

CHURCHILL RETIREMENT LIVING

LAND AT TOYNBEE ROAD, EASTLEIGH, SO50 9DP

GROUND INVESTIGATION REPORT

Revision 1

The Granary
White Hall Farm
Long Itchington
Warwickshire
CV47 9PU

June 2022
Report No. CCLo3552.CQ14-R1

www.crossfield-consulting.co.uk

Tel: 01926 815678
Fax: 01926 815222
mail@crossfield-consulting.co.uk

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<i>Revision</i>	<i>Date</i>	<i>Revision Notes</i>
Original Issue	April 2022	n/a
Revision 1	August 2022	Site area extended to Romsey Close; assessment updated accordingly

1. INTRODUCTION

A residential development is proposed at Toynbee Road, Eastleigh. The site is currently occupied by residential properties and was historically associated agricultural land. The proposed development comprises a three to four-storey block of apartments, together with car parking and managed landscaping areas. The residents will be of retirement age.

Crossfield Consulting Limited prepared a Desk Study Appraisal in April 2022, and revised in August 2022 to include the extended proposed development, as listed in the References. Subsequent ground investigation work has been designed on the basis of the preliminary assessment provided in the original issue Desk Study Appraisal.

Crossfield Consulting Limited was previously commissioned by Churchill Retirement Living to undertake an investigation of the site to identify potential constraints to redevelopment relating to the ground conditions and including a risk-based environmental assessment and recommendations for remediation works, recommendations regarding ground stability/support, and recommendations for foundations, road pavement design and general construction advice in the context of the above development proposals. The proposed development layout has since been enlarged, and as such, Churchill Retirement Living have commissioned Crossfield Consulting Limited to revise the report to reflect this change.

This report presents the information obtained from a ground investigation. Sections 2 to 5 of the report, together with the associated Figures and Appendices, provides a Ground Investigation Report (GIR), as defined in BS EN 1997-1:2004 and BS EN 1997-2:2007. This report should be read in conjunction with the Desk Study Appraisal.

A risk-based assessment of potential contamination is included in Section 7 of the report. This assessment makes reference to the desk study, ground investigation information and a Conceptual Site Model. It is considered that the report complies with National Planning Policy Framework and is in general accordance with guidance published by the Environment Agency and NHBC.

The report also includes a geotechnical assessment, and the salient information, assessments and recommendations are presented in Sections 9 to 14 of the report, together with the associated Figures and Appendices.

The report has been prepared under the direction and supervision of a Chartered Civil Engineer and Registered Specialist in Land Condition (SiLC). It is considered that the report is suitable for submission in support of a planning application and the report is appropriate to assist in an appraisal of development solutions and costs, together with the preparation of engineering designs for the development. The report also complies with the published guidance relating to the requirements of a Building Control authority.

2. THE SITE

2.1 Location

The site is located to the east of Toynbee Road, approximately 550 m west of Eastleigh train station, as shown on Figure 1. The National Grid Reference for the site is SU 4522 1924. The site is bounded by Toynbee Road to the west and Romsey Close to the east, with a footpath to north. The southern boundaries are formed with residential properties, as shown on Figure 2.

2.2 Site Description

This site description is based on observations made during a ground investigation undertaken in June 2022. A topographical survey is presented as Figure 3.

The site is generally square shaped plot of land with an approximate area of 0.4 ha.

The site comprises four semi-detached residential properties, with associated private gardens, including trees, bushes and outbuildings.

The site is relatively level, at about 16 mOD, and at a similar level to adjoining properties and roads.

2.3 Site History

A detailed history of the site, including historical map extracts and other pertinent information, is provided in the Desk Study Appraisal by Crossfield Consulting Limited. A summary of pertinent historical development at the site and in the surrounding area is provided below.

The site has historically been associated with an agricultural usage in the 1800s and early 1900s. The only development indicated at the site comprises the current residential properties.

3. PUBLISHED GEOLOGY

Geological map data, published by the British Geological Survey (BGS), online and in print, on the 1:50,000 scale Sheet No. 315 (Southampton), indicate that superficial deposits comprising River Terrace deposits are present in the vicinity of the site, described as clay and silt and resting on gravels. Immediately to the west of Toynbee Road, the River Terrace deposits are not classified into distinct units, but are described as “First Level”.

The underlying solid strata are indicated to be the Wittering Formation, described as sand, silt and clay, and these strata form part of the Eocene Bracklesham Group and appear to be underlain at relatively shallow depth by clays of the London Clay Formation.

4. DESK STUDY ENQUIRIES

Detailed desk study information is presented in the Desk Study Appraisal by Crossfield Consulting Limited. A summary of relevant information is provided below.

The Groundsure Environmental Database indicates that there are no active or historical landfills recorded within 250 m of the site.

Hydrogeological information indicates that the superficial deposits beneath the site are classified as ‘Secondary Undifferentiated’ aquifer strata and the bedrock strata are classified as ‘Secondary A’ strata. There are no active groundwater abstractions recorded within 1 km of the site. The site is not located within a groundwater Source Protection Zone.

BRE BR211 (2015) and the Groundsure report (based on BGS/Public Health England data) indicate that the site is not within an area where radon precautions are required in new buildings.

With reference to the available ground investigation records included in the Desk Study Appraisal report, as relating to the former police station immediately to the south of the site, the recorded natural strata comprise 'firm' silts to approximately 1.4 m, underlain by medium dense and dense clayey sand and gravels, as indicated to approximately 4.2 m. These strata are classified as River Terrace Deposits. Below this, 'stiff' and 'very stiff' clays were reported to the base of the exploratory holes at approximately 11 m. In addition to these natural strata, Made Ground is also recorded, as likely to relate to the former police station development. Groundwater appears to have been recorded below 1.5 m, although it is unclear if these observations are representative of longer-term conditions.

The data on deeper strata, as provided by the BGS borehole data, indicates the predominantly clayey strata of the London Clay and underlying Eocene sequence extend a depth of approximately 128 m (420 ft), below which chalk strata are recorded. This record relates to a former well, associated with a water level (when not pumping) at approximately 3 m below surface.

5. GROUND CONDITIONS AND GEOLOGICAL MODEL

5.1 Ground Investigation

Details of the rationale and scope of the ground investigation and laboratory testing, together with exploratory hole logs, monitoring, in situ and laboratory test results, are given in Appendix I. The investigation has identified the presence of the following, below the western part of site. Within the eastern section of the site, access was not available and the ground conditions remain to be confirmed.

5.2 Buried Foundations and Services

No buried obstructions or services were encountered during the ground investigation. However, foundations, services and associated structures will be associated with the current residential properties. In addition, a drain is understood to extend within the northern and eastern margins of the site.

5.3 Strata Encountered

Topsoil/Made Ground

Topsoil (and disturbed subsoil) was encountered in all garden/landscaping areas that were investigated and recorded to a typical depth of 0.5 m. The material comprises a dark brown, sandy silt/clay with rootlets. Locally, brick fragments were noted in the topsoil.

River Terrace Deposits

Below the Topsoil/Made Ground River Terrace deposits were encountered within all exploratory holes. The River Terrace deposits strata typically comprise an upper horizon of firm to stiff and stiff consistency gravelly clays/medium dense to dense clayey gravels, as indicated to depths of approximately 1.5 m, overlying dense to very dense clayey sand and gravels. These strata have been proven to 4.0 m depth in the northern section of the site. In the vicinity of the southern part of the site, these strata are indicated to depths of approximately 3.5 m to 4.5 m, and also include medium dense/'firm silts' (as indicated in the exploratory hole data for the adjoining site).

Standard penetration tests (SPTs) undertaken in the River Terrace strata recorded 'N' values of 18 to greater than 50.

Wittering Formation

Wittering Formation strata are indicated below the River Terrace Deposits, as observed in the northern section of the site (in DS2) at 4.0 m depth to a maximum depth of 5.0 m. These strata comprise very stiff consistency (high strength) silty clays. With reference to the available data, these strata are recorded to depths in excess of 10.5 m, and generally increase in strength with depth.

5.4 Groundwater

Groundwater was not encountered to the depth investigated (maximum depth of 5.0 m) during the recent ground investigation works at the site. The data for the adjoining site appears to indicate groundwater at depths of between 2.5 m to 3 m.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

6. PROPOSED DEVELOPMENT

The proposed development comprises a three to four-storey block of apartments with car parking and areas of managed soft landscaping. The residents will be of retirement age. An indicative proposed development plan is presented as Figure 4.

7. ASSESSMENT OF POTENTIAL CONTAMINATION AND GROUND GASES

7.1 Assessment Criteria

Assessment of potential contamination and ground gases has been undertaken using a risk assessment based approach, as recommended within the Environmental Protection Act (1990) (and subsequent amendments), Environment Agency LCRM (2020), CLEA Model (2004-2009), BS 10175:2011+A2:2017, CIRIA C552 (2001) and NHBC R&D Report 66 (2008). This approach considers the likely source of contamination, given the history and location of the site, and the possible migration pathways by which these potentially hazardous substances may reach likely receptors, such as end users of the site, controlled waters or the wider environment, in the context of the proposed development.

Part IIA of the Environmental Protection Act (1990) states that

‘Contaminated Land is any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) significant pollution of controlled waters is being caused or there is significant possibility of such pollution being caused;’

All risk assessments carried out as part of this investigation have been carried out with respect to the definition of ‘contaminated land’ within Part IIA of the Environmental Protection Act (1990) and have considered the site both before and on completion of the development. The basis of the risk assessment is the Conceptual Site Model, which is derived from the desk study and initial information and identifies potential contaminant linkages that could affect receptors relevant to the site and the wider environment. The Conceptual Site Model is presented in Table 1.

Based on the model within the Desk Study Appraisal, a ground investigation within accessible areas of the site was designed to obtain relevant information to assess further the identified contaminant linkages. Where relevant, this included the recovery of representative samples and subsequent analytical laboratory testing. The rationale for the sampling and testing is set out in Appendix I. The results of the analytical testing are presented in Appendix I and summarised in Table 2. On the basis of the conceptual site model and the results of the analytical laboratory testing, an assessment of the identified contaminant linkages is presented in Table 3.

7.2 Potential Sources of Contamination

Based on the site history, the site has only previously been developed with residential properties, as currently on site, and comprised fields prior to this. It is considered that these land uses are not associated with a significant source of potential contaminants. The residential properties may have used coal-fired heating systems in the past such that very limited volumes of ashy materials may have been disposed of across the site. Ashy materials may be associated with metals and polycyclic aromatic hydrocarbons.

With respect to potential sources of off-site contamination, where former industrial premises were present, such areas have since been redeveloped with residential properties (that include private gardens etc). On this basis, it is not plausible that a significant risk of mobile contaminants would remain in such areas as capable of adversely influencing ground conditions at the site.

Based on the available information, representative soil samples were recovered from the Made Ground materials (or topsoil with evidence of man-made inclusions in case of retention for use in the proposed development) encountered beneath the site and were tested for the potential contaminants identified above. The test results are summarised in Table 2 and are presented against generic assessment criteria (GAC) and Category 4 Screening Levels (C4SL), relevant to the protection of human health in a residential development with managed landscaping. As can be seen from Table 2, all of the potential contaminant concentrations are recorded below the GAC (negligible risk to human health) and C4SL (low but acceptable risk to human health) and therefore, do not represent an unacceptable risk to end users. Asbestos has not been identified within the shallow soils. Additional comments relevant to human health risk assessment are provided in Section 7.3.1.

Based on appropriate laboratory test data, risks to construction materials are assessed in Section 7.3.2.

No significant concentrations of potentially phytotoxic chemicals have been recorded. Topsoil is present on site and may be suitable for reuse through the site to provide a growing medium in proposed soft landscaping areas (if the topsoil can be suitably stored during the construction period). Any topsoil/subsoil imported to site should be of appropriate quality and, if sourced from a brownfield site or from a topsoil recycling facility, should be the subject of appropriate analytical testing to confirm that the imported soils do not themselves represent a risk to end users of the development.

No putrescible material has been identified at the site and no significant thicknesses of Made Ground have been recorded. There are no recorded landfills within influencing distance and the site is not within an area where precautions against the ingress of radon gas are required in new dwellings. Therefore, it is considered that there are no sources of hazardous ground gases at the site and ground gas protection is not necessary for the proposed development.

7.3 Contaminant Linkages – Solids and Liquids

Based on the Conceptual Site Model, consideration is given below to identified contaminant linkages and a risk evaluation is undertaken of each possible source-pathway-receptor linkage that may occur at the site.

The risk evaluation considers the potential consequences and probability of occurrence in accordance with CIRIA C552 (2001). Where risks are identified as 'negligible', then by implication such risks are within normally accepted levels for the proposed development, and the further reduction of such risks by remediation works is considered unnecessary. Where risks are identified that are 'low' as defined in CIRIA C552 (2001), or worse, then consideration is given to the management of the identified risks, with appropriate recommended actions that may include engineering solutions/remediation works as described in the following sections.

7.3.1 Human Health

Potential contaminants associated with the site history have been identified at concentrations below relevant GAC and C4SL values and asbestos fibres have not been recorded. Therefore no valid contaminant linkages for the proposed development have been identified within the area of ground investigation as completed to date. There is no evidence to suggest that the remainder of the site would be associated with significantly different ground conditions such that a contaminant linkage would be present, however, this is also addressed in the additional works recommended in Section 14.

Groundworkers involved in the constructions of the new development are unlikely to be exposed to short term (acute risks). However, in line with good practice, it is recommended that appropriate personal protective equipment (PPE) be worn and high levels of personal hygiene be maintained by groundworkers. To minimise soils at the site becoming airborne and moving beyond the site boundaries during earth moving operations, it is recommended that appropriate soil dampening equipment be maintained on site during dry periods to minimise dust generation.

7.3.2 Durability of Buried Structures and Services

In view of the low soluble sulphate content and near-neutral soil conditions recorded within the shallow strata as recorded to date, there are no special precautions required for the protection of good quality buried foundation concrete. Based on guidance within *BRE Special Digest 1* (2005), the specified DC Class of concrete for buried structures and foundations should be suitable for an ACEC site classification of AC-1.

If buried concrete is likely to come into contact with the underlying Wittering Formation strata, then additional analytical laboratory testing and assessment would be recommended, as these strata may include relatively high concentrations of sulphate (or sulphide) minerals, and an ACEC site classification of AC-4 might be applicable.

The site has not been associated with past fuel and/or chemical storage and there are no such storage facilities in close proximity. Therefore, the site would not be considered to be 'brownfield' under the definition provided by UKWIR (2010) with respect to the assessment of ground for water supply pipes. Based on the guidance provided by UKWIR, conventional plastic materials can be used for potable water supply pipes without any requirements for specific testing.

It should be noted that individual water companies may have in-house requirements for the assessment of ground conditions for potable water supply pipes and these requirements may be in addition to, or may contradict, the guidance provided by UKWIR. Therefore, it is recommended that the relevant water supply company be consulted prior to finalising the potable water supply design.

7.4 Recommended Remedial Works

On the basis of the foregoing information and risk assessment, it is evident that there are no valid contaminant linkages such that remediation works should not be necessary for the proposed development. However, in order to provide an increased level of confidence in the assessment, it is considered prudent that

a supplementary phase of ground investigation be undertaken within the eastern half of the site, as outlined in Section 14.

7.5 Construction Management/Best Practice

In compliance with normal good practice, consideration should be given to the following:

- In view of the ground conditions recorded at the site, it is recommended that soils should be kept damp during groundworks undertaken in dry weather to minimise the potential of aerial migration of dust to neighbouring properties and public.
- If existing topsoil material is not being retained for reuse, allowance should be made to import suitable topsoil/subsoil materials to provide a healthy growing medium for plantings. Such imported topsoil should be supported by appropriate documentation to confirm that it is suitable for use within the development, in compliance with published NHBC requirements.

7.6 Potential Liabilities

Based on the available data and risk assessment, it is considered that there should be no significant environmental liabilities associated with the ground conditions and site. Provided the work outlined in Sections 7.5 and 14 are undertaken, there should be no such liabilities following completion of the development.

8. ASSESSMENT OF MINING, QUARRYING AND OVERALL GROUND STABILITY

The site is not within an area of recorded underground mining or other such mineral extraction, nor are there any quarries recorded at, or in close proximity to, the site. Although chalk strata are indicated at (significant) depth below the site, the BGS database indicates a negligible hazard rating in relation to ground dissolution. Therefore, it is unlikely that the proposed development would be constrained by ground stability issues associated with mining/quarrying or ground dissolution.

9. GEOTECHNICAL ASSESSMENT

9.1 Assessment of Foundation Solutions

It is understood that the proposed development will comprise a block of retirement apartments, up to three to four storeys in height, together with car parking and areas of managed soft landscaping.

Ground conditions, as recorded within the western part of the site comprise a limited thickness of Topsoil/Made Ground, typically present to depths of approximately 0.5 m. Present beneath the Topsoil/Made Ground are River Terrace Deposits strata. These soils comprise gravelly clays/clayey gravels, as indicated to depths of approximately 1.5 m, overlying dense to very dense clayey sand and gravels. These strata have been proven to depths of up to 4.0 m. Below 4.0 m depth high strength clays of the Wittering Formation are indicated. Although relatively limited data is available regarding groundwater, significant groundwater has not been identified within approximately 2.5 m of the surface in the vicinity of the site.

As the superficial deposits at the site can include variable strata, it is recommended that a supplementary phase of ground investigation be undertaken when access is available, and in particular, it is recommended that the ground conditions be confirmed in the eastern section of the site, as outlined in Section 14.

With reference to the currently available data, the medium dense/dense and high strength (firm to stiff consistency) River Terrace Deposits strata identified may support the proposed structure on pad/trench-fill foundations. Foundations would need to extend through Topsoil/Made Ground, and any lower strength natural strata.

9.2 Recommended Foundation Design Parameters

9.2.1 Strip/Trench Fill/Pad Foundations

On the basis of the ground conditions recorded to date and the foregoing assessment, it is considered that trench fill footings may provide a suitable foundation solution for the proposed structure.

The recommended parameters for the foundation design are as follows:

<i>Foundation Strata:</i>	Medium dense to dense sand and gravel and/or high strength (firm to stiff and stiff consistency) sandy clays (River Terrace Deposits)
<i>Foundation Depth:</i>	Minimum 0.75 m, deepened through Made Ground and any low strength materials
<i>Foundation Width/Size:</i>	Up to 3.0 m
<i>Nett Allowable Bearing Pressure:</i>	150 kN/m ²

It is considered that total settlement of foundations designed on the above basis should be less than the normal serviceability limit state for this development (i.e. total settlements of 25 mm). Likewise, potential differential settlements for footings supported by the above strata should remain with acceptable limits (ie. 1/1000).

Although not indicated by the currently available data for the site, it remains possible that the shallow River Terrace Deposits may include pockets/limited horizons of 'firm' silts at shallow depth. Such soils may be of lower strength than the bearing strata as recommended above. If found to be present, additional geotechnical inspection and assessment would be recommended, as it may be necessary to deepen footings through such strata, use a reduced bearing pressure over such soils or include a section of reinforced strip footings/ground beams over such soils, to control potential deflections and differential settlement. It will be necessary to undertake further investigation within the eastern part of the site to confirm that such low strength strata are not indicated in this area.

Laboratory testing results indicates the shallow clayey horizons may be classified as medium volume change potential soils, as defined in NHBC Standards (2022). Within the influence zones of existing or proposed trees, suitable foundation precautions should be adopted, as outlined in NHBC Standards (2022).

As outlined in Section 7.3.2, with reference to the data currently available and based on guidance published within BRE Special Digest 1 (2005), the specified DC Class of concrete for buried structures and foundations should be suitable for an ACEC site classification of AC-1 for shallow structures. Where buried concrete may come into contact with Wittering Formation strata, additional precautions for buried concrete may be necessary.

9.3 Floor Slab Recommendations

Due to potential for disturbance of the shallow ground beneath the site during demolition of existing structures, it is recommended that an allowance be made for suspended ground floor slabs for the proposed new buildings. Within influencing distance of trees, allowance should be included for a suitable underfloor void, in accordance with NHBC Standards (2022), due to the presence of volume change potential clays.

9.4 General Construction Advice

All formations should be cleaned, and subsequently inspected by a suitably qualified engineer prior to placing concrete. Should any soft, compressible or otherwise unsuitable materials be encountered they should be removed and replaced by blinding concrete.

Foundation concrete, or alternatively, a blinding layer of concrete, should be placed immediately after excavation and inspection in order to protect the formation against softening and disturbance.

Generally, all formations should be placed wholly within the same material type, unless specific geotechnical inspection and assessment have been undertaken.

Care should be taken to ensure that any existing services encountered are carefully and satisfactorily blocked to prevent water seeping through the drains and into any excavations.

10. TEMPORARY WORKS

Conventional plant is considered appropriate for shallow excavation works at the site. However, the use of hydraulic breakers may be required to break up floor slabs, concrete surfacing, foundations and any buried concrete structures.

Shallow excavations may remain stable in the short term where excavations do not encounter groundwater. However, instability may occur in excavations left open for extended periods of time. Support should be provided, or the sides battered back, in any excavations requiring man entry in compliance with the relevant risk assessment.

Groundwater is, based on current data, expected to be present at depths at least below 2.0 m. However, perched water may locally be encountered. If perched water does enter excavations, pumping from screened sumps may be required.

11. ASSESSMENT OF SOAKAWAY DRAINAGE

Groundwater is expected to be present at relatively shallow depth (from around 2.5 m depth). Strata above this level generally comprise clays, classified in CIRIA C750 (2016) as very low permeability to practically impermeable. On this basis, it is considered unlikely that soakaways will provide a suitable drainage solution, such that an alternative SuDS drainage system appears to be necessary.

12. ROAD PAVEMENTS

Based on the current data and the nature of the shallow soils a preliminary design equilibrium CBR of 3% may be considered for the design of road pavements. The materials at shallow depth may be regarded as frost susceptible.

13. ASSESSMENT OF MATERIALS FOR WASTE DISPOSAL

There is no requirement to remove soils from site and, therefore, development levels should be set such that soils can be retained and reused on site where possible. Providing development levels are set to accommodate soil arisings (for example, from foundation excavations), such materials would not be classified as waste if retained and re-used on site. However, if materials are excess to requirements, they should be taken to an appropriately permitted waste facility.

If material is identified for removal to a waste facility, it will be necessary to provide a description of the material and laboratory test data to the receiving facility. This information is included in Appendix I. It should be noted that additional testing, either for classification purposes or for waste acceptance criteria (WAC) testing to confirm acceptability of the waste may be required (as noted below).

The available analytical laboratory test data has been used to provide preliminary waste disposal advice. It should be noted that these test results may not specifically relate to materials that are, or will be, scheduled for removal from site. However, the results are appropriate for preliminary guidance and costing purposes. A preliminary assessment of potential waste classification for materials on site has been undertaken in accordance with the Environment Agency's document Guidance on the Classification and Assessment of Waste WM3 (2021). The assessment indicates that the following preliminary waste classification advice would be appropriate.

- Topsoil is likely to be classified as 'non-hazardous' waste if taken to a landfill due to the organic content of such materials. Alternatively, these materials could be taken to a recycling facility.
- Topsoil/Made Ground at the site, whilst appearing to include topsoil-type material, has a total organic carbon content that is compliant with 'inert' WAC values. However, it is noted that DOC eluate values exceed inert waste criteria. Therefore, an allowance should be made for the Made Ground to be classified as 'non-hazardous' waste for disposal at landfill. In addition, it should be appreciated that in areas of higher topsoil content, these surface soils may include more organic materials
- Natural strata of the River Terrace and Wittering Formation would be classified as 'inert' waste without any requirement for laboratory testing.

Waste requires pre-treatment prior to disposal at landfill and this may take the form of physical or chemical treatment to reduce hazards and/or waste volumes. The segregation and screening of waste soils into separate, and appropriately classified, waste streams would satisfy the pre-treatment criteria by ensuring that volumes of each waste category are minimised. Segregation of waste streams is also important to prevent materials being classified within a worse-case category and, therefore, incurring higher disposal costs. Mixing of different waste streams to dilute hazardous properties is not permitted.

It should be noted that the above assessment is provided in accordance with current waste disposal and environmental permitting legislation and guidance documents. However, individual landfills and other waste disposal facilities may have variances in their permit that differs from standard guidance. Waste facilities may also make decisions with respect to accepting waste on a commercial basis. Therefore, landfills or other waste facilities should be approached to confirm that they will accept waste materials prior to finalising waste disposal proposals.

14. RECOMMENDATIONS FOR FURTHER GROUND INVESTIGATIONS

When suitable access is available, a supplementary phase of ground investigation is recommended in order to provide additional data on the shallow ground conditions and possible pockets/horizons of silt that may occur. This investigation should extend within the eastern part of the site to ensure adequate site coverage and confirm that the strata recorded to date continue in that area. The supplementary ground investigation may include a combination of trial pits, dynamic sampling and dynamic probing to provide data regarding excavation stability, groundwater seepages and in situ soil strength/relatively density.

15. RECOMMENDED SUPERVISION AND MONITORING

In compliance with the requirements in BS EN 1997-1:2004 and BE EN 1997-2:2007, construction and workmanship of the engineering solutions recommended in this report shall be supervised. In particular, issues listed in Section 9.4 General Construction Advice shall be considered in the implementation of the works and design of any necessary temporary works set out in Section 10.

In relation to the foundation solution(s) and ground floor slab recommendations in Section 9, the following supervision and monitoring is recommended.

- Inspections of formation strata in excavations for shallow strip/pad footings

16. SUMMARY

A residential development is proposed at Toynbee Road, Eastleigh. The site is currently occupied by residential properties and was historically associated agricultural land. The proposed development comprises a three to four-storey block of apartments, together with car parking and managed landscaping areas. The residents will be of retirement age.

Ground conditions within accessible areas of the site (in the west) comprise a limited thickness of Topsoil/Made Ground, typically present to depths of approximately 0.5 m. Present beneath the Topsoil/Made Ground are River Terrace Deposits strata. These soils are indicated to generally comprise high strength gravelly clays/clayey gravels, overlying dense to very dense clayey sand and gravels. These strata have been proven to depths of up to 4.0 m. Below 4.0 m depth high strength clays of the Wittering Formation are present. Groundwater is envisaged below depths of approximately 2.5 m. It is recommended that ground conditions within the eastern part of the site be confirmed with a supplementary phase of ground investigation.

Based on historical maps and information from regulatory authorities, a conceptual site model has been developed that has identified a number of potential contaminant linkages. A ground investigation was then designed to provide assessment of those contaminant linkages. At this stage, no unacceptable level of risk to human health has been identified in relation to the ground and potential contaminants identified in the Conceptual Site Model. On the basis of the current ground investigation data, it is indicated that there are no valid contaminant linkages in relation to the proposed development. Therefore, it is considered that remediation works should not be necessary for the proposed development.

Based on the recorded ground conditions, strip/trench fill foundations, placed within the medium dense/dense and high strength River Terrace Deposits strata are considered to be suitable for the proposed development. It is noted that the shallow strata may include variable strata, such that additional ground investigation is recommended (including within the eastern section of the site) prior to finalising designs.

It is recommended that an allowance should be made for suspended ground floor slabs with an underfloor void for the proposed buildings.

In view of the indicated relatively shallow groundwater together with shallow clays, the use of soakaways appears to be unsuitable for the proposed development.

When suitable access is available, a supplementary phase of ground investigation is recommended to provide additional data regarding the shallow strata and also to provide adequate coverage of the site.

REFERENCES

Site Specific References

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GENERAL NOTES

1. The report is limited to the site boundaries and is specific to the development proposals as identified by the Client (or Client's advisor) and confirmed within this report. The report should not be used in a different context. Where the report is identified as a site appraisal, further geoenvironmental assessment, and detailed investigations, will be required prior to finalisation of ground related assessment and designs. Other reports may recommend additional investigation or other works that would be considered essential prior to the preparation of final assessments and associated designs.
2. This report has been prepared by Crossfield Consulting Limited with all reasonable skill, care and diligence within the terms of the Appointment/Proposal Terms and Conditions (as applicable) and with the resources agreed with the Client. Responsibility for any matters outside the agreed scope is not accepted.
3. Where any data supplied by the Client or by other external sources, including previous site investigation data, has been used it has been assumed that the information is correct unless otherwise stated. No responsibility can be accepted by Crossfield Consulting Limited for inaccuracies within the data supplied by others.
4. Any borehole data from the British Geological Survey sources are included on the following basis: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
5. Any assessments made in this report are based on the ground conditions indicated by the factual records included and/or referenced in the report, namely, trial pits and/or boreholes, together with the results of any field or laboratory testing undertaken and, where appropriate, other relevant site data/desk study information which may have been obtained for the site. Variations in ground conditions may occur between exploratory hole locations and there may be special conditions appertaining to the site that have not been revealed by the investigation and that have not been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available.
6. Exploratory hole locations provided in the report are generally established by tape measurement (or similar measurement) from existing features or boundaries. Ground levels stated in the report are based on site survey plans as provided. Hole locations are not accurately surveyed and ground levels at these locations are not obtained unless specifically included in the agreed scope of services.
7. Unless stated otherwise, no consultations with regulatory authorities, funders or other third parties have been carried out; hence, definitive assurance that such third parties will accept the findings of this report cannot be provided.
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10. The Client cannot place reliance on the report until full payment has been made for the report and all associated works.
11. New information, improved methods, changes in published guidance, codes of practice, policies and legislation can occur at any time and may necessitate an alteration to the report in whole, or in part, after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Crossfield Consulting Limited for re-assessment and, if necessary, re-appraisal.

TABLES

TABLE 1

CONCEPTUAL SITE MODEL

	Potential Contaminant Source	Potential Contaminants	Potential Pathway	Receptors and Assessed Contaminant Linkage
On-Site Solid	Historical residential coal fired heating systems may be associated with very limited volumes of ashy material disposal across the site	Toxic and phytotoxic metals Polyaromatic Hydrocarbons (PAHs) Petroleum Hydrocarbons (non-volatile) Polyaromatic Hydrocarbons (PAHs)	Dermal and oral exposure pathways (including air-borne migration) are present during construction phase but will generally not be present following development due to building and hardstanding effective barriers. Limited and landscaping areas after development represent possible dermal, oral and dust exposure pathways.	Human Health <i>End Users:</i> Possible contaminant linkage <i>Groundworkers:</i> Possible contaminant linkage <i>Neighbouring Properties/General Public:</i> Possible contaminant linkage Buried Structures & Services <i>Buried concrete:</i> Possible contaminant linkage <i>Potable water pipes:</i> No contaminant linkage <i>Other buried structures:</i> No contaminant linkage Landscape Areas Possible contaminant linkage
Off-Site Solid	No evidence of potential source	n/a	Release into Liquid Phase Metal solubility generally low at typical soil temperature and pH. Low possibility of metal uptake by plants. Polyaromatic hydrocarbons are typically of low solubility. Release into liquid phase is unlikely Release into Vapour Phase n/a – no source	
On-Site Liquid	No evidence of potential source	n/a	n/a – no source	
Off-Site Liquid	No evidence of potential source	n/a	Release into Vapour Phase n/a – no source	
On Site Liquid	No evidence of potential source	n/a	n/a – no source	Controlled Waters <i>Groundwater:</i> Secondary A superficial aquifer and Unproductive bedrock strata, no groundwater source protection zone: No contaminant linkage <i>Surface Water:</i> No contaminant linkage
Ground Gases	No historical/active landfills	n/a	n/a – no source	Human Health <i>End Users:</i> No contaminant linkage
	Site not located in a radon affected area	n/a	n/a – no source	

NOTES

1.
- The above conceptual model is based on CIRIA C552 (2001) and BS 10175:2011+A2:2017, BS EN ISO 21365:2020 and Environment Agency Land Contamination Risk Management (LCRM) (2020).
2.
- The Conceptual Site Model is prepared from available desk study information. Where a site walkover or ground investigation identifies information that was not known at the desk study stage, such information is used to modify the Model.
3.
- Where a contaminant linkage is identified, any subsequent ground investigation is designed to obtain relevant information to assess the contaminant linkage. See Table 3 for a summary of contaminant linkage assessments.

TABLE 2
(Page 1 of 2)

SUMMARY OF ANALYTICAL TEST DATA: SOILS
RISKS TO HUMAN HEALTH

Determinand	Units	No of Tests	Concentration (mg/kg)		Generic Assessment Criteria (mg/kg) Residential Without Plant Uptake		Category 4 Screening Level (mg/kg) Residential Without Plant Uptake	
			Min	Max	Value	No>GAC	Value	No>C4SL
Arsenic	mg/kg	5	6.2	7.8	40 ¹	0	40 ³	0
Cadmium	mg/kg	5	<0.2	0.5	85 ¹	0	149 ³	0
Chromium (Total) ⁴	mg/kg	5	20	30	910 ¹	0	-	-
Chromium (VI)	mg/kg	5	<1.8	<1.8	6 ¹	0	21 ³	0
Lead	mg/kg	5	40	98	-	-	310 ³	0
Inorganic Mercury	mg/kg	5	<0.3	1.0	56 ¹	0	-	-
Nickel	mg/kg	5	14	19	180 ¹	0	-	-
Selenium	mg/kg	5	<1.0	<1.0	430 ¹	0	-	-
Copper	mg/kg	5	21	31	7100 ¹	0	-	-
Zinc	mg/kg	5	73	160	40,000 ¹	0	-	-
Boron	mg/kg	5	0.2	0.5	11,000 ¹	0	-	-
Phenols	mg/kg	5	<1.0	<1.0	440 ¹	0	-	-
pH	-	5	6.0	7.9	-	-	-	-
Total Organic Carbon	%	5	1.0	2.5	-	-	-	-
Petroleum Hydrocarbons								
Aliphatics C ₅ – C ₆	mg/kg	5	<0.001	<0.001	78 ¹	0	-	-
Aliphatics C ₆ – C ₈	mg/kg	5	<0.001	<0.001	230 ¹	0	-	-
Aliphatics C ₈ – C ₁₀	mg/kg	5	<0.001	<0.001	65 ¹	0	-	-
Aliphatics C ₁₀ – C ₁₂	mg/kg	5	<1.0	<1.0	330 ¹	0	-	-
Aliphatics C ₁₂ – C ₁₆	mg/kg	5	<2.0	<2.0	2400 ¹	0	-	-
Aliphatics C ₁₆ – C ₃₅	mg/kg	5	<16	<16	92,000 ¹	0	-	-
Aromatics C ₆ – C ₇	mg/kg	5	<0.001	<0.001	690 ¹	0	-	-
Aromatics C ₇ – C ₈	mg/kg	5	<0.001	<0.001	1800 ¹	0	-	-
Aromatics C ₈ – C ₁₀	mg/kg	5	<0.001	<0.001	110 ¹	0	-	-
Aromatics C ₁₀ – C ₁₂	mg/kg	5	<1.0	<1.0	590 ¹	0	-	-
Aromatics C ₁₂ – C ₁₆	mg/kg	5	<2.0	2.2	2300 ¹	0	-	-
Aromatics C ₁₆ – C ₂₁	mg/kg	5	<10	24	1900 ¹	0	-	-
Aromatics C ₂₁ – C ₃₅	mg/kg	5	<10	39	1900 ¹	0	-	-
VOCs								
Benzene	mg/kg	5	<0.001	<0.001	0.70 ¹	0	1.6 ³	0
Toluene	mg/kg	5	<0.001	<0.001	1900 ¹	0	-	-
Ethylbenzene	mg/kg	5	<0.001	<0.001	190 ¹	0	-	-
Xylene	mg/kg	5	<0.001	<0.001	180 ¹	0	-	-
MTBE	mg/kg	5	<0.001	<0.001	120 ²	0	-	-

TABLE 2
(Page 2 of 2)

Determinand	Units	No of Tests	Concentration (mg/kg)		Generic Assessment Criteria (mg/kg) Residential Without Plant Uptake		Category 4 Screening Level (mg/kg) Residential Without Plant Uptake	
			Min	Max	Value	No>GAC	Value	No>C4SL
PAHs								
Naphthalene	mg/kg	5	<0.05	<0.05	5.6 ¹	0	-	-
Acenaphthylene	mg/kg	5	<0.05	<0.05	4600 ¹	0	-	-
Acenaphthene	mg/kg	5	<0.05	<0.05	4700 ¹	0	-	-
Fluorene	mg/kg	5	<0.05	<0.05	1600 ¹	0	-	-
Phenanthrene	mg/kg	5	<0.05	3.0	1500 ¹	0	-	-
Anthracene	mg/kg	5	<0.05	0.84	35,000 ¹	0	-	-
Fluoranthene	mg/kg	5	<0.05	4.5	1600 ¹	0	-	-
Pyrene	mg/kg	5	<0.05	3.7	3800 ¹	0	-	-
Benz(a)anthracene	mg/kg	5	<0.05	2.5	14 ¹	0	-	-
Chrysene	mg/kg	5	<0.05	1.9	31 ¹	0	-	-
Benzo(b)fluoranthene	mg/kg	5	<0.05	2.6	4.0 ¹	0	-	-
Benzo(k)fluoranthene	mg/kg	5	<0.05	0.60	110 ¹	0	-	-
Benzo(a)pyrene	mg/kg	5	<0.05	2.0	3.2 ¹	0	5.3 ³	0
Indeno(123cd)pyrene	mg/kg	5	<0.05	0.81	46 ¹	0	-	-
Dibenzo(ah)anthracene	mg/kg	5	<0.05	0.25	0.32 ¹	0	-	-
Benzo(ghi)perylene	mg/kg	5	<0.05	0.89	360 ¹	0	-	-

NOTES

1. Suitable for Use Level (S4UL) published by LQM/CIEH, 2015 – Residential Without Plant Uptake landuse. S4UL assumptions comprise 2.5% soil organic matter, soil pH of 7 and sandy loam soil type. S4ULs are copyright © Land Quality Management Limited reproduced with permission; Publication Number S4UL3133.
2. Soil GAC for Human Health Risk Assessment produced by CL:AIRE (2010) – Residential Without Plant Uptake. Assumption of 2.5% soil organic matter.
3. Category 4 Screening Level (C4SL), Department for Environment Food and Rural Affairs (March 2014) – calculated for 2.5% SOM using the CLEA Model v1.071
4. In the absence of desk study or historical map evidence indicating a potential source of chromium (VI) usage at or in the near vicinity of the site (and confirmed by laboratory testing), total chromium concentrations have been compared to the GAC for chromium (III).

TABLE 3

ASSESSMENT OF CONTAMINANT LINKAGES

NOTES:

- 1. Contaminant linkage validity assessed following qualitative or semi-quantitative risk assessment.
- 2. Contaminant linkage assessed following detailed quantitative risk assessment or assuming the recommended remediation or mitigation measures are in place

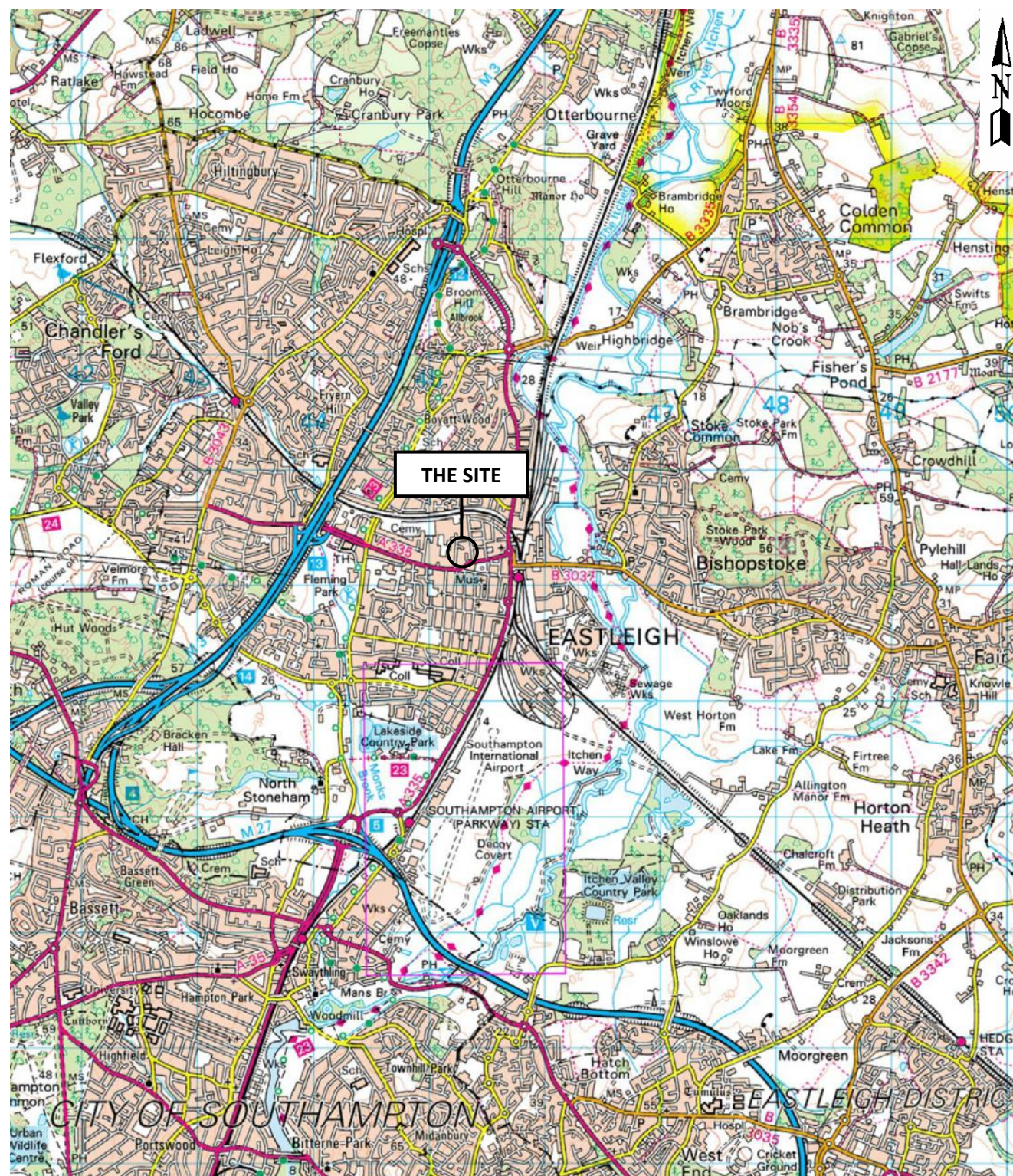
		Consequence (C)			
		Severe	Medium	Mild	Minor
Probability (P)	High likelihood (HL)	Very High Risk	High Risk	Moderate Risk	Moderate/ Low Risk
	Likely (L)	High Risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low likelihood (LL)	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely (UL)	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

All terminology in accordance with the definitions provided in CIRIA C552 (2001)

Contaminant Linkage			Assessment of Contaminant Linkage following Ground Investigation	Contaminant Linkage Valid? ¹	Risk Rating			Quantitative Risk Assessment	Recommended Remediation/Mitigation (See Section 7 for further details)	Recommended Work Verified?	Contaminant Linkage Valid? ²
Source	Pathway	Receptor			C	P	Risk				
Toxic Metals Petroleum Hydrocarbons Polyaromatic hydrocarbons Asbestos	Dermal contact (dust), Ingestion (dust) and Inhalation (dust).	End users	Recorded concentrations below the GAC/C4SL Recorded concentrations below the GAC/C4SL Recorded concentrations below the GAC/C4SL Asbestos containing materials have not been recorded.	No No No No	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	Not applicable	Not required	Not applicable	No
Toxic Metals Petroleum Hydrocarbons Polyaromatic hydrocarbons Asbestos	Dermal contact, Ingestion and Inhalation.	Construction workers	All tests below concentrations considered to be a short-term (acute) risk. No further assessment required. Asbestos containing materials have not been recorded.	No No No No	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	Not applicable	Not required but standard personal protective equipment is recommended as good practice during construction.	Not applicable	No
Toxic Metals Petroleum Hydrocarbons Polyaromatic hydrocarbons Asbestos	Dermal contact (dust), Ingestion (dust) and Inhalation (dust).	Neighbours/General Public	Recorded concentrations below the GAC/C4SL Recorded concentrations below the GAC/C4SL Recorded concentrations below the GAC/C4SL Asbestos containing materials have not been recorded.	No No No No	n/a n/a n/a n/a	n/a n/a n/a n/a	n/a n/a n/a n/a	Not applicable	Soil dampening equipment to be used to minimise potential for airborne migration of fugitive dust from site	To be confirmed during construction phase	No
Phytotoxic Metals	Uptake by plant roots	Landscape plantings	No significant concentrations of phytotoxic metals recorded, based on guideline values for topsoil in BS 3882:2015	No	n/a	n/a	n/a	Not applicable	Not applicable	Not applicable	No

FIGURES

FIGURE 1

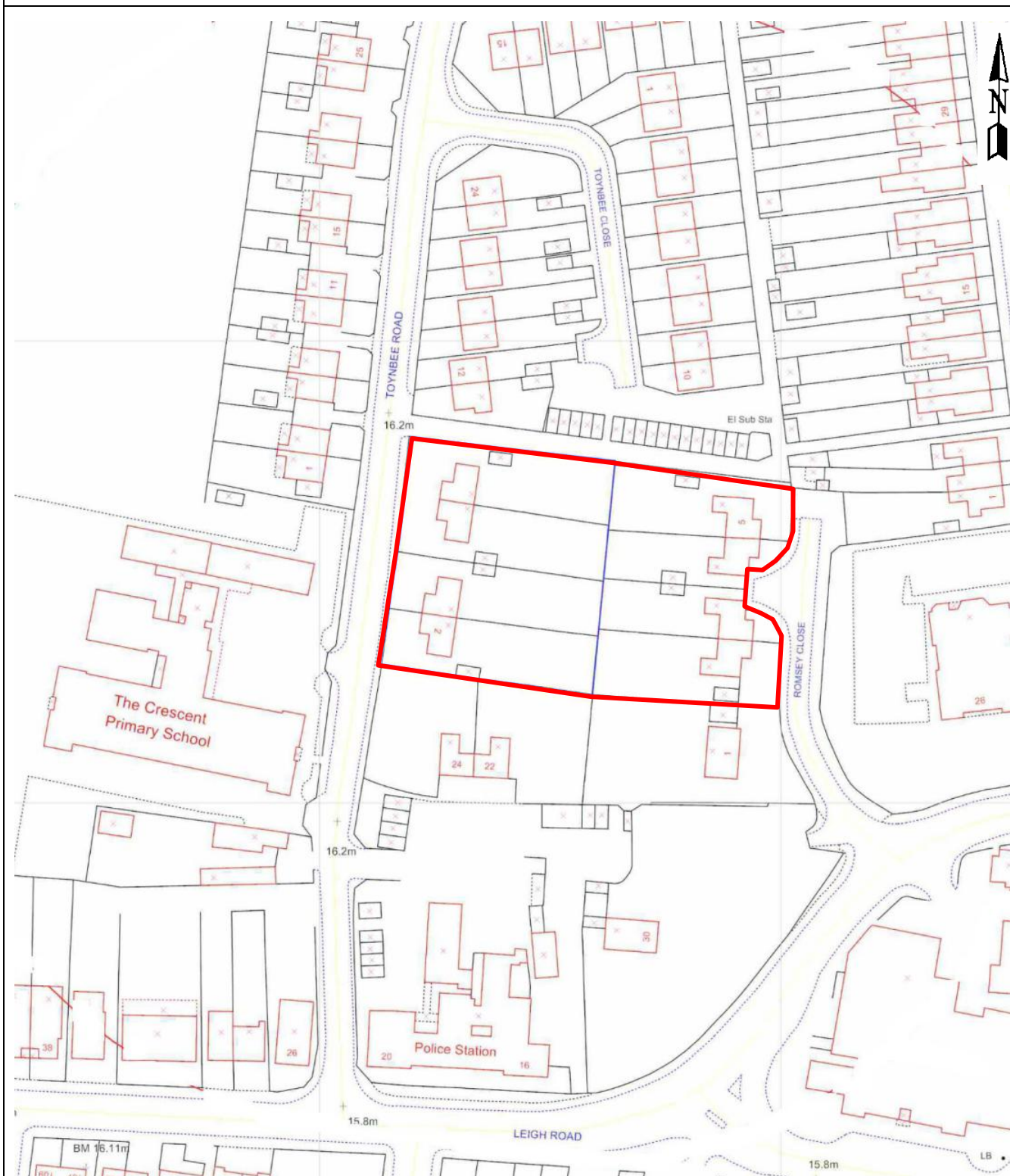


SITE LOCATION PLAN

Scale 1: 50,000

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FIGURE 2



SITE PLAN

Scale 1: 1250

Reproduced from the 2003 1:1250 Ordnance Survey map with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright. Licence No.100014660

FIGURE 3



TOPOGRAPHICAL SURVEY (WESTERN PART)

Scale 1:500 approx

Plan based on Drg No. SU01 Rev A by D & H Surveys

FIGURE 4

PROPOSED DEVELOPMENT PLAN
Scale 1:500

Plan based on Planning Issues Drg No. 22/SW051/FP06

APPENDIX I

APPENDIX I – GROUND INVESTIGATION

Introduction

This Appendix, together with Sections 2 to 5 of the report, forms the Ground Investigation Report for the development described in the report, in compliance with the requirements of BS 5930:2015+A1:2020, BS EN1997-1:2004(2007) and BS EN1997-2:2007(2007).

The site operations were carried out on 8th June 2022 under the supervision of a geotechnical/geoenvironmental engineer from Crossfield Consulting Limited. The scope and rationale for the design of the investigation is presented in Table I-1. It is noted that the exploratory hole locations were constrained by the existing residential properties at the site.

The ground investigation was designed and supervised by qualified and experienced geotechnical/geoenvironmental specialists from Crossfield Consulting Limited. Where appropriate, and as outlined below, specialist drilling/sampling equipment was procured together with trained and experienced operators. Unless otherwise indicated, sampling and logging remained the responsibility of trained staff from Crossfield Consulting Limited and field records were prepared on site, during or immediately following drilling/sampling or in situ measurements/tests. The results of in situ tests are presented on the relevant record sheets in this Appendix.

An exploratory hole location plan is presented as Figure I-1.

Dynamic Sampling

Five dynamic sampling boreholes, denoted as DS1 to DS5, were sunk by Regional Drilling, on 8th June to between 2.0 m and 5.0 m depth. Dynamic/driven open-tube soil sampling/boring was undertaken using a Premier Compact rig. Using a 1.0 m long thick-walled open-tube sampler (with plastic liner), Category A and B samples were recovered (sample disturbance being influenced by the specific soils encountered). Where appropriate, small disturbed sub-samples were recovered from the materials recovered in the open-tube sampler.

Standard Penetration Tests (SPT) were carried out at regular intervals to provide data on the in-situ density of coarse-grained strata and an indication of strength within fine-grained strata. The SPTs were carried out in accordance with BS EN ISO 22476-3:2005(2007).

The records from the investigation are presented in this Appendix. These records include the descriptions and depths of the strata encountered, together with sample depths, in situ test results (uncorrected values), groundwater observations, details of installations/backfill within exploratory holes and other pertinent comments.

Soil Samples

All samples for analytical testing were collected in appropriate containers, stored in cool boxes (where appropriate) and sent to the testing laboratory overnight. The sample containers, storage and handling procedures were all compatible with the relevant recommendations of the UKAS accredited testing laboratory for the specific testing proposed.

Samples designated for geotechnical testing were collected, stored and transported in accordance with the published requirements for the specific tests scheduled, such that moisture content and soil structure integrity was maintained, as necessary for the test requirements.

Analytical Laboratory Testing

The rationale for the analytical testing is set out in Table I-2.

Selected samples of the soils encountered were submitted for screening analysis of the following determinands:

- Arsenic (Total)
- Chromium (Total and Hexavalent)
- Lead (Total)
- Nickel (Total)
- Selenium (Total)
- Cyanide (Total)
- Sulphate (Water soluble)
- pH
- Asbestos (Fibre & ACM Screen)
- Cadmium (Total)
- Copper (Total)
- Mercury (Total)
- Zinc (Total)
- Boron (Water soluble)
- Sulphide (Total)
- Phenols (Total-monohydric)
- Total Organic Carbon
- Asbestos (Quantification)

Note: Total determinands are based on an aqua-regia extract.

Selected samples of the soils encountered were submitted for analysis of the following determinands:

- Total Petroleum Hydrocarbons – aromatic/aliphatic split and carbon number banding, using GC-FID techniques
- Polyaromatic Hydrocarbons – using GC-MS techniques

Selected samples were submitted for Waste Acceptance Criteria Tests (WAC) to BS EN 12457-3:

Solid Tests

Total Organic Carbon (TOC)	PCB # – Total (7 Congeners)
Loss on Ignition @ 450°C	PAH ^Δ – (Total WAC 17)
TPH (C ₁₀ -C ₄₀)	Acid Neutralisation Capacity
BTEX * – Total	pH

* BTEX: Total of Benzene, Toluene, Ethylbenzene, Xylenes

PCB: Polychlorinated biphenyl (Total of congener Nos. 28, 52, 101, 118, 138, 153, 180)

^Δ PAH: Polyaromatic Hydrocarbons (Total of 17No. compounds from WAC)

Eluate Tests

Arsenic (dissolved)	Molybdenum (dissolved)	Chloride
Barium (dissolved)	Nickel (dissolved)	Fluoride
Cadmium (dissolved)	Lead (dissolved)	Sulphate as SO ₄
Chromium (dissolved)	Antimony (dissolved)	Dissolved Solids
Copper (dissolved)	Selenium (dissolved)	Phenols - Total (monohydric)
Mercury (dissolved)	Zinc (dissolved)	Dissolved Organic Carbon (DOC)

The analyses were carried out by i2 Analytical, a UKAS accredited laboratory, and the results are presented in this Appendix. Soil testing was undertaken in accordance with the Environment Agency's Monitoring Certification Scheme (MCERTS).

Geotechnical Laboratory Testing

The rationale for the geotechnical laboratory testing is set out in the Table I-3.

Selected samples of the soils encountered were submitted for analysis for the following tests:

- pH value
- Water soluble sulphate
- Total Sulphate
- Total sulphur
- Moisture content
- Atterberg Limits

The analyses were carried out by i2 Analytical, a UKAS accredited laboratory. The results are currently awaited, and will be forwarded upon receipt.

TABLE I-1

RATIONALE FOR THE DESIGN OF THE GROUND INVESTIGATION

The scope of the ground investigation was designed with reference to the published geology and ground conditions indicated in the desk study information.

In compliance with the guidance published in BS EN 1997-2:2007, the ground investigation was designed to verify the preliminary ground model, established from the desk study information and to characterise the ground conditions within influencing distance of the proposed structures. In this regard, the exploratory holes were targeted within relevant areas of the site to provide information on the strata profile down to competent materials. With reference to the desk study information and the support requirements of the proposed development, it is evident that adequate support is provided by the strata that continue below the depths of the exploratory holes.

In compliance with the guidance published in BS 10175:2011+A2:2017, BS 5930:2015+A1:2020 and Environment Agency LCRM (2020), the layout of the exploratory holes and sampling regime also considers the Conceptual Site Model and potential contaminant linkages, such that the spatial arrangement of the investigation provides the necessary information to support a risk assessment of the identified potential contaminant linkages.

Exploratory Hole and Technique	Rationale for Hole Location	Depth (m)	Sampling/In Situ Testing and Monitoring
DS1-DS5	All exploratory hole locations were chosen to provide data in relevant areas of the site and to allow for samples to be taken for environmental and geotechnical assessments	Up to 5.0 m	Representative samples of Made Ground recovered for analytical testing Representative samples of potential founding strata recovered for geotechnical testing Standard penetration tests (SPT) undertaken at regular depth intervals.

Key

DS X Dynamic Sample Borehole

TABLE I-2

RATIONALE FOR THE ANALYTICAL TESTING SUITE

Exploratory Hole and Samples	Selection Criteria	Analytical Tests
DS1 0.3 m DS2 0.2 m DS3 0.4 m DS4 0.3 m DS5 0.2 m	Representative Topsoil/Made Ground samples recovered and tested to assess the presence and concentration of potential contaminants identified as relevant to the site risk assessment based on the Conceptual Site Model.	Metals and metalloids, cyanide (total), pH, phenol, sulphate (water and acid soluble), sulphide, sulphur (total) and TOC Polyaromatic Hydrocarbons Petroleum Hydrocarbons Asbestos
DS1 0.3 m DS3 0.4 m	Samples scheduled for waste classification and waste acceptance criteria testing to assist waste classification/assessment.	Solid Tests: Screening tests for metals and metalloids, cyanides, loss on ignition, ANC, pH and TOC. Petroleum Hydrocarbons, PCBs (7 congeners), BTEX (total), PAHs (WAC 17) Asbestos (fibre and ACM screen) WAC Leachate Suite: Two-stage Eluate test: (BS EN 12457-3) Dissolved As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn, Cl, F, SO ₄ , Dissolved Solids, Phenols (monohydric), dissolved organic carbon

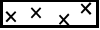
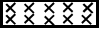
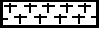
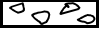
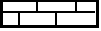
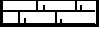
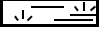
TABLE I-3

RATIONALE FOR THE GEOTECHNICAL TESTING SUITE

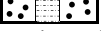
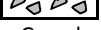
Exploratory Hole and Sample	Selection Criteria	Geotechnical Tests
DS1 1.1 m DS2 1.6 m DS4 1.3 m DS4 2.0 m DS5 0.7 m DS2 4.4 m	Representative samples of potential founding strata collected to aid in foundation concrete design	pH Water soluble sulphate
DS2 1.6 m DS4 2.0 m DS2 4.4 m	Representative samples of potential founding strata collected to aid in foundation concrete design	Total Sulphate Total sulphur
DS1 0.6 m DS2 1.2 m DS4 0.8 m	Representative samples of potential founding strata collected for classification testing	Moisture content Atterberg Limits

BOREHOLE & DRILLHOLE RECORDS - LEGENDS KEY SHEET

Legend - Strata Encountered in Exploratory Hole

Soil	Rock		
	Sedimentary	Igneous	Metamorphic
 Made Ground	 Mudstone	 Fine-grained	 Fine-grained
 Clay	 Shale	 Medium-grained	 Medium-grained
 Silt	 Siltstone	 Coarse-grained	 Coarse-grained
 Sand	 Sandstone		
 Gravel	 Limestone		
 Peat/Topsoil	 Chalk		
 Organic Sand	 Coal		
 Organic Clay	 Conglomerate		

Legend - Backfill to Borehole and Standpipe Installations

Backfill	Installations
 Soil arisings	 Concrete Cover Over Standpipe
 Bentonite	 Plain Standpipe - Bentonite Surround
 Cement-based Grout	 Perforated Standpipe - Geotextile and Granular Filter Surround
 Gravel	 Perforated Standpipe End Geotextile and Granular Filter Surround

Notes:

1. A combination of the strata symbols are indicative of mixed soil types.
2. The response zone of a standpipe refers to the section of perforated pipe within a granular surround, where substances may freely enter the standpipe from the surrounding strata.

DYNAMIC SAMPLE RECORDS

KEY

Sampling

J	Disturbed Jar Sample
G	Jar Sample in Glass Container
g	Soil Sample in Glass Vial
W	Water Sample
IC	Nett sample recovery ratio (ratio of length of recovered sample to length of sample run)

In Situ Measurements

FVT	{	C _{fv}	Undrained Shear Strength (from hand vane shear vane test)
		C _{rv}	Undrained Remoulded Shear Strength (from hand vane shear vane test)
		C _{fv} *	Hand Vane Shear Strength Test (on Category A: OS-TK/W soil sample recovered in window sampler)
		S	Standard Penetration Test (SPT: split spoon sampler)
		SPT(C)	SPT carried out with a 60° cone
		'N'	'N' Value from SPT test
		N ₁₀	Dynamic Probe Test: Number of blows to drive 100 mm
DPH		N _{H10}	Dynamic Probe Test: Heavy (30 kg mass & 500 mm fall)
DPSH-A		N _{SHA10}	Dynamic Probe Test: Super-Heavy A (63.5 kg mass & 500 mm fall)
DPSH-B		N _{SHB10}	Dynamic Probe Test: Super-Heavy B (63.5 kg mass & 750 mm fall)
		<u>x</u>	x Blows per y Driving Distance (for non-standard SPT or DP driving distance)
		y mm	
		T	Torque (max) required to turn rods (unit: Nm, unless otherwise shown)

Notes:

1. All measurement values on record sheets are uncorrected, unless otherwise indicated.
2. For corrected test values, refer to report.
3. Identification and classification of strata is based on the guidance published in the current edition of BS5930 together with BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003
4. Consistency (soft, firm, stiff etc) relates to a manual test/inspection on site (in compliance with BS EN ISO 14688-1:2002 Section 5.14).
5. Undrained shear strength (low, medium, high etc) relates to in situ or laboratory test data and the associated assessed strength of a stratum (in compliance with BS EN ISO 14688-2:2004 Section 5.3 and Table 5).
6. The density of coarse-grained soils is based on SPT N values (or equivalent Dynamic Probe test or CPT data) as outlined in BS5930 and BS EN ISO 14688-2:2004.
7. Rock strength (weak, strong etc) is based on field identification (and/or strength test data), as outlined in BS EN ISO 14689-1:2003 Table 5.

Crossfield CONSULTING GEOTECHNICAL ENVIRONMENTAL					Dynamic Sample Record Sheet				Hole Ref. DS1	
					Project: Toynbee Road, Eastleigh				Sheet 1 of 1	
					Date: 08/06/2022				Job No. CCL03552	
Contractor		Regional Drilling		Equipment		Premier Compact 100		Ground Level. 16.20 m OD		
Method		0.0 m to 2.0 m dynamic sampling						Co-ordinates		
Boring Diameter		100 mm						Logged by: GK Logged on site during filling operations		
Checked by										
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth		Backfill	Level O.D.	
0.30	JGg				Grass over brown humic slightly sandy slightly gravelly silt/clay with rare brick fragments (TOPSOIL/MADE GROUND)	0.50			15.70	
0.60	J				Medium desne orangish brown clayey sandy GRAVEL/Firm to stiff and stiff consistency slightly sandy gravelly CLAY. Gravel is fine to coarse subangular flint. (RIVER TERRACE DEPOSITS)					
1.00-1.45	S	1.00	Dry	N=24		1.30			14.90	
1.10	J									
1.70	J				Medium dense becoming very dense orangish brown clayey sandy GRAVEL. Gravel is fine to coarse subangular mixed lithologies including flint (RIVER TERRACE DEPOSITS)					
2.00-2.28	S	1.00	Dry	N=50		2.00			14.20	
				160 mm	(End of Exploratory Hole)					
Core Recovery					Groundwater			Additional Tests		
Depth		Recovery		Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value
0.00-1.00		100%		2.00	-	-				
1.00-2.00		100%								
Remarks					Notes					
Further progress below 2 m precluded by very dense strata					1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²					

Crossfield CONSULTING GEOTECHNICAL ENVIRONMENTAL					Dynamic Sample Record Sheet					Hole Ref. DS2	
					Project: Toynbee Road, Eastleigh					Sheet 1 of 1	
					Date: 08/06/2022					Job No. CCL03552	
Contractor		Regional Drilling		Equipment		Premier Compact 100		Ground Level.		16.50 m OD	
Method		0.0 m to 5.0 m dynamic sampling						Co-ordinates			
Boring Diameter		100 mm						Logged by: GK		Logged on site during drilling operations	
								Checked by:			
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth		Backfill	Level	O.D.	
0.20	JGg				Grass over brown sandy clay with rootlets (TOPSOIL)	0.50			16.00		
1.00-1.45	S	1.00	Dry	N=18	Medium dense orangish brown clayey sandy GRAVEL/Firm to stiff and stiff consistency slightly sandy gravelly CLAY. Gravel is fine to coarse subangular flint. (RIVER TERRACE DEPOSITS)	1.40			15.10		
1.20	J										
1.60	J				Dense light brown clayey SAND and GRAVEL. Gravel is fine to coarse subangular mixed lithologies including flint (RIVER TERRACE DEPOSITS)						
2.00-2.45	S	1.00	Dry	N=38							
3.00-3.32	S	1.00	Dry	N=70 * 320 mm					16.50		
4.00-4.45	S	1.00	Dry	N=38		4.00			12.50		
5.00-5.45	S	1.00	Dry	N=37	Very stiff consistency grey silty CLAY (WITTERING FORMATION)						
					(End of Exploratory Hole)	5.00			11.50		
Core Recovery					Groundwater			Additional Tests			
Depth		Recovery		Hole Depth	Strike Depth	Water Depth	Observations		Test type	Test Depth	Test Value
0.00-1.00		60%		5.00	-	-					
1.00-2.00		100%									
2.00-3.00		100%									
3.00-4.00		100%									
4.00-5.00		100%									
Remarks						Notes					
*Includes seating blows						1. All logging and sampling in accordance with BS 5930:2015+A1:2020					
						2. The depths to strata change are approximate only					
						3. Symbols and abbreviations are explained on the accompanying key					
						4. All linear dimensions are in metres unless otherwise stated					
						5. Undrained shear strength test value given in kN/m ²					

Dynamic Sample Record Sheet		Hole Ref.	DS3
Project:	Toynbee Road, Eastleigh	Sheet	1 of 1
Date:	08/06/2022	Job No.	CCL03552
Equipment	Premier Compact 100	Ground Level.	16.35 m OD
Sampling		Co-ordinates	
		Logged by:	GK Logged on site during drilling operations
		Checked by	

Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth		Backfill	Level O.D.
0.40	JGg				Grass over brown humic slightly sandy silt/clay with rare brick fragments (TOPSOIL/MADE GROUND)				
0.80	J				Firm to stiff and stiff consistency orangish brown sandy CLAY (RIVER TERRACE DEPOSITS)	0.50			15.85
1.00-1.45	S	1.00	Dry	N=25		1.20			15.15
1.50	J				Medium dense becoming dense brown slightly clayey SAND and GRAVEL. Gravel is fine to coarse subangular mixed lithologies including flint (RIVER TERRACE DEPOSITS)				
2.00-2.45	S	1.00	Dry	<u>N=50</u> 265 mm		2.00			14.35
					(End of Exploratory Hole)				

Core Recovery		Groundwater				Additional Tests		
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value
0.00-1.00	100%	2.00	-	-				
1.00-2.00	100%							

Remarks	Notes
Further progress below 2 m precluded by very dense strata	1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m^2

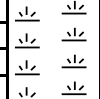
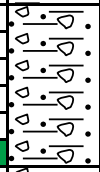
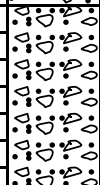
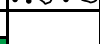
Job No. CCL03552

Ground Level.	16.35 m OD
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Co-ordinates

Logged by: GK Logged on site during

Checked by [REDACTED] drilling operations

Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth		Backfill	Level O.D.
0.30	JGg				Grass over brown humic sandy silt with rootlets (TOPSOIL)	0.40			15.95
0.80	J				Firm to stiff consistency orangish brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse subangular of flint (RIVER TERRACE DEPOSITS)	1.00			15.35
1.00-1.45	S	1.00	Dry	N=16	Medium dense orangish brown very clayey sandy GRAVEL/Stiff consistency slightly sandy gravelly CLAY. Gravel is fine to coarse subangular flint (RIVER TERRACE DEPOSITS)	2.10			14.25
1.30	J								
2.00-2.40	S	1.00	Dry	<u>N=50</u>		2.80			13.55
2.00	J			255 mm	Dense and very dense brown slightly clayey sandy GRAVEL. Gravel is fine to coarse subangular mixed lithologies including flint (RIVER TERRACE DEPOSITS)				
2.80-3.02	S	1.00	Dry	<u>N=75*</u>					
				255 mm	(End of Exploratory Hole)				
									
									
									
									
									
									
									
									
									
									
									
									

Core Recovery		Groundwater				Additional Tests		
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value
0.00-1.00	100%	2.80	-	-				
1.00-2.00	100%							
2.00-3.00	80%							

1. All logging and sampling in accordance with BS 5930:2015+A1:2020
2. The depths to strata change are approximate only
3. Symbols and abbreviations are explained on the accompanying key
4. All linear dimensions are in metres unless otherwise stated
5. Undrained shear strength test value given in kN/m^2

Crossfield CONSULTING GEOTECHNICAL ENVIRONMENTAL					Dynamic Sample Record Sheet				Hole Ref. DS5	
					Project: Toynbee Road, Eastleigh				Sheet 1 of 1	
					Date: 08/06/2022				Job No. CCL03552	
Contractor		Regional Drilling		Equipment		Premier Compact 100		Ground Level. 16.30 m OD		
Method		0.0 m to 2.0 m dynamic sampling						Co-ordinates		
Boring Diameter		100 mm						Logged by: GK Logged on site during drilling operations		
Checked by:										
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.	
0.20	JGg				Grass over brown humic sandy silt with rootlets (TOPSOIL)	0.40			15.90	
0.70	J				Firm to stiff consistency orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular of flint (RIVER TERRACE DEPOSITS)	1.00			15.30	
1.00-1.45	S	1.00	Dry	N=18	Dark orangish brown very clayey SAND and GRAVEL/Stiff consistency slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular of flint (RIVER TERRACE DEPOSITS)	1.30			15.00	
1.20	J				ense and very dense brown slightly clayey SAND and GRAVEL. Gravel is fine to coars (RIVER TERRACE DEPOSITS)	2.00			14.30	
1.80	J									
2.00-2.39	S	1.00	Dry	N=50 235 mm	(End of Exploratory Hole)					
Core Recovery					Groundwater			Additional Tests		
Depth		Recovery		Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value
0.00-1.00		100%		2.00	-	-				
1.00-2.00		100%								
Remarks					Notes					
Further progress below 2 m precluded by very dense strata					1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²					

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING UK LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: 100.19
Test Date: 04/02/2022
Report Date: 04/02/2022
File Name: 100.19.spt
Test Operator: CM

Instrumented Rod Data

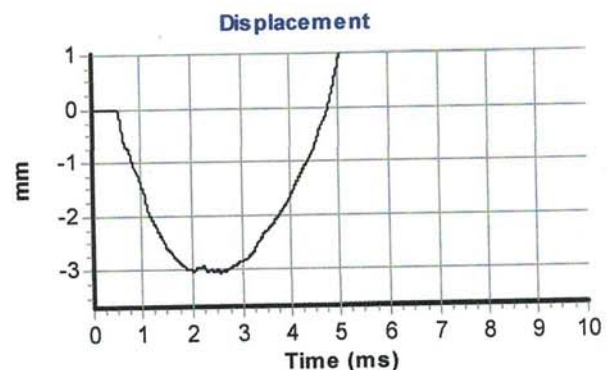
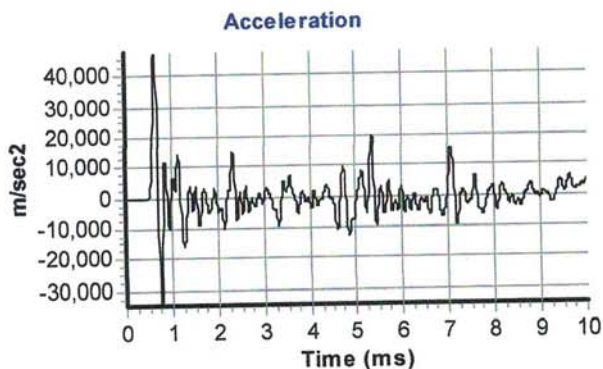
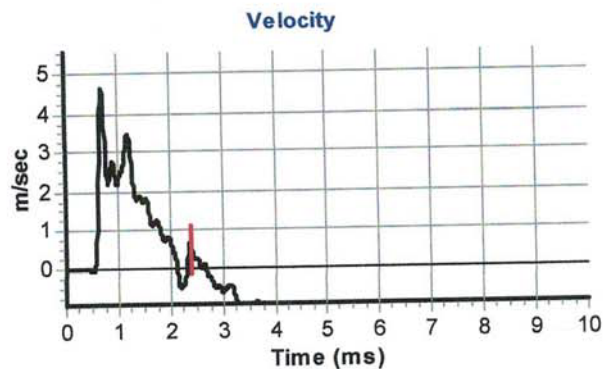
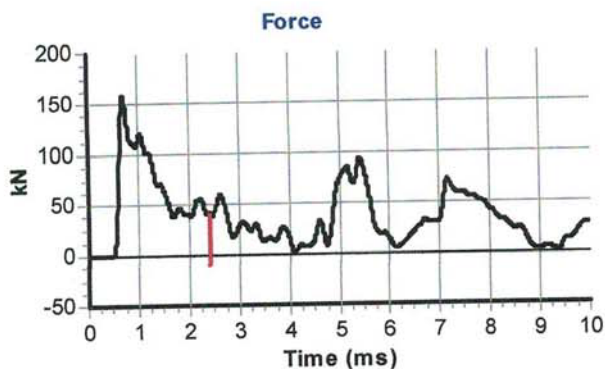
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

REGIONAL DRILLING/79060



Calculations

Area of Rod A (mm^2): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 316

Energy Ratio E_r (%): **67**

Title: FITTER

The recommended calibration interval is 12 months

George Kavanagh
Crossfield Consulting Ltd
The Granary
White Hall Farm
Leamington Road
Long Itchington
Warwickshire
CV47 9PU

e: gk@crossfield-consulting.co.uk

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

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

Analytical Report Number : 22-64223

Replaces Analytical Report Number: 22-64223, issue no. 1
Client references/information amended.

Project / Site name:	Toynbee Road, Eastleigh	Samples received on:	10/06/2022
Your job number:	CCL03552	Samples instructed on/ Analysis started on:	10/06/2022
Your order number:	PO12562	Analysis completed by:	22/06/2022
Report Issue Number:	2	Report issued on:	22/06/2022
Samples Analysed:	10 soil samples		

Signature

Adam Fenwick
Technical Reviewer
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: 22-64223
Project / Site name: Toynbee Road, Eastleigh
Your Order No: PO12562

Lab Sample Number				2309488	2309489	2309490	2309491	2309492
Sample Reference				DS1	DS2	DS3	DS4	DS5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.40	0.30	0.20
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.8	14	14	11	12
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	7.3	-	6.7	-	-
pH - Automated	pH Units	N/A	MCERTS	7.9	6.8	7.2	6	7.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	330	420	190	340	370
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0052	0.0023	0.0046	0.0045	0.0085
Sulphide	mg/kg	1	MCERTS	1.3	4.2	< 1.0	2	< 1.0
Total Sulphur	mg/kg	50	MCERTS	230	370	130	220	260
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5	2.4	1	1.6	2.5
Loss on Ignition @ 450oC	%	0.2	MCERTS	3.7	-	3	-	-
Acid Neutralisation Capacity	mmol/kg	-999	NONE	1.4	-	-0.91	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	3.0	< 0.05	1.8	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.84	< 0.05	0.57	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	4.5	0.38	3.4	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	3.7	0.42	2.8	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.5	< 0.05	1.9	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.9	< 0.05	1.4	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.6	< 0.05	1.7	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.60	< 0.05	0.60	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.0	< 0.05	1.5	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.81	< 0.05	0.57	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.25	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.89	< 0.05	0.57	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	23.5	0.8	16.9	< 0.80	< 0.80
Total WAC-17 PAHs	mg/kg	0.85	NONE	23.5	-	16.9	-	-

Analytical Report Number: 22-64223
Project / Site name: Toynbee Road, Eastleigh
Your Order No: PO12562

Lab Sample Number	2309488	2309489	2309490	2309491	2309492
Sample Reference	DS1	DS2	DS3	DS4	DS5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30	0.20	0.40	0.30	0.20
Date Sampled	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.3	7.8	7.8	6.2	7.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.3	0.2	0.4	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.5	< 0.2	0.4	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	21	30	20	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	31	21	26	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55	98	40	55	72
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.9	< 0.3	< 0.3	1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	15	19	14	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	88	110	73	160	110

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
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TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	2.2	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	24	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	39	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	MCERTS	65	< 10	< 10	< 10	< 10

TPH (C10 - C25) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	46	-	< 10	-	-
TPH (C25 - C40) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	18	-	< 10	-	-

Analytical Report Number: 22-64223
 Project / Site name: Toynbee Road, Eastleigh
 Your Order No: PO12562

Lab Sample Number	2309488	2309489	2309490	2309491	2309492
Sample Reference	DS1	DS2	DS3	DS4	DS5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.30	0.20	0.40	0.30	0.20
Date Sampled	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	< 0.007	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-64223
 Project / Site name: Toynbee Road, Eastleigh
 Your Order No: PO12562

Lab Sample Number				2309493	2309494	2309495	2309496	2309497
Sample Reference				DS1	DS2	DS3	DS4	DS5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10	1.60	1.30	2.00	0.70
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.6	5.5	7.2	5.1	13
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	-	-
pH - Automated	pH Units	N/A	MCERTS	8	8.3	7.7	8.3	7.8
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	130	-	140	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0044	0.0046	0.0084	0.012	0.0088
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	68	-	72	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	-	-
Loss on Ignition @ 450oC	%	0.2	MCERTS	-	-	-	-	-
Acid Neutralisation Capacity	mmol/kg	-999	NONE	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Coronene	mg/kg	0.05	NONE	-	-	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-	-	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	-	-	-

Analytical Report Number: 22-64223
Project / Site name: Toynbee Road, Eastleigh
Your Order No: PO12562

Lab Sample Number				2309493	2309494	2309495	2309496	2309497
Sample Reference				DS1	DS2	DS3	DS4	DS5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10	1.60	1.30	2.00	0.70
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C10 - C25) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C25 - C40) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 22-64223
 Project / Site name: Toynbee Road, Eastleigh
 Your Order No: PO12562

Lab Sample Number				2309493	2309494	2309495	2309496	2309497
Sample Reference				DS1	DS2	DS3	DS4	DS5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10	1.60	1.30	2.00	0.70
Date Sampled				08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-64223

Project / Site name: Toynbee Road, Eastleigh

* 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 *
2309488	DS1	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
2309489	DS2	None Supplied	0.2	Brown clay and loam with gravel and vegetation.
2309490	DS3	None Supplied	0.4	Brown clay and loam with gravel and vegetation.
2309491	DS4	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
2309492	DS5	None Supplied	0.2	Brown clay and loam with gravel and vegetation.
2309493	DS1	None Supplied	1.1	Brown clay with gravel.
2309494	DS2	None Supplied	1.6	Brown sand with gravel.
2309495	DS3	None Supplied	1.3	Brown clay with gravel.
2309496	DS4	None Supplied	2	Brown clay and sand with gravel.
2309497	DS5	None Supplied	0.7	Brown clay with gravel.

Analytical Report Number : 22-64223

Project / Site name: Toynbee Road, Eastleigh

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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE

Analytical Report Number : 22-64223

Project / Site name: Toynbee Road, Eastleigh

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
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.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' 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 30°C.

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)



Analytical Report Number : 22-64223

Project / Site name: Toynbee Road, Eastleigh

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
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+ Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



George Kavanagh
Crossfield Consulting Ltd
The Granary
White Hall Farm
Leamington Road
Long Itchington
Warwickshire
CV47 9PU

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

e: gk@crossfield-consulting.co.uk

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

Analytical Report Number : 22-64929

Project / Site name:	Tonybee Road, Eastleigh	Samples received on:	10/06/2022
Your job number:	CCL03552	Samples instructed on/ Analysis started on:	15/06/2022
Your order number:	PO12562	Analysis completed by:	23/06/2022
Report Issue Number:	1	Report issued on:	23/06/2022
Samples Analysed:	2 wac multi samples		

Sig

Adam Fenwick
Technical Reviewer
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.

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results							
Report No:	22-64929						
					Client: CROSSFCLTD		
Location	Tonybee Road, Eastleigh						
Lab Reference (Sample Number)	2313670				Landfill Waste Acceptance Criteria		
Sampling Date	08/06/2022				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	DS1						
Depth (m)	0.30						
Solid Waste Analysis							
TOC (%)**	-				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	-				6000	--	--
Sum of PCBs (mg/kg) **	-				1	--	--
Mineral Oil (mg/kg) _{EH, ID, CU, AL #}	-				500	--	--
Total PAH (WAC-17) (mg/kg)	-				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.013	0.0070		0.078	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0078	0.5	10	70
Copper *	0.020	0.0049		0.070	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		< 0.020	0.5	10	30
Nickel *	0.0051	0.0031		0.033	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.036	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.014	0.0036		0.050	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.43	0.29		3.1	10	150	500
Sulphate *	2.4	1.7		18	1000	20000	50000
TDS*	86	54		580	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	17	9.2		100	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.80						
Dry Matter (%)	92						
Moisture (%)	7.8						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.24						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							

* = UKAS accredited (liquid eluate analysis only)

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results							
Report No:	22-64929						
					Client: CROSSFCLTD		
Location	Tonybee Road, Eastleigh						
Lab Reference (Sample Number)	2313671				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	08/06/2022				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	DS3						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	-				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	-				6000	--	--
Sum of PCBs (mg/kg) **	-				1	--	--
Mineral Oil (mg/kg) _{EH, ID, CU, AL #}	-				500	--	--
Total PAH (WAC-17) (mg/kg)	-				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.059	0.032		0.34	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0034	0.0012		0.014	0.5	10	70
Copper *	0.032	0.014		0.15	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		0.025	0.5	10	30
Nickel *	0.0076	0.0066		0.067	0.4	10	40
Lead *	0.011	0.0072		0.075	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.031	0.0156		0.17	4	50	200
Chloride *	< 4.0	< 4.0		27	800	15000	25000
Fluoride	1.3	0.51		5.8	10	150	500
Sulphate *	3.2	2.3		24	1000	20000	50000
TDS*	150	50		590	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	20	61		580	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	< 0.00						
Dry Matter (%)	86						
Moisture (%)	14						
Stage 1							
Volume Eluate L2 (litres)	0.34						
Filtered Eluate VE1 (litres)	0.15						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					* = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 22-64929
Project / Site name: Tonybee Road, Eastleigh

* 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 *
2313670	DS1	None Supplied	0.3	Brown clay and loam with gravel and vegetation.



Analytical Report Number : 22-64929

Project / Site name: Tonybee Road, Eastleigh

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. (30 oC)	In house method.	L019-UK/PL	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.	L019-UK/PL	D	NONE
Preparation WAC leachate		In-house method	L043-PL	W	NONE
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	ISO 17025
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L031-PL	W	NONE
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	ISO 17025
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' 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.



George Kavanagh
Crossfield Consulting Ltd
The Granary
White Hall Farm
Leamington Road
Long Itchington
Warwickshire
CV47 9PU

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

e: gk@crossfield-consulting.co.uk

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

Analytical Report Number : 22-65421

Project / Site name:	Toynbee Road Eastleigh	Samples received on:	16/06/2022
Your job number:	CCL03552	Samples instructed on/ Analysis started on:	16/06/2022
Your order number:	PO12562	Analysis completed by:	27/06/2022
Report Issue Number:	1	Report issued on:	27/06/2022
Samples Analysed:	1 soil sample		

Signed:

Joanna Wawrzeczko
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: 22-65421
 Project / Site name: Toynbee Road Eastleigh
 Your Order No: PO12562

Lab Sample Number				2316689
Sample Reference				DS2
Sample Number				None Supplied
Depth (m)				4.40
Date Sampled				08/06/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.001	NONE	1.1

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1000
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.47
Total Sulphur	mg/kg	50	MCERTS	7700

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 22-65421
Project / Site name: Toynbee Road Eastleigh

* 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 *
2316689	DS2	None Supplied	4.4	Brown clay with gravel.

Analytical Report Number : 22-65421

Project / Site name: Toynbee Road Eastleigh

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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' 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.

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Toynbee Road, Eastleigh

Client Reference: CCL03552
Job Number: 22-65547
Date Sampled: 08/06/2022
Date Received: 10/06/2022
Date Tested: 24/06/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

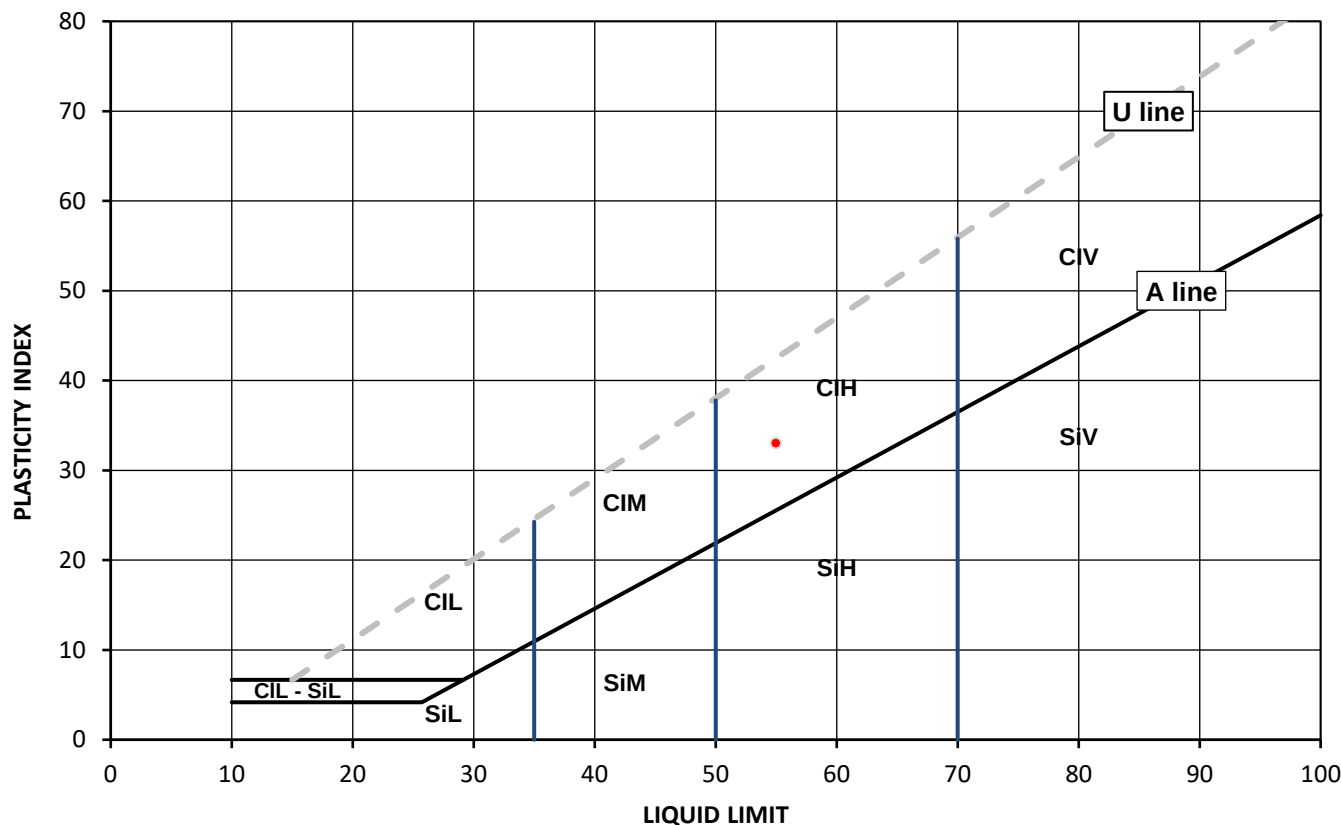
Test Results:

Laboratory Reference: 2317454
Hole No.: DS1
Sample Reference: Not Given
Sample Description: Brown very gravelly slightly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
16	55	22	33	33



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



Katarzyna Koziel
Technical Reviewer
for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Toynbee Road, Eastleigh

Client Reference: CCL03552
Job Number: 22-65547
Date Sampled: 08/06/2022
Date Received: 10/06/2022
Date Tested: 24/06/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

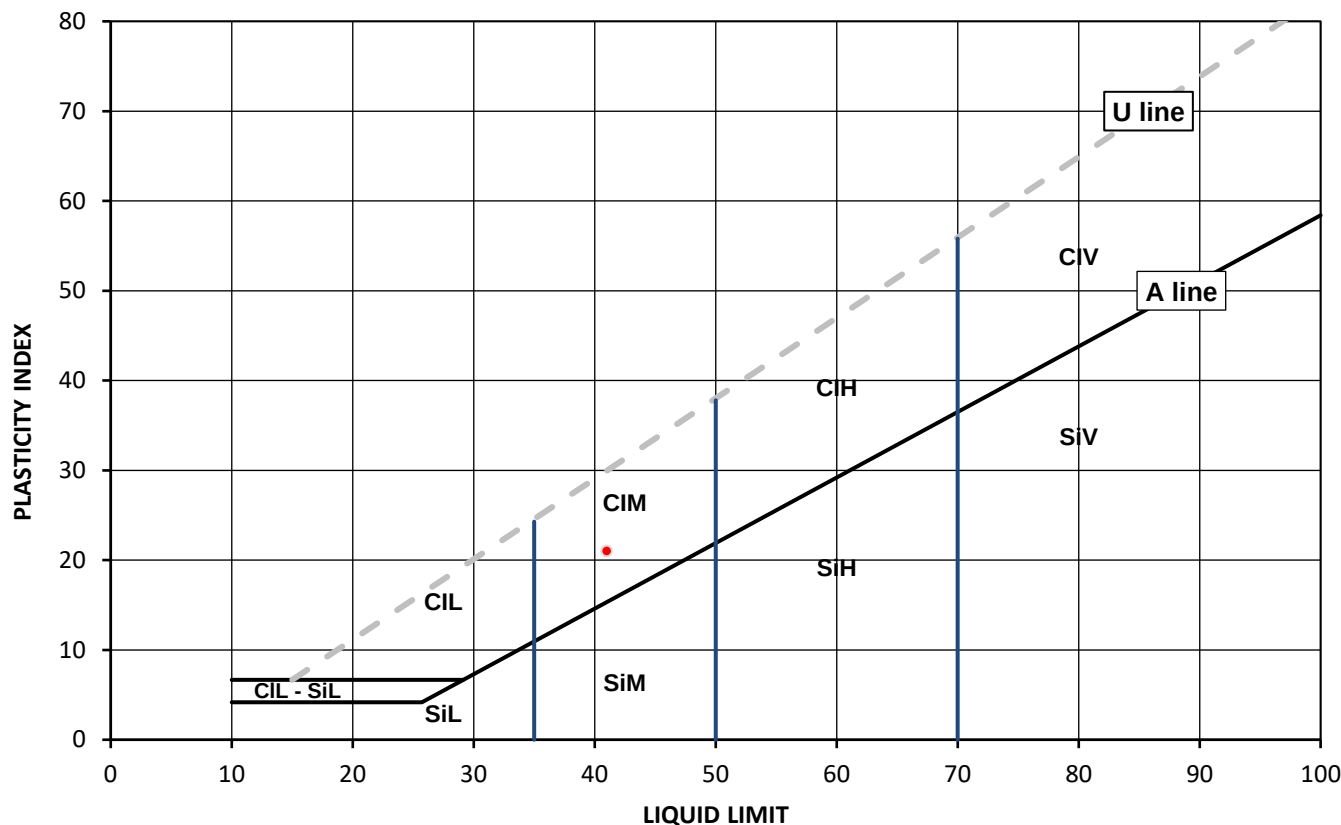
Test Results:

Laboratory Reference: 2317453
Hole No.: DS1
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 0.60
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	41	20	21	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Technical Reviewer
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Toynbee Road, Eastleigh

Client Reference: CCL03552
Job Number: 22-65547
Date Sampled: 08/06/2022
Date Received: 10/06/2022
Date Tested: 24/06/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

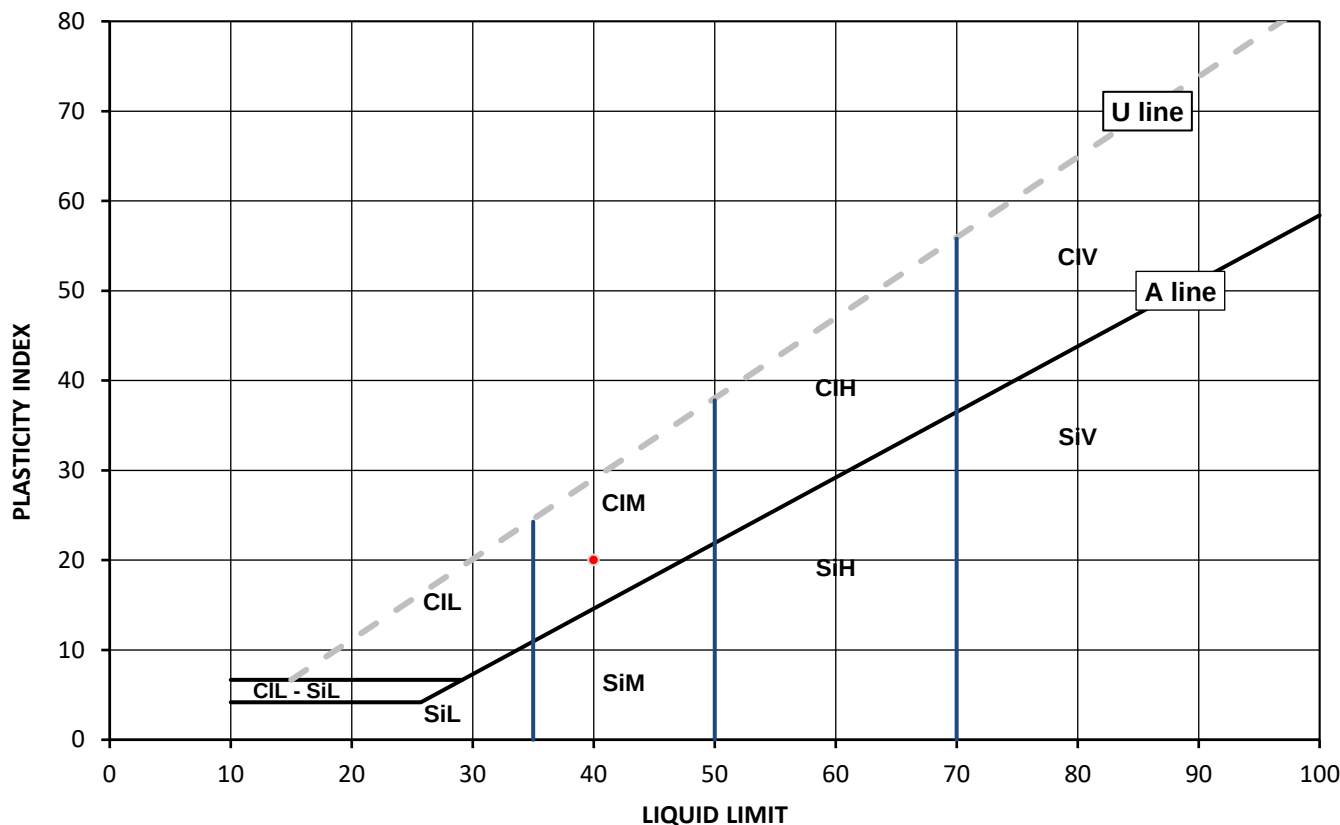
Test Results:

Laboratory Reference: 2317455
Hole No.: DS4
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 0.80
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	40	20	20	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Technical Reviewer
for and on behalf of i2 Analytical Ltd

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4041

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU
Contact: George Kavanagh
Site Address: Toynbee Road, Eastleigh

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2:
1990: Clause 8.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client Reference: CCL03552
Job Number: 22-65547
Date Sampled: 08/06/2022
Date Received: 10/06/2022
Date Tested: 24/06/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-1 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um %	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3			
2317453	DS1	Not Given	0.60	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20		95	41	20	21						
2317454	DS1	Not Given	1.20	Not Given	D	Brown very gravelly slightly sandy CLAY	Atterberg 1 Point	16		33	55	22	33						
2317455	DS4	Not Given	0.80	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		97	40	20	20						

Note: # Non accredited; NP - Non plastic

Comments:

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Katarzyna Koziel
Technical Reviewer
for and on behalf of i2 Analytical Ltd



4041

Client: Crossfield Consulting Ltd
 Client Address: The Granary, White Hall Farm,
 Leamington Road, Long Itchington,
 Warwickshire, CV47 9PU
 Contact: George Kavanagh
 Site Address: Toynbee Road, Eastleigh

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Client Reference: CCL03552
 Job Number: 22-65547
 Date Sampled: 08/06/2022
 Date Received: 10/06/2022
 Date Tested: 24/06/2022
 Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2317453	DS1	Not Given	0.60	Not Given	D	Brown slightly gravelly sandy CLAY		20	Sample was quartered, oven dried at 108 °C			
2317454	DS1	Not Given	1.20	Not Given	D	Brown very gravelly slightly sandy CLAY		16	Sample was quartered, oven dried at 106.1 °C			
2317455	DS4	Not Given	0.80	Not Given	D	Brown slightly gravelly sandy CLAY		19	Sample was quartered, oven dried at 108 °C			

Comments:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:



Katarzyna Koziel
 Technical Reviewer
 for and on behalf of i2 Analytical Ltd

FIGURE I-1



EXPLORATORY HOLE LOCATIONS
Scale 1:500 approx

Plan based on Drg No. SU01 Rev A by D & H Surveys and Planning Issues Drg No. 22/SW051/FP06