicable to re-use, onsite, natural and / or cohesive soils arising from excavations, subject to the scheme; if re-use is proposed the Claire DoWCoP and a Materials Management Plan can be utilised (other options may exist). The Materials Management Plan must be developed and submitted before works commence and completed, through to validation and re-submission.

Any ACMS or PACMs (asbestos-containing materials) or any soils suspected as being contaminated must be fully separated and segregated from reprocessed materials to prevent contamination.

Any waste or excess soils should be sentenced for offsite disposal or re-use in accordance with current guidance and legislation, and with the assistance of reputable, suitably licenced, and competent contractors. Information on soil classification is provided in the previous report.

If an MMP (or similar materials control system) is utilised the local planning authority will be informed as part of the submission / declaration process to CL: aire.

APPENDICES

Appendix 1 – Report Limitations and Conditions

General Limitations and Exceptions

This report was prepared solely for our Client for the stated purposes only and is not intended to be relied on by any other party or for any other use. No extended duty of care to any third party is implied or offered.

Geosphere Environmental Ltd does not purport to provide specialist legal advice.

The Executive Summary, Conclusions and Recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon, until considered in the context of the whole report.

Interpretations and recommendations contained within the report represent our professional opinions, which were arrived at in accordance with currently accepted industry practices at the time of reporting and based upon current legislation in force at that time.

Environmental and Geotechnical Reporting (including Phase 1, Phase 2 and Site Walkovers) Limitations and Exceptions

The comments given in this report and the options expressed herein, are based upon the readily available information collated for the report and an assessment based upon the current guidance which for Phase 1 / Phase 2 report is primarily the Contaminated Land Research (CLR) Report and notable, CLR report 3, 'Documentary research on industrial sites'.

The report has been prepared in relation to the proposed end use and should another end use be intended; reassessment may be required.

No warranty is given as to the possibility of future changes in the condition of the site.

The opinions expressed cannot be absolute, due to the limitation of time and resources imposed by the agreed brief.

With regards to any aspect of land contamination referred to, this is limited to those aspects specifically stated and necessarily qualified. No liability shall be accepted for other aspects which may be the result of gradual or sudden pollution incidents, past or present land uses and the potential for associated contamination migration.

Any Desk Study Report / data has been produced largely from the information purchased from The Landmark Information Group. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. The information purchased has been assumed to be correct and free from errors. However, there is the possibility that some data may be missing from the report including (but not limited to) unrecorded land uses both onsite and offsite or unrecorded pollution events. No attempt has been made to verify the information.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed onsite, between and subsequent to the various map surveys provided.

Any site walkover undertaken is a snapshot of the site recording the visually evident conditions at the time of the walkover in the areas readily accessible. It is possible that after the walkover, the site was altered (for example by fly-tipping or groundworks) or before the walkover, the site conditions changed removing evidence of potentially contaminative features (such as oil tanks removed).

Any intrusive works only cover a tiny proportion of the site. Where exploratory holes are positioned by Geosphere Environmental Limited, they are located to give as good a coverage of the site as possible and to target features / proposed land use where applicable, whilst allowing for areas that cannot be accessed, Client requested locations and other site / time / budget constraints. Whilst assumptions may have been drawn between exploratory holes on the ground conditions and / or extent or otherwise of any contamination, this is for guidance only and no liability can be accepted on its accuracy.

Foundation design is outside of the remit of Geosphere Environmental Limited unless specifically stated and it is recommended that the services of foundation design specialists are sought as required. Any foundation appraisal contained within the report is limited to foundation optioneering.

Any conceptual model is based upon the information available at the time of conducting this assessment and is an interpretive assessment of the conditions at the site. Redevelopment and / or further investigation of the site may reveal additional information and therefore alter the conceptual model and the report conclusions.

Any infiltration testing results are considered to be representative of the ground conditions at the locations tested and at the time of testing. As well as lateral variation in ground conditions, seasonal changes in ground water level may affect the results.

Any post-fieldwork monitoring (including ground gas / groundwater) is a snapshot of the conditions at the time of monitoring.

Appendix 2 – References

- R.1. British Standards Institute: BS 10175 'Code of practice for the investigation of potentially contaminated sites', BSI 2011.
- R.2. British Standards Institute: BS 5930 'Code of practice for site investigations', 2015.
- R.3. CLR 11, 'Model procedures for the management of contaminated land: Risk assessment procedure', DoE 2004.
- R.4. The Environmental Protection Act, Part IIA, Section 78, 1990.
- R.5. Environment Act 1995, Section 57, DoE 1995.

Appendix 3 – Drawings







Chemical Data Summary Plan – Drawing ref. 7826,GI/003/Rev1

Proposed Development Plan by Peter Wells Architects – Drawing ref. PW1284-BR03revC

Remediation and Validation Plan – 7826,GI/004/Rev0



LEGEND

- Site boundary
-  Window Sample Location
-  PAH Contamination
-  TPH Contamination
-  Asbestos Fibres in Soil
-  Asbestos Cement in Soil
-  Trial Pit Location

SOURCE

Background image provided by client

PROJECT

Elm Farm, Somersham Road, Little Blakenham, Ipswich, Suffolk, IP8 4NF

TITLE

Chemical Data Summary Plan

DRAWING NUMBER

7826,GI/003/Rev1

SCALE

NTS

DRAWN BY

JK

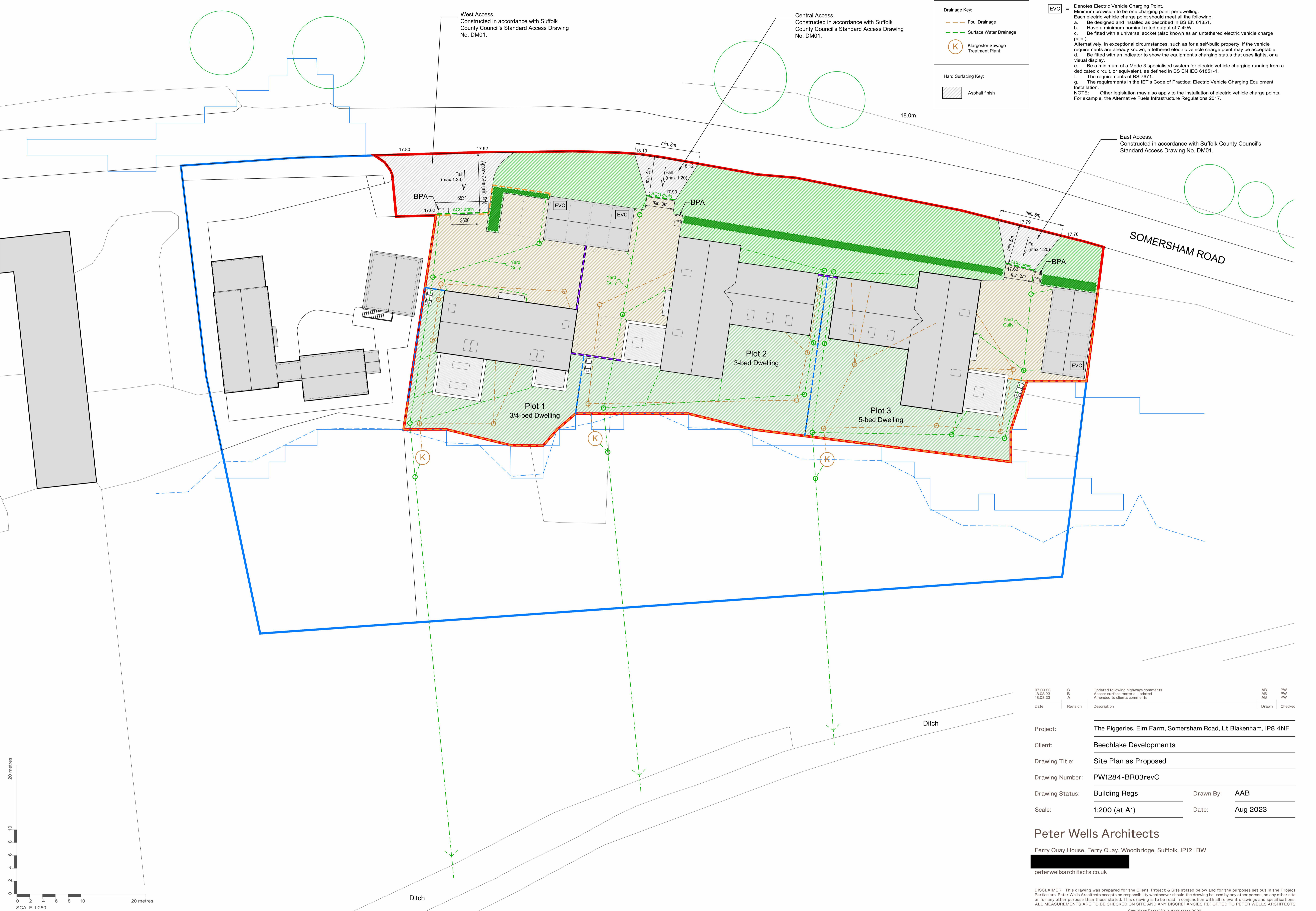
DATE

24/11/2023

CHECKED BY

JD





West Access.
Constructed in accordance with Suffolk
County Council's Standard Access Drawing
No. DM01.

Central Access.
Constructed in accordance with Suffolk
County Council's Standard Access Drawing
No. DM01.

East Access.
Constructed in accordance with Suffolk County Council's
Standard Access Drawing No. DM01.

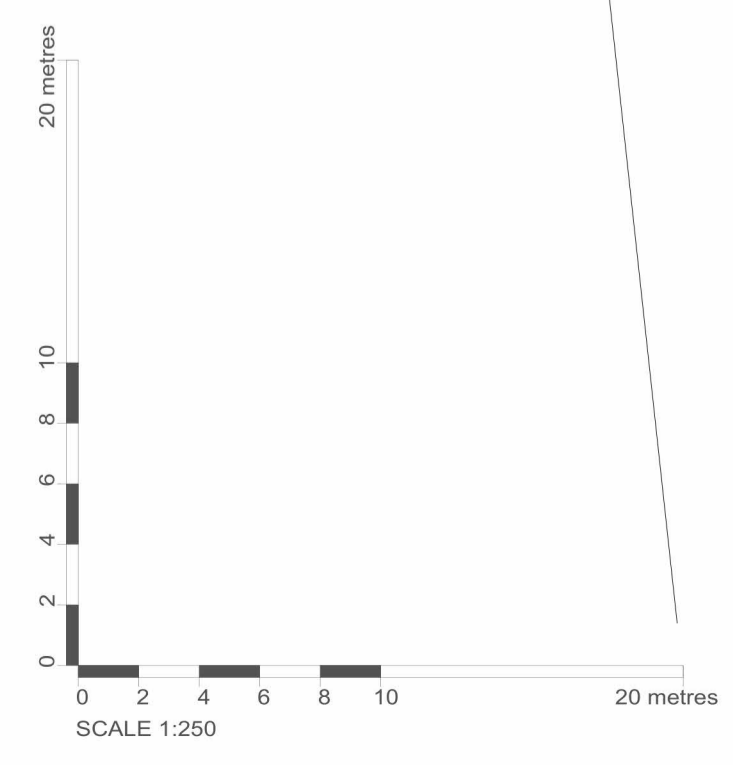
Drainage Key:

- Foul Drainage
- Surface Water Drainage
- Klargester Sewage Treatment Plant

Hard Surfacing Key:

- Asphalt finish

EVC = Denotes Electric Vehicle Charging Point.
Minimum provision to be one charging point per dwelling.
Each electric vehicle charge point should meet all the following:
a. Be designed and installed as described in BS EN 61851.
b. Have a minimum nominal rated output of 7.4kW.
c. Be fitted with a universal socket (also known as an untethered electric vehicle charge point).
Alternatively, in exceptional circumstances, such as for a self-build property, if the vehicle requirements are already known, a tethered electric vehicle charge point may be acceptable.
d. Be fitted with an indicator to show the equipment's charging status that uses lights, or a visual display.
e. Be a minimum of a Mode 3 specialised system for electric vehicle charging running from a dedicated circuit, or equivalent, as defined in BS EN IEC 61851-1.
f. The requirements of BS 7671.
g. The requirements in the IET's Code of Practice: Electric Vehicle Charging Equipment Installation.
NOTE: Other legislation may also apply to the installation of electric vehicle charge points. For example, the Alternative Fuels Infrastructure Regulations 2017.



Date	Revision	Description	Drawn	Checked
07.09.23	C	Updated following highways comments	AB	PW
18.08.23	B	Access surface material updated	AB	PW
15.08.23	A	Amended to clients comments	AB	PW

Project: **The Piggeries, Elm Farm, Somersham Road, Lt Blakenham, IP8 4NF**

Client: **Beechlake Developments**

Drawing Title: **Site Plan as Proposed**

Drawing Number: **PW1284-BR03revC**

Drawing Status: **Building Regs** Drawn By: **AAB**

Scale: **1:200 (at A1)** Date: **Aug 2023**

Peter Wells Architects
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Appendix 4 – Soil Quality Criteria

Soil Quality Criteria		
Analyte	Land Use: Residential with Plant Uptake (1% SOM*)	
Metals	(mg/kg)	Source
Arsenic (Inorganic)	37	LQM/CIEH S4UL
Beryllium	1.7	LQM/CIEH S4UL
Cadmium	11	LQM/CIEH S4UL
Chromium (III)	910	LQM/CIEH S4UL
Chromium (VI)	6	LQM/CIEH S4UL
Copper	2400	LQM/CIEH S4UL
Lead	210	pC4SL (upper bound)
Mercury (Elemental)	1.2	LQM/CIEH S4UL
Mercury (Inorganic)	40	LQM/CIEH S4UL
Nickel	180	LQM/CIEH S4UL
Selenium	250	LQM/CIEH S4UL
Vanadium	410	LQM/CIEH S4UL
Zinc	3700	LQM/CIEH S4UL
TPH	(mg/kg)	Source
Aliphatic EC 5 - 6	42	LQM/CIEH S4UL
Aliphatic EC > 6 - 8	100	LQM/CIEH S4UL
Aliphatic EC > 8 - 10	27	LQM/CIEH S4UL
Aliphatic EC > 10 - 12	130	LQM/CIEH S4UL
Aliphatic EC > 12 - 16	1100	LQM/CIEH S4UL
Aliphatic EC > 16 - 35	1100 (nominal value)	LQM/CIEH S4UL
Aliphatic EC > 35 - 44	1100 (nominal value)	LQM/CIEH S4UL
Aromatic EC 5 - 7 (Benzene)	70	LQM/CIEH S4UL
Aromatic EC > 7 - 8 (Toluene)	130	LQM/CIEH S4UL
Aromatic EC > 8 - 10	34	LQM/CIEH S4UL
Aromatic EC > 10 - 12	74	LQM/CIEH S4UL
Aromatic EC > 12 - 16	140	LQM/CIEH S4UL
Aromatic EC > 16 - 21	1100*	LQM/CIEH S4UL
Aromatic EC > 21 - 35	1100*	LQM/CIEH S4UL
Aromatic EC > 35 - 44	1100*	LQM/CIEH S4UL
Aliphatic + Aromatic EC > 44 - 70	1600*	LQM/CIEH S4UL
PAH	(mg/kg)	Source
Acenaphthene	210*	LQM/CIEH S4UL
Acenaphthylene	170*	LQM/CIEH S4UL
Anthracene	2400*	LQM/CIEH S4UL
Benz [a] anthracene	7.2	LQM/CIEH S4UL
Benzo [a] pyrene (only)	2.2	LQM/CIEH S4UL
Benzo [b] fluoranthene	2.6	LQM/CIEH S4UL
Benzo [ghi] perylene	320	LQM/CIEH S4UL
Benzo [k] fluoranthene	77*	LQM/CIEH S4UL
Chrysene	15	LQM/CIEH S4UL
Dibenz [ah] anthracene	0.24	LQM/CIEH S4UL

Soil Quality Criteria		
Analyte	Land Use: Residential with Plant Uptake (1% SOM [§])	
Fluoranthene	280*	LQM/CIEH S4UL
Fluorene	170*	LQM/CIEH S4UL
Indeno [123-cd] pyrene	27	LQM/CIEH S4UL
Naphthalene	2.3	LQM/CIEH S4UL
Phenanthrene	95*	LQM/CIEH S4UL
Pyrene	620*	LQM/CIEH S4UL
Coal Tar (bap as surrogate)	0.79	LQM/CIEH S4UL
BTEX	(mg/kg)	Source
Benzene	0.087	LQM/CIEH S4UL
Toluene	130*	LQM/CIEH S4UL
Ethylbenzene	47	LQM/CIEH S4UL
Xylenes (O)	60	LQM/CIEH S4UL
Xylenes (M)	59	LQM/CIEH S4UL
Xylenes (P)	56	LQM/CIEH S4UL
Other	(mg/kg)	Source
Asbestos Fibres	<0.01	N/A
Notes: *denotes a nominal concentration less than screening values or a screening value for "with plant uptake" to reduce risk of importing potential hazardous classification soils.		



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