

**Phase 1 Desk Study &
Phase 2 Preliminary Site
Investigation & Risk
Assessment Report**

Project Name: Wealden House

Location: Lewes Road, East Grinstead, West Sussex RH19 3TB

Client: Antler Homes plc

Project ID: J16139

Report Date: 04 December 2025

Report Issue: 1

SUMMARY

The site, which extends to about 1.3Ha, comprises the former EDF Energy building and an adjoining originally residential building, and associated garden, soft landscaping, access and parking areas. It is proposed to redevelop the site with a mixed residential development, consisting of two-storey houses with private gardens and two three-storey apartment blocks, and associated access and parking areas together with areas of soft landscaping.

Geological records indicate the site to be underlain by Ardingly Sandstone Member over Lower Tunbridge Wells Sand, with Wadhurst Clay Formation at depth. The Grinstead Clay Member is mapped overlying the Ardingly Sandstone Member over the far northern corner of the site.

A desk study has been carried out and indicates that the site has a history of residential and commercial use. Large areas of the site are covered by existing buildings and there is significant vegetation across other areas.

An intrusive investigation has been carried out. The soils encountered differed from the mapped geology, and Grinstead Clay was found across the site.

This report provides information to facilitate the discharge of Condition 8 of the planning permission. An existing Phase 1 Desk Study and Phase 2 intrusive investigation report forms the basis of this report (included as Appendix A), and should be read in conjunction with it.

There is evidence of limited soil contamination in the form of elevated concentrations of lead and genotoxic PAHs at one location on the site. An options appraisal and outline remediation strategy, comprising selective excavation and removal of the affected soils, are presented in respect of the known contamination.

The intrusive investigation was subject to various constraints, and some areas with potential contamination risk could not be accessed and have not been fully investigated. The constraints remain, and access to the areas in question can only be achieved once site clearance and demolition have commenced. Proposals are given for further investigation work to be undertaken as demolition proceeds.

A preliminary discovery strategy is also presented.

A final remediation strategy and verification plan will be produced once the results of the further investigation are known, and this will have to be agreed with the regulatory authorities to enable final discharge of Condition 8.

As with any site, areas of contamination not identified during investigation works may come to light during the course of redevelopment. Accordingly, a final discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site.

The presence of contamination may affect the classification of waste soils, or the potential for their re-use.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

It should be recognised that site conditions can vary over time, in response to seasonal variations, prevailing weather conditions or other natural phenomena, and also in response to human activity on or near the site.

This report has been prepared for the sole internal use and reliance of Antler Homes plc and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

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The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd. accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

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For and on behalf of Southern Testing Laboratories Limited

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A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in a copy of our Project Order Form, dated 21st November 2025, which was completed, signed and returned by Jonathan Towell of Antler Homes plc.

2 Location

The site located just to the south of the A22 Lewes Road, northwest of the village of Ashurst Wood, about 2.8 km southeast of East Grinstead Railway Station. The approximate National Grid Reference of the site is TQ 41219 36921. The site location is indicated on Figure 1 within the report included in Appendix A.

3 Proposed Construction

It is proposed to redevelop the site with a mixed residential development, consisting of 35 two-storey houses with private gardens and two three-storey apartment blocks, and associated access and parking areas, together with areas of soft landscaping.

For the purposes of the contamination risk assessment, the proposed development land use is mostly classified as Residential with consumption of Home-grown Produce, with some areas of Public Open Space (residential) CLEA Model Ref [1] / C4SL Report Ref [2].

The gas sensitivity of the proposed development is rated as Moderate (apartment blocks) or High (houses) CIRIA C665 Ref [3].

4 Background and Objectives

The approved planning for the site includes various planning conditions. Condition 8 relates to contaminated land, and states:

Prior to the commencement of development approved by this planning permission (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), the following components of a scheme to deal with the risks associated with contamination of the site, including the identification and removal of asbestos containing materials, shall each be submitted to and approved, in writing, by the local planning authority:

a) A preliminary risk assessment which has identified:

- all previous uses*
- potential contaminants associated with those uses*
- a conceptual model of the site indicating sources, pathways and receptors*
- potentially unacceptable risks arising from contamination at the site*

and unless otherwise agreed in writing by the Local Planning Authority,

b) A site investigation scheme, based on (a) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site;

and, unless otherwise agreed in writing by the Local Planning Authority,

c) Based on the site investigation results and the detailed risk assessment (b) an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.

The objective of this report is to provide information to facilitate the discharge of Condition 8 parts a) and b), and the outline basis for the discharge of part c).

A Phase 1 Desk Study and Walkover and Phase II geotechnical and contamination (risk estimation and evaluation) investigation was carried out at the site in 2024. The report on that investigation forms the basis of this report, and is included as Appendix A.

It should be noted that the earlier investigation did not include any assessment of the potential presence of asbestos or asbestos containing materials within the structures present on the site, and consideration of the same is excluded from this report. Appropriate pre-demolition surveys must be carried out, to ensure that any associated risks can be properly managed.

5 Scope

This report presents an outline remediation strategy, based on the existing site investigation, and details further investigation requirements to enable a detailed remediation strategy to be produced.

As with any site there may be differences in soil conditions between exploratory hole positions and below the depth of investigation. Southern Testing assumes no liability in respect of such differences.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The site investigation has been completed with reference to BS 5930 Ref [4] and BS 10175 Ref [5].

Geotechnical issues are not considered in this report.

It should be recognised that site conditions can vary over time, in response to seasonal variations, prevailing weather conditions or other natural phenomena, and also in response to human activity on or near the site.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

This report has been prepared for the sole internal use and reliance of Antler Homes plc and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

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Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

B EXISTING REPORT

The existing site investigation report is included as Appendix A of this report. The conditions, exclusions and limitations described in that report apply to its use in this report.

The following sections refer to elements of the existing report, for ease of reference and to provide context for this report.

6 Desk Study

A desk study has been carried out. There have been no significant changes on the site or in the surrounding area that are considered likely to affect the findings of the desk study.

7 Intrusive Investigation

The intrusive investigation provides general coverage of the site but was partly restricted by existing site buildings, features, vegetation, utilities and drainage.

7.1 Soils Found

The soils found across the site comprise clay, tending to mudstone with depth, overlain by 300mm to 800mm of made ground or topsoil. The clay soils are thought to be Grinstead Clay bedrock. The superficial soils across the majority of the site area (outside of the existing buildings) comprise made ground, which generally consists of a blacktop surfacing over a granular subbase of mixed composition; predominantly brick, brick and concrete, or crushed limestone. Topsoil is limited to the soft landscaped areas to the rear of the existing buildings (in the southwest corner of the site) and along the southern site boundary, though some may also be present in the densely vegetated area along the northern part of the eastern site boundary.

7.2 Identified Contamination

Samples of the made ground, topsoil, and underlying natural soils were tested.

No significant contamination was found, with the exception of one sample (WLS103 @ 0.5m) where concentrations of lead and genotoxic PAH's were recorded in excess of the screening values for a residential land use including consumption of home grown produce. Relevant pollutant linkages were identified in respect of this material.

The recorded concentration of PAH is not above the threshold for plastic drainage pipes. Water supply pipes should also not be affected, if they are to be laid in the affected area, as these would typically be laid in the clean natural soils at depth, and provided that appropriate precautions are taken during construction to ensure that only clean materials are used to backfill excavations. However, it is noted that some water companies require protective pipework on previously developed sites, regardless of the actual soil conditions.

A marginally elevated concentration of lead, relative to the selected screening criterion, was also recorded in the natural soils at WLS 102. However, this location is within a proposed area of open space, and the measured concentration here (210mg/kg) is below the screening criterion for residential land use without consumption of home grown produce (310mg/kg). Similar concentrations were not recorded elsewhere and, accordingly, this occurrence is not considered further.

It is noted that the investigation was subject to various constraints, and some areas with potential contamination risk could not be accessed. In particular, areas of the site where there has been fuel storage and use (locations of former tanks, generators and related infrastructure), and possible PCB use (locations of sub-stations and transformers) have not been fully investigated.

C OUTLINE REMEDIATION STRATEGY

8 Remedial Objectives

The objective of remediation is to remove or reduce any known risk to acceptable levels, and ensure that the development is safe and fit for purpose. Following remediation, the site shall not be classifiable as 'contaminated land' under part IIA of the Environmental Protection Act. The minimisation of soils waste is an important consideration.

9 Options Appraisal

The known presence of lead and PAHs in excess of their adopted screening criteria, appears restricted to a particular soil horizon that was observed in only one of the exploratory holes. This material may, therefore, be localised. The affected location is at the site of one of the proposed apartment blocks. Any associated soft landscaping is likely to be of limited extent and not for private use. Accordingly, and for the purposes of risk assessment, a land use classification of Residential without consumption of homegrown produce or Open Space (residential) would be more appropriate. Whilst the relevant screening criteria for these land uses are higher than those adopted in the initial assessment, they are still exceeded by the measured concentrations of lead and PAH at WLS 103.

9.1 Known Contamination - Lead & PAH

The risks to human health receptors from lead and PAH could be dealt with by several methods.

In respect of construction and maintenance workers, the use of PPE and safe working practices (minimising disturbance of the soil, creation of dust and the extent and duration of contact with soils) can reduce risk by helping to break the exposure pathways. However, while use of these measures should be considered as part of good practice in construction and maintenance, they typically are looked upon as a measure of last resort and need to be used in combination with other measures. Neither are such measures appropriate for future site users (residents).

A robust minimisation of the risk can be achieved by either removing or modifying the source of the hazard, or managing the exposure pathways. Removal of the source by careful selective excavation of affected soils and subsequent off-site disposal to an appropriately licensed facility is capable of reducing/eliminating the risk to human health receptors. This would only be required for soft landscaping areas, as hard cover such as buildings, access roads, parking areas etc. will break the exposure pathways. Within soft landscaping areas, the exposure pathways can be modified or broken by placement of clean material and/or impermeable cover over the affected soil. Depending on the stage of construction at which such work was undertaken, such measures could mitigate risks to site workers as well as future site users.

Imported soils would only be needed for areas of the site proposed as soft landscaping.

Off-site disposal of contaminated soils and importation of clean materials place additional demands on aggregate resources and waste disposal capacity, and both require significant road haulage. Use of these remediation methods therefore requires that the quantities involved be minimised to ensure the approach remains sustainable in respect of resources, energy and traffic impacts.

An approach combining targeted source removal and replacement with clean material, confined to proposed soft landscaping areas in the affected location, with carefully considered safe working methods for construction, is considered most likely to be effective and sustainable in respect of the known contamination.

9.2 Unknown Contamination

Some areas of the site have not been fully assessed. These include, in particular, areas that may be affected by potential petroleum hydrocarbon or PCB contamination, and also the area of the site beneath the footprint of the existing buildings. It is not possible to assess options for managing any associated contamination at this stage. However, given the low permeability of the Grinstead Clay bedrock underlying the site, it is considered likely that any mobile phase contamination will be fairly localised, and dealt with by targeted excavation. The proposed assessment of these areas is discussed in part D of this report.

9.3 Gardens and Other Soft Landscape Areas

Whilst the investigation has not found significant contamination of the superficial soils across the site, these materials generally comprise made ground, which typically consists of a blacktop surfacing over a granular subbase of mixed composition; predominantly brick, brick and concrete, or crushed limestone. As such, these materials are not a suitable growing medium. Accordingly, these materials will have to be removed from proposed gardens and soft landscaping areas and replaced with an appropriate thickness of suitable soils, if a natural planting environment is to be provided. The alternative would be to provide permanent hard cover.

The existing topsoil in the south western part of the site, and the Grinstead Clay bedrock that has been found to underlie the site have been found to be free from significant contamination. Space on the site is limited, but stripping and storage of the topsoil prior to demolition, and careful segregation and management of arisings from groundworks would maximise retention of clean soils on the site, for re-use.

10 Remediation Strategy

The Remediation Strategy, based on the known site conditions as described in this report, will comprise the following:

Location	Details
Area A (see figure 1, Appendix B) – Soft landscaping abutting Block 2	Excavation and removal of lead and PAH impacted soils, and replacement with suitable clean soils.
Private garden areas	Excavation and removal of up to 600mm of Made Ground. Where the Made Ground is thinner, only the Made Ground will be removed; this is anticipated to be the case across much of the site. Placement of up to 600mm of clean soil, depending on finished levels, including a minimum of 100mm topsoil.
Soft landscaping areas	Excavation and removal of Made Ground. For grassed areas or areas where planting of small or shallow rooted species is planned, a lesser thickness of soil may be sufficient, in which case 450mm of the Made Ground will be removed. Where the Made Ground is thinner, only the Made Ground will be removed. Replacement with clean soil, depending on finished levels, including a minimum of 100mm topsoil.
Houses	No special precautions required at this stage – to be reviewed following further investigation.
Buried Services	No special precautions required at this stage – to be reviewed following further investigation, and subject to local water company requirements.

11 Assessment Criteria

The following assessment criteria values will be used in the verification process.

It may be necessary to import some soil, particularly topsoil, to complete garden and soft landscaped areas. Imported soils shall be free from deleterious materials, weeds and contamination. Imported topsoil to be used will be tested in accordance with the appropriate BS Specifications for Topsoil (BS 3882:2015) and the analysis shall also comply with the values given for the relevant land use in the table in Appendix C. Any other soils to be imported shall comply with the values given in the table in Appendix C and shall also be free from deleterious materials and weeds. The values in the table are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

Certificates for imported soils must include details of the source, description of the material, and dates of sampling and analysis, as well as the test results for potential contaminants. The date of sampling and analysis must relate to the material imported. Associated consignment notes must clearly identify the source material, and must correspond to the certified material.

D FURTHER INVESTIGATION & DISCOVERY STRATEGY

12 Further Investigation

As noted above, the intrusive investigation was subject to various constraints, and some areas with potential contamination risk could not be accessed, and have not been fully investigated. The constraints remain, and access to the areas in question can only be achieved once site clearance and demolition have commenced. Accordingly, it is proposed that the further investigation work be undertaken as demolition proceeds. The various areas are tabulated below, together with the investigation and assessment proposals. The areas are shown on figure 2 in Appendix B.

Area	Description	Proposed investigation
B	Densely vegetated area along the northern part of the eastern site boundary	Shallow excavations to assess soils present, including possible topsoil. Testing of, say, three samples of topsoil (if present), and underlying soils for general contamination, as in the original investigation.
C	Former substation enclosure (brick)	Shallow excavations to sample soils from beneath the enclosure for analysis for PCBs. If the base of the enclosure has a solid concrete slab, then samples will be taken from around the margins of the slab, where any PCB containing fluids might have run off.
D	Substation enclosure (fibreglass)	Shallow excavations to sample soils from beneath the enclosure for analysis for PCBs. If there is a solid concrete slab beneath the enclosure, then samples will be taken from around the margins of the slab, where any PCB containing fluids might have run off.
E	Below-ground fuel storage tank. The condition of the tank is not known but it may have been concrete filled.	Inspection and sampling of soils from the sides and base of the tank excavation, for analysis for petroleum hydrocarbons (speciated).
F	Below-ground duct work, and generator locations associated with area E fuel tank.	Inspection and sampling of the soils from around the ducts and below the generator sites, for analysis for petroleum hydrocarbons (speciated)
G	Location of former above-ground fuel tank, associated with containerised generator.	Shallow excavations and sampling of the shallow soils in the area of the former location of the tank, for analysis for petroleum hydrocarbons (speciated)
H	Historical well location, as indicated on the historical mapping. Precise location is not known	Excavation of shallow trenches across the area to identify the location, if possible, and any remedial requirements.

A detailed remediation strategy and verification plan will be prepared, once the results of the additional investigation are known. In accordance with Condition 8 part c) of the approved planning, this must be agreed with the regulatory authorities. The findings of the investigation may also form part of the Verification Report.

13 Discovery Strategy

As with any site, areas of contamination not identified during site investigation works may come to light in the course of redevelopment. Accordingly, and in addition to the investigation works described above, a discovery strategy will be adopted site-wide to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner, as follows:

- A close watch will be maintained during all demolition and excavation works.
- In the event that unexpected or malodorous soils or liquids are encountered, excavation work shall cease in the affected area.
- The affected area shall be made safe and fenced off to prevent unauthorised access.
- The Site Manager shall notify Southern Testing Laboratories Limited of the discovery, who will attend site to inspect the suspect materials, provide advice and take samples as necessary. Contact details to be provided.
- The Site Manager shall notify Mid Sussex District Council of the discovery. Within MSDC, the Environmental Protection Team shall be the first point of contact.

Any suspect excavated soil will be stockpiled separately on polythene sheeting, covered, and tested to determine either its suitability for retention on site or classification for disposal.

14 General Guidance

Allowance should be made for experienced verification of any remedial works.

It may be that specific local requirements apply to this site, of which we are not aware at this time.

In general terms, the workforce and general public should be protected from contact with contaminated material. There is a range of relevant documents published by the Health and Safety Executive, and organisations such as CIRIA, and the BRE.

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REFERENCES

- [1] Environment Agency, "Updated technical background to the CLEA model," 2009.
- [2] Contaminated Land: Applications in Real Environments (CL:AIRE), "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination," 2014.
- [3] CIRIA, "C665 Assessing risks posed by hazardous ground gases to buildings," 2007.
- [4] BSI Standards, "BS 5930 Code of practice for ground investigations," 2015.
- [5] BSI Standards, "BS10175 Investigation of potentially contaminated sites – Code of practice," 2013.

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APPENDIX A

Site Investigation Report

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A

**Phase 1 Desk Study &
Phase 2 Site
Investigation & Risk
Assessment Report**

Project Name: Wealden House

Location: Lewes Road, East Grinstead, West Sussex RH19 3TB

Client: Octagon Developments Ltd.

Project ID: J15778

Report Date: 14 October 2024

Report Issue: 2

SUMMARY

The site is located just to the south of the A22 Lewes Road, northwest of the village of Ashurst Wood, about 2.8 km southeast of East Grinstead Railway Station. The development site comprises the former EDF Energy office block and surround hardstanding / landscaped areas, as well as the adjoining property to the north / north west and garden areas to the rear (south west). It is understood that the site boundary encompasses areas of woodland to the south that extend downslope into the valley, although these areas are not covered by this ground investigation report.

It is understood that it is proposed to construct 35 No. two-storey houses with private gardens, and 2 No three-storey blocks of apartments, with areas of soft landscaping, access and parking.

A previous desk study has been carried out and indicates that the site has a history of residential and commercial use. Large areas of the site are covered by existing buildings and there is significant vegetation across other areas.

The agreed scope of work did not allow for either a preliminary or detailed UXO risk assessment, however, it is advised that the risk is considered further prior to demolition or intrusive groundworks activities commencing.

The British Geological Survey Map indicates that the site geology consists of Ardingly Sandstone Member over Lower Tunbridge Wells Sand over Wadhurst Clay Formation. The Grinstead Clay Member is mapped overlying the Ardingly Sandstone Member over the far northern corner of the site.

However, the site has been subject to two previous phases of intrusive investigation by Southern Testing in 2018 and 2021. The soils encountered were not as anticipated based on the mapped geology. The Grinstead Clay Member which overlies the Ardingly Sandstone Formation appears to be more extensive and provides a covering of firm to stiff Clays, which tend to Mudstones with depth across the site. These soils are underlain by very weak to medium strong Sandstone, which could be the Ardingly Sandstone Formation, over poorly cemented Sandstone and Sands, which may be the Lower Tunbridge Wells Sand Formation.

A single phase of intrusive investigation was carried out. Exploratory hole locations were positioned to provide general site coverage, although it is noted that the spread of locations was partly restricted by existing site buildings, features, vegetation, utilities and drainage. Additional investigation will be required during or following demolition once access to the entire site is available.

The soils encountered comprised superficial Made Ground overlying soft to firm, tending stiff to very stiff Clay, silty Clay and clayey Silt. Thin or thick laminations of fine Sandstone or Siltstone were commonly encountered. The soils were seen to be iron stained in parts. Mudstone was encountered towards the base of some boreholes across the northern part of the site.

Groundwater was not encountered and is assumed to be at some depth below the site.

Conventional foundations and piled foundations would both be appropriate for this site. Given the previous use, there are areas where soils will be significantly disturbed during demolition and the removal of existing foundations/structures. An allowable bearing capacity of 110 kN/m² is recommended for conventional foundations within the firm the stiff clays. A number of areas will require foundation deepening due to the presence of weaker soils and trees/vegetation. NHBC High Volume Change Potential precautions will apply.

The sulphate content of the fill and shallow natural soil was found to fall within Class DS-1. The ACEC classification for the site is AC-1.

Suspended floor slabs are advised.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

The existing topsoil on site is considered suitable for reuse in private garden and soft landscaped areas.

There is evidence of a hotspot of Lead and more general PAH contamination within the Made Ground, which in addition, given its physical composition, should be removed from all private garden and soft landscaped areas, down to the underlying natural soils. The made ground soils are suitable to remain on site beneath proposed building and hardstanding areas (roads, car parking etc).

An allowance should be made for the further investigation, and potentially local excavation and removal of petroleum hydrocarbon affected soils, around former tanks, generators and related infrastructure. These works will need to be validated at that stage.

Further investigation is also required beneath the substations for any PCB contamination, once these features have been decommissioned and access is available.

Organic contaminants present in some of the soils, particularly PAH's and petroleum hydrocarbons, could affect plastic underground service pipes (such as the types used by water and gas supply companies). Guidance should be sought from the relevant companies regarding any proposed plant in the affected area. Many water supply companies now require higher specification pipe on contaminated sites, even following remediation.

An historical well was mapped on site. This location should be the subject of investigation and/or formal decommissioning.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

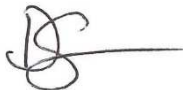
As with any site, areas of contamination not identified during investigation works may come to light during the course of redevelopment. Accordingly, a discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site. The presence of contamination may affect the classification of waste soils, or the potential for their re-use.

A formal remediation strategy and verification plan should be agreed with the regulatory authorities prior to commencement of any remedial works.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Octagon Developments Ltd. and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

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Author	Sarah Toms BSc (Hons) MSc MEnvSc PIEMA	
Author	Dan Spearman BEng (Hons) ACSM MSc CGeol FGS EurGeol RoGEP	
Check / Review	Jon Race BSc MSc CGeol FGS	

For and on behalf of Southern Testing Laboratories Limited

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APPENDIX I

Classification of Consequence

A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in a copy of our completed Project Order Form, which was signed and returned by Lewis Jones, on behalf of Octagon Developments Ltd. This is on the basis of our proposal and cost estimate (Ref Q240903-2) dated 11th July 2024.

2 Location

The site is located just to the south of the A22 Lewes Road, northwest of the village of Ashurst Wood, about 2.8 km southeast of East Grinstead Railway Station.

The development site comprises the former EDF Energy office block and surround hardstanding / landscaped areas, as well as the adjoining property to the north / north west and garden areas to the rear (south west).

It is understood that the site boundary encompasses areas of woodland to the south that extend downslope into the valley, although this area is not covered by this ground investigation report.

The approximate National Grid Reference of the centre of the site is TQ 41219 36921. The site location is indicated on Figure 1 within Appendix A.

3 Proposed Construction

It is understood that it is proposed to construct 35 No. two-storey houses with private gardens, and 2 No three-storey blocks of apartments, with areas of soft landscaping, access and parking.

A proposed layout plan has been provided and is included within Appendix A as drawing Dng. 2053_005 B

For the purposes of the contamination risk assessment, the proposed development land use is classified as Residential with consumption of Home-grown Produce CLEA Model Ref [1] / C4SL Report Ref [2].

The gas sensitivity of the proposed development is rated as High CIRIA C665 Ref [3].

4 Object

The site was the subject of previous Phase 1 and Phase 2 investigations completed by Southern Testing for Ashgrove Homes Ltd. in April 2018 and September 2021. Due to contractual arrangements it is understood that this earlier information cannot be provided to Octagon Developments Ltd. and hence a new investigation has been completed.

This is a Phase 1 Desk Study and Walkover and Phase 2 geotechnical and contamination (risk estimation and evaluation) investigation (Tier 1).

The object of the ground investigation was to assess foundation bearing conditions and other soil parameters relevant to the proposed development, and to assess the likely nature and extent of soil, groundwater and soil gas contamination on the site.

5 Scope

This report presents our desk study findings, exploratory hole logs and test results and our interpretation of these data.

A UXO risk assessment was not requested within our brief for the investigation.

As with any site there may be differences in soil conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The site investigation has been completed with reference to BS 5930 Ref [4] and BS 10175 Ref [5].

Waste Classification of soils has not been included within the brief for the investigation.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Octagon Developments Ltd. and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

B DESK STUDY AND WALKOVER SURVEY

6 Desk Study

A Phase 1 Desk Study has been carried out. Reference has been made to the following information sources.

- Online Geological Maps Ref [6] & Ref [7]
- Aerial Photographs
- Historical Ordnance Survey Maps
- Environmental Databases
- BGS Online Historical Borehole Records Ref [8]
- Search on Local Authority Planning Portal for planning history
- Gov.UK Website Flood Risk Ref [9]
- UK Radon Ref [10] and BRE Radon Ref [11]

The environmental databases search report compiled for this desk study contains site-specific environmental data drawn from data sets that comprise publicly available information together with data from third parties, some of which is under review. Accordingly, Southern Testing Laboratories Limited does not warrant its accuracy, reliability or completeness.

The full report is included in Appendix G and H, a summary of the salient features is included in the following sections of this report.

6.1 Geology

The British Geological Survey (BGS) Map No. 303 (Tunbridge Wells) indicates that the site geology consists of Ardingly Sandstone Member over Lower Tunbridge Wells Sand over Wadhurst Clay Formation. The Grinstead Clay Member is mapped overlying the Ardingly Sandstone Member over the far northern corner of the site.

An extract from the BGS 1:10,560 geological map dating from 1966 is also presented within Appendix D as Figure G1. This identified 'craggs of massive sandstone' outcropping on the slopes to the south and southwest of the site within an area identified as 'Blunds Hole'. These are presumably associated with the Ardingly Sandstone Member.

6.1.1 Grinstead Clay Member

The Grinstead Clay Member comprises grey to greenish grey mudstones, commonly very silty with subordinate thin beds of siltstone, nodular clay ironstone and shelly limestone. Rootlet horizons and plant-rich beds can be common.

Over part of its outcrop the member is divided by a bed of calcareous sandstone, the Cuckfield Stone Bed, into the informally named lower and upper Grinstead Clay. In places, the Cuckfield Stone Bed cuts out the lower Grinstead Clay entirely and rests directly on the underlying Ardingly Sandstone Member.

6.1.2 Ardingly Sandstone Member

The Ardingly Sandstone Member comprises the highest unit of the Lower Tunbridge Wells Sand Formation. The Ardingly Sandstone is typically a fine to medium grained massive cross-bedded sandstone. This sandstone is harder than most of the other Wealden strata and has formed numerous bluffs and crags in and around Tunbridge Wells, Uckfield, Ardingly and East Grinstead.

An important feature of the sandstone is that it is subject to "cambering". On and near steep hill slopes cracks and fissures have been formed because of movement in the underlying Wadhurst Clay. These are usually in two directions, parallel to, and at right angles to, the line of the escarpment, and range from a few mm wide, to a metre wide, or more. The fissures are often infilled with silt but are occasionally open (voids), and they can present significant difficulties to development on affected sites

6.1.3 Lower Tunbridge Wells Sand Formation

This formation can be divided into two members over much of its area. The lower member consists of interbedded silts and fine silty sandstones that were laid down at the outermost part of the Tunbridge Wells Sand delta, as it encroached on the Wealden Lake.

The upper member consists of a massive cross-bedded fine and medium grained sandstone called the Ardingly Sandstone. This sandstone is harder than most of the other Wealden strata and has formed numerous bluffs and crags in and around Tunbridge Wells, Uckfield, Ardingly and East Grinstead. It gives rise to most of the many short sharp steep hills in the area.

An important feature of the sandstone is that it is subject to "cambering". On and near steep hill slopes cracks and fissures have been formed because of movement in the underlying Wadhurst Clay. These are usually in two directions, parallel to, and at right angles to, the line of the escarpment, and range from a few mm wide, to a metre wide, or more. The fissures are often infilled with silt but are occasionally open (voids). There have been instances of the fissures opening up after soakaways have been installed.

6.1.4 Wadhurst Clay Formation

The Wadhurst Clay Formation comprises dark grey thinly-bedded shales and mudstones with subordinate beds of pale grey siltstone, fine grained sandstone, shelly limestone, clay ironstone and rare pebble beds. At the top of the sequence a red hematite stained stiff clay is present. These mudstones weather to stiff brown clays.

Wadhurst Clay is often found to line the valley bottoms in Tunbridge Wells Sand areas and may be distorted by valley bulging. Spring lines are commonly found at the junction between the two formations and land instability can be a concern.

6.2 Historical Borehole/Well Records

A search of previous exploratory hole records both from the online British Geological Survey (BGS) database [8] and Southern Testing in-house records, revealed three BGS records approximately 470m to the north east of the site and three STL records within the near vicinity of this site. Copies of some of these are included in Appendix D. Further discussion is given below.

BH Reference	Approximate Final Depth (mbgl)	Approximate Distance from site (m) & Direction	Remarks
TQ43NW9		430m NE	Historic well record for Ivydene Laundry in Ashurstwood dated February 1967. This is mapped as Lower Tunbridge Wells Sand Formation. The well log indicates Made Ground and Clay to a depth of 12ft (3.6m). This is underlain by Sandstone and Sand (part of the Lower Tunbridge Wells Sand Formation) to a depth of 19ft (5.79m) The underlying Wadhurst Clay Formation was then encountered to a depth of 82ft (24.99m). This is recorded as comprising blue Clay and sandy Clay. Sand and Sandstone horizons (Sand and Sandstone within the Wadhurst Clay Formation) is recorded between a depth of 82 - 100ft (24.99 - 30.48m). Fine brown 'blowing sand' is noted. A rest water level of 25ft (7.62mbgl) is indicated.
TQ43NW10	32.91	430m NE	This records also related to a well at Ivydene Laundry in Ashurstwood dating from December 1942. This is mapped as Lower Tunbridge Wells Sand Formation. The well log indicates horizons of Clay over Sand and Sandstone to a depth of 62ft (18.89mbgl), part of the Lower Tunbridge Wells Sand Formation. The underlying Wadhurst Clay Formation was encountered to a depth of 108ft (32.91mbgl) and comprised horizons of Clay and Sandstone. A rest water level of 49ft (14.93mbgl) is indicated.
TQ43NW11	30.48	430m NE	This records also related to a well at Ivydene Laundry in Ashurstwood dating from November 1952. This is mapped as Lower Tunbridge Wells Sand Formation. The well log indicates interbedded Sand and Sandstone to a depth of 100ft (30.48mbgl), part of the Lower Tunbridge Wells Sand Formation. Clay is indicated below this depth - presumably the Wadhurst Clay Formation? A rest water level of 32ft (9.75mbgl) is indicated.
STL J3636	0.9/1.0	90m N	The site off Windmill Land in Ashurstwood is mapped on the Grinstead Clay Member and the investigation was concerned with swelling and shrinkage associated cracking to an existing property. The soils encountered generally comprised blue grey and orange brown silty CLAY to a depth of 0.9 /1.0mbgl. No groundwater data was provided.
STL J3422	6.0	90m N	The site off Windmill Land in Ashurstwood is mapped on the Grinstead Clay Member and the investigation was concerned with swelling and shrinkage associated cracking to an existing property. The soils encountered comprised a succession of firm becoming stiff, grey and grey brown, plastic CLAY with interbedded with friable shaley Siltstone and Sandstone.
STL J13397	2.60/5.45	On site	Previous investigation completed by Southern Testing across the eastern part of the site (former EDF site) for Ashgrove Homes Ltd. in April 2018.

BH Reference	Approximate Final Depth (mbgl)	Approximate Distance from site (m) & Direction	Remarks
			The boreholes encountered a variable covering of MADE GROUND to a depth of 0.38/0.9mbgl. This was underlain by firm to stiff, becoming very stiff, fissured, yellow brown, orange brown, silty, plastic CLAY to 1.2/3.2mbgl, over stiff to very stiff fissured yellow brown, orange brown, brown and grey brown CLAY with occasional interbedded, extremely weak, thinly laminated, Mudstone, Siltstone and Sandstone, to depths of 2.6+/5.45m+. Seepages were noted within the exploratory holes.
STL J14847	2.5/20	On site	A second phase of investigation was completed by Southern Testing on the subject site for Ashgrove Homes Ltd. in April 2018 to provide complete coverage of the EDF site and adjoining site area to the north / north west. The boreholes encountered superficial MADE GROUND to 0.20/1.2mbgl, overlying firm to stiff CLAY, which tended to MUDSTONE with depth at around 2.5/6.3mbgl, overlying very weak to medium strong SANDSTONE and poorly cemented SANDSTONE and SAND to depths of 2.5+/20+mbgl. Seepages were noted within the exploratory holes.

Other BGS records are located approximately 410m southeast within the Lower Tunbridge Wells Sand Formation (Mudstone) and approximately 845m to the southwest of the site. The first record is not available for viewing. The second record is within the Wadhurst Clay, and so has not been considered based on the differing geological setting and topography.

As discussed within Section 6.6 of this report, the review of historic OS mapping dating from 1899 has identified a well on the central north western part of the site. No records for this structure have been located to date.

6.3 Geological Hazards and Mining Activities

Data from various sources relating to potential geological hazards at the site are summarized below. The Hazard Potentials listed for the BGS data are as presented in the Envirocheck report, derived from various generic BGS sources, **which are not considered as site-specific**. It is important that this information is considered in context of the actual site topography, ground conditions encountered during future investigation, and development proposals.

Data Source	Hazard	Hazard Potential to Site	Remarks
BGS	Potential for Collapsible Ground Stability Hazard	Very Low	As discussed within Section 6.2 above, historic ground investigations have shown that the soils across the site vary from those mapped by the BGS. Hence, this information should be treated with caution and must be considered in context of the actual site topography and ground conditions encountered.
	Potential for Compressible Ground Stability Hazard	No Hazard	
	Potential for Ground Dissolution Stability Hazard	No Hazard	
	Potential for Landslide Ground Stability Hazard	Low	
	Potential for Running Sand Ground Stability Hazard	Very Low	

Data Source	Hazard	Hazard Potential to Site	Remarks
	Potential for Swelling or Shrinkage Clay Ground Stability Hazard	Very low	
	Shallow Mining Hazard	Very low Risk	Given the mapped geology, small localised working of the Lower Tunbridge Wells Formation should be anticipated. BGS recorded mineral sites record one site within 250m of the site, an opencast working, operations are recorded as having ceased.
	BGS recorded mineral site	No Hazard	The closest record is for Luxford's Wood, 153m to the west of the site and was for the opencast mining of sandstone.
ARUP [Ref [12]]	Mining Instability	No Hazard	No records within 250m of the site.
CSS [Ref [13]] KURG [Ref [14]]	Underground Openings	No Hazard	No records within 250m of the site.
PBA	Natural & Mining Cavities	No Hazard	The closest record to the site is 892m to the southeast – gulls/fissures due to cambering

6.4 Radon Risk

With reference to the Envirocheck report, UK Radon Ref [10] and BRE Radon Ref [11] guidance: no radon protection is required on this site.

6.5 Hydrology and Hydrogeology

Data from the Environment Agency and other information relating to controlled waters is summarised below.

Data		Remarks	Possible Hazard to/from Site (Y/ N)
Aquifer Designation	Superficial Deposits	None mapped on site.	N
	Bedrock	Ardingly Sandstone/Lower Tunbridge Wells Sand Formation: Secondary Aquifer – A Wadhurst Clay: Unproductive Strata	Y N
Groundwater Vulnerability		High Vulnerability – Secondary A Aquifer in the Ardingly Sandstone/Lower Tunbridge Wells Sand Formation	Y
Abstractions	Surface Water	None listed within the Envirocheck report within 500m of site.	N
	Groundwater	None listed within the Envirocheck report within 500m of site.	N
Source Protection Zones		None listed for the site.	N
Surface Watercourses		An unnamed stream which feeds into the River Medway 165m to the south of the site.	N
Groundwater Flood Risk		Stated as being at limited risk within Envirocheck report	Y

Data	Remarks	Possible Hazard to/from Site (Y/ N)
Surface Water Flood Risk*	Small areas on the north and south of the site are shown as being at Low to Medium risk.	Y
Marine / Fluvial Flood Risk*	The site is not shown within/adjacent to an area mapped as being at risk.	N
Reservoir Flood Risk*	The site is not shown within/adjacent to an area mapped as being at risk.	N
Discharge Consents	The closest discharge consent to the site is 63m to the west; for the discharge of final/treated sewage effluent (not water company) from a single domestic property, to land/soakaway	N

* These sections are provided for information only, this report does not constitute a formal flood risk assessment and specialist advice should be sought in relation to potential flooding issues.

The site is mapped as being underlain by the Ardingly Sandstone Member over the Lower Tunbridge Wells Sand Formation which are designated as Secondary A aquifers. These soils comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. In terms of groundwater vulnerability, the associated soils are of Intermediate Leaching Potential and can possibly transmit a wide range of pollutants.

The underlying Wadhurst Clay Formation is designated as Unproductive Strata. These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. Hence, the site is not located within a Source Protection Zone and no abstractions have been identified within a 500m radius.

Given the topography of the site, which falls to the south, south east and south west, the nearest discharge consents are generally located downslope of the site, and are not considered to pose a risk to the subject site.

Based on the elevation of the site and the surrounding topography, groundwater flow is likely to be towards the south. As may be anticipated, spring lines are mapped on the 6 inch geological sheet, outcropping down slope on the interface with the underlying Wadhurst Clay Formation.

6.6 Historical Ordnance Survey Maps

Copy extracts of historical Ordnance Survey plans dating from 1874 to 2024 were obtained and are presented in Appendix G. A summary of the salient features is presented below.

The earliest available OS map extracted dated 1874 shows the west side of the site occupied by a single, large, detached house and its associated garden. A well is marked just to the front of the house. The east side of the site comprises undeveloped land. By the 1910 mapping the house on the western part of the site appears to have been redeveloped or enlarged, and is now named Cuttens; whilst the east of the site remains undeveloped. The well is no longer denoted on the mapping.

By 1964/65 the house has been significantly extended on its eastern edge, otherwise the site generally remains unchanged.

The existing EDF energy offices building is present adjoining the house, which is still labelled as Cuttens, on the 1973 map extract. An electricity substation is shown on the north eastern part of the site. By 1979 the building is labelled as Wealden House. The site then appears to remain unchanged up until the present day.

The surrounding area appears to have a similar history of use as the site, with gradual development for residential use (low density, detached houses with gardens) along Lewes Road.

6.7 Environmental Databases

Data Source	Distance (m)	Direction	Details	Possible Hazard to Site (Y/N)
Historical Industrial Land Use (within 250m of the site)	0 149 231	- W E	Electricity substation (1979) General quarrying (1899) Leather tanning & dressing (1878)	Y N N
Current Industrial Land Use	-	-	None listed within 250m of the site	N
Current and Historical Landfills (within 250m of the site)	359	NE	Historic landfill record (refs EAHLD19178 & WD27/91). The site is indicated to be located off Ivy Dene Lane. No further information given.	N
Potentially Infilled Land (within 250m of the site)	149	W	Unknown filled ground- pit, quarry etc. (1980)	Y
Fuel Sites	-	-	None listed within 1km of the site.	N
Pollution Incidents	-	-	None listed within 500m of the site	N
IPPC/LAPPC Authorisations	-	-	None listed within 1km of the site.	N
Hazardous Substances Consents	-	-	None listed within 1km of the site.	N
Sensitive Land Uses (within 250m of the site)	0 128 154 236	- S W NE W	Blunds Hole – ancient & semi-natural woodland Chance Coppice – ancient & semi-natural woodland Berry Wood – ancient & semi-natural woodland Luxfords Wood – ancient & semi-natural woodland	Y N N N

The historical mapping denotes an electricity substation on the northern part of the site. Polychlorinated biphenyls (PCBs) were often used as coolant fluids in cables associated with substation and other electrical installations of this age. Often dissolved in petroleum oils, they are persistent organic pollutants in the environment. Therefore, there is a potential risk to the site from the presence of the substation.

An area of potentially infilled ground has been identified approximately 149m to the west of the site. From the historical mapping a small quarry working or earthworks feature is shown in this location in 1899. By 1910 the area is shown as wooded, and by 1979 it is not defined. The greatest off-site risk from areas of potentially infilled ground is from the generation and migration of ground gases (methane and carbon dioxide). This potential risk is considered further in Section 6.9 below.

The wooded area to the south of the site comprises Blunds Hole, an ancient & semi-natural woodland. Therefore, there are likely to be constraints on the extent of any intrusive investigation works in this area (if required).

6.8 Planning Application History

A search of Mid Sussex District Council's planning website¹ listed 29 no. planning applications for the site. These applications comprised thirteen separate applications for alterations to the existing buildings and car parking areas, five applications for the siting of security huts/Portakabins, four applications for siting telecoms masts, four applications for signage and three applications for redevelopment of the site for residential use.

None of the applications listed indicate any potentially contaminative uses having taken place on the site.

¹ [001PEGKTBU000 | Wealden House Lewes Road Ashurst Wood West Sussex RH19 3TB \(midsussex.gov.uk\)](https://www.midsussex.gov.uk/) – accessed 17th July 2024

6.9 Ground Gas Risk

There is an historic landfill listed 359m to the northeast of the site, on Ivy Dene Lane. However, this area is not considered to pose a risk to the subject site from the migration of ground gases. The 1:10,000 scale 1980 map extract shows a possible small depression to the rear of a workshop/industrial building, likely resulting from the redevelopment of this site between the early 1960s and 1980. This depression does not appear to be shown on the 1999 mapping. Given the size and location of this area, which is relatively inaccessible, it is very unlikely to have been used for the deposition of domestic waste. It is more likely that illegal dumping (possibly from the adjacent industrial site) has occurred. The volume of material deposited would appear to be relatively small, and given it is unlikely to include significant amounts of domestic waste, the potential ground gas generation is considered low.

There are further areas of potentially worked ground (around 200m to the northeast of the site), shown on the historical mapping between 1874–1931. Given the relatively remote location of these features, which are not labelled as workings/pits or quarries, it is considered very unlikely they were backfilled as landfill sites.

There is also an area of potentially infilled ground is present 149m to the west of the site. However, given the small size of this feature, which is shown on the OS mapping as a quarry in 1899, but appears disused by 1910, and is no longer shown by 1979, it is not considered to pose a risk with respect to the generation and migration of ground gases.

Therefore, on the basis of the above, the risk to the site from the potential generation and migration of ground gases is considered negligible.

6.10 UXO Risk Management

The possibility of unexploded ordnance (UXO) being encountered on a site falls within the category of a potentially significant risk and should be addressed as a legal duty under the Construction (Design and Management) Regulations by the Client as early as possible in a project.

The CIRIA publication C681 Ref [15] has been developed to provide a consistent framework for the management of potential risks posed by UXO during site investigation and groundwork phases of construction. The process adopts a tiered approach, divided into four distinct stages; Preliminary risk assessment, Detailed risk assessment, Risk mitigation and Implementation.

The agreed scope of work did not allow for either a preliminary or detailed UXO risk assessment, however, it is advised that the risk is considered further prior to demolition or intrusive groundworks activities commencing.

6.11 Other Information Sources

As previous noted, the site has been the subject to two phases of intrusive investigation, undertaken by Southern Testing in April 2018 (EDF site) and September 2021 (whole site). The following factual information is provided based on previous site observations, discussions with EDF at that time and the findings of our site works. The reader is referred to the original reports for more detailed information.

6.11.1 Drawings Provided by EDF (2018)

The eastern part of the site was historically operated by EDF Energy. During our initial investigations in 2018, they provided a number of drawings highlighting features on site. Copies of these drawings are included within Appendix A and referenced below.

- WEA.539.AB.01 - As-Built Line Drawing
- WEA.REC.ENV.01 - Existing Drainage Plan
- WEA-ALL-TS-IP-R00 – Wealden House HSE Isolation Points Site Plan
- WEA-ALL-TS-UM-R00 – Wealden House HSE Meter Locations Site Plan

The base mapping used for the drawings (WEA-ALL-TS-IP-R00 and WEA-ALL-TS-UM-R00) which are dated 18/05/2010, identify structures across the south eastern corner of the EDF site, which include carports, a generator building, fuel tank and generator.

A radio mast and telecom porta cabin together with a second generator are shown off the southern edge of the main building.

The other two plans (WEA.539.AB.01 and WEA.5393ENV.01) dated June 2010 use different base mapping and show the above structures to the southeast to have been removed and the carpark extended.

6.11.2 Site Observations (2018)

Key observations from our walkover survey and discussions with the site operator (EDF) in 2018 are listed below.

- The office block on the eastern part of the site had been operated by EDF as a disaster recovery centre for a period of about 10 years leading up to 2018. It had also provided some administration services. It was now vacant.
- A brief walkover survey of the internal ground floor areas was undertaken. This generally comprised office and canteen space. However, three plant rooms were identified at the southern end of the building. Two contain large Uninterruptible Power Supply (UPS) units, together with Uninterruptible Power Supply (UPS) battery farms. The third plant room area housed compressed air plant.
- A large external generator and above ground fuel tank was located on the south eastern corner of the main building. The generator was housed within a structure and access was not possible. The tank was double skinned and has a capacity of 3400 litres. It was approximately half full at the time of our walk over survey.
- A 35m high communications mast was located just off the south western corner of the building together with a portacabin type building which was understood to house the communications plant and equipment (operated by EE, formerly Orange Personal Communications Ltd). No access was available within the portacabin at the time of our walkover survey.
- A large air conditioning / cooling plant area was located off the southwest corner of the building. This is understood to have serviced the servers / data centre plant and equipment as part of the disaster recovery use. The plant is understood to comprise Turbo Chill™ and Turbo Chill™ Free Cool units manufactured by Airedale Ltd. From literature on their website these are understood to use a low GWP refrigerant, R1234ze which is in a gaseous form, so were thought unlikely to pose a contamination risk to the ground. (Where possible, this should be confirmed with EDF or the manufacturer). The plant area is surrounded by a 5m high timber acoustic fence and set on a concrete floor slab and so access was partly restricted.
- Further air conditioning plant and equipment was noted on the roof of the main building, and to the rear of the building on the grassed area on the western boundary.
- The majority of external areas around the main building comprised tarmac hardstanding used for car parking.
- A number of covers were evident within the south eastern part of the site, and thought to be the duct covers shown on the as 'built plans' discussed in Section 6.11.1 above. Associated structures shown on the drawings were not evident.
- Two sub-stations were noted on the site, to the north east and associated with generator structures to the south east.
- A number of chambers understood to be associated with site soakaways were identified along the southern site boundary (as shown on the drawing WEA.REC.ENV.01 - Existing Drainage Plan).
- A number of trees along the eastern boundary had recently been felled.

6.11.3 Contamination Investigation (2018)

The intrusive works undertaken in 2018 found the site to be underlain by up to a depth of up to 0.9m of Made Ground, overlying the natural soils.

On the basis of the limited chemical laboratory analysis undertaken, the Made Ground soils were not considered to be contaminated with respect to the sites proposed residential end use. However, these soils were considered unsuitable to remain in domestic garden or communal landscaped areas due to their physical composition. As such, it was advised that allowance be made for the removal of on average the upper 500-600mm of such soils from garden or landscaped areas, and reinstatement with clean site-won soils on certified clean imported subsoil and topsoil. It was also noted that the investigations carried out were limited, and further investigation and testing was advised, to allow the site to be fully characterised and to allow an appropriate remedial strategy to be developed.

It was recommended that further investigation be undertaken, particularly around the former generator building, generator and tank in the south east corner of the site, as well as within the former substation area (on the northeast of the site).

6.11.4 Site Observations (2021)

The investigations in 2021 provided coverage of the full development site. Key observations from our walkover survey in 2021 are listed below.

- The EDF building on the eastern part of the site was still vacant.
- The EDF building and surrounding area generally remained unchanged. The vegetation appeared to have grown around the edges of the site, some further large trees had been felled along the eastern part of this area.
- The external generator and above ground fuel tank off the southern corner of the main building had been removed. The fuel pipework appeared to have been cut and a very small amount of diesel was noted on the blacktop surfacing (it is unknown whether any significant spillage occurred during the removal operation).
- The communications mast remained.
- The air conditioning / cooling plant area remained.
- The buildings on the western part of the site were occupied by business. Access was therefore restricted to external areas only. These comprised landscaped garden areas to the rear (south west) with gravel and tarmac parking areas at the front (north east).

6.11.5 Contamination Investigation (2021)

Further chemical laboratory analysis of samples from across the whole was undertaken. The underlying natural soils and topsoil was generally found to be uncontaminated. No asbestos containing materials were visually identified in the soils during the intrusive site investigation works, and none were observed in the exploratory holes.

Some areas of Made Ground (mainly beneath current hardstanding) had shown elevated levels of some contaminants (PAHs), which would not be suitable for reuse on site within soft landscaping areas, but could remain beneath structures.

Some elevated levels of petroleum hydrocarbons were identified, along with the presence of an underground structure (assumed to be a concrete filled tank associated with structures shown on drawings WEA-ALL-TS-IP-R00 and WEA-ALL-TS-UM-R00) within the south eastern part of the EDF. It was noted that further assessment and remediation of this area would be required during site clearance/demolition.

As noted above, although the above ground tank located off the southern corner of the EDF building had been removed, it was recommended that further assessment and possible remediation of this area would be required during site clearance/demolition as some evidence of a spillage was noted on the surface.

Further investigation was also recommended around the substations for any PCB contamination, when there was improved access during site clearance / demolition.

It was also recommended that further investigation in the location of the historical well, located towards the northwest side of the site, should be undertaken, and if found this feature should be subject to formal decommissioning.

7 Site Walkover Survey (July 2024)

7.1 General Site Description and Boundaries

The western part of the site comprises a roughly rectangular plot of land around 30m x 140m. The northern half of which comprises car parking areas and an access road to this and the adjacent properties, both to the north and south (south-eastern part of this overall site). The central part of the site is occupied by a two-storey building (Wealden House), and the southern part is a garden area predominately laid to lawn.

The eastern part of the site is occupied by the vacant EDF Energy offices and associated car park. Access to the EDF Energy site is via a shared access with Wealden House, off the A22. This leads round the north side of the EDF Energy offices, into a car park on the southeast of the site.

To the north of the site is the A22 Lewes Road, marked by a boundary of shrubs/trees. The western boundary is fenced or brick walled with residential flats beyond. To the south is an old metal fence line with an area of steeply sloping woodland beyond. The eastern boundary is marked by heavily vegetated woodland.

7.2 Topography and Drainage

Ground levels across the northern part of the site are fairly flat and level, with a slight cross fall to the south / south east. Levels generally vary between approximately 138 and 139mAOD. Across the southern part of the site ground levels fall away rapidly to the south and south east, with the southern boundary at approximately 120mAOD.

A brief walkover survey was undertaken of the downslope wooded areas beyond the southern boundary, referred to as 'Blunds Hole'. As denoted on the geological mapping massive outcrops of sandstone are evident.

The buildings and car parking have positive drainage. There are four soakaways located on the southeast part of the site. The site itself does not appear to have any obvious areas of boggy or poorly drained ground.

7.3 Vegetation

Areas of soft landscaping are present towards the front of the site and along the frontage with Lewes Road. These areas included the presence of some mature 'conifer' trees and laurels. At the rear of Wealden House is an area of more formal garden, with lawns, beds and more mature trees and hedges. Exact tree species were not determined and a formal arboricultural survey is recommended. The eastern and southern site boundaries are heavily wooded, with Blunds Hole, an ancient & semi-natural woodland bounding the south of the site.

It is noted that trees along the eastern and southern parts of the site had been felled at the time of our earlier investigations in 2018 and 2021. Reference should be made to arboricultural surveys completed at that time. These areas are now fairly overgrown.

7.4 Buildings and Land Use on Site and Nearby

Wealden House is a two-storey former residential dwelling, now used as offices, with various side extensions. It appears to be a rendered masonry structure. Adjoining to the south is the EDF building, a concrete framed two and three-storey building (now vacated). It is thought to date from the late 1960's / early 1970's and comprises a two to three storey office building, which has been subject to alterations over the years. It is understood that the building had been operated by EDF Energy as a disaster recovery centre, as well as providing administration services.

Structures associated with an external generator off the southern corner of the EDF building remain, although the above ground tank has been removed.

A 35m high communications mast is located just off the south western corner of the EDF building together with a porta cabin type building which is understood to house the communications plant. No access was available within this building.

A large air conditioning / cooling plant area is located off the south western corner of the EDF building. The plant area is surrounded by a 5m high timber acoustic fence and set on a concrete floor slab.

Further air conditioning plant and equipment was noted on the roof of the EDF building, and to the rear of the building on the grassed area on the western boundary.

The majority of external areas around the EDF building comprise tarmac hardstanding used for car parking.

A number of duct covers are still evident across the south eastern part of the site, (See Section 6.11.1 above).

7.5 Inaccessible Site Areas

The buildings on site were not accessible during the walkover or fieldwork activities. The buildings on the north western part of the site were occupied by various businesses at the time of our work.

7.6 Site Photographs

A series of photographs showing the site are included in Appendix F.

C PRELIMINARY SITE MODELS

8 Conceptual Engineering Geological Ground Model

From the desk study information and walkover undertaken at this site the following conceptual ground model has been formulated.

Data Source	Comments
Mapped Geology	The mapped site geology consists of Ardingly Sandstone Member over Lower Tunbridge Wells Sand over Wadhurst Clay Formation. The Grinstead Clay Member is mapped overlying the Ardingly Sandstone Member within the far northern corner of the site.
Anticipated Ground Conditions	The site has been subject to two previous phases of investigation. The soils encountered were not as anticipated, based on the mapped geology. The Grinstead Clay Member which overlies the Ardingly Sandstone Formation appears to be more extensive and provides as covering of firm to stiff Clays, which tend to Mudstones with depth across the site. These soils are underlain by very weak to medium strong Sandstone, which could be the Ardingly Sandstone Formation, over poorly cemented Sandstone and Sands, which may be the Lower Tunbridge Wells Sand Formation. (Note the descriptions correspond well with the historic borehole logs for the Ivydene Laundry site – See Section 6.2 above.)
Groundwater	The anticipated depth to groundwater is greater than 5m, and so this is unlikely to be encountered during the majority of shallow construction activities. However, local seepages should be anticipated within excavations.
Surface Water	The site is classified as being at medium risk of surface water flooding. This should be properly assessed during the design process and any necessary mitigation measures incorporated within the development.
Former Site Use	The site has a history of residential and commercial uses. A large proportion of the site area is occupied by existing buildings or external structures. There is also considered to be a high risk of encountered buried obstructions associated with former above ground and sub-surface structures, as well as existing utilities and drainage. Areas of contamination may also be discovered during demolition, site clearance and future construction.
Potential Geo-hazards	Shrinkage/swelling - associated with the predominately Clay soils across the site. There are a significant number of semi-mature to mature trees across the site together with shrubs and hedgerows. Allowance should be made for a formal arboricultural survey to determine the location, height and species of each. This information will be required for foundation design. As previously noted a number of trees were observed to have been felled at the time of our 2018 and 2021 investigations. Information from historic arboricultural survey should also be collated. Cambering - of the ground, especially the Ardingly Sandstone Member could be a potential hazard, with enlarged gulls possibly being present. 'Loose or blowing Sand' – poor ground conditions / recovery was encountered during drilling of two rotary boreholes on site in 2021. It is also noted from historic well records and 'blowing sand' was encountered during drilling within the Lower Tunbridge Wells Sand Formation. This could present a hazard during further borehole investigations or in areas where piled foundations are required. Slope Instability - The heavily vegetated slopes along the southern boundary to the site (Blunds Hole), are estimated to be at around 30 degrees. Sandstone outcrops are visible partway down the slope. Given that a considerable thickness of Clay soils have been encountered across the site, there is considered to be a potential risk for slope instability along this boundary. More detailed investigation and analysis would be required.

Data Source	Comments
	Careful consideration should therefore be given the proposed development layout with particular attention given to the siting of structures, site drainage features and soakaways.
Other Comments	Ground Disturbance - Demolition of existing buildings and removal of foundations, sub surfaces structures, drainage, utilities, vegetation and trees is likely to result in significant disturbance of the near surfaces soils across the site. This is likely to impact foundation design for proposed new structures, as well as road design, and the siting of site drainage features and soakaways etc.

On the basis of the available information the geotechnical categorisation for the proposed structure(s) is considered to fall within Geotechnical Category 2 – Conventional structure with no exceptional risk or difficult ground or loading conditions; Eurocode 7 Ref [16].

9 Conceptual Site Model

In the context of this report, the conceptual model summarises the potential pollutant linkages identified for the site and forms the basis of the risk assessment for the site. The preliminary model comprises the potential sources of contamination, receptors that could be harmed and exposure pathways identified from the desk study and walkover survey. These potential linkages form the basis upon which the investigation is designed and reported.

9.1 Potential Sources of Contamination

The site has a history of residential use, with commercial uses on the site from circa the early 1970's. The site is located within a largely residential area.

A few potentially contaminative uses have been identified on site.

9.1.1 On-Site Sources

Sources		Potential Contaminants	Likely hazard to Site
Historic use of the site	Made Ground from previous phases of development	Metals, Non-metals, Asbestos, Petroleum Hydrocarbons, PAHs	Very Low
Current use of the site	Wealden House (offices)	Asbestos Containing Materials	Very Low
	EDF Energy building (including fuel storage, generators, air-conditioning units & battery units)	Asbestos Containing Materials, Petroleum hydrocarbons, Volatile Organic Compounds (VOC's) & PCB's	Low to Moderate
	Electricity sub-station	PCB's	Very Low
UXO		Not considered within the scope of works	-
Radon		Not within an area affected by Radon	N/A
Ground and/or surface water		Metals, Petroleum hydrocarbons & Volatile Organic Compounds (VOC's)	Low
Ground Gases		No potential sources identified on site	N/A
Vapours		Petroleum hydrocarbons & Volatile Organic Compounds (VOC's)	Very Low

Wealden House was significantly extended on its eastern side in the 1960's, with the EDF building having been constructed shortly after. It is possible that Made Ground is present, due to the importation of hard-core as a sub-base, and beneath the building. However, given the limited redevelopment that has taken place on site, this is not considered to pose a significant risk from potential contamination.

Given the date of construction of the extension to Wealden House, it is possible that asbestos containing materials may have been used within the fabric of the building. However, it is understood that an asbestos survey is to be undertaken prior to demolition, and provided the demolition works are undertaken in accordance with best industry practice, the risk to the site from such material arising from this source is considered very low.

The EDF building on the east part of the site was also constructed at a time when asbestos containing materials were widely in use. As per the risk for Wealden House, provided the appropriate survey works are undertaken pre-demolition, this risk is not considered significant.

Given the use of this building, understood to have been a disaster recovery centre, which included an external generator and fuel storage tank (no longer present on site at the time of the site works) there is considered to be a potential risk from the use and storage of mobile sources of contaminants such as petroleum hydrocarbon fuels and oils. There is also a risk from the use of PCB's, which were often used in high voltage cables associated with electricity sub-stations. However, the risk from these substances will be localised to the immediate vicinity of the plant in which they are present, as they are not mobile in soils or water.

The potential storage and use of petroleum hydrocarbons on site also poses a risk to groundwater. The Ardingly Sandstone and Lower Tunbridge Wells Sand Formation are both classified as Secondary A aquifers, with soils of high vulnerability. However, at this stage, no significant potential sources of petroleum hydrocarbons have been identified on the site, and consequently the risk to groundwater is considered low.

Similarly, the potential storage and use of petroleum hydrocarbons presents a potential risk from the generation and migration of vapours. However, as per the risk to groundwater, the absence of any obvious sources of such contamination at this stage means that the risk from this potential source is considered very low.

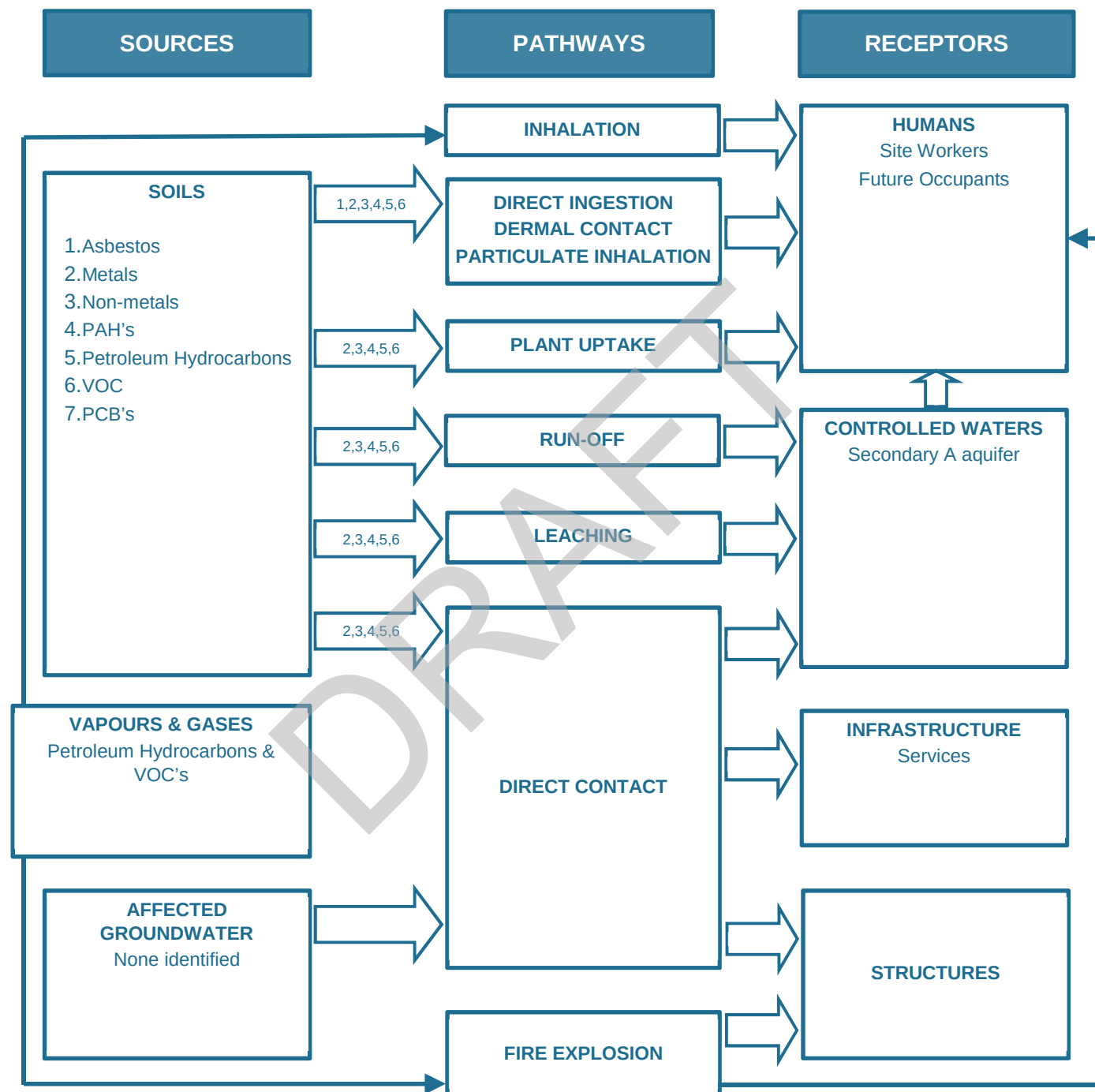
During the site walkover undertaken in 2018 an Uninterruptible Power Supply (UPS) battery farm was observed within the ground floor area of the EDF building. During decommissioning and removal of this infrastructure a careful watch should be kept for any areas of staining on the concrete floors. Where any staining is present, this should be further investigated, to ensure that the removal and crushing of this material does not spread contamination.

9.1.2 Off-Site Sources

No potential off-site sources of potential contamination have been identified.

9.2 Pollutant Linkages and Conceptual Site Model Summary

The following diagram shows the potential pollutant linkages identified for the site and summarises the preliminary conceptual model:



// Denotes potential pollutant linkage not complete.

D GROUND INVESTIGATION

10 Strategy and Method

It is noted that for Contractual reasons reliance cannot be made on earlier phases of intrusive investigation undertaken by Southern Testing in 2018 and 2021. Hence, a new ground investigation has been completed. The strategy adopted for this intrusive investigation comprised the following:

Activity / Method	Purpose	Max Depth Range (mbgl)	Installations / Notes
WLS101 - 109 Dynamic Windowless Sampling	Boreholes to investigate the shallow ground conditions within external areas across the site. To allow SPT's and collection of samples for geotechnical and contamination laboratory testing.	3.0	N/A
WLS110 – 112 Hand Augered Boreholes	Boreholes to investigate the shallow ground conditions within external areas and allow the collection of samples for geotechnical and contamination laboratory testing.	1.8 – 3.0	No access for the dynamic sampling rig to these locations
CBR 1-7	DCP CBR tests to provide preliminary information for pavement design.	1.0	N/A

Exploratory hole locations are shown in Figures 2A and 2B in Appendix A.

In-situ test and sampling methods descriptions employed are given in Appendix B together with the test results.

SPT Energy Ratio certificates and a Summary Table of SPT N Values is provided within Appendix B.

Exploratory hole locations were positioned to provide general site coverage, although it is noted that the spread of locations was partly restricted by existing site buildings, features, vegetation, utilities and drainage.

Additional investigation will be required during or following demolition once access to the entire site is available.

11 Weather Conditions

The fieldwork was carried out 18th and 19th July 2024 at which time the weather was generally hot, dry and sunny.

According to the Met Office², rainfall for June 2024 was around 50% of the average expected for the month. However, Met Office data for Winter 2024 (December 2023, January and February 2024) indicates that the UK provisionally recorded 445.8mm of rainfall, 129% the 1991-2020 average and the eighth-wettest winter. Rainfall totals were above average for all regions of the UK. Southern England was particularly wet with 153% of the 1991-2020 average rainfall. Similarly, Met Office data for Spring 2024 (March, April and May 2024) indicates that this was also a wet season with heavy rain in southern and central England during March, in northern England and Scotland during April, and across the country during May. Southern England is reported to have had in the region of 150 to 170% of the 1991-2020 average rainfall.

12 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs in Appendix A, but in general comprised a covering of variable Made Ground overlying silty clay tending to siltstone at depth. A summary is given below.

Depth (m)	Thickness (m)	Soil Type	Description
GL – 0.04/0.1	0.04 – 0.1	BLACKTOP (Absent WLS03 & 110 – 112)	Blacktop site surfacing.
GL – 0.05/0.3	0.05 – 0.3	TOPSOIL (WLS03 & 110 – 112 only)	Mid brown clayey silty SAND with frequent rootlets.

² [Climate summaries - Met Office](#) – accessed 26th July 2024

Depth (m)	Thickness (m)	Soil Type	Description
GL/0.1 – 0.3/0.6	0.26 – 0.55	MADE GROUND (Absent from WLS110 – 112)	WLS101, WLS106 & WLS107: Recovered as red-fine to coarse occasionally cobble size brick & concrete in a sandy matrix. WLS102, WLS105 & WLS109: Pink-grey fine to coarse limestone in a sandy matrix with rare brick cobbles. WLS103: Buff-grey fine to medium sand with fine to coarse brick, concrete and flint. WLS104 & WLS108: Dark brown/black gravel of blacktop, limestone and rare brick fragments.
0.4 – 0.6	0.2	RE-WORKED GROUND (WLS103 & WLS109 only)	Brown SILT/SAND or SILT/CLAY with rare fine brick and slate.
0.4 – 0.5/0.7	0.1 – 0.3	Silty CLAY (WLS101, 105 & 108 only)	Soft dark grey silty CLAY (poss. re-worked ground).
0.6/0.7 – 1.0	0.3 – 0.4	SAND (WLS107 & 108 only)	Loose blue-grey/yellow-brown fine SAND.
0.2/2.5 – 1.1+/3.45+	0.7+ – 3.0+	Silty CLAY/SILT CLAY	Soft to very stiff yellow-orange/yellow-brown mottled light grey silty CLAY or SILT/CLAY, with rare ironstone bands and siltstone gravel, tending to siltstone at depth. [Grinstead Clay Member]
2.45/2.9 – 3.0+/3.45+	0.1+/0.9+	MUDSTONE (WLS104 – 109)	Extremely weak highly weathered very thinly bedded yellow and grey MUDSTONE. [Grinstead Clay Member]

The soils encountered during this investigation correspond well with the findings of earlier investigations completed by Southern Testing in 2018 and 2021. Ground conditions do not appear to correspond with the mapped geology with a much more extensive covering of CLAY soil extending across more or less the entire site. These CLAY soils are thought to represent the Grinstead Clay Member.

12.1 Visual and Olfactory Evidence of Contamination

Evidence of possible contamination in the form of Made Ground was encountered in the majority of the exploratory holes; whilst no malodorous or visually contaminated materials were seen, such materials can contain elevated levels of contaminants, only detectable through laboratory analysis. These occurrences are discussed in Section E.

13 Groundwater Observations

Groundwater strikes or seepages were not encountered during the intrusive ground investigation works.

E DISCUSSION OF GEOTECHNICAL TEST RESULTS AND RECOMMENDATIONS

14 Geotechnical Laboratory Tests

The following geotechnical laboratory testing was carried out on selected samples in order to aid material classification and characterise soil properties. The test method references and results are given in Appendix C.

Laboratory Test	Number of Samples Tested	Stratum
Moisture Content	11	Grinstead Clay Member
Atterberg Limit	11	
Particle Size Distribution (Wet Sieve)	2	
Particle Size Distribution (Pipette)	2	
BRE SD1 Suite B	12	

15 Soil Classification and Properties

15.1 Made Ground and Sub-Surface Obstructions

"Fill" and "Made Ground" are terms used to describe material placed by man. It may have been placed in a controlled or uncontrolled manner and if the latter term applies then very great variations in material type, depth and density are likely to occur.

Shallow Made Ground soils have been encountered beneath areas of hard standing particularly around the EDF building. The material was generally found to be composed of brick, concrete, limestone sub-base or sandy gravels. These contained various anthropogenic materials including brick, concrete, ash, clinker wood and metal fragments.

Shallow Made Ground in the form of reworked natural soils such as Clay, clayey Sand and gravelly Clay or thickened Topsoil was also noted within some soft landscaped areas, which included brick fragments. These probably represent the historical landscaping works on the site.

As discussed within Section 6.11.1, it is anticipated that sub-surface obstructions associated with historic development will be encountered in some areas of the site. Substantial foundations are also anticipated to the EDF building. It is unknown whether any of the existing buildings have basement areas.

Demolition of existing buildings and removal of foundations, sub-surfaces structures, fuel tanks, drainage, utilities, vegetation and trees etc. is likely to result in significant disturbance of the near surfaces soils across the site and the creation of further Made Ground or Reworked Ground. This is likely to impact foundation design for proposed new structures, as well as road design, and the siting of site drainage features and soakaways etc.

An historic well onsite is recorded on the mapping, this may be encountered during the construction works. The state of this is unknown, it could be capped off or backfilled or remain as a void, so may require remedial engineering works to be undertaken.

The Made Ground / Reworked Soils will generally have the following properties:

1. Unsuitable as a foundation bearing material for settlement sensitive structures (such as buildings, roads, play areas, footpaths, drainage, services etc.). Bearing capacity would depend on the proposed loads, tolerable levels of settlement, and the use of ground improvement techniques.
2. These materials will be highly unstable in open excavations and prone to collapse. "Running" ground may be encountered in deep excavations at or beneath the water table. Statutory support will be required in all excavations where personnel must work.
3. Subject to high and variable amounts of settlement when loaded. Apart from the direct effect on foundations and floor slabs this would cause down drag on piled foundations.
4. Subject to long-term creep settlement from ongoing consolidation from self-weight. Any inundation from a rise in water table or the introduction of surface water would accelerate such settlement.
5. Allowance should be made for groundwater seepages / inflows in all excavations.

A bulk unit weight (γ_b) of 18kN/m³ is recommended.

15.2 Grinstead Clay Member

Ground conditions do not appear to correspond with the mapped geology with a much more extensive covering of CLAY soil extending across more or less the entire site. These CLAY soils are thought to represent the Grinstead Clay Member.

The CLAY soils generally extended to the full depth of all of the exploratory holes completed during this investigation. These deposits were generally seen to comprise yellowish brown and greyish brown clays, silty Clays or clayey Silts, near the surface tending to a more brown greyish brown and light grey.

The clays were seen generally to be gain strength with depth from soft or firm to stiff and very stiff and typically thinly laminated. Thin or thick laminations of fine Sandstone or Siltstone were commonly encountered. The soils were seen to be iron stained in parts.

Previous investigations had also encountered Mudstone below approximately 3.3m depth within the northern part of the site. Mudstone has also been encountered during this investigation within boreholes WLS104 (between 2.4 and 3.45+m) and WLS105 (between 2.10 and 3.45+m) in the northern part of the site.

The Mudstone does not appear to be present across the southern parts of the site.

The SAND was encountered with WLS107 (between 0.6 and 1.0m) & WLS108 (between 0.7 and 1.0m) which is not considered typical of the Lower Grinstead Clay Formation. However, it is noted that SAND was also encountered within a borehole positioned between WLS107 and WLS108, at a similar depth, during the 2018 ground investigation. A more extensive horizon of SAND was also encountered further towards the southern boundary during the 2018 ground investigation, which extended from 0.9m to a depth of 3.8m. In all cases the SAND was underlain by firm to stiff CLAY with interbedded Siltstone which are thought to be representative of the Grinstead Clay Member.

Twelve Atterberg test have been completed within Clay soils across the site which have indicated significant variations with a classification of Clay of Low through to Very High plasticity.

The range of material properties measured are as follows; Liquid Limit of 29 - 74%, a Plastic Limit of 16-25% and a Plasticity Index of 10 - 52%. On balance a NHBC High Volume Change Potential classification is advised.

The more sandy CLAY soils had the following range of particle size distribution results (from two tests).

Hole ID / Depth (m)	Clay & Silt (%)	Sand (%)	Gravel (%)	Cobbles (%)
WLS111 @ 2.00m	94	4	1	0
WLS112 @ 1.50m	95	3	1	0

The particle size distribution results above may not represent the full range of soils encountered on site and as discussed above more extensive SAND deposits may be encountered in some areas of the site.

The predominately Clay soils will have very low permeability. The Sand is anticipated to have moderate to low fines content and therefore are likely to be fairly free-draining, however, the vertical and lateral distribution of any Sand within the Clay soils may inhibit flow.

These cohesive soils are likely to have medium compressibility characteristics.

16 Ardingly Sandstone Member

The underlying Ardingly Sandstone Member does not appear to have been proved during this investigation. However, during the 2021 investigation it was proved at a depth of around 6.35mbgl on the northern part of the site and at a depth of around 3.30mbgl on the southern part of the site. It is therefore possible that the SPT's in boreholes WLS108 and WLS109 at 3.0m both refused on the upper part of this formation – although no sample was recovered to prove the theory. Additional rotary cored boreholes would be required to develop the ground model, prove the ground conditions at depth and confirm the geological sequence for the site.

16.1 Summary of Geotechnical Parameters

Soil Type: Made Ground

Parameters	Range	Suggested Design Value
Effective Cohesion (kPa)	Not tested	0 ⁽¹⁾
Bulk Density (Mg/m ³)	Not tested	1.8 ⁽¹⁾
Effective Angle of Friction, ϕ' (degrees)	Not tested	27 ⁽¹⁾

1. Where no testing has been undertaken, the suggested design values are based on our experience of similar soils.

Soil Type: Grinstead Clay Member

Parameters	Range	Suggested Design Value
Plasticity Index (%)	10 - 52	32
Effective Cohesion (kPa)	Not tested	0 ⁽¹⁾
Bulk Density (Mg/m ³)	Not tested	2.0 ⁽¹⁾
Coefficient of Compressibility, M_v (m ² /MN)	Not tested	0.1 ⁽¹⁾
Effective internal angle of friction, ϕ' (degrees)	Not tested	22 ⁽¹⁾

1. Where no testing has been undertaken, the suggested design values are based on our experience of similar soils.

17 Groundwater Levels

Groundwater levels vary considerably from season to season and year to year, often rising close to the ground surface in wet or winter weather, and falling in periods of drought. Long-term monitoring from boreholes or standpipes is required to assess the ground water regime and this was not possible during the course of this site investigation.

Whilst the groundwater regime for this site has not been established, it is anticipated that groundwater will be located towards the base of the Lower Tunbridge Wells Sand Formation, above the more impermeable Wadhurst Clay Formation.

Based on the observations to date, allowance should be made for seepages in all shallow excavations, especially during wet weather. Where seepages are encountered the soils will soften rapidly and excavations will be prone to instability. The Sand materials will 'run' and be highly unstable in excavations or boring operations where seepages are encountered or below the water table.

It is envisaged that seepages above the water table within shallow excavations could be controlled by locally pumping from sumps.

18 Swelling and Shrinkage

Shrinkable soils are subject to changes in volume as their moisture content is altered. Soil moisture contents vary from season to season and can be influenced by a number of factors including the action of roots. The resulting shrinkage or swelling of the soil can cause subsidence or heave damage to foundations, the structures they support and services.

The designer should be aware that precautions regarding swelling and shrinkage are applicable, and in this respect NHBC precautions provide a helpful guide with respect to minimum foundation depths and deepening particularly within the zone of influence of vegetation.

Assessment of foundation depths should take into account trees, hedgerow and shrubs which are to be removed, are to remain or are proposed in any planting scheme; and which may be allowed to reach maturity.

We would recommend that on balance a NHBC HIGH Volume Change Potential site classification be adopted for design purposes covering the Clay materials.

Full details of protective measures are given in NHBC Standards Ref [17], Chapter 4.2 to which the reader is referred.

There are a significant number of semi-mature to mature trees across the site, together with shrubs and hedgerows. Allowance should be made for a formal arboricultural survey to determine the location, height and species of each. This information will be required for foundation design.

As previously noted a number of trees were observed to have been felled at the time of our 2018 and 2021 investigations. Information from historic arboricultural survey should also be collated.

19 Lateral Pressure & Heave

Where foundations are more than 1.5m deep, and are within the zone of influence of existing or removed trees, then precautions will also need to be taken against the effects of lateral swelling of soils beneath house units due to removal of trees, or cutting tree roots.

A helpful guide with respect to requirements for the relief of lateral pressure is set out in the NHBC Standards Ref [17], Chapter 4.2 to which the reader is referred. The basic requirement is that compressible material or void former should be installed on the inner face of external foundation walls. With piled foundations additional voids are required below ring beams.

20 Soakaways

Southern Testing have been forwarded a copy of a Flood Risk Assessment and Surface Water Drainage Strategy for the site, prepared by Motion for Ashgrove Homes Ltd. in August 2022. It is understood to form part of the approved planning.

The proposed drainage strategy is reported to utilise SuDS techniques in the form of permeable paving and a swale, which it is stated will provide pollution mitigation as well as attenuation and infiltration of surface water.

The designer appears to have utilised soakage testing completed by Southern Testing for Ashgrove Homes Ltd. in 2018 (See our report J13397). Part of the objective of this work was to test existing soakaways which EDF had identified to be located on the southern edge of the site. We understand that Ashgrove Homes Ltd. were at that time considering re-use of the soakaways as part of their development proposals.

Falling head soakage testing was also undertaken at the same time within three windowless sampler boreholes. Given the presence of the Grinstead Clay Member across the site, these tests results reported negligible soakage due to the high clay/silt content of the soils.

There are a number of important points that need to be considered with regard to the design and use of soakaways on this site.

- Our previous report (J13397) was prepared for the reliance of Ashgrove Homes Ltd. Octagon Developments Ltd. have no reliance on this information.
- The design values adopted by Motion are not considered to be representative of the soils across the wider site and the measured values refer specifically to tests completed within the existing soakaways. Their design does not appear to consider the reuse of the existing soakaways, not that it is advised.
- The construction detail for the existing soakaways is unknown. The existing soakaways are located on the far southern edge of the site, and ground levels beyond to the south fall away steeply into the valley. The higher soakage rates measured within the existing soakaways may reflect a change in the geology across the far southern edge of the site or the fact that the soakaways are positioning on the edge of a slope.
- As has been noted within our previous reports in 2018 and 2021, all drainage system elements should be located and designed taking into account the topography and ground conditions of the site. Care should be taken to ensure that water is discharged at depth to prevent potential seepage outflows and or flooding of lower lying areas or potential instability of the clay slopes along the southern boundary. Careful consideration should therefore be given to the design and siting of all drainage system elements.
- As noted above the design prepared by Motion denotes a swale to be located along the southern boundary at the top of the slopes. For the same reasons discussed above, we would also not recommend the use of a swale within this area.

Falling head soakage testing was attempted within two of the windowless sampler boreholes as part of this investigation. The results are presented within Appendix B. Negligible soakage was measured due to the generally clayey nature of the shallow soils and again confirms our earlier findings.

On the basis of these test results and given the soil types present, the site is not considered suitable for shallow soakaway drainage or SUDS techniques. We would therefore recommend a positive drainage system be considered for all surface water disposal.

As an alternative solution, consideration could possibly be given to the use of deep borehole soakaways, if it were possible to penetrate into the underlying Ardingly Sandstone Member where, depending on how fractured it is, it may be possible to achieve soakage. However, in our experience the success rate locally has been low.

Whilst the site is not located within a groundwater Source Protection Zone (SPZ), the Ardingly Sandstone Member and underlying Lower Tunbridge Wells Sand Formation bedrock deposits are classified as a Secondary Aquifer and, therefore, specialist advice and permission should be sought from the Environment Agency with regard to drainage of roofs and access road/parking areas into soakaways on site.

Soakaways should not normally be constructed closer than 5-10 m to buildings and as discussed above should be located remote from the existing slope on the southern boundary.

21 Sulphates and Acidity

Chemical analysis of the underlying soils has been undertaken to establish the aggressive chemical environment for concrete in accordance with the BRE Special Digest 1, Ref [18]. The site category determined is that of a natural ground location that contain pyrites (or potential pyrites), as the underlying soils form part of the Grinstead Clay Member.

Given the sample numbers tested the characteristic value for sulphate concentration has been determined from the mean of highest 20% of measured concentrations.

The recorded pH values are in the range 4.9 to 8.3, mildly acidic to mildly alkaline in reaction.

The Design Sulphate Class is DS-1. Groundwater should be assumed to be mobile (default where unproven). The ACEC site classification is AC-1.

Where deeper piled foundations are proposed additional chemical analysis would be required to establish the aggressive chemical environment for the underlying soils which may vary from this classification.

22 Foundations and Bearing Capacity

All loadings should be transferred beneath any fill or made ground, topsoil, soft or disturbed soils and be placed within the underlying natural stiff Clay soils. Based on the results of this investigation an allowable bearing capacity of 110kN/m² could be adopted for foundations set within these soils.

Strip or trench-fill foundations should be kept at a width of 1.2m or less, and pads to a maximum plan dimension of 3.0m in order to help keep settlements tolerable. Settlement analysis would be required for any foundations beyond these sizes.

Given the marked variation in settlement characteristics of the various soils encountered, it is advised that reinforcement be incorporated in all foundations to help reduce the effects of differential settlement. The structural engineer should be consulted with respect to the reinforcement specification.

It is noted that demolition of existing buildings and buried structures will occur over quite a large part of the central area of the site, resulting in ground disturbance to a variable depth. Careful control and recording of excavations, monitoring of backfilling and foundation deepening will be required within these areas. Care needs to be taken to ensure that foundations are not constructed on disturbed or backfilled ground.

A minimum foundation depth of 1000mm is anticipated for NHBC High Volume Change Potential soils. However, the designer should be aware that precautions regarding swelling and shrinkage are applicable and in this respect NHBC precautions provide a helpful guide with respect to minimum foundation depths and deepening particularly within the zone of influence of trees, hedgerows or shrubs; existing, proposed or removed.

Noting that parts of the site are very heavily vegetated, allowance should be made for undertaking a detailed survey prior to any vegetation clearance with the location, height and species of all trees, saplings and shrubs accurately recorded. As previously noted a number of trees were observed to have been felled at the time of our 2018 and 2021 investigations. Information from historic arboricultural surveys should also be collated.

Subject to the Engineers final design excessive foundation deepening may be required, both due to ground disturbance during demolition and the influence of trees, hedgerows or shrubs; existing, proposed or removed.

Based on NHBC guidance, foundations below 2.5m must be designed individually by an engineer on an individual property basis taking into account soil desiccation, heave, lateral pressure, trench stability and workmanship. At depths in excess of 2.5m a piled foundation is usually the most appropriate foundation option.

Further testing is recommended to assess any potential desiccation on site. This should be carried out once a final design layout is available and the site has been cleared.

Given the inherent variability of soil conditions, it is recommended that foundation inspections be undertaken during construction by a suitably qualified engineer to confirm that the recommendations within this report are appropriate to the actual ground conditions encountered and the engineer's foundation design.

23 Piling

In the case of a piled foundation solution allowance would need to be made for a deeper borehole investigation to provide information for pile design. It is recommended that exploratory boreholes should penetrate to at least a depth of 33% to 50% more than final pile base depth in at least 2 positions.

24 Floor Slabs

Given the presence of the variable Made Ground, Clay soils, along with numerous trees and vegetation, allowance should be made for fully suspended ground floor slabs throughout the development.

25 Settlement

Based on the recommendations given above, settlement for the proposed structures should be within tolerable limits.

26 Excavations and Dewatering

Statutory support will be required in all excavations where personnel must work.

An allowance should be made for breaking out sub-surface obstructions associated with existing and past developments, the presence of buried concrete structures and heavily reinforced slabs. However, it should be assumed that other buried structures and obstructions are present across the wider site. The foundations and drainage associated with the existing buildings and associated infrastructure will also need to be allowed for where excavations are planned.

The presence of numerous buried utilities is known and recorded, however other unrecorded infrastructure should be assumed, which is not always identified using cable avoidance tools.

The Clay materials, whilst generally stable in the short-term, will be prone to instability in open excavations during wet weather or where seepages are encountered and will soften rapidly if exposed to moisture or the elements. The Sand materials will 'run' and be highly unstable in excavations or boring operations where seepages are encountered or below the water table. Any superficial Made Ground is likely to be unstable in open excavation.

Where excavation is proposed in close proximity to existing structures care will need to be taken to avoid undermining existing foundations.

Hard ground, such as rock bands may be encountered, and where necessary allowance should be made for breaking these using hydraulic hammers or the like mounted on the excavation plant, to facilitate excavation.

Significant inflows of groundwater into excavations would not be anticipated nor would the requirement for specialist de-watering activities.

An historic well is recorded onsite on the mapping, this may be encountered during the construction works. The state of this is unknown, it could be capped off or backfilled or remain as a void, so may require remedial engineering/decommissioning works to be undertaken.

27 Filling

Given the existing levels on site, it is not envisaged that any significant filling will be required for the proposed development. However it should be noted that the shallow materials generally have a high clay content and so will be difficult to handle and compact when wet, making them difficult for re-use as structural fill.

28 Slope Stability

No formal slope stability analysis has been undertaken for this site. Given the generally low gradients of the topography across the development site, it could be considered being generally at low risk.

However, the heavily vegetated slopes along the southern boundary to the site (Blunds Hole), are estimated to be at around 30 degrees, with Sandstone outcrops visible partway down the slopes. The upper parts of the slope are

anticipated to comprise Clay associated with the Grinstead Clay Member. Careful consideration should therefore be given to any proposed development with particular attention given to the siting of structures, soakaways and drainage elements remote from the crest of the slopes. More detailed slope stability assessment may be required as part of the final detailed site design.

29 Pavement Construction

Based on the available data, it is anticipated that the formation to proposed pavement areas will be founded both within the natural Clay soils as well as possibly within areas of Made Ground or Reworked Ground.

The results of in-situ *DCP CBR* or *CBR* testing generally indicated CBR values in the range of 0.7 to 26% at the anticipated formation level of 0.5 to 1.0mbgl. However, it should be noted that in-situ CBR readings can vary significantly depending on a number of factors, including the moisture content of the soil and this can in turn vary depending on the weather and other site conditions leading up to and during testing. For these reasons it is deemed that the results of in-situ CBR testing represent the CBR value only on the day of the test, and under the conditions prevailing at the time, and should not, in isolation, be considered as being equivalent to the Design CBR value.

The results of Atterberg Limit tests on the clay materials indicate plasticity indices in the range of 10 to 52%, with an average value of 32%. On the basis of guidance in the DMRB Ref [19] a CBR value of about 3% is estimated for a thin pavement construction for poor construction conditions with a low water table.

Taking these factors into consideration, a preliminary design CBR value of 3% can be assumed for pavement foundation design purposes on the natural Clay soils. However, given that the soils are likely to be disturbed by construction plant during demolition and construction it would be suggested that the CBR value is reassessed as construction progresses. Further sampling and laboratory testing may be necessary to satisfy Local Highway Authority design guidance, in terms of frequency and types of testing, if roads are to be submitted for adoption.

The most important element of any road construction is drainage and attention must be given not only to the drainage of the subsoil but to the various layers of construction. To this end, the formation should be shaped to a camber or crossfall to allow water movement out of the sub-base. Silty soils soften extremely quickly if allowed to become wet or if they are excavated below the water table and this softening can give rise to a very substantial increase in costs.

Sub-base and coarse capping materials tend to segregate during placing operations, particularly when end tipped. On soft clay subgrades this can lead to punching and softening of the formation. The use of an appropriate geotextile or geofabric, laid in accordance with manufacturer's recommendations / guidance, should help to minimise this.

The formation should be proof-rolled in a manner appropriate to the subgrade soils, and any soft spots found should be excavated and replaced with compacted granular material. The surface of the formation should then be appropriately compacted, prior to laying the capping layer and/or sub-base.

Construction traffic should be kept off formations and it is often advisable to leave a protective layer of soil above formation level until the last moment before reducing to formation level and placing the capping and/or sub-base.

The formation should be considered not frost-susceptible.

F DISCUSSION OF GEOENVIRONMENTAL TEST RESULTS AND RECOMMENDATIONS

30 Analytical Framework

There is no single methodology that covers all the various aspects of the assessment of potentially contaminated land and groundwater. Therefore, the analytical framework adopted for this investigation is made up of a number of procedures, which are outlined below. All of these are based on a Risk Assessment methodology centred on the identification and analysis of Source – Pathway – Receptor linkages.

The CLEA model Ref [1], provides a methodology for quantitative assessment of the long-term risks posed to human health by exposure to contaminated soils. Toxicological data is used to calculate a Soil Guideline Value (SGV) for an individual contaminant, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

In the absence of any published SGVs for certain substances, Southern Testing have derived or adopted Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH S4UL's Ref [20] and CL:AIRE Soil Generic Assessment Criteria Ref [21]. In addition, in 2014, DEFRA Ref [22] published the results of a research programme to develop screening values to assist decision making under Part 2A of the Environmental Protection Act. Category 4 screening levels were published for 6 substances, with reference to human health risk only. This guidance includes revisions of the CLEA exposure parameters, presenting parameters for public open space land use scenarios, and also of the toxicological approach. The screening levels represent a low risk scenario, based on a 'Low Level of Toxicological Concern' rather than the 'Minimal Risk' of CLEA. Category 4 screening levels for further substances have been published subsequently. The analytical results of this investigation may be considered relative to these levels.

Site-specific assessments are undertaken wherever possible and/or applicable.

CLEA requires a statistical treatment of the test results to take into account the normal variations in concentration of potential contaminants in the soil and allow comparisons to be made with published guidance.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

31 Site Investigation – Soils

31.1 Sampling Regime

The number of sample locations was limited and was intended to provide general coverage of the site.

Access was restricted by the presence of buildings and buried services.

31.2 Testing

The potential for contamination by asbestos, metals, non-metals, Polyaromatic Hydrocarbons (PAHs), petroleum hydrocarbons, Volatile Organic Compounds (VOCs) and Polychlorinated biphenyls (PCBs) was identified in the preliminary conceptual model. No olfactory evidence of VOC's were encountered during the intrusive site investigation works. Therefore, the following tests were selected.

Test Suite	Number of Samples	Soil Tested
STL Key Contamination Suite	11	2 No. Made Ground 3 No. Topsoil 6 No. Natural Soils
Asbestos Screen	15	6 No. Made Ground 3 No. Topsoil 6 No. Natural Soils
Total Petroleum Hydrocarbons with carbon banding and aliphatic/aromatic split	3	1 No. Made Ground 2 No. Natural Soils
PCB	3	1 No. Made Ground 2 No. Natural Soils

The test results are presented in full in Appendix E. A summary and discussion of the significance of the results and identified contamination sources is given below.

31.3 Test Results and Identified Contamination Sources

31.3.1 General Contaminants

The results of the key contaminant tests have been analysed in accordance with the CLEA methodology. The samples have been grouped into three populations comprising Made Ground, topsoil and natural soil. For each parameter in each population the sample mean is calculated and compared to a Tier 1 screening value. If the sample

mean exceeds the screening value, the soil may be regarded as contaminated and further assessment may be required. If neither the sample mean nor any single value exceeds the screening value, the soil may be regarded as not contaminated, though further confirmatory assessment may be required. Where any single parameter value exceeds the screening value but the sample mean does not, further statistical analysis may be applied to that parameter if the available data is suitable. Such analysis would include an assessment of the Normality of the distribution of the data, consideration of the presence of outliers, and the calculation of a UCL estimate of the mean.

Summary data is presented in the tables below and the laboratory analysis is included in Appendix E. The screening values and source notes are presented in Table 1 "Tier 1 Screening Values" at the front of Appendix E.

Soil Type: Made Ground

Contaminants	Units	WLS103 @0.5m	WLS109 @0.5m	Residential with Home-grown Produce Consumption Tier 1 Screening Values
Arsenic (As)	mg/kg	18	11	37
Cadmium (Cd)	mg/kg	<0.2	<0.2	11
Trivalent Chromium (CrIII)*	mg/kg	20	19	910
Hexavalent Chromium (CrVI)	mg/kg	<1.8	<1.8	6
Lead (Pb)	mg/kg	810	58	200
Mercury (Hg)	mg/kg	0.6	<0.3	7.6-11
Selenium (Se)	mg/kg	<1.0	1.9	250
Nickel (Ni)	mg/kg	12	12	130
Copper (Cu)	mg/kg	35	19	2,400
Zinc (Zn)	mg/kg	120	71	3,700
Phenol	mg/kg	<1.0	<1.0	120-380
Benzo(a)pyrene (BaP)	mg/kg	6.5	0.5	1.7-2.4
Naphthalene	mg/kg	0.13	<0.05	2.3-13
Total Cyanide (CN)	mg/kg	<1.0	<1.0	/
Acidity (pH values)	/	8.1	7.2	/
Soil Organic Matter	%	1.6	1.8	/

* Assumed as Total Cr minus CrVI

The concentrations of Lead and Benzo(a)pyrene in the sample of Made Ground taken from WLS103@0.5m bgl. would be considered elevated when compared to their Tier 1 screening values.

Benzo(a)pyrene is used as a surrogate marker for all genotoxic PAH's, in line with HPA guidance Ref [23]. The test data has been compared with the concentration limits reported for the Culp study, as recommended by HPA, and is consistent with this approach. On the basis of the test results, the genotoxic PAH's in the sample from WLS103@0.50m would be considered to pose a potential risk to human health.

Soil Type: Topsoil

Contaminants	Units	WLS110 @0.20m	WLS111 @0.10m	WLS112 @0.10m	Residential with Home-grown Produce Consumption Tier 1 Screening Values
Arsenic (As)	mg/kg	11	16	21	37
Cadmium (Cd)	mg/kg	<0.2	<0.2	<0.2	11
Trivalent Chromium (CrIII)*	mg/kg	24	19	27	910
Hexavalent Chromium (CrVI)	mg/kg	<1.8	<1.8	<1.8	6
Lead (Pb)	mg/kg	64	140	66	200
Mercury (Hg)	mg/kg	<0.3	<0.3	<0.3	7.6-11
Selenium (Se)	mg/kg	1.4	<1.0	2.3	250
Nickel (Ni)	mg/kg	14	12	35	130 (60 – 70)^
Copper (Cu)	mg/kg	32	25	22	2,400 (100 – 135)
Zinc (Zn)	mg/kg	78	57	67	3,700 (200)
Phenol	mg/kg	<1.0	<1.0	<1.0	120-380
Benzo(a)pyrene (BaP)	mg/kg	0.07	<0.05	<0.05	1.7-2.4
Naphthalene	mg/kg	<0.05	<0.05	<0.05	2.3-13
Total Cyanide (CN)	mg/kg	<1.0	<1.0	<1.0	/
Acidity (pH values)	/	7.4	5.6	6.5	/
Soil Organic Matter	%	1.8	3.4	2.7	/

* Assumed as Total Cr minus CrVI

^ Screening values shown in brackets are the screening values (for the phytotoxic metals) as given in the British Standard for Topsoil (BS3882:2015).

On the basis of the above laboratory analysis the existing topsoil (to the rear of Wealden House and the EDF Energy Offices) would be considered uncontaminated when compared to the Tier 1 screening values, and could be retained and re-used on site.

Soil Type: Natural Soil

Contaminants	Units	No of Samples Tested	Range	Sample Mean	Residential with Home-grown Produce Consumption Tier 1 Screening Values
Arsenic (As)	mg/kg	6	7 – 25	13.4	37
Cadmium (Cd)	mg/kg	6	<0.2	<0.2	11
Trivalent Chromium (CrIII)*	mg/kg	6	13 – 35	24.7	910
Hexavalent Chromium (CrVI)	mg/kg	6	<1.8	<1.8	6

Contaminants	Units	No of Samples Tested	Range	Sample Mean	Residential with Home-grown Produce Consumption Tier 1 Screening Values
Lead (Pb)	mg/kg	6	19 – 210	57.2	200
Mercury (Hg)	mg/kg	6	<0.3	<0.3	7.6-11
Selenium (Se)	mg/kg	6	1.3 – 1.8	1.6	250
Nickel (Ni)	mg/kg	6	6.4	15	130
Copper (Cu)	mg/kg	6	7.8 – 23	14.1	2,400
Zinc (Zn)	mg/kg	6	30 – 84	52.8	3,700
Phenol	mg/kg	6	<1.0	<1.0	120-380
Benzo(a)pyrene (BaP)	mg/kg	6	0.42 – 0.47	0.4	1.7-2.4
Naphthalene	mg/kg	6	<0.05	<0.05	2.3-13
Total Cyanide (CN)	mg/kg	6	<1.0	<1.0	/
Acidity (pH values)	/	6	6.8 – 8.1	7.5	/
Soil Organic Matter	%	6	0.4 – 1.8	1.0	/

* Assumed as Total Cr minus CrVI

With the exception of a marginally elevated concentration of Lead in the sample taken from WLS102@0.55m, on the basis of the above laboratory analysis the shallow natural ground across the site would be considered uncontaminated when compared to the Tier 1 screening values.

31.3.2 Asbestos Containing Materials

No asbestos containing materials were visually identified in the exploratory holes during the intrusive site investigation works, or detected in the samples subject to laboratory analysis.

However, it should be noted that the exploratory holes are of small size relative to the area investigated and the investigation was constrained by the presence of buildings and services. Therefore, the samples obtained may not reflect the full composition of the soils on the site, and there is always the potential for pockets of asbestos or for asbestos containing materials to be present, which have not been detected in the sampling.

It is also our experience that asbestos containing materials are quite often encountered in buried pockets and beneath slabs (sometimes adhering to the concrete) on older sites. It is, therefore, advised that further examination is carried out in trial pits, when suitable access is available.

No assessment of the existing buildings has been made. It is understood that a survey of the buildings will be undertaken prior to their demolition.

31.3.3 Organic Contaminants

Petroleum hydrocarbons

Three samples of shallow soils from areas of the site where petroleum hydrocarbon may be present, were subject to laboratory analysis for such potential contamination. These samples comprised the natural soils from WLS105@0.5m which was located in the vicinity of the electricity substation, a sample of natural soils from WLS108@0.45m which was close to the location of the former above ground fuel storage tank, and a sample of the Made Ground from WLS09@0.5m located to the rear of the air conditioning plant.

No petroleum hydrocarbons above the laboratory limit of detection were found in these three samples.

Polychlorinated biphenyls (PCBs)

PCBs were often used as cooling and insulating fluids for transformers and capacitors, therefore, the same three samples which were subject to analysis for petroleum hydrocarbons were also subject to analysis for PCBs.

No petroleum hydrocarbons above the laboratory limit of detection were found in these three samples.

32 Site Investigation – Waters

The desk study did not identify any potential sources of groundwater contamination, so no groundwater investigation was undertaken.

33 Site Investigation - Gas

The desk study did not identify any potential gas sources, so no gas investigation was undertaken. No significant sources of petroleum hydrocarbons have been identified during the investigation, however if areas are identified during any groundworks, such as during any remedial work around the below ground tank, then any vapour risk would need to be assessed at that time.

34 Summary of Identified Contamination

On the basis of the site investigation works undertaken to date, the site is not considered to be generally contaminated; which would be in line with the findings of the desk study and previous intrusive site investigation works.

The concentrations of Lead and Benzo(a)pyrene in the sample of Made Ground taken from WLS103@0.5m bgl. would be considered elevated. This is in keeping with the results of the previous intrusive investigation works, which found that where Made Ground was present (mainly beneath current hardstanding), concentrations of PAHs were elevated. Given this contamination, and the physical composition of the made Ground, these soils would not be considered suitable for retention on site within garden and soft landscaped areas, but could remain beneath structures and other areas of hardstanding.

A slightly elevated concentration of Lead was also found in the sample of natural soil taken from WLS102@0.55m, which was just below the Made Ground. This trial hole is located within a proposed soft landscaped area. Assuming post development site level is to be around existing site level, and given the Made Ground will require removal from across this area as it will not constitute a suitable growing medium, the placement of around 500mm of clean soils will provide an adequate depth of cover with respect to the elevated concentration of Lead in this location.

The existing topsoil would appear to be suitable for re-use, however the practicalities of careful excavation, separation, storage and re-use on such a site may be difficult/impractical.

To date no ACMs have been visually identified in the exploratory holes, or detected in the samples subject to laboratory analysis. However, it should be noted that the exploratory holes are of small size relative to the area investigated and the investigation was constrained by the presence of buildings and services. Therefore, the samples obtained may not reflect the full composition of the soils on the site, and there is always the potential for pockets of asbestos or for asbestos containing materials to be present, which have not been detected in the sampling.

No organic contaminants (petroleum hydrocarbons or PCBs) have been found to date. However, investigation of the soils in the immediate vicinity of the potential sources of such contamination has been somewhat limited, due to the presence of the structures themselves (the electricity substation, the presence of buildings and the nature of the site surfacing/buried infrastructure).

35 Risk Evaluation

The object of the risk evaluation is to assess the pollution linkages for specific contaminant groups considered in the conceptual model, identify any unacceptable risks and, therefore establish whether there is a need for further investigation and/or remedial action.

The risks are considered in the context of the specific development proposals for the site and, therefore, the conclusions may not be appropriate for alternative schemes.

35.1 Revised Conceptual Model

The preliminary site model has been refined in light of the findings of this investigation and is summarised below.

Metals – Lead	Petroleum Hydrocarbons	PAHs	PCBs	Asbestos	Pathways	Receptors
Y	P	Y	P	P	Ingestion and inhalation of contaminated soil and dust	Human Health
Y	P	Y	P	n/a	Dermal contact with contaminated soil and dust	
n/a	P	N	n/a	n/a	Inhalation of vapours or gases	
n/a	P	Y	P	n/a	Uptake into edible fruit and vegetables (n/a on this site)	
N	P	N	P	n/a	Surface water run-off into surface water features	Water Environment
N	P	Y	P	n/a	Migration through ground into surface water or groundwater	
N	P	Y	P	n/a	Off-site migration of contaminated groundwater	
N	N	N	P	n/a	Vegetation on site growing in contaminated soil	Flora and Fauna
N	N	N	n/a	n/a	Aquatic life in affected waters	
n/a	P	Y	P	n/a	Contact with contaminated soils	Building materials / buried services

Key:

- Y Pollutant linkage likely
- N Pollutant linkage not likely
- P Pollutant linkage possible
- n/a Pathway not applicable to contaminant

It should be noted that the identification of potential contaminant linkages does not indicate that they are significant. For those contaminant pollutant linkages identified within the revised conceptual site model, the overall level of risk has also been re-evaluated based on the UK CIRIA C552 approach (see Appendix I for details).

For each of the pollutant linkages, an estimate is made of the potential consequence of the risk; and the probability of the risk occurring; in order to give an overall classification of risk, as per the table below.

Contaminant	Pathways	Receptors	Risk	Risk Score
Metals (Lead) & PAHs in the Made Ground	Ingestion and inhalation of contaminated soil and dust	Human Health	Moderate	9
	Dermal contact with contaminated soil and dust		Moderate	9
	Uptake into edible fruit and vegetables		Moderate	9
	Vegetation on site growing in contaminated soil	Flora and Fauna	Low	4
	Contact with contaminated soils	Infrastructure/Structures	Very Low	3
Asbestos Containing Materials	Inhalation of contaminated dust	Human Health	Low	6
Petroleum Hydrocarbons	Ingestion and inhalation of contaminated soil and dust	Human Health	Low	6
	Dermal contact with contaminated soil and dust		Low	6
	Inhalation of vapours or gases		Low	6
	Contact with contaminated soils	Infrastructure/Structures	Very Low	3
PCBs	Ingestion and inhalation of contaminated soil and dust	Human Health	Low	6
	Dermal contact with contaminated soil and dust		Low	6

The intrusive site works have found elevated concentrations of Lead and PAH's on site, and therefore the risk to Human Health receptors has been reclassified from Very Low to Moderate. The risk to Flora and Fauna has been classified as Low, whilst the risk to infrastructure has been reclassified as Very Low, given the depth of the Made Ground means that services will likely be laid well below this material.

No ACMs, or measurable concentrations of Petroleum Hydrocarbons or PCB's have been found during the intrusive site investigation works. On this basis the risks are considered Low. However, should such contaminants be encountered during demolition and site clearance works, the risks could be significant.

35.2 Relevant Pollutant Linkages

A number of Relevant Pollutant Linkages for which remedial action will be required have been identified in the revised conceptual model, as follows.

Contaminant / Source	Pathways	Receptor
Lead & PAH's in Made Ground	Soil/dust dermal exposure	Site/construction workers Future residents
	Soil/dust ingestion/inhalation	Site/construction workers Future residents
	Direct Contact	Structures/services

Potential pollutant linkages have been identified for ACMs and organic contaminants (petroleum hydrocarbons or PCBs).

The extent of any petroleum hydrocarbon contamination will need to be fully established. This is best done in conjunction with the site clearance works/demolition. At this stage allowance for some contaminated soils to be present in these areas should be made.

Further investigation is also required to assess the potential presence of PCBs around the substations on site. Once again, this would be best undertaken when site/vegetation clearance has been undertaken and utilities disconnected.

The soils beneath the building (and within their structure) and associated infrastructure has not been established; along with any contamination.

36 Soil Waste Management

36.1 Re-use of Soils

It is anticipated that the arisings from groundworks on this site will comprise topsoil, Made Ground and natural soils.

Clean natural arisings from groundworks may be re-used on site without further testing, where there is a definite use for such materials, e.g. raising levels or construction of landscaping layers or bunds as set out in the approved plans for the development.

Treated contaminated soils may be reused on site under an appropriate Materials Management Plan, where certain criteria are met, in accordance with the CL:AIRE Definition of Waste Code of Practice, Ref [24].

36.2 Disposal of Soils

Some soils will require removal from site and disposal to suitably licensed landfills. Different guidelines and charges will apply to different waste classifications. As waste producers, the Developer holds responsibilities under the various governing regulations, particularly the Waste Duty of Care Code of Practice under the Environmental Protection Act 1990, Ref [25].

The chemical analyses appended to this report can be used to inform the initial classification of the soils as either Hazardous or Non-Hazardous, and derive the appropriate EWC code, for offsite disposal or transfer. Waste Acceptance Criteria (WAC) testing may be needed for confirmation of the material's classification, and will be required to demonstrate an inert classification.

There are strict requirements in place for the accurate description of wastes using EWC codes and, therefore, it is essential that materials that would be given different descriptions (e.g. blacktop, made ground and natural soils), as well as those with different classifications, are carefully segregated during excavation and storage on site. This will also ensure the most cost effective disposal. Mixing these materials can give rise to significant difficulties in disposal and also substantially increase costs.

Soil arisings may be transferred to other development sites under a Materials Management Plan, where certain criteria are met, in accordance with the CL:AIRE Definition of Waste Code of Practice Ref [24].

All soils leaving site will need to be pre-treated. Waste minimisation by selective excavation is a recognised form of pre-treatment.

37 Discussion and Conclusions

On the basis of the contamination laboratory test results to date, with the exception of a hotspot of Lead and more general PAH contamination within the Made Ground, and taking into consideration the physical composition of the Made Ground, it is recommended that these soils be removed from all private garden and soft landscaped areas, down to the underlying natural soils. Natural site-won soils, from foundation/drainage excavations etc. could be used to make up levels, allowing for the placement of a minimum depth of 150mm of certified clean topsoil.

The existing topsoil on site is considered suitable for reuse in private garden and soft landscaped areas. However, given its volume, the practicalities of careful excavation, separation, and storage during redevelopment of the site; importation of topsoil is likely to be required. Any imported soils must be certified clean and suitable for the intended purpose. It would be recommended that any site-won topsoil stockpiles be re-tested to confirm suitability for reuse.

The made ground soils are suitable to remain on site beneath proposed building and hardstanding areas (roads, car parking etc).

An allowance should be made for the further investigation, and potentially local excavation and removal of petroleum hydrocarbon affected soils around former tanks, generators and related infrastructure. These works will need to be validated at that stage.

Further investigation is required beneath the substations for any PCB contamination, once these features have been decommissioned and access is available.

Organic contaminants present in some of the soils, particularly PAH's and petroleum hydrocarbons, could affect plastic underground service pipes (such as the types used by water and gas supply companies). Guidance should be sought from the relevant companies regarding any proposed plant in the affected area. Many water supply companies now require higher specification pipe on contaminated sites, even following remediation.

An historical well was mapped on site. This location should be the subject of investigation and/or formal decommissioning.

As with any site, areas of contamination not identified during site investigation works may come to light in the course of redevelopment. Accordingly, a discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site. This is especially the case for the area beneath the existing buildings and around the buried tank structure.

A formal remediation strategy and verification plan should be agreed with the regulatory authorities prior to commencement of any remedial works.

38 General Guidance

Allowance should be made for experienced verification of any remedial works.

It may be that specific local requirements apply to this site, of which we are not aware at this time.

In general terms, the workforce and general public should be protected from contact with contaminated material. There is a range of relevant documents published by the Health and Safety Executive, and organisations such as CIRIA, and the BRE.

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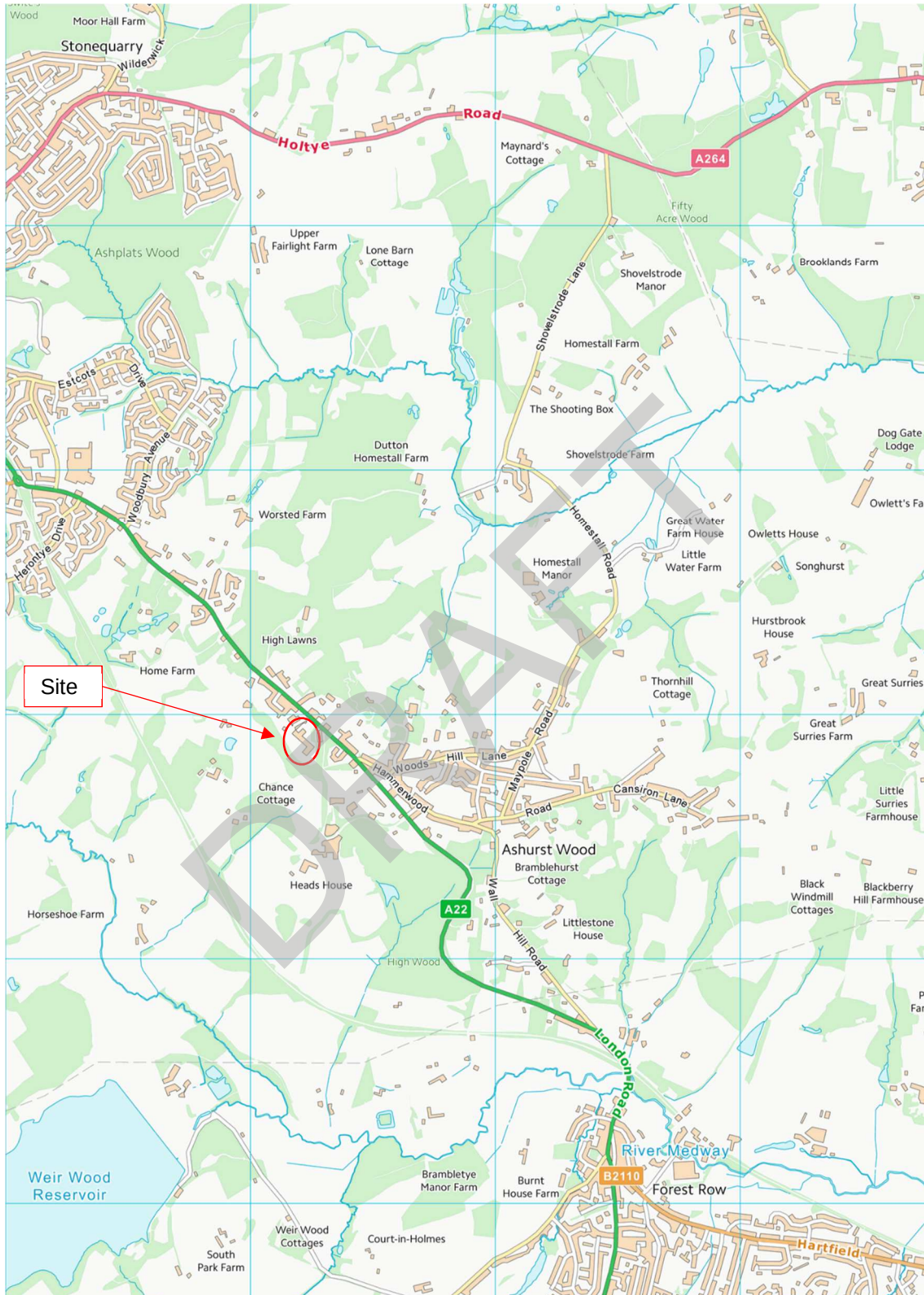
APPENDIX A

Site Plans and Exploratory Hole Logs



DRAFT

A



Contains Ordnance Survey Data © Crown Copyright and Database Right 2024

Site:	Wealden House, Lewes Road, East Grinstead, RH19 3TB	Project ID	J15778
Figure 1	Site Location Plan	Date:	05/08/2024

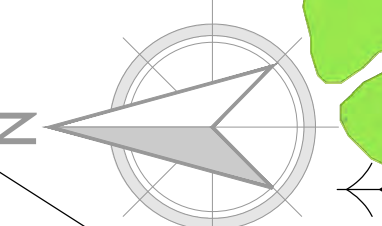


Proposed Refuge Island
(refer to Motion's
drawing 1911051-
SK01A for more details)

Existing
Access

North Lodge

Do not scale dimensions from this drawing
1:250 @ A1
0 10 20



Existing Access
Maintained

Open
Space

sub-station

Block 2
38 - 46
3 storey

Carlton
House

Ashbourne
House

T/H
10.0m

Proposed Type 2 pumping
station, 10m stand-off
distance from Wet well to
nearest buildings

15m Ancient Woodland Buffer

A S73 REVISIONS 05/24
Revision Date

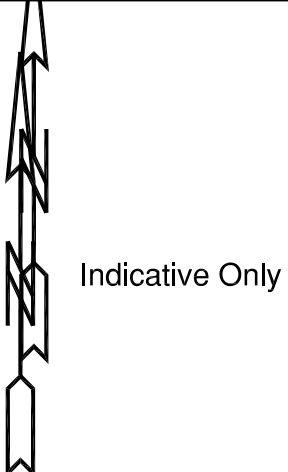
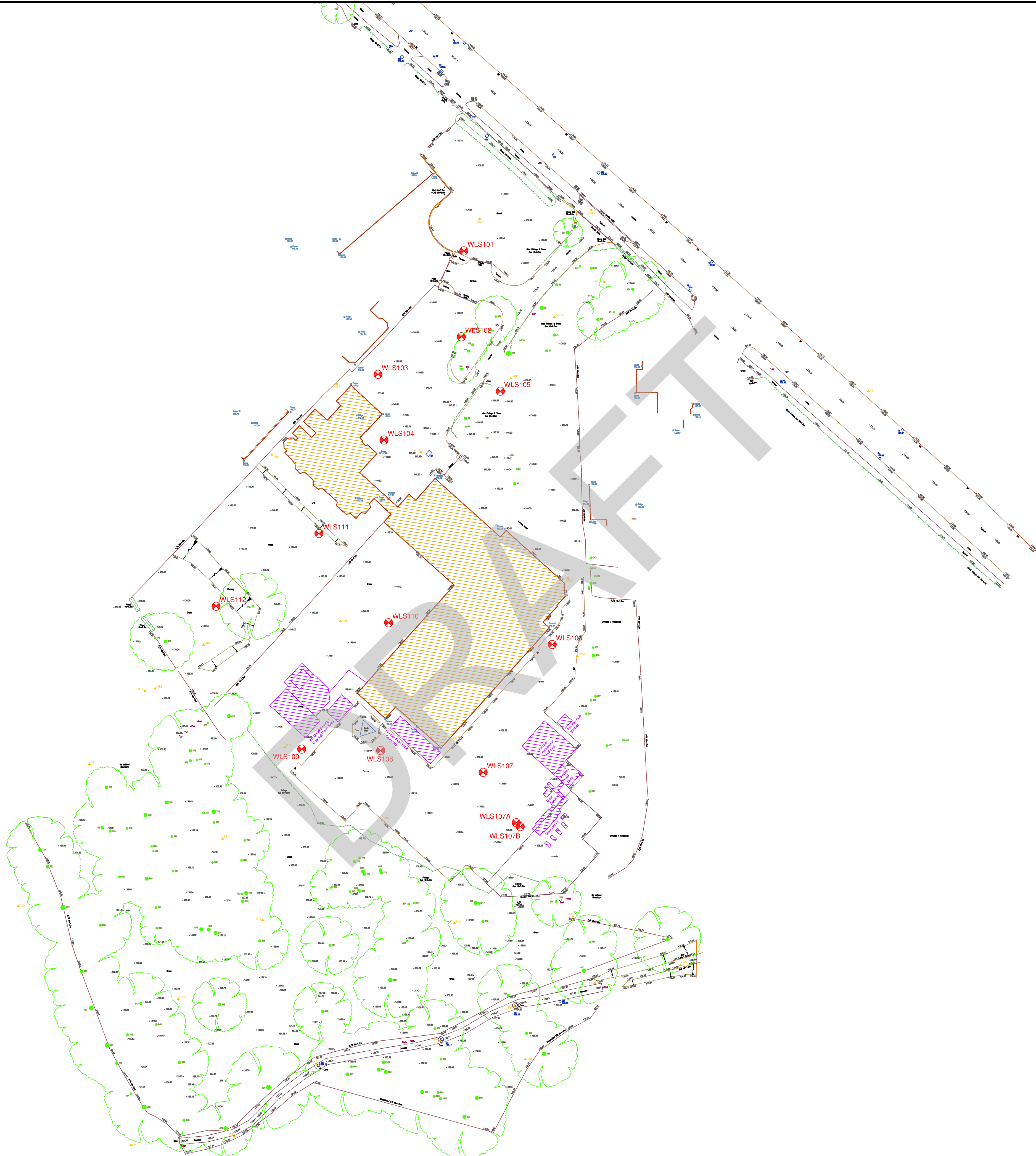


Octagon Developments Ltd
Weir House, Hurst Road, East Molesey, Surrey KT8 9AY
020 8481 7500 | octagon.co.uk

Project
**WEALDEN HOUSE/FORMER EDF
OFFICE, LEWES ROAD, ASHURST
WOOD, WEST SUSSEX**
Title
PROPOSED SITE PLAN

Status
PLANNING
Scale
1:250 @ A1
Job number
2053_005
Drawn
AA
Drawing number
2053_005
Date
05/24
Revision
B

© Copyright Octagon Developments Limited
Original Size 100mm



NOTES

Base drawing (AG/1710036/1, 03/18) prepared by CD Surveys Ltd.
Proposed Site Plan (2053_53, 05/24) provided by Octagon Developments Ltd.
Windowless Sampler and Trial Pit locations added by Southern Testing.
Exploratory hole positions are only indicative unless dimensioned.

Historical detailed added by Southern Testing.

Revisions:		
REV	DATE	DETAILS



SOUTHERN TESTING
Environmental & Geotechnical

Keeble House, Stuart Way, East Grinstead, West Sussex, RH19 4QA.
Tel: 01342 333100 Fax: 01342 410321
www.southerntesting.co.uk

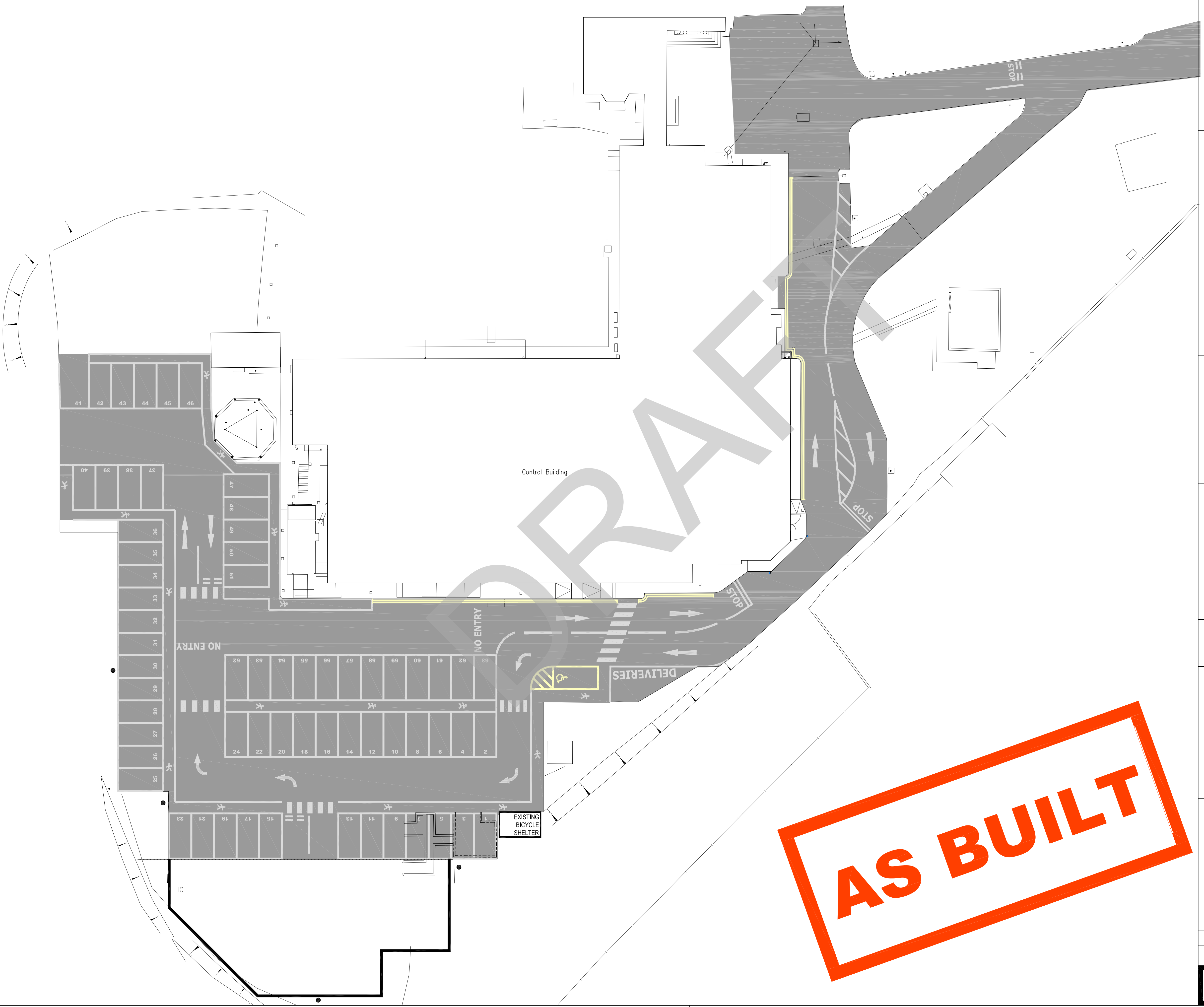
Client:
Octagon Developments Ltd

Job Title:
Wealden House

Description:
Ground Investigation Layout
Topographic Survey Overlay

Drawing No:
Figure 2A

Drawing Status:	
Scale: 1:500	Paper Size: A1
Drawn by: DS	Checked by: SKT
Date: 05 08 2024	



NOTES:

REVISIONS:

PROJECT:
.539 – CAR PARK
RE–SURFACING

SITE:
WEALDEN HOUSE,
EAST GRINSTEAD,
WEST SUSSEX

CLIENT:

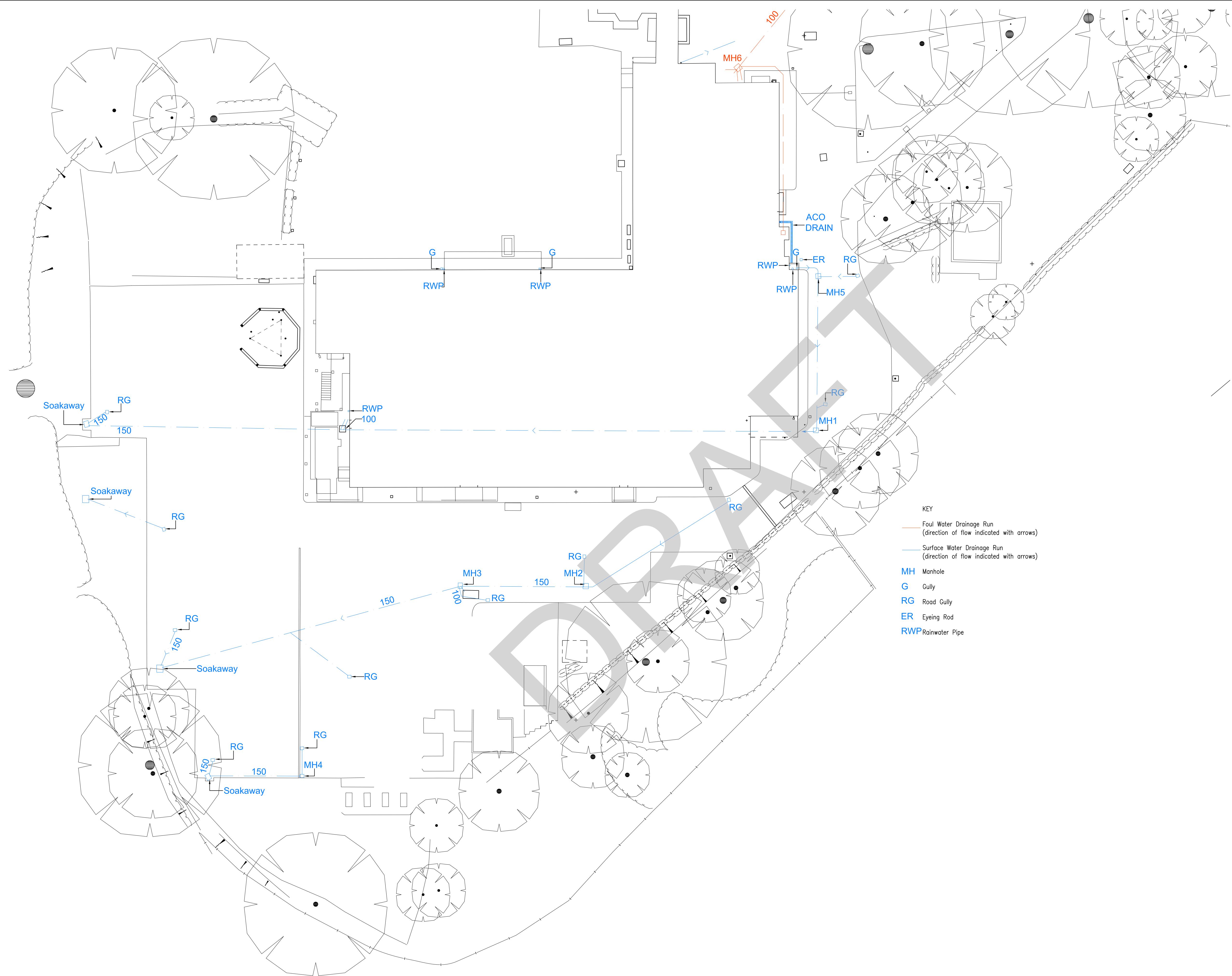


PROPERTY SERVICES
ENERGY HOUSE
HAZELWICK AVENUE
CRAWLEY
WEST SUSSEX
RH10 1EX
01293 657525

DRAWING TITLE:
AS–BUILT LINE DRAWING

DATE	SCALE	DRAWN BY
JUNE 10	1:200@A1	JLW

WEA.539.AB.01	REV.
---------------	-------------



NOTES:

REVISIONS:

PROJECT:
Car Park Resurfacing

SITE:
Wealden House,
East Grinstead

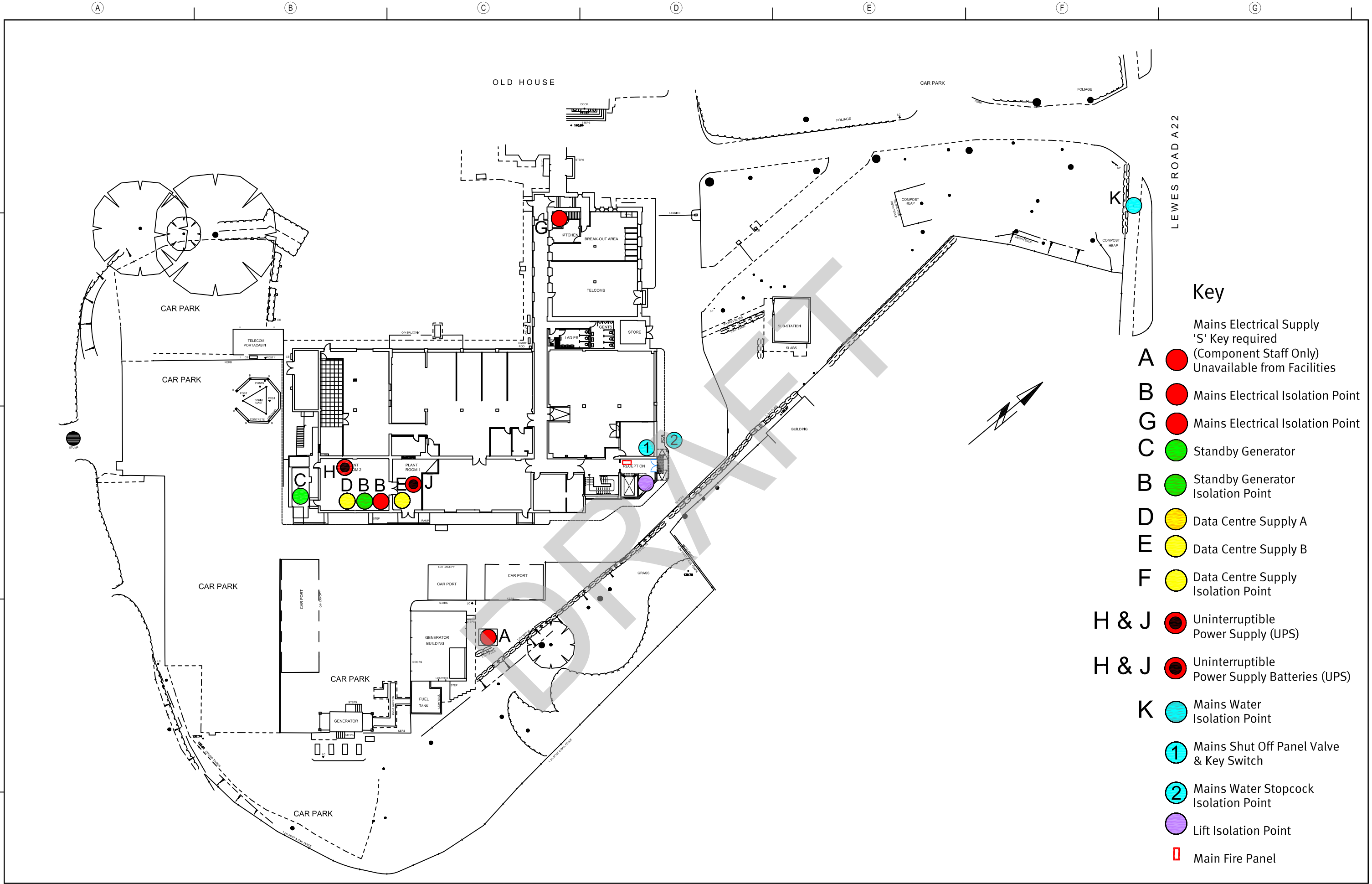
CLIENT:



PROPERTY SERVICES
ENERGY HOUSE
HAZELWICK AVENUE
CRAWLEY
WEST SUSSEX
RH10 1EX
01293 657525

DRAWING TITLE:
Existing Drainage Plan

DATE	SCALE	DRAWN BY
Apr 2010	1:200@A1	JLW
WEA.539.ENV.01		REV.



Key

- Mains Electrical Supply
'S' Key required
(Component Staff Only)
Unavailable from Facilities
- A Mains Electrical Isolation Point
- B Mains Electrical Isolation Point
- G Mains Electrical Isolation Point
- C Standby Generator
- B Standby Generator Isolation Point
- D Data Centre Supply A
- E Data Centre Supply B
- F Data Centre Supply Isolation Point
- H & J Uninterruptible Power Supply (UPS)
- H & J Uninterruptible Power Supply Batteries (UPS)
- K Mains Water Isolation Point
- 1 Mains Shut Off Panel Valve & Key Switch
- 2 Mains Water Stopcock Isolation Point
- Lift Isolation Point
- Main Fire Panel

Revision	Date	Description	By

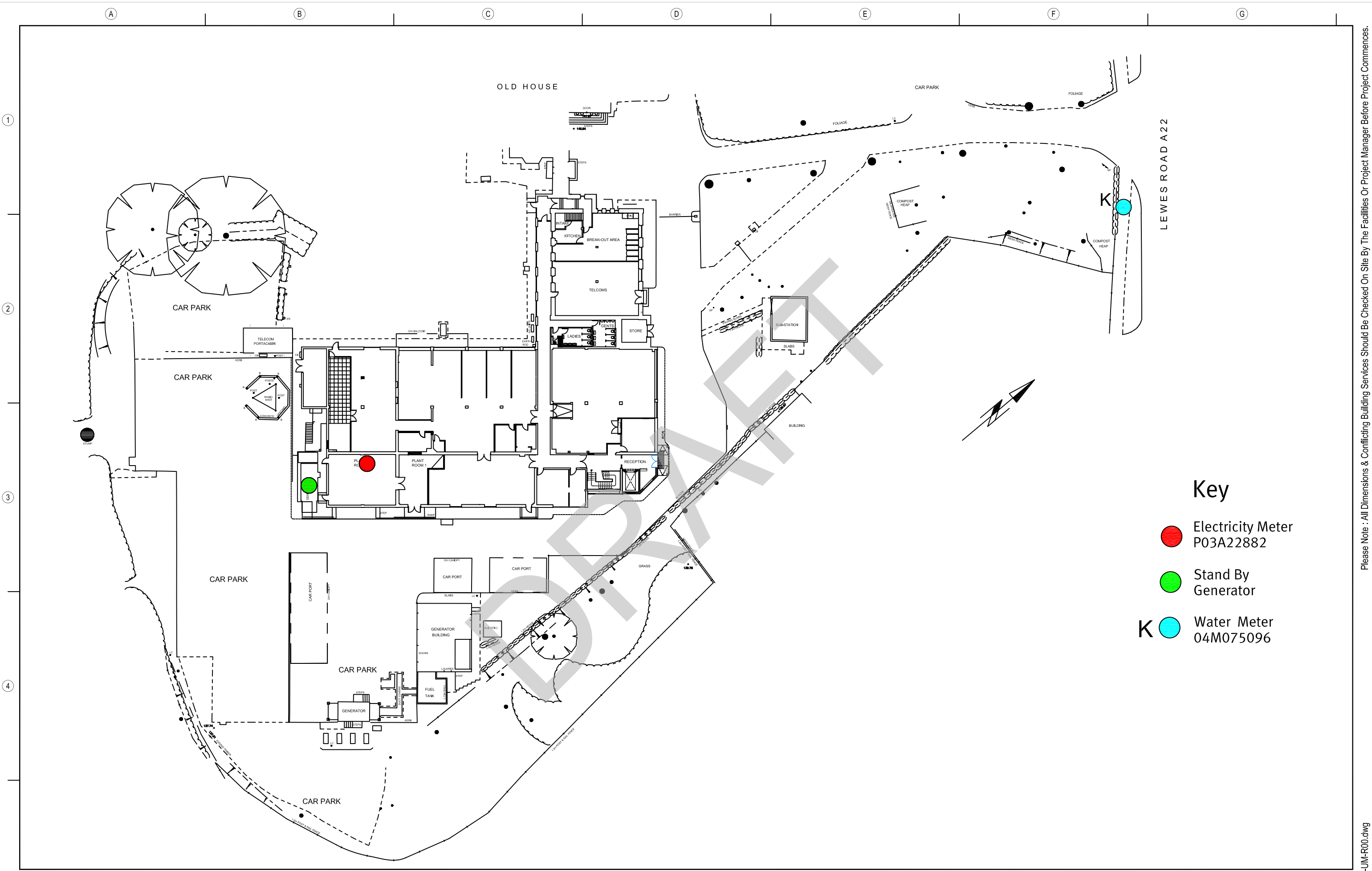


For
EDF Energy
Property Services

Site
Wealden Hse
Lewes Road East Grinstead
West Sussex RH19 3TB

Project
Wealden Hse
Isolation Points
Site Plan

Date 18/05/2010	Scale (At A3) 1:500@A3
Drawn KMW	Revision
Dwg.No. WEA-ALL-TS-IP-R00	



- Key**
- Electricity Meter
P03A22882
 - Stand By
Generator
 - K ● Water Meter
04M075096

<table><thead><tr><th>Revision</th><th>Date</th><th>Description</th><th>By</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td><td> </td></tr></tbody></table>				Revision	Date	Description	By					EDF Energy Property Services	Site Wealden Hse Lewes Road East Grinstead West Sussex RH19 3TB	Project Wealden Hse Meter Locations Site Plan	<table><tr><td>Date 18/05/2010</td><td>Scale (At A3) 1:500@A3</td></tr><tr><td>Drawn KMW</td><td>Revision</td></tr><tr><td colspan="2">Dwg.No. WEA-ALL-TS-UM-R00</td></tr></table>	Date 18/05/2010	Scale (At A3) 1:500@A3	Drawn KMW	Revision	Dwg.No. WEA-ALL-TS-UM-R00	
Revision	Date	Description	By																		
Date 18/05/2010	Scale (At A3) 1:500@A3																				
Drawn KMW	Revision																				
Dwg.No. WEA-ALL-TS-UM-R00																					

Please Note : All Dimensions & Conflicting Building Services Should Be Checked On Site By The Facilities Or Project Manager Before Project Commences.

FILE : WEA-ALL-TS-UM-R00.dwg

Key to Exploratory Hole Logs, Plans and Sections

Backfill Symbols		Pipe Symbols		Principal Soil Types		Principal Rock Types		Drilling Records	
Arisings		Plain Pipe		Topsoil		Mudstone		Water Strike	
Concrete		Slotted Pipe		Made Ground		Claystone		Depth Water Rose	
Blacktop		Piezometer		Clay		Siltstone		Total Core Recovery (%) [TCR]	
Bentonite		Piezometer Tip		Silt		Sandstone		Solid Core Recovery (%) [SCR]	
Gravel Filter		Filter Tip		Sand		Limestone		Rock Quality Index (%) RQD]	
Sand Filter		Extensometer		Gravel		Chalk		Fracture Index (fractures / m) [FI]	
		Inclinometers		Peat					

All soil and rock descriptions are in general accordance with BS5930 2015, BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. Chalk descriptions are also based on CIRIA C574 and "Logging the Chalk – R.N. Mortimer 2015". The Geology Code is only provided where a positive identification of the sample strata has been made.

Location / Method Identifiers		In-situ Test Location / Method	
BH	Borehole (undefined)	DP	Dynamic Probe
CP	Cable Percussive	CPT	Cone Penetration Test
RC	Rotary Core	CBR	In-situ CBR Test
RO	Rotary Open Hole	DCP	CBR using Dynamic Cone Penetrometer
ODC	Rotary Odex/Symmetrix drilling cased	CBRT	CBR using TRL Probe
CP+RC	Cable Percussive to Rotary Core	PB	Plate Bearing Test
SNC	Sonic	SPT (S)	Standard Penetration Test (Split Barrel Sampler)
CFA	Continuous Flight Auger	SPT (C)	Standard Penetration Test (Solid Cone)
FA	Flight Auger	N	SPT Result
VC	Vibro Core	-/-	Blows/Penetration (mm) after seating drive
WLS+RC	Windowless (Dynamic) Sampler to Rotary Core	-*/-	Total Blows / Penetration (mm)
WLS	Windowless Sampler	()	Extrapolated Value
WS	Window Sampler	PPT	Perth Penetration (In-House Method - Equivalent N Value)
HA	Hand Auger	HP / UCS	Strength from Hand Penetrometer (kN/m ²)
C	Road / Pavement Core	IVN	Strength from Hand Vane ((kN/m ²) P = peak, R = residual
IP	Inspection Pit (Hand Excavation)	PID	Photo Ionisation Detector (ppm)
TP	Trial Pit (Machine Excavated)	MEXE	Mexi-Cone CBR (%)
OP	Observation Pit (Supported Excavation Hand or Machine)		

Samples / Test Type	
B	Bulk Sample
BLK	Block Sample
C	Core Sample
CBRS	CBR Mould Sample
D	Small Disturbed Sample
ES	Environmental Sample (Soil)
EW	Environmental Sample (Water)
GS	Environmental Sample (Gas)

Samples / Test Type	
SPTLS	Standard Penetration Test Split Barrel Sample
TW	Thin Wall Push In Sample (e.g. Shelby Sampler)
U	Undisturbed Open Drive Sample (blows to take)
UT	Thin Wall Undisturbed Open Drive Sample (blows to take)
W	Water Sample (Geotechnical)
SP	Sample from Stockpile
P	Piston Sample
AMAL	Amalgamated Sample

				Start - End Date:		Project ID:		Hole Type:		WLS101	
				18/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
						E 541236 - N 136951		140.11		SKT	
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Runs						
		0.05				0.05	140.06		Blacktop site surfacing (car park). MADE GROUND		
		0.20	ES				(0.35)		Recovered as red fine to coarse occasionally cobble size brick and yellow concrete in a silty/sand matrix. MADE GROUND		
		0.55	ES			0.40	139.71		Soft dark grey silty CLAY.		
						0.50	(0.10) 139.61		Soft yellowish-orangish brown mottled light grey SILT/CLAY with black iron staining and ironstone gravel. GRINSTEAD CLAY MEMBER		
		1.00	SPT	N=6 (1,1/2,1,1,2)			(0.70)				1
		1.20				1.20	138.91		Firm becoming very stiff with depth yellowish-brown mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER		
		1.50	ES HP	UCS(kPa)=170					40mm band extremely weak thickly laminated to thinly bedded mudstone at 2.7m		
		2.00	HP SPT	UCS(kPa)=200 N=8 (1,1/1,2,2,3)							2
		2.50	D HP	UCS(kPa)=300			(2.25)				
		3.00	HP SPT	UCS(kPa)=320 N=18 (1,3/3,4,5,6)							3
						3.45	136.66		End of Borehole at 3.45m		
											4
											5
Remarks:											
Hand dug to 1.0m Dry on completion.											
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR	

	Start - End Date:	Project ID:	Hole Type:	WLS101
	18/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

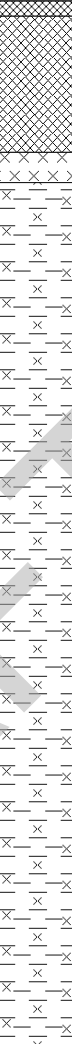
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=6 (1,1/2,1,1,2)	RP11075	78	
2.00	S				N=8 (1,1/1,2,2,3)	RP11075	78	
3.00	S				N=18 (1,3/3,4,5,6)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS102	
				18/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
						E 541236 - N 136931		140.32		SKT	
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Runs						
						0.05	140.27		Blacktop site surfacing (car park). MADE GROUND Recovered as pink-grey fine to coarse sub-angular to sub-rounded limestone in sandy matrix with rare brick cobbles. MADE GROUND Recovered as friable yellowish-brown SILT. Soft becoming very stiff with depth, yellowish-orange mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER <u>Extremely thickly laminated ironstone bands from 1.3-1.4m.</u>	1 2 3 4 5	
		0.55	ES			0.50	139.82				
						0.60	139.72				
		1.00	D HP SPT	UCS(kPa)=150 N=6 (1,1/1,1,2,2)							
		1.50	HP	UCS(kPa)=300							
		2.00	ES HP SPT	UCS(kPa)=300 N=17 (1,4/3,4,5,5)		(2.85)					
		2.50	HP	UCS(kPa)=350							
		3.00	D HP SPT	UCS(kPa)=600+ N=26 (3,4/5,6,8,7)							
						3.45	136.87				
		End of Borehole at 3.45m									
Remarks: Hand dug to 1.0m Dry on completion.											
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR	

	Start - End Date:	Project ID:	Hole Type:	WLS102
	18/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=6 (1,1/1,1,2,2)	RP11075	78	
2.00	S				N=17 (1,4/3,4,5,5)	RP11075	78	
3.00	S				N=26 (3,4/5,6,8,7)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS103				
				18/07/2024		J15778		WLS		Sheet 1 of 1				
Client:		Octagon Developments Ltd.				Co-ordinates:			Level (m AOD)		Logger:			
						E 541216 - N 136922			141.22		SKT			
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB						
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type/Fl	Results	Runs									
		0.20	ES			0.05	141.27		Brown SILT/CLAY with abundant fine rootlets, rare fine concrete and brick (TOPSOIL). MADE GROUND Buff-grey fine to medium sand with fine to coarse brick, concrete and flint. MADE GROUND		1			
		0.50	ES			0.40	140.82							
		0.60				(0.20)								
		1.00	SPT	N=14 (2,1/2,3,4,5)		(1.00)	140.62	Mid brown SILT/SAND with rare fine brick and slate. REWORKED GROUND Medium dense yellowish-brown sandy gravelly CLAY. Gravel is fine to coarse sandstone. GRINSTEAD CLAY MEMBER						
		1.50	ES											
		2.00	HP SPT	UCS(kPa)=250 N=13 (1,2/3,4,2,4)		1.60	139.62							
		2.50	D ES HP	UCS(kPa)=300		(1.85)		Band of siltstone gravel from 1.5-1.6m Stiff yellowish-orange mottled light grey silty CLAY, becoming friable, dark grey and brown from 1.7m. GRINSTEAD CLAY MEMBER						
		3.00	HP SPT	UCS(kPa)=350 N=18 (1,2/4,3,5,6)										
							3.45	137.77	End of Borehole at 3.45m			5		
Remarks:														
Hand dug to 1.0m Dry on completion.														
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR				

	Start - End Date:	Project ID:	Hole Type:	WLS103
	18/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

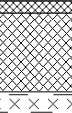
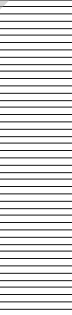
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=14 (2,1/2,3,4,5)	RP11075	78	
2.00	S				N=13 (1,2/3,4,2,4)	RP11075	78	
3.00	S				N=18 (1,2/4,3,5,6)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS104		
				18/07/2024		J15778		WLS		Sheet 1 of 1		
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:		
						E 541217 - N 136906		140.90		SKT		
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB				
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Runs							
		0.40	ES			0.04	140.86		Blacktop site surfacing (car park). MADE GROUND Dark brown/black gravel of blacktop, limestone and rare brick fragments. MADE GROUND Yellowish-orange clayey SILT. GRINSTEAD CLAY MEMBER			
						0.30	140.60					
		1.00	ES HP SPT	UCS(kPa)=190 N=7 (1,1/2,2,1,2)			0.90	140.00		Soft to firm yellow-orange mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER		1
							1.50	HP				
		2.00	D HP SPT	UCS(kPa)=250 N=12 (1,2/2,3,3,4)			(1.50)			Extremely weak thinly laminated yellowish-grey highly weathered very thinly bedded MUDSTONE. GRINSTEAD CLAY MEMBER		2
3.00	D HP SPT	UCS(kPa)=600 N=15 (2,2/2,4,4,5)			2.40	138.50						
					3.45	137.45	End of Borehole at 3.45m		3			
											4	
											5	
Remarks:												
Hand dug to 1.0m Dry on completion.												
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR		

	Start - End Date:	Project ID:	Hole Type:	WLS104
	18/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

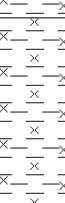
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=7 (1,1/2,2,1,2)	RP11075	78	
2.00	S				N=12 (1,2/2,3,3,4)	RP11075	78	
3.00	S				N=15 (2,2/2,4,4,5)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS105	
				18/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
						E 541245 - N 136918		140.13		SKT	
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Runs						
		0.50	ES			0.10	(0.10) 140.03		Blacktop site surfacing (access road). MADE GROUND	1	
							(0.30)				Pink-brown sandy limestone gravel. MADE GROUND
						0.40	139.73				Dark grey silty CLAY with a slight organic (natural) odour. REWORKED GROUND
							(0.30)				
		1.00	D HP SPT	UCS(kPa)=200 N=5 (1,1/1,1,1,2)		0.70	139.43		Firm to stiff yellowish-orange mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER		2
							(1.10)				
		1.50	D HP	UCS(kPa)=300							3
		2.00	D SPT	N=14 (1,1/3,3,4,4)		1.80	138.33		Stiff orangish-brown with mid grey thinly laminated SILT/ CLAY, tending to mudstone at depth. GRINSTEAD CLAY MEMBER		4
							(0.30)				
2.60	HP	UCS(kPa)=600+		2.10	138.03		Extremely weak thinly laminated mid brown highly weathered MUDSTONE. GRINSTEAD CLAY MEMBER	5			
					(1.35)						
3.00	D HP SPT	UCS(kPa)=600+ N=17 (2,2/3,4,4,6)		3.45	136.68		End of Borehole at 3.45m				
Remarks:											
Hand dug to 1.0m Dry on completion.											
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR	

	Start - End Date:	Project ID:	Hole Type:	WLS105
	18/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

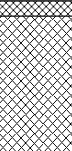
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=5 (1,1/1,1,1,2)	RP11075	78	
2.00	S				N=14 (1,1/3,3,4,4)	RP11075	78	
3.00	S				N=17 (2,2/3,4,4,6)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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						Start - End Date:		Project ID:		Hole Type:		WLS106	
						18/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.						Co-ordinates:		Level (m AOD)		Logger:	
								E 541258 - N 136857		139.71		SKT	
Project Name:		Wealden House						Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Runs								
		0.05					139.86		Blacktop site surfacing (access road). MADE GROUND				
		0.30	ES				(0.45)		Brown-red fine to coarse brick gravel in a sandy matrix. MADE GROUND				
		0.50					139.21		Firm becoming very stiff brown speckled black and orange CLAY. GRINSTEAD CLAY MEMBER				
		1.00	D HP SPT	UCS(kPa)=150 N=9 (1,1/2,2,2,3)			(2.00)					1	
		2.00	ES HP SPT	UCS(kPa)=270 N=9 (1,2/1,2,3,3)								2	
	2.50	HP	UCS(kPa)=450			2.50	137.21		Stiff to very stiff very thinly laminated, yellowish-brown silty gravelly CLAY. Gravel is fine to coarse sub-angular extremely weak mudstone. GRINSTEAD CLAY MEMBER				
	3.00	D HP SPT	UCS(kPa)=500 N=18 (1,3/4,5,4,5)				(0.95)					3	
						3.45	136.26		End of Borehole at 3.45m				
												4	
												5	
Remarks:													
Hand dug to 1.0m Dry on completion.													
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR			

	Start - End Date:		Project ID:	Hole Type:	WLS106
	18/07/2024		J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.45	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

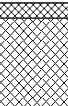
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=9 (1,1/2,2,2,3)	RP11075	78	
2.00	S				N=9 (1,2/1,2,3,3)	RP11075	78	
3.00	S				N=18 (1,3/4,5,4,5)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS107			
				19/07/2024		J15778		WLS		Sheet 1 of 1			
Client:		Octagon Developments Ltd.				Co-ordinates:			Level (m AOD)		Logger:		
						E 541241 - N 136826			139.15		SKT		
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB					
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Runs								
		0.40	ES			0.05	139.70		Blacktop site surfacing (car park). MADE GROUND Red-orange brick rubble. MADE GROUND		1		
				1.00	HP SPT	UCS(kPa)=170 N=9 (1,1/2,2,2,3)		0.60	138.55			Loose (estimated) blue-grey fine SAND, becoming mottled orange-brown from 0.9m.	
				2.00	D SPT	N=8 (1,2/2,2,1,3)		1.00	138.15			Stiff blueish-grey mottled orange-brown sandy gravelly CLAY. Frequent medium to coarse siltstone gravel from 1.6m. GRINSTEAD CLAY MEMBER	
				2.50	HP	UCS(kPa)=300						Stiff orange-brown silty gravelly CLAY. Gravel is fine to medium sub-angular siltstone.	
			3.00	D HP SPT	UCS(kPa)=380 50 (3,29/50 for 1mm)					Very thinly laminated from 2.9m.			
						3.00	136.15		End of Borehole at 3.00m		3		
											4		
											5		
Remarks:													
Hand dug to 1.0m Dry on completion. SPT refused at 3.0m													
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR			

	Start - End Date:	Project ID:	Hole Type:	WLS107
	19/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.00	WLS	18/07/2024	18/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

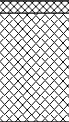
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=9 (1,1/2,2,2,3)	RP11075	78	
2.00	S				N=8 (1,2/2,2,1,3)	RP11075	78	
3.00	S				50 (3,29/50 for 1mm)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS108	
				19/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
						E 541216 - N 136832		139.60		SKT	
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/Fl	Results	Runs						
						0.04	139.56		Blacktop site surfacing. MADE GROUND	1	
						(0.36)			Black fine to coarse brick gravel. MADE GROUND		
	0.45	ES			0.40	139.20		Black stained silty sandy CLAY (no odour).			
	0.60	ES			0.50	139.10		Orange-brown sandy CLAY.			
					0.70	138.90		Loose (estimated) fine yellow-brown fine SAND.			
					1.00	138.60		Stiff orangish-yellow mottled buff-yellow silty gravelly CLAY. Gravel is fine to medium extremely weak mudstone. GRINSTEAD CLAY MEMBER			
	1.50	HP	UCS(kPa)=200								
	2.00	D HP SPT	UCS(kPa)=180 N=9 (1,2/1,2,3,3)			(2.00)					
	2.50	HP	UCS(kPa)=280								
	3.00	D HP SPT	UCS(kPa)=380 50 (5,20/50 for 1mm)		3.00	136.60		End of Borehole at 3.00m	3		
									4		
									5		
Remarks:											
Hand dug to 1.0m Dry on completion. SPT refused at 3.0m											
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR	

	Start - End Date:	Project ID:	Hole Type:	WLS108
	19/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.00	WLS	19/07/2024	19/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

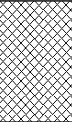
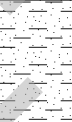
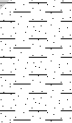
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=4 (1,0/1,1,1,1)	RP11075	78	
2.00	S				N=9 (1,2/1,2,3,3)	RP11075	78	
3.00	S				50 (5,20/50 for 1mm)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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						Start - End Date:		Project ID:		Hole Type:		WLS109	
						19/07/2024		J15778		WLS		Sheet 1 of 1	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:			
						E 541198 - N 136832		139.57		SKT			
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB					
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Runs								
		0.50	ES			0.40	(0.40)		Medium to coarse grey limestone gravel. MADE GROUND	1			
							139.17		Dark brown SILT/CLAY with fine brick. REWORKED GROUND				
		1.00	HP SPT	UCS(kPa)=120 N=2 (0,1/0,0,1,1)		0.80	138.77		Firm yellowish-brown mottled grey silty gravelly CLAY. Gravel is fine to medium sandstone. GRINSTEAD CLAY MEMBER				
							(0.80)						
		1.50	D			1.60	137.97		Firm to stiff dark grey/yellow-grey sandy CLAY. GRINSTEAD CLAY MEMBER	2			
							(1.30)						
2.00	HP SPT	UCS(kPa)=120 N=9 (0,1/2,1,3,3)						3					
2.50	D HP	UCS(kPa)=250											
3.00	SPT	50 (25 for 1mm/50 for 1mm)		2.90 3.00	136.67 (0.10) 136.57		Extremely weak thinly laminated highly weathered yellow and light grey SILTSTONE. End of Borehole at 3.00m						
										4			
										5			
Remarks:													
Hand dug to 1.0m Dry on completion. SPT refused at 3.0m													
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:39		Log Approved By:		JNR			

	Start - End Date:	Project ID:	Hole Type:	WLS109
	19/07/2024	J15778	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	3.00	WLS	19/07/2024	19/07/2024	STL	Rotary Prem. Rig		SKT	Hand dug to 1.0m

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
101	2.00				
101	3.00				

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

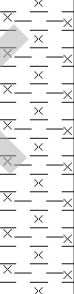
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=2 (0,1/0,0,1,1)	RP11075	78	
2.00	S				N=9 (0,1/2,1,3,3)	RP11075	78	
3.00	S				50 (25 for 1mm/50 for 1mm)	RP11075	78	

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

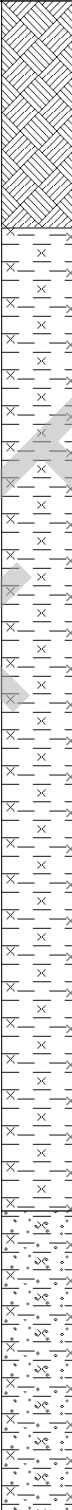
Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	3.00	Arisings	

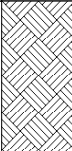
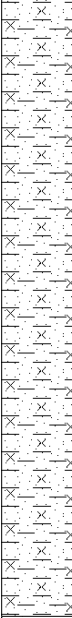
Status:	FINAL	Log Print Date and Time:	09/08/2024 10:39	Log Approved By:	JNR
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				Start - End Date:		Project ID:		Hole Type:		WLS110	
				19/07/2024		J15778		HA		Sheet 1 of 2	
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
						E 541218 - N 136862		140.14		SKT	
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/Fl	Results	Window Run						
		0.20	ES			0.30	139.84		Mid brown clayey silty SAND with frequent rootlets (TOPSOIL).		
		0.40	ES						Recovered as firm brown-yellow mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER		
		1.00	D HP	UCS(kPa)=210					Fine ironstone gravel from 0.8-0.9m		
		1.50	D						Recovered as friable yellow-orange and light grey SILT/CLAY with bands of very thinly laminated extremely weak orange siltstone. GRINSTEAD CLAY MEMBER		
		2.00	D								
Remarks:											
Dry on completion. Hand augered trial hole.											
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:40		Log Approved By:		JNR	

					Start - End Date:		Project ID:		Hole Type:		WLS110	
					19/07/2024		J15778		HA		Sheet 2 of 2	
Client:		Octagon Developments Ltd.					Co-ordinates:		Level (m AOD)		Logger:	
							E 541218 - N 136862		140.14		SKT	
Project Name:		Wealden House					Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/FI	Results	Window Run							
		2.50	HP	UCS(kPa)=250			(1.90)		Recovered as friable yellow-orange and light grey SILT/CLAY with bands of very thinly laminated extremely weak orange siltstone. GRINSTEAD CLAY MEMBER			
		2.90	D									
						3.00	137.14		End of Borehole at 3.00m		3	
											4	
Remarks:												
Dry on completion. Hand augered trial hole.												
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:40		Log Approved By:		JNR		

					Start - End Date:		Project ID:		Hole Type:		WLS111	
					19/07/2024		J15778		HA		Sheet 1 of 2	
Client:		Octagon Developments Ltd.					Co-ordinates:		Level (m AOD)		Logger:	
							E 541202 - N 136884		140.47		SKT	
Project Name:		Wealden House					Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Window Run							
		0.10	ES				(0.30)		Brown SILT/CLAY with abundant fine rootlets, rare cinder block and brick (TOPSOIL).		1	
		0.40	ES			0.30	140.17		Recovered as firm yellowish-brown mottled light grey silty CLAY. GRINSTEAD CLAY MEMBER			
		1.00	D HP	UCS(kPa)=130			(1.30)					
		1.50	D HP	UCS(kPa)=140								
		2.00	D			1.60	138.87		Recovered as stiff yellowish-brown mottled light grey sandy CLAY with abundant fine siltstone gravel. GRINSTEAD CLAY MEMBER			
		2.00	D								2	
Remarks:												
Dry on completion. Hand augered trial hole.												
Status:		FINAL			Log Print Date and Time:		09/08/2024 10:40		Log Approved By:		JNR	

					Start - End Date:		Project ID:		Hole Type:		WLS111	
					19/07/2024		J15778		HA		Sheet 2 of 2	
Client:		Octagon Developments Ltd.					Co-ordinates:		Level (m AOD)		Logger:	
							E 541202 - N 136884		140.47		SKT	
Project Name:		Wealden House					Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Window Run							
						3.00	137.47		Recovered as stiff yellowish-brown mottled light grey sandy CLAY with abundant fine siltstone gravel. GRINSTEAD CLAY MEMBER		3	
									End of Borehole at 3.00m			
											4	
Remarks:												
Dry on completion. Hand augered trial hole.												
Status:		FINAL			Log Print Date and Time:			09/08/2024 10:40		Log Approved By:		JNR

				Start - End Date:		Project ID:		Hole Type:		WSL112		
				19/07/2024		J15778		HA		Sheet 1 of 1		
Client:		Octagon Developments Ltd.				Co-ordinates:		Level (m AOD)		Logger:		
						E 541177 - N 136866		138.41		SKT		
Project Name:		Wealden House				Location:		Lewes Road, East Grinstead, West Sussex, RH19 3TB				
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Window Run							
		0.10	ES			0.20	(0.20)		Brown silty CLAY with frequent rootlets (TOPSOIL).			1
		0.30	ES				138.21			Stiff pale brown and yellow-brown silty sandy CLAY with bands of very thinly laminated extremely weak siltstone from 1.0m. GRINSTEAD CLAY MEMBER		
		1.00	D HP	UCS(kPa)=150		1.80	(1.60)			Siltstone gravel at 1.0m		
		1.50	D HP	UCS(kPa)=150			136.61		End of Borehole at 1.80m			
												2
Remarks:												
Dry on completion. Hand augered trial hole. Refusal at 1.8m.												
Status:		FINAL		Log Print Date and Time:		09/08/2024 10:40		Log Approved By:		JNR		

APPENDIX B

**Field Sampling and In-Situ
Test Methods and Results**

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B

Soil and Rock Descriptions

All soil and rock descriptions are in general accordance with BS5930 Ref [4].

Anthropogenic soils ('made ground' or 'fill') describe materials which have been placed by man and can be divided into those composed of reworked natural soils and those composed of or containing man-made materials. 'Fill' is used to describe material placed in a controlled manner and 'made ground' is used to describe materials placed without strict engineering control.

The classification of materials such as topsoil is based on visual description only and should not be interpreted to mean that the material complies with criteria used in BS 3882 Ref [26].

Chalk descriptions are based on CIRIA C574 Ref [27] and Mortimore Ref [28].

The geology code is only provided on logs where a positive identification of the sample strata has been made.

Inspection Pit

Inspection pits are hand excavated from the surface (maximum depth 1.2 – 1.5m) using appropriate tools to locate and avoid existing buried services at exploratory hole positions. They are also regularly used as part of investigations on existing structures to expose and determine foundation detail.

Dynamic Sampling - Window or Windowless

Window sampling is carried out by driving hollow steel tubes incorporating a longitudinal access slot (window) and a cutting shoe into the ground using a percussive 'breaker'. This enables recovery of a continuous soil sample for examination and sub-sampling.

Windowless samplers are designed for taking disturbed, continuous soil samples to depths up to 10 metres (depending on ground conditions). The samplers comprise steel tubes of about 50-100mm diameter with a rigid plastic liner (no window) and are driven into the ground with a sliding hammer mounted on a tracked purpose-designed soil sampling rig. After driving and extracting the sampler from the ground, the plastic liner is extracted together with the enclosed soil sample. The sample can then either be extracted, split and sub-sampled or plastic end caps may be fitted, the tube labelled and transported for future examination and sub-sampling.

Soil samples are disturbed by the driving process with both techniques and can be regarded as being between Class 5 up to Class 3 samples at best (in favourable ground).

The major advantage of using windowless samplers is that the plastic liner greatly reduces the possibility of cross-contamination between successive samples.

An equivalent in-situ test to the Standard Penetration Test can be carried out with the windowless sampler rig.

Standard Penetration Test (SPT)

The Standard Penetration Test (SPT) is specified in BS EN ISO 22476-3 Ref [29]. In this test, an open-ended tube is driven into the ground by blows from a free-falling hammer (with specified sizes, weights and distances).

The tube is seated by driving to a penetration of 150mm, or by 25 blows, whichever occurs first. It is then driven for a maximum of a further 300mm and the number of blows is termed the penetration resistance (N). If 300mm penetration cannot be achieved in 50 blows, the test drive is terminated and penetration depth is recorded.

When testing in gravels, a conical end piece is attached to the tube. The test is then called an SPT(C).

A classification of relative density descriptions as used on borehole logs, based upon uncorrected SPT N values, is given within BS5930 Ref [4] and set out as follows:

Classification based on uncorrected SPT N Value	Term
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
Over 50	Very Dense

Perth Penetrometer Test

The Perth Penetrometer is a non-standard test used for assessing the relative density of sands. It consists of a 16 mm diameter hardened steel probe, which is driven into the soil by successive blows of a 9.09 kg weight, which freely falls over a distance of 600 mm. The number of blows required for each 50 mm of penetration is recorded, and the test is continued for a total depth of 450 mm, according to soil type.

The energy input is roughly the same as that from the Standard Penetration Test (SPT), and experience by this laboratory indicate that in sand the Perth Penetrometer readings correlate fairly well with SPT blow counts (this relationship does not hold for coarse or cohesive soils). A classification of relative density descriptions as used on trial pit logs is given below.

Perth Correlation with uncorrected SPT N Value	Term
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
Over 50	Very Dense

Hand Penetrometer Test

The handheld soil penetrometer consists of a spring loaded and calibrated plunger which is forced into cohesive soil. A reading of unconfined compression strength (equal to twice cohesion) is given on a calibrated scale. The average of a set of three readings shall be recorded.

In common with other hand methods of strength assessment it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

Dynamic Cone Penetrometer (DCP) CBR Test (Modified)

The dynamic cone CBR test uses light portable equipment and is used to provide a continuous record of the penetration resistance of each layer in the ground for a depth of a metre from the surface. The penetration resistance provides a measure from which CBR values may be calculated.

In the test a 22 mm diameter 60° cone is driven into the ground to a depth of up to one metre by a 9.09 kg weight, freely falling over 600 mm. The number of blows is recorded for each successive 50mm penetration increment.

A plot of the cumulative number of blows versus depth penetrated is drawn. This plot usually takes the form of a series of straight lines, the slopes of which are measured and expressed as penetration in mm per blow. It is the practice of this laboratory to adopt the lower of two values derived from formulae established by Kleyn & Van Heerden Ref [30]

$$CBR = 10^{(2.632 - 1.28 \log_{10} (mm / blow))}$$

& TRL Ref [31]

$$CBR = 10^{(2.48 - 1.057 \log_{10} (mm / blow))}$$

The test is an adaptation of the Perth Penetrometer Test developed for the granular soils in Perth West Australia in the 1960s, and in the UK by this laboratory since 1973. It is similar to the TRL dynamic cone penetrometer. Local experience by this laboratory has shown in UK conditions it has been found to give consistent results for granular soils.

Disturbed Samples

Disturbed samples were taken from exploratory holes in general accordance with BS 5930 [4] and BS EN ISO 22475-1 Ref [32] as required and stored in appropriately labelled containers. Details of the type, size and depth of sample will be recorded within the exploratory hole record. Such samples can be regarded as being between Class 5 up to Class 3 quality depending upon their method of sampling.

Environmental Samples

Environmental samples were taken from the boreholes at regular intervals in the made ground and natural soils as indicated on the exploratory hole logs. The sampling strategy was in general accordance with BS10175 Ref [5] and BS ISO 18400 Refs [33], [34], [35], [36] & [37].

These samples were collected and stored in glass jars or plastic pots and transferred to the laboratory in cool boxes as appropriate to the proposed laboratory testing.

Groundwater Monitoring – Dip Meter

The dip meter is used to measure standing water levels within boreholes. The probe is lowered into the borehole until the meter detects the groundwater with an audible 'beep'. The level is then read from the tape.

Soakage Tests (after BRE DG365 2016)

The BRE DG365 Ref [38] paper on soakaway design allows for the design of trench soakaways as well as traditional square and circular soakaways.

The test to measure the soil infiltration rate is carried out in pits which are excavated to the full depth of the proposed soakaway. The trial pits are filled and allowed to drain to empty or near empty, three times, on the same day or on consecutive days. Water levels are recorded against time. Where the sides are unstable the pit should be filled with granular material to provide stability during the test.

Calculated soakage rates are expressed as l/m²/minute, which is a convenient rate to use. The BRE use a unit of m/sec, which is the value in l/m²/minute divided by 60,000.

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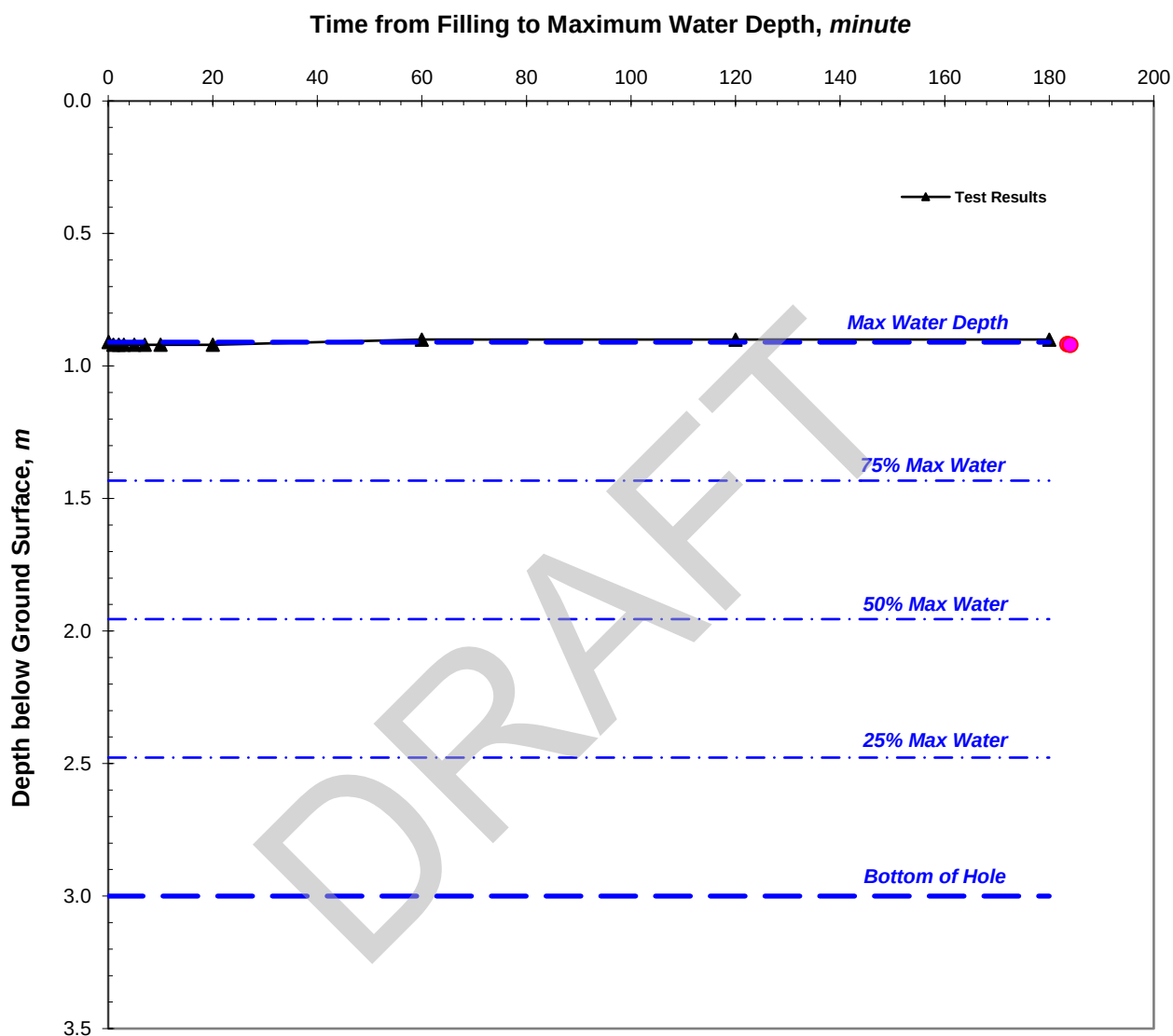
Summary Sheet

Results of Preliminary Falling-Head Soakage Tests

Site : Wealden House/Former EDF Energy Office, Lewes					Job No : J15778		
Client : Octagon Developments					O S Reference :		
Tested By : OS/JS				Engineer: SKT		Test Date : 18/Jul/2024	
Hole No	Test No	Hole Depth <i>m</i>	Soakage Rate for Each Test <i>litre/m²/min</i>	Soakage Rate for Each Hole <i>litre/m²/min m/sec</i>		Water Level at Finish of Test	Remarks
WLS101	No 1	3.00	N/A	N/A	N/A	Pit was not emptied; Non compliant value was calculated.	Test undertaken in windowless sampler borehole
WLS112	No 1	1.80	0.0020	0.0020	3.28E-8	Pit was not emptied; Non compliant value was calculated.	Test undertaken in windowless sampler borehole
Mean Value of All Calculated Soakage Rates :				0.0020 <i>litre/m²/min</i>	3.28E-8 <i>m/sec</i>		

Preliminary Falling-Head Soakage Test

Test Hole No: WLS101
Test No: Test No 1 (Initial)



Diameter of Borehole, m	0.100	Depth to Water at Start of Test, m	0.910
Depth to End of Borehole Casing, m		Max Water Dropdown during Test, m	0.010
Depth to Borehole Base, m	3.000	Total Soakage Test Time, min	180.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	0.662
Depth to Groundwater Surface, m		Discharge Rate, litre/min	
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	N/A
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	N/A

Comments: Test undertaken in windowless sampler borehole
Water level arose during the test, soakage rate calculation is not applicable.

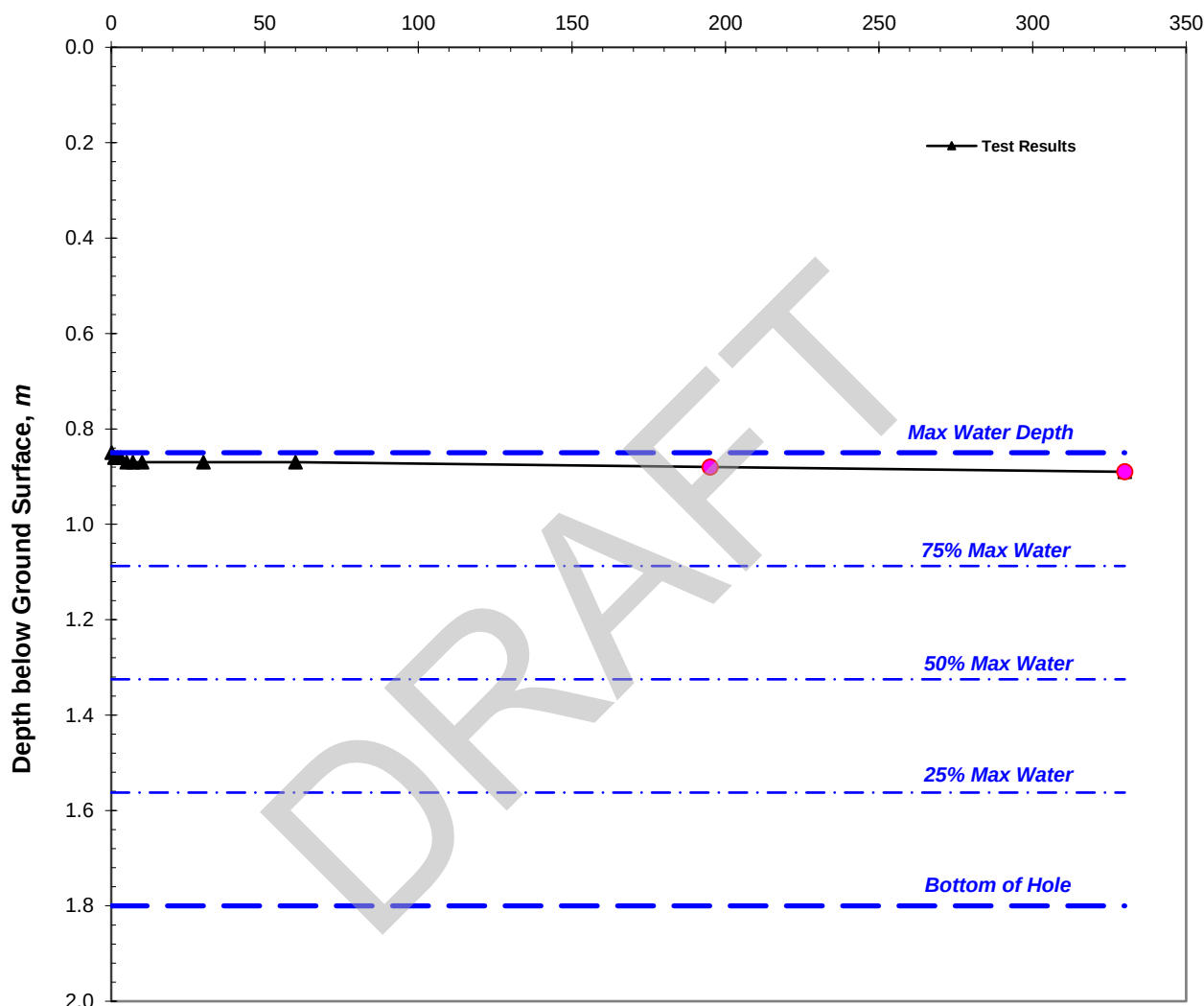
Client: Octagon Developments	Job No: J15778	Test Date: 18/Jul/2024
Site: Wealden House/Former EDF Energy Office	Tested By: OS/JS	Engineer: SKT
		Fig. S1

Preliminary Falling-Head Soakage Test

Test Hole No: WLS112

Test No: Test No 1 (Initial)

Time from Filling to Maximum Water Depth, minute



Diameter of Borehole, m	0.100	Depth to Water at Start of Test, m	0.850
Depth to End of Borehole Casing, m		Max Water Dropdown during Test, m	0.040
Depth to Borehole Base, m	1.800	Total Soakage Test Time, min	330.0
Depth to Top of Permeable Soils, m		Mean Internal Discharge Area, m ²	0.295
Depth to Groundwater Surface, m		Discharge Rate, litre/min	0.001
Depth to Top of Granular Fill, m		Soakage Rate, litre/m ² /min	0.0020
Voids Assumed within Borehole, %	100%	BRE Soil Infiltration Rate, m/sec	3.28E-08

Comments: Test undertaken in windowless sampler borehole

Water level did not fall to 75% max water depth, calculations were based on actual fall of water level achieved.

Result not compliant with BRE365 requirement since water did not fall to 25% max water depth.

Client: Octagon Developments	Job No: J15778	Test Date: 18/Jul/2024	
Site: Wealden House/Former EDF Energy Office	Tested By: OS/JS	Engineer: SKT	Fig. S2

Dynamic Cone Penetrometer (DCP) Test Results

Test No: **WLS102**

Chainage:

Tested By: GC

Start Layer: GL

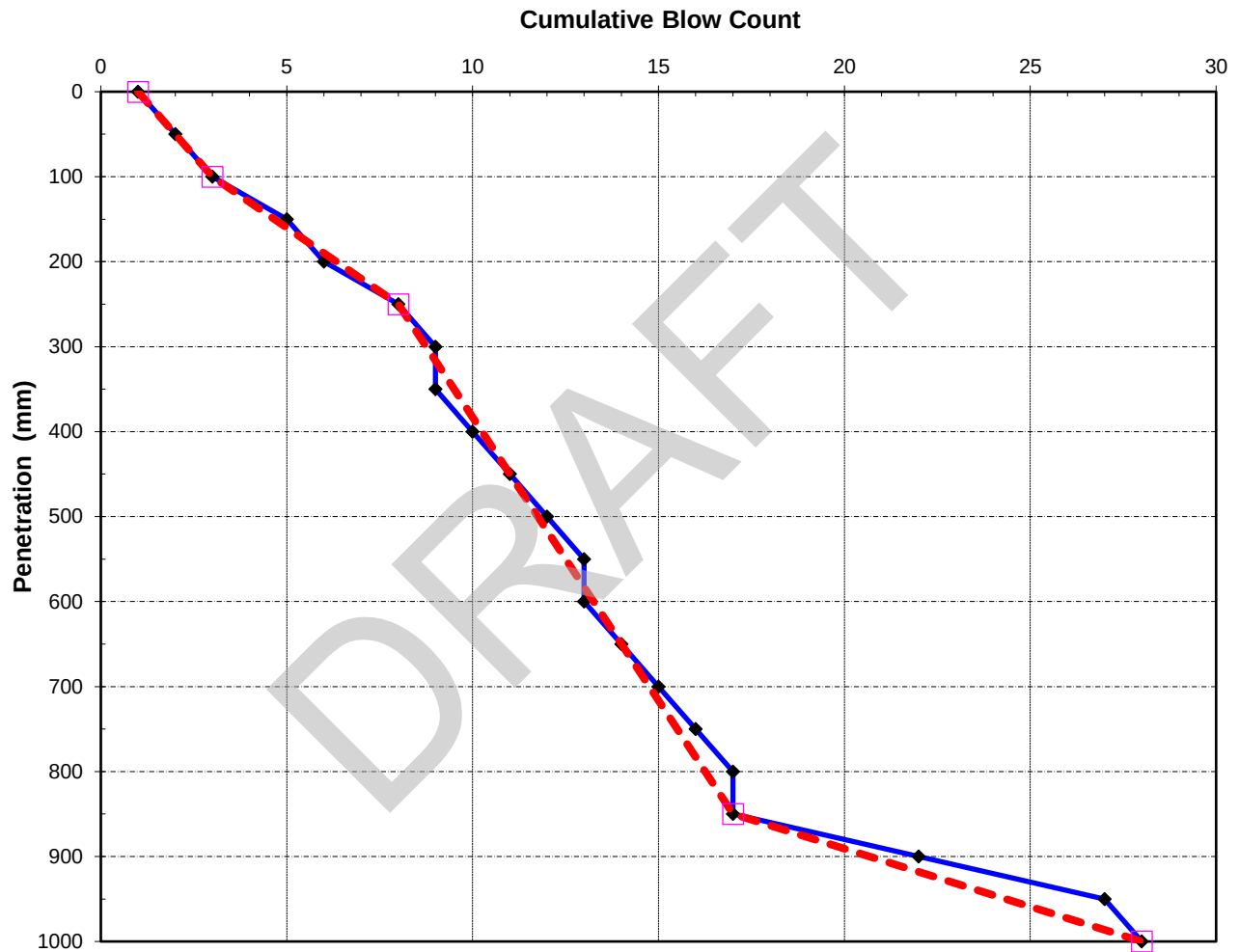
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	100	100	3	2	50.0	2.9		
2	100	250	150	8	5	30.0	5.5		
3	250	850	600	17	9	66.7	2.0		
4	850	1000	150	28	11	13.6	15		

Client: **Octagon Developments**

Job No: J15778

Site: **Wealden House/Former EDF Energy Office, L**

Date: 30/07/2024

Fig. WLS102

Dynamic Cone Penetrometer (DCP) Test Results

Test No: WLS103

Chainage:

Tested By: GC

Start Layer: GL

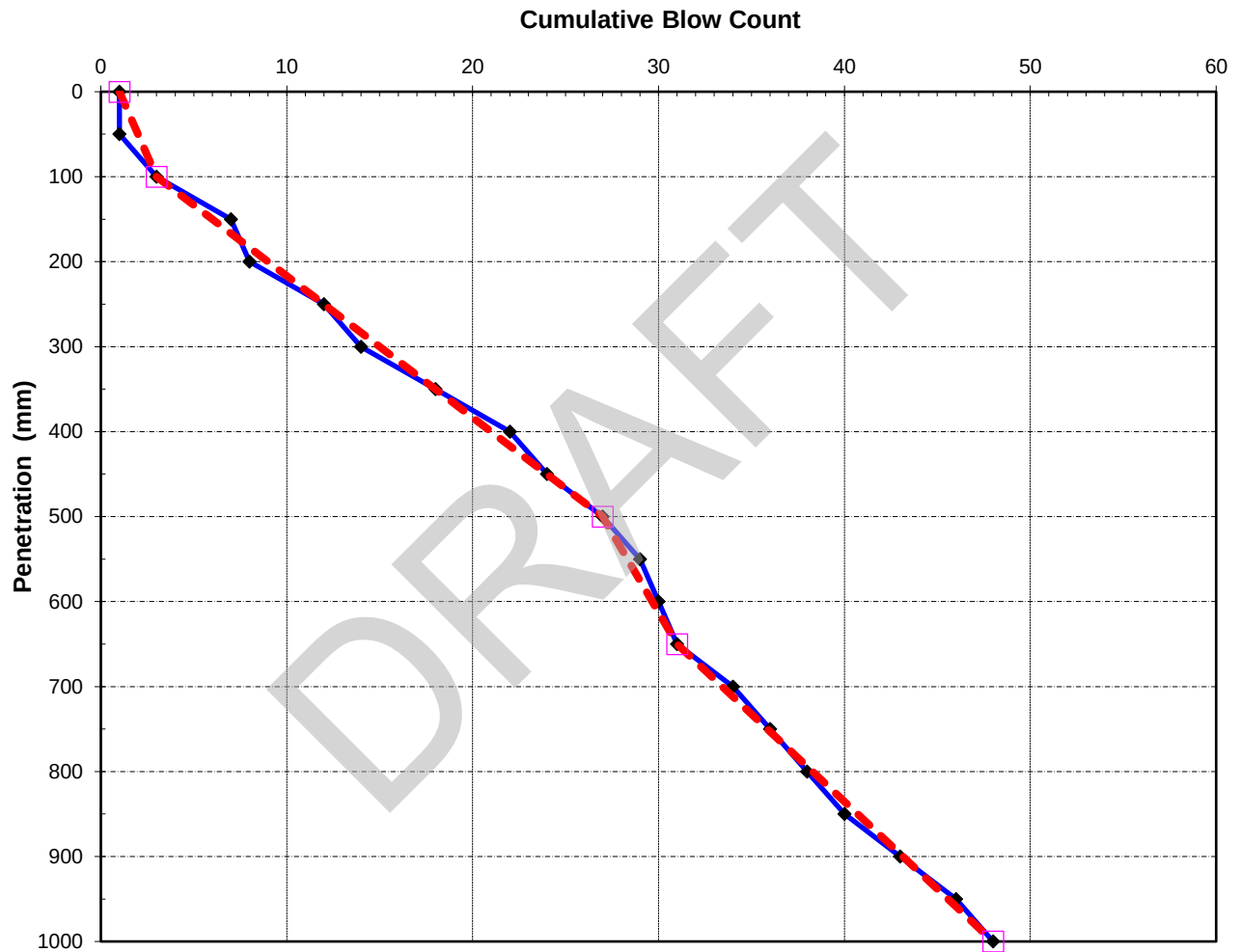
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	100	100	3	2	50.0	2.9		
2	100	500	400	27	24	16.7	12		
3	500	650	150	31	4	37.5	4.1		
4	650	1000	350	48	17	20.6	8.9		

Client: Octagon Developments

Job No: J15778

Site: Wealden House/Former EDF Energy Office, L

Date: 30/07/2024

Fig. WLS103

Dynamic Cone Penetrometer (DCP) Test Results

Test No: WLS105

Chainage:

Tested By: GC

Start Layer: GL

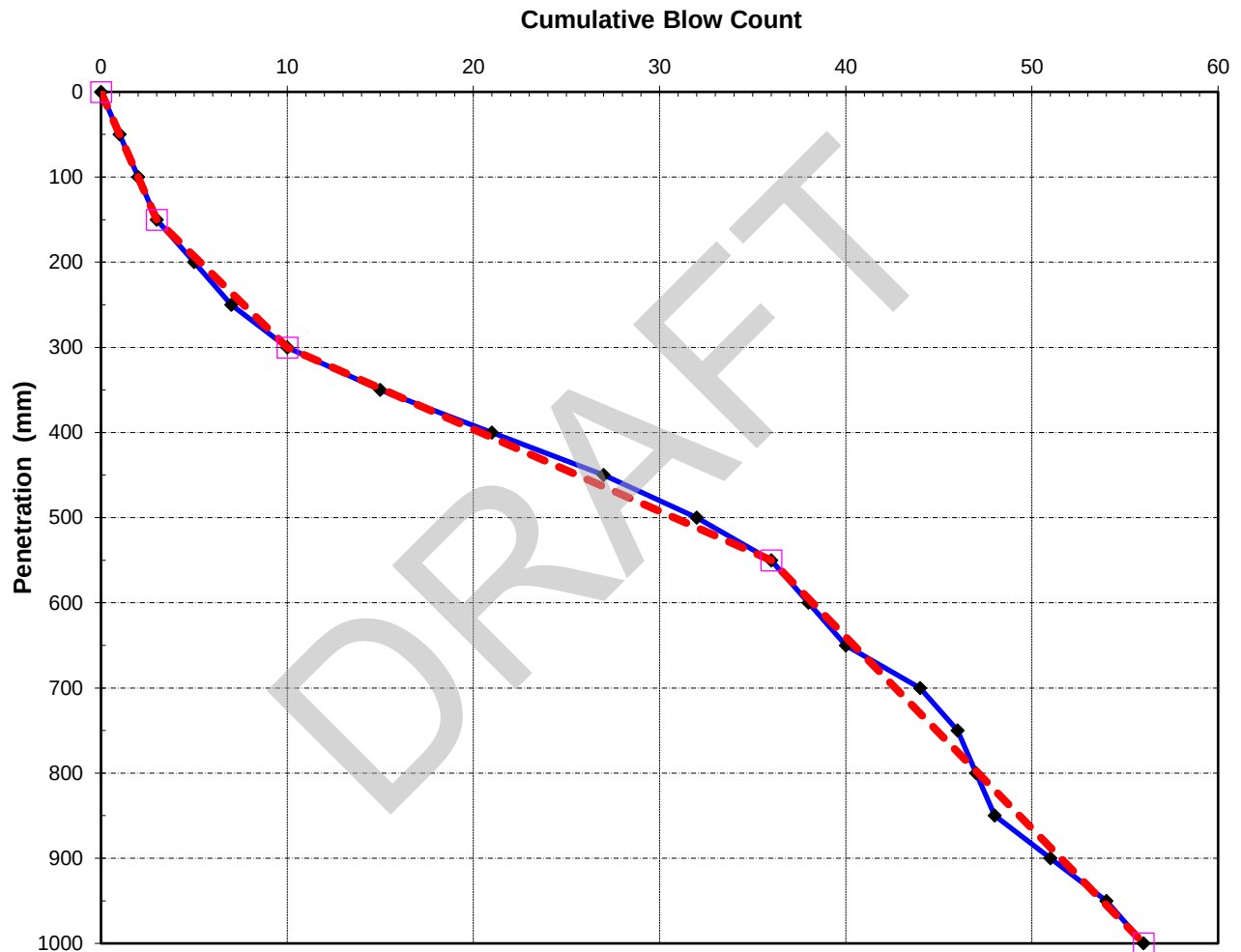
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	150	150	3	3	50.0	2.9		
2	150	300	150	10	7	21.4	8.5		
3	300	550	250	36	26	9.6	24		
4	550	1000	450	56	20	22.5	8.0		

Client: Octagon Developments

Job No: J15778

Site: Wealden House/Former EDF Energy Office, L

Date: 30/07/2024

Fig. WLS105

Dynamic Cone Penetrometer (DCP) Test Results

Test No: WLS109

Chainage:

Tested By: GC

Start Layer: GL

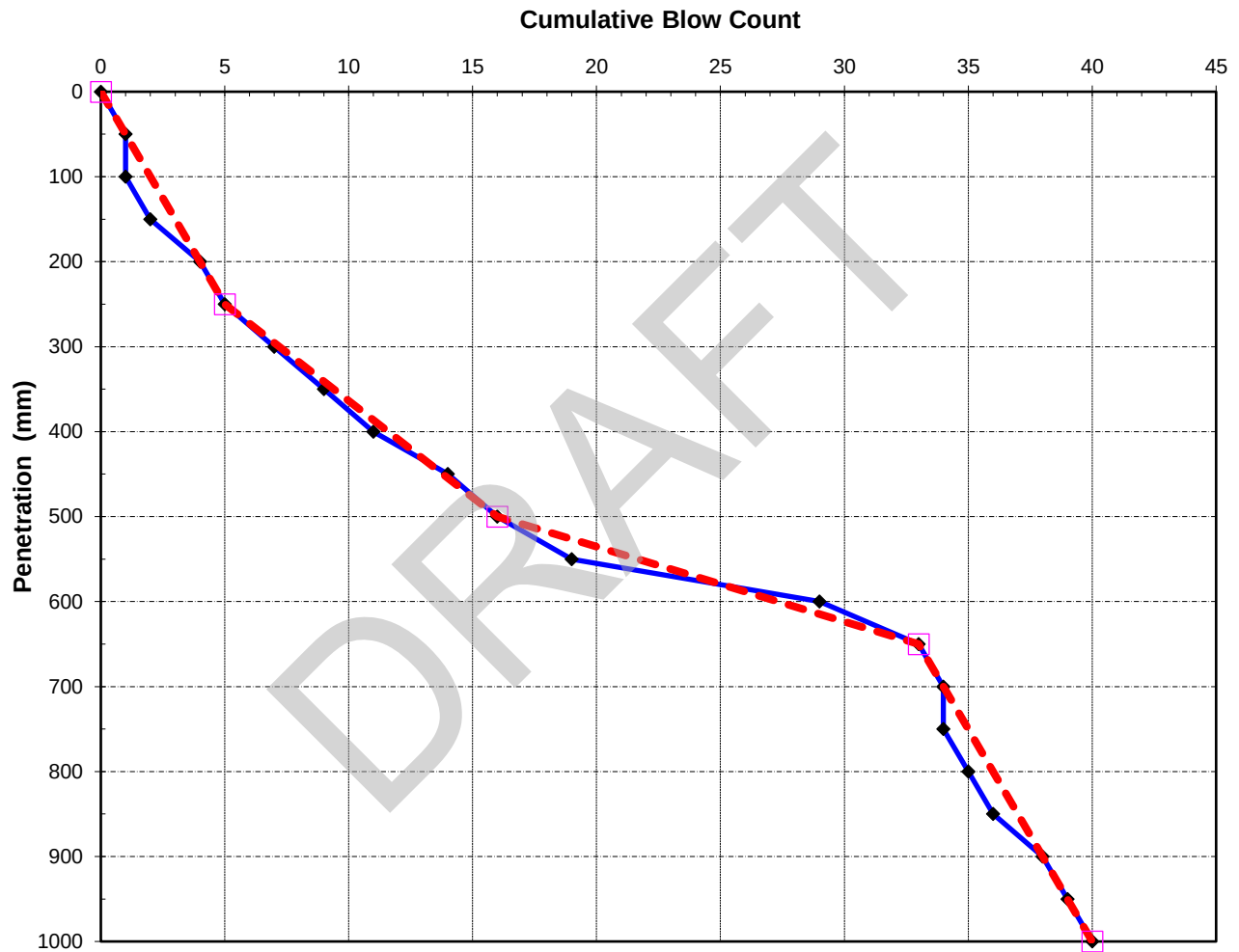
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	250	250	5	5	50.0	2.9		
2	250	500	250	16	11	22.7	7.9		
3	500	650	150	33	17	8.8	26		
4	650	1000	350	40	7	50.0	2.9		

Client: Octagon Developments**Job No:** J15778**Site:** Wealden House/Former EDF Energy Office, L**Date:** 30/07/2024**Fig.** WLS109

Dynamic Cone Penetrometer (DCP) Test Results

Test No: WLS110

Chainage:

Tested By: GC

Start Layer: GL

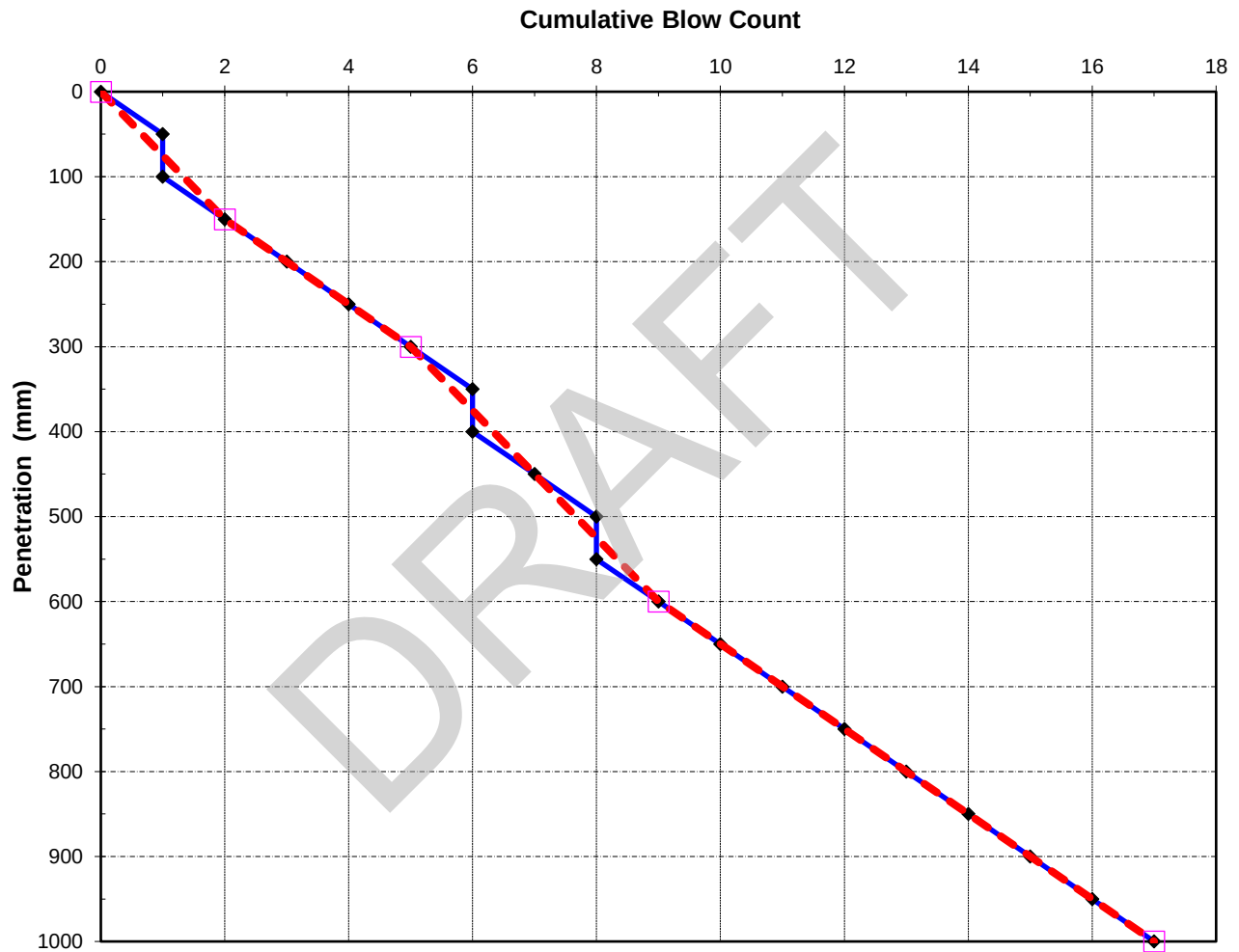
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	150	150	2	2	75.0	1.7		
2	150	300	150	5	3	50.0	2.9		
3	300	600	300	9	4	75.0	1.7		
4	600	1000	400	17	8	50.0	2.9		

Client: Octagon Developments

Job No: J15778

Site: Wealden House/Former EDF Energy Office, L

Date: 30/07/2024

Fig. WLS110

Dynamic Cone Penetrometer (DCP) Test Results

Test No: **WLS111**

Chainage:

Tested By: GC

Start Layer: GL

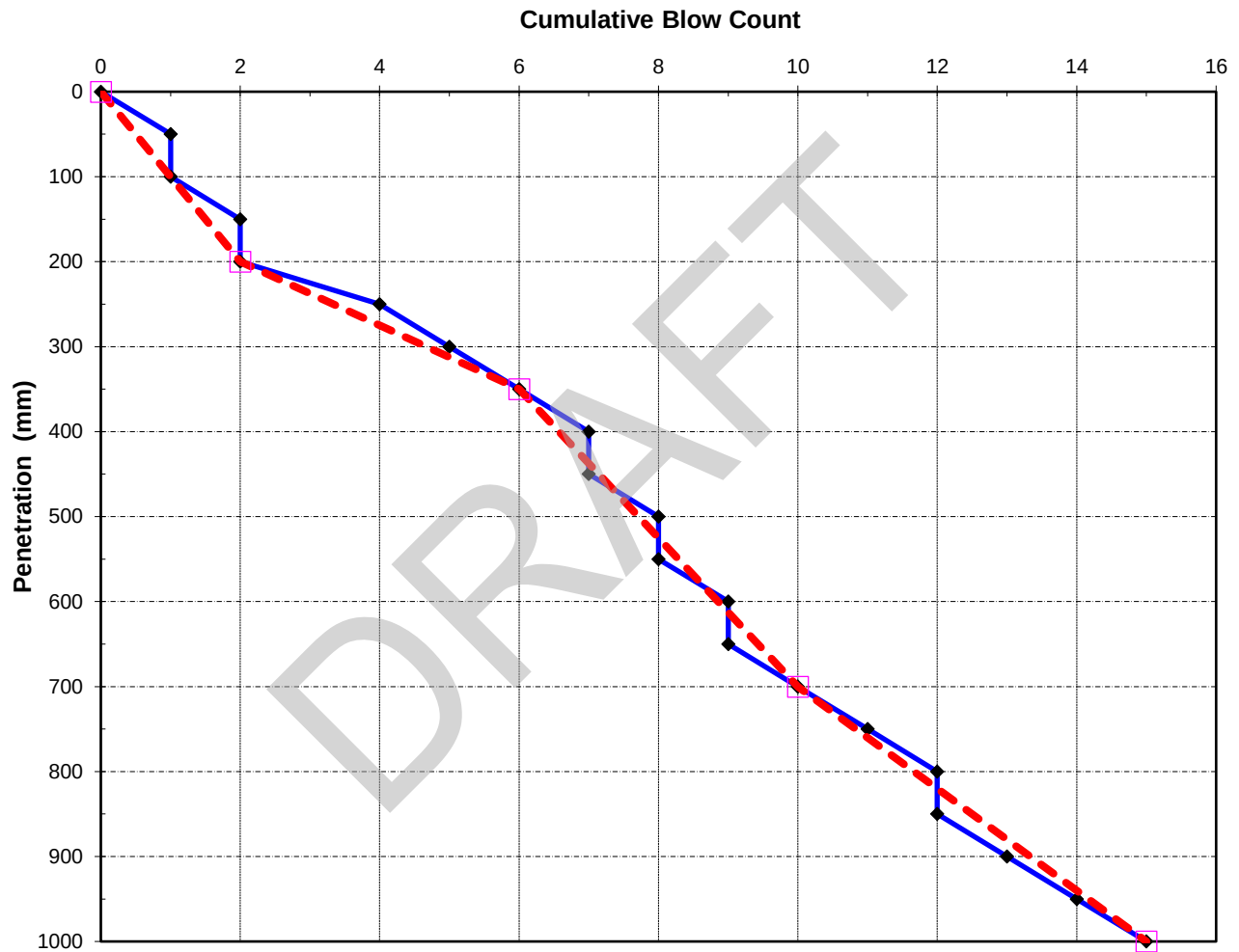
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	200	200	2	2	100.0	1.2		
2	200	350	150	6	4	37.5	4.1		
3	350	700	350	10	4	87.5	1.4		
4	700	1000	300	15	5	60.0	2.3		

Client: **Octagon Developments**

Job No: **J15778**

Site: **Wealden House/Former EDF Energy Office, L**

Date: **30/07/2024**

Fig. **WLS111**

Dynamic Cone Penetrometer (DCP) Test Results

Test No: WLS112

Chainage:

Tested By: GC

Start Layer: GL

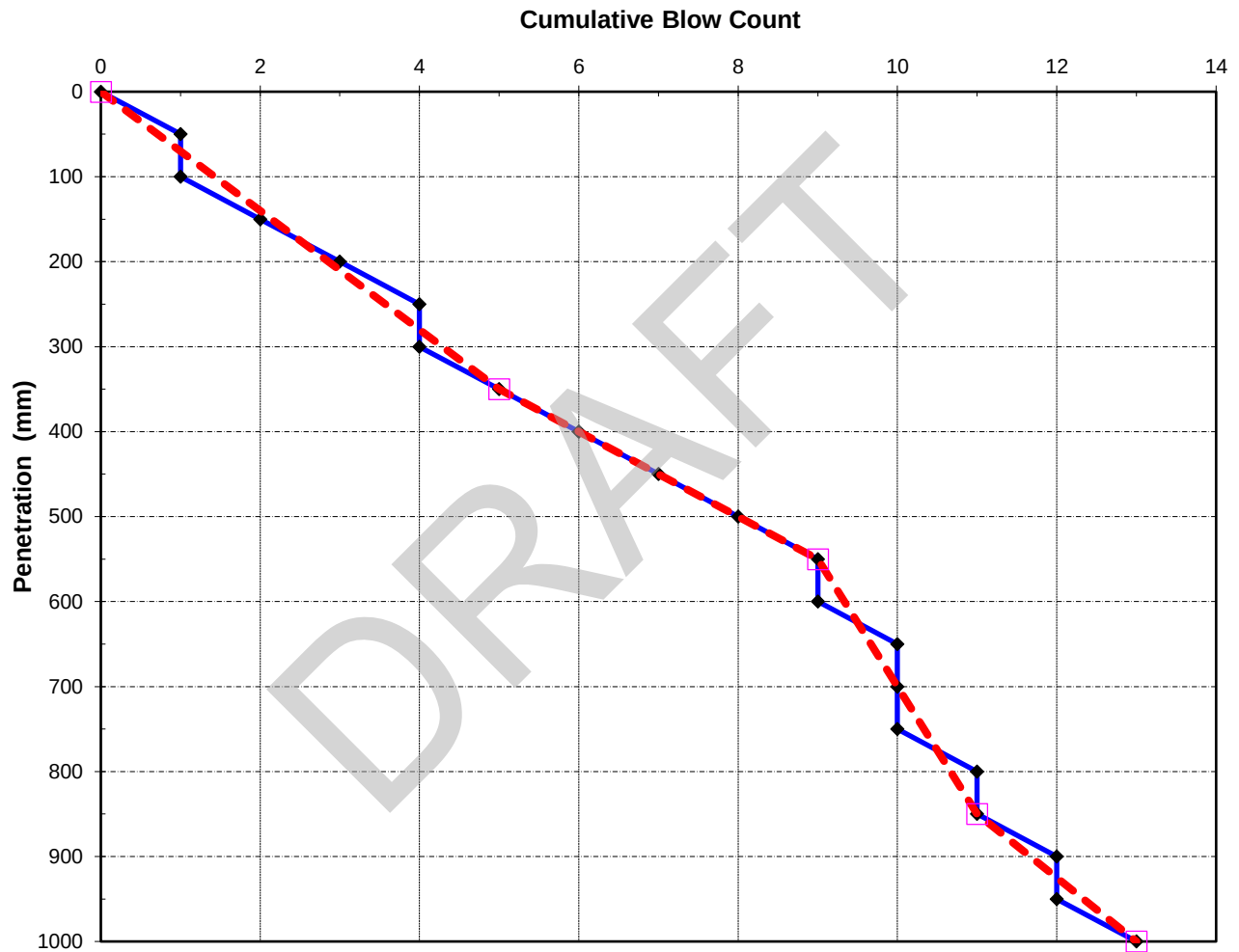
Checked By: SKT

Soil Condition: Topsoil

Test Date: 19-Jul-24

Notes:

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	350	350	5	5	70.0	1.9		
2	350	550	200	9	4	50.0	2.9		
3	550	850	300	11	2	150.0	0.7		
4	850	1000	150	13	2	75.0	1.7		

Client: Octagon Developments

Job No: J15778

Site: Wealden House/Former EDF Energy Office, L

Date: 30/07/2024

Fig. WLS112

Project: Wealden House	Project ID: J15778	Figure: SPT1
Client: Octagon Developments Ltd.	Project Engineer: SKT	

STANDARD PENETRATION TEST (SPT) RESULTS

* Note: N60 correction for energy delivered to rods only. Energy loss due to length of rods and overburden pressure not considered.

Location ID	Test Depth (m bgl)	Test Type	SPT Hammer Ref.	Energy Ratio %	Seating Blows/Penetration				Main Test Blows/Penetration								N Value	N60 *	Reported Result
					SB1	SP1	SB2	SP2	MB1	MP1	MB2	MP2	MB3	MP3	MB4	MP4			
WLS101	1.00	S	RP11075	78	1	75	1	75	2	75	1	75	1	75	2	75	6	8	N=6 (1,1/2,1,1,2)
WLS101	2.00	S	RP11075	78	1	75	1	75	1	75	2	75	2	75	3	75	8	10	N=8 (1,1/1,2,2,3)
WLS101	3.00	S	RP11075	78	1	75	3	75	3	75	4	75	5	75	6	75	18	23	N=18 (1,3/3,4,5,6)
WLS102	1.00	S	RP11075	78	1	75	1	75	1	75	1	75	2	75	2	75	6	8	N=6 (1,1/1,1,2,2)
WLS102	2.00	S	RP11075	78	1	75	4	75	3	75	4	75	5	75	5	75	17	22	N=17 (1,4/3,4,5,5)
WLS102	3.00	S	RP11075	78	3	75	4	75	5	75	6	75	8	75	7	75	26	34	N=26 (3,4/5,6,8,7)
WLS103	1.00	S	RP11075	78	2	75	1	75	2	75	3	75	4	75	5	75	14	18	N=14 (2,1/2,3,4,5)
WLS103	2.00	S	RP11075	78	1	75	2	75	3	75	4	75	2	75	4	75	13	17	N=13 (1,2/3,4,2,4)
WLS103	3.00	S	RP11075	78	1	75	2	75	4	75	3	75	5	75	6	75	18	23	N=18 (1,2/4,3,5,6)
WLS104	1.00	S	RP11075	78	1	75	1	75	2	75	2	75	1	75	2	75	7	9	N=7 (1,1/2,2,1,2)
WLS104	2.00	S	RP11075	78	1	75	2	75	2	75	3	75	3	75	4	75	12	16	N=12 (1,2/2,3,3,4)
WLS104	3.00	S	RP11075	78	2	75	2	75	2	75	4	75	4	75	5	75	15	20	N=15 (2,2/2,4,4,5)
WLS105	1.00	S	RP11075	78	1	75	1	75	1	75	1	75	1	75	2	75	5	7	N=5 (1,1/1,1,1,2)
WLS105	2.00	S	RP11075	78	1	75	1	75	3	75	3	75	4	75	4	75	14	18	N=14 (1,1/3,3,4,4)
WLS105	3.00	S	RP11075	78	2	75	2	75	3	75	4	75	4	75	6	75	17	22	N=17 (2,2/3,4,4,6)
WLS106	1.00	S	RP11075	78	1	75	1	75	2	75	2	75	2	75	3	75	9	12	N=9 (1,1/2,2,2,3)
WLS106	2.00	S	RP11075	78	1	75	2	75	1	75	2	75	3	75	3	75	9	12	N=9 (1,2/1,2,3,3)
WLS106	3.00	S	RP11075	78	1	75	3	75	4	75	5	75	4	75	5	75	18	23	N=18 (1,3/4,5,4,5)
WLS107	1.00	S	RP11075	78	1	75	1	75	2	75	2	75	2	75	3	75	9	12	N=9 (1,1/2,2,2,3)
WLS107	2.00	S	RP11075	78	1	75	2	75	2	75	2	75	1	75	3	75	8	10	N=8 (1,2/2,2,1,3)
WLS107	3.00	S	RP11075	78	3	75	29	75	50	1							50	65	50 (3,29/50 for 1mm)
WLS108	1.00	S	RP11075	78	1	75	0	75	1	75	1	75	1	75	1	75	4	5	N=4 (1,0/1,1,1,1)
WLS108	2.00	S	RP11075	78	1	75	2	75	1	75	2	75	3	75	3	75	9	12	N=9 (1,2/1,2,3,3)
WLS108	3.00	S	RP11075	78	5	75	20	75	50	1							50	65	50 (5,20/50 for 1mm)
WLS109	1.00	S	RP11075	78	0	75	1	75	0	75	0	75	1	75	1	75			N=2 (0,1/0,0,1,1)
WLS109	2.00	S	RP11075	78	0	75	1	75	2	75	1	75	3	75	3	75	9	12	N=9 (0,1/2,1,3,3)
WLS109	3.00	S	RP11075	78	25	1			50	1							50	65	50 (25 for 1mm/50 for 1mm)

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: RP11075
Test Date: 04/06/2024
Report Date: 04/06/2024
File Name: RP11075.spt
Test Operator: BOB

Instrumented Rod Data

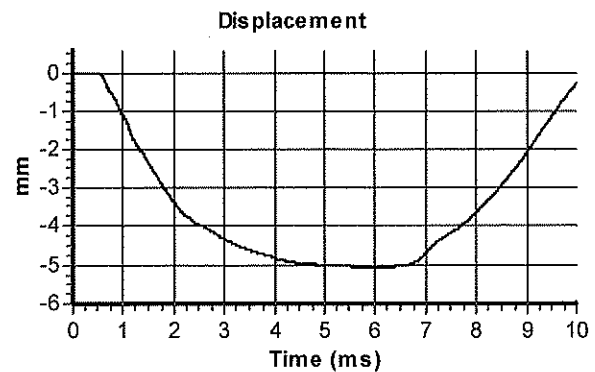
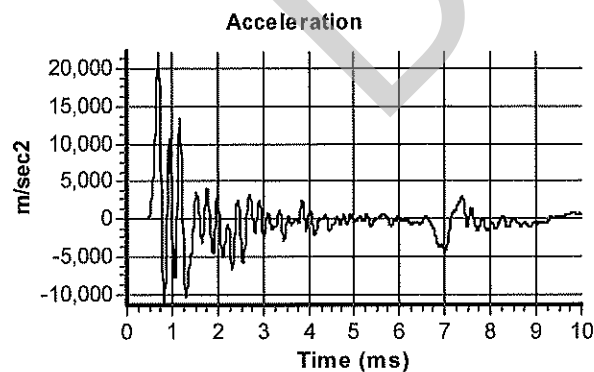
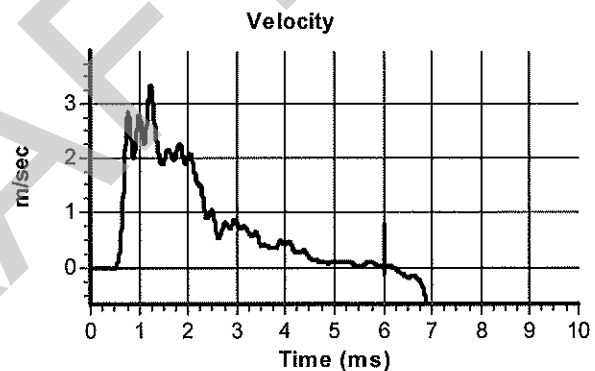
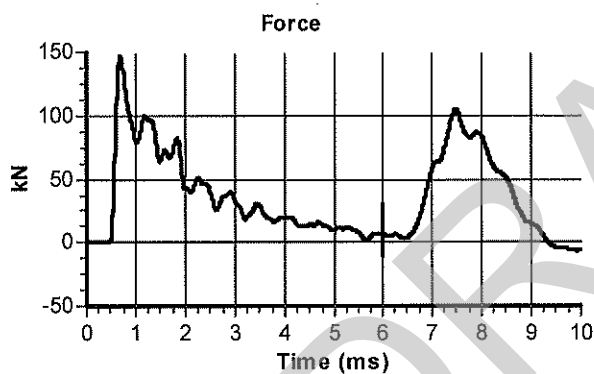
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.4
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 73547
Accelerometer No.2: 64789

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.7

Comments / Location

CHARLSWOOD



Calculations

Area of Rod A (mm^2): 957
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 367

Energy Ratio E_r (%): **78**

Signed: Bob Stewart

Title: Technician

The recommended calibration interval is 12 months

APPENDIX C

Geotechnical Laboratory Test Methods and Results



DRAFT

C

Plasticity Index and Water Content Summary

BS1377-2:2022 cl. 5, BS EN ISO 17892-1:2014 + A1:2022, BS EN ISO 17892-12:2018 + A2:2022

Project Name		Wealden House, East Grinstead					Project Number		J15778	
Client		Octagon Developments Ltd				PE	SKT	Date Issued		08-Aug-24
Location ID	Depth m	Sample Type	Visual Description	Comments	Initial WC %	Liquid Limit %	Plastic Limit %	Plasticity Index	Classification	Passing 425 micron %
WLS101	2.50	D	Very stiff grey brown mottled grey calcareous CLAY.		23	60	23	36	CH	98
WLS103	1.50	ES	Stiff grey patched orange sandy gravelly CLAY. Gravel consists of fine to coarse subangular sandstone. Slightly malodourous.	Sample passed through 425µm sieve	21	35	18	17	CL/CI	49
WLS103	2.50	D	Stiff dark yellow grey mottled yellow brown CLAY.		25	61	23	38	CH	100
WLS105	1.00	D	Stiff yellow grey mottled grey CLAY.		34	74	22	52	CV	100
WLS105	2.00	D	Firm brown laminated grey brown slightly sandy slightly gravelly CLAY. Gravel consists of fine and medium subangular sandstone.	Sample passed through 425µm sieve	17	47	18	29	CI	71
WLS106	1.00	D	Very stiff brown speckled black and orange CLAY.		28	69	25	44	CH	100
WLS107	2.00	D	Stiff brown patched grey and orange slightly sandy CLAY.		18	29	19	10	CL	99
WLS107	3.00	D	Stiff yellow orange patched dark yellow grey CLAY.		20	55	20	35	CH	100
WLS109	1.50	D	Soft dark yellow grey mottled grey and yellow brown sandy slightly gravelly organic CLAY. Gravel consists of fine subangular flint.		25	36	16	20	CIO	95
WLS111	1.50	D	Firm buff brown speckled yellow grey CLAY.		28	61	24	37	CH	100

Project Name		Wealden House, East Grinstead					Project Number		J15778	
Client		Octagon Developments Ltd				PE	SKT	Date Issued		08-Aug-24
Location ID	Depth m	Sample Type	Visual Description	Comments	Initial WC %	Liquid Limit %	Plastic Limit %	Plasticity Index	Classi- fication	Passing 425 micron %
WLS112	1.00	D	Stiff yellow brown mottled dark yellow grey CLAY.		24	58	21	37	CH	100

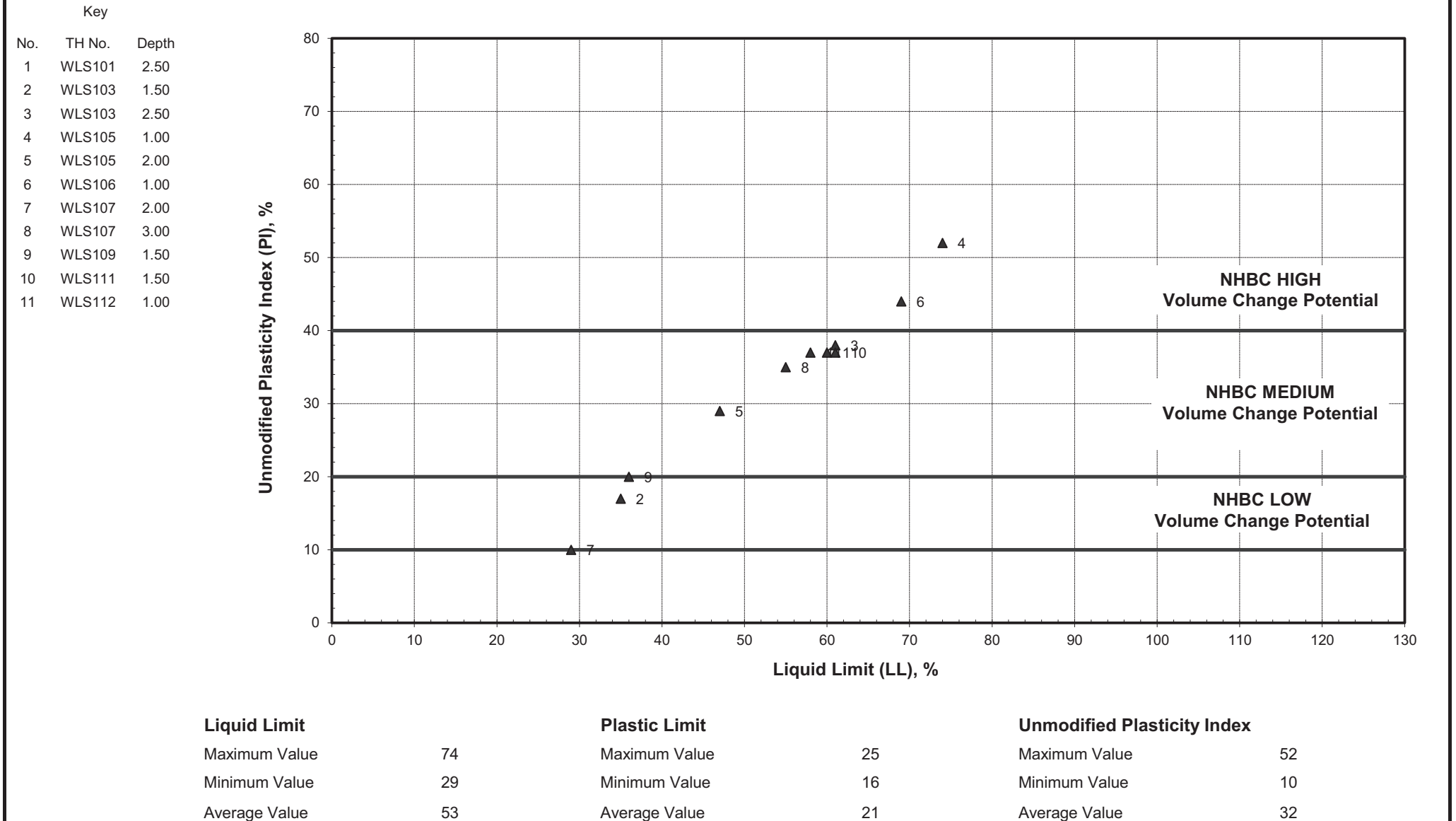
Registered office Southern Testing Laboratories Ltd, Keeble House, Stuart Way, East Grinstead RH19 4QA. Testing carried out at Units 20A & B, Durkins Road, East Grinstead RH19 2RW. BSI Ref: FS29280 under BS EN ISO 9001.

Jun 13

NHBC Classification for Volume Change Potential



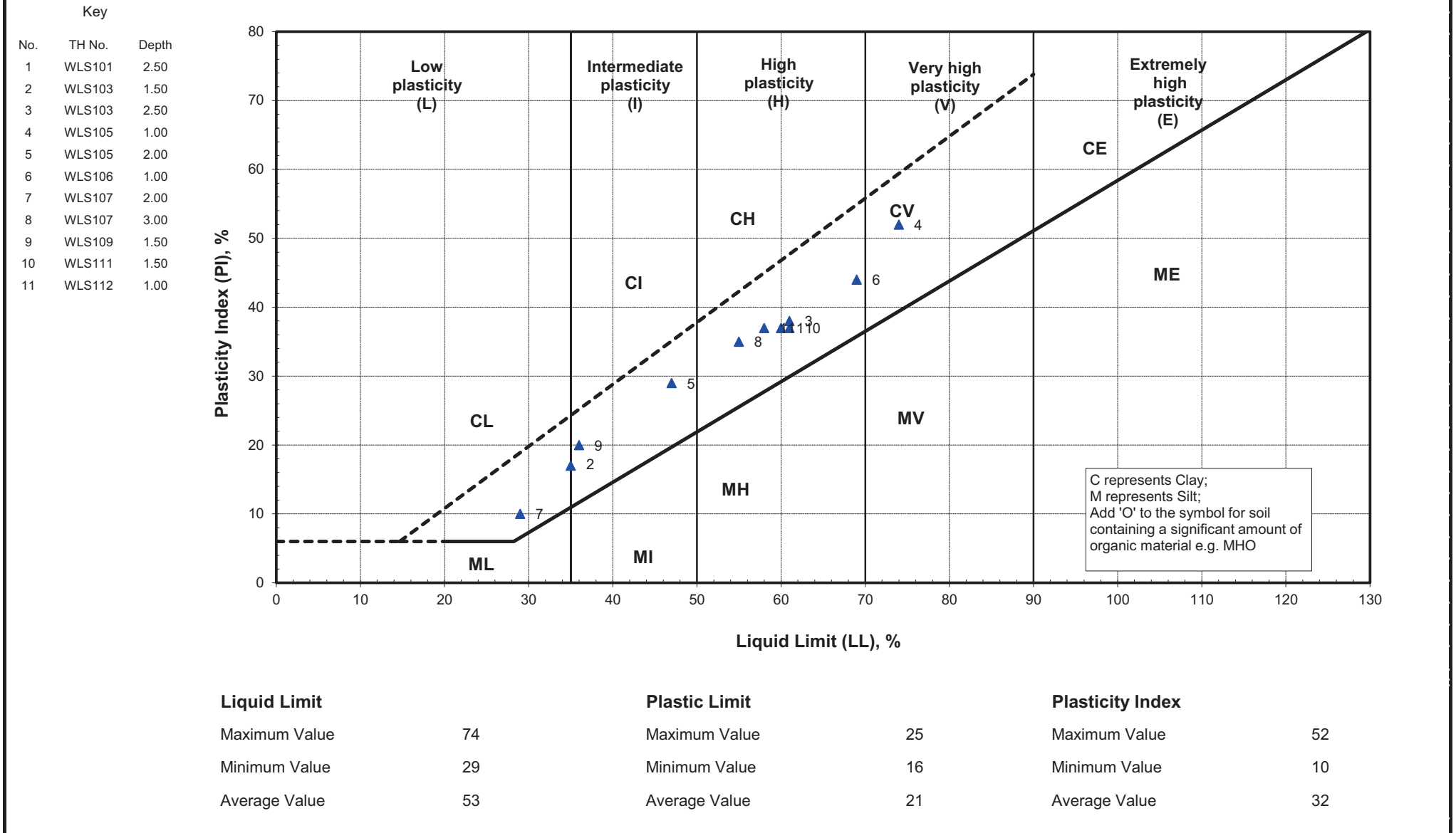
Project Name	Wealden House, East Grinstead			Project Number	J15778
Client Name	Octagon Developments Ltd	PE	SKT	Date Issued	30-Jul-24



Plasticity Chart for Atterberg Limit Tests



Project Name	Wealden House, East Grinstead			Project Number	J15778
Client Name	Octagon Developments Ltd	PE	SKT	Date Issued	30-Jul-24



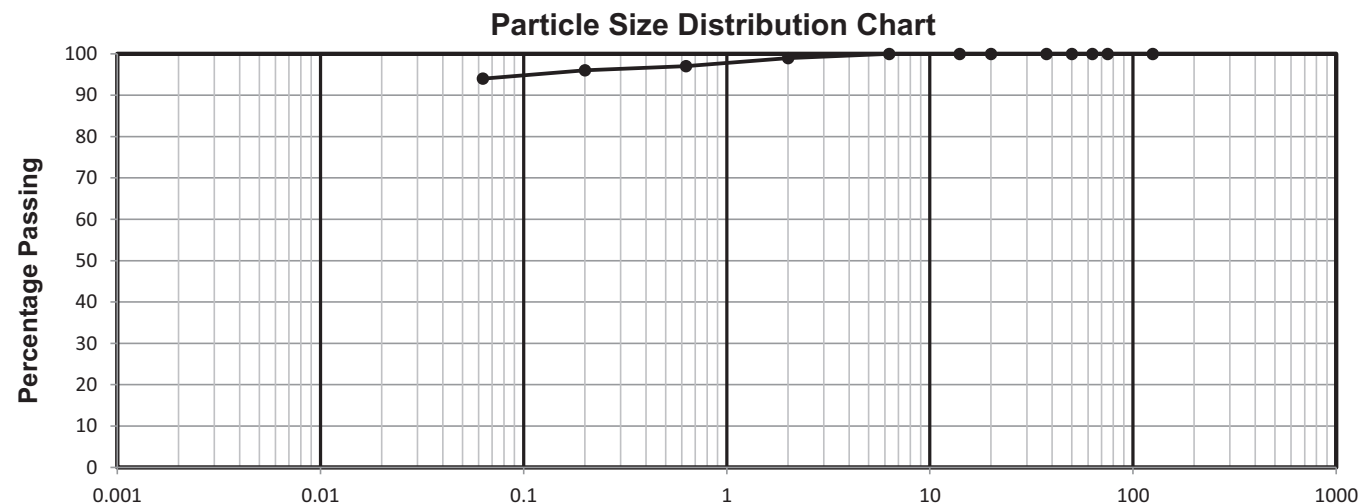
PARTICLE SIZE DISTRIBUTION REPORT

BS EN ISO 17892-4:2016 cl. 5.2, 5.4



Project Name	Wealden House, East Grinstead			Project Number	J15778
Client Name	Octagon Developments Ltd	PE	SKT	Date Issued	30-Jul-24

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	100
2mm	99
630µm	97
200µm	96
63µm	94



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
94				4			1			0

Visual Description of Sample:

Stiff dark yellow grey mottled brown slightly sandy CLAY.

Particle Density Mg/m³

Coefficient of Uniformity

N/A

Test Methods:

Wet & Dry Grading BS EN ISO 17892-4:2016 cl. 5.2

Location

WLS111

Depth (m)

2.00

Sample Type

D

Comments:

Tested By

STL Lab

Checked By

RJM

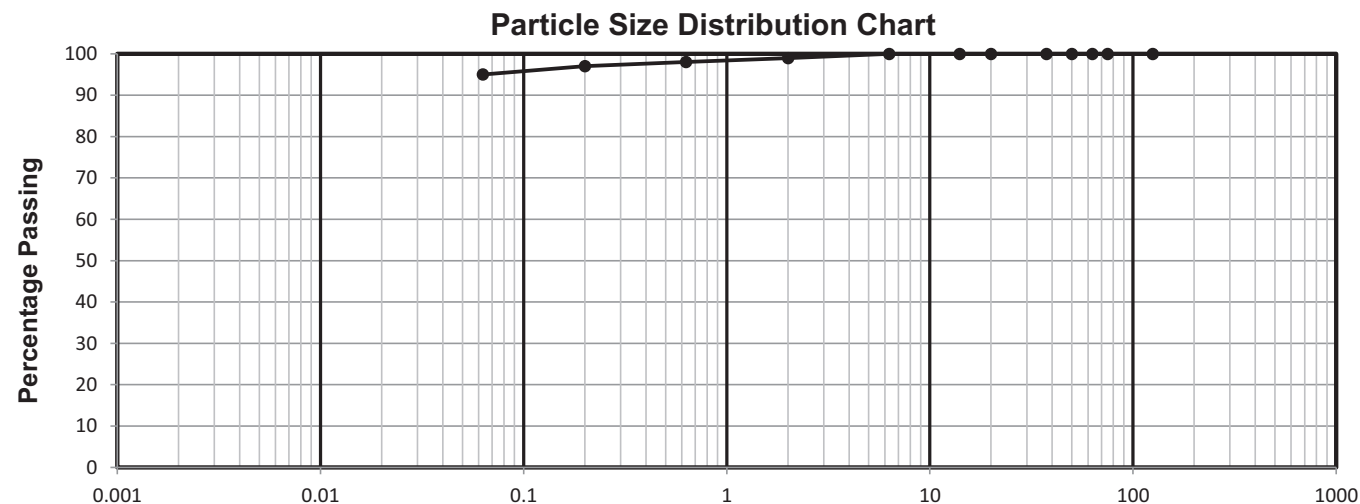
PARTICLE SIZE DISTRIBUTION REPORT

BS EN ISO 17892-4:2016 cl. 5.2, 5.4



Project Name	Wealden House, East Grinstead			Project Number	J15778
Client Name	Octagon Developments Ltd	PE	SKT	Date Issued	30-Jul-24

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	100
2mm	99
630µm	98
200µm	97
63µm	95



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
95				3			1			0

Visual Description of Sample:

Stiff yellow grey patched yellow brown slightly sandy CLAY.

Particle Density Mg/m³

Coefficient of Uniformity

N/A

Test Methods:

Wet & Dry Grading BS EN ISO 17892-4:2016 cl. 5.2

Location

WLS112

Depth (m)

1.50

Sample Type

D

Comments:

Tested By

STL Lab

Checked By

RJM



Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01342 333100
e: stoms@southerntesting.co.uk
contamresults@southerntesting.co.uk

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-032111

Project / Site name:	Wealden House, East Grinstead	Samples received on:	23/07/2024
Your job number:	J15778	Samples instructed on/ Analysis started on:	23/07/2024
Your order number:	J15778 4	Analysis completed by:	01/08/2024
Report Issue Number:	1	Report issued on:	01/08/2024
Samples Analysed:	12 soil samples		

Signed: 
Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 24-032111
Project / Site name: Wealden House, East Grinstead
Your Order No: J15778 4

Lab Sample Number				264821	264822	264823	264824	264825
Sample Reference				WLS101	WLS102	WLS103	WLS104	WLS104
Sample Number				ES	ES	ES	ES	D
Depth (m)				1.50	2.00	2.50	1.00	3.00
Date Sampled				18/07/2024	18/07/2024	18/07/2024	18/07/2024	18/07/2024
Time Taken				0900	1000	1130	1200	1230
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	15	17	22	14
Total mass of sample received	kg	0.1	NONE	0.6	0.6	0.6	0.6	0.9

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	7.7	8.1	4.9	8.3
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.038	0.031	0.021	0.03	0.042
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	230	140	56	37	33
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	115	68.3	28.1	18.3	16.3
Total Sulphur	mg/kg	50	MCERTS	130	100	120	120	210
Total Sulphur	%	0.005	MCERTS	0.013	0.01	0.012	0.012	0.021

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 24-032111
Project / Site name: Wealden House, East Grinstead
Your Order No: J15778 4

Lab Sample Number				264826	264827	264828	264829	264830
Sample Reference				WLS105	WLS105	WLS106	WLS106	WLS109
Sample Number				D	D	ES	D	D
Depth (m)				1.50	3.00	2.00	3.00	2.50
Date Sampled				18/07/2024	18/07/2024	18/07/2024	18/07/2024	18/07/2024
Time Taken				1400	1400	1500	1430	1030
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	15	17	18	20
Total mass of sample received	kg	0.1	NONE	0.9	1.1	1.1	1.2	1.2

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	5	7.6	5	8.2	8.3
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	790	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.121	0.079	0.126	0.015	0.045
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	330	110	170	49	170
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	166	54	86.3	24.5	85.7
Total Sulphur	mg/kg	50	MCERTS	450	290	460	85	410
Total Sulphur	%	0.005	MCERTS	0.045	0.029	0.046	0.009	0.041

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 24-032111
Project / Site name: Wealden House, East Grinstead
Your Order No: J15778 4

Lab Sample Number				264831	264832
Sample Reference				WLS110	WLS111
Sample Number				D	D
Depth (m)				1.50	1.00
Date Sampled				18/07/2024	18/07/2024
Time Taken				1230	1130
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection
				Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	1.2	1.2

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	7.2
Total Sulphate as SO4	mg/kg	50	MCERTS	-	-
Total Sulphate as SO4	%	0.005	MCERTS	0.02	0.06
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	29	38
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.4	19.1
Total Sulphur	mg/kg	50	MCERTS	66	310
Total Sulphur	%	0.005	MCERTS	0.007	0.031

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-032111
Project / Site name: Wealden House, East Grinstead

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
264821	WLS101	ES	1.5	Brown clay
264822	WLS102	ES	2	Brown clay
264823	WLS103	ES	2.5	Brown clay and loam
264824	WLS104	ES	1	Brown clay
264825	WLS104	D	3	Brown clay and loam
264826	WLS105	D	1.5	Brown clay
264827	WLS105	D	3	Brown clay
264828	WLS106	ES	2	Brown clay
264829	WLS106	D	3	Brown clay
264830	WLS109	D	2.5	Brown clay
264831	WLS110	D	1.5	Brown clay and loam with gravel and vegetation
264832	WLS111	D	1	Brown clay and loam



Analytical Report Number : 24-032111
Project / Site name: Wealden House, East Grinstead

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

A collage of six images related to geotechnical engineering. Top left: A large white pipe. Top middle: A close-up of a soil sample in a sieve. Top right: A pressure gauge on a soil sample. Middle left: A worker in a high-visibility vest. Middle right: A red truck with 'Southern' on the side. Bottom right: A person using a tool to sample soil.

APPENDIX D

Geotechnical Figures and Tables

