Tionscadal Soláthair Uisce
Water Supply Project

Environmental Impact Assessment Report (EIAR)

Volume 6 of 6: Appendices

(Appendix 10.12) Lot 3 Peatlands

Document no: 32105801/EIARA10.12

Version: Final

December 2025

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Irish Water

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IGSL Ltd

Water Supply Project Eastern and Midlands Region Lot 3 – Pipeline

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Site Investigation Report

FACTUAL

Project No. 23560

April 2023

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DOCUMENT ISSUE REGISTER

Distribution	Report Status	Revision	Date of Issue	Prepared By:	Approved By:
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FOREWORD
The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards
The ground investigation works for this project (**Water Supply Project Eastern and Midlands Region Lot 3 – Pipeline**) have been carried out by IGSL Limited in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930 (2015+A1:2020) and BS 1377 (Parts 1 to 9) and the following European Norms:

- EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing and its associated complementary standards.
- EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- EN ISO 14688-1:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- EN ISO 14688-2:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Principles for a classification
- EN ISO 14689-1:2017 Geotechnical Investigation and Testing – Identification, description & classification of rock

The Eurocode 7, Part 2 – Ground Investigation and Testing GI specification shall be read in conjunction with the Specification and Related Documents for Ground Investigation in Ireland, 2nd Edition, published by Engineers Ireland in 2016 and the Ervia Particular Specification document entitled 'A Multi-Supplier Framework for the Provision of Site Investigation Works to Ervia (Ref:18/085) - Annex 2 – Works Order Requirement', framework reference 18/085.

Reporting
No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations. The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points. Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction, mining works or karstification below or close to the site.

This report has been prepared for Irish Water. The information should not be used without their prior written permission. The Engineer is Mott MacDonald Ireland. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Boring Procedures
Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variation is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

In-Situ Testing

Standard penetration tests were conducted strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005 and the Energy Ratio (E_r). A calibration certificate is available upon request. The E_r is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005).

Soil Sampling

Three categories of sampling methods are outlined in EN ISO 22475-1:2006. The categories are referenced A, B and C for any given ground conditions and are shown in Tables 1 and 2 of EN ISO 22475-1:2006. Reference should be made to EN 1997-2:2002 for guidelines on sample class and quality for strength and compressibility testing. Samples of quality classes 1 or 2 can only be obtained by using Category A sampling methods.

Class 1 thin wall undisturbed tube samples (UT100) were obtained in fine grained soils and strictly meet the requirements of EN 1997-2:2002 and EN ISO 22475-1:2006. Soil samples for laboratory tests are divided into five classes with respect to the soil properties that are assumed to remain unchanged during sampling, handling transport and storage. The minimum sample quality required for testing purposes to Eurocode 7 compatibility (EN 1997-2:2002) is shown in Table A.

Table A – Details of Sample Quality Requirements

EN 1997 Clause	Test	Minimum Sample Quality Class
5.5.3	Water Content	3
5.5.4	Bulk Density	2
5.5.5	Particle Density	N/S
5.5.6	Particle Size Analysis	N/S
5.5.7	Consistency Limits	4
5.5.8	Density Index	N/S
5.5.9	Soil Dispersivity	N/S
5.5.10	Frost Susceptibility	N/S
5.6.2	Organic Content	4
5.6.3	Carbonate Content	3
5.6.4	Sulphate Content	3
5.6.5	pH	3
5.6.6	Chloride Content	3
5.7	Strength Index	1
5.8	Strength Tests	1
5.9	Compressibility Tests	1
5.10	Compaction Tests	N/S
5.11	Permeability	2

N/S – not stated. Presume a representative sample of appropriate size.

Samples recovered from trial pits or trenches meet the requirements of IS EN ISO 22475-1. It is highlighted that unforeseen circumstances such as variations in geological strata may lead to lower quality sample classes being obtained.

Groundwater

The depth of entry of any influx of groundwater is recorded during the course of boring operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible, drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those

appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Engineering Logging

Soil and rock identification has been based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2002 and IS EN ISO 14689-1:2004. Rock weathering classification conforms to IS EN ISO 14689-1:2003 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2003. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Where peat has been encountered, samples have been logged in accordance with the Von Post Classification (ref. Von Post, L. 1992. Sveriges Gologiska Undersoknings torvinventering och nogra av dess hittils vunna resultat (SGU peat inventory and some preliminary results) Svenska Mosskulturforeningens Tidskrift, Jonkoping, Swedden, 36, 1-37 and Hobbs N. B. Mire morphology and the properties of some British and foreign peats. QJEG, Vol. 19, 1986.

Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material will be discarded. Unless a period of retention of samples is agreed, it is our normal practice to discard all soil samples one month after submission of our final report.

9.1 INTRODUCTION

IGSL Limited has undertaken a programme of geotechnical site investigation works along the proposed pipeline route for the Water Supply Project (WSP) – Eastern and Midlands Region scheme. IGSL was tasked with undertaking the site investigation for the section of pipeline on Lot 3 (contract 3). The section extends from chainage Ch.103,000 to 170,000, a total of 67km. Given the widespread occurrence of peatland bogs in the westernmost section, the pipeline report was split into a 'Peatlands' (Ch.103,000 to 147,000) section and a 'Pipeline' (Ch.147,000 to 170,000) section.

The proposed WSP will deliver infrastructure to supply treated water from the River Shannon to sustain Ireland's Eastern and Midlands Region. The entire scheme as proposed extends from the Parteen Basin in North Tipperary to Peamount Reservoir in West Dublin, a distance of approximately 170km. The Termination Point Reservoir [TPR] works at Peamount form part of the greater Lot 3 ground investigation contract and are reported separately.

The aim of the investigation was to gather representative information on the ground conditions to allow for adequate characterisation of the ground conditions in order to inform the next stage design and construction of the scheme. The GI was designed to identify and investigate geotechnical risks such that adequate mitigation may be implemented to manage those risks in the next stage of works.

In terms of the positioning of SI locations in the 'Pipeline' section, IGSL fully considered the buried infrastructure traversing the area when setting out as per the coordinates provided. Good practice was to microsite if necessary, to avoid any potential impact on the pipelines already crossing the route. Known buried service locations were identified and pegged beforehand to inform site workers.

In addition to the IGSL and Mott MacDonald representation on site, the works were attended by an ACoW and an ECoW. The ACoW or Archaeologist in Charge of Works was provided by Edmund O'Donovan and Associates. Their attendance was required to maintain a watching brief on freshly opened trial pit excavations to allow immediate identification and recording of any archaeological remains that may have been present. The role of ECoW or Ecologist in Charge of Works was assumed by Sean Meehan (qualified Ecologist). He was tasked with informing on the presence of potentially sensitive ecological habitats on site in addition to the presence of invasive species which could, if disturbed, be detrimentally spread across the site.

9.2 SITE & GEOLOGY

9.2.1 Site

The section of pipeline reported in this document, entitled 'Pipeline', extends over 33 km. The route traverses predominantly fertile, lime-rich clay soils and is generally devoid of bogland. For this reason, in contrast to the 'Peatland' section, land usage is typically agricultural with pastureland and tillage widespread. The chainages identified extend from Ch.147,000 to Ch.170,000 from the townland of Newtownmoneenaluggagh, Donadea, Naas, County Kildare eastwards towards Peamount in west County Dublin.

Chainage 147,000 represents the westernmost extent of the route reported in this 'Pipeline' report. It begins approximately 100m west of the L1008 local road, north of Ballagh Woods Crossroads, Donadea. From this point, trending northeast, the proposed pipeline route crosses the L1008 Local Road. It passes through arable farmland in the townland of Cooltrim South and Cooltrim North crossing the Tirmoghan (Local) Road at Ch.149,130.

The route then tracks across farmland in the rural townlands of Clonshanbo, Aghafullim, Belgard and Farranadum before meeting the R407 Regional Road north of Baltreacy Crossroads, Donadea. It continues to wind through arable farmland and pastureland in the townland of Baltreacy, before crossing the Lyreen River into the townland of Barreen. The route then meets the Baltreacy River and the L1010 Local Road west of Barreen Crossroads. Upon meeting a 220kV transmission line, it dog-legs in direction from southeast to east.

The proposed pipeline crosses the L5039 Local Road before meeting the R408 Newtown Road at Graiguesallagh, east of the village of Rathcoffey. The course of the pipeline turns southeast, following the line of the L5045 Local Road, through mixed grassland and arable farmland of Johninstown, Maynooth. The route then meets an unnamed Local Road, passing through further agricultural land where it once again meets a 220kV overhead line. From Johninstown, briefly into Park Stud, Newtownmacabe, the pipeline crosses the L5046 Local Road. Here, through expansive tillage fields, the pipeline route tracks east towards the R406 Barberstown / Maynooth Road and on to the R403 Barberstown / Celbridge Road.

The pipeline once again passes through arable land, crossing the L5067 Local Road and heading southeast towards the meandering River Liffey. The proposed river crossing is located on the townland boundary of Ardrass Upper (western bank) and Castledillon Upper (eastern bank). Further large expanses of arable land take the pipeline through Friarstown and Reeves, Straffan. The route meets the L1016, Temple Mills Road before the Dublin – Cork railline at Commons Upper, Celbridge. Once southeast of the railline, the routeway dog-legs abruptly tracking northeast. Here, in lands bound by the railline to the north and the Grand Canal to the south, the pipeline extends almost 2 kilometres, crossing the L5064 Lyons (Local) Road as it does so. The proposed pipeline meets the Grand Canal southwest of Hazelhatch Bridge between the townlands of Ringwood and Colganstown.

Once southeast of the canal, the route crosses the R405 Hazelhatch Road, passing through lands at the Commons, Newcastle, before crossing the L6032 Loughtown Road near the existing Precast Concast facility. The final section of the pipeline sees it meet the TPR site at Peamount after passing through further arable farmland in the townland of Hynestown. Newcastle, County Dublin.

The IGSL Limited intrusive fieldworks commenced following completion of the initial TPR site investigation at the eastern extent of the WSP project. The fieldworks extended from late November 2021 to August 2022 not inclusive. Siteworks were occasionally halted due to landowner issues most especially when seeking access to farmland during the winter months of 2021 / 2022 – landowners were reluctant to allow plant access what they deemed saturated ground.

The investigation comprised cable percussion boring, dynamic (driven) sampling, conventional rotary coring, Geobore-S rotary coring, machine-dug trial pitting in addition to in-situ testing, namely borehole infiltration testing.

Geotechnical and chemical laboratory testing was scheduled on a range of soil and rock samples by the supervising engineer, Mott MacDonald Ltd. The geotechnical testing included moisture contents, Atterberg Limits, Particle Size Distribution [PSD] testing, California Bearing Ratio [CBR], Moisture Condition Value [MCV] and shear box testing among others. Chemical analyses were carried out using comprehensive soil testing suites. Rock testing remains ongoing. Rock testing will be reported in a future version of this report.

This report presents the factual geotechnical data acquired to date from the 2021 / 2022 investigation. Ongoing sample retention of untested samples is to be agreed with Irish Water.

Standpipe installations were constructed in boreholes to allow for groundwater measurements. Data loggers were installed in nineteen of the installations. They allow for continuous water level measurement over a 12-month period following site works. Downloading of recorded groundwater monitoring data is ongoing and will be completed every quarter by IGSL for a period of 12 months.

The investigations were executed in accordance with BS 5930, Code of Practice for Site Investigations (2015+A1:2020) and EN 1997-2 Eurocode 7 Part 2 Ground Investigation & Testing and supervised full-time by an IGSL geotechnical engineer and approved IGSL professional attendant being either Chartered Engineer or Geologist (with a minimum of 10 years relevant experience in planning and supervision of ground investigation works).

Figure 1 – Approximate Pipeline Route from Ch.147,000 (Newtownmoneenluggagh, Donadea, Naas, Co. Kildare) to Ch. 170,000 (Peamount, Co. Dublin)

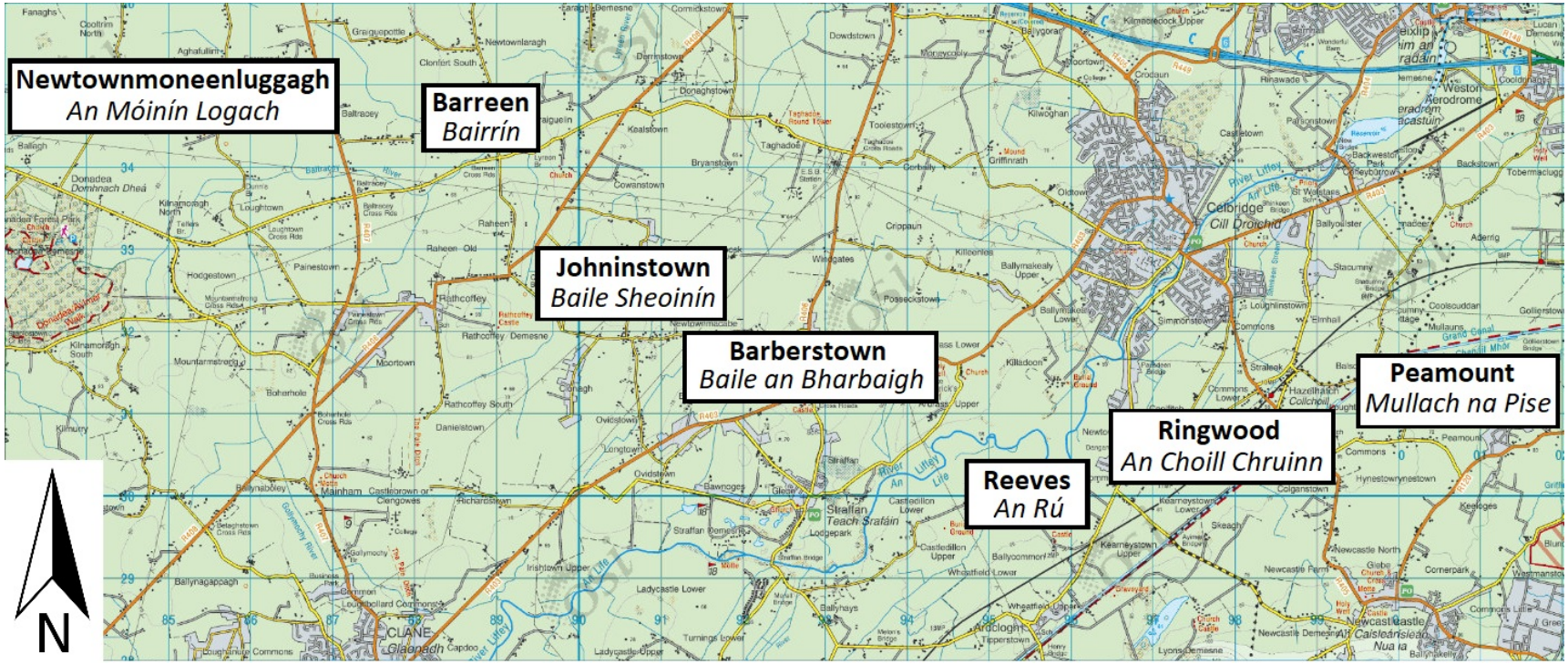

Figure 1 reproduced from OSI website (www.osi.ie)
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9.2.2 Superficial Geology

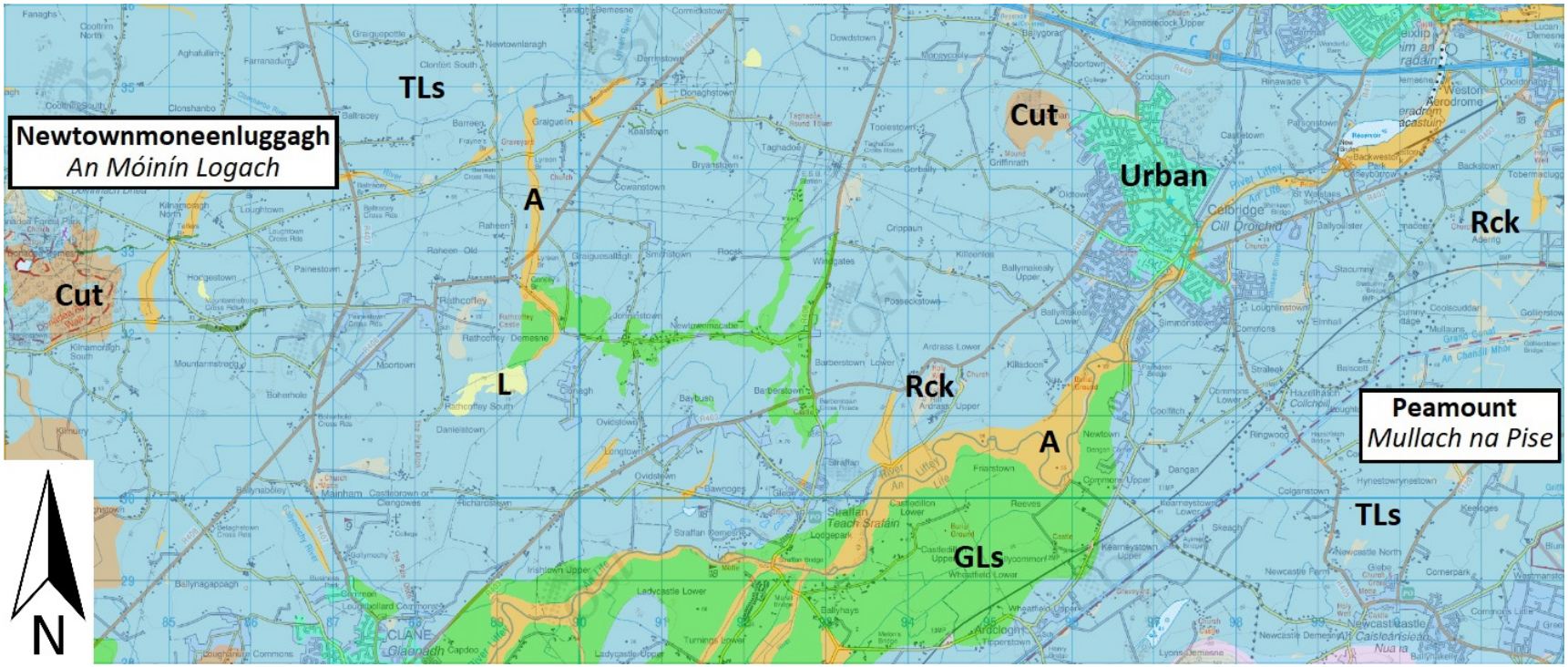
9.2.2.1 GI Findings - Soil

The soils along the route range from both limestone-derived gravels and fines-dominant till with minor occurrences of alluvial and lacustrine soils. Shallow bedrock was a more typical feature of the east of the project. Multiple cable percussion bores achieved significant depths (up to 15m), illustrating the presence of an often thick accumulation of overburden glacially-derived soils.

9.2.2.2 Published Maps - Soil

The Quaternary Soils plot for the area (retrieved from GSI website) reaffirms the findings of the investigation and highlights the widespread nature of clay-dominant till derived largely from the ubiquitous Carboniferous Limestone. The linear accumulations of gravel found across the route, represent the glacio-fluvial outwash from the recessional phase of the last major ice-sheet to affect the Central Lowlands (Whittow, 1975).

Figure 2 – Quaternary Soils Plot for the 'Pipeline' route (retrieved from GSI website)



Key:

Urban	=	Urban
Cut	=	Cut over raised peat
A	=	Alluvium
L	=	Lacustrine
GLs	=	Gravels derived from Limestones
TLs	=	Till derived from limestones
Rck	=	Bedrock outcrop or subcrop

9.2.3 Solid Geology

9.2.3.1 Published Maps - Rock

Reference to the GSI map for the area (Figure 3, 1:100,000 Solid Geology series) shows that the site is underlain by chiefly Lower Carboniferous or Dinantian-aged bedrock. The rocks along the pipeline route are represented, for the most part, by Waulsortian Limestone, the Lucan Formation, the Tober Colleen Formation and the Boston Hill Formation. These rock formations span a depositional history in the geological record of ca. 20 million years from 360mya to 340mya [million years ago].

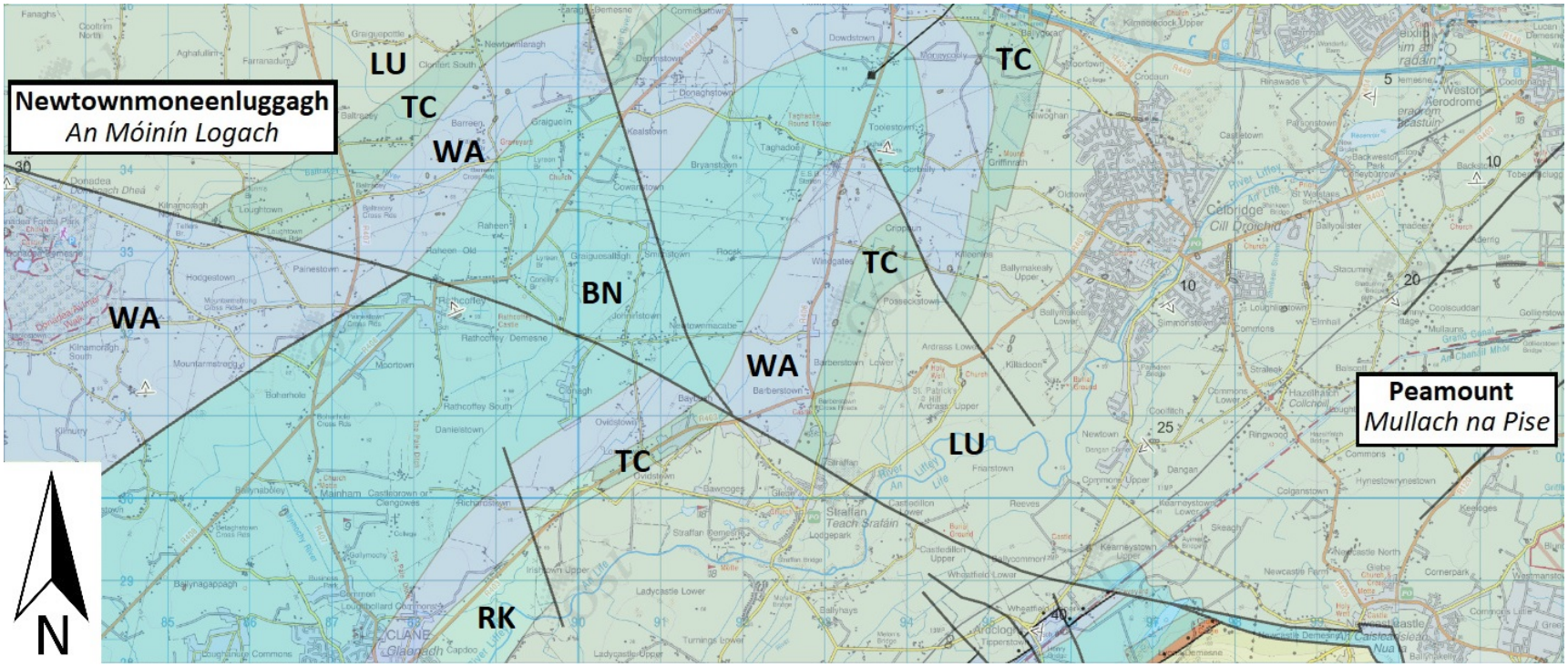
The majority of drillhole locations on the route are positioned on bedrock belonging to the Lucan Formation. This is particularly so east of Chainage 160,000. The Lucan Formation (LU) (Nolan 1986, 1989) forms the bulk of the basinal rocks throughout the geologically termed 'Dublin Basin', and is characterised by graded, intraclastic skeletal packstone/grainstone interbedded with anoxic calcareous mudstone / black shale, laminated calcisiltite and argillaceous micrite (i.e. impure limestone with clay minerals). The Dublin (sedimentary) Basin extends spatially from the east coast of north County Dublin westwards to the River Shannon at Athlone (Somerville & Waters, 2011). It formed in the Lower Carboniferous during a gradual marine transgression from south to north. As a result, the depositional environment within the basin gradually progresses from terrestrial and shallow marine to deep marine sedimentary facies (Lucan Formation). The basement found beneath the basin is likely to be comprised of Devonian terrestrial sandstone conglomerates. The Old Red Sandstone [ORS] inlier at Kilmeague, County Kildare likely represents this basal red-bed facies.

The Waulsortian Limestone (WA) largely consists of calcareous mudstones, wackestones and packstones many of them containing original cavities (including stromatactis) filled with internal sediments and fibrous and blocky sparry cements (Sevastopulo 1982). The very fine-grained carbonate lithology typical of the Waulsortian Limestones is also relatively pure and, in the right circumstances, amenable to dissolution and karst development. Blake *et al* (2015) suggest the Waulsortian limestone deposits within the Dublin Basin are massive and unbedded and are typically less prone to karstification. Waulsortian Limestone is also susceptible to Magnesium replacement and dolomitisation, which can further enhance permeability. McConnell & Philcox (1994) note the texture of the Waulsortian Limestone when dolomitized can make it almost indistinguishable from dolomitized Allenwood Formation limestones found moreso in the 'Peatlands' section.

Areas of the site are underlain by the Chadian-aged Tober Colleen Formation (formerly the Rush Slate Formation). The Tober Colleen Formation (Nolan 1986, 1989) forms the basinal rocks throughout the geologically termed 'Dublin Basin', and are characterised by dark-grey black, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones.

The formation is often cited as a key lithology when considering pyrite and pyritic heave. Pyrite (FeS_2) microcrystals form in anoxic, reducing conditions similar to those present at the time of deposition of the mud-rich sediment 340 million years ago. Framboidal pyrite is considered to be an extremely reactive form of pyrite and has historically been found in the Tober Colleen formation.

Figure 3 - Bedrock Geological Map for the 'Pipeline' route (retrieved from GSI website) (Adapted from McConnell & Philcox, 1994B)



Key:

LU	=	Lucan Formation
TC	=	Tober Colleen Formation
RK	=	Rickardstown Formation
WA	=	Waulsortian Limestones
BN	=	Boston Hill Formation

9.2.3.2 GI Findings - Rock

The rotary drillholes reflect the subtle lithological changes highlighted in the Geological Survey of Ireland record. There are widespread dark grey black argillaceous limestones reported across the project. In engineering terms, the formations of the Boston Hill, Rickardstown and Lucan Formations are almost indistinguishable in both strength and composition. The Tober Colleen Formation is thought to be more shale dominant and for this reason has the propensity to derive weaker strengths. It also, because of its original depositional environment, contains naturally-occurring sulphides which can readily oxygenate.

There are notable cases where the bedrock appears more pure and less muddy / argillaceous. This is the case at both BH157543 and BH157862. Here the rock is described as 'very strong to strong, medium to thinly bedded, bluish grey/dark grey/black, fine-grained LIMESTONE' being predominantly calci-siltite limestone. This pure 'reef' limestone is typical of Waulsortian Limestone. Indeed, there are very minor localised solution or 'Karst' features noted in both cases. These areas are sited in Johninstown and Newtownmacabe.

There is a trend of thinning overburden cover from west to east across the 'Pipeline' section with relatively elevated rock levels found approaching west County Dublin, east of Straffan.

9.3 FIELDWORK

9.3.1 General

The IGSL Limited intrusive fieldworks commenced on in late November 2021 and were completed by August 2022. Each site workspace, conforming to Covid-19 protocols, comprised exclusion zones demarcated with safety barriers to reinforce the necessity for appropriate social distancing between site attendees. The works comprised the following:

- Cable Percussion (47 No.)
- Combined Cable Percussion Borehole / Rotary Coreholes (35 No.)
- Conventional Rotary-Only Drillholes (9 No.)

- Geobore S Rotary Coreholes (1 No.)
- Dynamic Sampling (7 No.)
- Trial Pitting (127 No.)
- Borehole Permeability Test (5 No.)
- Geophysical Survey
- Groundwater Monitoring / Data Loggers (19 No.)
- Surveying of Exploratory Hole Locations

9.3.2 Cable Percussion / Combined Cable Percussion Borehole + Rotary / Rotary Only

Cable percussion boring (200mm diameter) was undertaken at forty-seven locations using a Dando 2000 rig, thirty-five of which were furthered using rotary follow-on drilling.

The twelve cable percussion-only boreholes extended to depths between 0.60 and 10.0m. Boring commenced through hand-dug services inspection pits. Each service pit was excavated only after undertaking a careful CAT [Cable Avoidance Tool] survey and following consultation of all available utility plans. Disturbed bulk samples were recovered at 1m intervals or change of strata during boring and these are denoted ‘B’ on the engineering logs. Small disturbed samples were also acquired in 1kg plastic tubs (denoted ‘D’ on the pit logs). Undisturbed samples were acquired where the ground conditions permitted.

Standard Penetration Tests (SPT's) were performed during boring and reported in accordance with IS EN ISO 22476-3. Given the nature of the soils, a solid cone was used. In accordance with Clause 7.6.6 of the Specification and Related Documents for Ground Investigation in Ireland, 2nd Edition (2016), when a standard penetration test (SPT) was carried out, a bulk disturbed sample was taken over the depth range of the test. Additionally, as per Clause 7.6.4, the frequency of SPT testing in boreholes was at 0.50m below the base of the inspection pit, with the next 1.0m deeper, following at one metre centres thereafter to a depth of 5m. SPT tests were also undertaken to prove the presence of a ‘hard stratum’ or ‘obstruction’. In this case, the SPT test shows a resistance in excess of 35 blows/75 mm, or displays two successive 75mm increments achieving in excess of 50 blows (Clause 2.8.5).

It is noted that the SPT N-Values reported are the number of blows for 300mm increment penetration (e.g. BH161865 at 3.0m where N=10). These exclude the seating blow values, which represent the initial 150mm depth of penetration. Where partial penetration was achieved during testing, the number of blows is shown for the actual penetration depth achieved (e.g. BH166526 at 1.20m where N=50/225mm). In accordance with Eurocode 7, the SPT hammer has been calibrated and the energy ratio (Er) value is incorporated on the engineering logs. It is highlighted that the SPT N-Values reported on the engineering logs are uncorrected for energy ratio.

Descriptions of the soils encountered, in-situ tests undertaken and samples recovered are presented on the borehole records in Appendix 9A.1. Details of groundwater strikes and hard strata boring (i.e. chiselling) are also presented on the aforementioned records.

As already mentioned, at thirty-five locations, following completion of the cable percussion bore, rotary drilling was carried out through the backfilled borehole using either a track-mounted Knebel or Comacchio top-drive rig. Symmetrex drilling system was first utilised to clear the superficial / backfill deposits. Where rockhead was met, conventional rotary coring with air/mist flush was used. In the case of nine drillhole locations, Symmetrex drilling (termed open-hole drilling) was solely utilised to progress the drillhole with no pre-bore undertaken. At BH161516, open-hole drilling by means of a down-the-hole hammer pulverised the bedrock once intercepted. No rock cores were recovered at this location.

For conventional coring, rotary diamond cutting was used to retrieve 78mm diameter bedrock core samples through initial fractured and weathered rockhead, extending to the more competent bedrock at depth. Drilling produced cores of generally variably very strong to medium strong, thickly to thinly bedded, grey, dark grey and black fine-grained, LIMESTONE. The limestone was described as predominantly calci-siltite limestone with subordinate muddy limestone, local stylolites and localised chert formation. Weaker thin fissile muddy limestone/shale intervals were remarked as slightly weathered to moderately weathered. Otherwise, the rock cores were recovered fresh to slightly weathered.

The cores were placed in 3m capacity timber boxes and logged by an IGSL engineering geologist. This included photography of the cores with a digital camera. Where rock core was recovered, a graphic fracture log is also presented alongside the mechanical indices. This illustrates the fracture state of the rock cores and allows easy identification of highly fractured / non-intact zones and discontinuity spacings. It should be noted that no correction for dip of the joints has been made and that the spacings shown are successive joint / core intersections within the core.

As with cable percussion boring, Standard Penetration Tests (SPT's) were performed during drilling operations. In accordance with Eurocode 7, the SPT hammer has been calibrated and the energy ratio (Er) value is incorporated on the engineering logs. It is highlighted that the SPT N-Values reported on the engineering logs are uncorrected for energy ratio.

Water monitoring standpipes were installed in twenty-six of the completed drillholes (not including Geobore S hole BH149963 – see Table 1). The standpipes consisted of 50mm diameter HDPE pipework with proprietary 1mm slots and incorporated a pea gravel filter pack and cement / bentonite grout seal. Protective headwork covers were concreted in place. Data loggers were introduced to a number of wells (20 in all), as selected by Mott MacDonald supervising engineers. Quarterly return visits are required under the contract to permit the downloading of data logger information. This will be continued for a period of 12 months from first installed.

Where relevant, the core log records are presented along with cable percussion borehole records on combined logs in Appendix 9A.1. The logs include engineering geological descriptions, details of the bedding / discontinuities and mechanical indices (Total Core Recovery [TCR], Solid Core Recovery [SCR] and Rock Quality Designation [RQD]) for each core run. Core photographs are presented in Appendix 9I.3 and these illustrate the structure and fracture state of the bedrock.

9.3.3 Geobore S Rotary Coreholes

Rotary Geobore S drilling was carried out using a track-mounted Knebel rotary rig at one corehole location (BH149963). The Knebel drilling unit employed triple-tube Geobore S coring techniques producing 102mm diameter core samples. In the case of drillhole BH149963, core recovery shows the transition from soil overburden to rockhead. Re-circulated water flush was used to promote sample recovery throughout coring.

The core samples were placed in 2m capacity timber boxes. Photographs of the cores were taken using a digital camera prior to logging by a senior engineering geologist. The boxes were then

transported to IGSL's laboratory in Naas for laboratory testing. The core photographs are presented in Appendix 9I.3.

The core log record includes engineering geological descriptions of the core, details of discontinuities and mechanical indices (TCR, SCR and RQD's) for each core run. It is noted that core comprised of overburden deposits do not form part of the SCR and RQD percentage values. Comments on casing details are included on the rotary records. The rotary drillhole records are presented in Appendix 9A.2 and reference should be made to the Foreword which provides details on the logging of the cores.

A water monitoring standpipe was installed in the Geobore S drillhole once completed (See Table 1). As with the installs in cable percussion and combined cable percussion / rotary holes, the standpipe consisted of a 50mm diameter HDPE pipework with proprietary 1mm slots and incorporated a pea gravel filter pack and cement / bentonite grout seal. A protective headwork cover was concreted in place. A data logger was introduced to the well as per Mott MacDonald instruction. Quarterly return visits are required under the contract to permit the downloading of data logger information. This will be continued for a period of 12 months from first installed.

9.3.4 Dynamic Sampling

Dynamic sampling was carried out at seven locations using a Dando Terrier rig. The Terrier rig uses a 63.5kg weight to drive a hollow cylindrical windowless sampler and the material is retrieved in a semi-rigid plastic core liner. The dynamic sample records are presented in Appendix 9B and include descriptions of the soils encountered and the total recovery per run. Upon completion of the final sample run, each hole was backfilled.

Standard Penetration Tests (SPT's) were performed during drilling operations in the soil. In accordance with Eurocode 7, the SPT hammer has been calibrated and the energy ratio (Er) value is incorporated on the engineering logs. It is highlighted that the SPT N-Values reported on the engineering logs are uncorrected for energy ratio.

9.3.5 Trial Pitting

Trial pitting was undertaken at one hundred and twenty-seven locations in all. The locations were set out as per the coordinates provided with minor micro-siting where necessary, ie., where services / overhead wires were in proximity. Pits were excavated using a range of excavators ranging from 13tonne to 6.5tonne. Pits commenced only after scanning (CAT & Genny) to verify the presence or absence of service ducts. In addition, all available service drawings were consulted ahead of breaking ground. An on-site archaeologist (Edmund O'Donovan & Associates assuming the role of ACoW) provided full-time observation for all trial pit excavations. The trial pits were excavated, logged and sampled under the direction of an IGSL geotechnical engineer in accordance with BS 5930 (2015+A1:2020). In-situ hand shear vane testing was completed within non-gravelly cohesive strata where encountered. Bulk disturbed samples (typically 20 to 30kg) were taken as the pits progressed. Small disturbed samples were also acquired in 1kg plastic tubs (denoted 'D' on the pit logs).

The bulk soil samples were placed in heavy-duty polyethylene bags and sealed before being transported to Naas for laboratory testing. The trial pits were backfilled with the as-dug arisings and reinstated to the satisfaction of IGSL's site geotechnical engineer. The trial pit logs are presented in Appendix 9C and include descriptions of the soils encountered, groundwater conditions, in-situ shear vane records and stability of the pit sidewalls. Pit photos are presented in Appendix 9I.1. Prior to accessing specific GI locations with machinery / plant, pre-condition photos of the site were taken. These will be presented in Appendix 9I.2.

9.3.6 Borehole Infiltration Testing

In situ infiltration tests were undertaken in five exploratory holes during their construction (BH151907, BH156922, BH157953, BH160756 & BH166722) in accordance with BS 5930. The tests were undertaken in the 200mm diameter boreholes. The records for the tests are presented in Appendix 9E.1.

9.3.7 Geophysical Survey

Minerex Geophysics Limited were commissioned to carry out a geophysical survey for the Water Supply Project – Contract 3. Their survey consisted of 2D-Resistivity and seismic refraction (*p*-wave) measurements at specific locations along the pipeline route, ie., at river crossings, rail crossings, canal crossings, etc..

In the case of resistivity profiling, the generated model resistivity values and their spatial distribution can be related to typical values for different geological materials. 2D-Resistivity can also highlight zones of anomalous or karstified rock with lateral extents of 5m and more. The seismic refraction survey method focuses on propagating *p*-waves travelling through the subsurface. As the wave propagates through the subsurface, its velocity varies as it travels through overburden, rock with different elastic properties, and along geological boundaries. Velocity data can therefore, when processed, allow geological layer thicknesses and boundaries to be established. The Minerex interpretative reports are presented in Appendix 9G.

9.3.8 Groundwater Monitoring / Data Loggers

Groundwater monitoring was undertaken following the fieldworks period. Groundwater levels were measured using an electric dipmeter with measurements taken from the wells installed in the holes on the project (Table 1). The levels recorded are shown in Appendix 9J.1.

Nineteen data loggers were installed in designated wells across the project. One barologger was also positioned on site to record fluctuations in barometric pressure over the long term. A once per quarter visit is required by IGSL to download the logger information. The downloaded logger information, once processed, is being issued to the client through Sharepoint. Note that the downloaded raw data (in excel format) will not feature in these reports. Manual dips taken on the day of download will also be noted (Appendix 9J.1).

Table 1 – Well installations at noting standpipe (SP) diameter and gravel response zones

			Response Zone	
Location	**Installation Date**	**SP diameter**	**From (m)**	**To (m)**
BH149406	16/06/2022	50mm SP	3	4.5
BH149963 (GB)	05/08/2022	50mm SP	3.5	6.5
BH150554	23/03/2022	50mm SP	3	4.7
BH151688	17/05/2022	50mm SP	4	7
BH151907	17/05/2022	50mm SP	6	9
BH153150	29/04/2022	50mm SP	6.5	9.5
BH156922	04/04/2022	50mm SP	7	8.5
BH157543	28/04/2022	50mm SP	1.5	4.5
BH161062	11/04/2022	50mm SP	1.5	3.2
BH163697	26/04/2022	50mm SP	3.5	5.5
BH163697	26/04/2022	50mm SP	3.5	5.5
BH165006A	11/07/2022	50mm SP	2	6
BH165906	18/08/2022	50mm SP	2	7
BH166025	10/08/2022	50mm SP	4	7
BH166356	16/08/2022	50mm SP	4.5	8.5
BH166562	21/04/2022	50mm SP	2.2	10
BH166722	19/04/2022	50mm SP	4	13
BH149406	16/06/2022	50mm SP	3	4.5
BH149963	05/08/2022	50mm SP	3.5	6.5
BH150554	23/03/2022	50mm SP	3	4.7
BH151688	17/05/2022	50mm SP	4	7
BH151907	17/05/2022	50mm SP	6	9
BH153150	29/04/2022	50mm SP	6.5	9.5
BH156922	04/04/2022	50mm SP	7	8.5
BH157543	28/04/2022	50mm SP	1.5	4.5
BH161062	11/04/2022	50mm SP	1.5	3.2
BH163697	26/04/2022	50mm SP	3.5	5.5

GB = Geobore S Drillhole

9.3.9 Surveying of Exploratory Hole Locations

Following completion of the exploratory works, surveying was carried out using GPS techniques. Co-ordinates (x, y) were measured to Irish Transverse Mercator and ground levels (z) established to Malin Head. The co-ordinates and ground levels are shown on the exploratory hole logs. An exploratory hole plan is included in Appendix 9K.

9.4 LABORATORY TESTING

Geotechnical laboratory testing was performed at IGSL's INAB-accredited* laboratory (Naas, County Kildare) in accordance with the methods set out in BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute:1990. Soils testing included moisture content, Atterberg Limits (Liquid / Plastic Limits), Particle Size Distribution (*Hydrometer not INAB-accredited) and Moisture Condition Value testing. The results from geotechnical testing on selected trial pit, borehole and Geobore S soil samples are presented in Appendix 9H.1.

A single soil sample was selected from BH-163697 and subject to the Mott MacDonald Soil Suite of testing as listed in Section 2.13.2 'Geoenvironmental laboratory testing for contamination' contained in the Specification document entitled 'A Multi-Supplier Framework for the Provision of Site Investigation Works to Ervia (Ref:18/085)". The results can be used to classify the material with regard to its potential for disposal to landfill. The results along with BRE SD1 Suite D, loss on ignition, organic matter content, chloride analysis among others are presented in Appendix 9H.2.

Rock core strength testing and reusability testing is presented in appendices 9H.3 and 9H.4. A geological classification in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol is presented in Appendix 9H.7.

Tables 2, 3 and 4 list the types of laboratory testing performed with quantities. In all cases, the test schedules were prepared by the Client's Engineer (Mott MacDonald Ireland).

Table 2 – Geotechnical testing performed on disturbed and undisturbed soils

Test Type	Number of Tests	Reported in Appendix
Moisture Content	247	Appendix 9H.1
Atterberg Limits	243	
Particle Size Distribution	283	
Hydrometer	215	
Moisture Condition Value [MCV]	23	
5-Point MCV	0	
CBR	13	
Consolidation	1	
Small Shear Box	3	
Undrained Triaxial	0	

Table 3 – Geotechnical testing performed on rock cores

Test Type	Number of Tests	Reported in Appendix
Uniaxial Compressive Strength [UCS]	24	Appendix 9H.3
Point Load - Axial	98	
Point Load - Diametral	24	
Indirect Tensile Strength by Brazil Method	8	
Magnesium Sulphate Soundness	6	Appendix 9H.4
Los Angeles Abrasion	6	
Slake Durability	6	
Particle Shape / Flakiness	6	
Particle Density / Water Absorption	6	
Aggregate Abrasion Value (AAV)	6	
Mohs Hardness	6	

Table 4 – Chemical / Environmental testing on soil

Test Type	Number of Tests	Reported in Appendix
pH	7	Appendix 9H.2
Sulphate (2:1 Water Soluble) as SO_4 (WSS)	7	
Sulphate (2:1 Extract), TS, ASS	7	
pH (2.5:1), WSS, TS, ASS	11	
Chloride	7	
Loss on Ignition	3	
Organic Matter	3	
MM Soil Suite – Soil Analysis	1	
MM Soil Suite – Leachate Analysis	1	
BRE SD1 Suite D (Brownfield – Pyrite Present)	34	

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1.0 Blake, S., Jones, A.G., Henry, T., & Kalscheuer, T., & IRETHERM Team (2015). A multi-disciplinary investigation of Irish warm springs and their potential for geothermal energy provision. Proceedings World Geothermal Congress 2015 Melbourne, Australia

2.0 BS 5930:2015 + A1:2020 Code of Practice for Site Investigation, British Standards Institution (BSI).

3.0 BS 1377 (1990) Methods of Testing of Soils for Civil Engineering Purposes, BSI.

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5.0 McConnell, B. & Philcox, M.E. (1994A). Geology of Kildare – Wicklow. A Geological Description to Accompany the Bedrock Geology 1: 100 000 Map Series, Sheet 16, Kildare – Wicklow. Dublin: Geological Survey of Ireland

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7.0 Nolan, S. C. (1986). The Carboniferous geology of the Dublin area. Unpublished Ph.D. Thesis, University of Dublin.

8.0 Sevastopulo, G.D. (1982). The age and depositional setting of Waulsortian Limestones in Ireland. In: Le Mone, D.V. (ed.) Symposium on the paleoenvironmental setting and distribution of the Waulsortian Facies. University of Texas at El Paso and El Paso Geological Society. 65-79.

9.0 Site Investigation Practice: Assessing BS 5930 (1986), Geological Society Special Publication, No. 2.

10.0 Somerville, I. & Waters, C.N. (2011). Dublin Basin. In Waters et al A Revised Correlation of Carboniferous Rocks in the British Isles (Chapter 21). Geological Society of London

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Appendix 9A

Borehole Records / Legend

SPT Calibration Report

Driller (Rig)	**SPT Calibration Report No. (Hammer ID)**
WB (Cable Percussion)	**SA1**
PA (Cable Percussion)	**SA3**
MN (Rotary - Knebel)	**RC1**
AK (Rotary – Comacchio 405)	**RC2**
DH (Rotary – Comacchio 205)	**RC3**

LEGEND

Trial Pits / Cable Percussion Boreholes

D	Small Disturbed Sample (Tub)
B	Large Disturbed Sample
U	Undisturbed U100 Sample
AA 11235	Sample Reference No
W	Groundwater Sample
Env	Environmental Tub, Jar & Vial
C	SPT N-Value (Solid Cone)
S	SPT N-Value (Split Spoon / Open Shoe)

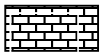
Rotary Core Drillholes

TCR	Total Core Recovery (%)
SCR	Solid Core Recovery (%)
RQD	Rock Quality Designation Value (%)
NI	Non-Intact (where rock core is highly fractured)

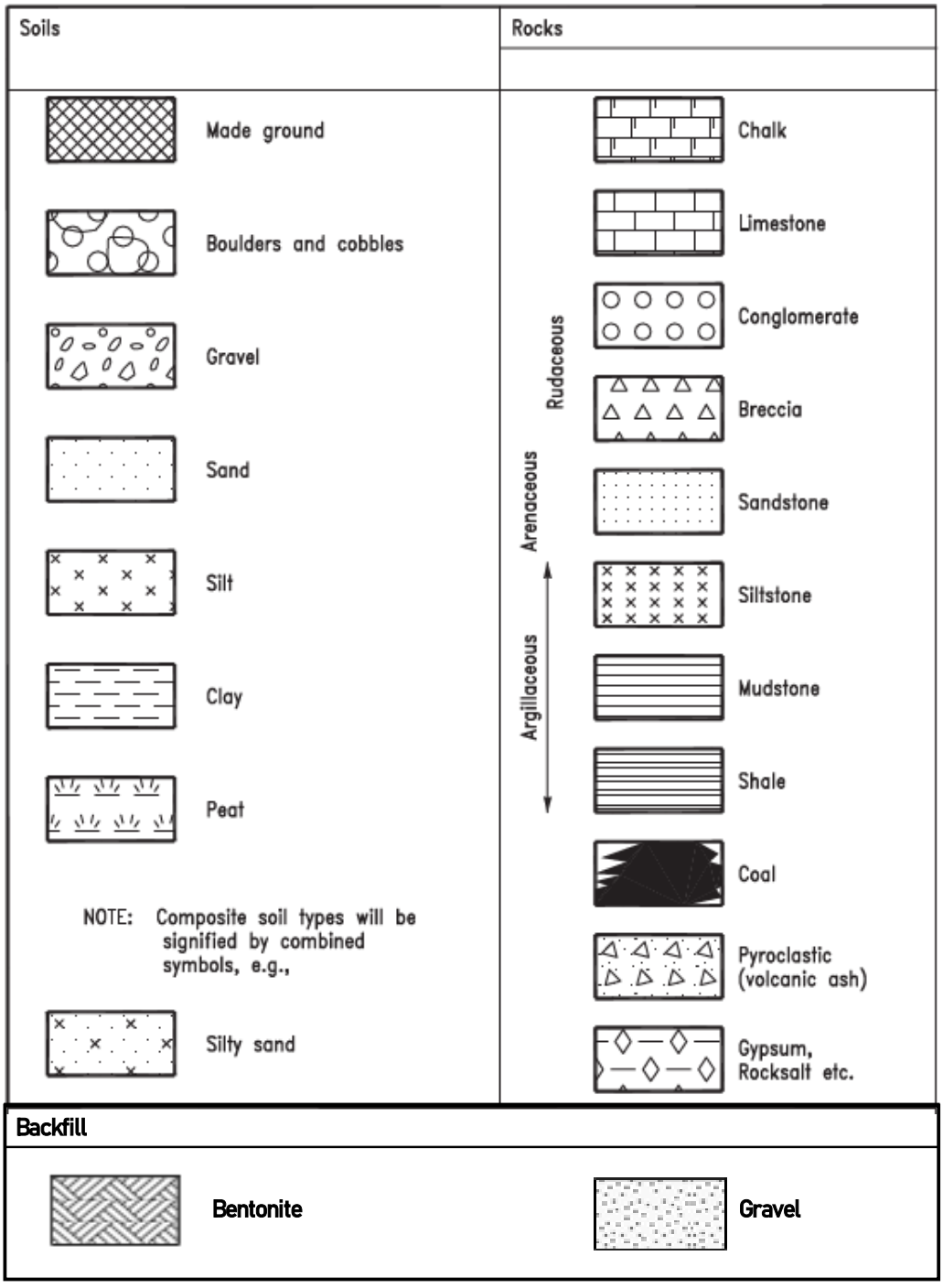
Water Strike Legend

Water Strike

Strata Legends / Symbolic Logs (BS 5930:2015+A1:2020)



Strata legends / symbolic logs reflect main stratum in accordance with BS 5930:2015+A1:2020. Legend codes are selected from GINT software to reflect stratum. Note, due to limited codes, legends may not represent exact constituent proportions (e.g. slightly or very sandy, slightly or very gravelly etc)



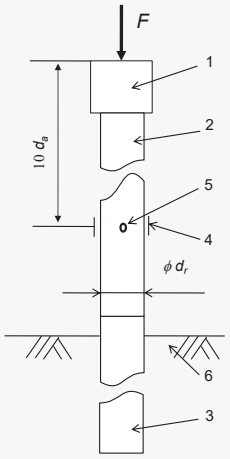
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		2022_117
Client		IGSL
Test Depth (m)		9.85
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21/02/2022	21/02/2023	SA1

E_{meas} = **0.355** kN-m

E_{theor} = **0.473** kN-m

Comments

Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **75.09%**

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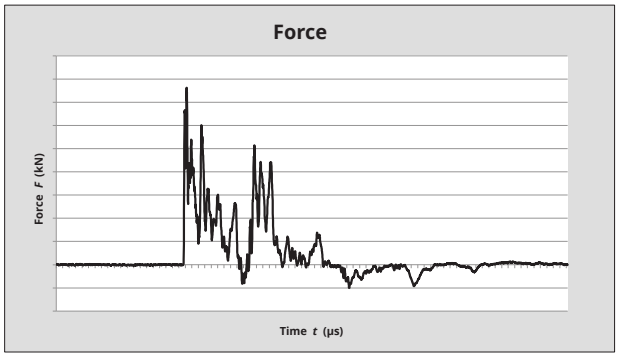

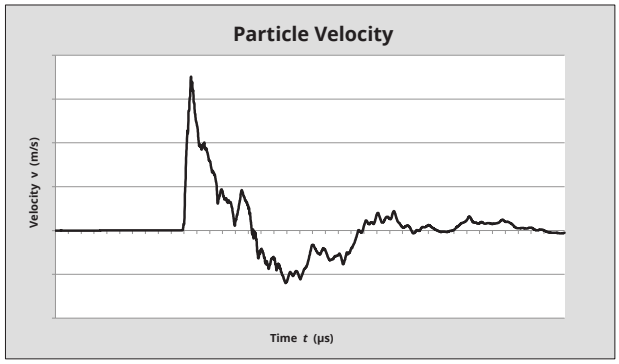

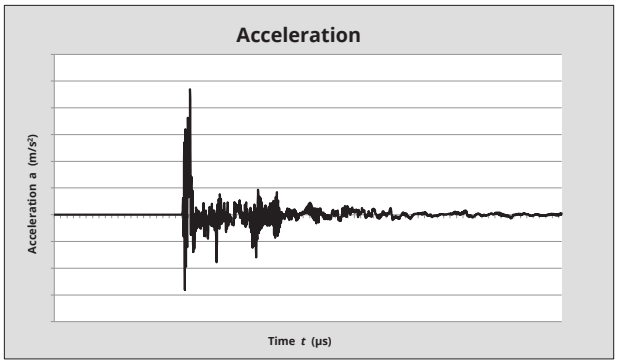

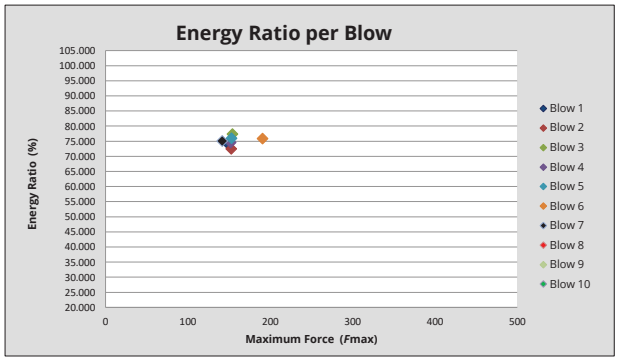

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			01/03/2022

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Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

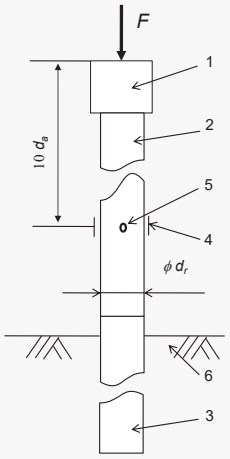
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		2022_119
Client		IGSL
Test Depth (m)		9.85
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21/02/2022	21/02/2023	SA3

E_{meas} = **0.364** kN-m

E_{theor} = **0.473** kN-m

Comments

Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **77.00%**

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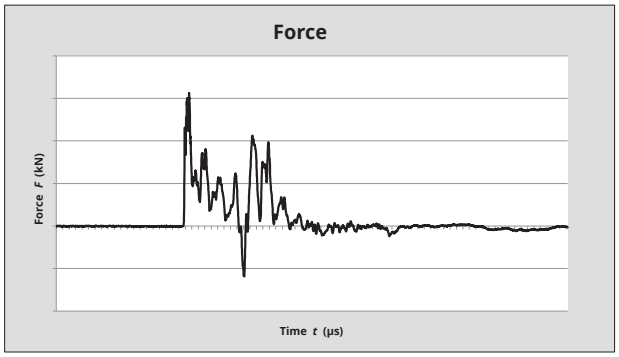

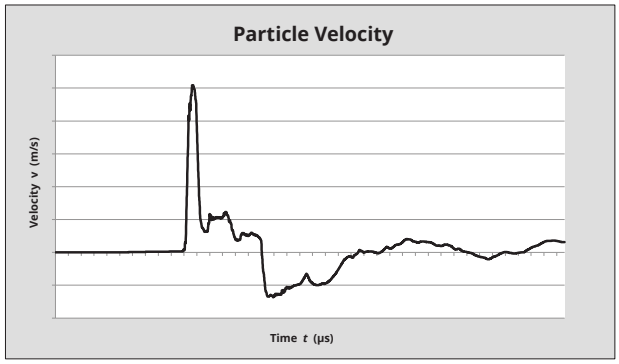

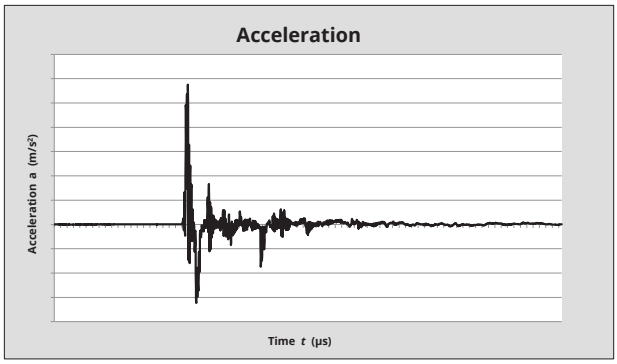

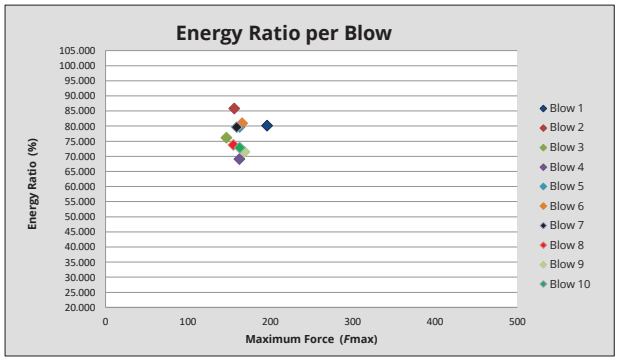

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JL			01/03/2022

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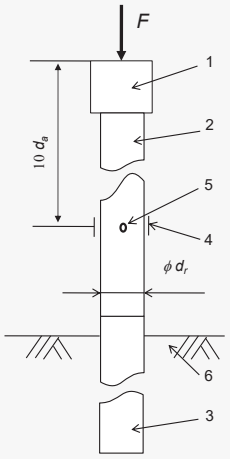
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		2022_122
Client		IGSL
Test Depth (m)		9.85
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21/02/2022	21/02/2023	RC1

E_{meas} = **0.347** kN-m

E_{theor} = **0.473** kN-m

Comments

Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **73.31%**

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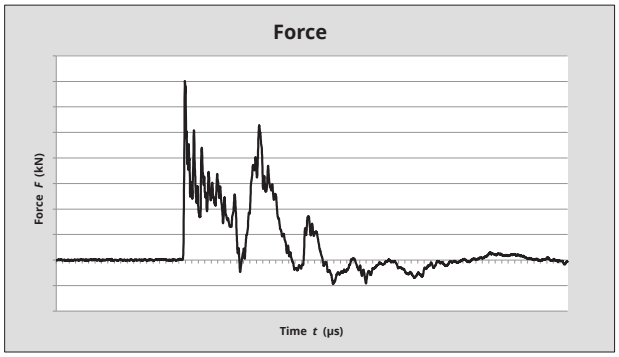

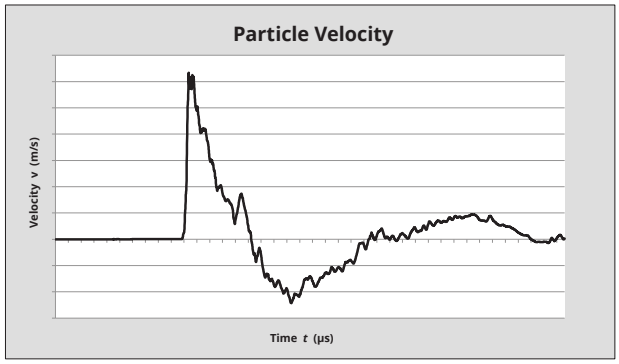

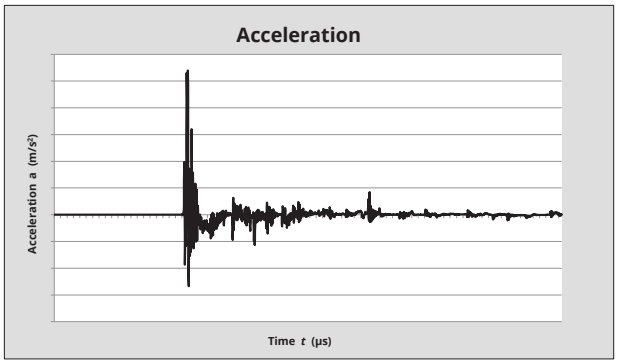

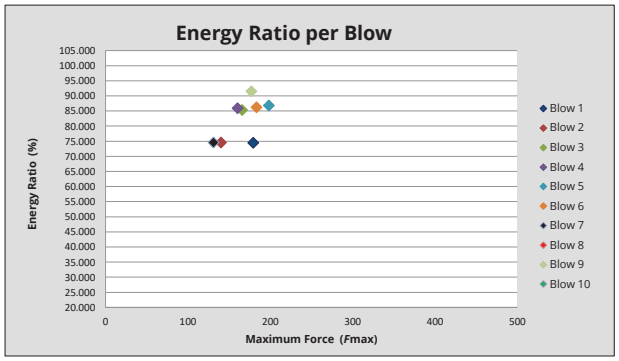

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			01/03/2022

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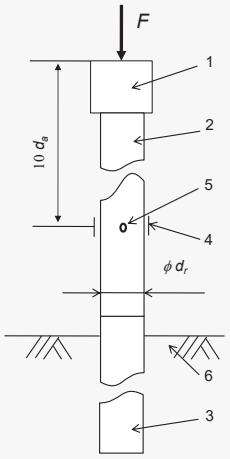
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		2022_124
Client		IGSL
Test Depth (m)		9.85
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21/02/2022	21/02/2023	RC2

E_{meas} = **0.330** kN-m

E_{theor} = **0.473** kN-m

Comments

Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **69.84%**

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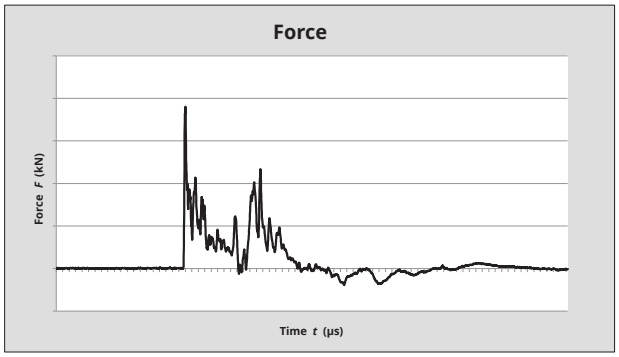
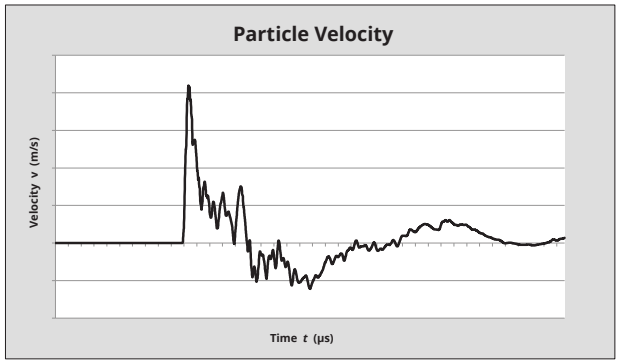
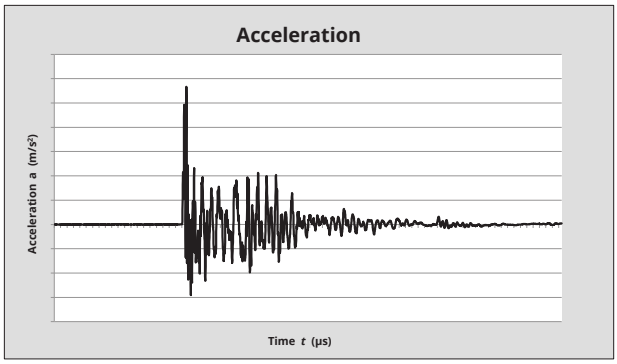
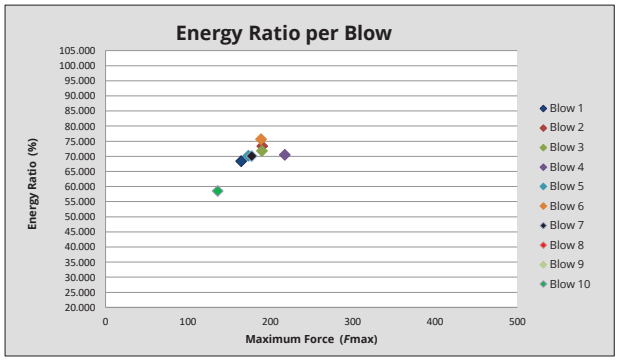








Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			01/03/2022

© Copyright 2022 **Equipe Group**, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

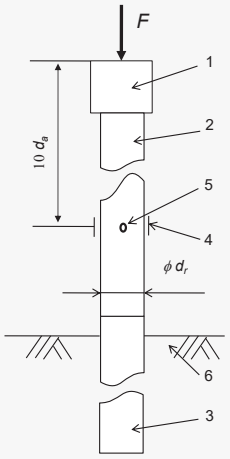
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		2022_125
Client		IGSL
Test Depth (m)		9.85
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21/02/2022	21/02/2023	RC3

E_{meas} = **0.303** kN-m

E_{theor} = **0.473** kN-m

Comments

Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **63.97%**

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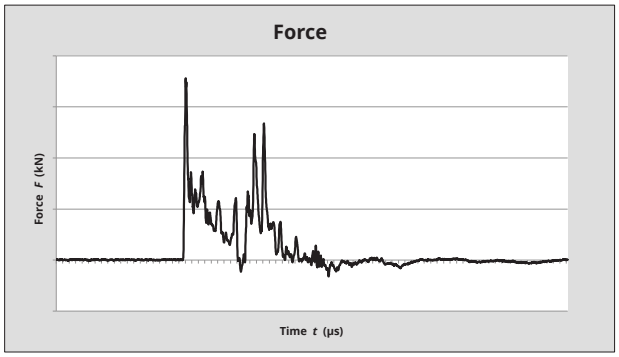

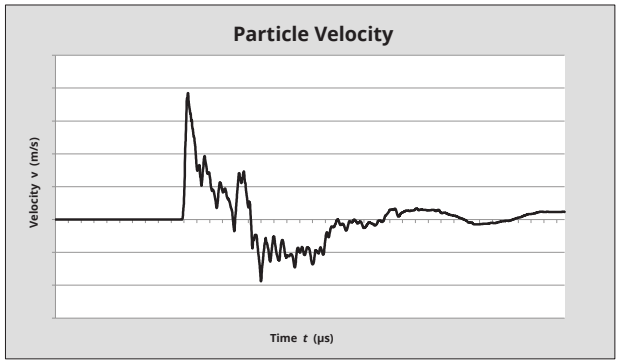

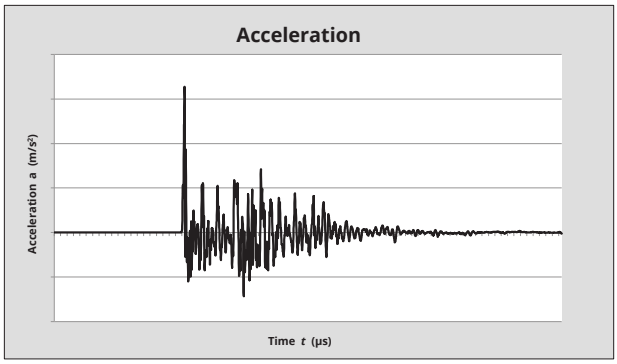

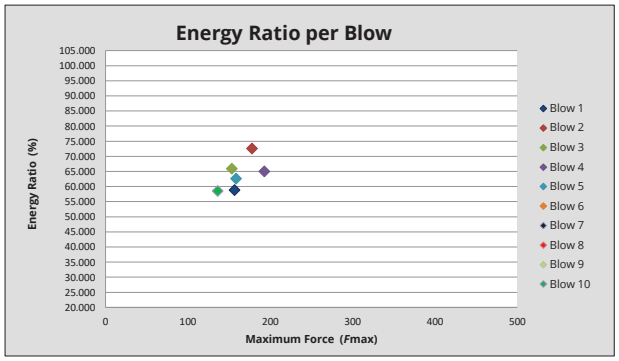

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			01/03/2022

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Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Appendix 9A.1

Cable Percussion Boreholes

BH150554	BH161865
BH152315	BH161953
BH160675	BH165006
BH160756	BH166526
BH161062	BH167255
BH161293	BH168286

Combined Cable Percussion Borehole / Rotary Drillhole Records

BH148404	BH152938	BH165890*
BH148707	BH153150	BH165906*
BH149101	BH155634	BH165960*
BH149273	BH156922	BH166006*
BH149406	BH156988	BH166025*
BH149804	BH157032	BH166078*
BH149963	BH157543	BH166356*
BH150204	BH157862	BH166562*
BH150291	BH157953	BH166722
BH150888	BH157977	BH169001
BH151188	BH160190	
BH151688	BH161471	
BH151877	BH161516**	
BH151907	BH163697	
BH152124	BH163860	
BH152207	BH165006A	
BH152702	BH165317	

*Rotary (Symmetrex + Coring) Only
**Rotary (Symmetrex) Only

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH148404
SHEET Sheet 1 of 2

CO-ORDINATES(_) 683,617 E
735,007 N
GROUND LEVEL (mOD) 84.98

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.20

DATE COMMENCED 05/07/2022
DATE COMPLETED 06/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												84.68		0.30	TOPSOIL Firm to stiff grey brown slightly sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
1							173327	B D	1.00	12/300mm			2	1.50		
												83.48	1		Firm grey brown slightly sandy slightly gravelly silty CLAY	
2							173328	B D	2.00	11/300mm						
3							173329	B D	3.00	19/300mm			1 2			
													3	4.00		
4							173330	B	4.00	26/300mm		80.98		4.30	Medium dense silty SAND and GRAVEL with high cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
												80.68		5.00		
5							173331	B D	5.00	50/0mm		79.98			Dense grey silty sandy gravelly COBBLES. Gravel is subangular to rounded, fine to coarse, limestone. Cobbles are subangular to rounded, limestone.	
6							173332	B	6.00	50/0mm				6.20		
	6.50	100	54	33								78.78		6.50	Very dense grey slightly silty slightly sandy GRAVEL with high cobble content. Sand is fine. Gravel is angular to subangular, medium to coarse, limestone. Cobbles are angular to subangular, limestone.	
7	7.20	100	27	0								78.48			SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	
	7.50	100	43	17												
8	8.15	100	29	0												
	8.60	100	37	23											Strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy (argillaceous) limestone with subordinate layers of calci-siltite (sandy) limestone), slightly weathered to very locally moderately weathered at fissile shale zones (at	
9	9.20	100	80	38												
	9.65	100	78	33												
10	10.20											74.78		10.20		

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
5.1	5.2	0030	
6.2	6.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.00	3.00	3.80	2.00	20	Slow
3.30	3.30				Slow
4.10	4.00	6.00	1.50	20	No Water Strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-07-22	10.20	6.50	4.50	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 30/05/2022 to 30/05/2022. Hole cased 0.00-6.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH148404
SHEET Sheet 2 of 2

CO-ORDINATES(_) 683,617 E
735,007 N
GROUND LEVEL (mOD) 84.98

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.20

DATE COMMENCED 05/07/2022
DATE COMPLETED 06/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															9.73-9.76m). High degree of non-intact core due to high angle bedding Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-5mm thick). Dips are 75° & locally 20-30°.	
12																
13																
14																
15																
16																
17																
18																
19																
20																
21															End of Borehole at 10.2 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 30/05/2022 to 30/05/2022. Hole cased 0.00-6.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH148707
SHEET Sheet 1 of 2

CO-ORDINATES(_) 683,908 E 735,096 N
GROUND LEVEL (mOD) 82.38

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 04/07/2022
DATE COMPLETED 04/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												82.28		0.10	Topsoil	
														0.50	Grey brown gravelly silty CLAY	
												81.88			Firm grey gravelly sandy CLAY with low cobble content. Gravel is fine to coarse. Cobbles are rounded to subangular	
1							173323	D B	1.00	11/300mm						
														2.00		
2							173324	D B	2.00	9/300mm		80.38	1		Soft brown slightly gravelly slightly sandy CLAY with low cobble content. Cobbles are rounded to subrounded	
														2.60		
												79.78			Very stiff/Very stiff grey gravelly sandy CLAY with medium cobble content. Gravel and cobbles are subangular to subrounded predominately of limestone.	
3							173325	D B	3.00	50/225mm						
													1			
4							173326	D B	4.00	50/75mm						
														4.40		
	4.40											77.98	2		Obstruction	
		100	0	0				C	4.80						SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	
5	5.10	100	0	0												
	5.50													5.50		
												76.88			SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	
6										58/5mm						
														6.40		
		0	0	0								75.98			SYMMETRIX DRILLING: No recovery, observed by driller as returns of weathered ROCK	
7														7.50		
	7.50									50/15mm		74.88			Strong to medium strong, medium to thinly bedded, grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite (sandy) limestone with subordinate layers of muddy (argillaceous) limestone), slightly weathered.	
		92	67	40				C	7.70							
8	8.10	100	36	0												
															Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-2mm thick). Dips are 75° & locally 20-30°.	
9	9.10	100	53	0				C	9.00							
														9.80		
10	9.80											72.58				

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
4.4	4.4	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.90	3.90		2.50	20	Moderate
4.60	4.60				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
30-05-22	4.40	0.00	2.50	End of Borehole
04-07-22	9.80	9.20	0.35	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 30/05/2022 to 30/05/2022. Hole cased 0.00-9.20m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH148707
SHEET Sheet 2 of 2

CO-ORDINATES(_) 683,908 E
735,096 N
GROUND LEVEL (mOD) 82.38

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 04/07/2022
DATE COMPLETED 04/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															End of Borehole at 9.8 (m)	
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 30/05/2022 to 30/05/2022. Hole cased 0.00-9.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149101
SHEET Sheet 1 of 2

CO-ORDINATES(_) 684,289 E
735,181 N
GROUND LEVEL (mOD) 81.29

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.85

DATE COMMENCED 13/06/2022
DATE COMPLETED 14/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												81.19		0.10	Topsoil	
							179101	D B D	0.50					1.00	Brown sandy CLAY	
1							179102	D B D	1.20	50/245mm		80.29		2.00	Very stiff grey gravelly sandy CLAY with medium cobble and low boulder content	
2							179103	D B D	2.00	27/300mm		79.29	2 1	3.00	Stiff brown gravelly sandy CLAY with medium cobble content and low boulder content	
3							179104	D B D	3.00	26/300mm		78.29	2	4.00	Stiff grey gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
4							179105	D B D	4.00	42/300mm		77.29		5.70	Very stiff/Very stiff grey gravelly sandy CLAY with medium cobble content. Gravel and cobbles are subangular to subrounded predominately of limestone.	
5							179106	D B D	5.00	50/170mm						
6	5.70	100	23	18				C	6.10	50/0mm 50/75mm		75.59 75.34		5.95	Obstruction	
	6.30	100	24	0											Stiff, black, slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of various lithologies, predomianately limestone.	
7	6.85	100	62	14				C	7.50						Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy (argillaceous) limestone with subordinate layers of calci-siltite (sandy) limestone), slightly weathered to moderately weathered at fissile shale zones (at 9.74-9.83m).	
8	7.75	100	51	16				C	8.00							
9	8.60	100	60	41				C	9.20							
10	9.85											71.44		9.85	Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally stepped. Apertures are tight to locally	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.6	1.8	0100	
5.6	5.7	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.00	3.00		2.80	20	Slow
3.60	3.50		2.80	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
26-05-22	5.70	0.00	2.80	End of Borehole
13-06-22	9.85	5.70	4.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 26/05/2022 to 26/05/2022. Hole cased 0.00-5.70m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149101
SHEET Sheet 2 of 2

CO-ORDINATES(_) 684,289 E
735,181 N
GROUND LEVEL (mOD) 81.29

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.85

DATE COMMENCED 13/06/2022
DATE COMPLETED 14/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															moderately open, locally clay-smeared and filled, locally calcite-veined (1-10mm thick). Dips are 75° & locally 10-20°.	
12															End of Borehole at 9.85 (m)	
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 26/05/2022 to 26/05/2022. Hole cased 0.00-5.70m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149273
SHEET Sheet 1 of 1

CO-ORDINATES(_) 684,450 E
735,213 N
GROUND LEVEL (mOD) 77.78

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.05

DATE COMMENCED 14/06/2022
DATE COMPLETED 14/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												77.58		0.20	TOPSOIL.	
							179107	B D	0.50						Stiff grey brown slightly sandy gravelly silty CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
1							179108	B D	1.20	32/300mm		76.58		1.20		
															Very stiff dark grey slightly sandy gravelly silty CLAY with high cobble content. Gravel is subangular to subrounded, fine to medium, limestone. Cobbles are subangular to subrounded, limestone.	
2							179109	B D	2.00	50/0mm			1			
	2.50	100	16	0				C	2.50	50/0mm		75.28	1	2.50		
3	3.20														Obstruction Strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy (argillaceous) limestone with very local subordinate layers of calci-siltite (sandy) limestone), slightly weathered to very locally moderately weathered at fissile shale zones (at 2.95-3.06m & 3.44-3.47m). High degree of non-intact core due to high angle bedding Discontinuities are medium to closely spaced, smooth to locally rough, planar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-5mm thick). Dips are 80-85° & locally 10-20°.	
		100	12	0												
4	4.55	100	51	31				C	4.60							
	4.90	100	21	0												
5	5.90															
		100	43	0												
6								C	6.80							
	7.10															
7		100	38	0				C	7.50							
	8.30															
8		100	73	37				C C	8.60 8.80							
	8.90	100	36	0												
9	9.35	100	77	34												
10	10.05											67.73		10.05	End of Borehole at 10.05 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
2.4	2.5	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.50	2.50		2.30	20	Slow
2.80	2.50				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
14-06-22	10.05	2.50	3.60	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 26/05/2022 to 26/05/2022. Hole cased 0.00-2.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149406
SHEET Sheet 1 of 1

CO-ORDINATES(_) 684,572 E 735,268 N
GROUND LEVEL (mOD) 76.32

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 15/06/2022
DATE COMPLETED 16/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												76.12		0.20	Topsoil	
														0.50	Brown sandy CLAY	
							179110	D B	0.50			75.82			Grey brown sandy CLAY	
1														1.20		
							179111	D B	1.20	15/300mm		75.12	1		Firm grey brown gravelly sandy CLAY	
2														2.00		
							179112	D B	2.00	19/300mm		74.32			Firm grey SILT	
													1	3.00		
3							179113	D B	3.00	29/300mm		73.32	2		Dense grey sandy GRAVEL with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular	
4							179114	D B	4.00	50/300mm						
	4.50	100	22	0				C	4.60	50/75mm		71.72		4.60	Strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (interbedded muddy (argillaceous) limestone with layers of calci-siltite (sandy) limestone), slightly weathered to very locally moderately weathered at fissile shale zones (at 5.57-5.63m, 5.74-5.79m, 6.62-6.65m, 6.69-6.77m, 6.95-6.97m, 7.26-7.30m, 7.52-7.55m, 7.59-7.65m, 7.78-7.83m & 9.73-9.80m). Discontinuities are medium to closely spaced, smooth to locally rough, planar. Apertures are tight to locally moderately open, locally clay-smeared, commonly calcite-veined (1-50mm thick). Dips are 20-30° & becoming 50-60° with depth.	
5	5.00	67	7	0												
	5.30	100	80	33												
6	6.00	100	49	19				C	5.90							
7	7.20	100	64	59				C	7.10							
8	8.15	100	54	15				C	8.00							
								C	8.40							
9	9.10	100	77	27												
	9.80													9.80	Obstruction	
10												66.52			End of Borehole at 9.8 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
4.5	4.6	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.00 3.50	3.00 3.50		1.50	20	Moderate Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
16/06/2022	4.00	3.00	4.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
16-06-22	9.80	5.30	1.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 27/05/2022 to 27/05/2022. Hole cased 0.00-2.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149804
SHEET Sheet 1 of 2

CO-ORDINATES(_) 684,913 E 735,482 N
GROUND LEVEL (mOD) 76.31

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.85

DATE COMMENCED 16/06/2022
DATE COMPLETED 17/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												76.21		0.10	Topsoil	
														0.50	Brown sandy CLAY	
							179115	D B	0.50			75.81			Firm grey brown gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles and subrounded to subangular	
1							179116	D B	1.20	32/300mm			1			
2							179117	D B	2.00	13/300mm			1			
														2.80		
3							179118	D B	3.00	17/300mm		73.51			Firm grey gravelly sandy CLAY with medium cobble content. Gravel and cobbles are subangular to subrounded predominately of limestone.	
														4.00		
4	4.00	80	0	0						50/40mm		72.31			Obstruction	
	4.50													4.50	Returns of clayey GRAVEL. Gravel is angular to subrounded fine to coarse of limestone.	
		80	0	0								71.81		4.80	BOULDER of limestone	
5	5.50	100	0	0						50/35mm		71.51			Stiff black slightly sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are of limestone.	
6	6.10	90	0	0										6.40		
	6.50	87	68	45				C	6.60			69.91			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 8.07-8.09m & 8.57-8.61m).	
7	7.10	100	93	93				C	7.20							
	7.55	100	49	0												
8	7.90	100	66	20				C	8.20							
9	9.15	100	76	0												
	9.40	100	76	56												
	9.65	100	20	0										9.85		
10	9.85											66.46			Discontinuities are medium to closely spaced, smooth to locally rough, planar to irregular. Apertures are tight to locally moderately open, locally clay-smeared, commonly	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.8	1.9	0030	
3.9	4	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.00	2.00		1.70	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
30-05-22	4.00	0.00	1.80	End of Borehole
16-06-22	9.85	6.75	2.55	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 30/05/2022 to 30/05/2022.Hole cased 0.00-6.75m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. **BH149804**
SHEET Sheet 2 of 2

CO-ORDINATES(_) 684,913 E
735,482 N
GROUND LEVEL (mOD) 76.31

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.85

DATE COMMENCED 16/06/2022
DATE COMPLETED 17/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															calcite-veined (1-40mm thick). Dips are 20-30° & locally subvertical.	
12															End of Borehole at 9.85 (m)	
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 30/05/2022 to 30/05/2022.Hole cased 0.00-6.75m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149963
SHEET Sheet 1 of 1

CO-ORDINATES(_) 685,075 E, 735,527 N
GROUND LEVEL (mOD) 74.78
CLIENT Irish Water
ENGINEER Eriva

RIG TYPE Knebel
RC FLUSH MEDIUM P. Gel
CASING DIAMETER (mm)
CORE DIAMETER (mm) 102
BOREHOLE DEPTH (m) 9.90

DATE COMMENCED 03/08/2022
DATE COMPLETED 05/08/2022
BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												74.68		0.10	Frim reddish brown slightly sandy TOPSOIL with thin rootlets	
		100	0	0											Stiff brown/grey mottled silty sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to medium. Gravel is angular to subrounded fine to coarse of various lithologies predominantly limestone. Cobbles are of limestone.	
1														1.30		
	1.50	100	0	0								73.48			Returns of grey/brown clayey cobbly GRAVEL. Gravel is angular to subrounded fine to coarse of various lithologies predominantly limestone. Cobbles are of limestone.	
2	2.30	100	0	0												
3	3.00	100	40	0										3.10		
	3.10	100	69	34				C	3.10			71.68			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.44-3.51m, 5.02-5.04m, 5.23-5.26m, 5.74-5.76m, 5.79-5.83m, 6.18-6.21m, 6.7-6.29m, 6.33-6.35m & 8.83-8.88m).	
4																
	4.50	100	55	0				C	4.40							
	4.70															
5		100	49	24												
6	6.00															
		100	57	14				C	6.50							
7	6.95	100	49	0												
	7.40	100	50	0												
	7.70	100	64	29												
8	8.15	100	47	0												
	8.60	100	60	30												
9																
	9.20	100	77	100												
	9.50	100	35	0										9.90		
10	9.90											64.88			End of Borehole at 9.9 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
05/08/2022	6.00	3.50	6.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-08-22	9.90	1.20	2.15	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-1.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH150204
SHEET Sheet 1 of 2

CO-ORDINATES(_) 685,292 E
735,619 N
GROUND LEVEL (mOD) 73.12

RIG TYPE GEO-205 &Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.90

DATE COMMENCED 30/03/2022
DATE COMPLETED 30/03/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												73.02		0.10	Topsoil	
							179159	D B	0.50				1		Stiff grey gravelly sandy CLAY. Gravel is fine to coarse, subrounded to subangular	
1														1.20		
							179160	D B	1.20	23/300mm		71.92			Very stiff grey gravelly sandy CLAY with medium to high cobble and boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
2							179161	D B	2.00	50/150mm					1.50 - 3.00 Blowing sands encountered @ 1.5mbgl to 3.0mbgl	
													1	3.00		
3							179162	D B	3.00	23/300mm		70.12			Dense/very dense grey sandy GRAVEL with medium cobble content	
4							179163	D B	4.00	25/75mm						
													2			
5										50/75mm				5.00		
												68.12		5.20	Obstruction	
												67.92		5.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of COBBLE	
												67.72		5.80	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black sandy GRAVEL	
6	5.80	100	27	0								67.32			SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible ROCK	
	6.50							C	6.70						Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantly calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 6.44-6.52m, 7.69-7.70m, 8.31-8.33m).	
7		100	49	34												
8	8.00	100	72	64				C	7.90							
	8.50							C	8.20							
9		100	77	46	510									9.90		
	9.60	100	100	90				C	9.50							
10	9.90											63.22			Discontinuities are medium to	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.5	3	0200	
4.2	4.4	0100	
4.9	5	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.70	2.70		0.80	20	Moderate
4.60	4.60				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
24-03-22	5.00	0.00	0.80	End of Borehole
30-03-22	9.90	5.80	1.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 23/03/2022 to 24/03/2022. Hole cased 0.00-5.80m. Erect Covid-19 Safe Zone - 1hr.

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. **BH150204**
SHEET Sheet 2 of 2

CO-ORDINATES(_) 685,292 E
735,619 N
GROUND LEVEL (mOD) 73.12

RIG TYPE GEO-205 &Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.90

DATE COMMENCED 30/03/2022
DATE COMPLETED 30/03/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay/gravel-filled (at 5.80-6.05m & 6.84-7.04m), locally calcite-veined (1-5mm thick). Dips are 10-20° & very locally 70-75°.	
12																
13															End of Borehole at 9.9 (m)	
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 23/03/2022 to 24/03/2022. Hole cased 0.00-5.80m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH150291
SHEET Sheet 1 of 1

CO-ORDINATES(_) 685,381 E
735,625 N
GROUND LEVEL (mOD) 72.89

RIG TYPE GEO-205 &Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.10

DATE COMMENCED 29/03/2022
DATE COMPLETED 29/03/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												72.69		0.20	Topsoil	
												72.49		0.40	Brown sandy CLAY	
							174193	D B	0.50						Very stiff grey gravelly sandy CLAY with medium to high cobble and boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
1							174194	D B	1.20	50/150mm			1 1			
2										50/75mm 50/75mm			2	2.20		
												70.69		2.70	Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible ROCK	
3	2.70	100	87	51				C	2.70			70.19			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantly calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.94-4.10m, 6.05-6.09m & 8.12-8.14m). Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-20mm thick). Dips are subhorizontal, 10° & locally 70-75°.	
	3.40	71	23	0												
4	4.10	100	58	0				C	4.30							
								C	4.70							
5	4.90	100	96	96	760			C	5.10							
								C	5.60							
	5.70							C	5.90							
6		100	71	30												
	6.40															
7		100	56	29				C	6.90							
	7.80															
8		100	77	44												
9																
	9.40															
		100	79	40												
10	10.10													10.10		
												62.79			End of Borehole at 10.1 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.4	1.5	0100	
2.1	2.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.80	1.80		1.60	20	Moderate
2.20	2.20				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-03-22	2.20	0.00	1.60	End of Borehole
29-03-22	10.10	2.70	1.20	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 22/03/2022 to 22/03/2022. Hole cased 0.00-5.80m. Erect Covid-19 Safe Zone - 1hr.

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH150554
SHEET Sheet 1 of 1

CO-ORDINATES(_) 685,643 E
735,598 N
GROUND LEVEL (mOD) 73.92

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 5.50

DATE COMMENCED 22/03/2022
DATE COMPLETED 23/03/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY P.Allen
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												73.72		0.20	Topsoil	
							174195	D B	0.50						Soft brown sandy CLAY with low cobble content. Cobbles are subrounded to subangular	
1							174196	D B	1.20	9/300mm			1	1.80		
2								U	2.00			72.12			Firm grey gravelly sandy CLAY with medium cobble content and low boulder content. Gravel is fine to coarse. Gravel, cobbles and boulders are subrounded to subangular	
							174197	B	2.50	18/300mm			1	3.00		
3							174198	D B	3.00	17/300mm		70.92			Firm/stiff grey gravelly sandy Clay with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular	
4							174199	D B	4.00	22/300mm				4.70		
5							174200	D B	5.00	25/75mm		69.22			Very stiff grey gravelly sandy CLAY with medium to high cobble and boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
										50/75mm		68.42		5.50	Obstruction End of Borehole at 5.5 (m)	
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
4.7	4.9	0100	
5.4	5.5	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.50	2.50		1.50	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
23-03-22	5.50	0.00	1.50	End of Borehole

INSTALLATION DETAILS

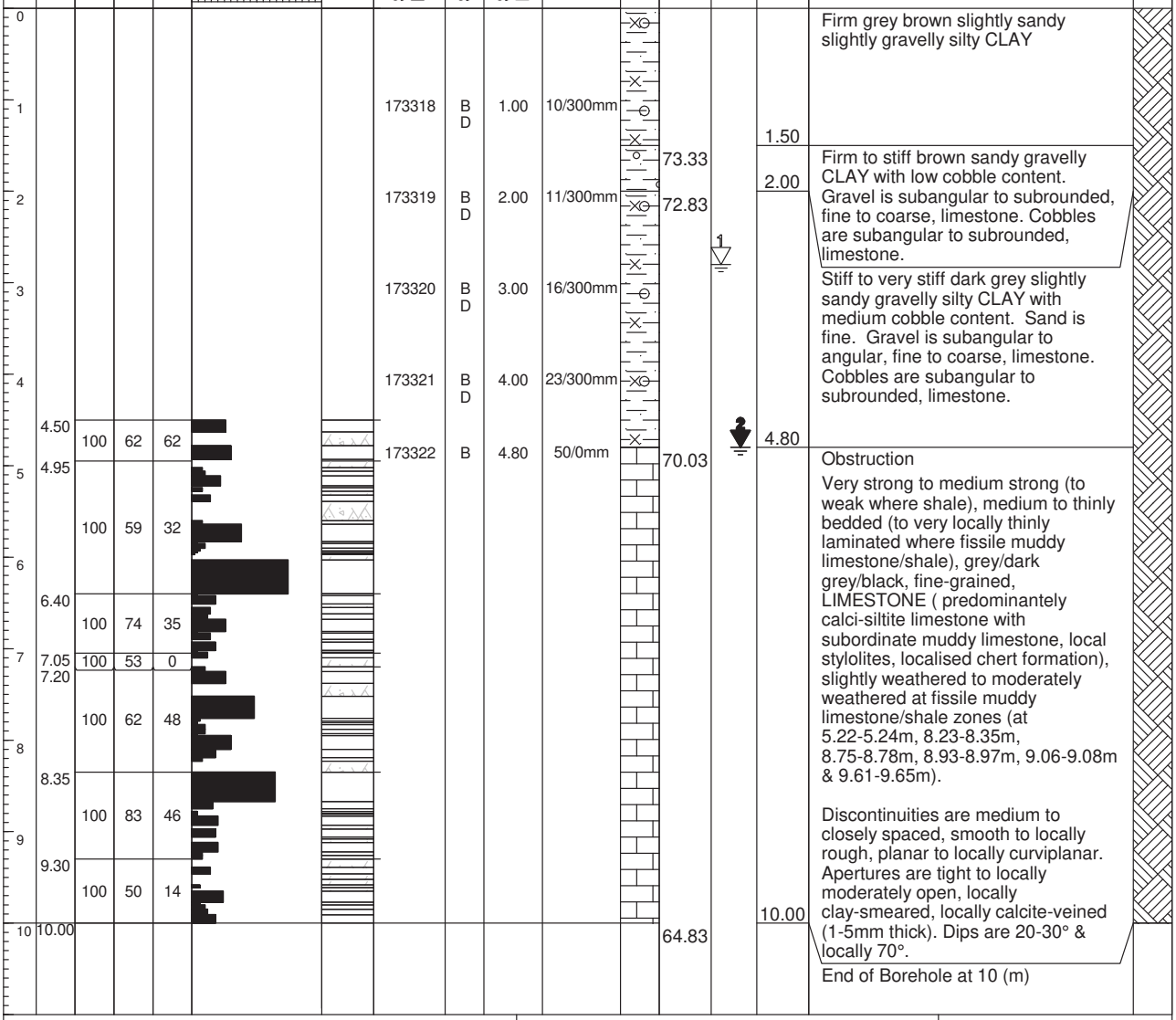
Date	Tip Depth	RZ Top	RZ Base	Type
23/03/2022	4.70	3.00	4.70	50mm SP

REMARKS Hand Service inspection Pit. Standing 1 hr waiting for Borehole location. Move 23km. Rig, track dumper, installation equipment etc

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
HOLE NO.	**BH150888**
SHEET	Sheet 1 of 1
CO-ORDINATES(_)	685,976 E 735,541 N
GROUND LEVEL (mOD)	74.83
RIG TYPE	Knebel & Dando 2000
RC FLUSH MEDIUM	Air/Mist
CASING DIAMETER (mm)	200
CORE DIAMETER (mm)	78
BOREHOLE DEPTH (m)	10.00
DATE COMMENCED	06/07/2022
DATE COMPLETED	07/07/2022
CLIENT	Irish Water
ENGINEER	Eriva
BORED BY	IGSL - MN&WB
PROCESSED BY	D.O'Shea



Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														Firm grey brown slightly sandy slightly gravelly silty CLAY	
1						173318	B D	1.00	10/300mm				1.50		
											73.33			Firm to stiff brown sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
2						173319	B D	2.00	11/300mm		72.83		2.00		
												1		Stiff to very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine. Gravel is subangular to angular, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
3						173320	B D	3.00	16/300mm						
4						173321	B D	4.00	23/300mm						
	4.50	100	62	62									4.80		
5	4.95					173322	B	4.80	50/0mm		70.03			Obstruction Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantly calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 5.22-5.24m, 8.23-8.35m, 8.75-8.78m, 8.93-8.97m, 9.06-9.08m & 9.61-9.65m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-5mm thick). Dips are 20-30° & locally 70°.	
		100	59	32											
6	6.40														
		100	74	35											
7	7.05	100	53	0											
	7.20														
		100	62	48											
8	8.35														
		100	83	46											
9	9.30														
		100	50	14											
10	10.00										64.83		10.00	End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
3.5	3.7	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.80	4.80				Slow
4.80	4.50		2.80	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
07-07-22	10.00	6.00	3.65	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 27/05/2022 to 27/05/2022. Hole cased 0.00-4.50m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH151188
SHEET Sheet 1 of 1

CO-ORDINATES(_) 686,050 E 735,244 N
GROUND LEVEL (mOD) 73.18

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.40

DATE COMMENCED 18/05/2022
DATE COMPLETED 19/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Soft to firm orange brown slightly sandy silty CLAY with low cobble content. Gravel is subangular to	
1							173313	B D	1.00	13/300mm						
2							173314	B D	2.00	8/300mm				2.30		
												70.88			Stiff dark grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subangular, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
3							173315	B D	3.00	10/300mm						
4							173316	B D	4.00	50/75mm				4.30	4.00 - 4.30 Below 4.0m: Very stiff with high cobble content.	
	4.20	100	0	0			173317	B	4.30			68.88	1		Obstruction	
5	5.00	100	0	0											Stiff/Very stiff black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
	5.80	100	0	0						59/45mm						
6	6.20	100	0	0												
7	7.20	100	0	0						50/0mm						
8																
	8.55	100	0	0						115/150mm						
9	8.90	100	0	0												
	9.70	86	0	0												
10														10.40		
	10.40									50/0mm		62.78			End of Borehole at 10.4 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
4.3	4.3	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.60	4.60				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
17-05-22	4.00	4.00	1.00	End of Borehole
18-05-22	10.40	7.20	0.95	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 13/05/2022 to 17/05/2022.Hole cased 0.00-7.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH151688
SHEET Sheet 1 of 2

CO-ORDINATES(_) 686,544 E, 735,240 N
GROUND LEVEL (mOD) 72.00
CLIENT Irish Water
ENGINEER Eriva

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 17/05/2022
DATE COMPLETED 17/05/2022
BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Soft to firm light brown sandy gravelly CLAY. Gravel is subangular to subrounded, fine to medium, limestone	
1							173311	B D	1.00	10/300mm				1.60		
												70.40			Very stiff dark grey slightly sandy gravelly silty CLAY with high cobble content. Gravel is subangular to subrounded, fine to medium, limestone. Cobbles are subangular to subrounded, limestone.	
2							173312	B D	2.00	50/75mm				2.50		
												69.50			SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY	
3										15/300mm						
4													1	4.50		
	4.50	100	0	0						50/45mm		67.50			Returns of stiff black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
5	5.20	100	0	0												
6	6.00	100	0	0						50/30mm						
	6.35	100	51	51										6.70		
7	7.05	100	52	21				C	7.00			65.30			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 6.76-6.80m, 7.66-7.69m & 7.73-7.75m).	
8	8.00	100	45	23				C	7.80							
9	9.20	100	90	90				C	9.10							
10	10.00													10.00		
												62.00			Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.6	2	0100	
2.3	2.5	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.10	4.10				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
17-05-22	10.00	7.05	1.35	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
17/05/2022	6.50	4.00	7.00	50mm SP

REMARKS CP Drilled from 12/05/2022 to 13/05/2022. Hole cased 0.00-10.00m.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH151688
SHEET Sheet 2 of 2

CO-ORDINATES(_) 686,544 E
735,240 N
GROUND LEVEL (mOD) 72.00

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 17/05/2022
DATE COMPLETED 17/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															moderately open, locally clay-smeared and clay-filled at 7.92-8.01m, locally calcite-veined (1-8mm thick). Dips are 20-30° & locally 70-75°.	
12															End of Borehole at 10 (m)	
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
17/05/2022	6.50	4.00	7.00	50mm SP

REMARKS CP Drilled from 12/05/2022 to 13/05/2022. Hole cased 0.00-10.00m.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
HOLE NO.	**BH151877**
SHEET	Sheet 1 of 1
CO-ORDINATES(_)	686,741 E 735,251 N
GROUND LEVEL (mOD)	71.55
RIG TYPE	Knebel & Dando 2000
RC FLUSH MEDIUM	Air/Mist
CASING DIAMETER (mm)	200
CORE DIAMETER (mm)	78
BOREHOLE DEPTH (m)	10.00
DATE COMMENCED	16/05/2022
DATE COMPLETED	16/05/2022
CLIENT	Irish Water
ENGINEER	Eriva
BORED BY	IGSL - MN&WB
PROCESSED BY	D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.40	TOPSOIL.	
												71.15			Stiff orange brown mottled grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded, fine to medium, limestone.	
1							173301	B D	1.00	9/300mm				1.60		
												69.95			Stiff dark grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subangular, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
2							173302	B D	2.00	12/300mm						
3							173303	B D	3.00	13/300mm						
4							173304	B D	4.00	10/300mm						
5							173305	B D	5.00	13/300mm						
6	6.00	100	0	0			173306	B	6.00	24/300mm			▼1			
	6.50									50/75mm		64.85		6.70	Obstruction Returns of stiff black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
7		47	0	0												
8	8.00									62/100mm				8.70		
		39	0	0								62.85		9.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY	
9	9.00	100	0	0						50/75mm		62.55			Returns of stiff black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
	9.40	0	0	0												
		67	0	0										10.00		
	9.80															
10	10.00											61.55			End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6.7	6.7	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
6.35	6.35				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
16-05-22	10.00	9.00	6.35	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 11/05/2022 to 11/05/2022. Hole cased 0.00-10.00m.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH151907
SHEET Sheet 1 of 2

CO-ORDINATES(_) 686,764 E
735,234 N
GROUND LEVEL (mOD) 71.30

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 13/05/2022
DATE COMPLETED 17/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												70.90		0.40	Soft brown silty CLAY	
1							178040	B D	1.00	7/300mm		69.90		1.40	Soft light brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
2							178041	B D	2.00	13/300mm					Firm to very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Gravel is subangular to subrounded, fine to coarse, limestone.	
3							178042	B D	3.00	9/300mm						
4							178043	B	4.00	10/300mm						
5							178044	B	5.00	17/300mm						
6							178045	B	6.00	42/300mm				6.60		
7	7.50	80	0	0						50/75mm		64.70			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly cobbly CLAY	
8	8.00	0	0	0						50/100mm		63.80		7.50		
	8.30	83	0	0								63.30		8.00	Returns of stiff black slightly sandy gravelly CLAY with a cobble. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
9	8.90	62	0	0						50/0mm		63.00		8.30	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY	
	9.30							C	9.40							
10		58	28	12								61.30		10.00	Returns of stiff black slightly sandy gravelly CLAY with occasional cobbles. Sand is fine. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
	10.85															

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
17/05/2022	8.50	6.00	9.00	50mm SP

REMARKS CP Drilled from 09/05/2022 to 10/05/2022. Hole cased 0.00-10.00m.

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH151907
SHEET Sheet 2 of 2

CO-ORDINATES(_) 686,764 E
735,234 N
GROUND LEVEL (mOD) 71.30

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 13/05/2022
DATE COMPLETED 17/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11																
	11.75	100	90	59				C	11.80						Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 10.81-10.86m, 11.18-11.21m, 13.57-13.60m & 14.50-14.54m).	
12		100	94	67												
	13.15															
13		100	85	72												
	14.70															
14		100	67	0												
	15.10											56.20		15.10	Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-10mm thick). Dips are subhorizontal & locally 70-75°. *(continued)*	
15															End of Borehole at 15.1 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
17-05-22	15.10	10.00	1.10	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
17/05/2022	8.50	6.00	9.00	50mm SP

REMARKS CP Drilled from 09/05/2022 to 10/05/2022. Hole cased 0.00-10.00m.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
HOLE NO.	**BH152124**
SHEET	Sheet 1 of 2
CO-ORDINATES(_)	686,994 E 735,235 N
GROUND LEVEL (mOD)	70.80
RIG TYPE	Knebel & Dando 2000
RC FLUSH MEDIUM	Air/Mist
CASING DIAMETER (mm)	200
CORE DIAMETER (mm)	78
BOREHOLE DEPTH (m)	9.95
DATE COMMENCED	10/05/2022
DATE COMPLETED	10/05/2022
CLIENT	Irish Water
ENGINEER	Eriva
BORED BY	IGSL - MN&WB
PROCESSED BY	D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												70.50		0.30	TOPSOIL.	
															Soft orange brown mottled grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium.	
1							178035	B D	1.00	7/300mm		69.60		1.20		
															Firm to stiff dark grey slightly sandy slightly gravelly silty CLAY with low cobble content. Gravel is subangular to subrounded, fine to medium, limestone. Cobbles are subangular to subrounded, limestone.	
2							178036	B D	2.00	20/300mm		68.80		2.00		
													1		Very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Gravel is subangular to subrounded, fine to medium, limestone. Cobbles are subangular to subrounded, limestone.	
3							178037	B D	3.00	49/300mm						
4							178038	B D	4.00	40/170mm			1			
5							178039	B	5.00	50/0mm				5.10		
												65.70			Obstruction	
	5.70													5.70	SYMMETRIX DRILLING: No recovery, observed by driller as returns of black silty GRAVEL with occasional cobbles	
6		100	31	17				C	5.80			65.10				
	6.40														Strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy (argillaceous) limestone with very local subordinate layers of calci-siltite (sandy) limestone), slightly weathered to very locally moderately weathered at fissile shale zones (at 7.54-7.61m, 9.73-9.78m & 9.85-9.95m).	
7		100	54	23				C C	7.00 7.10							
	7.35	100	52	0												
	7.85	100	18	0												
8	8.45	100	53	20												
								C	8.90							
9	9.15	100	30	0												
														9.95	Discontinuities are medium to closely spaced, smooth to locally rough, planar. Apertures are tight to locally moderately open, locally clay-smeared and clay/gravel-filled (at 5.94-6.20m, 7.33-7.43m & 7.85-7.96m), locally calcite-veined (1-2mm thick). Dips are 30-40° &	
10	9.95											60.85				

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
5.1	5.1	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.20	4.00		3.00	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-05-22	9.95	9.95	2.45	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 07/05/2022 to 07/05/2022. Hole cased 0.00-5.70m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH152124
SHEET Sheet 2 of 2

CO-ORDINATES(_) 686,994 E
735,235 N
GROUND LEVEL (mOD) 70.80

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.95

DATE COMMENCED 10/05/2022
DATE COMPLETED 10/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															locally 60°.	
															End of Borehole at 9.95 (m)	
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 07/05/2022 to 07/05/2022. Hole cased 0.00-5.70m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH152207
SHEET Sheet 1 of 1

CO-ORDINATES(_) 687,070 E
735,245 N
GROUND LEVEL (mOD) 70.35

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.10

DATE COMMENCED 13/05/2022
DATE COMPLETED 13/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												70.05		0.30	TOPSOIL.	
													2		Very soft to soft grey slightly sandy gravelly silty CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
1							173307	B D	1.00	5/300mm			1	1.50		
												68.85			Soft to firm grey slightly sandy slightly gravelly clayey SILT with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
2							173308	B D	2.00	8/300mm			1 2			
	2.70													3.00		
3		45	0	0			173309	B	3.00	50/75mm		67.35	3		Very dense grey slightly silty slightly sandy GRAVEL with high cobble content. Sand is fine. Gravel is angular to subangular, medium to coarse, limestone. Cobbles are angular to subangular, limestone.	
	3.80						173310	B	3.70	50/75mm		66.65		3.70		
4		0	0	0						50/30mm					Obstruction	
5															SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY with occasional cobbles	
	5.70													5.70		
6		80	32	22				C	6.00			64.65			Strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy (argillaceous) limestone with very local subordinate layers of calci-siltite (sandy) limestone), slightly weathered to very locally moderately weathered at fissile shale zones (at 7.05-7.13m).	
	6.20							C	6.40							
7		100	61	36												
	7.05															
		100	80	58				C	7.40							
	7.70															
8		100	85	85				C	7.90							
								C	8.20							
	8.35														Discontinuities are medium to closely spaced, smooth to locally rough, planar. Apertures are tight to locally moderately open, locally clay-smeared and filled (at 5.70-5.90m), locally calcite-veined (1-2mm thick). Dips are 20-40° & locally 75°.	
		100	81	43												
9	9.05															
		100	70	49												
10	10.10													10.10		
												60.25			End of Borehole at 10.1 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
3.6	3.7	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.70	1.70				Slow
3.00	3.00	3.50	2.80	20	Slow
3.70	3.70		1.00	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
13-05-22	10.10	5.70	0.20	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 10/05/2022 to 11/05/2022. Hole cased 0.00-5.70m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH152315
SHEET Sheet 1 of 1

CO-ORDINATES(_) 687,167 E
735,193 N
GROUND LEVEL (mOD) 70.10

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 4.00

DATE COMMENCED 05/05/2022
DATE COMPLETED 06/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY WB
PROCESSED BY AG

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Firm to stiff brown mottled light grey sandy slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, limestone.	
1							178031	B D	1.00	15/300mm		68.90		1.20		
2							178032	B D	2.00	50/75mm					Firm to very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Gravel is subangular to subrounded, fine to coarse, limestone.	
3							178033	B D	3.00	9/300mm			1			
4							178034	B	4.00	50/75mm		66.10	1	4.00	Obstruction End of Borehole at 4 (m)	
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.8	2.2	0100	
4	4	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.00	4.00		3.50	20	No Water Strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**HOLE NO.**	**BH152702**
		SHEET	Sheet 1 of 2
CO-ORDINATES(_)	687,479 E 734,982 N	**RIG TYPE**	GEO-405 & Dando 2000
GROUND LEVEL (mOD)	70.57	**RC FLUSH MEDIUM**	Air/Mist
		CASING DIAMETER (mm)	200
CLIENT	Irish Water	**CORE DIAMETER (mm)**	78
ENGINEER	Eriva	**BOREHOLE DEPTH (m)**	10.00
		DATE COMMENCED	04/05/2022
		DATE COMPLETED	04/05/2022
		BORED BY	IGSL - AK & WB
		PROCESSED BY	D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
												70.27		0.30	TOPSOIL.	
															Soft to firm orange brown mottled grey sandy CLAY with low cobble content.	
1							178022	B D	1.00	10/300mm				1.30		
												69.27			Stiff dark grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subangular, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
2							178023	B D	2.00	9/300mm						
3							178024	B	3.00	31/300mm				3.50		
										50/75mm		67.07			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly cobbly CLAY	
4										12/300mm						
5																
6										26/300mm			1	6.50		
	6.50	100	67	14				C	6.70			64.07			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 9.09-9.13m).	
7																
8	8.00	100	47	10												
9	9.50	100	100	82				C	9.40							
10	10.00											60.57		10.00	Discontinuities are medium to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-6mm thick). Dips are	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
3.5	3.5	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
6.30	6.30				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-05-22	10.00	6.50	3.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 27/04/2022 to 04/05/2022. Hole cased 0.00-6.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH152702
SHEET Sheet 2 of 2

CO-ORDINATES(_) 687,479 E
734,982 N
GROUND LEVEL (mOD) 70.57

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 04/05/2022
DATE COMPLETED 04/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															subhorizontal & locally 70-75°.	
															End of Borehole at 10 (m)	
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 27/04/2022 to 04/05/2022. Hole cased 0.00-6.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH152938
SHEET Sheet 1 of 1

CO-ORDINATES(_) 687,712 E, 734,931 N
GROUND LEVEL (mOD) 72.60

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 04/05/2022
DATE COMPLETED 04/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Soft brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded, fine to coarse, limestone.	
1							178025	B D	1.00	7/300mm 16/300mm				1.80		
2							178026	B D	2.00	12/300mm		70.80			Firm to stiff, locally soft, brown slightly sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
3							178027	B D	3.00	7/300mm			1			
4							178028	B D	4.00	24/300mm				4.20		
										8/300mm		68.40			Stiff to very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine. Gravel is subangular to angular, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
5							178029	B D	5.00	24/300mm			1 2			
6							178030	B	6.00	50/300mm				6.80		
7										50/75mm 3/300mm		65.80			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly cobbly CLAY	
8																
9										16/300mm			3			
														10.00		
10										23/300mm		62.60			End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6.8	6.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.70	3.70				Slow
5.80	5.80		5.40	20	Slow
9.20	9.20				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-05-22	10.00	10.00	8.90	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 04/05/2022 to 04/05/2022. Hole cased 0.00-10.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH153150
SHEET Sheet 1 of 2

CO-ORDINATES(_) 687,854 E
734,763 N
GROUND LEVEL (mOD) 71.08

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 29/04/2022
DATE COMPLETED 29/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Soft light brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
1							178017	B D	1.00	7/300mm						
2							178018	B D	2.00	6/300mm		69.08		2.00		
														2.50	Stiff brown slightly sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
3							178019	B D	3.00	8/300mm		68.58				
4							178020	B D	4.00	35/300mm					Firm to very stiff dark grey slightly sandy gravelly silty CLAY with medium cobble content. Gravel is subangular to subrounded, fine to coarse, limestone.	
5							178021	B D	5.00	50/75mm			1	5.20		
												65.88			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly cobbly CLAY	
6										32/300mm						
7													2	7.50		
	7.50									25/20mm		63.58			Returns of GRAVEL. Gravel is angular to subrounded fine to coarse of muddy limestone	
8		40	9	0										8.35		
	8.50				600							62.73			Very strong to strong, medium to thinly bedded, grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered.	
9		100	93	87				C	9.30							
								C	9.70					10.00		
10	10.00											61.08			Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open,	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
5.2	5.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.00	5.00		4.80	20	Slow
7.30	7.30				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
29/04/2022	9.00	6.50	9.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
29-04-22	10.00	8.50	7.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 28/04/2022 to 28/04/2022. Hole cased 0.00-8.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH153150
SHEET Sheet 2 of 2

CO-ORDINATES(_) 687,854 E
734,763 N
GROUND LEVEL (mOD) 71.08

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 29/04/2022
DATE COMPLETED 29/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															locally clay-smeared. Dips are 10-20° & locally 70-75°.	
12															End of Borehole at 10 (m)	
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
29/04/2022	9.00	6.50	9.50	50mm SP

REMARKS CP Drilled from 28/04/2022 to 28/04/2022. Hole cased 0.00-8.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH155634
SHEET Sheet 1 of 2

CO-ORDINATES(_) 689,591 E
733,315 N
GROUND LEVEL (mOD) 69.43

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 22/08/2022
DATE COMPLETED 22/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
												68.93		0.50	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy CLAY	
										33/300mm					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown cobbly CLAY	
										50/250mm				3.50		
												65.93		3.75	SYMMETRIX DRILLING: No recovery, observed by driller as returns of black sandy gravelly CLAY	
												65.68		3.90	SYMMETRIX DRILLING: No recovery, observed by driller as returns of BOULDER	
												65.53			SYMMETRIX DRILLING: No recovery, observed by driller as returns of black sandy gravelly CLAY	
										56/45mm			1	5.20	SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY with cobbles	
												64.23				
										60/85mm				7.10	SYMMETRIX DRILLING: No recovery, observed by driller as returns of silty GRAVEL with cobbles	
												62.33				
										50/80mm						
										50/0mm						
										59/10mm				10.70		
												58.73				

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.30	5.30				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-9.00m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH155634
SHEET Sheet 2 of 2

CO-ORDINATES(_) 689,591 E
733,315 N
GROUND LEVEL (mOD) 69.43

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 22/08/2022
DATE COMPLETED 22/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK *(continued)*	
12																
13																
14														15.00		
15												54.43			End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-08-22	15.00	9.00	6.85	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-9.00m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH156922
SHEET Sheet 1 of 2

CO-ORDINATES(_) 690,606 E
732,611 N
GROUND LEVEL (mOD) 67.09

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 05/04/2022
DATE COMPLETED 06/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												66.69		0.40	Topsoil	
1							173018 173025	B D	1.00	2/300mm		65.59		1.50	Very soft grey sandy SILT	
2							173019 173026	B D	2.00	12/300mm					Firm grey black gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular of predominately limestone	
3							173020 173027	B D	3.00	19/300mm			2		3.00 - 3.00 Falling Head Test Performed	
4							173021 173028	B D	4.00	38/300mm		63.09		4.00	Very stiff black gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular of predominately limestone	
5							173022	B	5.00	50/225mm			1			
6							173023	B	6.00	50/75mm			1			
7							173024	B	7.00	50/75mm			2	7.20		
8										32/300mm		59.89 59.69		7.40	Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of COBBLE	
9										32/300mm		58.59		8.50	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black silty sandy GRAVEL	
10										54/160mm		57.79		9.30	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black silty gravelly CLAY SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
7.2	7.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
6.00	6.00	6.20	5.80	20	Moderate
7.20	7.20		3.50	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
04/04/2022	8.50	7.00	8.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-04-22	7.20	0.00	3.50	End of Borehole

REMARKS CP Drilled from 04/04/2022 to 04/04/2022. Hole cased 0.00-14.20m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH156922
SHEET Sheet 2 of 2

CO-ORDINATES(_) 690,606 E, 732,611 N
GROUND LEVEL (mOD) 67.09

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 05/04/2022
DATE COMPLETED 06/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY *(continued)*	
12										50/45mm						
13																
14	14.20	100	0	0								52.89		14.20	Stiff black slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of limestone.	
15	15.00											52.09		15.00	End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
06-04-22	15.00	14.20	14.20	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
04/04/2022	8.50	7.00	8.50	50mm SP

REMARKS CP Drilled from 04/04/2022 to 04/04/2022. Hole cased 0.00-14.20m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH156988
SHEET Sheet 1 of 2

CO-ORDINATES(_) 690,670 E
732,582 N
GROUND LEVEL (mOD) 67.66

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 04/04/2022
DATE COMPLETED 04/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												67.56		0.10	Topsoil	
1							173009	D B	1.00	13/300mm					Firm to stiff brown gravelly sandy CLAY with medium cobble content. Gravel and cobbles are subrounded to subangular predominately of limestone	
2							173010	D B	2.00	23/300mm				2.50		
												65.16			Very stiff grey/black gravelly sandy CLAY with medium cobble and boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
3							173011	D B	3.00	48/300mm						
4							173012	D B	4.00	50/225mm						
5							173013	D B	5.00	50/225mm			1			
6							173014	D B	6.00	50/75mm						
7							173015	D B	7.00	50/75mm			1	7.10		
										116/300mm		60.56		7.30	Obstruction	
												60.36		7.60	SYMMETRIX DRILLING: No recovery, observed by driller as returns of COBBLE	
8												60.06			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY	
													2	8.70		
9										50/300mm		58.96			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown/black clayey sandy GRAVEL	
														9.60		
												58.06			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown/orange mottled clayey sandy gravelly SILT	
10										23/300mm						

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
7.1	7.1	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
7.00	7.00		5.00	20	Moderate
8.50	8.50	8.90			Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
31-01-22	6.00	6.00	1.50	End of Borehole
31-01-22	7.10	0.00	5.00	End of Borehole

REMARKS CP Drilled from 31/01/2022 to 31/01/2022. Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH156988
SHEET Sheet 2 of 2

CO-ORDINATES(_) 690,670 E
732,582 N
GROUND LEVEL (mOD) 67.66

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 04/04/2022
DATE COMPLETED 04/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11												56.26		11.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/light brown silty sandy gravelly CLAY *(continued)*	
12										56/300mm					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black silty sandy gravelly CLAY	
13										109/300mm				13.80		
14												53.86			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
15										50/40mm		52.66		15.00	End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-04-22	15.00	15.00	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 31/01/2022 to 31/01/2022. Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157032
SHEET Sheet 1 of 2

CO-ORDINATES(_) 690,705 E 732,555 N
GROUND LEVEL (mOD) 68.57

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 16.00

DATE COMMENCED 31/03/2022
DATE COMPLETED 01/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												68.47		0.10	Topsoil	
							174901	D B	0.50						Soft brown gravelly sandy CLAY. Gravel is subrounded to subangular	
1							174902	D B	1.20	8/300mm				2.00		
2							174903	D B	2.00	21/300mm		66.57			Stiff brown gravelly sandy CLAY	
														3.00		
3							174904	D B	3.00	40/300mm		65.57			Very stiff grey/black gravelly sandy CLAY with medium cobble and boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to angular	
4							174905	D B	4.00	50/150mm						
5							174906	D B	5.00	50/225mm						
6							174907	D B	6.00	50/75mm						
														6.90		
7										50/75mm		61.67		7.20	Obstruction	
										121/300mm		61.37			SYMMETRIX DRILLING: No recovery, observed by driller as returns of BOULDER	
8															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
9										50/45mm						
														9.80		
10												58.77		10.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of COBBLE	
												58.57		10.40		
										162/300mm		58.17			SYMMETRIX DRILLING: No recovery, observed by driller as	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6.9	6.9	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
29-03-22	2.00	0.00	0.70	Start of Day
29-03-22	6.90	0.00	dry	End of Borehole

REMARKS CP Drilled from 24/03/2022 to 29/03/2022. Hole cased 0.00-14.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157032
SHEET Sheet 2 of 2

CO-ORDINATES(_) 690,705 E 732,555 N
GROUND LEVEL (mOD) 68.57

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 16.00

DATE COMMENCED 31/03/2022
DATE COMPLETED 01/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															returns of grey/black gravelly CLAY	
12										115/170mm					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles *(continued)*	
13												55.57	1	13.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown silty sandy gravelly CLAY	
14	14.50									62/300mm		54.87		13.70	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black clayey sandy GRAVEL	
15		100	85	68				C	14.60			54.47		14.10	SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible ROCK	
16	16.00							C	15.40			54.07		14.50	Strong to medium strong, medium to thinly bedded (to thinly laminated), pale grey/dark grey/black, fine-grained, LIMESTONE (predominantely argillaceous with some sandy layers), fresh to very locally slightly weathered. Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared and filled (at 15.22-15.26m & 15.93-16.00m), locally slightly iron-oxide stained. Dips are subhorizontal & locally 40°.	
17												52.57		16.00	End of Borehole at 16 (m)	
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
13.40	13.40				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
01-04-22	16.00	14.50	Dry	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 24/03/2022 to 29/03/2022. Hole cased 0.00-14.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157543
SHEET Sheet 1 of 2

CO-ORDINATES(_) 691,183 E, 732,400 N
GROUND LEVEL (mOD) 65.59

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 28/04/2022
DATE COMPLETED 28/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Soft orange brown mottled grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium.	
1							178013	B D	1.00	7/300mm			▼1	1.50		
												64.09			Firm grey slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular to subrounded, limestone.	
2							178014	B D	2.00	12/300mm		63.59		2.00		
3							178015	B D	3.00	31/300mm					Firm to stiff dark grey slightly sandy slightly gravelly silty CLAY with low cobble content. Gravel is subangular to subrounded, fine to medium, limestone. Cobbles are subangular to subrounded, limestone.	
4							178016	B D	4.00	50/75mm				4.20		
												61.39			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly cobbly CLAY	
5																
6										31/300mm				6.00		
												59.59		6.50	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly cobbly CLAY	
	6.50							C C	6.60 6.80			59.09				
7		100	65	51											Very strong to strong, medium to thinly bedded, blueish grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone,, local stylolites, localised chert formation), fresh to locally slightly (solution, Karst) weathered. Discontinuities are medium to closely spaced, smooth to rough, planar to undulose. Apertures are tight to locally moderately open, locally clay-smeared, clay/gravel-filled (at 7.07-7.19m, 8.27-8.33m & 9.66-9.92m) locally calcite-veined (1-20mm thick). Dips are subhorizontal, 30° & locally 70-75°.	
8	8.00							C	8.40							
		100	78	67												
9	9.50							C	9.60							
		100	54	30												
10	10.00											55.59		10.00		

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
4.2	4.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.30	1.30				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
28/04/2022	4.00	1.50	4.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-04-22	10.00	6.50	0.90	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 26/04/2022 to 26/04/2022. Hole cased 0.00-6.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157543
SHEET Sheet 2 of 2

CO-ORDINATES(_) 691,183 E
732,400 N
GROUND LEVEL (mOD) 65.59

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 28/04/2022
DATE COMPLETED 28/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															End of Borehole at 10 (m)	
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
28/04/2022	4.00	1.50	4.50	50mm SP

REMARKS CP Drilled from 26/04/2022 to 26/04/2022. Hole cased 0.00-6.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157862
SHEET Sheet 1 of 2

CO-ORDINATES(_) 691,343 E
732,117 N
GROUND LEVEL (mOD) 68.18

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.40

DATE COMMENCED 19/04/2022
DATE COMPLETED 19/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												68.08		0.10	Topsoil	
1							173041	D B	1.00	10/300mm					Firm grey brown gravelly sandy CLAY with medium cobble and low boulder content. Gravel is fine to coarse. Gravel and cobbles and subrounded to subangular	
														1.80		
2							173042	D B	2.00	50/300mm		66.38 66.18		2.00	Grey brown gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles and subrounded to subangular	
														3.00	Dense grey clayey sandy GRAVEL with horizons of clay	
3										50/75mm		65.18		3.40	COBBLES/BOULDERS	
							173043	B	3.40			64.78			Dense grey clayey sandy GRAVEL with horizons of clay, medium cobble and low boulder content.	
4							173045	B	4.00	47/300mm			1	4.40		
										50/75mm		63.78		4.50	Very stiff black gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular of predominately limestone	
5												63.68 63.38		4.80	Obstruction	
										36/50mm		62.28		5.90	SYMMETRIX DRILLING: No recovery, observed by driller as returns of BOULDER	
6															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black silty sandy GRAVEL	
7										50/35mm			2	7.60	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY	
												60.58		8.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible ROCK	
8	8.00	100	71	48				C	8.30			60.18			Strong to medium strong, medium to thinly bedded, pale grey/dark grey/black mottled, fine-grained, LIMESTONE (stromatactic structure, dolomitised, local stylolites, common dolomite/calcite veining), fresh to very locally slightly weathered.	
9	9.50															
10		100	88	88				C C	9.80 10.00					10.40		
	10.40											57.78			Discontinuities are medium to	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
2.4	2.6	0030	
3	3.4	0100	
4.5	4.5	0030	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.50	4.50		4.40	20	Slow
7.60	7.60				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-04-22	4.50	0.00	4.40	End of Borehole
19-04-22	10.40	8.00	3.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 05/04/2022 to 05/04/2022. Hole cased 0.00-8.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157862
SHEET Sheet 2 of 2

CO-ORDINATES(_) 691,343 E 732,117 N
GROUND LEVEL (mOD) 68.18

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.40

DATE COMMENCED 19/04/2022
DATE COMPLETED 19/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared and filled (at 9.65-9.75m), locally slightly iron-oxide stained, locally calcite/dolomite-veined (1-30mm thick). Dips are subhorizontal, 30° & locally 70-75°.	
12																
13															End of Borehole at 10.4 (m)	
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 05/04/2022 to 05/04/2022. Hole cased 0.00-8.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157953
SHEET Sheet 1 of 2

CO-ORDINATES(_) 691,320 E
732,001 N
GROUND LEVEL (mOD) 67.16

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 22/04/2022
DATE COMPLETED 22/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												67.06		0.10	Topsoil	
															Soft grey brown sandy silty CLAY	
1							173045	D B	1.00	6/300mm			1	1.50		
												65.66			loose grey brown fine SAND	
2							173046	D B	2.00	9/300mm						
													1	3.00		
3							173047	D B	3.00	7/300mm		64.16		3.20	Very soft grey sandy SILT	
												63.96			Firm grey sandy gravelly CLAY	
4							173048	D B	4.00	12/300mm			2			
5							173049	D B	5.00	22/300mm						
														6.00		
6	6.20									50/75mm		61.16			Obstruction	
		100	77	75	540			C	6.60						Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 11.12-11.15m).	
7								C	7.30							
	7.70							C	7.40							
8		100	94	77	840			C	8.00							
9	9.20							C	9.40							
		100	83	69											Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-100mm thick). Dips	
10	10.70															

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6	6	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.50	1.50				Slow
4.50	4.50		3.00	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-04-22	6.00	0.00	3.00	End of Borehole

REMARKS CP Drilled from 22/04/2022 to 22/04/2022. Hole cased 0.00-6.20m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157953
SHEET Sheet 2 of 2

CO-ORDINATES(_) 691,320 E
732,001 N
GROUND LEVEL (mOD) 67.16

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 22/04/2022
DATE COMPLETED 22/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11		100	88	65											are 10-20° & locally 70-75°. Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 11.12-11.15m). *(continued)*	
12	12.20															
13		100	90	74												
14	13.70	100	65	33										15.00		
15	15.00											52.16			End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-04-22	15.00	6.20	1.40	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 22/04/2022 to 22/04/2022. Hole cased 0.00-6.20m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157977
SHEET Sheet 1 of 2

CO-ORDINATES(_) 691,336 E
732,004 N
GROUND LEVEL (mOD) 66.04

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 13/04/2022
DATE COMPLETED 14/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												65.94		0.10	Topsoil	
															Grey brown gravelly sandy CLAY with low rounded to subrounded cobble content	
1							173050	D B	1.00	12/300mm 10/300mm		65.04 64.84		1.00 1.20	Loose grey sandy GRAVEL with horizons of brown silty clay	
															Dense grey sandy GRAVEL. Gravel is fine to coarse rounded to subangular predominately of limestone	
2							178001	D B	2.00	32/300mm			1			
3							178002	D B	3.00	57/300mm 47/300mm			1			
4							178003	D B	4.00	48/300mm 21/300mm		62.04		4.00	Very stiff black gravelly sandy CLAY with medium cobble and low boulder content. Gravel is angular to subangular, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
5							178004	D B	5.00	52/225mm			2	5.20	Obstruction	
												60.84			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black sandy gravelly CLAY	
6										36/10mm			3	6.30		
	6.40											59.74		6.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible ROCK	
7		100	77	43				C	6.80			59.64			Very strong to strong, thickly to thinly bedded, grey/dark grey/black, fine-grained, LIMESTONE (predominantely argillaceous with local sandy layers, local stylolites, localised chert formation), fresh to locally slightly weathered.	
	7.50															
8		100	86	42				C	8.00							
	8.80															
9		100	96	92	510 570			C	9.00						Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-2mm thick). Dips are subhorizontal & very locally 70-75°.	
10	10.30															

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.2	4	0100	Hard Stratum boring
5.2	5.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.30	2.30	3.40			Slow
5.00	5.00		3.50	20	Moderate
6.30	6.30				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
20-04-22	5.20	0.00	3.50	End of Borehole

REMARKS CP Drilled from 13/04/2022 to 14/04/2022. Hole cased 0.00-6.40m. Erect Covid-19 Safe Zone - 1hr.

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH157977
SHEET Sheet 2 of 2

CO-ORDINATES(_) 691,336 E
732,004 N
GROUND LEVEL (mOD) 66.04

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 13/04/2022
DATE COMPLETED 14/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11		100	96	72											Very strong to strong, thickly to thinly bedded, grey/dark grey/black, fine-grained, LIMESTONE (predominantly argillaceous with local sandy layers, local stylolites, localised chert formation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-2mm thick). Dips are subhorizontal & very locally 70-75°. *(continued)*	
	11.80															
12		100	94	91	760											
13	13.10	100	90	65												
	13.50				850											
14		100	98	91												
					550.000000000001											
15	15.10											50.94		15.10	End of Borehole at 15.1 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
			Hard Stratum boring

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
14-04-22	15.10	6.40	2.00	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 13/04/2022 to 14/04/2022. Hole cased 0.00-6.40m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH160190
SHEET Sheet 1 of 2

CO-ORDINATES(_) 693,315 E
731,390 N
GROUND LEVEL (mOD) 69.84

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 12.00

DATE COMMENCED 19/08/2022
DATE COMPLETED 22/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												69.44		0.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy CLAY	
1															SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY with occasional cobbles	
2										24/300mm		68.14		1.70	SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY with occasional cobbles and boulders	
3										44/300mm						
4										50/225mm			1			
5																
6										50/225mm						
7										50/5mm						
8														8.80		
9												61.04			SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.60	4.50				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-7.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. **BH160190**
SHEET Sheet 2 of 2

CO-ORDINATES(_) 693,315 E
731,390 N
GROUND LEVEL (mOD) 69.84

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 12.00

DATE COMMENCED 19/08/2022
DATE COMPLETED 22/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK *(continued)*	
														12.00		
12												57.84			End of Borehole at 12 (m)	
13																
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-08-22	12.00	7.50	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-7.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH160675
SHEET Sheet 1 of 1

CO-ORDINATES(_) 693,705 E
731,098 N
GROUND LEVEL (mOD) 58.45

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 3.80

DATE COMMENCED 05/04/2022
DATE COMPLETED 06/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Bulter
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.50	Topsoil	
												57.95			Firm grey brown slightly gravelly sandy CLAY with low cobble content	
1							173025	D B	1.00	12/300mm						
2							173026	D B	2.00	9/300mm				2.00		
												56.45			Stiff grey gravelly sandy CLAY	
3							173027	D B	3.00	20/300mm				3.80		
												54.65			Obstruction End of Borehole at 3.8 (m)	
4																
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
3.6	3.8	0100	
3.8	3.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
06-04-22	3.80	0.00	0.50	End of Borehole

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH160756
SHEET Sheet 1 of 1

CO-ORDINATES(_) 693,712 E
731,014 N
GROUND LEVEL (mOD) 57.83

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 2.90

DATE COMMENCED 07/04/2022
DATE COMPLETED 07/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Bulter
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												57.43		0.40	Topsoil	
														0.90	Light brown sandy silty CLAY	
1							173028	D B	1.00	11/300mm		56.93	1		Dense grey brown silty sandy GRAVEL	
2							173029	D B	2.00	50/75mm			1	2.90		
												54.93			Obstruction End of Borehole at 2.9 (m)	
3																
4																
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
2.4	2.6	0100	
2.75	2.9	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90	2.90		1.00	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
07-04-22	2.90	0.00	1.00	End of Borehole

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hand Service inspection Pit

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161062
SHEET Sheet 1 of 1

CO-ORDINATES(_) 693,827 E
730,778 N
GROUND LEVEL (mOD) 58.24

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 6.20

DATE COMMENCED 11/04/2022
DATE COMPLETED 11/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Bulter
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												58.14		0.10	Topsoil Soft brown gravelly sandy CLAY with medium cobble content	
1							173035	D B	1.00	6/300mm				1.50		
2							173036	D B	2.00	11/300mm		56.74			Firm grey gravelly sandy SILT	
3							173037	D B	3.00	31/300mm				3.20		
4							173038	D B	4.00	22/300mm		55.04			Very stiff black gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular of predominately limestone	
5							173039	D B	5.00	47/300mm						
6							173040	B	6.00	50/75mm				6.20		
												52.04			Obstruction End of Borehole at 6.2 (m)	
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6	6.2	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
11/04/2022	3.20	1.50	3.20	50mm SP

REMARKS Hand Service inspection Pit

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161293
SHEET Sheet 1 of 1

CO-ORDINATES(_) 694,053 E
730,665 N
GROUND LEVEL (mOD) 58.15

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 5.50

DATE COMMENCED 08/04/2022
DATE COMPLETED 08/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Bulter
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												58.05		0.10	Topsoil	
1							173030	D B	1.00	9/300mm					Firm brown gravelly sandy CLAY with medium cobble content	
2							173031	D B	2.00	22/300mm		56.15	1	2.00	Stiff brown gravelly sandy CLAY	
3							173032	B	3.00	12/300mm		55.35		2.80	Medium dense grey brown clayey sandy GRAVEL	
												54.85		3.30	Brown gravelly sandy CLAY	
4							173033	B	4.00	25/300mm		54.25		3.90	Stiff black gravelly sandy CLAY with medium cobble content. Gravel is fine to coarse. Gravel and cobbles are subrounded to subangular of predominately limestone	
5							173034	B	5.00	50/75mm			1	5.50		
												52.65			End of Borehole at 5.5 (m)	
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
5.1	5.5	0130	
5.5	5.5	0030	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.10	5.50		2.50	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-04-22	5.50	0.00	2.50	End of Borehole

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hand Service inspection Pit

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161471
SHEET Sheet 1 of 2

CO-ORDINATES(_) 694,168 E
730,622 N
GROUND LEVEL (mOD) 56.71

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 11/04/2022
DATE COMPLETED 12/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												56.61		0.10	SYMMETRIX DRILLING: No recovery, observed by driller as returns of TOPSOIL	
															SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown silty SAND	
1										9/300mm				1.80		
												54.91	▼1		SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown silty sandy GRAVEL	
2																
										18/300mm						
3														3.70		
												53.01		4.20	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey sandy SILT	
4												52.51				
										24/300mm				4.70	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black silty sandy gravelly CLAY	
5												52.01				
															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
6										50/185mm						
														6.60		
												50.11		6.90	SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black clayey sandy GRAVEL	
7												49.81				
										30/30mm					SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
8																
										23/15mm						
9																
10										50/115mm						

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.30	2.30				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161471
SHEET Sheet 2 of 2

CO-ORDINATES(_) 694,168 E
730,622 N
GROUND LEVEL (mOD) 56.71

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)

DATE COMMENCED 11/04/2022
DATE COMPLETED 12/04/2022

CLIENT Irish Water
ENGINEER Eriva

CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles *(continued)*	
12										50/70mm						
13										21/20mm						
14														15.00		
15										50/35mm		41.71			End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-04-22	15.00	15.00	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161516
SHEET Sheet 1 of 2

CO-ORDINATES(_) 694,222 E, 730,621 N
GROUND LEVEL (mOD) 56.79

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 07/04/2022
DATE COMPLETED 08/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
												56.49		0.30	SYMMETRIX DRILLING: No recovery, observed by driller as returns of TOPSOIL	
															SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown silty SAND	
										5/300mm		55.39		1.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey sandy SILT	
														2.70		
										6/300mm		54.09		3.30	SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey clayey gravelly SILT	
												53.49		3.50		
												53.29			SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey silty sandy GRAVEL	
										5/300mm					SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey clayey gravelly SILT	
										4/300mm		50.79		6.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey sandy SILT	
													1	7.30		
										19/300mm		49.49		8.60	SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey silty sandy GRAVEL	
										45/300mm		48.19			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
													2	10.40		
										50/70mm		46.39				

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
7.40	7.40	8.60			Slow
10.20	10.20				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-15.10m. Erect Covid-19 Safe Zone - 1hr.

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161516
SHEET Sheet 2 of 2

CO-ORDINATES(_) 694,222 E
730,621 N
GROUND LEVEL (mOD) 56.79

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.10

DATE COMMENCED 07/04/2022
DATE COMPLETED 08/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark grey clayey sandy GRAVEL *(continued)*	
12										32/65mm						
13										30/25mm				13.80		
14												42.99			SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown gravelly CLAY	
15										50/60mm				15.10		
												41.69			End of Borehole at 15.1 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-04-22	15.10	15.10	2.80	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-15.10m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161865
SHEET Sheet 1 of 1

CO-ORDINATES(_) 694,564 E, 730,544 N
GROUND LEVEL (mOD) 55.66

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 9.00

DATE COMMENCED 13/06/2022
DATE COMPLETED 14/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY WB
PROCESSED BY AG

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Very soft grey slightly sandy slightly organic silty CLAY	
1							178321	B D	1.00	6/300mm			1	1.50		
												54.16			Soft grey slightly sandy SILT.	
2							178322	B D	2.00	6/300mm						
3							178323	B D	3.00	10/300mm				3.00		
												52.66			Firm grey sandy SILT interbedded with silty fine SAND	
4							178324	B	4.00	15/300mm				4.00		
												51.66			Medium dense grey silty sandy GRAVEL with medium cobble content. Gravel is subangular to subrounded, fine to coarse, limestone. Cobbles are subangular tosubrounded, limestone.	
5							178325	B	5.00	26/300mm		51.16		4.50	Stiff grey slightly sandy laminated SILT.	
6							178326	B	6.00	21/300mm						
7							178327	B	7.00	38/300mm						
8							178328	B	8.00	30/300mm						
														9.00		
9							178329	B	9.00	30/300mm		46.66			End of Borehole at 9 (m)	
10							178330	B	10.00	46/300mm						

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.00	2.00	3.00	1.50	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH161953
SHEET Sheet 1 of 1

CO-ORDINATES(_) 694,642 E
730,498 N
GROUND LEVEL (mOD) 55.25

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 15/06/2022
DATE COMPLETED 15/06/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY WB
PROCESSED BY AG

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Grass over very soft grey slightly sandy slightly organic silty CLAY.	
1							178331	B D	1.00	5/300mm			2	1.80		
2							178332	B D	2.00	5/300mm		53.45			Very soft grey slightly sandy slightly organic SILT with occasional shells	
3							178333	B D	3.00	11/300mm		52.25		3.00	Firm grey sandy SILT	
4							178334	B D	4.00	16/300mm		51.25	1	4.00	Firm to stiff grey slightly sandy laminated SILT.	
5							178335	B D	5.00	20/300mm						
6							178336	B D	6.00	24/300mm						
7							178337	B D	7.00	18/300mm						
8							178338	B D	8.00	18/300mm						
9							178339	B D	9.00	19/300mm			3	10.00		
10							178340	B D	10.00	22/300mm		45.25			End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
4.80	4.80	6.00	4.00	20	Slow
10.00	10.00		1.50	20	Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
HOLE NO.	**BH163697**
SHEET	Sheet 1 of 2
CO-ORDINATES(_)	696,235 E 729,927 N
GROUND LEVEL (mOD)	55.73
RIG TYPE	GEO-405 & Dando 2000
RC FLUSH MEDIUM	Air/Mist
CASING DIAMETER (mm)	200
CORE DIAMETER (mm)	N/A
BOREHOLE DEPTH (m)	15.00
DATE COMMENCED	26/04/2022
DATE COMPLETED	26/04/2022
CLIENT	Irish Water
ENGINEER	Eriva
BORED BY	IGSL - AK&WB
PROCESSED BY	D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												55.63		0.10	Topsoil	
															MADE GROUND comprised of grey sandy gravelly CLAY with steel, concrete and cast iron fragments	
1							178007	D B	1.00	9/300mm			1			
2							178008	D B	2.00	13/300mm		53.73		2.00	Stiff becoming very stiff black gravelly sandy CLAY with medium cobble and low boulder content. Gravel is angular to subangular, fine to coarse, limestone. Cobbles are angular to subangular, limestone.	
3							178009	D B	3.00	32/300mm			1			
4							178010	D B	4.00	34/300mm						
5							178011	D B	5.00	46/300mm			2	5.40		
												50.33			Very stiff grey gravelly sandy CLAY	
6							178012	D B	6.00	48/300mm			3	6.30		
												49.43			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	
7																
										10/300mm						
8																
9										3/300mm						
10													4			
										2/300mm						

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
6.3	6.3	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.10	3.10		1.70	20	Moderate
3.40	3.40				Slow
6.00	6.00		5.50	20	Moderate
10.30	10.30				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
26/04/2022	5.50	3.50	5.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
25-04-22	6.30	0.00	1.70	End of Borehole

REMARKS CP Drilled from 25/04/2022 to 25/04/2022 Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH163697
SHEET Sheet 2 of 2

CO-ORDINATES(_) 696,235 E
729,927 N
GROUND LEVEL (mOD) 55.73

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 26/04/2022
DATE COMPLETED 26/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK&WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY *(continued)*	
12										6/300mm						
13										11/300mm						
14														15.00		
15										14/300mm		40.73			End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
26-04-22	15.00	15.00	Dry	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
26/04/2022	5.50	3.50	5.50	50mm SP

REMARKS CP Drilled from 25/04/2022 to 25/04/2022 Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH163860
SHEET Sheet 1 of 1

CO-ORDINATES(_) 696,385 E 729,858 N
GROUND LEVEL (mOD)

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 27/04/2022
DATE COMPLETED 27/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.10	Topsoil	
														0.40	Brown sandy CLAY	
													1		Loose grey brown fine SAND	
1							178005	D	1.00	3/300mm				1.20		
								B					1		Very soft grey sandy CLAY. Sand is fine	
							178006	D	1.80	50/75mm				1.80		
2								B					2		Obstruction	
	2.50							C	2.50					2.50	SYMMETRIX DRILLING: No recovery, observed by driller as returns of cobbly CLAY	
3		100	44	23				C	3.10						Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 4.22-4.27m, 4.50-4.54m, 4.96-4.99m, 5.30-5.33m, 5.58-5.73m & 6.96-7.02m).	
4	4.00							C	4.20							
		100	61	41				C	4.40							
5																
	5.50															
6		100	68	61				C	5.80							
7	7.00														Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-8mm thick). Dips are 10-20° & locally 70-75°.	
		100	81	62		520										
8	8.50					539.999999999999										
9		100	87	51				C	8.90							
10	10.00													10.00	End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.8	1.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.50	1.50		1.00	20	Moderate
2.10	2.10				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-04-22	1.80	0.00	1.00	End of Borehole
27-04-22	10.00	2.50	2.40	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 25/04/2022 to 25/04/2022. Hole cased 0.00-2.50m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165006
SHEET Sheet 1 of 1

CO-ORDINATES(_) 697,403 E
730,086 N
GROUND LEVEL (mOD) 64.96

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 0.60

DATE COMMENCED 08/07/2022
DATE COMPLETED 11/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												64.56		0.40	TOPSOIL	
												64.36		0.60	Limestone BOULDER.	
															End of Borehole at 0.6 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
0.5	0.6	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 31/05/2022 to 31/05/2022. Hole cased 0.00-1.50m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165006A
SHEET Sheet 1 of 1

CO-ORDINATES(_) 697,403 E
730,086 N
GROUND LEVEL (mOD) 64.96

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 31/05/2022
DATE COMPLETED 31/05/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY PA
PROCESSED BY AG

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												64.66		0.30	TOPSOIL	
							179119	B D	0.50						Very stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble content. Gravel is angular to subangular, medium to coarse, limestone. Cobbles are angular, limestone.	
1							179120	B D	1.20	50/225mm						
	1.50							C	1.50					1.80		
2		100	60	36				C	2.00	50/0mm		63.16			Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-80mm thick). Dips are 10-20° & locally 40° & subvertical.	
3	2.95	100	85	65									1			
4	3.75	100	96	73				C	4.00						Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 2.91-2.98m 3.70-3.78m, 4.55-4.57m, 5.39-5.44m, 6.78-6.80m, 7.11-7.14m & 8.26-8.41m).	
	4.50	100	94	65				C	4.70							
5	5.30															
6		100	90	83				C	6.00							
	6.45															
7		100	95	86		550										
	7.75															
8		100	84	64												
	8.30															
9		100	80	65												
10	9.80											55.16		9.80	End of Borehole at 9.8 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.6	1.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.20	1.50				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
11/07/2022	5.50	2.00	6.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
11-07-22	9.80	1.50	6.80	Water level recorded 5 mins after end of drilling.

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165317
SHEET Sheet 1 of 1

CO-ORDINATES(_) 697,631 E, 730,183 N
GROUND LEVEL (mOD) 63.80

RIG TYPE Knebel & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 04/07/2022
DATE COMPLETED 12/07/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN & PA
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												63.50		0.30	TOPSOIL	
							179121	B D	0.50						Very stiff grey brown slightly sandy slightly gravelly silty CLAY with high cobble content. Gravel is angular to subangular, medium to coarse, limestone. Cobbles are angular, limestone.	
1							179122	B D	1.20	50/125mm						
	1.50	100	18	0						50/0mm		62.10		1.70	Returns of slightly weathered ROCK with clay/gravel layers at 2.04-2.13m, 2.18-2.21m, 2.56-2.60m & 2.84-2.90m	
2	2.00	100	75	40				C	2.30					2.90		
3	3.30	100	88	32								60.90			Very strong to medium strong, thickly to thinly bedded, grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.36-3.40m, 5.61-5.66m, 5.71-5.78m & 7.50-7.61m).	
	3.80	100	89	77												
4	4.70	100	100	91	530			C	5.30						Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-10mm thick). Dips are 20-30° & locally 60° & subvertical.	
5	5.60	100	78	63												
6	6.20	100	76	43				C	6.30							
7	7.70	100	90	71												
8	9.05	100	100	100												
9	9.45	100	76	47												
10	10.00											53.80		10.00	End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.5	1.7	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-07-22	10.00	2.40	5.85	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CP Drilled from 31/05/2022 to 31/05/2022. Hole cased 0.00-2.40m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165890
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,154 E
730,401 N
GROUND LEVEL (mOD) 63.76

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.20

DATE COMMENCED 18/08/2022
DATE COMPLETED 18/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.90	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy COBBLES	
1	0.90	100	39	0				C	0.90			62.86			Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 2.51-2.55m, 2.69-2.76m, 4.25-4.27m, 4.69-4.73m, 4.93-4.96m, 5.71-5.76m, 5.86-5.97m, 6.90-7.00m & 10.18-10.13m). Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared and clay/gravel-filled (at 0.90-1.15m & 1.31-1.36m) , locally calcite-veined (1-5mm thick). Dips are 10-20° & locally 75° & irregular.	
2	1.65	100	89	76				C	1.90				1			
3	2.45	100	49	0												
4	3.10	100	56	13				C	3.10							
5	3.85	100	86	15				C	4.00							
6	4.50	100	66	42												
7	5.75	100	56	28												
8	6.75	100	45	0												
9	6.95	100	97	97		650		C	7.00							
10	7.65	100	72	58		719.999999999999										
	8.85	100	90	47										10.20		
	10.20											53.56			End of Borehole at 10.2 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.80	0.90				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-08-22	10.20	0.90	2.12	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-0.90m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165906
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,184 E, 730,384 N
GROUND LEVEL (mOD) 64.01

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.95

DATE COMMENCED 17/08/2022
DATE COMPLETED 18/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														1.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy COBBLES	
1	1.00	100	58	39				C	1.50			63.01		1.25	Returns of brown gravelly CLAY. Gravel is angular to subrounded fine to coarse of limestone.	
								C	1.80			62.76	1		Very strong to medium strong (to weak where shale), thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.11-3.21m, 3.60-3.75, 6.32-6.36m & 7.42-7.49m). Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-2mm thick). Dips are 10-20° & locally 75°.	
2	2.00	100	23	0												
3	2.90	100	58	0				C	3.50							
4	4.25	100	73	34												
5	5.50	100	86	44												
6								C	6.50							
7	6.90	100	98	80	590											
	7.35	100	57	23												
8	8.30															
9		100	71	65										9.95		
10	9.95											54.06			End of Borehole at 9.95 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.80	1.80				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
18/08/2022	6.50	2.00	7.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-08-22	9.95	2.90	0.70	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-2.90m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH165960
SHEET Sheet 1 of 2

CO-ORDINATES(_) 698,218 E
730,361 N
GROUND LEVEL (mOD) 66.67

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 12.80

DATE COMMENCED 19/08/2022
DATE COMPLETED 19/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															Hand-dug INSPECTION PIT - See IP Log	
1														1.20		
												65.47			SYMMETRIX DRILLING: No recovery, observed by driller as returns of silty sandy CLAY	
2																
3														3.60		
												63.07			SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY	
4																
5													1	5.30		
												61.37		5.80	SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	
6	5.80	100	49	18				C	5.90			60.87				
								C	6.00							
7	6.60	100	49	29				C	6.05							
								C	6.10							
8	8.10	100	54	15				C	6.55							
9																
10	9.70	100	19	0												

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.30	5.30				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-5.80m. Hand-dug INSPECTION PIT 0.00-1.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. **BH165960**
SHEET Sheet 2 of 2

CO-ORDINATES(_) 698,218 E
730,361 N
GROUND LEVEL (mOD) 66.67

RIG TYPE GEO-205 & dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 12.80

DATE COMMENCED 19/08/2022
DATE COMPLETED 19/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - DH
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11	11.30														Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantly muddy limestone with subordinate calci-siltite limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 7.21-7.27m, 7.37-7.41m, 8.07-8.14m, 8.88-8.91m, 8.93-9.02m, 10.84-10.92m, 11.30-11.51m, 12.68-12.75m & 12.78-12.80m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-100mm thick). Dips are subhorizontal, 10-20° & locally subvertical. *(continued)*	
12		100	34	24												
13	12.80											53.87		12.80	End of Borehole at 12.8 (m)	
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-08-22	12.80	5.80	4.40	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-5.80m. Hand-dug INSPECTION PIT 0.00-1.20m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166006
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,248 E, 730,350 N
GROUND LEVEL (mOD) 64.13
CLIENT Irish Water
ENGINEER Eriva

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.10

DATE COMMENCED 11/08/2022
DATE COMPLETED 12/08/2022
BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Sample Type	Sample Depth (m)	Elevation	Water	Depth (m)	Description
									0.80	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy CLAY
							63.33		1.35	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY with occasional cobbles
	1.35	100	20	0	C	1.75	62.78		1.75	Returns of firm very dark grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of various lithologies predominantly limestone.
	2.20	100	46	8			62.38			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 2.35-2.75m, 3.71-3.91m, 5.62-5.65m & 6.06-6.14m).
	3.40	100	32	0	C	3.30				
	4.40	100	80	42	C	4.50				
	4.90	100	30	0	C	5.40				
	5.60	100	66	0						
	6.10	100	76	56						
	6.60	100	95	95						Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-30mm thick). Dips are subhorizontal, 10-20° & locally subvertical.
	7.00	100	77	14						
	8.10	100	57	17						
	8.70	100	68	52						
	9.35	100	69	44						
	10.10						54.03		10.10	End of Borehole at 10.1 (m)

Fracture Spacing Log (mm): 0 250 500
Non-intact Zone
Sample Ref. Number
SPT "N" Value
Legend
Standpipe Details

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.00	3.00				Slow

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-08-22	10.10	3.40	0.80	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hole cased 0.00-6.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166025
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,272 E, 730,328 N
GROUND LEVEL (mOD) 64.28

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 09/08/2022
DATE COMPLETED 10/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy cobbly CLAY	
														1.50		
1	1.50	100	5	0						50/5mm		62.78			Probable weathered ROCK - recovered as black gravelly CLAY with cobbles. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are of limestone.	
2	1.90	100	8	0				C	2.00							
	2.50	100	2	0										3.00		
3	3.40											61.28			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.00-3.20m & 6.56-6.77m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-40mm thick). Dips are subhorizontal, 10-20° & locally 40° & subvertical.	
4		100	53	17				C	3.70							
5	4.90												1			
6		100	68	21				C	6.00							
7	6.40	100	75	32												
8	7.90	100	62	40												
9	8.85	100	80	73	570											
														9.80		
10	9.80											54.48			End of Borehole at 9.8 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.00	2.50				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
10/08/2022	6.50	4.00	7.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-08-22	9.80	2.50	4.85	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-2.50m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166078
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,305 E, 730,359 N
GROUND LEVEL (mOD) 64.25

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.60

DATE COMMENCED 12/08/2022
DATE COMPLETED 15/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															SYMMETRIX DRILLING: No recovery, observed by driller as returns of cobbly CLAY	
														1.35		
1	1.35	29	0	0								62.90			Returns of brown gravelly CLAY. Gravel is angular to subrounded fine to medium of limestone.	
														2.20		
2	2.20	100	0	0						50/150mm		62.05			Returns of black gravelly CLAY with occasional cobbles. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are of limestone.	
3	3.00	50	0	0									1			
	3.60	100	0	0												
	3.90	100	0	0												
4	4.50	100	23	0										4.75		
	4.85							C	4.85			59.50			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy limestone with subordinate calci-siltite limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 6.21-6.22m & 9.48-9.52m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally calcite-veined (1-20mm thick). Dips are subhorizontal, 10-20° & locally subvertical.	
5								C	5.00							
								C	5.20							
								C	5.30							
		100	44	6				C	5.50							
6								C	6.00							
								C	6.20							
	6.55							C	6.50							
								C	6.55							
7		100	78	53												
	7.90															
8		100	64	24												
	9.30															
9																
		100	78	34												
10																
	10.60											53.65		10.60	End of Borehole at 10.6 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.20	3.20				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
15-08-22	10.60	4.50	1.00	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-4.50m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166356
SHEET Sheet 1 of 2

CO-ORDINATES(_) 698,503 E
730,559 N
GROUND LEVEL (mOD) 65.19

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 16/08/2022
DATE COMPLETED 16/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														1.00	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy cobbly CLAY	
1	1.00	100	0	0								64.19		1.90	Stiff brown sandy gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are of limestone.	
2	2.30	100	0	0						50/75mm		63.29			Stiff, black sandy gravelly CLAY with cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone. Cobbles are of limestone.	
3	2.70	73	0	0										3.80		
4	3.80	0	0	0						53/35mm		61.39		4.40	SYMMETRIX DRILLING: No recovery, observed by driller as returns of sandy gravelly CLAY	
	4.40	100	0	0								60.79			Probable weathered ROCK - recovered as black gravelly CLAY with cobbles and boulders. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles and boulders are of limestone.	
5	4.75	100	0	0												
	5.45	100	0	0												
6	6.40	100	0	0												
7								C	7.00							
	7.30	100	0	0												
	7.70	100	0	0												
8	8.10	100	23	0										8.40		
	8.80	100	64	21				C	8.70			56.79			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely muddy limestone with subordinate calci-siltite limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale	
9								C	9.00					9.80		
10	9.90											55.39				

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.85	2.85				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
16/08/2022	8.00	4.50	8.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
16-08-22	9.80	5.85	2.12	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-5.85m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166356
SHEET Sheet 2 of 2

CO-ORDINATES(_) 698,503 E
730,559 N
GROUND LEVEL (mOD) 65.19

RIG TYPE Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 9.80

DATE COMMENCED 16/08/2022
DATE COMPLETED 16/08/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11															zones (at 9.73-9.76m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared. Dips are subhorizontal, 10-20° & locally subvertical.	
12																
13															End of Borehole at 9.8 (m)	
14																
15																
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
16/08/2022	8.00	4.50	8.50	50mm SP

REMARKS Hole cased 0.00-5.85m

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166526
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,709 E
730,500 N
GROUND LEVEL (mOD) 64.78

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 1.80

DATE COMMENCED 06/12/2021
DATE COMPLETED 06/12/2021

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Butler
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												64.58		0.20	Topsoil	
														0.40	Brown silty sandy CLAY	
							151412	D	0.50			64.38			Very stiff brown very gravelly sandy CLAY with medium angular cobble content	
1								B					1			
							151413	D	1.00							
								B		50/225mm						
							151414	B	1.40							
							151415	B	1.60					1.80		
2												62.98			Obstruction End of Borehole at 1.8 (m)	
3																
4																
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.7	1.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.70	1.70	No	1.20	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
06-12-21	1.80	1.80	1.20	End of Borehole

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Hand Service inspection Pit

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166562
SHEET Sheet 1 of 1

CO-ORDINATES(_) 698,723 E 730,510 N
GROUND LEVEL (mOD) 64.68

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm)
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 21/04/2022
DATE COMPLETED 21/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0															SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
1										30/300mm						
2	2.30												1	2.30		
		100	49	14				C	2.30			62.38			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 2.92-2.96m, 6.74-6.76m, 8.46-8.54m & 9.97-10.00m). Discontinuities are medium to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared and filled (at 8.03-8.32m), locally slightly iron-oxide stained, locally calcite-veined (1-20mm thick). Dips are subhorizontal, 30° & locally 70-75°.	
3	3.00							C	3.20							
		100	48	9				C	3.40							
4	4.30															
		100	63	32				C	4.80							
5	5.30							C	5.00							
		100	57	0												
6								C	6.00							
	6.30															
		100	73	55												
7	7.30															
		100	58	41				C	7.50							
8	8.30															
		100	68	32												
9	9.30															
		100	83	83												
10	10.00													10.00		
												54.68			End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.20	2.20				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
21/04/2022	10.00	2.20	10.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
21-04-22	10.00	2.30	1.80	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-2.30m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166722
SHEET Sheet 1 of 2

CO-ORDINATES(_) 698,847 E 730,616 N
GROUND LEVEL (mOD) 64.07

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 19/04/2022
DATE COMPLETED 19/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0													1	0.40	Topsoil	
							151409	D	0.40			63.67				
								B					1	0.80	Yellow silty SAND	
							151410	D	0.80			63.27				
1							151411	B	1.10	50/0mm					Very dense grey silty slightly gravelly SAND with medium angular cobble	
							151411	B	1.50	33/300mm				1.80		
2												62.27			Obstruction SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/black gravelly CLAY with occasional cobbles	
3										30/300mm						
													2	4.00		
4	4.00	100	51	7				C	5.00			60.07			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 4.46-4.48m, 7.30-7.32m & 14.38-14.42m). Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay-smeared and filled (at 10.37-10.39m), locally slightly iron-oxide stained, locally calcite-veined (1-10mm thick). Dips are subhorizontal, 30-40° & locally 70-75°.	
5	5.50	100	65	45				C	6.10							
6					560			C	6.90							
7	7.00	100	67	57				C	7.40							
8	8.50							C	8.60							
9		100	45	29												
10	10.00	100	63	41												

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1.5	1.7	0100	
1.7	1.8	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
0.80	1.80	1.00	0.50	20	Moderate
3.80	3.80				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19/04/2022	12.00	4.00	13.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
03-12-21	1.80	1.80	0.70	End of Borehole

REMARKS CP Drilled from 03/12/2021 to 03/12/2021. Hole cased 0.00-4.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH166722
SHEET Sheet 2 of 2

CO-ORDINATES(_) 698,847 E
730,616 N
GROUND LEVEL (mOD) 64.07

RIG TYPE GEO-405 & Dando 2000
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 15.00

DATE COMMENCED 19/04/2022
DATE COMPLETED 19/04/2022

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL - AK & WB
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
11																
	11.50															
12		100	57	54												
13	13.00															
		100	79	57												
14																
	14.50	100	96	62										15.00		
15	15.00											49.07			End of Borehole at 15 (m)	
16																
17																
18																
19																
20																
21																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19/04/2022	12.00	4.00	13.00	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-04-22	15.00	4.00	5.10	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 03/12/2021 to 03/12/2021. Hole cased 0.00-4.00m. Erect Covid-19 Safe Zone - 1hr.

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH167255
SHEET Sheet 1 of 1

CO-ORDINATES(_) 699,568 E
730,552 N
GROUND LEVEL (mOD) 66.52

RIG TYPE Dando 2000
RC FLUSH MEDIUM
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) N/A
BOREHOLE DEPTH (m) 3.10

DATE COMMENCED 01/12/2021
DATE COMPLETED 01/12/2021

CLIENT Irish Water
ENGINEER Eriva

BORED BY W.Butler
PROCESSED BY C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.40	Topsoil	
							151401	D B	0.50			66.12		0.50	Grey Silt	
												66.02		0.80	Grey brown gravelly sandy CLAY with medium Angular cobble content	
1							151402	D B	1.00	7/300mm		65.72	1		Soft brown black silty sandy CLAY with medium rounded cobbles	
2							151403	D B	2.00	50/255mm			1	2.20		
												64.32			Very stiff black silty gravelly sandy CLAY with rounded cobbles	
3							151404	D B	3.00	50/0mm				3.10		
												63.42			Obstruction End of Borehole at 3.1 (m)	
4																
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
3	3.1	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.80	3.10	2.00	1.40	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
01-12-21	3.10	3.10	1.00	End of Borehole

REMARKS Hand Service inspection Pit

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
HOLE NO.	**BH168286**
SHEET	Sheet 1 of 1
CO-ORDINATES(_)	699,943 E 730,450 N
GROUND LEVEL (mOD)	68.18
RIG TYPE	Dando 2000
RC FLUSH MEDIUM	
CASING DIAMETER (mm)	200
CORE DIAMETER (mm)	N/A
BOREHOLE DEPTH (m)	2.10
DATE COMMENCED	02/12/2021
DATE COMPLETED	02/12/2021
CLIENT	Irish Water
ENGINEER	Eriva
BORED BY	W.Butler
PROCESSED BY	C.Killaly

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0														0.30	Topsoil	
							151405	D	0.40			67.88	1	0.40	Brown gravelly sandy CLAY with low round cobble content	
								B				67.78		0.80		
1							151406	B	0.80			67.38	2		Grey brown sandy slightly silty CLAY	
							151407	B	1.00	50/295mm			3		Very stiff to Very stiff black gravelly sandy CLAY with medium angular Cobbles and boulders	
2														2.00		
							151408	B	2.00	50/0mm		66.18		2.10	Obstruction - Large Boulders	
												66.08			End of Borehole at 2.1 (m)	
3																
4																
5																
6																
7																
8																
9																
10																

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
1	1.2	0100	
2.1	2.1	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
0.80	0.80	1.00	0.70	20	Moderate
1.40	1.40	No	1.10	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
02-12-21	2.10	2.10	1.50	End of Borehole

REMARKS Hand Service inspection Pit

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH169001
SHEET Sheet 1 of 1

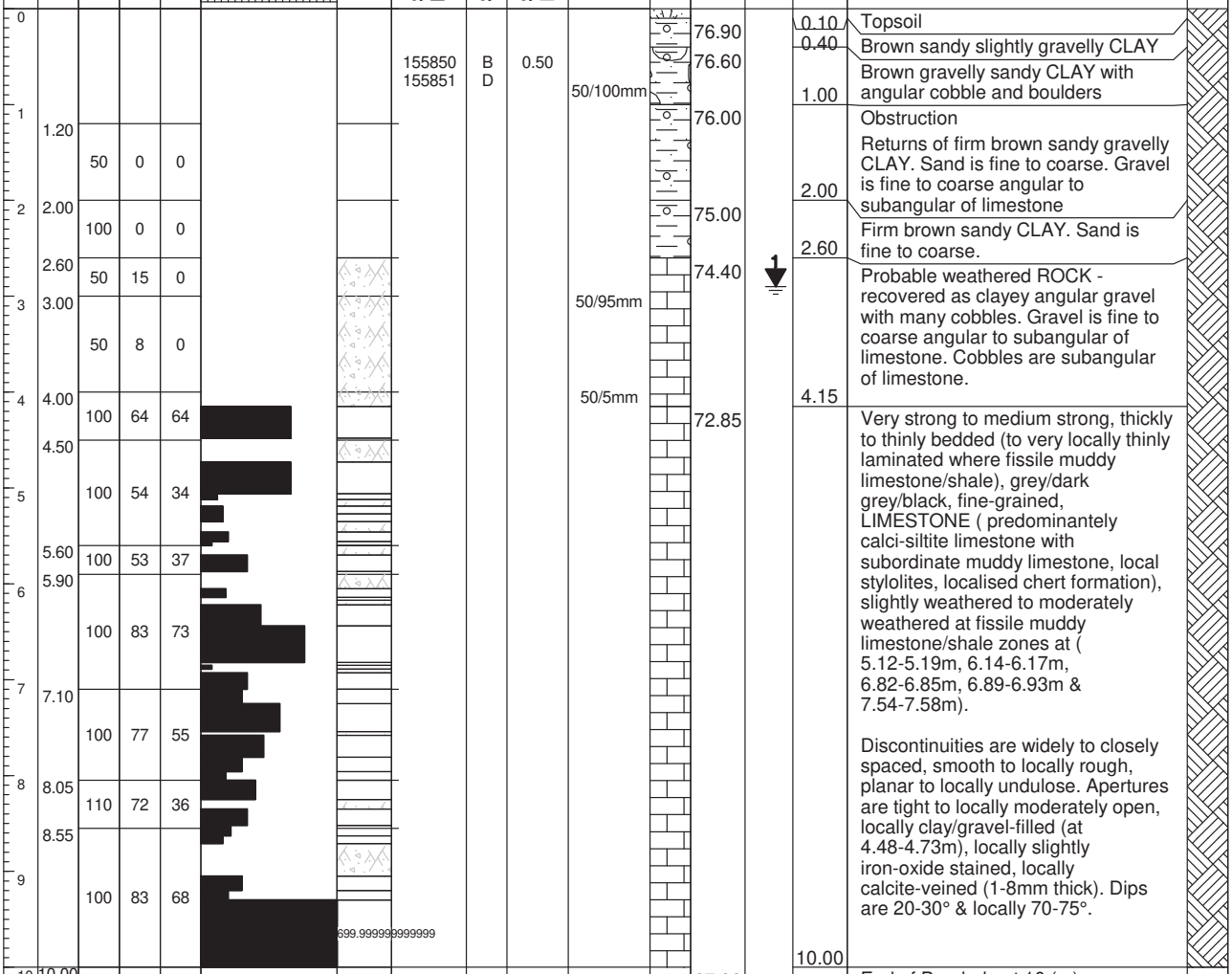
CO-ORDINATES(_) 700,811 E
730,398 N
GROUND LEVEL (mOD) 77.00

RIG TYPE Dando 2000/Knebel
RC FLUSH MEDIUM Air/Mist
CASING DIAMETER (mm) 200
CORE DIAMETER (mm) 78
BOREHOLE DEPTH (m) 10.00

DATE COMMENCED 17/11/2021
DATE COMPLETED 18/11/2021

CLIENT Irish Water
ENGINEER Eriva

BORED BY IGSL
PROCESSED BY D.O'Shea



Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0											76.90		0.10	Topsoil	
													0.40	Brown sandy slightly gravelly CLAY	
						155850	B	0.50			76.60			Brown gravelly sandy CLAY with angular cobble and boulders	
1						155851	D		50/100mm				1.00		
	1.20	50	0	0							76.00			Obstruction Returns of firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of limestone	
2	2.00	100	0	0							75.00		2.00		
	2.60	50	15	0									2.60	Firm brown sandy CLAY. Sand is fine to coarse.	
3	3.00	50	8	0					50/95mm		74.40	1		Probable weathered ROCK - recovered as clayey angular gravel with many cobbles. Gravel is fine to coarse angular to subangular of limestone. Cobbles are subangular of limestone.	
4	4.00	100	64	64					50/5mm				4.15		
	4.50	100	54	34							72.85			Very strong to medium strong, thickly to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones at (5.12-5.19m, 6.14-6.17m, 6.82-6.85m, 6.89-6.93m & 7.54-7.58m). Discontinuities are widely to closely spaced, smooth to locally rough, planar to locally undulose. Apertures are tight to locally moderately open, locally clay/gravel-filled (at 4.48-4.73m), locally slightly iron-oxide stained, locally calcite-veined (1-8mm thick). Dips are 20-30° & locally 70-75°.	
5	5.60	100	53	37											
6	5.90	100	83	73											
7	7.10	100	77	55											
8	8.05	110	72	36											
	8.55	100	83	68											
9															
10	10.00										67.00		10.00	End of Borehole at 10 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments
0.7	1	0100	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90	2.90				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-11-21	10.00	4.50	2.30	Water level recorded 5 mins after end of drilling.

REMARKS CP Drilled from 22/08/2021 to 22/09/2022. Hand dug inspection pit to 1.20m. Hole cased 0.00-4.50m. Erect Covid-19 Safe Zone - 1hr. SPT Er = 71.43%

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Appendix 9A.2

Geobore S Corehole Records

BH149963

BOREHOLE RECORD

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

HOLE NO. BH149963
SHEET Sheet 1 of 1

CO-ORDINATES(_) 685,075 E, 735,527 N
GROUND LEVEL (mOD) 74.78
CLIENT Irish Water
ENGINEER Eriva

RIG TYPE Knebel
RC FLUSH MEDIUM P. Gel
CASING DIAMETER (mm)
CORE DIAMETER (mm) 102
BOREHOLE DEPTH (m) 9.90

DATE COMMENCED 03/08/2022
DATE COMPLETED 05/08/2022
BORED BY IGSL - MN
PROCESSED BY D.O'Shea

Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Sample Ref. Number	Sample Type	Sample Depth (m)	SPT "N" Value	Legend	Elevation	Water	Depth (m)	Description	Standpipe Details
0												74.68		0.10	Frim reddish brown slightly sandy TOPSOIL with thin rootlets	
		100	0	0											Stiff brown/grey mottled silty sandy slightly gravelly CLAY with occasional cobbles. Sand is fine to medium. Gravel is angular to subrounded fine to coarse of various lithologies predominantly limestone. Cobbles are of limestone.	
1														1.30		
	1.50	100	0	0								73.48			Returns of grey/brown clayey cobbly GRAVEL. Gravel is angular to subrounded fine to coarse of various lithologies predominantly limestone. Cobbles are of limestone.	
2	2.30	100	0	0												
3	3.00	100	40	0										3.10		
	3.10	100	69	34				C	3.10			71.68			Very strong to medium strong (to weak where shale), medium to thinly bedded (to very locally thinly laminated where fissile muddy limestone/shale), grey/dark grey/black, fine-grained, LIMESTONE (predominantely calci-siltite limestone with subordinate muddy limestone, local stylolites, localised chert formation), slightly weathered to moderately weathered at fissile muddy limestone/shale zones (at 3.44-3.51m, 5.02-5.04m, 5.23-5.26m, 5.74-5.76m, 5.79-5.83m, 6.18-6.21m, 6.7-6.29m, 6.33-6.35m & 8.83-8.88m).	
4																
	4.50	100	55	0				C	4.40							
	4.70															
5		100	49	24												
6	6.00															
		100	57	14				C	6.50							
7	6.95	100	49	0												
	7.40	100	50	0												
	7.70	100	64	29												
8	8.15	100	47	0												
	8.60	100	60	30												
9																
	9.20	100	77	100												
	9.50	100	35	0										9.90		
10	9.90											64.88			End of Borehole at 9.9 (m)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (hhmm)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
05/08/2022	6.00	3.50	6.50	50mm SP

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-08-22	9.90	1.20	2.15	Water level recorded 5 mins after end of drilling.

REMARKS Hole cased 0.00-1.20m

IGSL COMBINED BH/RC DUB PORT 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Appendix 9B

Dynamic Sampling Records

DS161402
DS165890
DS165906
DS166006
DS166025
DS166078
DS166356

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
BOREHOLE NO.	**DS161402**
SHEET	Sheet 1 of 1
CO-ORDINATES	694,109.99 E 730,607.54 N
GROUND LEVEL (mOD)	56.51
DATE COMMENCED	21/08/2022
DATE COMPLETED	21/08/2022
CLIENT	Irish Water
DRILLED BY	C.Kavanagh
ENGINEER	Eriva
LOGGED BY	M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown sandy silty CLAY with rootlets. Sand is fine to medium.					DS10005	B	0.00-1.00		
	Brown to golden brown clayey silty SAND. Sand is fine to medium.		0.30	56.21						
1.0	Soft brown sandy silty CLAY. Sand is fine to medium.		0.95	55.56		DS10006	B	1.00-2.00	N = 2	
	Poor Recovery/Obstruction		1.50	55.01						
2.0	Soft brownish grey very sandy sligthly gravelly silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular.		2.00	54.51		DS10007	B	2.00-3.00	N = 6	
	Very dense brown very gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is fine to medium and subrounded.		2.80	53.71						
3.0	Final Depth 3.00m		3.00	53.51					N = 50/75 mm	
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

BOREHOLE NO. DS165890
SHEET Sheet 1 of 1

CO-ORDINATES 698,153.94 E
730,401.03 N
GROUND LEVEL (mOD) 63.76

DATE COMMENCED 19/08/2022
DATE COMPLETED 19/08/2022

CLIENT Irish Water
ENGINEER Eriva

DRILLED BY C.Kavanagh
LOGGED BY M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown slightly gravelly sandy CLAY with rootlets. Sand is fine to coarse. Gravel is fine to coarse and angular.					DS10001	B	0.00-1.00		
	Brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse and angular.		0.60	63.16						
1.0	Firm/Stiff brownish black sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular.		1.00	62.76		DS10002	B	1.00-1.70	N = 21	
	Grey Sandy slightly clayey/silty GRAVEL. Gravel is angular to subangular and fine to coarse. Sand is fine to coarse.		1.50 1.65	62.26 62.11					N = 50/75 mm	
	Very stiff/hard black sandy slightly gravelly silty CLAY		1.70	62.06						
2.0	Final Depth 1.70m									
3.0										
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
BOREHOLE NO.	**DS165906**
SHEET	Sheet 1 of 1
CO-ORDINATES	698,173.99 E 730,393.98 N
GROUND LEVEL (mOD)	63.77
DATE COMMENCED	16/08/2022
DATE COMPLETED	16/08/2022
CLIENT	Irish Water
DRILLED BY	C.Kavanagh
ENGINEER	Eriva
LOGGED BY	M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown sligthly sandy gravelly CLAY with rootlets. Sand is fine to medium. Gravel is fine to medium and subangular.					DS10003	B	0.00-1.00		
	Brown sandy very gravelly CLAY with yellow sand (fine to medium) pockets. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular. (>2% red brick fragements and glass)		0.40	63.37						
	Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular.		0.80	62.97						
1.0	Firm/Stiff brownish grey sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium and subangular.		1.00	62.77		DS10004	B	1.00-1.70	N = 33	
	Hard black sandy slightly gravelly silty CLAY		1.40	62.37						
	Poor Recovery/Obstruction		1.50	62.27						
	Final Depth 1.70m		1.70	62.07					N = 50/75 mm	
2.0										
3.0										
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

BOREHOLE NO. DS166006
SHEET Sheet 1 of 1

CO-ORDINATES 698,248.13 E
730,350.40 N
GROUND LEVEL (mOD) 64.13

DATE COMMENCED 20/08/2022
DATE COMPLETED 20/08/2022

CLIENT Irish Water
ENGINEER Eriva

DRILLED BY C.Kavanagh
LOGGED BY M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown very sandy silty CLAY with rootlets. Sand is fine to medium.		0.20	63.93		DS10020	B	0.00-1.00		
	Brown slightly gravelly clayey SAND. Sand is fine to medium. Gravell is fine to medium and subangular.		0.60	63.53						
	Brown very sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and subangular.		1.00	63.13		DS10021	B	1.00-1.80		
1.0	Firm/stiff brownish grey sandy slightly gravelly silty CLAY. Sand is fine. Gravel is fine and subangular. Pyrite present.								N = 20	
	Grey slightly gravelly silty CLAY. Sand is fine. Gravel is fine to medium and subangular. Pyrite present.		1.40	62.73						
	Greyish black sandy silty GRAVEL. Gravel is fine to coarse and angualr to subangular. Sand is fine to coarse. Pyrite in gravel.		1.70	62.43						
			1.80	62.33						
2.0	Pushing cobble - No Recovery								N = 37	
	Final Depth 1.80m		2.50	61.63					N = 50/75 mm	
3.0										
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

BOREHOLE NO. DS166025
SHEET Sheet 1 of 1

CO-ORDINATES 698,272.01 E
730,328.03 N
GROUND LEVEL (mOD) 64.28

DATE COMMENCED 08/08/2022
DATE COMPLETED 08/08/2022

CLIENT Irish Water
ENGINEER Eriva

DRILLED BY C.Kavanagh
LOGGED BY M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown sandy slightly gravelly CLAY with rootlets. Sand is fine to medium. Gravcel is fine and angular.					DS10018	B	0.00-1.00		
	Greyish brown sandy gravelly silty CLAY with low cobbles. Sand is fine to coarse. Gravel is fine to coarse and angular to subrounded.		0.30	63.98						
1.0	Very stiff blackish brown sandy gravelly silty CLAY with low cobbles. Sand is fine to medium. Gravel is fine to coarse and subangular to subrounded.		1.00	63.28		DS10019	B	1.00-1.90	N = 53	
	Poor recovery: very Dense Sandy GRAVEL. Gravel is fine to coarse and angualr to subangular. Sand is fine to coarse. Pyrite in gravel.		1.50	62.78						
2.0	Final Depth 1.90m		1.90	62.38					N = 50/75 mm	
3.0										
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3
BOREHOLE NO.	**DS166078**
SHEET	Sheet 1 of 1
CO-ORDINATES	698,305.04 E 730,359.01 N
GROUND LEVEL (mOD)	64.25
DATE COMMENCED	20/08/2022
DATE COMPLETED	20/08/2022
CLIENT	Irish Water
ENGINEER	Eriva
DRILLED BY	C.Kavanagh
LOGGED BY	M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Brown gravelly sandy silty CLAY with rootlets. Sand is fine to medium. Gravel is fine to coarse and subangular to subrounded.					DS10013	B	0.00-1.00		
	Grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium and subangular to subrounded		0.30	63.95						
1.0	Firm/Stiff brownish grey to greyish black sandy gravelly silty CLAY with low cobbles		1.00	63.25		DS10014	B	1.00-1.80	N = 30	
	Pushing cobble - No Recovery		1.80	62.45					N = 31	
2.0										
3.0	Final Depth 1.80m		3.00	61.25					N = 50/75 mm	
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Percussive Terrier Boring Record

REPORT NUMBER 23560

CONTRACT WSP Ground Investigation Contract Lot 3

BOREHOLE NO. DS166356
SHEET Sheet 1 of 1

CO-ORDINATES 698,502.54 E
730,558.99 N
GROUND LEVEL (mOD) 65.19

DATE COMMENCED 16/08/2022
DATE COMPLETED 16/08/2022

CLIENT Irish Water
ENGINEER Eriva

DRILLED BY C.Kavanagh
LOGGED BY M.B

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Field Test Results	Standpipe Details
0.0	TOPSOIL: Dark brown sandy CLAY with rootlets. Sand is fine to medium.					DS10008	B	0.00-1.00		
	Light brown sandy gravelly silty CLAY with root hairs. Sand is fine to coarse. Gravel is fine to medium and angular to subrounded.		0.30	64.89						
	Hard Greyish brown firm to stiff gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium and subangular.		0.70	64.49						
1.0						DS10009	B	1.00-1.10	N = 50/75 mm	
	Final Depth 1.10m		1.10	64.09						
2.0										
3.0										
4.0										
5.0										

General Remarks
Servcie Inspection Pit Excavated

Installations

PERCUSSIVE TERRIER BH PIEZO/SPT/SAMPLES 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

Appendix 9C

Trial Pit Records / Legend

TP147204	TP152002	TP160993
TP148005	TP152045	TP161109
TP148104	TP152102	TP161199
TP148205	TP152190	TP161292
TP148304	TP152295	TP161469
TP148403	TP152405	TP161858
TP148504	TP152500	TP162008
TP148600	TP152699	TP162045
TP148704	TP152806	TP162103
TP148802	TP152901	TP162214
TP148903	TP152989	TP162302
TP149004	TP153098	TP162401
TP149130	TP153199	TP162500
TP149200	TP153301	TP162602
TP149304	TP156000	TP162699
TP149373	TP156099	TP162797
TP149505	TP156204	TP163301
TP149604	TP156299	TP163403
TP149705	TP156398	TP163502
TP149803	TP156499	TP163605
TP149904	TP156601	TP163696
TP149986	TP156701	TP163799
TP150104	TP156803	TP164905
TP150190	TP156895	TP165010
TP150295	TP156965	TP165105
TP150400	TP157100	TP165204
TP150490	TP157202	TP165314
TP150590	TP157300	TP166562
TP150702	TP157403	TP166697
TP150800	TP157502	TP166772
TP150900	TP157585	TP166867
TP151000	TP157697	TP167031
TP151095	TP157813	TP167205
TP151178	TP157895	TP167384
TP151301	TP159013	TP168033
TP151412	TP159100	TP168041
TP151503	TP159203	TP168241
TP151602	TP159303	TP168340
TP151737	TP159347	TP168871
TP151799	TP159404	
TP151882	TP159488	
TP151901	TP160696	
TP151906	TP160795	
TP151961	TP160895	

LEGEND

Trial Pits / Cable Percussion Boreholes

D	Small Disturbed Sample (Tub)
B	Large Disturbed Sample
U	Undisturbed U100 Sample
AA 11235	Sample Reference No
W	Groundwater Sample
Env	Environmental Tub, Jar & Vial
C	SPT N-Value (Solid Cone)
S	SPT N-Value (Split Spoon / Open Shoe)

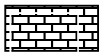
Rotary Core Drillholes

TCR	Total Core Recovery (%)
SCR	Solid Core Recovery (%)
RQD	Rock Quality Designation Value (%)
NI	Non-Intact (where rock core is highly fractured)

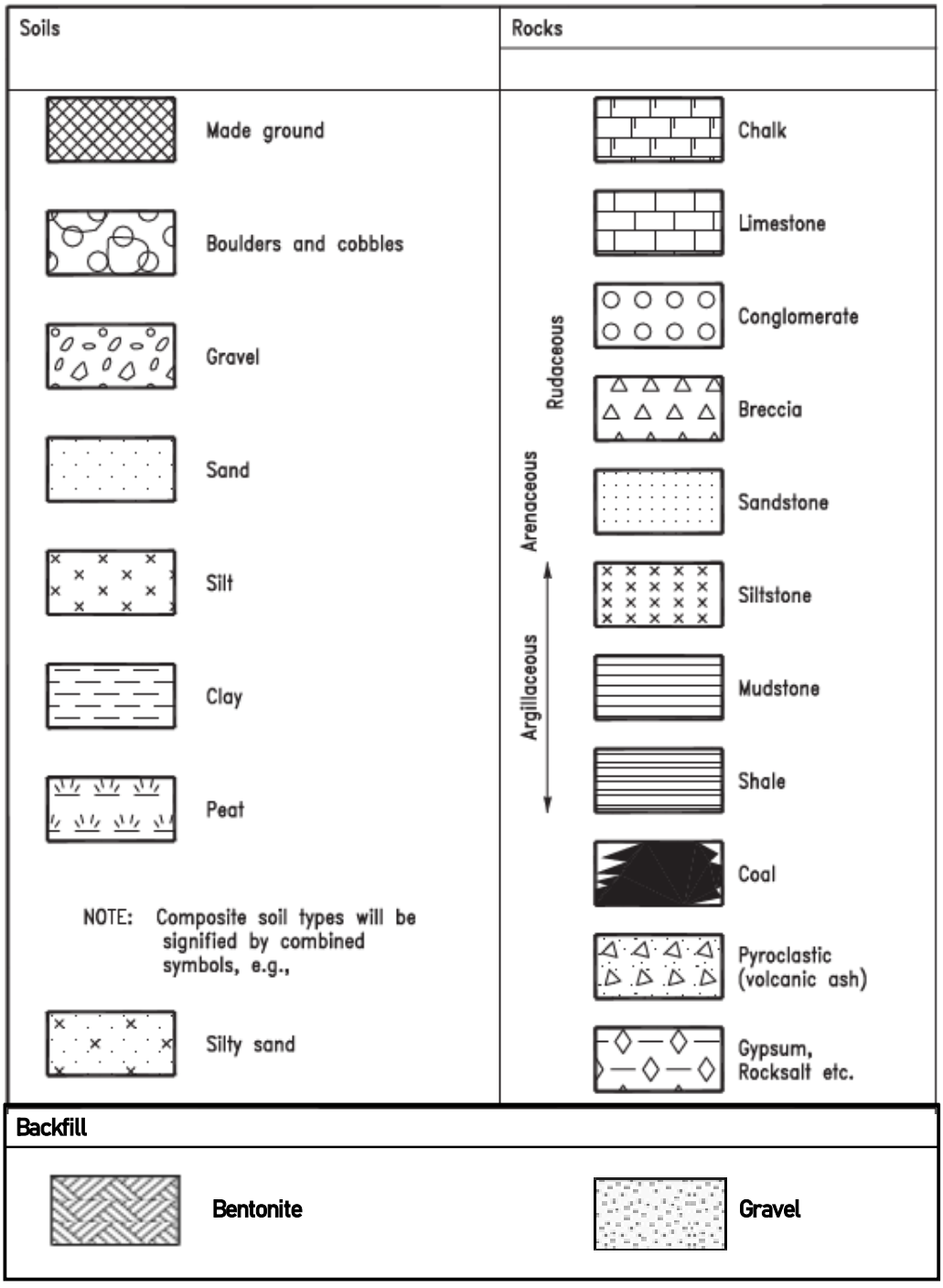
Water Strike Legend

Water Strike

Strata Legends / Symbolic Logs (BS 5930:2015+A1:2020)



Strata legends / symbolic logs reflect main stratum in accordance with BS 5930:2015+A1:2020. Legend codes are selected from GINT software to reflect stratum. Note, due to limited codes, legends may not represent exact constituent proportions (e.g. slightly or very sandy, slightly or very gravelly etc)



TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP147204**
		SHEET	Sheet 1 of 1
LOGGED BY	A. Garne	**CO-ORDINATES**	682,483.27 E 734,609.21 N
		DATE STARTED	08/03/2022
		DATE COMPLETED	08/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	82.92
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	82.62						
Firm brown slightly sandy slightly gravelly CLAY. Gravels sub-angular to sub-rounded						D	0.50-0.50	99	
					AA178601	B	0.50-0.50	87	
								105	
		0.90	82.02						
1.0 Dense grey silty sandy GRAVEL. Medium cobble content. Cobbles sub-angular to sub-rounded								104	
								87	
								98	
						D	1.50-1.50		
					AA178602	B	1.50-1.50		
2.0									
						D	2.50-2.50		
				1 (Seepage)	AA178603	B	2.50-2.50		
3.0 Trial pit terminated due to collapse End of Trial Pit at 3.00m		3.00	79.92						
4.0									

Groundwater Conditions
Seepage from 2.70m

Stability
Slightly unstable from 2.50m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148005**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	683,232.04 E 734,906.01 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	83.91
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.30	83.61						
Stiff brown mottled grey sandy gravelly CLAY with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.						D	0.50-0.60		
					AA173618	B	0.50-0.60		
1.0									
Stiff to very stiff brown mottled grey sandy gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		1.90	82.01			D	2.00-2.10		
2.0					AA173619	B	2.00-2.10		
3.0				1 (Moderate)					
Weathered rock recovered as dark greyish black slightly clayey very sandy very gravelly COBBLES of LIMESTONE.		3.40	80.51						
End of Trial Pit at 3.50m		3.50	80.41		AA173620	B	3.40-3.50		
4.0									

Groundwater Conditions
Moderate inflow from 3.2m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148104**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	683,330.56 E 734,916.38 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	84.22
		EXCAVATION METHOD	CAT 13 Tonne
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	83.92						
Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and subangular.		0.50	83.72			D	0.40-0.50		
Stiff brown very sandy gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.					AA173615	B	0.40-0.50		
1.0						D	1.50-1.60		
2.0					AA173616	B	1.50-1.60		
		2.40	81.82	1 (Moderate)					
Medium compact to compact clayey very sandy GRAVEL with medium to high cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		2.70	81.52		AA173617	B	2.60-2.70		
ROCK - LIMESTONE End of Trial Pit at 2.70m									
3.0									
4.0									

Groundwater Conditions
Moderate inflow from 2.4m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148205**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	683,436.04 E 734,919.95 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	85.09
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	84.79			D	0.40-0.50		
Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and subangular.		0.60	84.49		AA173612	B	0.40-0.50		
Stiff dark greyish brown sandy very gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.									
1.0						D	1.50-1.60		
					AA173613	B	1.50-1.60		
2.0									
		2.30	82.79			D	2.20-2.30		
ROCK - LIMESTONE End of Trial Pit at 2.30m					AA173614	B	2.20-2.30		
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
Digger moved > 5km

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148304**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	683,523.04 E 734,973.04 N
		DATE STARTED	28/02/2022
		DATE COMPLETED	28/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	85.45
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil						D	0.50-0.50	34	
		0.60	84.85		AA179480	B	0.50-0.50	84	
Firm brown mottled grey slightly gravelly CLAY								34	
								61	
								33	
								74	
						D	1.50-1.50		
					AA179481	B	1.50-1.50		
		2.10	83.35						
Firm greyish brown slightly sandy gravelly CLAY						D	2.50-2.50		
					AA179482	B	2.50-2.50		
		2.80	82.65						
Firm to stiff brownish grey gravelly sandy CLAY				(Slow)					
						D	3.50-3.50		
		3.70	81.75		AA179483	B	3.50-3.50		
Trial pit terminated due to collapse End of Trial Pit at 3.70m									

Groundwater Conditions
Slow flow at 3.50m

Stability
Unstable from 3.50m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148403**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	683,609.02 E 735,025.95 N
		DATE STARTED	28/02/2022
		DATE COMPLETED	28/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	84.80
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil		0.30	84.50						
Firm to stiff brownish grey sandy gravelly CLAY						D	0.50-0.50	44	
					AA179484	B	0.50-0.50	81	
								62	
								65	
								83	
								92	
						D	1.50-0.50		
					AA179485	B	1.50-0.50		
Firm grey gravelly sandy CLAY		1.80	83.00	1 (Seepage)					
						D	2.50-2.50		
					AA179486	B	2.50-2.50		
Trial pit terminated due to collapse End of Trial Pit at 2.80m		2.80	82.00						

Groundwater Conditions
Seepage at 1.80m

Stability
Unstable from 1.80m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148504**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	683,710.77 E 735,041.88 N
		DATE STARTED	25/03/2022
		DATE COMPLETED	25/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	84.25
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	84.05						
Firm greyish brown slightly gravelly SILT						D	0.50-0.50	105	
					AA175191	B	0.50-0.50	91	
								72	
1.0 Firm greyish brown slightly sandy gravelly CLAY		1.10	83.15					85	
								79	
								106	
						D	1.50-2.50		
					AA175192	B	1.50-2.50		
2.0									
				1 (Seepage)					
Loose grey clayey sandy GRAVEL		2.80	81.45						
3.0						D	3.00-3.00		
Trial pit terminated due to collapse End of Trial Pit at 3.10m		3.10	81.15		AA175193	B	3.00-3.00		
4.0									

Groundwater Conditions
Seepage at 2.80m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148600**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	683,809.67 E 735,051.16 N
		DATE STARTED	25/03/2022
		DATE COMPLETED	25/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	83.70
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	83.50						
Firm brownish grey sandy gravelly SILT						D	0.50-0.50	88	
					AA175194	B	0.50-0.50	107	
								99	
1.0								95	
								79	
								101	
Loose grey clayey sandy GRAVEL		1.40	82.30	(Seepage)					
						D	1.50-1.50		
					AA175195	B	1.50-1.50		
2.0									
Trial pit terminated due to collapse End of Trial Pit at 2.10m		2.10	81.60						
3.0									
4.0									

Groundwater Conditions
Seepage at 1.40m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148704**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	683,898.89 E 735,110.08 N
		DATE STARTED	25/03/2022
		DATE COMPLETED	25/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	82.59
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	82.39						
Grey mottled brown slightly gravelly sandy SILT						D	0.50-0.50	88	
					AA175188	B	0.50-0.50	103	
								107	
1.0								91	
Firm to stiff dark grey slightly gravelly CLAY with pockets of fine to coarse sand throughout		1.20	81.39					89	
								96	
						D	1.50-1.50		
					AA175189	B	1.50-1.50		
2.0									
Loose grey clayey sandy GRAVEL		2.50	80.09	1 (Seepage)		D	2.50-3.50		
					AA175190	B	2.50-3.50		
3.0									
Trial pit terminated due to collapse End of Trial Pit at 3.50m		3.50	79.09						
4.0									

Groundwater Conditions
Seepage at 2.60m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148802**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	683,989.98 E 735,158.10 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	83.24
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown slightly sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	82.94			B	0.30-0.30		
SUBSOIL - Firm light brown slightly sandy very slightly gravelly CLAY		0.40	82.84			D	0.30-0.30		
Stiff to very stiff light brown mottled grey slightly sandy slightly gravelly silty CLAY with low cobble content (Subangular to subrounded). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded.						B D	0.70-0.70 0.70-0.70		
1.0									
2.0 Stiff Grey brown slightly sandy slightly gravelly CLAY with low cobble content (Subrounded to rounded). Sand is fine to medium. Gravel is fine to coarse, subrounded to rounded.		2.00	81.24			B D	2.20-2.20 2.20-2.20		
End of Trial Pit at 2.50m		2.50	80.74		AA158210	B	2.20-2.20		
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP148903**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,091.76 E 735,158.27 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	83.40
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown slightly sandy very slightly gravelly CLAY		0.30	83.10						
Firm to stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse, subangular to subrounded.		0.60	82.80			D	0.50-0.50		
Stiff light brown mottled grey mottled grey brown slightly sandy gravelly silty CLAY with low cobble content (Angular to subrounded). Sand is fine to coarse, Gravel is fine to coarse, subangular to rounded.					AA158205	B	0.50-0.50		
1.0						D	0.80-0.80		
					AA158206	B	0.80-0.80		
Soft moist dark brown mottled greyish brown sandy gravelly CLAY with low cobble content (Angular to subrounded) and low boulder content (Varied Lithologies, max. approx 0.5m).		1.40	82.00						
						D	1.70-1.70		
					AA158207	B	1.70-1.70		
2.0 2.0-2.70m - Medium cobble content									
End of Trial Pit at 2.70m		2.70	80.70						
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149004**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,196.99 E 735,148.21 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	82.66
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Light brown slightly sandy very slightly gravelly CLAY		0.30	82.36						
Firm to stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to coarse, subangular to subrounded. Cobbles are Angular to subrounded of various lithologies.						D	0.50-0.50		
					AA158201	B	0.50-0.50		
Firm light brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded.		0.75	81.91						
						D	0.90-0.90		
					AA158202	B	0.90-0.90		
Soft moist dark brown mottled greyish brown sandy gravelly CLAY with low cobble content (Angular to subrounded) and low boulder content (Angular, Flat, Mudstone approx 0.5m).		1.20	81.46						
						D	1.40-1.40		
					AA158203	B	1.40-1.40		
		2.70	79.96			D	2.60-2.60		
End of Trial Pit at 2.70m					AA158204	B	2.60-2.60		

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149130**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,320.93 E 735,170.19 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	80.33
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Brown slightly sandy very slightly gravelly CLAY with occasional rootlets		0.30	80.03						
SUBSOIL - Firm brown slightly sandy very slightly gravelly CLAY		0.50	79.83			D	0.40-0.40		
					AA158211	B	0.40-0.40		
						D	0.60-0.60		
0.60-0.70m - Lens of dark bluish grey slightly gravelly CLAY Moderately compact grey brown clayey very gravelly SAND with low cobble content (Subrounded to rounded) and low boulder content (Blocky, Limestone, approx 0.4m). Sand is fine to coarse. Gravel is fine to coarse, angular to rounded.					AA158212	B	0.60-0.60		
						D	1.20-1.20		
					AA158213	B	1.20-1.20		
				1 (Rapid)					
End of Trial Pit at 2.70m		2.70	77.63						

Groundwater Conditions
Ingress at 1.9m - Rapid

Stability
Very poor Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149200**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,383.24 E 735,223.13 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	78.68
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Dark brown slightly sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	78.38						
SUBSOIL - Firm dark brown slightly sandy very slightly gravelly CLAY		0.50	78.18						
Stiff to very stiff light brown mottled grey slightly sandy slightly gravelly silty CLAY with low cobble content (Angular to subrounded). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded.						D	0.50-0.50		
					AA158214	B	0.50-0.50		
						D	0.70-0.70		
1.0					AA158215	B	0.70-0.70		
		1.10	77.58						
Very soft very moist dark blueish grey clayey very gravelly SAND with low cobble content (Angular to rounded) and low boulder content (Varied lithologies, angular to subrounded, max approx 0.6m). Sand is fine to coarse. Gravel is fine to coarse, Angular to subrounded.						D	1.30-1.30		
					AA158216	B	1.30-1.30		
2.0									
		2.40	76.28	1 (Moderate)					
Soft moist dark blueish grey very sandy very gravelly CLAY with low cobble content (Subangular to rounded).						D	2.50-2.50		
		2.70	75.98		AA158217	B	2.50-2.50		
End of Trial Pit at 2.70m									
3.0									
4.0									

Groundwater Conditions
Ingress at 2.5 - Moderate

Stability
Very poor Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149304**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,487.45 E 735,227.05 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	77.30
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Dark brown slightly sandy very slightly gravelly CLAY with occasional rootlets		0.30	77.00						
SUBSOIL - Firm dark brown slightly sandy very slightly gravelly CLAY		0.40	76.90						
Stiff to very stiff light brown mottled grey slightly sandy gravelly silty CLAY with low cobble content (Angular to subrounded). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded.						D B	0.50-0.50 0.50-0.50		
1.0 Moderately compact dark grey and brown clayey GRAVEL with high cobble content (Angular to subangular) and Low boulder content (Angular, Tabular Limestone, Approx 0.5m)		1.30	76.00						
				1 (Moderate)		D B	1.60-1.60 1.60-1.60		
End of Trial Pit at 1.90m		1.90	75.40		AA158218 AA158219				
2.0									
3.0									
4.0									

Groundwater Conditions
Ingress at 1.8m - Moderate

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149373**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,561.98 E 735,231.41 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	76.36
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown slightly sandy very slightly gravelly CLAY with occasional rootlets		0.35	76.01						
Moderately compact light brown mottled grey clayey gravelly silty SAND. Sand is fine to coarse. Gravel is fine to course, subangular to subrounded						D	0.50-0.50		
					AA158220	B	0.50-0.50		
Stiff grey mottled light brown gravelly silty CLAY with low cobble content. Gravel is subangular to subrounded.		0.90	75.46						
1.0						D	1.10-1.10		
		1.30	75.06		AA158221	B	1.10-1.10		
Firm dark grey mottled brown slightly sandy slightly gravelly CLAY with low cobble content (Angular to rounded)									
						D	1.80-1.80		
2.0					AA158222	B	1.80-1.80		
		2.90	73.46						
End of Trial Pit at 2.90m									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149505**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,660.09 E 735,325.15 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	77.03
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.35	76.68			D	0.50-0.50		
Firm light brown sandy slightly gravelly CLAY		0.65	76.38		AA158223	B	0.50-0.50		
Stiff grey mottled light brown slightly sandy gravelly silty CLAY with low cobble content (subangular to subrounded). Gravel is subangular to subrounded.		0.75	76.28						
1.0 Firm dark grey mottled brown slightly sandy gravelly CLAY with low cobble content (Angular to rounded) and low boulder content (Angular to subrounded, varied lithologies)						D	1.00-1.00		
					AA158224	B	1.00-1.00		
		1.80	75.23						
Stiff dark blueish grey mottled brown slightly silty CLAY with medium cobble content and low boulder content (Flat mudstone, 0.4m)						D	1.90-1.90		
2.0					AA158225	B	1.90-1.90		
				1 (Moderate)					
2.30-2.40m - High cobble content		2.40	74.63						
End of Trial Pit at 2.40m									
3.0									
4.0									

Groundwater Conditions
Ingress at 2.2m - Moderate

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149604**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,736.20 E 735,390.73 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	77.25
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Brown slightly sandy very slightly gravelly CLAY with occasional rootlets		0.30	76.95						
Firm light brown mottled grey slightly sandy slightly gravelly slightly silty CLAY with low cobble content (Subangular to subrounded). Sand is fine to medium. Gravel is fine to coarse.						D	0.50-0.50		
					AA158226	B	0.50-0.50		
Soft moist dark grey mottled brown slightly sandy slightly silty gravelly CLAY with medium cobble content (Angular to subrounded) and low boulder content (Angular to subrounded, varied lithologies, 0.4m) 1.60-2.0m - Sidewall collapse		1.30	75.95						
				1 (Moderate)		D	1.50-1.50		
		1.70	75.55		AA158227	B	1.50-1.50		
Moderately compact very moist multicoloured clayey sandy GRAVEL with high cobble content (Angular to subrounded) and low boulder content (Tabular limestone, 0.6m)						D	1.90-1.90		
					AA158228	B	1.90-1.90		
End of Trial Pit at 2.50m		2.50	74.75						

Groundwater Conditions
Ingress at 1.7m - Moderate

Stability
Very poor Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149705**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,829.73 E 735,429.03 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	76.84
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown slightly sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	76.54			D	0.50-0.50		
Firm brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded					AA158229	B	0.50-0.50		
		0.90	75.94						
1.0 Soft to firm slightly moist brown mottled grey slightly sandy gravelly CLAY with low cobble content (Subangular to subrounded) and low boulder content (Blocky limestone, 0.4m). Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded						D	1.00-1.00		
					AA158230	B	1.00-1.00		
		1.80	75.04	1 (Moderate)					
2.0 Very moist dark grey mottled dark brown sandy very gravelly CLAY with medium cobble content (Angular to subrounded) and low boulder content (Blocky limestone, 0.4m). Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded.						D	2.00-2.00		
					AA158231	B	2.00-2.00		
		2.70	74.14						
End of Trial Pit at 2.70m									
3.0									
4.0									

Groundwater Conditions
Ingress at 1.9m - Moderate

Stability
Very poor Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149803**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	684,928.62 E 735,448.24 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	76.71
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Brown slightly sandy very slightly gravelly CLAY with occasional rootlets		0.30	76.41						
SUBSOIL - Firm brown slightly sandy very slightly gravelly CLAY		0.50	76.21			D	0.50-0.50		
Soft dark grey mottled dark brown sandy gravelly CLAY with low cobble content (Subangular to subrounded) and low boulder content (Subrounded, Varied lithologies, 0.5m)					AA158232	B	0.50-0.50		
						D	0.80-0.80		
					AA158233	B	0.80-0.80		
				(Moderate)					
Soft dark grey mottled dark brown very sandy very gravelly CLAY with medium cobble content (Subangular to subrounded) and low boulder content (Subrounded, Varied lithologies, 0.5m) 2.10-2.50m - Sidewall collapse		1.90	74.81			D	2.00-2.00		
					AA158234	B	2.00-2.00		
						D	2.80-2.80		
End of Trial Pit at 2.90m		2.90	73.81		AA158235	B	2.80-2.80		

Groundwater Conditions
Ingress at 1.8m - Moderate

Stability
Poor Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149904**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,011.84 E 735,510.88 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	74.94
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	74.64						
SUBSOIL - Firm brown sandy very slightly gravelly CLAY		0.40	74.54						
Stiff light brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (Angular to subrounded). Sand is fine to medium, Gravel is fine to coarse, subangular to rounded.						D	0.50-0.50		
					AA158236	B	0.50-0.50		
1.0									
		1.60	73.34						
Stiff light brown slightly sandy slightly gravelly CLAY with low cobble content (Angular to subrounded). Sand is fine to medium, Gravel is fine to coarse, subangular to rounded.		1.90	73.04	(Seepage)					
2.0 Firm moist dark blueish grey sandy gravelly CLAY with low cobble content (subangular to subrounded). Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.						D	2.00-2.00		
					AA158237	B	2.00-2.00		
		2.60	72.34						
End of Trial Pit at 2.60m									
3.0									
4.0									

Groundwater Conditions
Ingress at 2m - Seepage

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP149986**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,083.29 E 735,551.59 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	74.67
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown sandy very slightly gravelly CLAY with occasional rootlets		0.35	74.32						
Stiff to very stiff brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (subangular to rounded). Sand is fine to medium. Gravel is fine to medium, angular to rounded.					AA158238	D B	0.60-0.60 0.60-0.60		
1.0									
						D	1.80-1.80		
2.0 Firm to stiff brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (subangular to rounded). Sand is fine to medium. Gravel is fine to medium, angular to rounded. 2.0-2.80m - Becoming firm to stiff		2.00	72.67	1 (Rapid)	AA158239	B	1.80-1.80		
Loose waterlogged dark blueish grey slightly clayey very gravelly SAND with low cobble content (Subangular to subrounded. Sand is medium to coarse. Gravel is fine to coarse, subangular to subrounded.		2.80	71.87			D	2.90-2.90		
3.0 End of Trial Pit at 3.10m		3.10	71.57		AA158240	B	2.90-2.90		
4.0									

Groundwater Conditions
Ingress at 2.5m - Rapid

Stability
Moderate Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150104**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	685,198.72 E 735,583.30 N
		DATE STARTED	09/03/2022
		DATE COMPLETED	09/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.38
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	72.98						
Stiff grey mottled brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular						D	0.50-0.50	88	
					AA152189	B	0.50-0.50	91	
								108	
1.0								102	
								99	
								100	
						D	1.50-1.50		
					AA152190	B	1.50-1.50		
2.0									
Firm to stiff grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		2.20	71.18	1 (Moderate)					
						D	2.50-2.50		
					AA152191	B	2.50-2.50		
Trial pit terminated due to collapse. End of Trial Pit at 2.70m		2.70	70.68						
3.0									
4.0									

Groundwater Conditions
Moderate flow at 2.50m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150190**
		SHEET	Sheet 1 of 1
LOGGED BY	A. Garne	**CO-ORDINATES**	685,283.23 E 735,588.97 N
		DATE STARTED	08/03/2022
		DATE COMPLETED	08/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.49
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	73.29						
Very stiff grey mottled orange brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular. Medium cobble content.						D	0.50-1.00	78	
					AA178606	B	0.50-1.00	68	
								105	
1.0								99	
								111	
								93	
						D	1.50-2.00		
					AA178607	B	1.50-2.00		
2.0									
Stiff grey slightly sandy slightly gravelly SILT. Low cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		2.50	70.99						
3.0						D	3.00-3.50		
					AA178608	B	3.00-3.50		
Trial pit terminated due to boulders End of Trial Pit at 3.80m		3.80	69.69						
4.0									

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150295**
		SHEET	Sheet 1 of 1
LOGGED BY	A. Garne	**CO-ORDINATES**	685,339.93 E 735,590.77 N
		DATE STARTED	08/03/2022
		DATE COMPLETED	08/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.23
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil		0.30	72.93						
Firm grey slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		0.50	72.73						
Stiff to very stiff grey mottled orange brown slightly sandy gravelly CLAY. Medium cobble content. Gravels sub-angular to sub-rounded.					AA178604	D B	0.50-1.00 0.50-1.00	105 79 87	
Dense grey silty sandy GRAVEL. Medium cobble content. Cobbles sub-angular to sub-rounded		1.10	72.13	1 (Seepage)				99 113 86	
					AA178605	D B	1.50-2.00 1.50-2.00		
Trial pit terminated due to collapse End of Trial Pit at 2.30m		2.30	70.93						

Groundwater Conditions
Seepage at 1.10m

Stability
Unstable from 2.0m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150400**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	685,489.95 E 735,626.02 N
		DATE STARTED	28/02/2022
		DATE COMPLETED	28/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.54
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil		0.30	73.24			D	0.50-0.50	66	
Firm grey slightly sandy gravelly CLAY					AA179489	B	0.50-0.50	58	
		0.80	72.74					71	
Medium dense clayey sandy GRAVEL				(Slow)				53	
								48	
								45	
Trial pit terminated due to collapse		1.50	72.04			D	1.50-1.50		
End of Trial Pit at 1.50m					AA179490	B	1.50-1.50		

Groundwater Conditions
Slow flow at 1.20m

Stability
Slightly unstable from 0.80m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150490**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	685,579.98 E 735,607.99 N
		DATE STARTED	28/02/2022
		DATE COMPLETED	28/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.84
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	73.54						
Stiff grey mottled brown slightly gravelly sandy CLAY						D	0.50-0.50	82	
					AA179487	B	0.50-0.50	52	
								67	
1.0 Firm brown grey gravelly sandy CLAY		1.00	72.84					63	
								91	
								88	
						D	1.50-1.50		
					AA179488	B	1.50-1.50		
2.0				1 (Moderate)					
Trial pit terminated due to collapse End of Trial Pit at 2.20m		2.20	71.64						
3.0									
4.0									

Groundwater Conditions
Moderate flow at 2.0m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150590**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,674.18 E 735,561.80 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.70
		EXCAVATION METHOD	Hitachi 6.5T
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Dark brown sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	73.40						
SUBSOIL - Firm dark brown sandy very slightly gravelly CLAY		0.40	73.30						
						D	0.50-0.50		
Stiff brown mottled grey slightly sandy slightly gravelly silty CLAY with low cobble content (subangular to rounded). Sand is fine to medium. Gravel is fine to medium, angular to rounded.					AA156001	B	0.50-0.50		
1.0									
		1.50	72.20						
						D	1.60-1.60		
Soft to firm slightly damp brown mottled grey slightly sandy slightly gravelly silty CLAY with low cobble content (subangular to rounded). Sand is fine to medium. Gravel is fine to medium, angular to rounded.					AA156002	B	1.60-1.60		
		1.90	71.80						
2.0 Firm dark blueish grey sandy gravelly silty CLAY with low cobble content (angular to subrounded) and low boulder content (Varied lithologies, max 0.5m				1 (Rapid)					
						D	2.20-2.20		
					AA156003	B	2.20-2.20		
2.70-3.0m - Medium cobble content Very gravelly									
3.0		3.00	70.70						
End of Trial Pit at 3.00m									
4.0									

Groundwater Conditions
Ingress at 2.3m - Rapid

Stability
Moderate Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150702**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,789.01 E 735,573.27 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.77
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown sandy very slightly gravelly CLAY with occasional rootlets									
		0.30	73.47						
SUBSOIL - Firm brown sandy very slightly gravelly CLAY		0.40	73.37						
Stiff brown mottled grey slightly sandy slightly gravelly silty CLAY with low cobble content (Subangular to subrounded) and low boulder content (Blocky Limestone, subrounded, 0.5m). Sand is fine to medium. Gravel is fine to coarse, subangular to subrounded.						D	0.60-0.60		
					AA158247	B	0.60-0.60		
1.0									
						D	1.60-1.60		
Firm moist dark grey slightly gravelly CLAY with low cobble content (Subrounded to rounded) and low boulder content (subrounded to rounded). Sand is fine to coarse. Gravel if fine to coarse, subangular to rounded.		1.80	71.97		AA158248	B	1.60-1.60		
						D	2.00-2.00		
2.0					AA158249	B	2.00-2.00		
2.50-3.10m - Medium cobble content 2.60-3.10m - Material becomes moist				1 (Seepage)					
3.0									
End of Trial Pit at 3.10m		3.10	70.67						
4.0									

Groundwater Conditions
Ingress at 2.8m - Seepage

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150800**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,888.85 E 735,575.94 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	74.69
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Brown sandy very slightly gravelly CLAY with occasional rootlets									
SUBSOIL - Firm brown sandy very slightly gravelly CLAY		0.30	74.39						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (angular to subrounded). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded		0.40	74.29			D	0.50-0.50		
1.0					AA158244	B	0.50-0.50		
Firm moist brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (angular to subrounded) and low boulder content (Varied lithologies, max. 0.8m). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded		1.60	73.09			D	1.70-1.70		
2.0					AA158245	B	1.70-1.70		
Firm moist dark grey slightly sandy gravelly CLAY. Sand is medium to coarse, subangular to rounded		2.90	71.79	1 (Seepage)		D	2.90-2.90		
3.0 End of Trial Pit at 3.00m		3.00	71.69		AA158246	B	2.90-2.90		
4.0									

Groundwater Conditions
Ingress at 2.9m - Seepage

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP150900**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	685,952.12 E 735,519.11 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	74.61
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 6.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Brown sandy very slightly gravelly CLAY with occasional rootlets									
		0.35	74.26						
SUBSOIL - Firm brown sandy very slightly gravelly CLAY									
Firm to stiff dark grey slightly gravelly CLAY with low cobble content (Angular to subrounded). Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded.		0.60	74.01			D	0.60-0.60		
					AA158241	B	0.60-0.60		
Firm brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content (angular to subrounded). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded									
		1.30	73.31						
Firm brown mottled grey slightly sandy gravelly CLAY with low cobble content (angular to subrounded) and low boulder content (Blocky limestone, 0.4m). Sand is fine to medium. Gravel is fine to coarse, angular to subrounded						D	1.60-1.60		
1.60-2.40m - Material becomes moist					AA158242	B	1.60-1.60		
		2.40	72.21						
						D	2.50-2.50		
				1 (Seepage)	AA158243	B	2.50-2.50		
		2.80	71.81						
End of Trial Pit at 2.80m									

Groundwater Conditions
Ingress at 2.8m - Seepage

Stability
Good Stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151000**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	685,973.18 E 735,417.06 N
		DATE STARTED	09/03/2022
		DATE COMPLETED	09/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	74.12
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
Stiff to very stiff brown slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		0.40	73.72			D	0.50-0.50	62	
					AA152192	B	0.50-0.50	93	
								106	
1.0 Stiff to very stiff grey mottled brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		1.00	73.12					98	
								101	
								75	
						D	1.50-1.50		
					AA152193	B	1.50-1.50		
2.0 Stiff dark grey sandy very gravelly CLAY. Medium cobble content. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular		2.20	71.92						
						D	2.50-2.50		
					AA152194	B	2.50-2.50		
3.0				(Seepage)					
4.0 End of Trial Pit at 4.00m		4.00	70.12						

Groundwater Conditions
Seepage at 3.50m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151095**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,032.72 E 735,335.82 N
		DATE STARTED	09/03/2022
		DATE COMPLETED	09/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.86
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	73.46						
Stiff brown slightly sandy gravelly CLAY.						D	0.50-0.50	81	
					AA152195	B	0.50-0.50	86	
								96	
1.0								100	
		1.20	72.66					72	
Stiff brown gravelly sandy CLAY.								79	
						D	1.50-1.50		
					AA152196	B	1.50-1.50		
2.0 Stiff dark grey sandy gravelly CLAY, Medium cobble content.		2.00	71.86						
						D	2.50-2.50		
					AA152197	B	2.50-2.50		
3.0				(Seepage)					
4.0 End of Trial Pit at 4.00m		4.00	69.86						

Groundwater Conditions
Seepage at 3.50m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151178**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,065.50 E 735,261.60 N
		DATE STARTED	10/03/2022
		DATE COMPLETED	10/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.29
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.60	72.69			D	0.60-0.60	97	
Firm greyish brown slightly sandy gravelly CLAY.						D	0.60-0.60	81	
					AA170147	B	0.60-0.60	103	
1.0								110	
								99	
								98	
						D	1.50-1.50		
					AA170148	B	1.50-1.50		
2.0									
		2.50	70.79			D	2.50-2.50		
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content.					AA170149	B	2.50-2.50		
3.0									
						D	3.50-3.50		
					AA170150	B	3.50-3.50		
4.0 End of Trial Pit at 4.00m		4.00	69.29						

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151301**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,166.09 E 735,238.27 N
		DATE STARTED	10/03/2022
		DATE COMPLETED	10/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.07
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
						D	0.50-0.50	77	
Stiff to very stiff brown slightly sandy gravelly CLAY.		0.60	72.47		AA170151	B	0.50-0.50	81	
								96	
1.0								100	
								88	
								106	
						D	1.50-1.50		
					AA170152	B	1.50-1.50		
2.0									
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content.		2.50	70.57						
						D	2.50-2.50		
					AA170153	B	2.50-2.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	69.07						

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151412**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,273.86 E 735,196.57 N
		DATE STARTED	10/03/2022
		DATE COMPLETED	10/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	72.42
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	72.02						
Stiff to very stiff brown slightly sandy gravelly CLAY.						D	0.50-0.50	81	
					AA170154	B	0.50-0.50	105	
								96	
1.0								98	
		1.20	71.22					110	
Stiff to very stiff grey mottled brown slightly sandy gravelly CLAY.								89	
						D	1.50-1.50		
					AA170155	B	1.50-1.50		
2.0									
		2.20	70.22						
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content.									
						D	2.50-3.50		
					AA170156	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	68.42						

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151503**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,370.47 E 735,216.48 N
		DATE STARTED	16/03/2022
		DATE COMPLETED	16/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	72.09
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	71.79			D	0.50-0.50	110	
Firm brown slightly gravelly sandy CLAY.					AA170198	B	0.50-0.50	112	
								92	
1.0		1.00	71.09						
Firm to stiff gbrownish grey slightly gravelly sandy CLAY.								93	
								103	
								113	
						D	1.50-1.50		
					AA170199	B	1.50-1.50		
		1.80	70.29						
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.									
2.0									
						D	2.50-3.50		
					AA170200	B	2.50-3.50		
3.0									
		4.00	68.09						
4.0 End of Trial Pit at 4.00m									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151602**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,462.25 E 735,245.65 N
		DATE STARTED	16/03/2022
		DATE COMPLETED	16/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.92
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	71.52						
Firm brown sandy gravelly CLAY.						D	0.50-0.50	85	
					AA170195	B	0.50-0.50	109	
								99	
1.0 Firm to stiff brownish grey sandy gravelly CLAY. Medium cobble content. Cobbles sub rounded to angular.		1.10	70.82					106	
								101	
								98	
						D	1.50-1.50		
					AA170196	B	1.50-1.50		
2.0 Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.		2.00	69.92						
						D	2.50-3.50		
					AA170197	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	67.92						

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151737**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,598.89 E 735,244.20 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.67
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.37						
Soft to firm grey mottled brown slightly sandy SILT						D	0.50-1.50	80	
					AA175216	B	0.50-1.50	91	
1.0								88	
								104	
								94	
								96	
Firm dark grey slightly gravelly sandy CLAY. Medium cobble content. Low boulder content. Cobbles angular to sub-angular. Boulders sub-angular to rounded		1.90	69.77						
2.0						D	2.50-3.50		
					AA175217	B	2.50-3.50		
3.0									
Trial pit terminated due to possible bedrock End of Trial Pit at 3.50m		3.50	68.17						
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151799**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,662.98 E 735,225.68 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.46
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.16						
Very stiff grey mottled from slightly sandy slightly gravelly SILT						D	0.50-1.50	70	
					AA175218	B	0.50-1.50	61	
								103	
1.0								95	
								81	
								83	
Firm to stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles are sub-angular to rounded.		1.70	69.76						
2.0									
						D	2.50-3.50		
					AA175219	B	2.50-3.50		
3.0				(Seepage)					
4.0 End of Trial Pit at 4.00m		4.00	67.46						

Groundwater Conditions
Seepage at 3.50m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151882**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,743.01 E 735,321.26 N
		DATE STARTED	28/03/2022
		DATE COMPLETED	28/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.82
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	71.62						
Firm brown mottled grey slightly gravelly slightly sandy SILT						D	0.50-1.50	80	
					AA175202	B	0.50-1.50	89	
1.0								93	
								85	
								101	
								99	
Firm to stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles are sub-angular to rounded. 2.0		1.90	69.92						
						D	2.50-3.50		
					AA175203	B	2.50-3.50		
3.0									
Trial pit teminated due to boulders End of Trial Pit at 3.50m 4.0		3.50	68.32						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151901**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,763.05 E 735,268.89 N
		DATE STARTED	28/03/2022
		DATE COMPLETED	28/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.75
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	71.55						
Firm brown mottled grey slightly sandy SILT						D	0.50-1.50	79	
					AA175200	B	0.50-1.50	99	
								85	
1.0								83	
								89	
								90	
2.0 Stiff to very stiff dark grey slightly gravelly sandy CLAY. Medium cobble content. Low boulder content. Cobbles angular to sub-angular. Boulders sub-angular to rounded.		2.00	69.75						
						D	2.50-3.50		
3.0					AA175201	B	2.50-3.50		
Trial pit terminated due to boulders End of Trial Pit at 3.50m		3.50	68.25						
4.0									

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151906**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,769.31 E 735,398.44 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.47
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.17						
Firm brownish grey slightly sandy SILT						D	0.50-0.50	87	
					AA175204	B	0.50-0.50	99	
								107	
1.0								95	
								93	
		1.30	70.17					108	
Stiff to very stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles sub-angular to rounded									
						D	1.50-3.50		
					AA175205	B	1.50-3.50		
2.0									
3.0									
Trial pit terminated due to collapse End of Trial Pit at 3.50m		3.50	67.97						
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP151961**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,821.87 E 735,328.65 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.30
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.00						
Firm to stiff brownish grey slightly gravelly sandy SILT						D	0.50-0.50	71	
					AA175206	B	0.50-0.50	103	
								96	
		0.90	70.40						
1.0 Stiff to very stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles sub-angular to rounded								107	
								85	
								91	
						D	1.50-2.50		
2.0					AA175207	B	1.50-2.50		
		2.90	68.40						
3.0 Trial pit terminated due to boulders End of Trial Pit at 2.90m									
4.0									

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152002**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,864.12 E 735,269.93 N
		DATE STARTED	28/03/2022
		DATE COMPLETED	28/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.99
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	70.69						
Stiff grey mottled brown slightly sandy SILT						D	0.50-0.50	78	
					AA175198	B	0.50-0.50	99	
								81	
1.0								88	
		1.20	69.79					90	
Stiff dark grey gravelly sandy CLAY. Medium cobble content. Low boulder content. Cobbles and boulders sub-angular to rounded								79	
						D	1.50-3.50		
					AA175199	B	1.50-3.50		
2.0									
3.0									
Trial pit terminated due to boulders End of Trial Pit at 3.50m		3.50	67.49						
4.0									

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152045**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,870.71 E 735,366.20 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.18
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	70.88			D	0.50-0.50	97	
Firm greyish brown slightly gravelly clayey SILT					AA175208	B	0.50-0.50	86	
		0.80	70.38					84	
Firm to stiff brownish grey sandy gravelly CLAY. Medium cobble content. Cobbles angular to sub-angular									
1.0								90	
								80	
								81	
						D	1.50-1.50		
Stiff to very stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles sub-angular to rounded		1.60	69.58		AA175209	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA175210	B	2.50-3.50		
3.0									
		3.50	67.68						
Trial pit terminated due to boulders End of Trial Pit at 3.50m									
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152102**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	686,963.92 E 735,249.13 N
		DATE STARTED	28/03/2022
		DATE COMPLETED	28/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.90
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	70.60						
Dense brownish grey slightly gravelly clayey SAND						D	0.50-1.50	55	
					AA175196	B	0.50-1.50	43	
1.0								61	
								63	
								54	
2.0								52	
Very stiff dark grey slightly sandy slightly gravelly CLAY. Medium cobble content. Medium boulder content. Cobbles and boulders sub-angular to rounded		2.20	68.70						
						D	2.50-3.50		
3.0					AA175197	B	2.50-3.50		
Trial pit terminated due to collapse End of Trial Pit at 3.50m		3.50	67.40						
4.0									

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152190**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,053.18 E 735,228.95 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.44
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	70.14						
Firm to stiff grey mottled brown slightly sandy slightly gravelly SILT						D	0.50-0.50	100	
					AA175211	B	0.50-0.50	90	
1.0								92	
								85	
								87	
		1.30	69.14					90	
Dense dark grey slightly gravelly silty SAND. Medium cobble content. Medium boulder content. Cobbles and boulders angular to sub-angular						D	1.50-3.50		
					AA175212	B	1.50-3.50		
2.0									
3.0				1 (Seepage)					
Trial pit terminated due to possible bedrock End of Trial Pit at 3.50m		3.50	66.94						
4.0									

Groundwater Conditions
Seepage at 3.20m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152295**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,153.97 E 735,209.07 N
		DATE STARTED	29/03/2022
		DATE COMPLETED	29/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.15
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	69.85						
Firm to stiff grey mottled brown slightly sandy slightly gravelly SILT						D	0.50-1.50	103	
					AA175213	B	0.50-1.50	91	
1.0								93	
								93	
								85	
								88	
2.0 Stiff to very stiff dark grey slightly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded		2.00	68.15						
						D	2.50-2.50		
					AA175214	B	2.50-2.50		
3.0									
Dense dark grey very silty SAND		3.30	66.85						
						D	3.50-3.50		
					AA175215	B	3.50-3.50		
4.0 End of Trial Pit at 4.00m		4.00	66.15						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152405**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,250.19 E 735,177.08 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.17
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	69.97						
Stiff to very stiff greyish brown sandy SILT						D	0.50-1.50	81	
					AA175220	B	0.50-1.50	70	
								85	
1.0								99	
								100	
								95	
2.0		2.10	68.07						
Very stiff dark grey slightly gravelly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded						D	2.50-2.50		
					AA175221	B	2.50-2.50		
		2.90	67.27						
3.0 Medium dense grey silty SAND. Medium cobble content. Cobbles sub-angular to rounded						D	3.50-3.50		
					AA175222	B	3.50-3.50		
4.0 End of Trial Pit at 4.00m		4.00	66.17						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152500**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,318.14 E 735,148.03 N
		DATE STARTED	30/03/2022
		DATE COMPLETED	30/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.07
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	69.77						
Firm brownish grey sandy SILT				1 (Seepage)		D	0.50-0.50	81	
					AA175223	B	0.50-0.50	93	
		0.80	69.27					89	
Medium dense grey clayey sandy GRAVEL. Medium cobble content. Cobbles sub-angular to rounded								103	
1.0								92	
								98	
						D	1.50-1.50		
					AA175224	B	1.50-1.50		
2.0		2.10	67.97						
Trial pit terminated due to collapse End of Trial Pit at 2.10m									
3.0									
4.0									

Groundwater Conditions
Seepage at 0.80m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152699**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,482.78 E 734,992.66 N
		DATE STARTED	01/04/2022
		DATE COMPLETED	01/04/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.57
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	70.27						
Firm greyish brown slightly sandy slightly gravelly SILT						D	0.50-1.50	103	
					AA175234	B	0.50-1.50	99	
								88	
1.0								105	
								86	
								89	
2.0									
Stiff to very stiff dark grey gravelly sandy CLAY. Low cobble content. Cobbles sub-angular to rounded		2.40	68.17			D	2.50-3.50		
					AA175235	B	2.50-3.50		
3.0				1 (Slow)					
4.0 End of Trial Pit at 4.00m		4.00	66.57						

Groundwater Conditions
Slow flow at 3.0m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152806**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,589.14 E 734,982.52 N
		DATE STARTED	01/04/2022
		DATE COMPLETED	01/04/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	72.24
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.94						
Firm brown sandy gravelly CLAY		0.70	71.54			D	0.50-0.50	103	
					AA175236	B	0.50-0.50	81	
Firm to stiff brown gravelly sandy CLAY. Medium cobble content. Occasional boulder. Cobbles and boulders sub-angular to rounded								83	
1.0								91	
								99	
				1 (Seepage)				98	
						D	1.50-2.50		
2.0					AA175237	B	1.50-2.50		
Stiff to very stiff dark grey gravelly sandy CLAY. High cobble content. Medium boulder content. Cobbles and boulders sub-angular to rounded		2.90	69.34						
3.0						D	3.50-3.50		
					AA175238	B	3.50-3.50		
4.0 End of Trial Pit at 4.00m		4.00	68.24						

Groundwater Conditions
Seepage at 1.50m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152901**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,672.96 E 734,937.27 N
		DATE STARTED	01/04/2022
		DATE COMPLETED	01/04/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.83
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	71.53						
Firm brown mottled grey slightly gravelly sandy CLAY						D	0.50-0.50	79	
					AA175239	B	0.50-0.50	81	
								89	
1.0								91	
		1.20	70.63					85	
Firm to stiff brown slightly sandy gravelly CLAY. Medium cobble content. Cobbles are sub-angular to rounded								90	
						D	1.50-1.50		
					AA175240	B	1.50-1.50		
2.0									
		2.40	69.43	1 (Seepage)					
Very stiff dark grey gravelly very sandy CLAY with silt pockets throughout. Medium cobble content. Low boulder content. Cobbles and boulders sub-angular to rounded						D	2.50-3.50		
					AA175241	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	67.83						

Groundwater Conditions
Seepage at 2.40m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP152989**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,740.17 E 734,859.11 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.37
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	71.17						
Firm greyish brown slightly gravelly sandy CLAY						D	0.50-1.50	81	
					AA175231	B	0.50-1.50	88	
								91	
1.0								85	
								93	
								96	
2.0		2.10	69.27						
Firm greyish brown gravelly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded						D	2.50-2.50		
					AA175232	B	2.50-2.50		
3.0									
		3.40	67.97						
Stiff dark grey gravelly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded		3.50	67.87			D	3.50-3.50		
Trial pit terminated due to collapse End of Trial Pit at 3.50m					AA175233	B	3.50-3.50		
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP153098**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,825.90 E 734,814.10 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.43
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.13						
Firm to stiff slightly gravelly sandy SILT						D	0.50-1.50	93	
					AA175229	B	0.50-1.50	81	
								85	
1.0								81	
								94	
								91	
2.0		2.10	69.33	1 (Seepage)					
Stiff dark grey sandy gravelly CLAY. Medium cobble content. Cobbles sub-angular to rounded						D	2.50-3.50		
3.0					AA175230	B	2.50-3.50		
4.0 End of Trial Pit at 4.00m		4.00	67.43						

Groundwater Conditions
Seepage at 2.10m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP153199**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	687,913.17 E 734,779.58 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.78
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.20	71.58						
Soft brown slightly gravelly SILT						D	0.50-1.50	73	
					AA175227	B	0.50-1.50	81	
								85	
1.0								99	
								92	
2.0									
Firm to stiff greyish brown gravelly SILT. Medium cobble content. Cobbles sub-angular to rounded		2.20	69.58						
						D	2.50-2.50		
					AA175228	B	2.50-2.50		
3.0 Trial pit terminated due to collapse End of Trial Pit at 3.00m		3.00	68.78						
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP153301**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	688,005.14 E 734,733.92 N
		DATE STARTED	31/03/2022
		DATE COMPLETED	31/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.73
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	71.43						
Firm brown slightly gravelly slightly clayey SILT. Low cobble content. Cobbles sub-angular to rounded						D	0.50-1.50	60	
					AA175225	B	0.50-1.50	101	
								93	
1.0								83	
								85	
								83	
2.0									
						D	2.50-3.50		
					AA175226	B	2.50-3.50		
3.0				1 (Seepage)					
4.0 End of Trial Pit at 4.00m		4.00	67.73						

Groundwater Conditions
Seepage at 3.0m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156000**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	689,825.83 E 733,059.16 N
		DATE STARTED	25/03/2022
		DATE COMPLETED	25/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.30
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	68.00						
Firm brown mottled grey slightly gravelly sandy SILT						D	0.50-0.50	79	
					AA175185	B	0.50-0.50	88	
		0.80	67.50					106	
Firm brownish grey slightly gravelly sandy CLAY									
1.0								95	
								108	
								83	
						D	1.50-1.50		
Very stiff dark grey to black gravelly sandy CLAY. Medium cobble content. Medium boudler content. Cobbles and boulders sub-angular to rounded		1.70	66.60		AA175186	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA175187	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	64.30						

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156099**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	689,900.15 E 732,989.87 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.94
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	67.54						
Firm to stiff grey mottled brown slightly gravelly sandy CLAY						D	0.50-1.50	106	
					AA175183	B	0.50-1.50	99	
								101	
1.0								111	
								89	
								95	
Firm dark grey gravelly sandy CLAY		1.60	66.34	(Seepage)					
2.0						D	2.50-2.50		
					AA175184	B	2.50-2.50		
3.0 Trial pit terminated due to collapse End of Trial Pit at 3.00m		3.00	64.94						
4.0									

Groundwater Conditions
Seepage at 1.60m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156204**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	689,964.06 E 732,905.25 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.53
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	68.13						
Soft to firm brownish grey sandy gravelly CLAY						D	0.50-1.50	98	
					AA175181	B	0.50-1.50	107	
								99	
1.0								81	
								95	
2.0								111	
Soft to firm dark grey gravelly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded		2.40	66.13	1 (Seepage)		D	2.50-2.50		
					AA175182	B	2.50-2.50		
3.0 Trial pit terminated due to collapse End of Trial Pit at 3.00m		3.00	65.53						
4.0									

Groundwater Conditions
Seepage at 2.40m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156299**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,057.63 E 732,866.90 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	69.51
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	69.11						
Firm greyish brown sandy gravelly CLAY. Medium cobble content. Cobbles sub-angular to rounded					AA175179	D B	0.50-1.50 0.50-1.50	104 93 96	
1.0								106 99 110	
2.0									
Medium dense grey clayey sandy GRAVEL. Medium cobble content. Cobbles sub-angular to rounded		2.80	66.71	1 (Seepage)					
3.0									
Trial pit terminated due to collapse End of Trial Pit at 3.50m		3.50	66.01		AA175180	D B	3.50-3.50 3.50-3.50		
4.0									

Groundwater Conditions
Seepage at 2.80m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156398**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,150.03 E 732,827.40 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.57
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil									
		0.50	68.07			D	0.50-1.50	110	
Firm greyish brown gravelly sandy CLAY					AA175177	B	0.50-1.50	107 91	
								106 85 99	
		2.20	66.37						
Very stiff dark grey to black gravelly sandy CLAY. Medium cobble content. Medium boulder content. Cobbles and boulders sub-angular to rounded.				1 (Seepage)		D	2.50-3.50		
					AA175178	B	2.50-3.50		
		3.50	65.07						
Trial pit terminated due to boulders End of Trial Pit at 3.50m									

Groundwater Conditions
Seepage at 3.0m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156499**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,220.84 E 732,752.94 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.60
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	68.20						
Firm greyish brown gravelly sandy CLAY						D	0.50-1.50	88	
					AA175175	B	0.50-1.50	94	
								107	
1.0								101	
								92	
2.0								97	
Stiff grey to dark grey slightly gravelly sandy CLAY. Medium cobble content. Cobbles sub-angular to rounded		2.50	66.10			D	2.50-2.50		
					AA175176	B	2.50-2.50		
3.0 Trial pit terminated due to boulders End of Trial Pit at 3.00m		3.00	65.60						
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156601**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,303.99 E 732,665.90 N
		DATE STARTED	24/03/2022
		DATE COMPLETED	24/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.38
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	67.98						
Soft to firm greyish brown sandy CLAY						D	0.50-0.50	106	
					AA175172	B	0.50-0.50	77	
								91	
1.0									
Soft to firm brown slightly gravelly sandy CLAY		1.10	67.28					93	
								85	
								79	
						D	1.50-1.50		
					AA175173	B	1.50-1.50		
2.0									
Very stiff dark grey to black gravelly sandy CLAY. Medium cobble content. Medium boudler content. Cobbles and boulders sub-angular to rounded		2.20	66.18						
						D	2.50-3.50		
					AA175174	B	2.50-3.50		
3.0									
Trial pit terminated due to boulders End of Trial Pit at 2.20m		3.50	64.88						
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156701**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,416.51 E 732,631.79 N
		DATE STARTED	11/03/2022
		DATE COMPLETED	11/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.59
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.50	67.09			D	0.50-0.50	88	
Firm brown gravelly sandy CLAY.					AA170163	B	0.50-0.50	79	
								98	
1.0								103	
		1.20	66.39					79	
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.								85	
						D	1.50-1.50		
					AA170164	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA170165	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	63.59						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156803**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,494.54 E 732,645.63 N
		DATE STARTED	11/03/2022
		DATE COMPLETED	11/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.21
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.50	66.71			D	0.50-0.50	91	
Firm grey mottled brown slightly gravelly sandy CLAY.					AA170160	B	0.50-0.50	87 104	
1.0								100 78 96	
						D	1.50-1.50		
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.		1.70	65.51		AA170161	B	1.50-1.50		
2.0									
						D	2.50-2.50		
					AA170162	B	2.50-2.50		
Trial pit terminated due to boulders End of Trial Pit at 2.80m		2.80	64.41						
3.0									
4.0									

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156895**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,581.69 E 732,624.78 N
		DATE STARTED	11/03/2022
		DATE COMPLETED	11/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.12
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
Dense grey mottled brown very clayey SAND.		0.50	66.62			D	0.50-0.50	53	
					AA170157	B	0.50-0.50	38	
								60	
1.0								45	
Firm to stiff grey mottled brown sandy CLAY.		1.20	65.92					52	
								58	
						D	1.50-1.50		
					AA170158	B	1.50-1.50		
2.0				1 (Seepage)					
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.		2.10	65.02						
						D	2.50-3.50		
					AA170159	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	63.12						

Groundwater Conditions
Seepage at 2.10m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP156965**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,663.76 E 732,624.07 N
		DATE STARTED	11/03/2022
		DATE COMPLETED	11/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.65
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.50	67.15			D	0.50-0.50	89	
Firm brown slightly gravelly sandy CLAY.					AA170166	B	0.50-0.50	85	
								101	
1.0								99	
		1.20	66.45					97	
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.								105	
						D	1.50-1.50		
					AA170167	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA170168	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	63.65						

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157100**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,763.25 E 732,526.58 N
		DATE STARTED	14/03/2022
		DATE COMPLETED	14/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.48
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	68.18						
Firm brown gravelly CLAY.						D	0.50-0.50	66	
					AA170169	B	0.50-0.50	71	
		0.80	67.68					68	
Soft to firm greyish brown sandy gravelly CLAY. Medium cobble content. Low boulder content.								93	
1.0								81	
								71	
						D	1.50-1.50		
					AA170170	B	1.50-1.50		
2.0									
						D	2.50-2.50		
				1 (Seepage)	AA170171	B	2.50-2.50		
3.0 Trial pit terminated due to collapse. End of Trial Pit at 3.00m		3.00	65.48						
4.0									

Groundwater Conditions
Seepage at 2.80m

Stability
Slightly unstable from 0.80m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157202**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,848.13 E 732,495.76 N
		DATE STARTED	14/03/2022
		DATE COMPLETED	14/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.12
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	66.82			D	0.50-0.50	95	
Firm to stiff brown slightly sandy slightly gravelly CLAY.					AA170172	B	0.50-0.50	78 106	
		0.90	66.22						
1.0 Stiff to very stiff grey mottled brown slightly sandy slightly gravelly CLAY.		1.10	66.02			D	1.00-1.00	99	
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content. Low boulder content.					AA170173	B	1.00-1.00	87 91	
2.0									
						D	2.50-3.50		
3.0					AA170174	B	2.50-3.50		
				(Seepage)					
4.0 End of Trial Pit at 4.00m		4.00	63.12						

Groundwater Conditions
Seepage at 3.50m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157300**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	690,954.35 E 732,431.29 N
		DATE STARTED	14/03/2022
		DATE COMPLETED	14/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.14
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	65.74						
Firm greyish brown slightly sandy slightly gravelly CLAY.						D	0.50-0.50	88	
					AA170175	B	0.50-0.50	91	
								109	
1.0								101	
Stiff greyish brown slightly sandy gravelly CLAY.		1.20	64.94					95	
								96	
						D	1.50-1.50		
					AA170176	B	1.50-1.50		
2.0									
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.		2.50	63.64	1 (Slow)		D	2.50-3.50		
					AA170177	B	2.50-3.50		
3.0									
End of Trial Pit at 3.50m		3.50	62.64						
4.0									

Groundwater Conditions
Slow flow at 2.80m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157403**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,035.01 E 732,392.44 N
		DATE STARTED	14/03/2022
		DATE COMPLETED	14/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.19
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.50	65.69			D	0.50-0.50	106	
Firm to stiff brown slightly sandy slightly gravelly CLAY.					AA170178	B	0.50-0.50	101	
								91	
1.0		1.10	65.09					98	
Stiff to very stiff greyish brown slightly sandy gravelly CLAY. Medium cobble content.								105	
								107	
						D	1.50-1.50		
					AA170179	B	1.50-1.50		
		1.90	64.29						
2.0 Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.									
						D	2.50-3.50		
					AA170180	B	2.50-3.50		
3.0									
		3.50	62.69						
Refusal due to high boulder content. End of Trial Pit at 3.50m									
4.0									

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157502**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,137.46 E 732,401.97 N
		DATE STARTED	15/03/2022
		DATE COMPLETED	15/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	65.41
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	65.01						
Stiff to very stiff brown slightly sandy slightly gravelly CLAY.						D	0.50-0.50	118	
					AA170181	B	0.50-0.50	97	
								105	
1.0		1.10	64.31					109	
Stiff to very stiff grey mottled brown slightly sandy slightly gravelly CLAY.								112	
								106	
						D	1.50-1.50		
					AA170182	B	1.50-1.50		
2.0		2.30	63.11						
Very stiff dark grey sandy gravelly CLAY.									
						D	2.50-3.50		
					AA170183	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	61.41						

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157585**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,223.03 E 732,368.67 N
		DATE STARTED	15/03/2022
		DATE COMPLETED	15/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.11
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	65.81						
Firm to stiff brown slightly sandy gravelly CLAY.						D	0.50-1.50	99	
					AA170184	B	0.50-1.50	110	
								103	
1.0								112	
								96	
								107	
2.0									
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.		2.20	63.91						
						D	2.50-3.50		
					AA170185	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	62.11						

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157697**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,259.47 E 732,262.10 N
		DATE STARTED	15/03/2022
		DATE COMPLETED	15/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.40
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	67.00						
Firm brown slightly gravelly CLAY.						D	0.50-0.50	96	
					AA170192	B	0.50-0.50	109	
								91	
1.0									
Firm brownish grey slightly sandy slightly gravelly CLAY.		1.10	66.30					85	
								111	
								109	
						D	1.50-1.50		
					AA170193	B	1.50-1.50		
2.0									
Very stiff dark grey to black gravelly sandy CLAY. Medium boulder content.		2.20	65.20						
						D	2.50-3.50		
					AA170194	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	63.40						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157813**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,291.50 E 732,146.87 N
		DATE STARTED	15/03/2022
		DATE COMPLETED	15/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.04
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	67.64						
Firm brown slightly gravelly CLAY.						D	0.50-0.50	106	
					AA170189	B	0.50-0.50	98	
								101	
1.0		1.10	66.94					91	
Firm brown slightly sandy slightly gravelly CLAY.								86	
								109	
						D	1.50-1.50		
					AA170190	B	1.50-1.50		
2.0		2.20	65.84						
Very stiff dark grey to black sandy gravelly CLAY. Medium boulder content.									
						D	2.50-3.50		
					AA170191	B	2.50-3.50		
3.0									
4.0 End of Trial Pit at 4.00m		4.00	64.04						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP157895**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	691,346.64 E 732,084.27 N
		DATE STARTED	15/03/2022
		DATE COMPLETED	15/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.26
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.40	66.86						
MADE GROUND - Firm greyish brown slightly sandy gravelly CLAY. Rare pieces of wood and plastic throughout.						D	0.50-0.50	88	
					AA170186	B	0.50-0.50	79	
								91	
		1.00	66.26						
1.0 MADE GROUND - Firm grey sandy gravelly CLAY. Rare pieces of wood and plastic througout.								95	
								103	
								81	
						D	1.50-1.50		
		1.70	65.56		AA170187	B	1.50-1.50		
Medium dense grey slightly clayey sandy GRAVEL.									
2.0									
						D	2.50-3.50		
					AA170188	B	2.50-3.50		
3.0				1 (Seepage)					
		3.50	63.76						
Trial pit terminated due to collapse. End of Trial Pit at 3.50m									
4.0									

Groundwater Conditions
Seepage at 3.40m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159013**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,240.08 E 731,641.91 N
		DATE STARTED	22/02/2022
		DATE COMPLETED	22/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.00
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil		0.40	65.60						
Firm to stiff grey mottled brown slightly sandy gravelly CLAY. Medium cobble content. Cobbles rounded to sub-angular						D	0.50-0.50	50	
					AA179458	B	0.50-0.50	58	
								87	
								18	
								21	
								91	
Soft to firm dark grey sandy gravelly CLAY. Medium cobble content. Low boulder content. Cobbles and boulders rounded to sub-angular		1.50	64.50			D	1.50-1.50		
					AA179459	B	1.50-1.50		
						D	2.00-2.00		
					AA179460	B	2.00-2.00		
Trial pit terminated due to boulders End of Trial Pit at 2.20m		2.20	63.80						

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159100**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,328.14 E 731,617.09 N
		DATE STARTED	22/02/2022
		DATE COMPLETED	22/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.28
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.40	65.88			D	0.50-0.50	102	
Soft to firm grey mottled brown slightly sandy slightly gravelly CLAY. Medium cobble content. Cobbles rounded to sub-angular					AA179454	B	0.50-0.50	98	
		0.70	65.58					77	
Soft to firm grey sandy gravelly CLAY									
1.0						D	1.00-1.00	88	
					AA179455	B	1.00-1.00	83	
								95	
		2.00	64.28			D	2.00-2.00		
2.0 Firm grey sandy gravelly CLAY. Medium cobble content. Cobbles rounded to sub-rounded.					AA179456	B	2.00-2.00		
		3.00	63.28			D	3.00-3.00		
3.0 Trial pit terminated due to collapse End of Trial Pit at 3.00m					AA179457	B	3.00-3.00		
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159203**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,418.01 E 731,620.99 N
		DATE STARTED	22/02/2022
		DATE COMPLETED	22/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.27
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
Stiff grey mottled brown slightly sandy slightly gravelly CLAY		0.50	66.77		AA174499	D B	0.50-0.50 0.50-0.50	29 56 52	
1.0 Stiff grey slightly sandy gravelly CLAY		1.00	66.27	1 (Seepage)	AA174500	D B	1.00-1.00 1.00-1.00	53 47 89	
2.0 Trial pit terminated due to collapse End of Trial Pit at 2.00m		2.00	65.27		AA179453	D B	2.00-2.00 2.00-2.00		
3.0									
4.0									

Groundwater Conditions
Seepage at 1.0m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159303**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,520.01 E 731,613.00 N
		DATE STARTED	22/02/2022
		DATE COMPLETED	22/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	70.00
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	69.60						
Medium dense brown clayey sandy GRAVEL						D	0.50-0.50	76	
		0.70	69.30		AA174497	B	0.50-0.50	53	
Medium dense grey sandy GRAVEL								82	
1.0								62	
				1 (Seepage)				55	
								59	
						D	1.50-1.50		
					AA174498	B	1.50-1.50		
2.0 Trial pit terminated due to collapse End of Trial Pit at 2.00m		2.00	68.00						
3.0									
4.0									

Groundwater Conditions
Seepage at 1.50m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159347**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,560.01 E 731,647.08 N
		DATE STARTED	22/02/2022
		DATE COMPLETED	22/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	71.09
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	70.69						
Medium dense greyish brown sandy GRAVEL		0.70	70.39	1 (Seepage)	AA174495	D B	0.50-0.50 0.50-0.50	92 58	
Medium dense brownish grey sandy clayey GRAVEL								81	
1.0					AA174496	D B	1.00-1.00 1.00-1.00	29 28	
								22	
Trial pit terminated due to collapse End of Trial Pit at 1.50m		1.50	69.59						
2.0									
3.0									
4.0									

Groundwater Conditions
Seepage at 0.70m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159404**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,623.08 E 731,607.12 N
		DATE STARTED	21/02/2022
		DATE COMPLETED	21/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	72.52
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.60	71.92					72	
Medium dense brown sandy clayey GRAVEL								102	
								68	
1.0						D	1.00-1.00		
					AA174493	B	1.00-1.00		
								93	
								81	
								76	
				1 (Moderate)					
2.0 Trial pit terminated due to collapse		2.00	70.52			D	2.00-2.00		
End of Trial Pit at 2.00m					AA174494	B	2.00-2.00		
3.0									
4.0									

Groundwater Conditions
Moderate flow at 2.0m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP159488**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	692,706.04 E 731,617.97 N
		DATE STARTED	21/02/2022
		DATE COMPLETED	21/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	73.75
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil						D	0.50-0.50	55	
Medium dense brown gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subroudned to subangular.		0.60	73.15		AA174491	B	0.50-0.50	93 88	
1.0 Medium dense brownish grey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded to subangular.		1.00	72.75						
Trial pit terminated due to collapse End of Trial Pit at 1.50m		1.50	72.25	1 (Slow)	AA174492	D B	1.50-1.50 1.50-1.50	101 72 76	
2.0									
3.0									
4.0									

Groundwater Conditions
Slow flow at 1.50m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP160696**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,696.20 E 731,075.76 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	58.38
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.50	57.88			D	0.50-0.50	91	
Firm brown slightly silty slighty gravelly sandy CLAY					AA175151	B	0.50-0.50	106	
		0.70	57.68					77	
Firm grey gravelly very sandy CLAY									
1.0								99	
								101	
								110	
		1.50	56.88	1 (Seepage)		D	1.50-1.50		
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content. Medium boulder content. Cobbles angular to very angular. Boulders sub-angular to rounded					AA175152	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA175153	B	2.50-3.50		
		3.00	55.38						
3.0 Trial pit terminated due to boulders End of Trial Pit at 3.00m									
4.0									

Groundwater Conditions
Seepage at 1.50m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP160795**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,753.92 E 730,986.51 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	58.15
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	57.85						
Medium dense brown clayey SAND						D	0.50-0.50	55	
					AA175154	B	0.50-0.50	47	
								61	
		0.80	57.35						
Firm dark grey to black clayey SILT									
1.0								65	
								54	
								59	
		1.50	56.65						
Very stiff dark grey to black sandy gravelly CLAY. Medium cobble content. Medium boulder content. Cobbles angular to very angular. Boulders sub-angular to rounded						D	1.50-1.50		
					AA175155	B	1.50-1.50		
2.0									
						D	2.50-3.50		
					AA175156	B	2.50-3.50		
3.0									
		3.50	54.65						
Trial pit terminated due to boulders End of Trial Pit at 3.50m									
4.0									

Groundwater Conditions
DRY

Stability
Stabe

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP160895**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,760.44 E 730,884.45 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	57.62
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	57.32						
Firm dark grey to black very clayey SILT						D	0.50-0.50	33	
					AA175157	B	0.50-0.50	49	
								44	
1.0 Firm to stiff grey CLAY		1.00	56.62					51	
								37	
								42	
						D	1.50-1.50		
					AA175158	B	1.50-1.50		
Firm to stiff grey gravelly sandy CLAY. Medium boulder content. Boulders sub-angular to rounded		1.80	55.82						
2.0									
						D	2.50-3.50		
					AA175159	B	2.50-3.50		
3.0									
Trial pit terminated due to boulders End of Trial Pit at 3.30m		3.30	54.32						
4.0									

Groundwater Conditions
DRY

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP160993**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,827.57 E 730,845.92 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	58.01
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.40	57.61						
Firm brown sandy CLAY						D	0.50-0.50		
					AA175160	B	0.50-0.50		
1.0 Firm grey mottled brown sandy SILT		1.00	57.01						
						D	1.50-1.50		
					AA175161	B	1.50-1.50		
		1.80	56.21						
Firm grey slightly sandy SILT									
2.0									
						D	2.50-3.50		
					AA175162	B	2.50-3.50		
3.0									
		4.00	54.01						
4.0 End of Trial Pit at 4.00m									

Groundwater Conditions
DRY

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP161109**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,866.26 E 730,742.07 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	61.78
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	61.48						
Medium dense brown clayey GRAVEL						D	0.50-0.50	43	
					AA175163	B	0.50-0.50	54	
								47	
1.0								61	
								51	
								59	
						D	1.50-2.50		
					AA175164	B	1.50-2.50		
2.0									
Firm greyish brown gravelly CLAY		2.80	58.98						
3.0						D	3.00-3.00		
Trial pit terminated due to collapse End of Trial Pit at 3.10m		3.10	58.68		AA175165	B	3.00-3.00		
4.0									

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP161199**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	693,982.86 E 730,769.16 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	62.59
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	62.29						
Very stiff brownish grey gravelly CLAY						D	0.50-0.50	88	
					AA175166	B	0.50-0.50	103	
		0.70	61.89					91	
Firm brownish grey slightly gravelly sandy SILT									
1.0								97	
								106	
								101	
						D	1.50-2.50		
					AA175167	B	1.50-2.50		
2.0									
				1 (Seepage)					
Very stiff dark grey to black gravelly sandy CLAY. Medium cobble content. Medium boudler content. Cobbles and boulders sub-angular to rounded		2.80	59.79						
3.0									
		3.50	59.09			D	3.50-3.50		
Trial pit terminated due to boulders End of Trial Pit at 3.50m					AA175168	B	3.50-3.50		
4.0									

Groundwater Conditions
Seepage at 2.80m

Stability
Very stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP161292**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	694,006.89 E 730,658.13 N
		DATE STARTED	23/03/2022
		DATE COMPLETED	23/03/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	57.54
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	57.24						
Medium dense brown clayey very sandy GRAVEL. Low cobble content. Cobbles sub-angular to rounded						D	0.50-0.50	61	
		0.70	56.84		AA175169	B	0.50-0.50	48	
Medium dense grey sandy GRAVEL. Medium cobble content. Cobbles sub-angular to rounded								59	
1.0								55	
								66	
								61	
						D	1.50-1.50		
					AA175170	B	1.50-1.50		
2.0				1 (Slow)					
Very stiff dark grey to black gravelly sandy CLAY. Medium cobble content. Medium boudler content. Cobbles and boulders sub-angular to rounded		2.20	55.34						
						D	2.50-2.50		
					AA175171	B	2.50-2.50		
3.0 Trial pit terminated due to boulders End of Trial Pit at 3.00m		3.00	54.54						
4.0									

Groundwater Conditions
Slow flow at 2.20m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP161469**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,181.21 E 730,655.07 N
		DATE STARTED	09/06/2022
		DATE COMPLETED	09/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	56.46
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	56.16						
Soft to firm brown sandy CLAY with rare rootlets. Sand is fine to medium.									
		0.60	55.86					66	
Soft to firm brown mottled grey slightly moist slightly sandy slightly organic silty CLAY. Sand is fine to medium.								60[R]	
						D	0.80-0.80		
1.0					AA171479	B	0.80-0.80		
		1.70	54.76						
Soft grey slightly micaceous sandy SILT. Sand is fine to medium.									
						D	1.80-1.80		
2.0					AA171480	B	1.80-1.80		
				1 (Slow)					
		2.80	53.66						
Loose waterlogged dark grey clayey sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse, subrounded to rounded.		3.00	53.46			D	2.90-2.90		
3.0 Minor sidewall collapse					AA171481	B	2.90-2.90		
Pit flooded End of Trial Pit at 3.00m									
4.0									

Groundwater Conditions
Ingress @ 2.5m

Stability
Moderate stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP161858**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,539.97 E 730,549.08 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	56.19
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	55.89						
Firm brown with grey hue slightly sandy CLAY with rare rootlets.						D	0.50-0.50		
					AA171474	B	0.50-0.50	84 82[R]	
1.0									
		2.00	54.19						
2.0 Soft grey slightly organic sandy SILT. Sand is fine to medium.						D	2.10-2.10		
					AA171475	B	2.10-2.10		
		2.70	53.49	1 (Rapid)					
Very soft damp very sandy SILT. Sand is fine to coarse.						D	2.80-2.80		
		3.00	53.19		AA171476	B	2.80-2.80		
3.0 Pit flooded End of Trial Pit at 3.00m									
4.0									

Groundwater Conditions
Ingress @ 2.8m

Stability
Moderate stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162008**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,695.95 E 730,504.01 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.25
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	55.05						
Firm dark brown and dark grey micaceous sandy silty CLAY						D	0.50-0.50	92	
					AA171472	B	0.50-0.50	88[R]	
		0.90	54.35						
1.0 Soft dark grey micaceous very sandy clayey SILT with rare fossil fragments.				1 (Rapid)		D	1.00-1.00		
					AA171473	B	1.00-1.00		
Pit flooded		1.40	53.85						
End of Trial Pit at 1.40m									
2.0									
3.0									
4.0									

Groundwater Conditions
Ingress @ 1.2m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162045**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,735.04 E 730,475.01 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	56.21
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	55.91						
Firm to stiff light brown slightly sandy CLAY with rare rootlets. Sand is fine to medium.						D	0.50-0.50	98	
					AA171470	B	0.50-0.50	84[R]	
1.0									
		1.40	54.81						
Loose waterlogged brown to greyish brown very gravelly coarse SAND. Sand is medium to coarse. Gravel is fine to medium, subangular to subrounded.		1.60	54.61			D	1.60-1.60		
Loose grey and brown sandy slightly clayey GRAVEL. Sand is coarse. Gravel is fine to coarse, subrounded to rounded.					AA171471	B	1.60-1.60		
2.0 Sidewall collapse				1 (Rapid)					
		2.20	54.01						
Pit Collapse/Flooded End of Trial Pit at 2.20m									
3.0									
4.0									

Groundwater Conditions
Ingress @ 1.8m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162103**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,792.00 E 730,497.11 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	56.18
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.25	55.93						
Firm to stiff light brown slightly sandy CLAY with rare rootlets. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.						D	0.50-0.50		
					AA171468	B	0.50-0.50	92 89[R]	
1.0									
Loose brown and grey very gravelly SAND. Sand is medium to coarse. Gravel is fine to medium, subangular to rounded.		1.45	54.73						
		1.70	54.48	1 (Rapid)		D	1.60-1.60		
Loose grey sandy slightly clayey GRAVEL. Sand is coarse. Gravel is fine to coarse, subrounded to rounded.					AA171469	B	1.60-1.60		
2.0 Sidewall collapse									
Pit collapse End of Trial Pit at 2.30m		2.30	53.88						
3.0									
4.0									

Groundwater Conditions
Ingress @ 1.7m

Stability
Poor stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162214**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,904.00 E 730,483.01 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.72
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.30	55.42						
Firm brown slightly sandy CLAY with rare rootlets. Sand is fine to medium.						D	0.50-0.50	84	
					AA171477	B	0.50-0.50	80[R]	
Loose damp dark grey and brown very gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded.		1.20	54.52						
		1.40	54.32						
Loose waterlogged dark grey slightly clayey slightly sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse,subangular to subrounded.				1 (Rapid)		D	1.50-1.50		
					AA171478	B	1.50-1.50		
Pit flooded End of Trial Pit at 2.20m		2.20	53.52						

Groundwater Conditions
Ingress @ 1.8m

Stability
Unstable

General Remarks

IGSL TP LOG 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162302**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	694,991.06 E 730,489.96 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.61
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.25	55.36						
Firm to stiff light brown slightly sandy CLAY with rare rootlets. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.						D	0.50-0.50	111	
					AA171465	B	0.50-0.50	109[R]	
Loose waterlogged orange brown and grey slightly clayey gravelly coarse SAND. Sand is fine to coarse. Gravel is fine to medium, subrounded.		1.60	54.01	1 (Slow)					
		1.80	53.81			D	1.70-1.70		
					AA171466	B	1.70-1.70		
Loose waterlogged orange brown sandy clayey fine GRAVEL. Sand is coarse. Gravel is fine to coarse, angular to rounded.						D	1.90-1.90		
					AA171467	B	1.90-1.90		
Major sidewall collapse									
Pit flooded End of Trial Pit at 2.40m		2.40	53.21						

Groundwater Conditions
Ingress @ 1.6m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162401**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	695,095.06 E 730,474.04 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.43
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	55.23						
Firm to stiff brown mottled grey mottled orange slightly sandy slightly gravelly CLAY with rare rootlets. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.						D	0.50-0.50		
					AA171463	B	0.50-0.50	>120 118[R]	
		1.35	54.08	1 (Rapid)					
Loose waterlogged grey sandy GRAVEL. Sand is fine to medium. Gravel is fine to medium, subrounded.		1.50	53.93			D	1.40-1.40		
					AA171464	B	1.40-1.40		
Loose waterlogged dark grey slightly clayey slightly sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse,subangular to subrounded. Major sidewall collapse									
Pit Collapse/Flooded End of Trial Pit at 2.30m		2.30	53.13						

Groundwater Conditions
Ingress @1.35m

Stability
Unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162500**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	695,170.02 E 730,407.04 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.30
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.25	55.05						
Firm brown sandy slightly gravelly CLAY with occasional rootlets. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.		0.40	54.90			D	0.50-0.50	>120	
Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.					AA171460	B	0.50-0.50	110[R]	
Loose waterlogged grey mottled brown sandy GRAVEL. Sand is medium to coarse. Gravel is fine to medium, subrounded. Major sidewall collapse		1.10	54.20	(Rapid)		D	1.40-1.40		
					AA171461	B	1.40-1.40		
						D	1.80-1.80		
					AA171462	B	1.80-1.80		
Pit Collapse/Flooded End of Trial Pit at 2.30m		2.30	53.00						

Groundwater Conditions
Ingress @ 1.6m

Stability
Unstable in Gravel

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162602**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	695,232.14 E 730,322.08 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	54.99
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	54.69			D	0.40-0.40	100	
Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, subrounded to rounded.					AA171457	B	0.40-0.40	92[R]	
		0.60	54.39						
Loose grey and brown gravelly SAND. Sand is medium to coarse. Gravel is fine to coarse, Subrounded to rounded.		0.80	54.19						
						D	0.90-0.90		
1.0 Loose damp grey sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse, subrounded to rounded.					AA171458	B	0.90-0.90		
		1.20	53.79						
Firm to stiff slightly damp dark bluish grey slightly sandy slightly silty CLAY. Sand is fine to coarse.				1 (Seepage)					
						D	1.40-1.40		
					AA171459	B	1.40-1.40		
2.0									
		2.80	52.19						
Pit terminated - Obstruction End of Trial Pit at 2.80m									
3.0									
4.0									

Groundwater Conditions
Ingress @ 1.4m

Stability
Moderate stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162699**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	695,326.01 E 730,283.08 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.19
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	54.89						
Soft to firm grey very sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, subrounded to rounded.		0.50	54.69					70	
Moderately compact grey medium grained SAND. Sand is fine to coarse. Gravel is fine to medium, subrounded to rounded.						D	0.70-0.70	40[R]	
					AA171454	B	0.70-0.70		
1.0									
Firm to stiff slightly damp dark bluish grey very sandy silty CLAY. Sand is fine to coarse.		1.40	53.79						
						D	1.70-1.70		
					AA171455	B	1.70-1.70		
2.0									
		2.70	52.49						
Pit terminated - Obstruction End of Trial Pit at 2.70m						D	2.70-2.70		
					AA171456	B	2.70-2.70		
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Moderate stability

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP162797**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	695,413.93 E 730,234.87 N
		DATE STARTED	08/06/2022
		DATE COMPLETED	08/06/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.14
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.30	54.84			D	0.40-0.40		
Firm brown very sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse, subrounded to rounded.		0.60	54.54		AA171451	B	0.40-0.40	91 45[R]	
Moderately compact grey and brown sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse, subrounded to rounded.						D	0.80-0.80		
1.0					AA171452	B	0.80-0.80		
		1.20	53.94						
Loose grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse, subrounded to rounded. Major sidewall collapse						D	1.50-1.50		
					AA171453	B	1.50-1.50		
2.0				1 (Moderate)					
		2.50	52.64						
Pit terminated - Pit unstable and flooded End of Trial Pit at 2.50m									
3.0									
4.0									

Groundwater Conditions
Ingress @ 1.6m

Stability
Unstable in Gravel

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163301**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	695,868.05 E 730,004.33 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.41
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.40	55.01						
Firm grey mottled brown slightly sandy slightly gravelly CLAY						D	0.50-0.50	48	
					AA179461	B	0.50-0.50	51	
		0.80	54.61					61	
Firm grey mottled brown slightly sandy gravelly CLAY. Medium cobble content. Cobbles rounded to sub-angular									
1.0						D	1.00-1.00	65	
					AA179462	B	1.00-1.00	77	
								70	
		2.00	53.41	1 (Moderate)					
2.0 Firm grey mottled brown sandy gravelly CLAY. High boulder content. Boulders rounded to sub-angular		2.10	53.31			D	2.00-2.00		
					AA179463	B	2.00-2.00		
Trial pit terminated due to boulders End of Trial Pit at 2.10m									
3.0									
4.0									

Groundwater Conditions
Moderate flow at 2.0m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163403**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	695,944.99 E 729,969.01 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.98
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	55.68						
Firm greyish brown sandy gravelly CLAY. High boulder content. Boulders rounded to sub-angular						D	0.50-0.50	52	
					AA179464	B	0.50-0.50	57 70	
1.0						D	1.00-1.00	81	
					AA179465	B	1.00-1.00	63 66	
				1 (Moderate)		D	1.50-1.50		
					AA179466	B	1.50-1.50		
Trial pit terminated due to boulders End of Trial Pit at 1.90m 2.0		1.90	54.08						
3.0									
4.0									

Groundwater Conditions
Moderate flow at 1.70m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163502**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	696,047.06 E 729,978.99 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	56.44
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Topsoil		0.30	56.14						
Firm to stiff grey mottled brown slightly sandy slightly gravelly CLAY						D	0.50-0.50	12	
					AA179467	B	0.50-0.50	11 25	
Firm grey slightly sandy gravelly CLAY. Medium boulder content. Boulders rounded to sub-angular		1.00	55.44			D	1.00-1.00	30	
					AA179468	B	1.00-1.00	79 81	
Trial pit terminated due to boulders End of Trial Pit at 1.40m		1.40	55.04						

Groundwater Conditions
DRY

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163605**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	696,155.97 E 729,976.03 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.67
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	55.37						
Firm to stiff brownish grey gravelly sandy CLAY. Medium cobble content. Cobbles rounded to sub-angular								49 47 65	
1.0					AA179470	B	1.00	47 82 32	
Trial pit terminated due to boulders End of Trial Pit at 1.40m		1.40	54.27	1 (Seepage)					
2.0									
3.0									
4.0									

Groundwater Conditions
Seepage at 1.40m

Stability
Slightly unstable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163696**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	696,225.03 E 729,906.03 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.79
		EXCAVATION METHOD	Tracked Excavator
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil									
		0.30	55.49						
MADE GROUND - Firm grey slightly gravelly sandy CLAY with common plastic, wood and metal pieces		0.40	55.39						
		0.50	55.29			D	0.50-0.50	51	
MADE GROUND - Firm brown mottled grey slightly sandy slightly gravelly CLAY with rare red brick, plastic and wood pieces					AA179471	B	0.50-0.50	62	
					AA179472	B	0.50-0.50	67	
		0.80	54.99		AA179473	B	0.50-0.50		
Trial pit terminated due to large concrete boulders									
1.0 MADE GROUND - Firm to stiff brownish grey slightly sandy gravelly CLAY with rare red brick, plastic and wood pieces				1 (Seepage)		D	1.00-1.00	55	
					AA179474	B	1.00-1.00	77	
								53	
		2.00	53.79						
2.0 Trial pit terminated due to large concrete boulders End of Trial Pit at 2.00m						D	2.00-2.00		
					AA179475	B	2.00-2.00		
3.0									
4.0									

Groundwater Conditions
Seepage at 1.50m

Stability
Stable

General Remarks
Trial pit moved 20m east of original location.

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP163799**
		SHEET	Sheet 1 of 1
LOGGED BY	C. Moynihan	**CO-ORDINATES**	696,311.02 E 729,857.04 N
		DATE STARTED	25/02/2022
		DATE COMPLETED	25/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	55.50
ENGINEER	Eriva	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Topsoil		0.30	55.20						
Firm grey slightly sandy gravelly CLAY						D	0.50-0.50	29	
					AA179476	B	0.50-0.50	31	
								51	
1.0 Firm to stiff grey sandy gravelly CLAY		1.00	54.50			D	1.00-1.00	57	
					AA179477	B	1.00-1.00	59	
				(Slow)				64	
2.0 Trial pit terminated due to collapse		2.10	53.40			D	2.00-2.00		
End of Trial Pit at 2.10m					AA179478	B	2.00-2.00		
3.0									
4.0									

Groundwater Conditions
Slow flow at 1.80m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP164905**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	697,203.90 E 729,973.41 N
		DATE STARTED	27/07/2022
		DATE COMPLETED	27/07/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	62.57
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL - Light brown sandy slightly gravelly CLAY		0.20	62.37						
Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to coarse, angular. Cobbles are angular, tabular and blocky fragments of dark green Limestone.		0.60	61.97			D	0.50-0.50		
					AA174056	B	0.50-0.50	>120 >120[R]	
Very stiff brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to coarse, angular. Cobbles are angular, tabular and blocky fragments of dark green Limestone.						D	1.00-1.00		
					AA174057	B	1.00-1.00		
High Cobble content									
REFUSAL - Possible rockhead/boulder End of Trial Pit at 1.70m		1.70	60.87						

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks
Work area checked for services using CAT scanner.

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP165010**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	697,353.87 E 730,039.09 N
		DATE STARTED	27/07/2022
		DATE COMPLETED	27/07/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	64.89
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown sandy slightly gravelly CLAY		0.20	64.69						
Very stiff brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to medium. Gravel is fine to coarse, angular. Cobbles are angular, tabular, platy and blocky fragments of dark green Limestone.						D	0.70-0.70		
REFUSAL - Undulating possible boulder. Undulating from NE (0.8) to SW (1.0).					AA174058	B	0.70-0.70		
1.0 End of Trial Pit at 1.00m		1.00	63.89						
2.0									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks
Work area checked for services using CAT scanner.

IGSL TP LOG 23560 PEATLANDS AND PIPELINE.GPJ IGSL.GDT 17/4/23

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP165105**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	697,398.12 E 730,102.18 N
		DATE STARTED	27/07/2022
		DATE COMPLETED	27/07/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	64.86
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown sandy slightly gravelly CLAY		0.20	64.66						
Very stiff brown slightly sandy gravelly CLAY with low cobble content and low boulder content. Sand is fine to medium. Gravel is fine to coarse, angular to subangular. Cobbles are angular, tabular, platy and blocky fragments of dark green Limestone.		0.50	64.36		AA174059	D B	0.40-0.40 0.40-0.40		
REFUSAL - Possible rockhead/boulder End of Trial Pit at 0.50m									
1.0									
2.0									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks
Work area checked for services using CAT scanner.

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP165204**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	697,507.04 E 730,162.03 N
		DATE STARTED	27/07/2022
		DATE COMPLETED	27/07/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	64.72
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown sandy slightly gravelly CLAY		0.20	64.52						
Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to coarse, angular. Cobbles are angular, tabular and blocky fragments of dark green Limestone and angular platy Mudstone.						D	0.50-0.50		
					AA174060	B	0.50-0.50		
Lens of clay blound COBBLES at North wall of pit. Cobbles are angular, tabular and blocky fragments of dark green Limestone.						D	0.80-0.80		
1.0 REFUSAL - Undulating possible boulder. Undulating from S (0.6) to N (1.5).					AA174061	B	0.80-0.80		
Becomes Gravelly									
End of Trial Pit at 1.50m		1.50	63.22						
2.0									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks
Work area checked for services using CAT scanner.

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP165314**
		SHEET	Sheet 1 of 1
LOGGED BY	DN	**CO-ORDINATES**	697,610.91 E 730,199.11 N
		DATE STARTED	27/07/2022
		DATE COMPLETED	27/07/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	63.78
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 10.5T

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL - Light brown sandy slightly gravelly CLAY		0.20	63.58						
Very stiff brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to medium. Gravel is fine to coarse, angular. Cobbles are angular, tabular and blocky fragments of dark green Limestone. REFUSAL - Undulating possible boulder. Undulating from S (0.4) to N (0.9).					AA174062	D B	0.40-0.40 0.40-0.40		
End of Trial Pit at 0.90m		0.90	62.88						
1.0									
2.0									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Good Stability

General Remarks
Work area checked for services using CAT scanner.

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP166562**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	698,727.00 E 730,492.00 N
		DATE STARTED	24/02/2022
		DATE COMPLETED	24/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.30							
Firm brown very sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		0.60				D	0.50-0.60		
Stiff brown mottled grey very sandy very gravelly CLAY with medium cobble contentand occasional boulders.					AA174863	B	0.50-0.60		
1.0						D	1.40-1.50		
Medium compact to compact dark greyish black clayey very sandy GRAVEL with medium to high cobble content and some boulders.		1.60			AA174864	B	1.40-1.50		
2.0						D	2.10-2.20		
Obstruction - probable rock End of Trial Pit at 2.20m		2.20			AA174865	B	2.10-2.20		
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP166697**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	698,809.64 E 730,598.88 N
		DATE STARTED	24/02/2022
		DATE COMPLETED	24/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	64.44
		EXCAVATION METHOD	CAT 13 Tonne
ENGINEER	Eriva		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
		0.40	64.04			D	0.50-0.60		
Firm brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		0.70	63.74		AA174866	B	0.50-0.60		
Stiff brown mottled grey very sandy very gravelly CLAY with medium cobble contentand occasional boulders.									
1.0						D	1.40-1.50		
		1.60	62.84		AA174867	B	1.40-1.50		
Medium compact to compact dark greyish black clayey very sandy GRAVEL with medium to high cobble content and some boulders.		1.80	62.64			D	1.70-1.80		
					AA174868	B	1.70-1.80		
2.0 ROCK - LIMESTONE End of Trial Pit at 1.80m									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stabe

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP166772**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	698,886.82 E 730,651.83 N
		DATE STARTED	24/02/2022
		DATE COMPLETED	24/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	63.94
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.30	63.64						
Stiff brown mottled grey sandy gravelly (becoming very sandy and very gravelly) CLAY with low to medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, very angular to subangular.						D	0.50-0.60		
					AA173606	B	0.50-0.60		
1.0									
Medium compact to compact dark greyish black clayey very sandy GRAVEL with medium to high cobble content and some boulders.		1.50	62.44	1 (Seepage)		D	1.50-1.60		
					AA173607	B	1.50-1.60		
2.0									
Obstruction - probable rock End of Trial Pit at 2.10m		2.10	61.84		AA173608	B	2.00-2.10		
3.0									
4.0									

Groundwater Conditions
Seepage from 1.7m

Stability
Unstable below 0.9m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP166867**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	698,957.00 E 730,718.00 N
		DATE STARTED	24/02/2022
		DATE COMPLETED	24/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.30							
Firm to stiff brown very sandy gravelly CLAY with low to medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.						D	0.50-0.60		
					AA173609	B	0.50-0.60		
		0.80							
1.0 Sttiff brown sandy gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.						D	1.50-1.60		
					AA173610	B	1.50-1.60		
		1.90							
2.0 Medium compact to compact dark greyish black clayey very sandy GRAVEL with medium to high cobble content and some boulders.				1 (Seepage)					
		2.30				D	2.20-2.30		
Obstruction - probable rock End of Trial Pit at 2.30m					AA173611	B	2.20-2.30		
3.0									
4.0									

Groundwater Conditions
Seepage from 2.2m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP167031**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,426.17 E 730,558.78 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.34
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.40	65.94						
Stiff brown mottled grey sandy very gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.						D	0.50-0.60		
					AA174857	B	0.50-0.60		
1.0									
		1.80	64.54						
Stiff black sandy gravelly CLAY with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse and angular.						D	1.90-2.00		
2.0					AA174858	B	1.90-2.00		
		2.70	63.64			D	2.60-2.70		
Refusal due to boulders. End of Trial Pit at 2.70m					AA174859	B	2.60-2.70		
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP167205**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,508.17 E 730,546.77 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	66.30
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.30	66.00						
Firm becoming stiff dark grey mottled brown sandy gravelly CLAY with low to medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.						D	0.50-0.60		
					AA174860	B	0.50-0.60		
		0.90	65.40						
1.0 Stiff to very stiff black sandy gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse and angular.						D	1.20-1.30		
					AA174861	B	1.20-1.30		
2.0						D	2.10-2.20		
					AA174862	B	2.10-2.20		
		2.30	64.00						
Obstruction - probable rock End of Trial Pit at 2.30m									
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP167384**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,798.04 E 730,474.08 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.51
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.40	68.11						
Firm brown mottled grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.						D	0.50-0.60		
					AA174855	B	0.50-0.60		
1.0									
Medium compact dark grey clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		1.70	66.81	1 (Slow)					
2.0					AA174856	B	2.10-2.20		
Pit terminated due to instability. End of Trial Pit at 2.30m		2.30	66.21						
3.0									
4.0									

Groundwater Conditions
Slow inflow from 1.7m

Stability
Unstable below 1.7m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP168033**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,601.75 E 730,512.76 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.03
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.40	66.63						
Firm becoming stiff dark grey mottled brown sandy gravelly CLAY with low to medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.						D	0.50-0.60		
					AA174863	B	0.50-0.60		
1.0 Stiff to very stiff black sandy gravelly CLAY with medium cobble content and some boulders. Sand is fine to coarse. Gravel is fine to coarse and angular.		1.10	65.93						
						D	1.70-1.80		
					AA174864	B	1.70-1.80		
2.0 Obstruction - probable rock End of Trial Pit at 2.00m		2.00	65.03						
3.0									
4.0									

Groundwater Conditions
Dry

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP168041**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,712.06 E 730,519.02 N
		DATE STARTED	24/02/2022
		DATE COMPLETED	24/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	67.47
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL				1 (Seepage)					
Medium compact brownish grey clayey gravelly SAND. Clay is soft to firm. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded.		0.40	67.07		AA174865	B	0.50-0.60		
1.0 Stiff dark brownish grey sandy very gravelly CLAY with medium cobble content and occasional to some boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		0.90	66.57			D	1.50-1.60		
				2 (Slow)	AA174866	B	1.50-1.60		
2.0 Obstruction - probable rock End of Trial Pit at 2.30m		2.30	65.17			D	2.20-2.30		
					AA174867	B	2.20-2.30		
3.0									
4.0									

Groundwater Conditions
Seepage from 0.4m, Slow inflow from 1.8m

Stability
Stable

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP168241**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,900.06 E 730,478.02 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.12
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL									
Medium compact dark grey clayey slightly gravelly SAND with occasional boulders. Clay is firm. Sand is fine to medium. Gravel is fine to medium and subangular.		0.50	67.62		AA174853	D B	0.60-0.70 0.60-0.70		
Firm dark grey sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium and subangular.		1.60	66.52	1 (Rapid)					
Pit terminated due to instability. End of Trial Pit at 1.90m		1.90	66.22		AA174854	D B	1.80-1.90 1.80-1.90		

Groundwater Conditions
Fast inflow from 1.6m

Stability
Unstable below 1.2m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP168340**
		SHEET	Sheet 1 of 1
LOGGED BY	J.Condon	**CO-ORDINATES**	699,988.18 E 730,413.76 N
		DATE STARTED	23/02/2022
		DATE COMPLETED	23/02/2022
CLIENT	Irish Water	**GROUND LEVEL (m)**	68.48
ENGINEER	Eriva	**EXCAVATION METHOD**	CAT 13 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.40	68.08						
Firm dark greyish brown silty very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse and subangular.						D	0.50-0.60		
					AA174851	B	0.50-0.60		
1.0 Medium compact dark greyish brown slightly clayey very sandy GRAVEL with medium cobble content and occasional boulders. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		1.20	67.28	1 (Seepage)					
					AA174852	B	1.70-1.80		
2.0 Pit terminated due to instability. End of Trial Pit at 2.00m		2.00	66.48						
3.0									
4.0									

Groundwater Conditions
Seepage from 1.6m

Stability
Unstable below 1.1m

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23560

CONTRACT	WSP Ground Investigation Contract Lot 3	**TRIAL PIT NO.**	**TP168871**
		SHEET	Sheet 1 of 1
LOGGED BY	D.Newell	**CO-ORDINATES**	700,809.14 E 730,402.76 N
		DATE STARTED	07/10/2021
		DATE COMPLETED	07/10/2021
CLIENT	Irish Water	**GROUND LEVEL (m)**	76.91
ENGINEER	Eriva	**EXCAVATION METHOD**	Hitachi 8 Tonne

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	76.71						
Soft to firm brown gravelly slightly sandy CLAY with a low cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse. Gravel, cobbles and boulders are subrounded to subangular of limestone						D	0.50-0.60	44 38	
					AA152124	B	0.50-0.60	40	
						D	1.10-1.20		
					AA152125	B	1.10-1.20		
Firm light brown and brown gravelly slightly sandy CLAY with a low cobble content. Sand is fine to coarse. Gravel and cobbles are subrounded to subangular of limestone.		1.50	75.41						
					AA152126	B	1.60-1.70		
Possible Rockhead / Boulder, undulating in profile from 1.50 to 1.80 east to west End of Trial Pit at 1.80m		1.80	75.11						

Groundwater Conditions
Dry

Stability
Good

General Remarks
Pit backfilled with arisings upon completion. Trial pit length = 3.50m / width = 0.50m.

Appendix 9D

Peat Probe & Russian Core Records

Appendix 9E

Field / In-Situ Test Results

Appendix 9E.1

Borehole Infiltration Tests

Borehole Infiltration Test

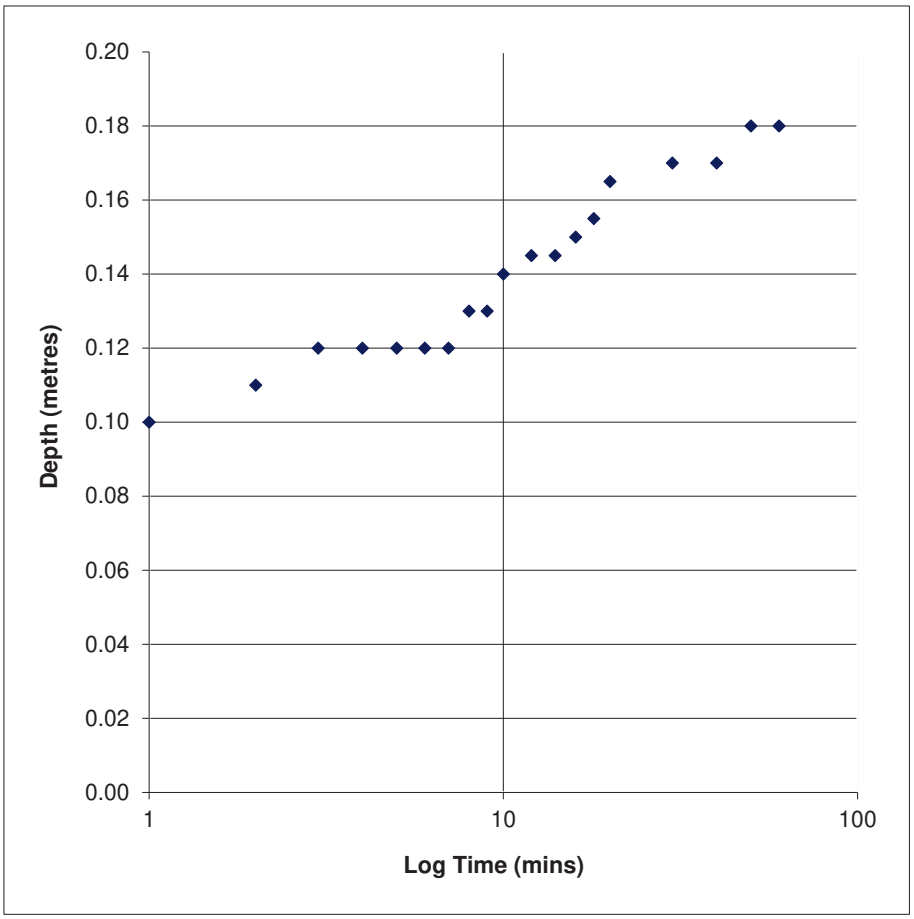
IGSL

CONTRACT:	WSP Lot 3 - Pipeline
NUMBER	23560
CLIENT:	Ervia / Irish Water
ENGINEER:	MM
LOCATION:	BH151907
BOREHOLE No.	BH151907 @ 3.0m
TEST No.	1
Date	09/05/2022

TEST RESPONSE ZONE DETAILS:

Top (mbgl):	3.00
Bottom (mbgl):	4.00
Length (m):	1.00
Diameter (m):	0.200
Initial Standing Water Level (m below top of casing)	None
Height of casing or standpipe : above ground level (m)	0.30
Falling or Rising Head Test?	Falling

Elapsed Time (mins)	Depth to Water* (m)
0.00	0.00
1	0.10
2	0.11
3	0.12
4	0.12
5	0.12
6	0.12
7	0.12
8	0.13
9	0.13
10	0.14
12	0.15
14	0.15
16	0.15
18	0.16
20	0.17
30	0.17
40	0.17
50	0.18
60	0.18



Calculation of steady flow Rate

T1 (mins)	0.00
T2 (mins)	60.00
Flow period (mins)	60.00
Initial depth (m)	0.00
Final depth (m)	0.18
Fall in level (m)	0.18
Vol. Dispersed (m3)	0.0057

Respone Zone

Length (m)	1.000
Diameter (m)	0.200
Exposed Area (m2)	0.660

f-value = Volume dispersed / unit exposed area / unit time

f-value (m/min) = 1.43E-04

* Below Ground level

Borehole Infiltration Test

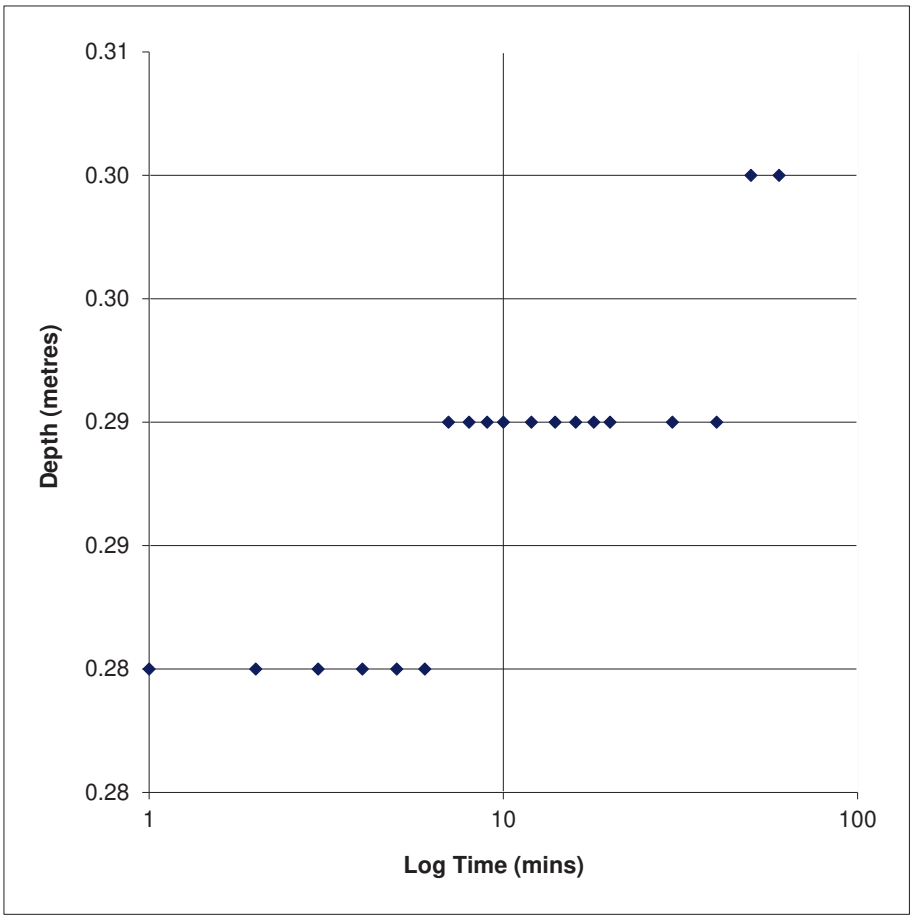
IGSL

CONTRACT:	WSP Lot 3 - Pipeline
NUMBER	23560
CLIENT:	Ervia / Irish Water
ENGINEER:	MM
LOCATION:	BH156922
BOREHOLE No.	BH156922 @ 3.0m
TEST No.	1
Date	05/04/2022

TEST RESPONSE ZONE DETAILS:

Top (mbgl):	3.00
Bottom (mbgl):	4.00
Length (m):	1.00
Diameter (m):	0.200
Initial Standing Water Level (m below top of casing)	None
Height of casing or standpipe : above ground level (m)	0.30
Falling or Rising Head Test?	Falling

Elapsed Time (mins)	Depth to Water* (m)
0.00	0.00
1	0.28
2	0.28
3	0.28
4	0.28
5	0.28
6	0.28
7	0.29
8	0.29
9	0.29
10	0.29
12	0.29
14	0.29
16	0.29
18	0.29
20	0.29
30	0.29
40	0.29
50	0.30
60	0.30



Calculation of steady flow Rate

T1 (mins)	0.00
T2 (mins)	60.00
Flow period (mins)	60.00
Initial depth (m)	0.00
Final depth (m)	0.30
Fall in level (m)	0.30
Vol. Dispersed (m3)	0.0094

Respone Zone

Length (m)	1.000
Diameter (m)	0.200
Exposed Area (m2)	0.660

f-value = Volume dispersed / unit exposed area / unit time

f-value (m/min) = 2.38E-04

* Below Ground level

Borehole Infiltration Test

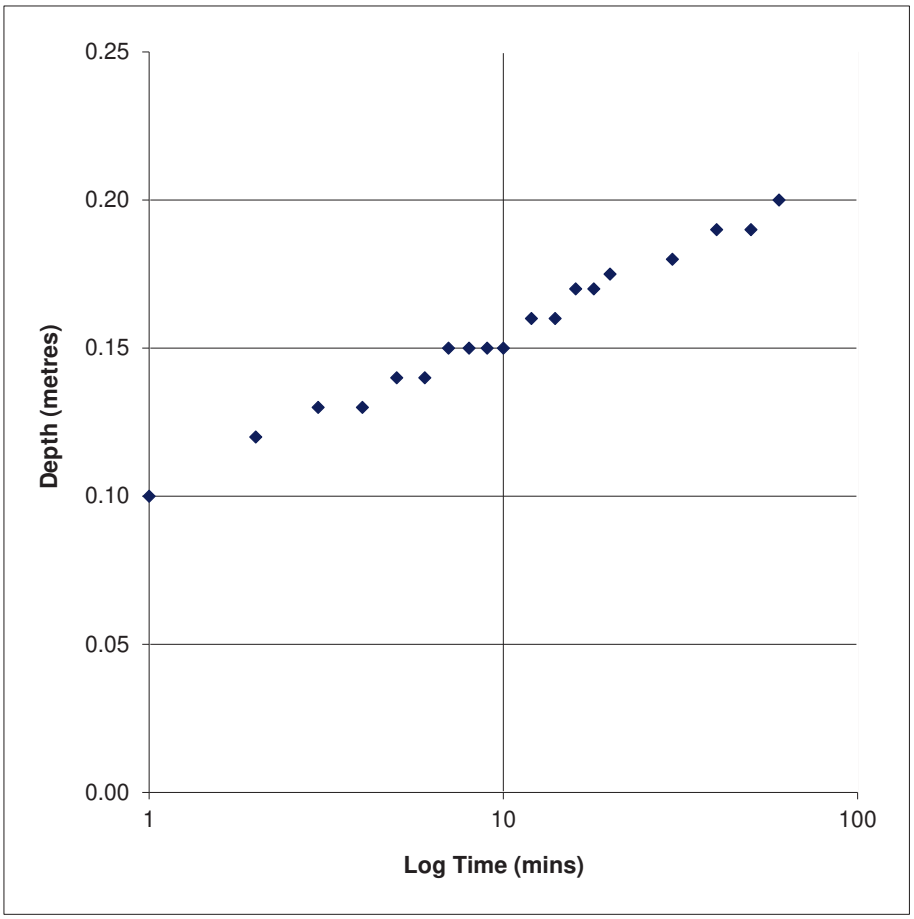
IGSL

CONTRACT:	WSP Lot 3 - Pipeline
NUMBER	23560
CLIENT:	Ervia / Irish Water
ENGINEER:	MM
LOCATION:	BH157953
BOREHOLE No.	BH157953 @ 3.0m
TEST No.	1
Date	23/04/2022

TEST RESPONSE ZONE DETAILS:

Top (mbgl):	3.20
Bottom (mbgl):	4.00
Length (m):	0.80
Diameter (m):	0.200
Initial Standing Water Level (m below top of casing)	None
Height of casing or standpipe : above ground level (m)	0.25
Falling or Rising Head Test?	Falling

Elapsed Time (mins)	Depth to Water* (m)
0.00	0.00
1	0.10
2	0.12
3	0.13
4	0.13
5	0.14
6	0.14
7	0.15
8	0.15
9	0.15
10	0.15
12	0.16
14	0.16
16	0.17
18	0.17
20	0.18
30	0.18
40	0.19
50	0.19
60	0.20



Calculation of steady flow Rate

T1 (mins)	0.00
T2 (mins)	60.00
Flow period (mins)	60.00
Initial depth (m)	0.00
Final depth (m)	0.20
Fall in level (m)	0.20
Vol. Dispersed (m3)	0.0063

Respone Zone

Length (m)	0.800
Diameter (m)	0.200
Exposed Area (m2)	0.534

f-value = Volume dispersed / unit exposed area / unit time

f-value (m/min) = 1.96E-04

* Below Ground level

Borehole Infiltration Test

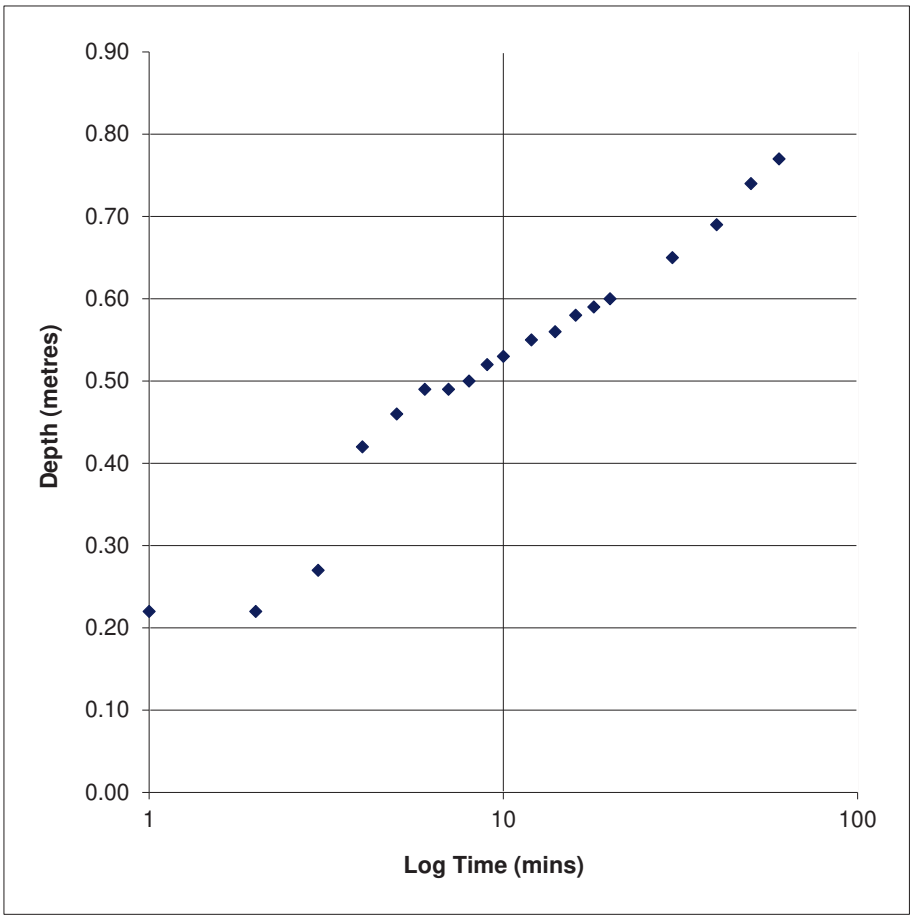
IGSL

CONTRACT:	WSP Lot 3 - Pipeline
NUMBER	23560
CLIENT:	Ervia / Irish Water
ENGINEER:	MM
LOCATION:	BH160756
BOREHOLE No.	BH160756 @ 1.5m
TEST No.	1
Date	07/04/2022

TEST RESPONSE ZONE DETAILS:

Top (mbgl):	1.50
Bottom (mbgl):	2.00
Length (m):	0.50
Diameter (m):	0.200
Initial Standing Water Level (m below top of casing)	None
Height of casing or standpipe : above ground level (m)	0.20
Falling or Rising Head Test?	Falling

Elapsed Time (mins)	Depth to Water* (m)
0.00	0.00
1	0.22
2	0.22
3	0.27
4	0.42
5	0.46
6	0.49
7	0.49
8	0.50
9	0.52
10	0.53
12	0.55
14	0.56
16	0.58
18	0.59
20	0.60
30	0.65
40	0.69
50	0.74
60	0.77



Calculation of steady flow Rate

T1 (mins)	0.00
T2 (mins)	60.00
Flow period (mins)	60.00
Initial depth (m)	0.00
Final depth (m)	0.77
Fall in level (m)	0.77
Vol. Dispersed (m3)	0.0242

Respone Zone

Length (m)	0.500
Diameter (m)	0.200
Exposed Area (m2)	0.346

f-value = Volume dispersed / unit exposed area / unit time

f-value (m/min) = 1.17E-03

* Below Ground level

Borehole Infiltration Test

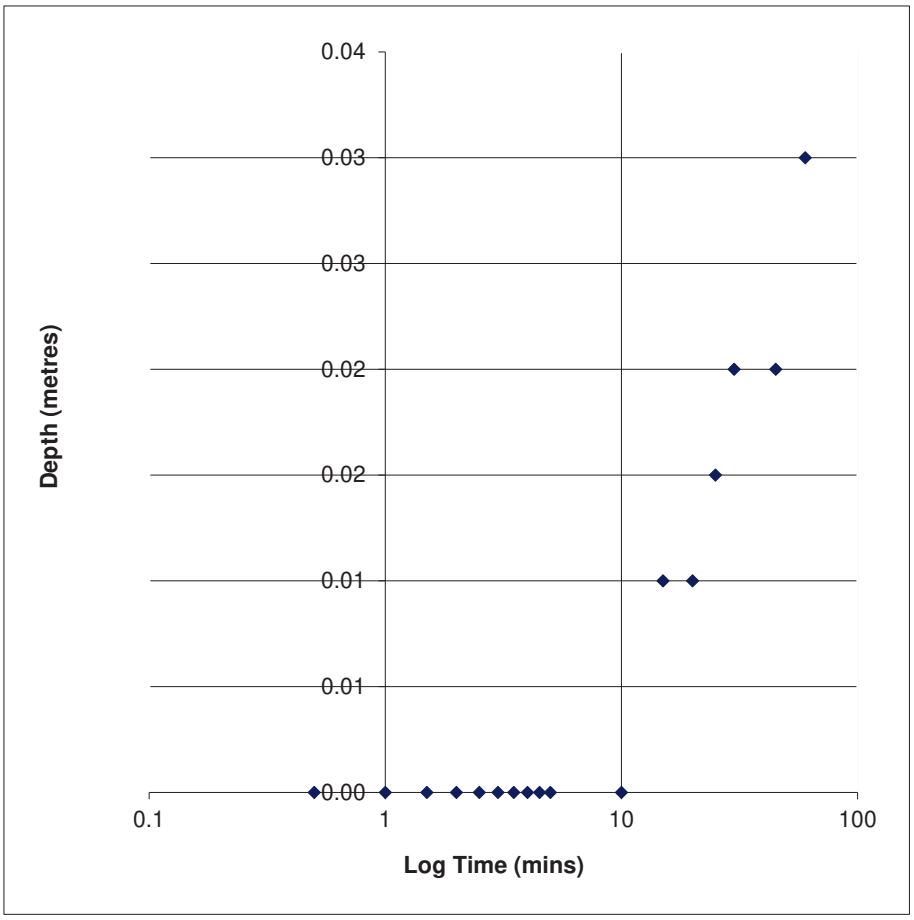
IGSL

CONTRACT:	WSP Lot 3 - Pipeline
NUMBER	23560
CLIENT:	Ervia / Irish Water
ENGINEER:	MM
LOCATION:	PP-BH166722
BOREHOLE No.	PP-BH166722
TEST No.	1
Date	02/12/2022

TEST RESPONSE ZONE DETAILS:

Top (mbgl):	1.50
Bottom (mbgl):	1.82
Length (m):	0.32
Diameter (m):	0.200
Initial Standing Water Level (m below top of casing)	None
Height of casing or standpipe : above ground level (m)	0.20
Falling or Rising Head Test?	Falling

Elapsed Time (mins)	Depth to Water* (m)
0.00	0.00
0.5	0.00
1	0.00
1.5	0.00
2	0.00
2.5	0.00
3	0.00
3.5	0.00
4	0.00
4.5	0.00
5	0.00
10	0.00
15	0.01
20	0.01
25	0.02
30	0.02
45	0.02
60	0.03



Calculation of steady flow Rate

T1 (mins)	0.00
T2 (mins)	60.00
Flow period (mins)	60.00
Initial depth (m)	0.00
Final depth (m)	0.03
Fall in level (m)	0.03
Vol. Dispersed (m3)	0.0009

Respone Zone

Length (m)	0.320
Diameter (m)	0.200
Exposed Area (m2)	0.233

f-value = Volume dispersed / unit exposed area / unit time

f-value (m/min) = 6.76E-05

* Below Ground level

Appendix 9F

Specialist In-Situ Test Results

Appendix 9G

Geophysics Report (Combined Peatland & Pipeline)

Chainage	Profile Numbers
133050 - 133452	R1 - R3, S1 - S3
133050 - 133452	R4 - R6, S4 - S6
135592 - 135805	R7 - R12, S7 - S12
139734 - 139927	R13 - R17, S13 - S17
143294 - 143414	R18 - R20, S18 - S20
156888 - 157026	R21 - R23, S21 - S23
160542 - 160752	R31 - R34, S31 - S34
161244 - 161924	R24 - S27, S24 - S27
161244 - 161924	R28 - R30, S28 - S30

Water Supply Project – Contract 3

Eastern and Midlands Region

Geophysical Survey

Report Status: Draft

MGX Project Number: 6586

MGX File Ref: 6586d-005.doc

04th March 2022

Confidential Report To:

IGSL
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Naas
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Reviewer: Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

EXECUTIVE SUMMARY

1. Minerex Geophysics Ltd. (MGX) carried out a geophysical survey consisting of 2D-Resistivity and seismic refraction (p-wave) surveying for the ground investigation for the Water Supply Project, Eastern and Midlands Region – Contract 3.

2. The main objectives of the survey were to determine ground conditions under the site; determine the depth to rock and the overburden thickness in order to estimate the strength or stiffness or compaction of overburden and the rock quality; establish the presence of faults and fracture zones, and to detect possible karstified rock.

3. Seven separate areas were surveyed along the route for this contract. Most sites were interpreted as consisting deep clay rich overburden. An esker, consisting of sand and gravel was identified at Ch143294 – 143414.

4. Peat was surveyed to depths of 5m in the area between Ch160542 – 160752. The deepest peat is found on the west side of this area and becomes shallower to the east.

5. The rock at most of the survey locations was deep. The shallowest rock encountered was at Ch160542 – 160752 where the top of the good limestone was interpreted as being as shallow as 4m bgl. There may be some weathered rock even shallower.

6. At Ch160542 – 160752 there is a sharp change in the rock geology across the survey lines. This may indicate a zone of karstified limestone or a fault zone in the south of this area.

7. This report will be reviewed and finalised after the complete direct ground investigation data has been received.

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Table 2: Summary of Interpretation	In text	In text
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Map 2: Geophysical Survey Location Map Ch133050	1 x A3	6586d_Drawings.dwg
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Map 3: Geophysical Survey Location Map Ch135592	1 x A3	6586d_Drawings.dwg
Figure 3a: Models of Geophysical Survey Ch135592	1 x A3	6586d_Drawings.dwg
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Map 4: Geophysical Survey Location Map Ch139734	1 x A3	6586d_Drawings.dwg
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Figure 4b: Interpretation of Geophysical Survey Ch139734	1 x A3	6586d_Drawings.dwg
Map 5: Geophysical Survey Location Map Ch143294	1 x A3	6586d_Drawings.dwg
Figure 5a: Models of Geophysical Survey Ch143294	1 x A3	6586d_Drawings.dwg
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Map 9: Geophysical Survey Location Map Ch161244	1 x A3	6586d_Drawings.dwg
Figure 9a: Models of Geophysical Survey Ch161244	1 x A3	6586d_Drawings.dwg
Figure 9b: Interpretation of Geophysical Survey Ch161244	1 x A3	6586d_Drawings.dwg

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the Water Supply Project – Contract 3. The survey consisted of 2D-Resistivity and seismic refraction (p-wave) measurements at specific locations along the pipeline route targeting areas of alluvium overburden. The survey was commissioned by IGSL.

Surveying was carried out on all sites where access was available at the time of this report.

A previous geophysical report (MGX, 2017) was carried out for this scheme concentrating of water crossings along the full route. This survey was aimed mainly at areas containing alluvium overburden as well as some other targeted locations.

A broad geophysical interpretation covering various geological setting expected across the country was used in the previous survey which is again used in this report and is shown in Table 2. A more refined interpretation based on individual locations are provided on the interpretation figures and in Chapter 4 of this report.

This survey utilized various complimentary geophysical methods to improve final interpretations. The role of geophysics as a non-destructive fast method is to provide a geological interpretation over a wide area to complement direct ground investigations at specific locations. The direct ground investigation results can be used to improve the initial geophysical results and interpretation.

The proposed development is a large 2m diameter water supply pipeline from the River Shannon to Dublin.

1.2 Objectives

The main objectives of the geophysical survey were:

- To determine the ground conditions under the site
- To determine the depth to rock and the overburden thickness
- To estimate the strength or stiffness or compaction of overburden materials and the rock quality
- To determine the type of overburden and rock
- To detect lateral changes within the geological layers
- To determine the presence of possible faults and fracture zones
- To detect possible karstified zones within the rock, karst features

1.3 Site Description

The 7 geophysical survey sites which have been completed to date for Contract 3 are located along the proposed pipeline route. For naming the locations, the chainage provided at the time of the survey is used in the labelling in this report.

1.4 Geology

The overburden and bedrock geological conditions as taken from the Geological Survey of Ireland (GSI, 2022) are shown in Table 1. The quaternary sediments in most areas are described as alluvium, limestone till or cut over raised peat. The bedrock formations are Waulsortian Limestone, Lucan Formation, and Boston Hill Formation. There are no karst features noted at any of the survey areas.

1.5 Report

This report includes the results and interpretation of the geophysical survey. Maps, figures and tables are included to illustrate the results of the survey. More detailed descriptions of geophysical methods and measurements can be found in GSEG (2002), Milsom (1989) and Reynolds (1997).

The description of soil, rock and the use of geotechnical terms (soft, stiff, dense etc) follows Eurocode (2007) and BSI (2015) standards. The terms are defined in the standards and the physical parameters are related from experience. This geophysical survey has been acquired, processed, interpreted and reported in accordance with these guidelines.

The client provided maps of the site and the digital version was used as the background map in this report. Elevations were surveyed on site and are used in the vertical sections.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

2. GEOPHYSICAL SURVEY

2.1 Methodology

The methodology was agreed before surveying and consisted of 2D-Resistivity surveying and Seismic Refraction surveying along a number of lines in each area.

The survey locations are indicated on Map 1. The lines, locations, chainage and parameters are tabulated in Table 1.

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 3m, up to 64 electrodes per set-up and a maximum length of 189m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

Some data was acquired in the roll-along mode where lines extended greater than 189m to achieve continuous coverage to a depth of 15m.

During 2D-Resistivity surveying, data is acquired in the form of linear arrays using a suite of metal electrodes. A current is induced into the ground via a pair of electrodes whilst a potential difference is measured across a second pair of electrodes. This allows for the recording of the apparent resistivity in a two-dimensional arrangement below the line. The data is inverted after the survey to obtain a model of subsurface resistivities. The generated model resistivity values and their spatial distribution can then be related to typical values for different geological materials.

2D-Resistivity has previously proven zones of anomalous or karstified rock with lateral extents of 5m and more.

2.3 Seismic Refraction

Seismic refraction lines were surveyed with geophone spacing of 3m and 24 geophones per set-up resulting in a 69m length per set-up. The recording equipment consisted of a 24 Channel GEOMETRICS ES-3000 engineering seismograph with 4.5Hz vertical geophones. The seismic energy source consisted of a hammer and plate. A zero-delay trigger was used to start the recording. Normally 7 shot points per p-wave set-up were used.

Many set-ups were acquired in longer continuous lines using common shot points between set-ups and concatenating into longer lines at the processing stage.

The seismic refraction survey method focuses on propagating p-waves travelling through the subsurface, which are generated by hitting a hammer on a plate or other source. As the wave propagates through the

subsurface, its velocity varies as it travels through overburden, rock with different elastic properties, and along geological boundaries. Velocity data is recorded via the surveying equipment, which is then processed, allowing geological layer thicknesses and boundaries to be established.

Seismic Refraction generally determines the depth to horizontal or near horizontal layers where the compaction or strength or rock quality changes with an accuracy of 10 – 20% of depth to that layer. Where low velocity layers or shadow zones are present (e.g., below solid ground surface) or where layers dip with more than a 20 degree angle the accuracy becomes much less.

The seismic refraction set-ups with 69m individual length have a reasonable penetration depth of around 15m. An internationally accepted maximum depth estimate for a seismic refraction set-up is 1/6 of the set-up length including offshots. The depth penetration varies according to the velocity structure of the subsurface. In this report we used a depth of 15m below ground level (bgl). where the seismic modelling was ended as deeper modelling becomes less meaningful.

2.4 Site Work

The data acquisition was carried out between the 24th of January and 28th of February 2022. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times. The locations and elevations were surveyed with a Carlson NR3 RTK-GPS to accuracy < 0.05m.

3. RESULTS AND INTERPRETATION

The interpretation of geophysical data was executed utilizing the known response of geophysical measurements, typical physical parameters for subsurface features that may underlay the site, and the experience of the authors.

Some ground investigation results were available before and after the survey from surveying carried out in 2017, and the abbreviated borehole logs are indicated on the sections.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. Lines using the roll-along method were concatenated for a joint inversion. The programme uses a smoothness constrained least-squares inversion method to produce a 2D model of the subsurface resistivities from the recorded apparent resistivity values. Three variations of the least squares method are available and for this project the Jacobian Matrix was recalculated for the first three iterations, then a Quasi-Newton approximation was used for subsequent iterations. Each dataset was inverted using seven iterations resulting in a typical RMS error of <3.0%. The resulting models were colour contoured with the same resistivity scale for all lines and they are displayed as cross sections (Figure 1a – 9a).

Resistivities are characteristic for certain overburden and rock types. If there is a high content of clay minerals (which are electrically conductive) then the overburden resistivity will be lower than as if there is a high content of clastic grains like sand or gravel. The purer the clay and the lower the sand and gravel content, the lower the resistivity. Water content in overburden layers can influence the resistivities, but generally clay content has a more dominating effect.

Within bedrock types like clean limestone, high resistivities indicate a fresh, strong, unweathered rock. As the weathering in the rock increases, the resistivity gets lower because of weathering products, remineralisation of rock and infill of cracks, faults and voids with clay and water. Weathering within rock is typically indicated by lower resistivity values in the cross sections.

In limestone areas, karstified rock is defined in this report as a formerly intact clean limestone rock, liable to karstification, that has been partially dissolved by water over long geological time scales and where the cavities and voids have either remained empty (filled by air) or became filled by overburden sediment (clay, silt, sand), weathering product of the broken rock itself or water. This process would lead to a reduction of the resistivity of the overall rock and therefore karstified rock has a lower resistivity than intact clean limestone rock. This is generally indicated by lower resistivities embedded within high resistivity at depth.

The resistivities cover a range typical for materials from clay rich overburden (low resistivities) to fresh strong unweathered bedrock (high resistivities). The ranges have been taken into the consideration for the interpretation. Within the overburden layers, very low resistivities (<62.5 Ohmm) indicate a clay rich

overburden. Low resistivity values (62.5 - 250 Ohmm) indicates a sandy gravelly clay and silt. Medium values (250 to 500 Ohmm) show a clayey silty sand and gravel while high resistivities (>500 Ohmm) indicate sand and gravel.

Within Rock layers, the resistivities indicate different rock types as well as differing levels of weathering within a rock. Low resistivities (<250 Ohmm) indicate a mudstone or shale bedrock or a very infilled limestone. Medium resistivities (250 – 500 Ohmm) may be a shale or infilled limestone. High resistivities (500 – 2000 Ohmm) are interpreted either as shale or limestone while very high resistivities (>2000 Ohmm) indicate a clean limestone.

3.2 Seismic Refraction

The seismic refraction data was positioned and processed with the SEISIMAGER software package to give a layered model of the subsurface. The number of layers has been determined by analysing the seismic traces and up to 7 layers in total were used in the models ranging from 3 to 4-layer models. All seismic profiles were subject to a standardised processing sequence which consisted of a topographic correction which was based on integrated elevation data, first break picking, tomographic inversion, travel-time computation via ray-tracing and velocity modelling. Residual deviations of typically 0.4 to 1.8 msec RMS have been obtained for each profile. Following each processing stage QC procedures were adhered to. The resulting layer boundaries are shown as thick lines overlaid on the 2D-Resistivity cross sections (Figures 1a to 9a). The average seismic velocities obtained within the layers are annotated on the sections as bold black numbers.

The p-wave seismic velocity is closely linked to the density of subsurface materials and to parameters like compaction, stiffness, strength and rock quality. The higher the density of the subsurface materials the higher the seismic velocity. Similarly for the other parameters it is generally valid that a more compacted, stiffer and stronger material will have a higher seismic velocity. For rock, the seismic velocity is higher when the rock is stronger, less weathered and has a higher quality. If the rock is more weathered, broken, fractured, fissured or karstified then the seismic velocity will be reduced compared to that of intact fresh rock.

Because of the above relationship, the seismic refraction method and seismic velocities are suitable to investigate ground where the layers get denser, more compacted and stronger with depth. A disadvantage is that some materials may have the same seismic velocity: Very stiff to hard or very dense highly consolidated overburden and a weathered rock can have the same seismic velocity range.

3.3 Interpretation of Resistivity and Seismic Refraction

Table 2 summarises the interpretation. The stiffness or compaction and the rock strength or quality have been estimated from the seismic velocity. The estimation of the excavatability for the bedrock has been made according to the caterpillar chart published in Reynolds (1997). The geotechnical assessment for rippability will have to take factors like rock type and jointing into account and the estimation in this report is solely based on the seismic velocities.

Interpreted cross sections are shown in Figure 1b to 16b. The interpretation has been made from all available information. For overburden layers and the top of the rock, the seismic refraction data has been used as seismic refraction is the best method to delineate layer boundaries. The resistivity models have been used to delineate generalised types of overburden and rock. Resistivity data is better suited to show rock types and features within the rock while seismic refraction velocities are indicating the change of compaction, stiffness or rock quality with depth. Along short profile parts where only one data type is available an interpolation for the interpreted layers was made.

Table 2: Summary of Interpretation

Layer	**General Seismic Velocity Range (m/sec)**	**General Resistivity Range (Ohmm)**	**Stiffness/ Compaction or Rock Strength/ Quality**	**Interpretation**	**Estimated Excavation Method**
1	<150	N/A		Peat	Diggable
2	170 – 400	N/A	Soft or loose	Topsoil	Diggable
3A	500 - 900	<62.5	Firm	Clay	Diggable
3B	500 - 900	62.5 - 250	Firm	Sandy gravelly Clay or Silt	Diggable
3C	500 – 900	250 – 500	Medium Dense	Clayey silty Sand or Gravel	Diggable
4A	1000 – 1500	<62.5	Stiff	Clay	Diggable
4B	1000 – 1500	62.5 - 250	Stiff	Sandy gravelly Clay or Silt	Diggable
4C	1000 – 1500	250 - 500	Dense	Clayey silty Sand or Gravel	Diggable
4D	1000 – 1500	500 - 2000	Dense	Sand or Gravel	Diggable
5A	1600 – 2000	<62.5	Very Stiff or Poor	Clay or Very Weathered Mudstone or Shale or very infilled Limestone	Diggable/Rippable
5B	1600 – 2000	62.5 - 250	Very Stiff or Poor	Sandy gravelly Clay or Silt or very Weathered Mudstone or Shale or infilled Limestone	Diggable/Rippable

5C	1600 – 2000	250 - 500	Very Dense or Poor	Clayey silty Sand or Gravel or very Weathered Shale or Limestone	Diggable/Rippable
6A	2100 – 2900	<62.5	Fair or very stiff	Weathered Mudstone or Shale or very infilled Limestone or Clay	Diggable/Rippable
6B	2100 – 2900	62.5 - 250	Fair or Very Stiff	Weathered Mudstone or Shale or very infilled Limestone or sandy gravelly Clay or Silt	Rippable/Marginal Rippable or Breaking and Blasting
6C	2100 – 2900	250 - 500	Fair or Very Dense	Weathered Shale or infilled Limestone or clayey silty Sand or Gravel	Rippable/Marginal Rippable or Breaking and Blasting
6D	2100 – 2900	500 - 2000	Fair or Very Dense	Weathered Shale or Limestone or Sand or Gravel	Rippable/Marginal Rippable or Breaking and Blasting
7B	>3000	62.5 - 250	Good	Mudstone, Shale or very infilled Limestone	Breaking or Blasting
7C	>3000	250 - 500	Good	Shale or Infilled Limestone	Breaking or Blasting
7D	>3000	500 - 2000	Good	Shale or Limestone	Breaking or Blasting
7E	>3000	>2000	Good	Clean Limestone	Breaking or Blasting

4. INTERPRETATION BY LOCATION

Due to the large distances covered during this project and the space between each survey area, the geology varies greatly throughout the project. In this chapter the interpretations are divided into a section for each box. The layers shown in table 2 are narrowed for each location to provide the most likely geological interpretation for each area using all available information available. The chainages, indicating the survey location indicate the lowest chainage where surveying being.

4.1 Ch133050

Maps and Figures: 1 & 2

Lines: 1 - 6

Location Comments: Three parallel lines were surveyed which were broken at a field boundary.

GI Points: N/A

The seismic refraction velocities provided a three-layer model ranging from topsoil to good rock. The seismic refraction model ties in will with the 2D-Resistivity trends.

The soft and loose topsoil layer is 2 – 3m thick and underlain by 4 – 10m of very stiff sandy gravelly clay and silt. Good clean limestone is interpreted at a depth of 6 – 12m. The rock layer becomes deeper along all three lines towards the SW which may indicate a fault zone or karstified limestone.

4.2 Ch135592

Maps and Figures: 3

Lines: 7 - 12

Location Comments: Three lines perpendicular to the Cushaling River on both banks.

GI Points: RC208

The 2D-Resistivity models show deep low resistivity across all three lines. The seismic refraction velocities layers indicate deep overburden which no rock being interpreted from the data.

There is 0.5 – 1.5m of topsoil, underlain by 1.5 – 5m of firm sandy gravelly clay and silt. The deepest layer is described as very stiff sandy gravelly clay and silt with some very dense clay in parts. The depth to the top of this layer is between 2.5 – 6.5m. There is no rock interpreted to a depth of 15m bgl.

RC208 indicates predominantly clay and silt with some peat and sand near the surface to a depth of 10.1m bgl.

4.3 Ch139734

Maps and Figures: 4

Lines: 13 -17

Location Comments: Three parallel lines surveyed which were split by a stream. The NW area was inaccessible.

GI Points: N/A

Peat was noted in this area and peat probing was carried out along the line. The results were used to calibrate the seismic refraction models.

The peat is thicker in the west where it reaches depths of up to 5m but becomes very thin in the east. The peat is underlain by sandy gravelly clay and silt increasing in stiffness with depth from soft to very stiff. Increases in resistivity at depths of 5 – 7m bgl may indicate a weathered rock or a clayey silty sand and gravel overburden.

4.4 Ch143294

Maps and Figures: 5

Lines: 18 - 20

Location Comments: Three parallel lines covering the survey area.

GI Points: N/A

The main geological feature noted in this area is the high resistivities on the higher ground near the surface. This is an esker comprising of sand and gravel. This sand and gravel lens is underlain by thick hard sandy gravelly clay and silt.

The sand and gravel lens is up to 6m thick and is present on the higher ground. On the lower ground there is clay or possibly peat near the surface. The seismic refraction models indicate that if there is peat it is a thin layer.

Rock is indicated at depths of over 15m bgl. The depth of the rock means an accurate description cannot be provided.

4.5 Ch156888

Maps and Figures: 6

Lines: 21 - 23

Location Comments: Three parallel lines covering the survey area

GI Points: BH215

There is some variation across the three lines with the rock becoming shallower towards the south.

The seismic refraction data was modelled with a three-layer model. Layer 1 is described as soft or loose topsoil and is up to 1.5m thick. This is underlain by very stiff sandy gravelly clay and silt. Good rock is indicated at 7m in the south and 15m to the north at the start of line 21.

BH215 shows clay to a depth of 6.6m bgl.

4.6 Ch160542

Maps and Figures: 7

Lines: 31 - 34

Location Comments: Two parallel lines surveyed on opposite side of the river.

GI Points: BH222 & BH223

The 2D-Resistivity data shows a sudden change in the rock geology at the break in the lines.

The seismic refraction data was modelled with a four-layer model. The top layer, described as soft or loose topsoil is approx. 1m thick. This is underlain by 1 – 2.5m layer of firm clay or sandy gravelly clay. The top of the very stiff of very dense layer is between 2 – 3.5m bgl. This layer comprises of clay, sandy gravelly clay and silt and clayey silty sand and gravel and contains some weathered or infilled limestone.

The top of the good rock layer is between 4 – 11m bgl. In the north this layer is described as good clean limestone while in the south it is interpreted as infilled limestone or good shale. The change in resistivities within this layer may indicate a fault zone, an area of karstified limestone or a change in rock type from limestone to shale.

RC223 which was carried out 24m away from line 31 shows weathered limestone at 2.5m bgl with good limestone at 8.6m. This indicates there is likely weathered rock with seismic layer 6 in this area.

4.7 Ch161244

Maps and Figures: 8 & 9

Lines: 24 - 30

Location Comments: Three parallel lines, broken at river and impenetrable field boundaries

GI Points: RC219 & RC220

The 2D-Resistivity data shows low resistivities across all the lines to depths of over 12m.

The seismic refraction data was modelled with a 4-layer model. The top two layers are described as soft and loose topsoil and firm sandy gravelly clay and silt. These layers extend to depths of 2 – 4.5m bgl. These layers are underlain by a thick layer of very stiff sandy gravelly clay. Some models indicate rock at depths of greater than 12m bgl.

RC219 and BH220 show a predominantly clay rich overburden to depths of 7.9 and 8.7m bgl respectively.

5. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are made:

- The large area the survey was carried out across means that the interpretation varies significantly across the project.
- The main geological concerns when constructing a pipeline are soft ground, shallow rock and karstified rock.

Soft Ground:

- The area between Ch139734 - 139927 (Map 4) shows peat to depths of 5m along the west side of the survey area, underlain by deep very stiff overburden.

Shallow Rock:

- The shallowest rock encountered was at Ch160542 – 160752 (Map 7) where the top of the good limestone was interpreted as being as shallow as 4m bgl but was generally deeper. There may be some weathered rock even shallower.

Karst Features:

- There were no clear karst features identified within any of the survey areas.
- One possible karst zone was noted at Ch160542 – 160752 (Map 7). A sharp drop in resistivities in the south may indicate a zone of karstified limestone or a fault zone.
- The interpretation presented here should be reviewed once any additional geotechnical data becomes available.

6. REFERENCES

1. **BSI, 2015.** BS5930, Code of Practice for Ground Investigations, British Standards Institute 2015

2. **Eurocode, 2007.** EN 1997-2:2007. Eurocode 7. Part 2 Ground Investigation and Testing 2007

3. **GSEG, 2002.** Geophysics in Engineering Investigations. Geological Society Engineering Geology Special Publication 19, London, 2002

4. **GSI, 2021.** Online Bedrock Geological Map of Ireland. Geological Survey of Ireland 2021

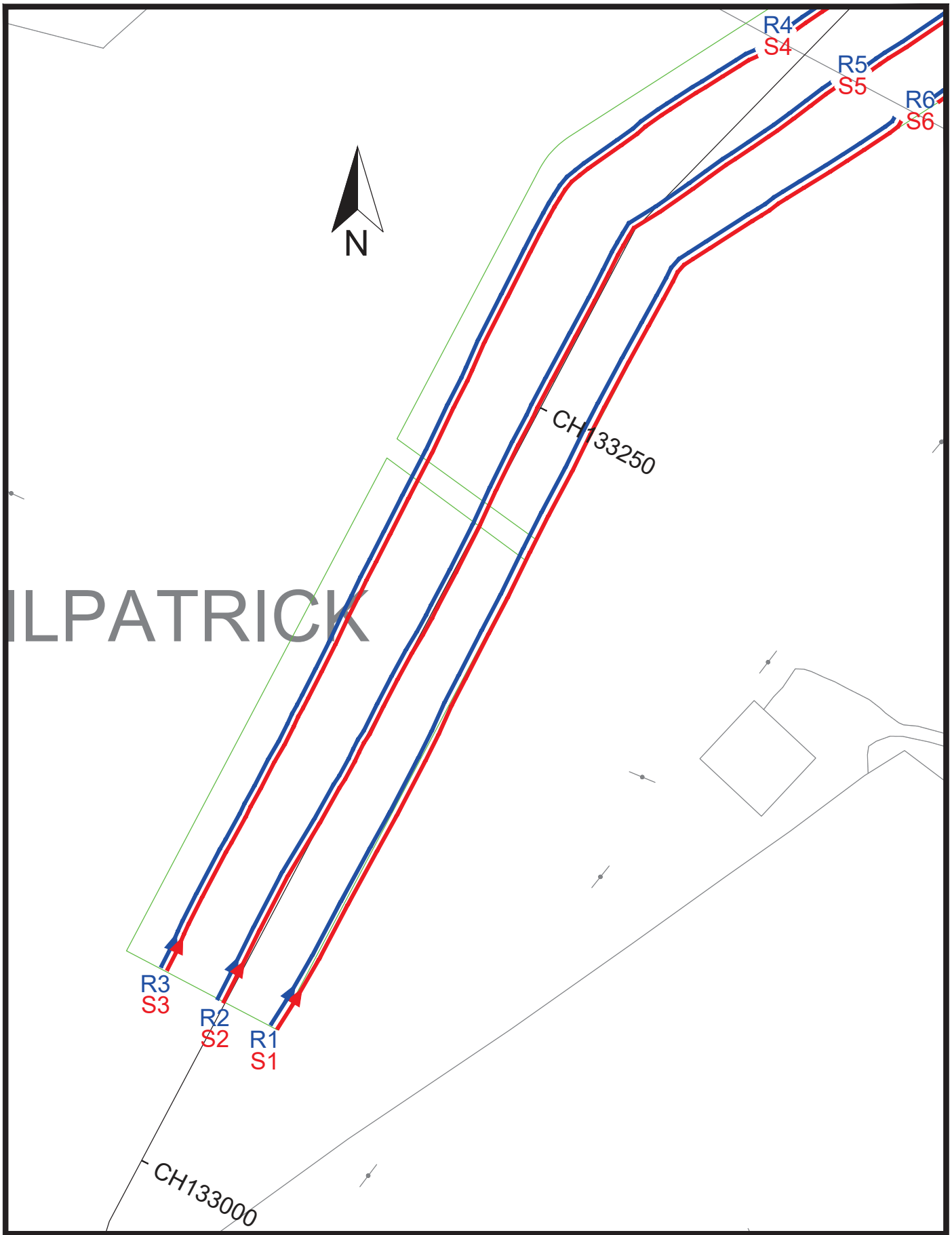
5. **Milsom, 1989.** Field Geophysics. John Wiley and Sons, 1989

6. **Reynolds, 1997.** An Introduction to Applied and Environmental Geophysics. John Wiley and Son, 1997

7. **Weaver, 1975.** Geological Factors significant in the Assessment of Rippability, 1975

Table 1: Geophysical Survey Locations and Acquisition Parameters

Ervia Sheet No.	MGX Report Map/Figure No.	Treated Water Chainage	Profile Numbers	Display Direction	Combined Line Length Resistivity (m)	Combined Line Length Seismics (m)	Quatenary Sediments	Bedrock	Karst/Fault	Relevent Boreholes
							From Geological Survey of Ireland Database			
95	1	133050 - 133452	R1 - R3, S1 - S3	NW - SE	990	990	Limestone Till	Waulsortian Limestone		
95	2	133050 - 133452	R4 - R6, S4 - S6	NW - SE	177	177	Limestone Till	Waulsortian Limestone		
96	3	135592 - 135805	R7 - R12, S7 - S12	SW - NE	558	558	Alluvium Along River. Till away from it	Waulsortian Limestone		RC208
98	4	139734 - 139927	R13 - R17, S13 - S17	W - E	465	465	Cut over raised Peat	Waulsortian Limestone		
100	5	143294 - 143414	R18 - R20, S18 - S20	W - E	351	351	Eskers, Cut over raised Peat	Lucan Formation		
108	6	156888 - 157026	R21 - R23, S21 - S23	NW - SE	387	387	Limestone Till	Boston Hill Formation		
111	7	160542 - 160752	R31 - R34, S31 - S34	NW - SE	372	372	Alluvium in West, Limestone Till to East	Lucan Formation		BH222, BH223
111	8	161244 - 161924	R24 - S27, S24 - S27	W - E	417	417	Alluvium along river, Limestone Till to NW	Lucan Formation		RC219, BH220
111	9	161244 - 161924	R28 - R30, S28 - S30	W - E	1284	1254	Alluvium along river, Gravel to SE	Lucan Formation		
				Sums:	**5001**	**4971**				



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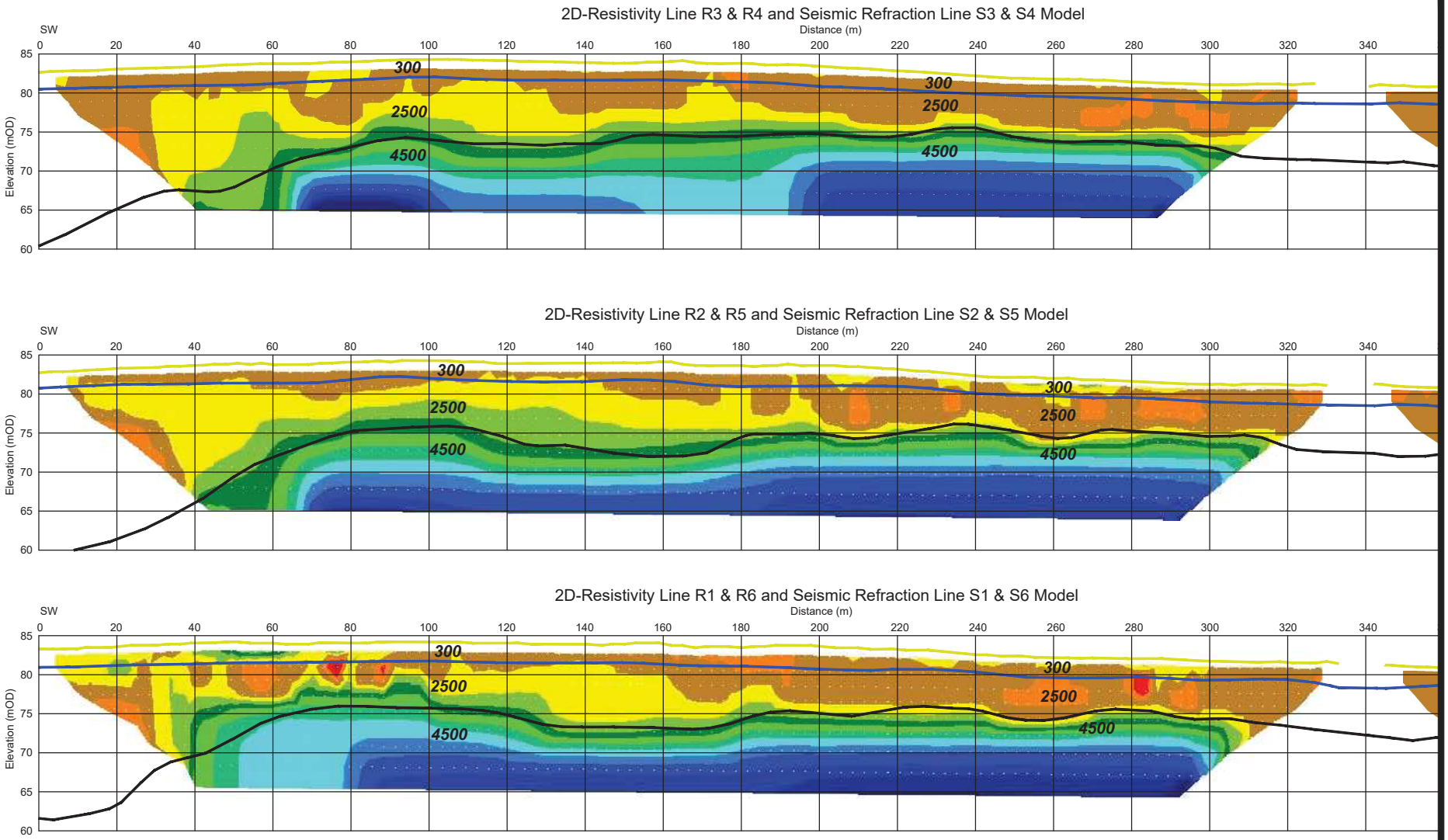
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 1: Geophysical Survey Location Map Ch133050

SCALE:	1:1000 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 1a: Models of Geophysical Survey Ch133050

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

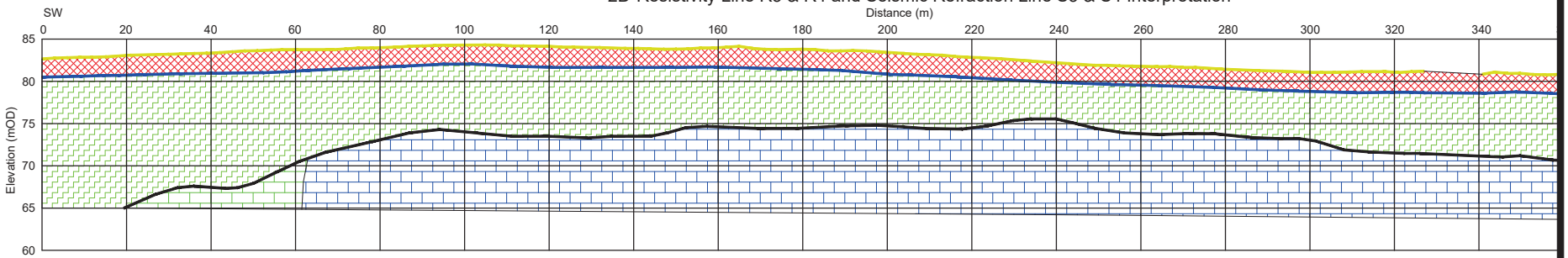
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

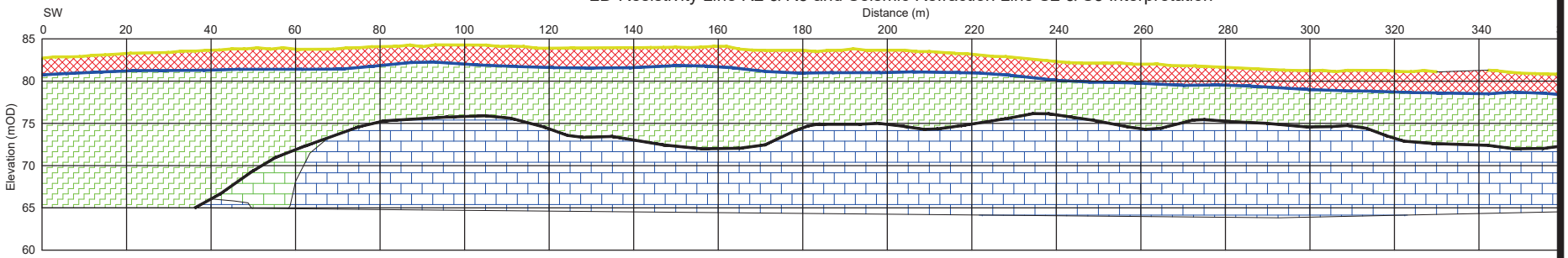
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

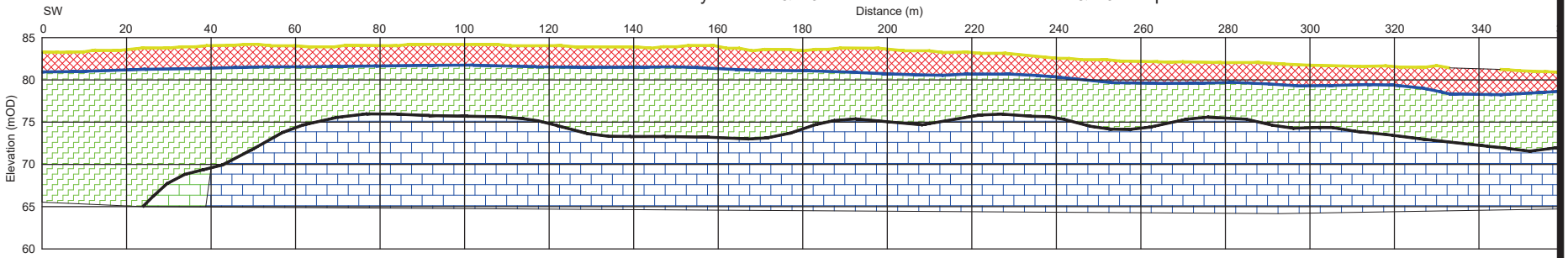
2D-Resistivity Line R3 & R4 and Seismic Refraction Line S3 & S4 Interpretation



2D-Resistivity Line R2 & R5 and Seismic Refraction Line S2 & S5 Interpretation



2D-Resistivity Line R1 & R6 and Seismic Refraction Line S1 & S6 Interpretation



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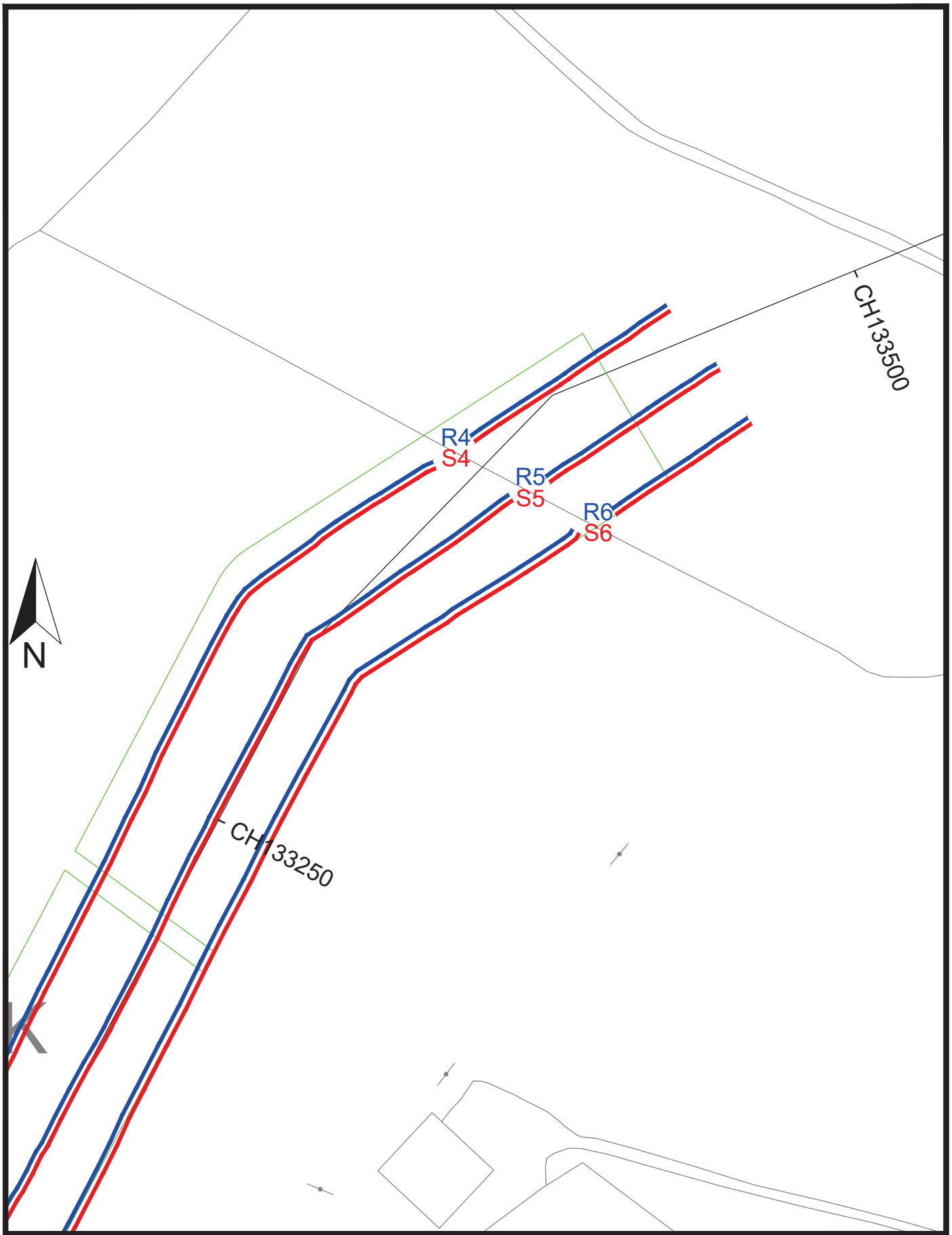
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 1b: Interpretation of Geophysical Survey Ch133050

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 6b Very stiff sandy gravelly Clay and Silt
- 7c Infilled Limestone
- 7e Good Limestone



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 2: Geophysical Survey Location Map Ch133050

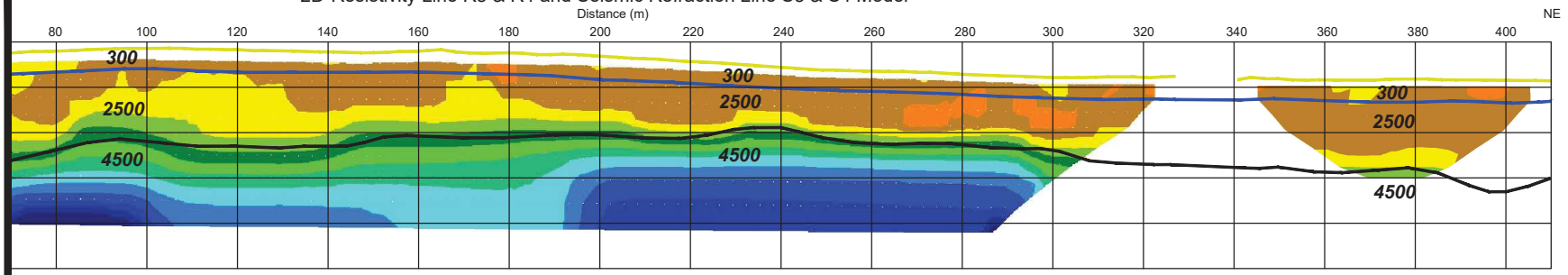
SCALE:	1:1000 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

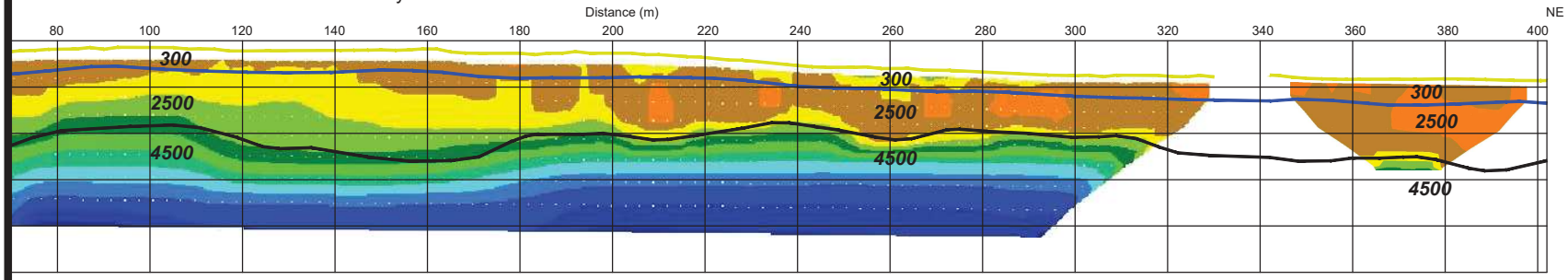
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

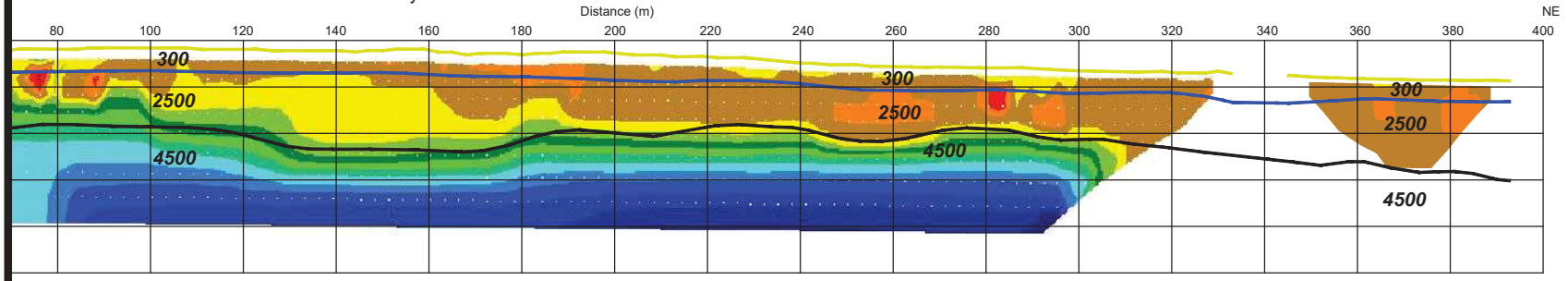
2D-Resistivity Line R3 & R4 and Seismic Refraction Line S3 & S4 Model



2D-Resistivity Line R2 & R5 and Seismic Refraction Line S2 & S5 Model



2D-Resistivity Line R1 & R6 and Seismic Refraction Line S1 & S6 Model



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PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 2a: Models of Geophysical Survey Ch133050

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

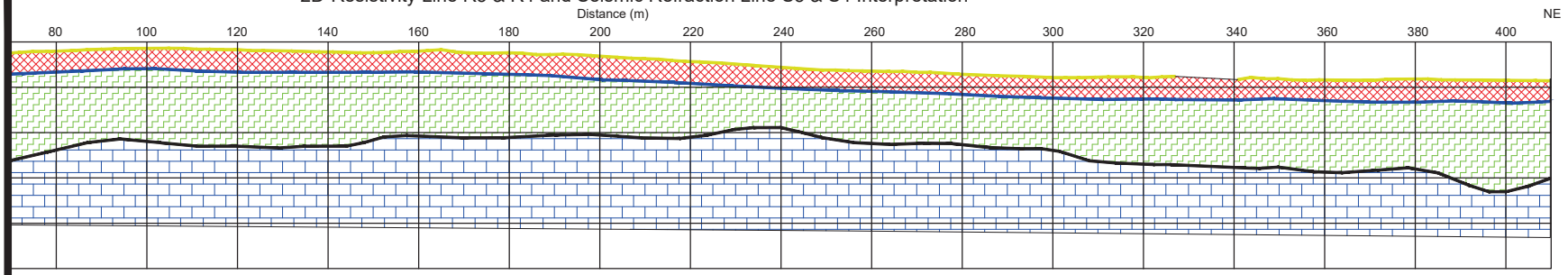
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

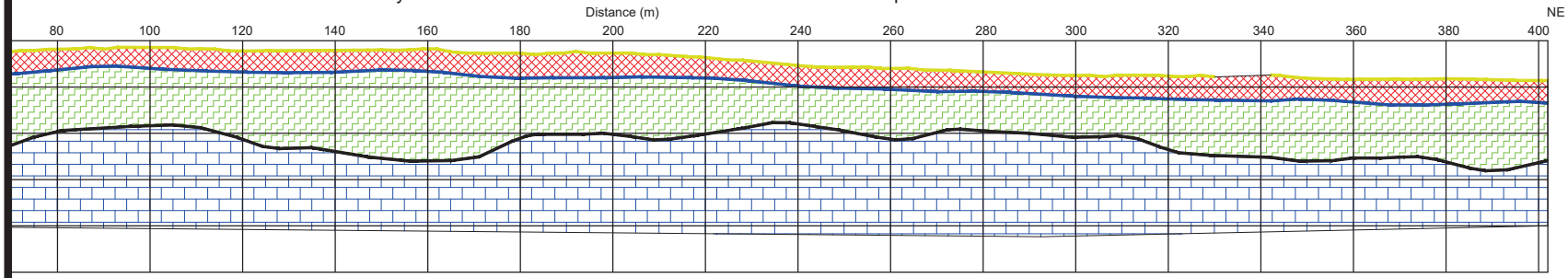
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

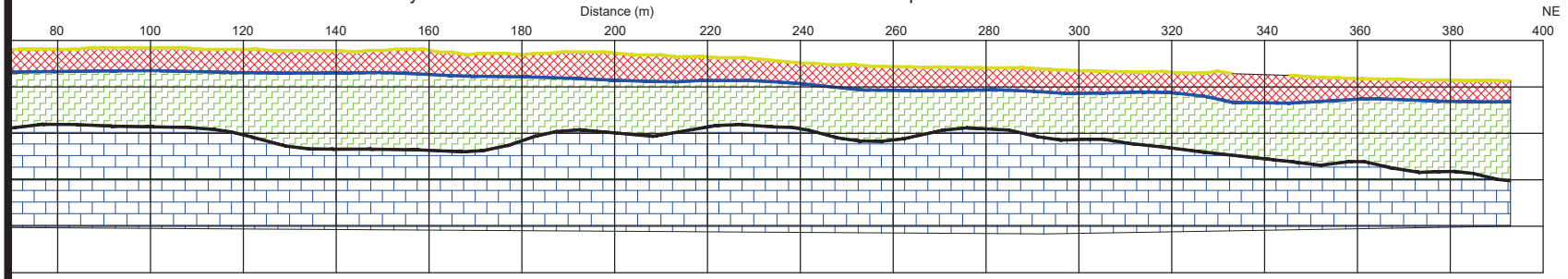
2D-Resistivity Line R3 & R4 and Seismic Refraction Line S3 & S4 Interpretation



2D-Resistivity Line R2 & R5 and Seismic Refraction Line S2 & S5 Interpretation



2D-Resistivity Line R1 & R6 and Seismic Refraction Line S1 & S6 Interpretation



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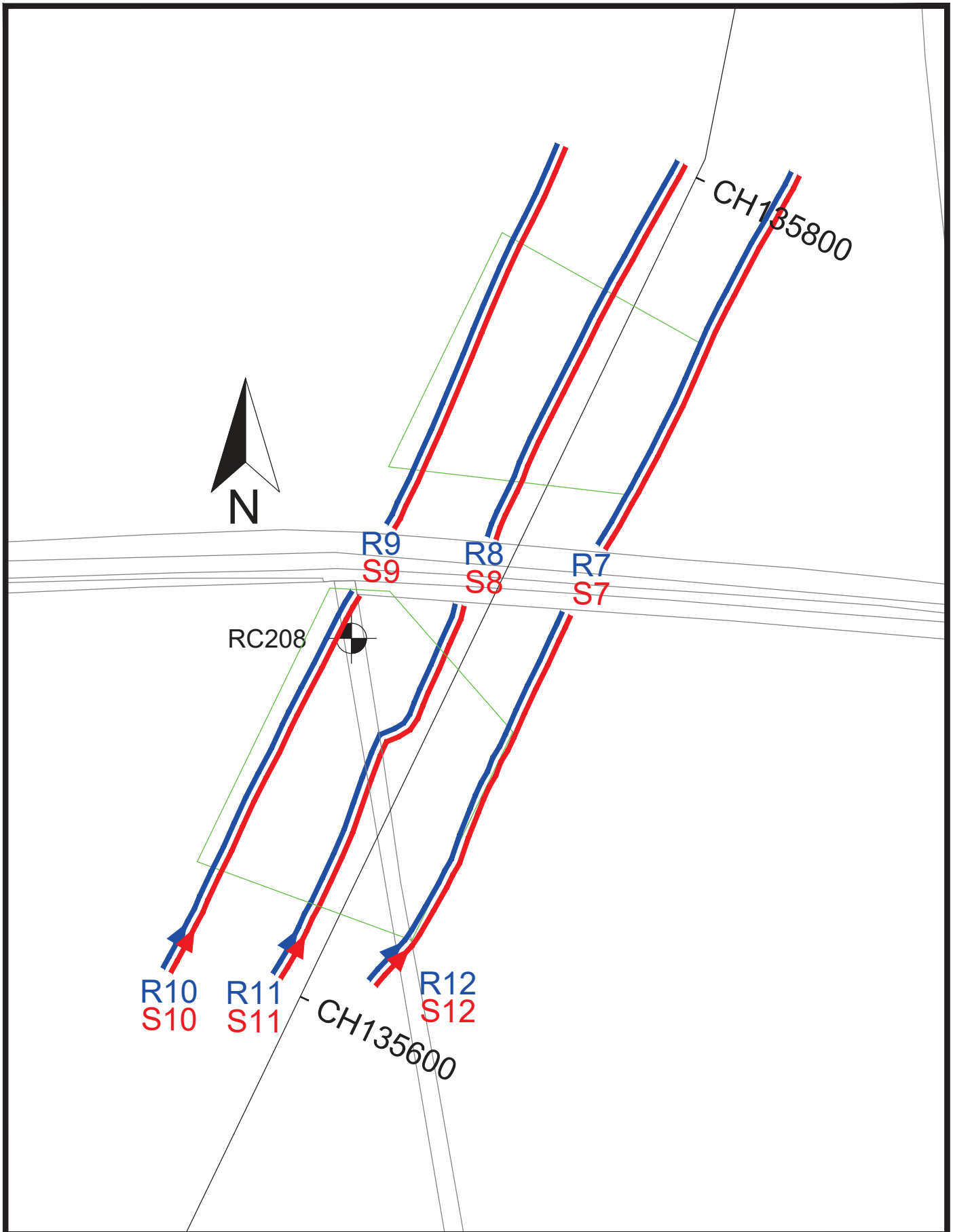
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 2b: interpretation of Geophysical Survey Ch133050

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	14/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 6b Very stiff sandy gravelly Clay and Silt
- 7c Infilled Limestone
- 7e Good Limestone



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 3: Geophysical Survey Location Map From Ch135592

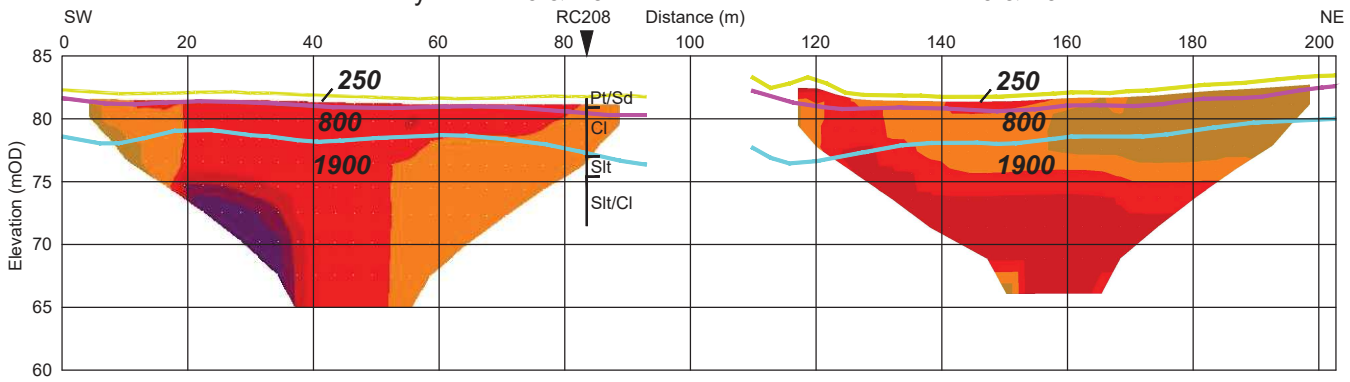
SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	18/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

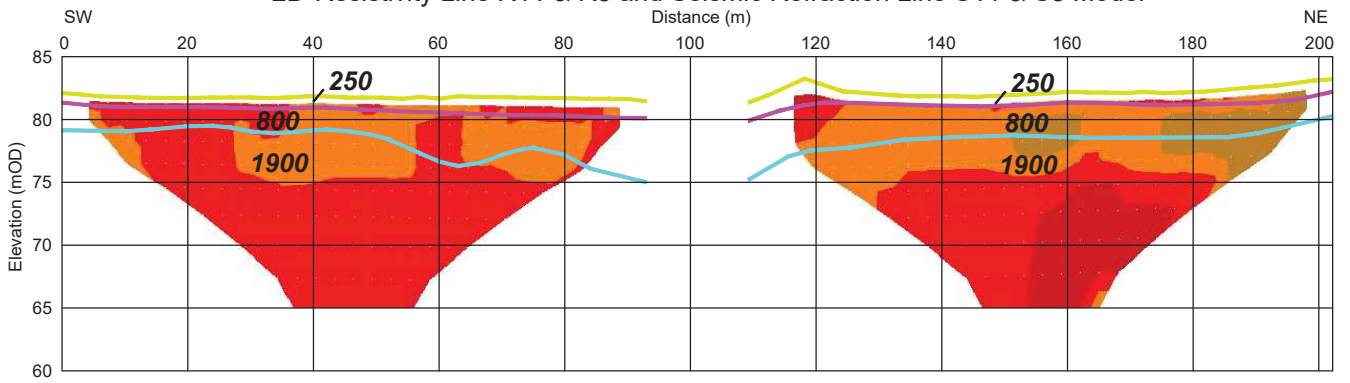
- R2 — 2D-Resistivity Line
- S1 — Seismic Refraction Line
- Survey Area

Locations are in Irish Transverse Mercator (ITM). Elevations are in mOD (Malin Head)

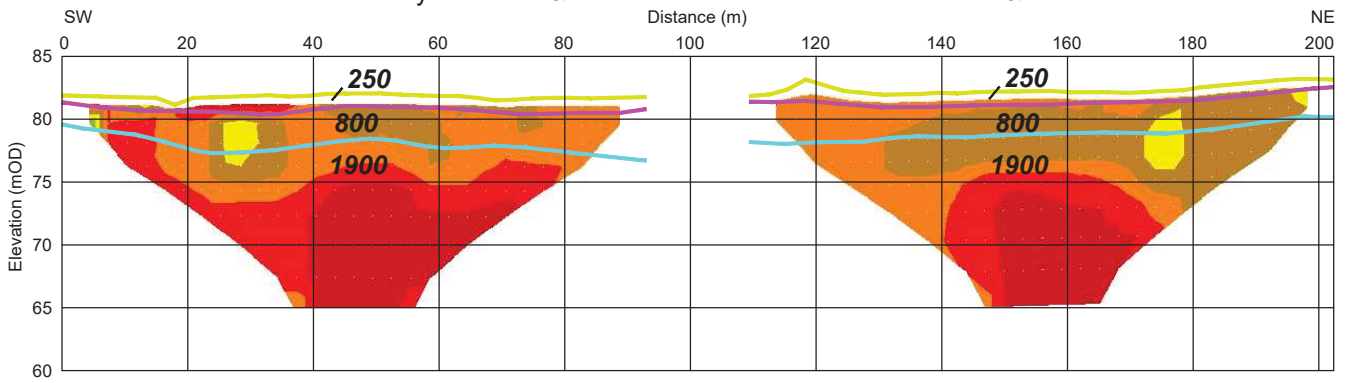
2D-Resistivity Line R10 & R9 and Seismic Refraction Line S10 & S9 Model



2D-Resistivity Line R11 & R8 and Seismic Refraction Line S11 & S8 Model



2D-Resistivity Line R12 & R7 and Seismic Refraction Line S12 & S7 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 3a: Models of Geophysical Survey from Ch135592

SCALE:	1:800 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	18/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

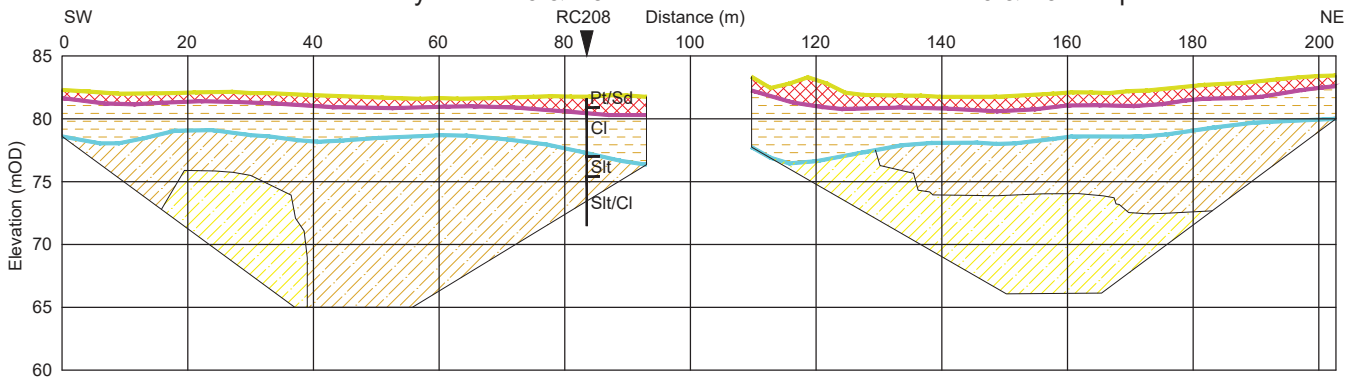
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

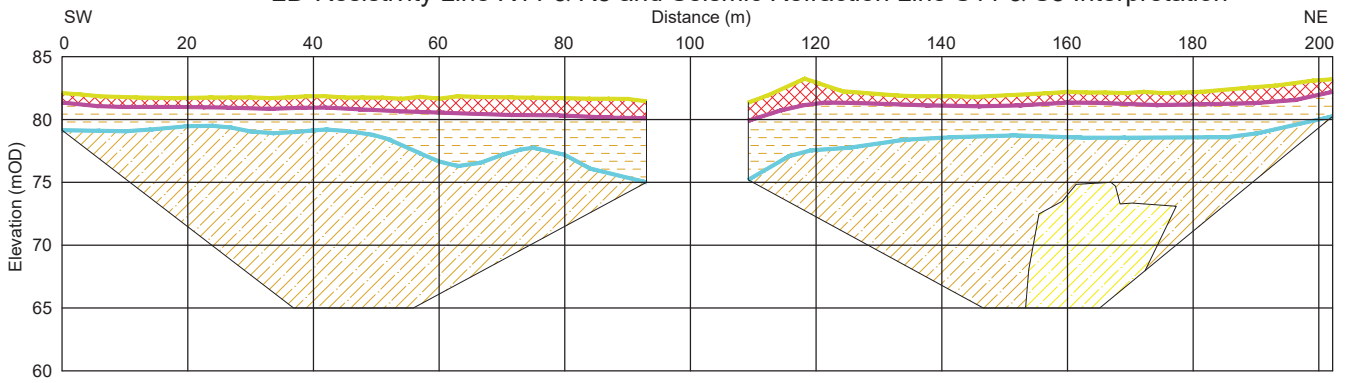
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

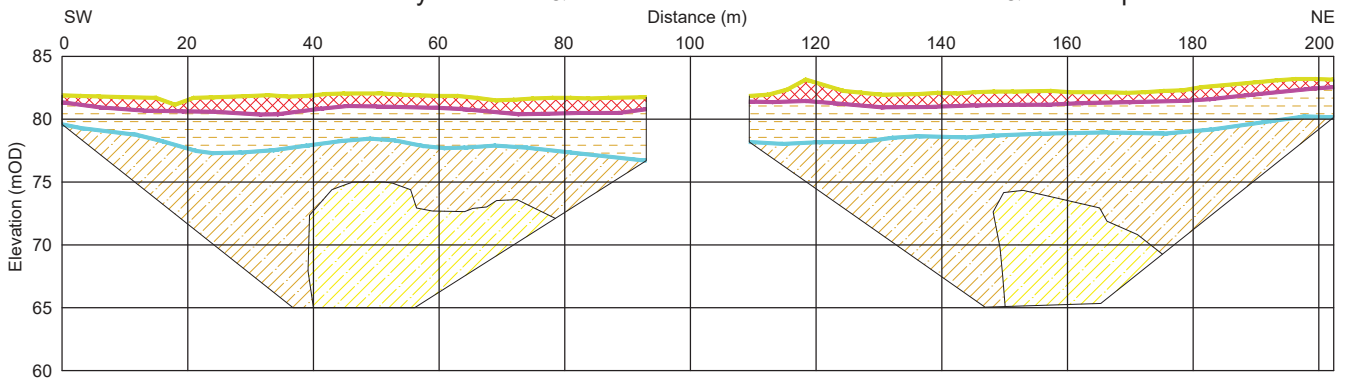
2D-Resistivity Line R10 & R9 and Seismic Refraction Line S10 & S9 Interpretation



2D-Resistivity Line R11 & R8 and Seismic Refraction Line S11 & S8 Interpretation



2D-Resistivity Line R12 & R7 and Seismic Refraction Line S12 & S7 Interpretation



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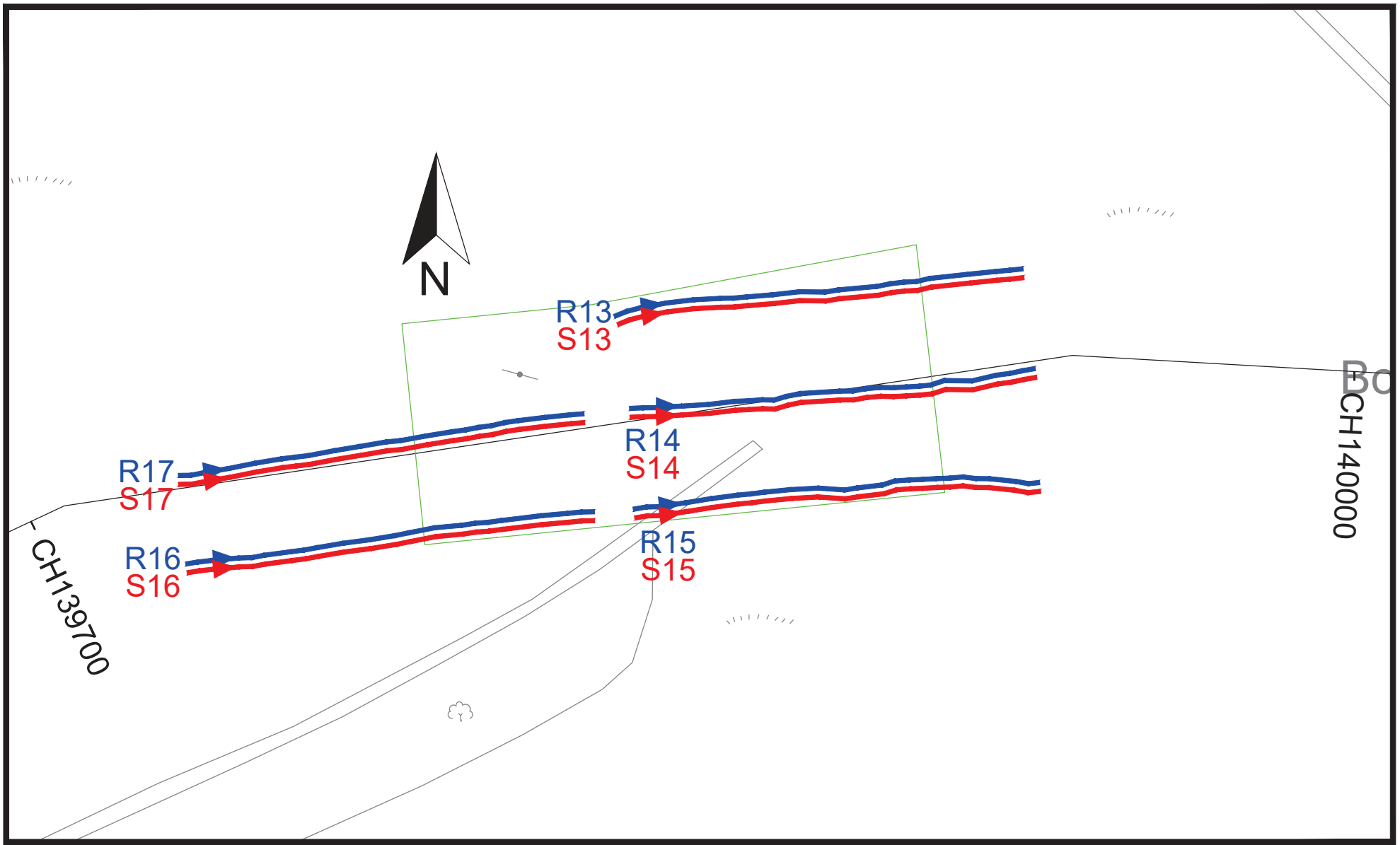
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 3b: Interpretation of Geophysical Survey from Ch135592

SCALE:	1:800 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	18/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 3B Firm sandy gravelly Clay or Silt
- 5A Very stiff Clay
- 5B Very stiff sandy gravelly Clay or Silt



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 4: Geophysical Survey Location Map Ch139734

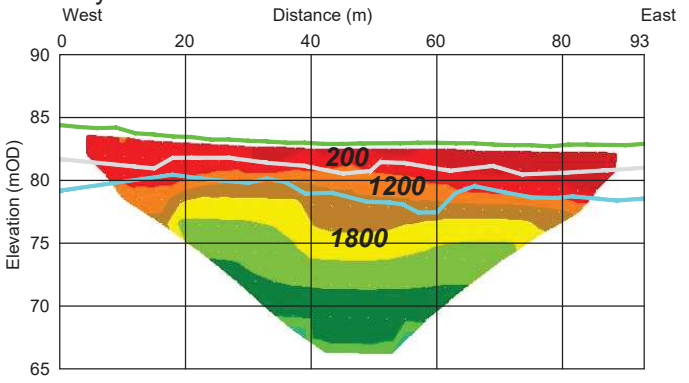
SCALE:	1:800 @ A3
PROJECT:	6486
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

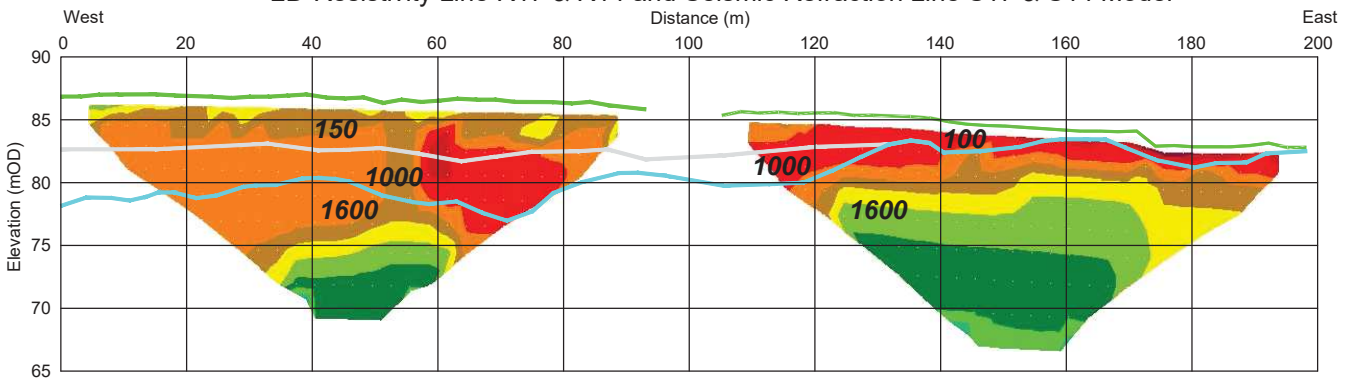
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

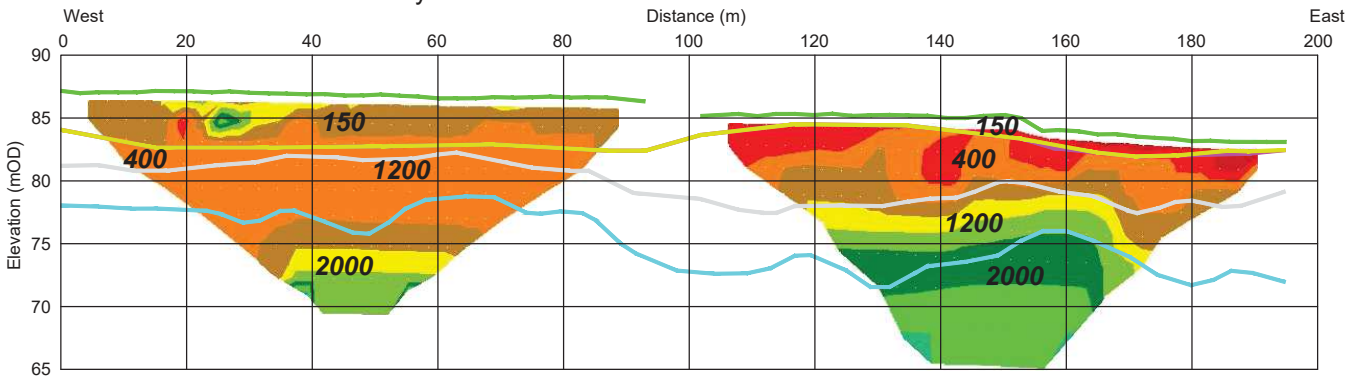
2D-Resistivity Line R13 and Seismic Refraction Line S13 Model



2D-Resistivity Line R17 & R14 and Seismic Refraction Line S17 & S14 Model



2D-Resistivity Line R16 & R15 and Seismic Refraction Line S16 & S15 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 4a: Models of Geophysical Survey Ch139734

SCALE:	1:800 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

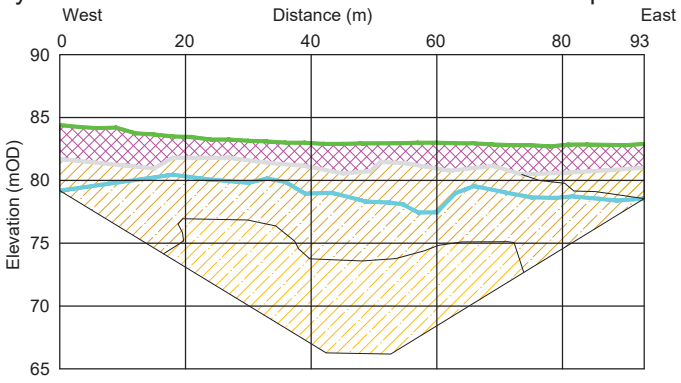
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

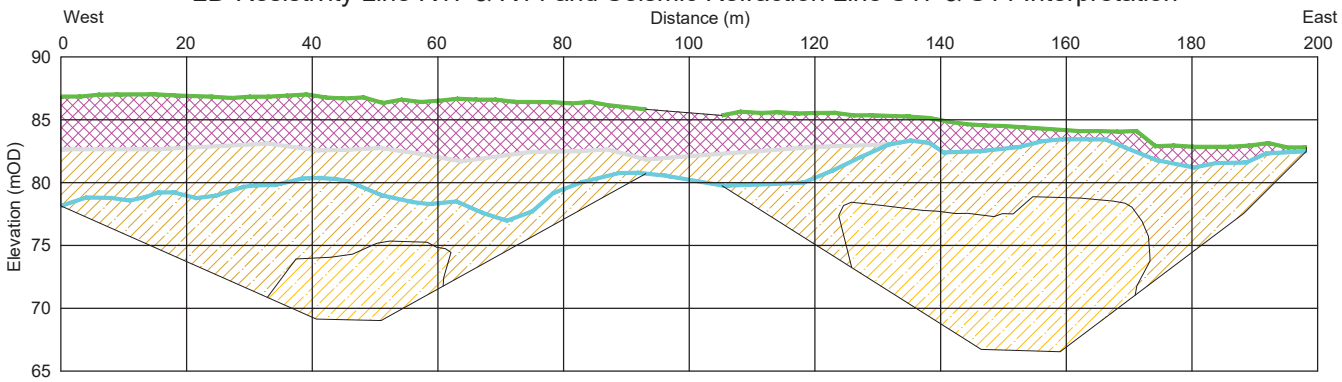
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

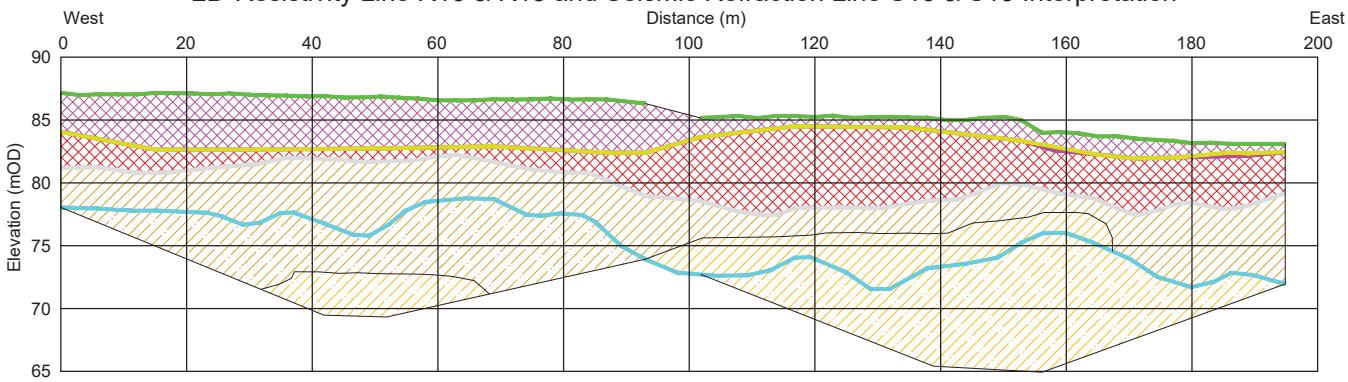
2D-Resistivity Line R13 and Seismic Refraction Line S13 Interpretation



2D-Resistivity Line R17 & R14 and Seismic Refraction Line S17 & S14 Interpretation



2D-Resistivity Line R16 & R15 and Seismic Refraction Line S16 & S15 Interpretation



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 4b: Interpretation of Geophysical Survey Ch139734

SCALE:	1:800 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	03/03/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 1 Peat
- 2 Soft or loose Topsoil
- 4B Stiff sandy gravelly Clay or Silt
- 5B Very stiff sandy gravelly Clay or Silt
- 5C Very dense clayey silty Sand or Gravel or poor very weathered Shale or Limestone

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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 5: Geophysical Survey Location Map Ch143294

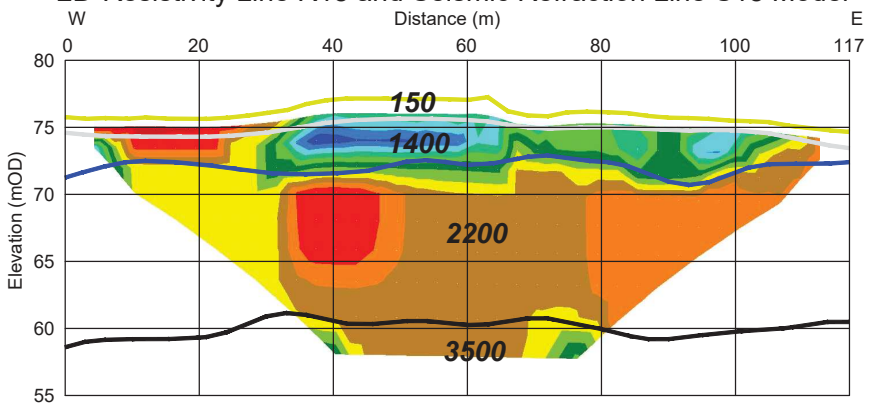
SCALE:	1:750 @ A3
PROJECT:	6486
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

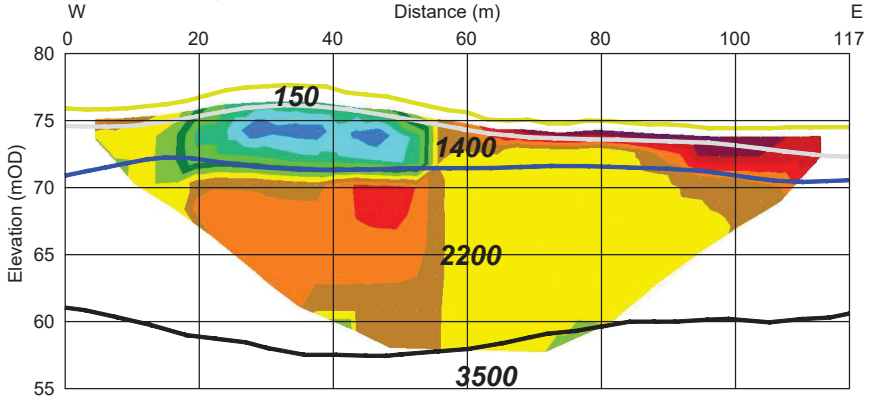
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

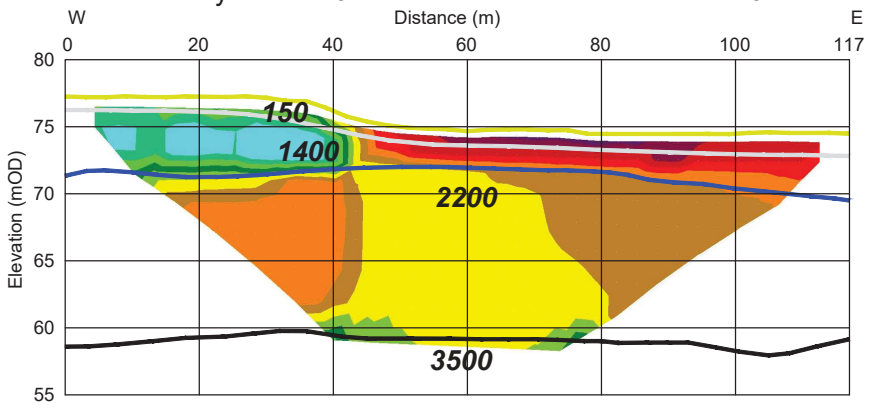
2D-Resistivity Line R18 and Seismic Refraction Line S18 Model



2D-Resistivity Line R19 and Seismic Refraction Line S19 Model



2D-Resistivity Line R20 and Seismic Refraction Line S20 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 5a: Models of Geophysical Survey Ch143294

SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

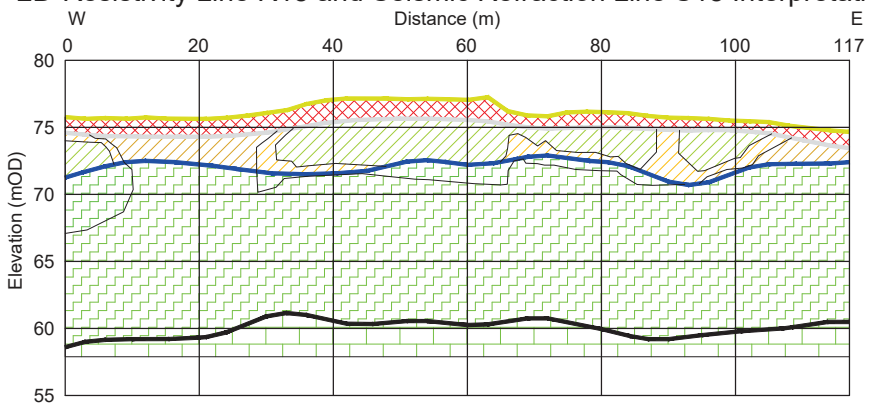
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

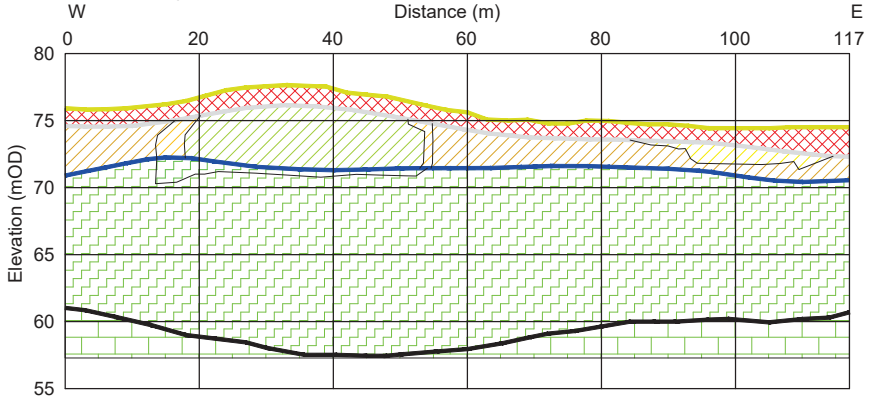
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

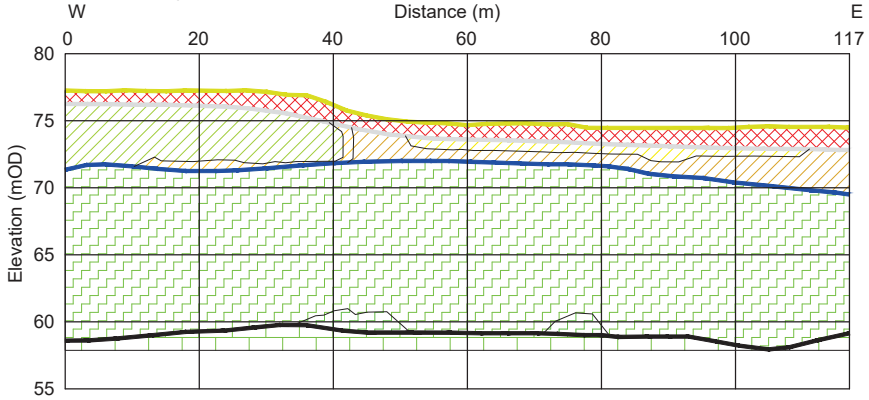
2D-Resistivity Line R18 and Seismic Refraction Line S18 Interpretation



2D-Resistivity Line R19 and Seismic Refraction Line S19 Interpretation



2D-Resistivity Line R20 and Seismic Refraction Line S20 Interpretation



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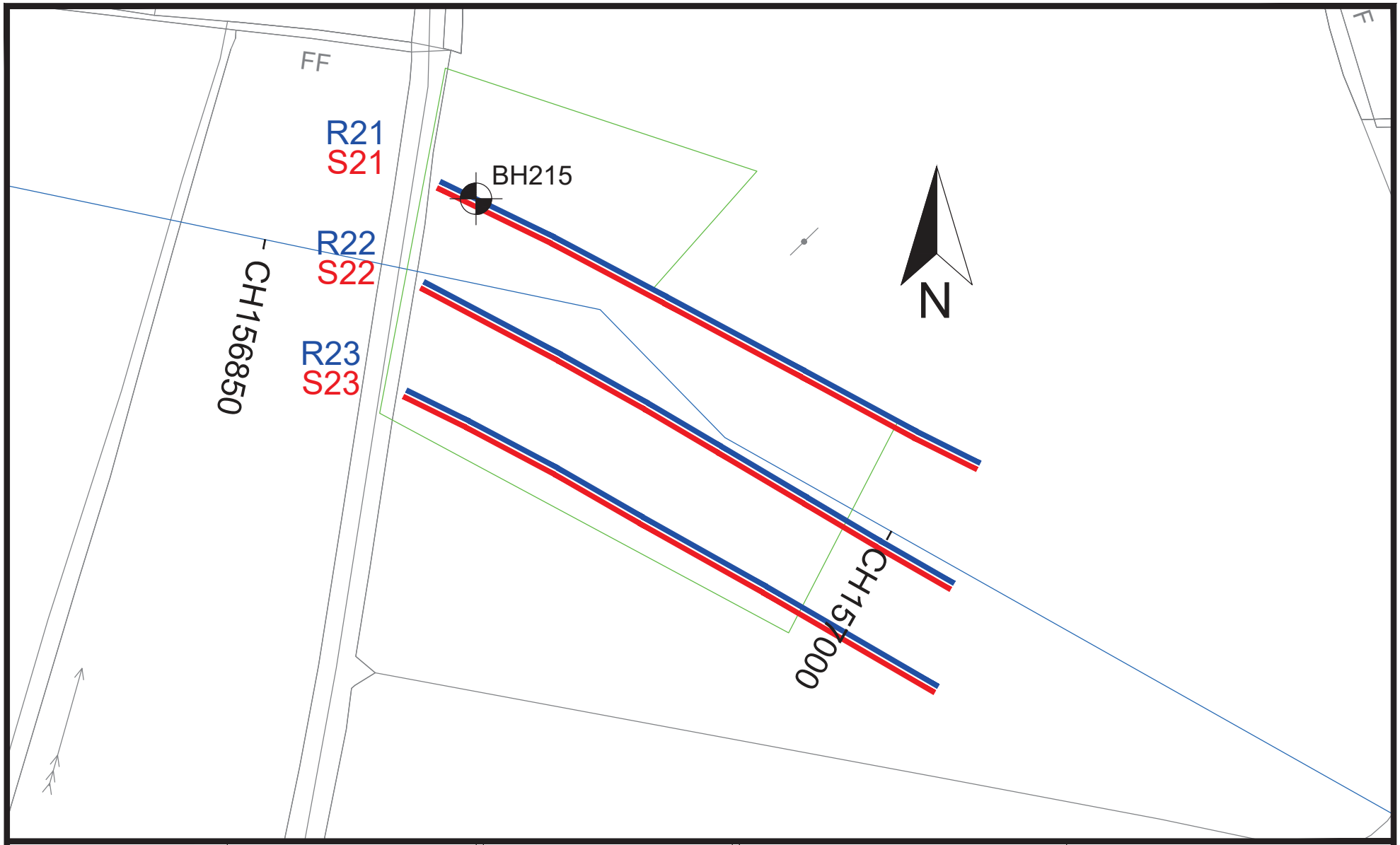
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 5b: Interpretation of Geophysical Survey Ch143294

SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 4B Stiff sandy gravelly Clay or Silt
- 4C Dense clayey silty Sand or Gravel
- 4D Dense Sand or Gravel
- 6B Very stiff sandy gravelly Clay or Silt
- 6C Very dense clayey silty Sand or gravel
- 7B Good Mudstone, Shale or very infilled Limestone



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 6: Geophysical Survey Location Map Ch156888

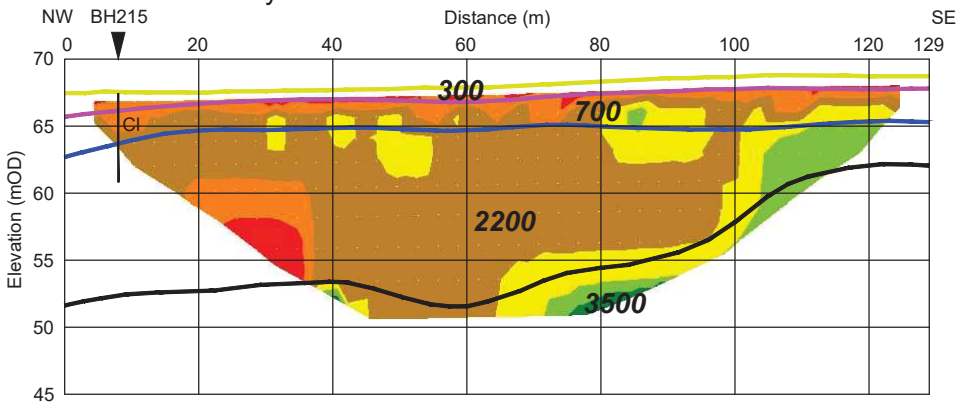
SCALE:	1:750 @ A3
PROJECT:	6486
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

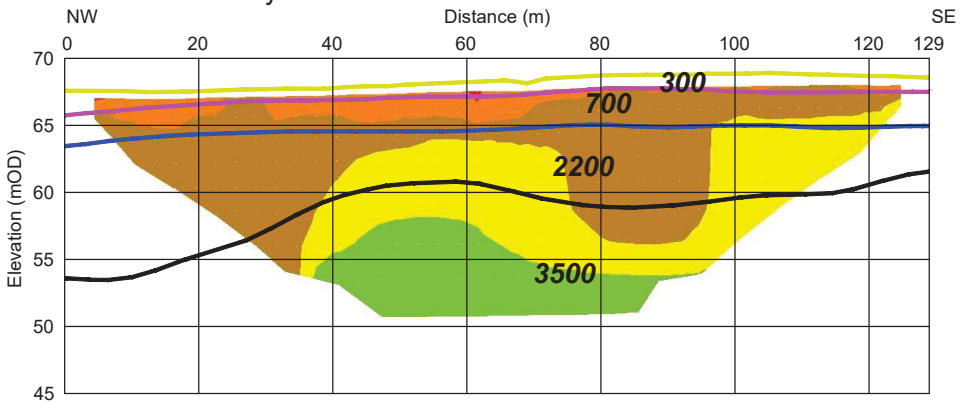
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM). Elevations are in mOD (Malin Head)

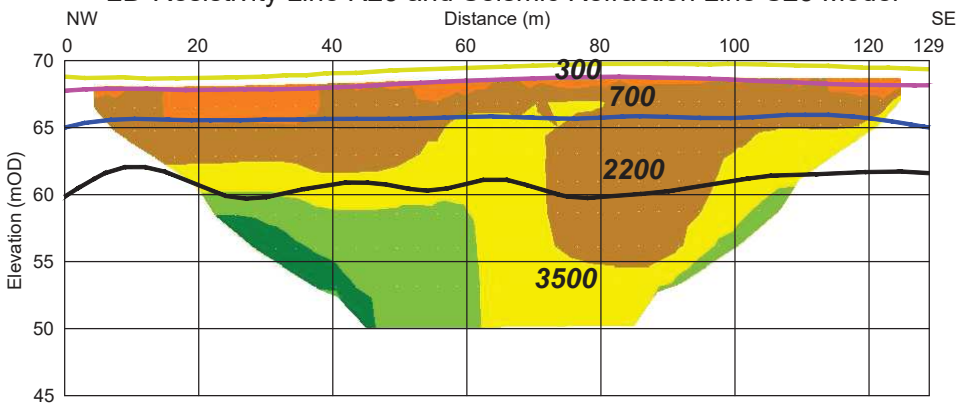
2D-Resistivity Line R21 and Seismic Refraction Line S21 Model



2D-Resistivity Line R22 and Seismic Refraction Line S22 Model



2D-Resistivity Line R23 and Seismic Refraction Line S23 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 6a: Models of Geophysical Survey Ch156888

SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

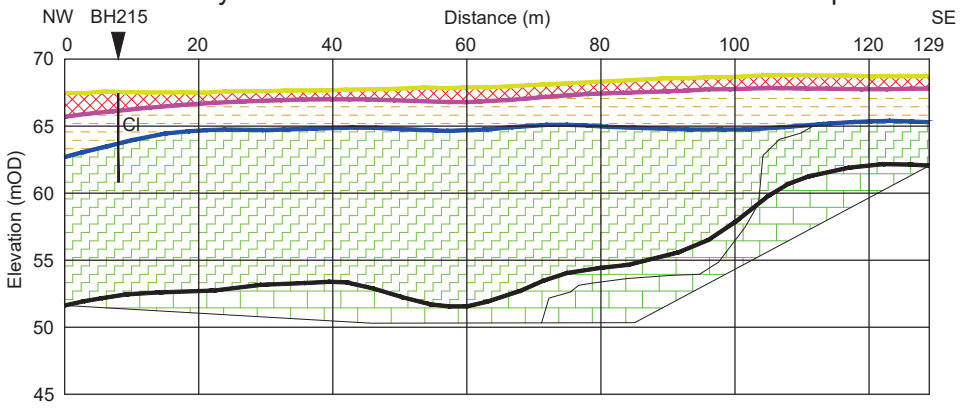
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

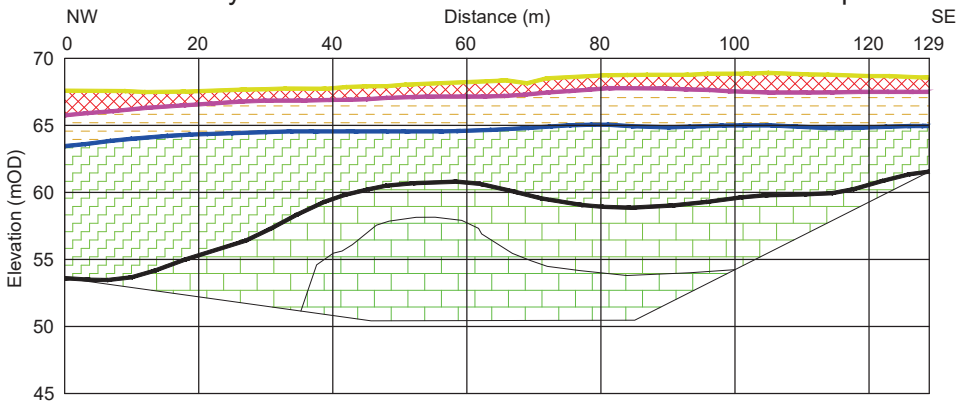
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

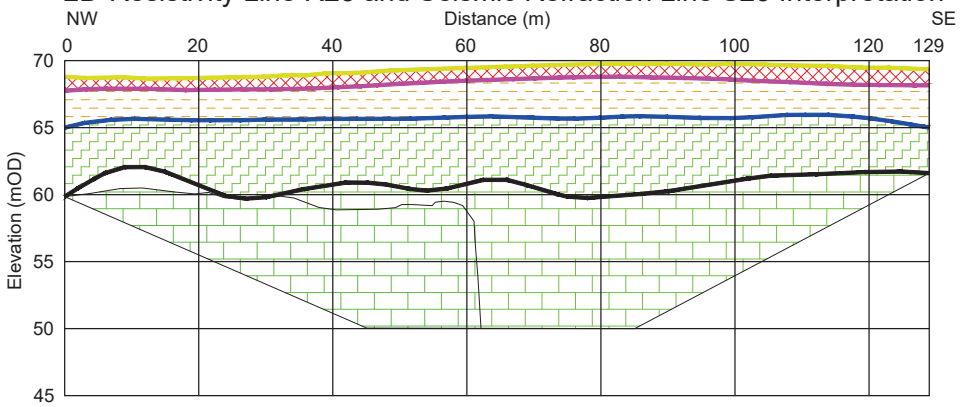
2D-Resistivity Line R21 and Seismic Refraction Line S21 Interpretation



2D-Resistivity Line R22 and Seismic Refraction Line S22 Interpretation



2D-Resistivity Line R23 and Seismic Refraction Line S23 Interpretation



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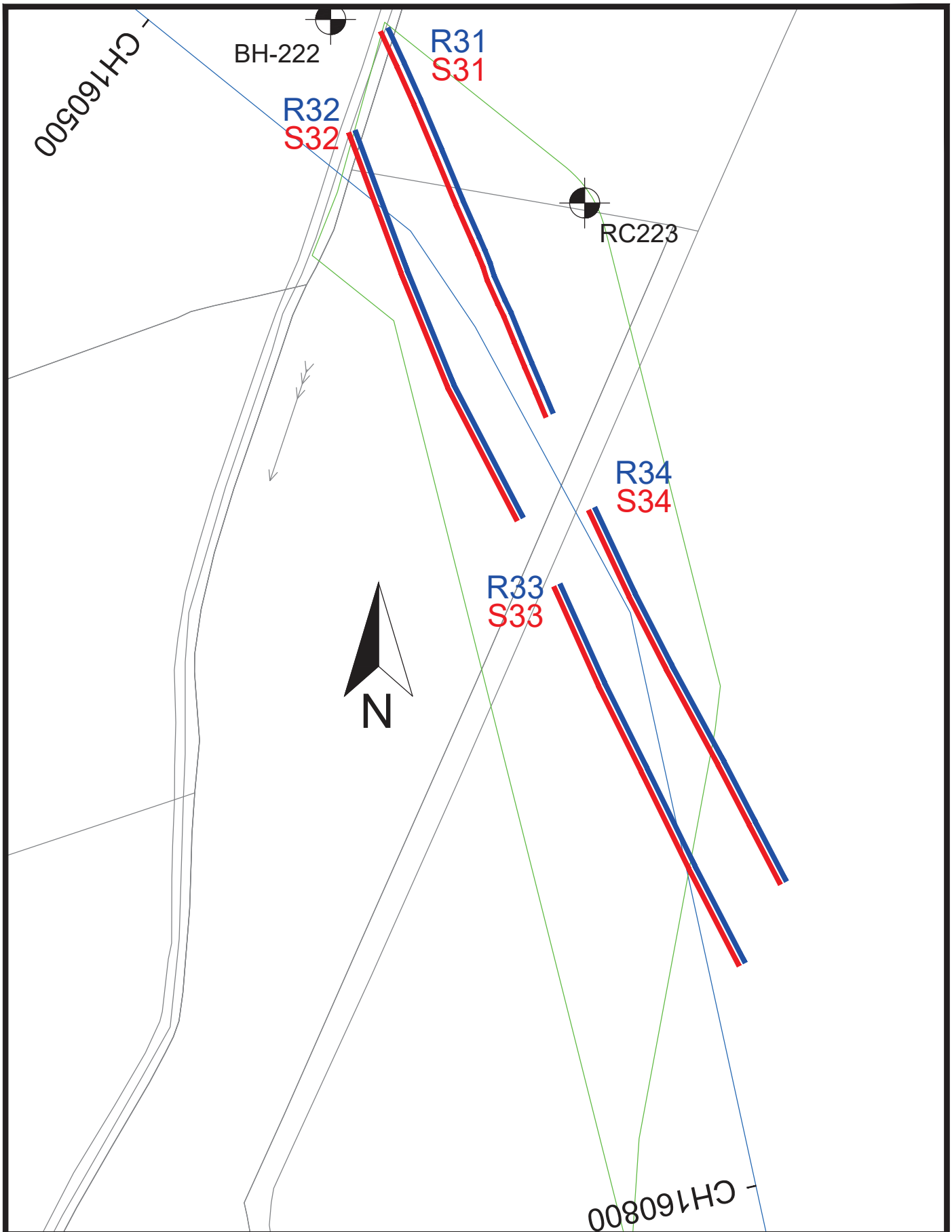
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 6b: Interpretation of Geophysical Survey Ch156888

SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 3B Firm sandy gravelly Clay or Silt
- 6B Very stiff sandy gravelly Clay or Silt
- 6C Very dense clayey silty Sand or gravel
- 7B Good Mudstone or Shale
- 7C Good Shale



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 7: Geophysical Survey Location Map from Ch160542

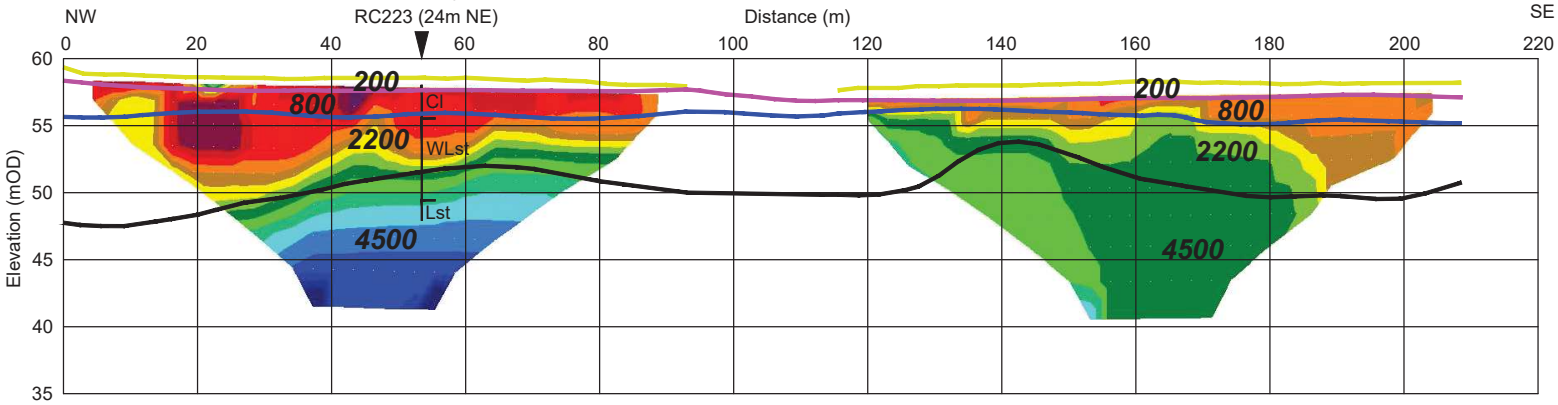
SCALE:	1:750 @ A3
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

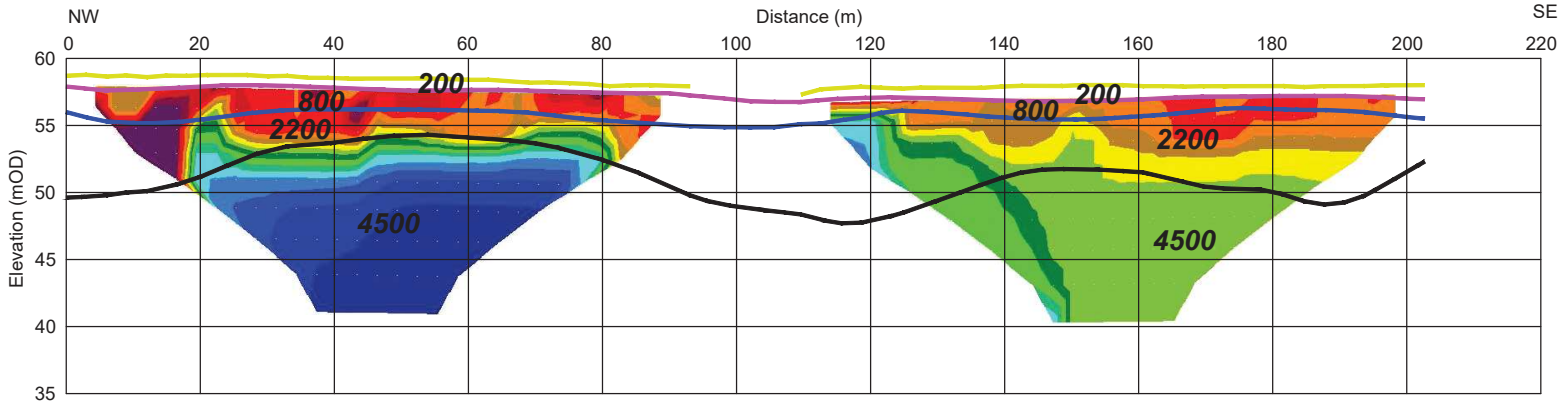
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

2D-Resistivity Line R31 & R34 and Seismic Refraction Line S31 & S34 Model



2D-Resistivity Line R32 & R33 and Seismic Refraction Line S32 & S33 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 7a: Models of Geophysical Survey Ch160542

SCALE:	1:750 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

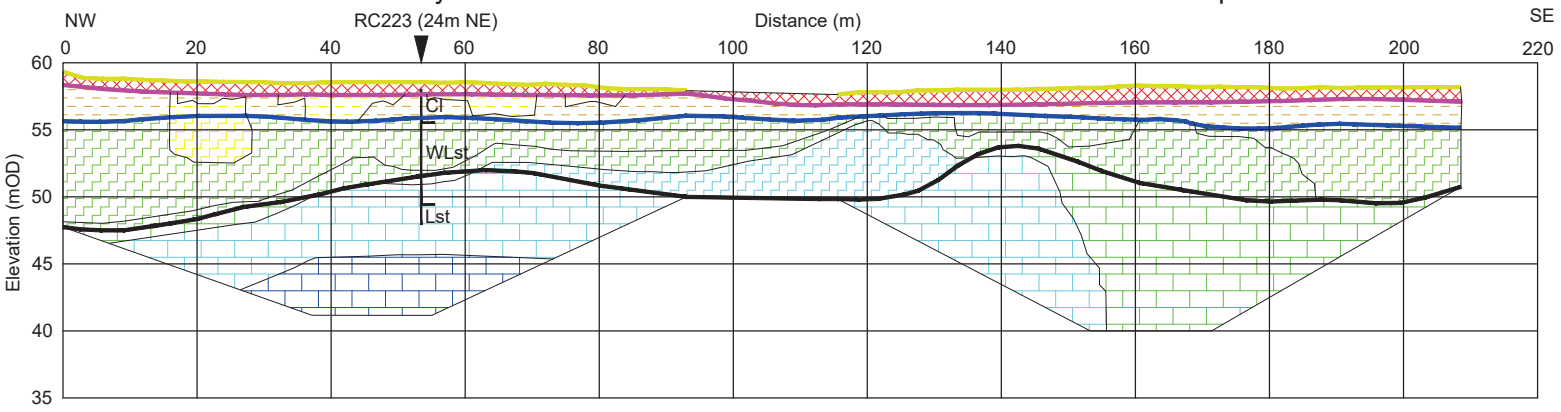
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

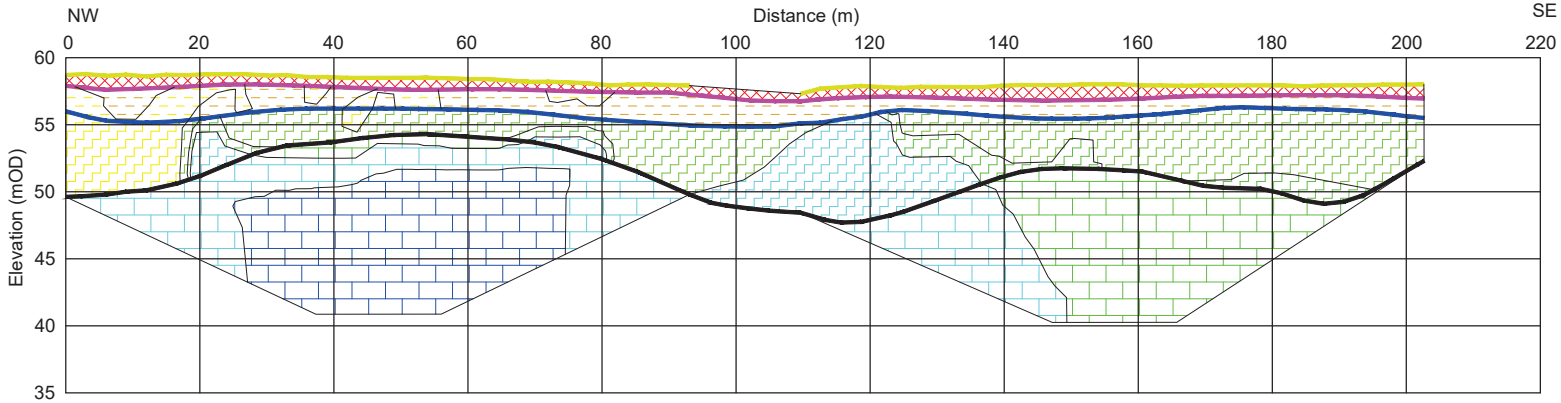
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

2D-Resistivity Line R31 & R34 and Seismic Refraction Line S31 & S34 Interpretation



2D-Resistivity Line R32 & R33 and Seismic Refraction Line S32 & S33 Interpretation



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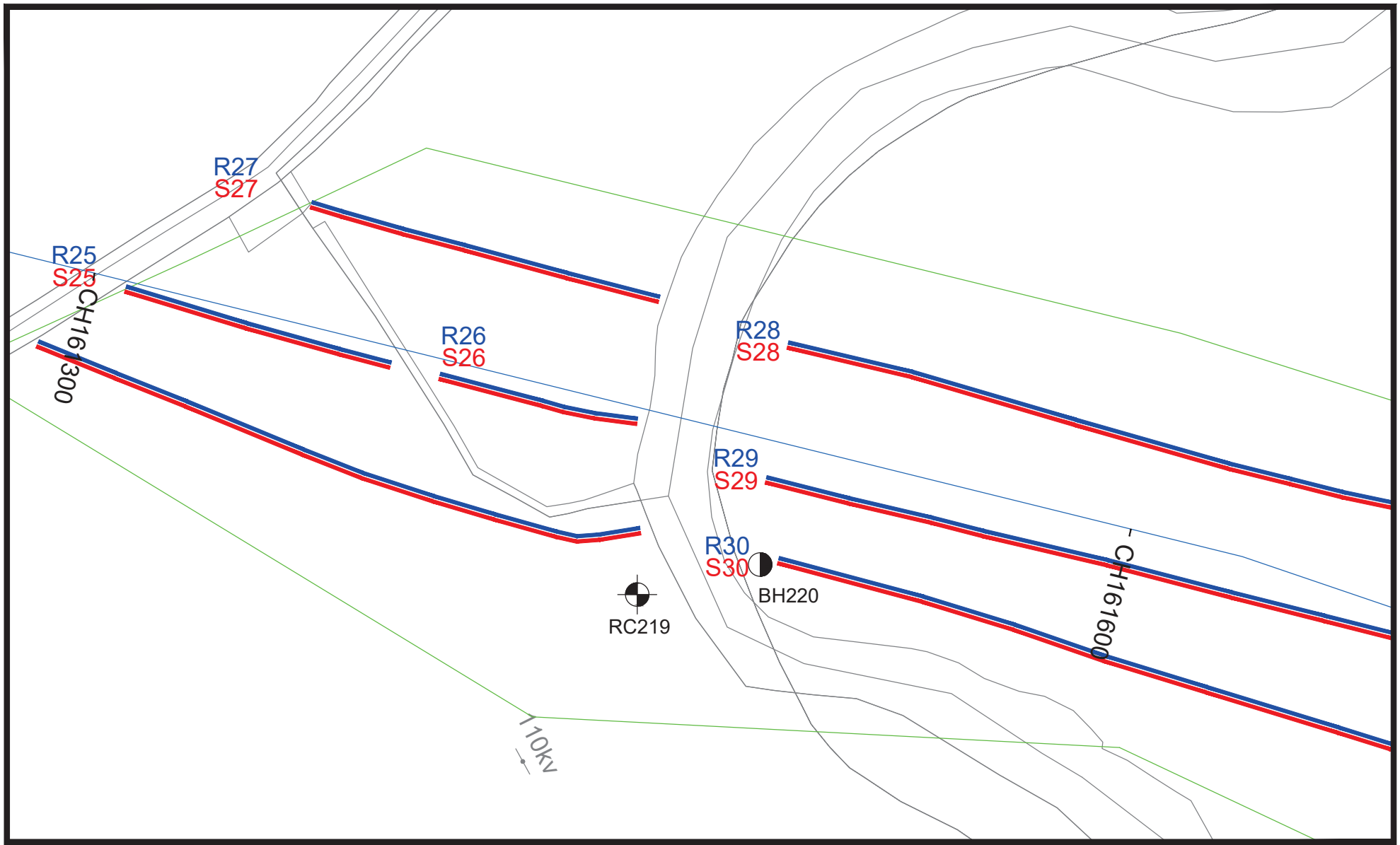
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 7b: Interpretation of Geophysical Survey Ch160542

SCALE:	1:750 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 3A Firm Clay
- 3B Firm sandy gravelly Clay or Silt
- 6A Very stiff Clay
- 6B Very stiff sandy gravelly Clay or Silt
- 6C Very dense clayey silty Sand or gravel, fair weathered Shale or Infilled Limestone
- 6D Fair weathered Shale or Limestone
- 7C Good Shale or infilled Limestone
- 7D Good Limestone
- 7E Good clean Limestone



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 8: Geophysical Survey Location Map from Ch161244

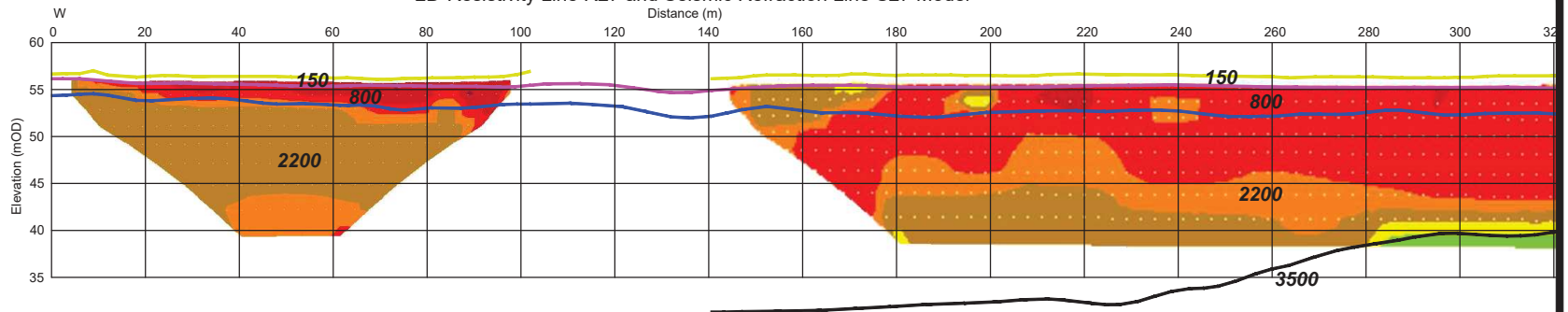
SCALE:	1:1000 @ A3
PROJECT:	6596
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6596d_Drawings.dwg
STATUS:	Draft

Interpretation:

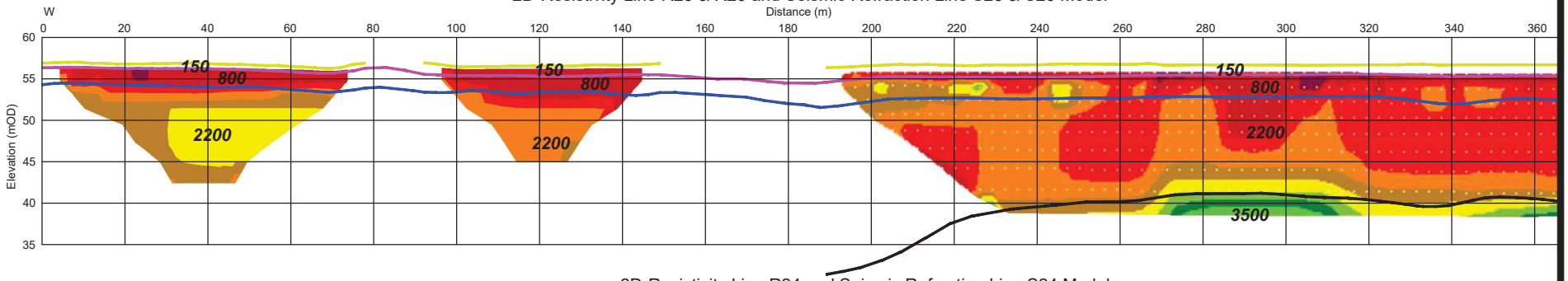
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

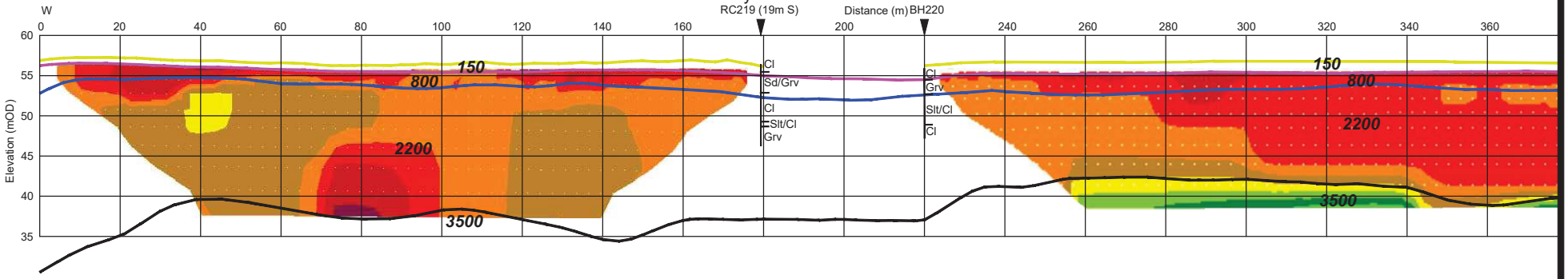
2D-Resistivity Line R27 and Seismic Refraction Line S27 Model



2D-Resistivity Line R25 & R26 and Seismic Refraction Line S25 & S26 Model



2D-Resistivity Line R24 and Seismic Refraction Line S24 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 8a: Models of Geophysical Survey Ch161244

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

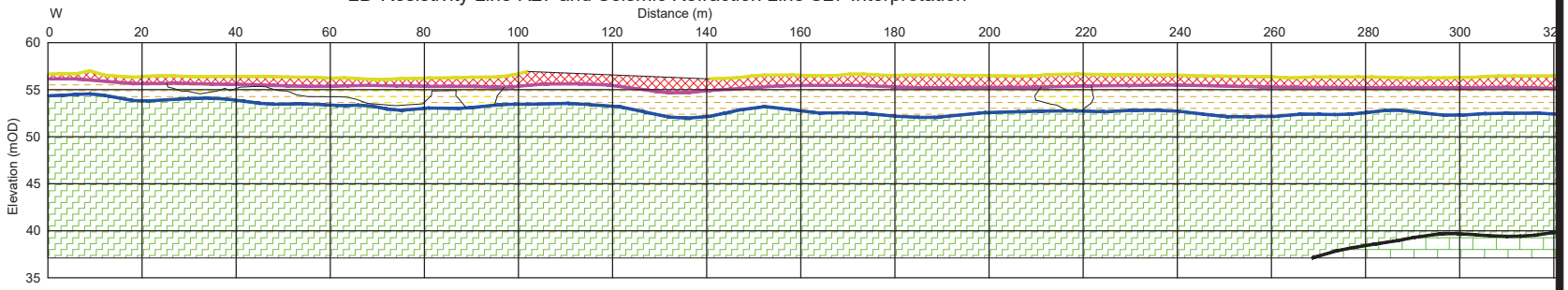
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

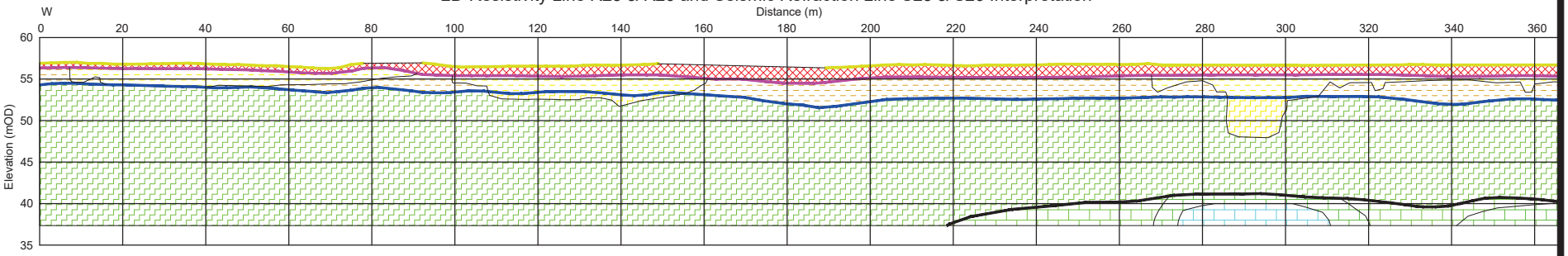
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

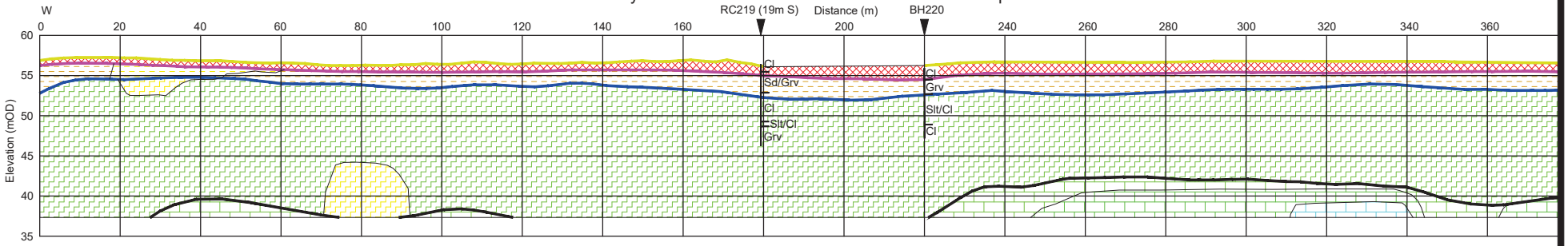
2D-Resistivity Line R27 and Seismic Refraction Line S27 Interpretation



2D-Resistivity Line R25 & R26 and Seismic Refraction Line S25 & S26 Interpretation



2D-Resistivity Line R24 and Seismic Refraction Line S24 Interpretation



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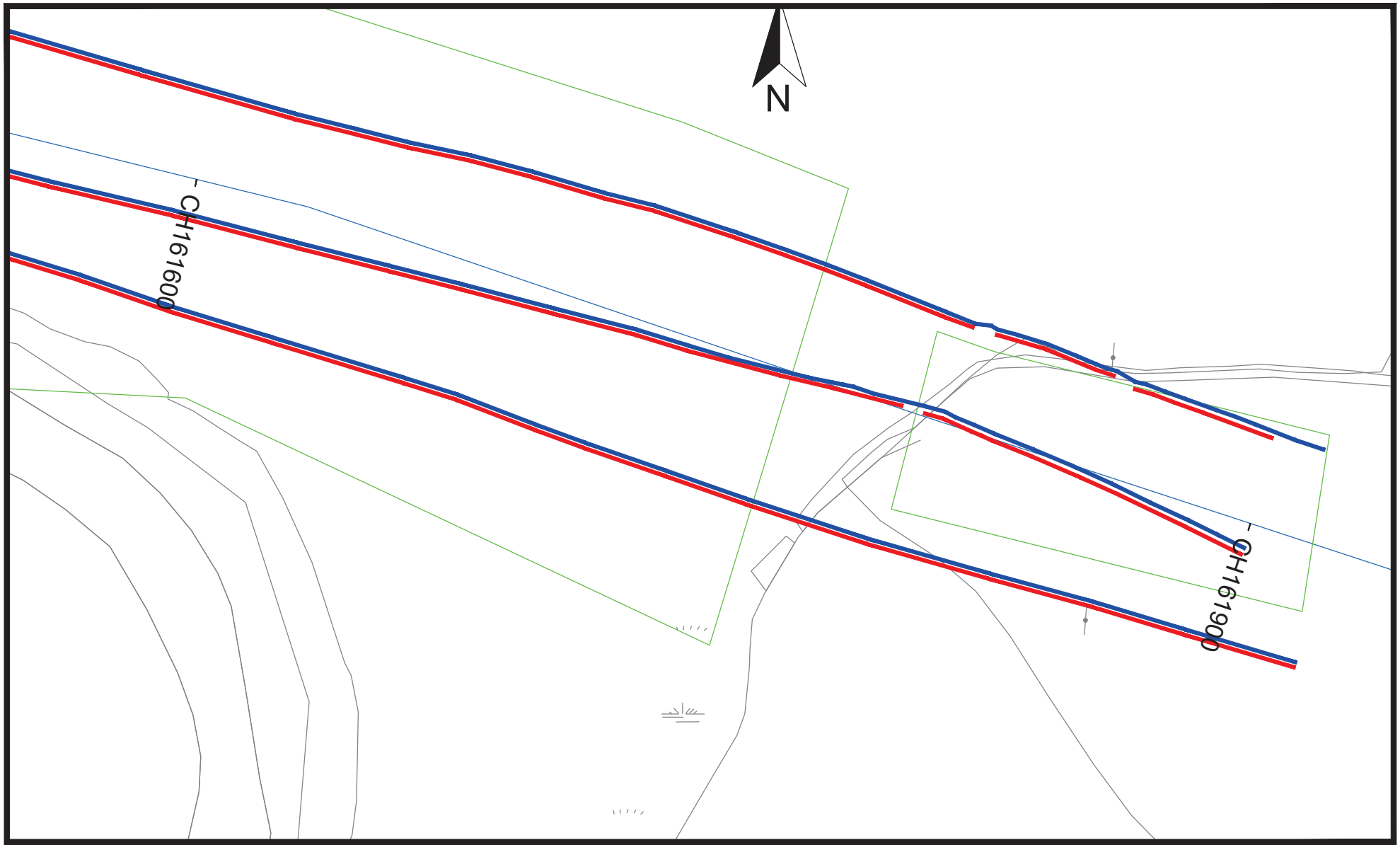
CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 8b: Interpretation of Geophysical Survey Ch161244

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 3A Firm Clay
- 3B Firm sandy gravelly Clay or Silt
- 6A Very stiff Clay
- 6B Very stiff sandy gravelly Clay or Silt
- 7B Shale or very infilled Limestone
- 7C Good Shale or infilled Limestone
- 7D Good Shale or Limestone



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Map 9: Geophysical Survey Location Map from Ch161244

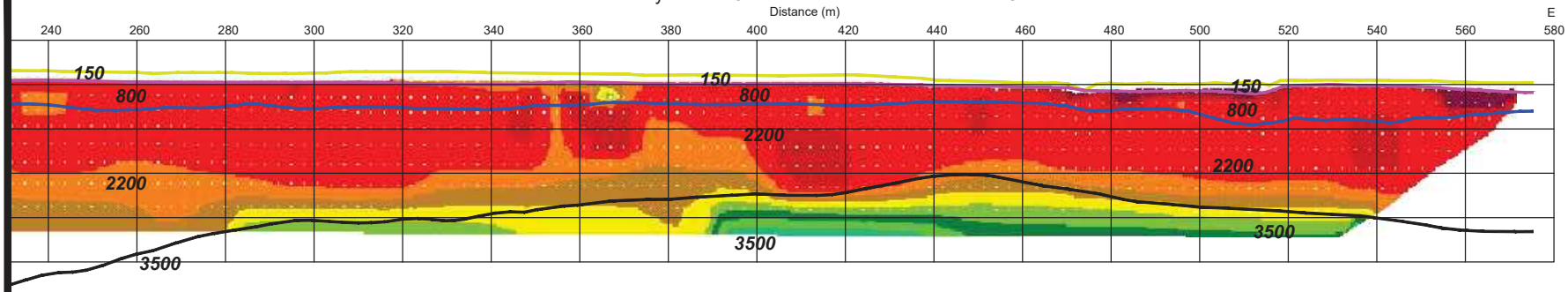
SCALE:	1:1000 @ A3
PROJECT:	6596
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6596d_Drawings.dwg
STATUS:	Draft

Interpretation:

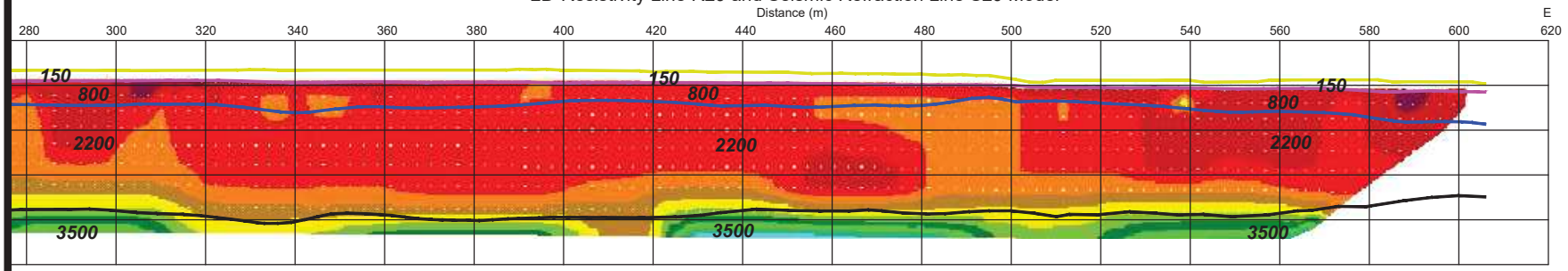
R2	2D-Resistivity Line
S1	Seismic Refraction Line
	Survey Area

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

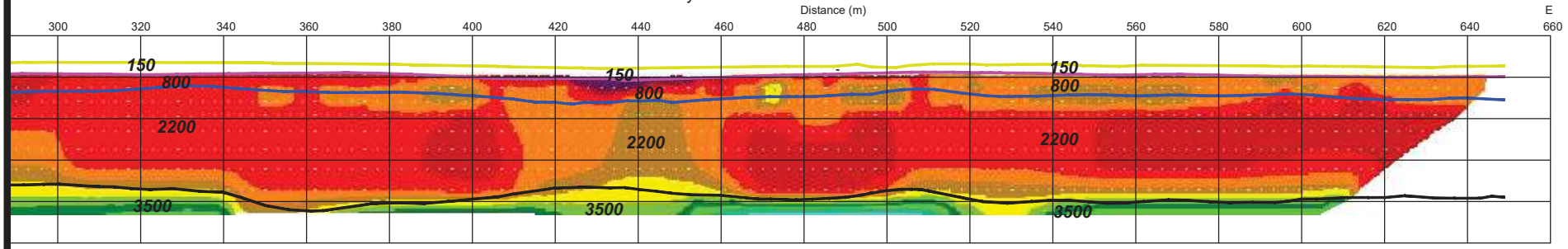
2D-Resistivity Line R28 and Seismic Refraction Line S28 Model



2D-Resistivity Line R29 and Seismic Refraction Line S29 Model



2D-Resistivity Line R30 and Seismic Refraction Line S30 Model



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 9a: Models of Geophysical Survey Ch161244

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

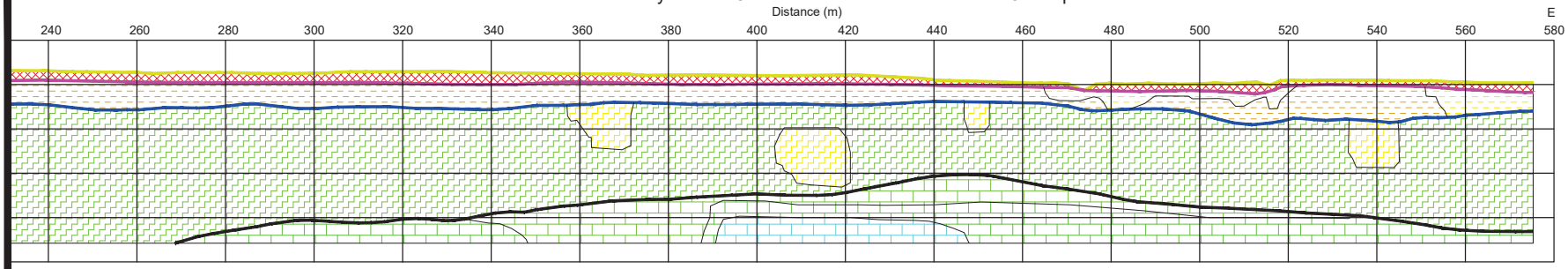
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (<150 m/s)
- Ground Surface/Top of Layer 2 (200 - 400 m/s)
- Top of Layer 3 (500 - 900 m/s)
- Top of Layer 4 (1000 - 1500 m/s)
- Top of Layer 5 (1600 - 2000 m/s)
- Top of Layer 6 (2100 - 2900 m/s)
- Top of Layer 7 (>3000 m/s)

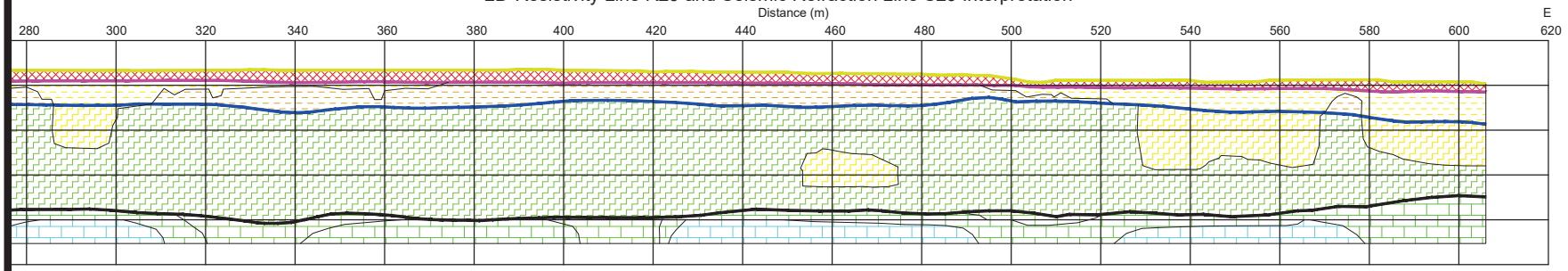
Resistivities (Ohmm) for 2D-Resistivity Model

31.3 62.5 125 250 500 1000 2000 4000

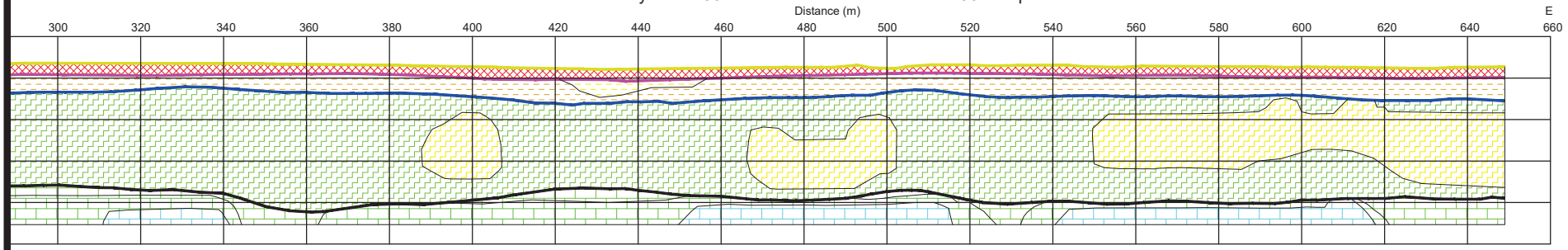
2D-Resistivity Line R28 and Seismic Refraction Line S28 Interpretation



2D-Resistivity Line R29 and Seismic Refraction Line S29 Interpretation



2D-Resistivity Line R30 and Seismic Refraction Line S30 Interpretation



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CLIENT	IGSL Irish Water
PROJECT	Water Supply Project, Lot 3 Geophysical Survey
TITLE	Figure 9b: Interpretation of Geophysical Survey Ch161244

SCALE:	1:1000 @ A3, VE x 2
PROJECT:	6586
DRAWN:	JC
DATE:	28/02/2022
MGX FILE:	6586d_Drawings.dwg
STATUS:	Draft

Interpretation:

- 2 Soft or loose Topsoil
- 3A Firm Clay
- 3B Firm sandy gravelly Clay or Silt
- 6A Very stiff Clay
- 6B Very stiff sandy gravelly Clay or Silt
- 7B Shale or very infilled Limestone
- 7C Good Shale or infilled Limestone
- 7D Good Shale or Limestone

Appendix 9H

Laboratory Test Results

Appendix 9H.1

Geotechnical Laboratory Test Records – Soil

Including Laboratory Non-Compliance Notes

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

Report No. **R144086** Contract No. 23560 Contract Name: WSP Lot 3

Customer Ervia

Samples Received: Various Date Tested: Various

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH148707	0	1.00	A22/6474	D	17	31	14	17	85	WS	4.4	C L	Brown sandy gravelly CLAY
BH148707	0	4.00	A22/6475	D	18	29	13	16	69	WS	4.4	C L	Grey brown sandy gravelly CLAY
BH149101	0	1.20	A22/6580	D	28	39	18	21	64	WS	4.4	C I	Grey Brown sandy gravelly CLAY
BH149101	0	2.00	A22/6461	D	13	29	14	15	64	WS	4.4	C L	Grey brown sandy gravelly CLAY
BH149101	0	3.00	A22/6462	D	36	47	NP	NP	70	WS	4.4		Grey brown sandy gravelly SILT
BH149101	0	4.00	A22/6583	D	9.6	22	NP	NP	31	WS	4.4		Grey brown sandy gravelly SILT
BH149273	179107	0.50	A22/6466	D	16	29	15	14	71	WS	4.4	C L	Brown sandy gravelly CLAY
BH149273	179109	2.00	A22/6467	D	8.4	29	15	14	21	WS	4.4	C L	Brown sandy gravelly CLAY
BH149406	0	1.20	A22/6480	D	15	29	14	15	68	WS	4.4	C L	Grey brown sandy gravelly CLAY
BH149406	0	2.00	A22/6481	D	11	27	12	15	47	WS	4.4	C L	Grey brown sandy gravelly CLAY
BH149804	0	1.20	A22/6484	D	13	25	14	11	49	WS	4.4	C L	Brown sandy gravelly CLAY
BH149804	0	3.00	A22/6484	D	16	39	18	21	41	WS	4.4	C I	Brown sandy gravelly CLAY
BH150204	0	0.50	A22/2416	D	15	29	16	13	69	WS	4.4	C L	Brown sandy gravelly CLAY
BH150204	0	2.00	A22/2418	D	18	34	20	14	87	WS	4.4	C L	Brown sandy gravelly CLAY
BH150291	0	1.20	A22/2404	D	4.8	34	19	15	35	WS	4.4	C L	Brown sandy gravelly CLAY
BH150554	0	1.20	A22/2405	D	18	44	22	19	62	WS	4.4	C I	Brown sandy gravelly CLAY
BH150554	174197	2.50	A22/2406	B	8.5	32	16	16	48	WS	4.4	C L	Brown sandy gravelly CLAY
BH150554	174198	3.00	A22/2407	B	1.2		NP	NP	0	WS	4.4		Brown grey silty sandy GRAVEL
BH150554	0	5.00	A22/6594	D	16	32	15	17	51	WS	4.4	C L	Grey Brown sandy gravelly CLAY
BH150888	173318	1.00	A22/6470	D	13	31	15	16	52	WS	4.4	C L	Brown sandy gravelly CLAY
BH150888	173320	3.00	A22/6471	D	12	33	16	17	42	WS	4.4	C L	Brown sandy gravelly CLAY
BH151188	173313	1.00	A22/3933	D	13	30	16	14	71	WS	4.4	C L	Brown sandy gravelly CLAY
BH151188	173315	3.00	A22/3936	D	12	29	14	15	53	WS	4.4	C L	Brown sandy gravelly CLAY
BH151688	173311	1.00	A22/3940	D	11	28	14	14	64	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH151688	173312	2.00	A22/3941	D	16	36	18	18	52	WS	4.4	C I	Grey/brown sandy gravelly CLAY
BH151877	173301	1.00	A22/3943	D	12	30	14	16	77	WS	4.4	C L	Brown sandy gravelly CLAY
BH151877	173304	4.00	A22/3945	D	11	28	14	14	58	WS	4.4	C L	Brown sandy gravelly CLAY

BH151907	178040	1.00	A22/3947	D	16	33	17	16	73	WS	4.4	C L	Brown sandy gravelly CLAY
BH151907	178042	3.00	A22/3951	D	11	29	13	16	52	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH152124	178035	1.00	A22/3952	D	17	31	15	16	72	WS	4.4	C L	Brown sandy gravelly CLAY
BH152124	178038	4.00	A22/3955	D	7.8	25	14	11	42	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH152207	173307	1.00	A22/3956	D	15	33	19	14	55	WS	4.4	C L	Brown sandy gravelly CLAY
BH152207	173308	2.00	A22/3960	D	7.2	26	12	14	60	WS	4.4	C L	Grey sandy gravelly CLAY
BH152315	178031	1.00	A22/3961	D	16	24	16	8	68	WS	4.4	C L	Brown sandy gravelly CLAY
BH152315	178033	3.00	A22/3965	D	8.0	26	12	14	38	WS	4.4	C L	Brown sandy gravelly CLAY
BH152702	178022	1.00	A22/3966	D	14	28	15	13	56	WS	4.4	C L	Brown sandy gravelly CLAY
BH152702	178023	2.00	A22/3967	D	10	30	14	16	50	WS	4.4	C L	Brown sandy gravelly CLAY
BH152938	178025	1.00	A22/3970	D	16	33	15	18	67	WS	4.4	C L	Brown sandy gravelly CLAY
BH152938	178027	3.00	A22/3971	D	9.5	24	13	11	50	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH152938	178029	5.00	A22/3972	D	8.6	25	13	12	47	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH153150	178017	1.00	A22/3976	D	34	38	22	16	82	WS	4.4	C I	Brown sandy gravelly CLAY
BH153150	178018	2.00	A22/3980	D	10	27	15	12	51	WS	4.4	C L	Brown sandy gravelly CLAY
BH153150	178020	4.00	A22/3981	D	8.0	25	12	13	39	WS	4.4	C L	Grey brown sandy gravelly CLAY
BH156922	173027	3.00	A22/3908	D	8.1	26	14	12	56	WS	4.4	C L	Brown sandy gravelly CLAY
BH156922	173028	4.00	A22/3909	D	9.5	26	15	11	48	WS	4.4	C L	Brown sandy gravelly CLAY
BH156988	0	1.00	A22/2420	D	11	28	14	14	52	WS	4.4	C L	Brown sandy gravelly CLAY
BH156988	0	3.00	A22/2421	D	15	29	13	16	71	WS	4.4	C L	Grey Brown sandy gravelly CLAY
BH157032	0	1.20	A22/2411	D	15	30	16	14	56	WS	4.4	C L	Brown sandy gravelly CLAY
BH157032	0	2.00	A22/2412	D	11	26	11	38	61	WS	4.4	C L	Brown sandy gravelly CLAY
BH157032	0	4.00	A22/2413	D	11	24	14	10	54	WS	4.4	C L	Brown sandy gravelly CLAY
BH157543	178013	1.00	A22/3982	D	21	31	15	16	92	WS	4.4	C L	Brown sandy gravelly CLAY
BH157543	178015	3.00	A22/3985	D	11	23	13	10	65	WS	4.4	C L	Brown sandy gravelly CLAY
BH157862	0	1.00	A22/3912	D	12	47	21	26	56	WS	4.4	C I	Brown sandy gravelly CLAY
BH157953	0	1.00	A22/6610	D	24	30	NP	NP	96	WS	4.4		Grey Brown sandy gravelly SILT
BH157953	0	4.00	A22/6611	D	11	26	12	14	55	WS	4.4	C L	Grey Brown sandy gravelly CLAY
BH157977	0	4.00	A22/6615	D	14	27	14	13	69	WS	4.4	C L	Black brown sandy gravelly CLAY
BH160675	0	1.00	A22/3915	D	19	35	18	17	61	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH160675	0	3.00	A22/3916	D	10	26	14	12	59	WS	4.4	C L	Brown sandy gravelly CLAY
BH161062	0	1.00	A22/3923	D	15	32	17	15	74	WS	4.4	C L	Brown sandy gravelly CLAY
BH161062	0	2.00	A22/3924	D	19	32	18	14	65	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH161062	0	4.00	A22/3925	D	17	30	15	15	53	WS	4.4	C L	Grey/brown sandy gravelly CLAY
BH161293	0	2.00	A22/3927	D	7.8	27	17	10	18	WS	4.4	C L	Brown sandy gravelly CLAY
BH161865	178321	1.00	A22/6676	D	30	42	NP	NP	97	WS	4.4		Brown slightly sandy slightly gravelly SILT
BH161865	178322	2.00	A22/6677	D	44	44	NP	NP	96	WS	4.4		Grey brown slightly sandy slightly gravelly SILT
BH161293	173033	4.00	A22/3929	B	9.7	33	17	16	74	WS	4.4	C L	Brown sandy gravelly CLAY
BH163697	0	2.00	A22/6617	D	12	27	14	13	56	WS	4.4	C L	Grey brown sandy gravelly SILT
BH163860	0	1.80	A22/6618	D	17	24	14	10	73	WS	4.4	C L	Brown sandy gravelly CLAY
BH165006A	179119	0.50	A22/6680	D	13	32	13	19	68	WS	4.4	C L	Brown sandy gravelly CLAY
BH165317	179122	1.20	A22/6682	D	10	39	18	21	26	WS	4.4	C I	Grey brown sandy gravelly CLAY
BH166526	0	1.00	A22/2369	D	18	26	14	12	71	WS	4.4	C L	Brown sandy gravelly CLAY
BH167255	0	1.00	A22/2371	D	15	30	16	14	65	WS	4.4	C L	Black sandy gravelly CLAY
BH167255	0	3.00	A22/2372	D	15	28	14	14	62	WS	4.4	C L	Black sandy gravelly CLAY

DS161402	DS10007	2.00	A22/6348	B	22	39	NP	NP	77	WS	4.4		Grey brown SILT
DS165890	DS10001	0.00	A22/6349	B	18	34	17	17	91	WS	4.4	C L	Brown sandy, gravelly, CLAY
DS165906	DS10004	1.00	A22/6352	B	51	107	NP	NP	100	WS	4.4		Grey brown SILT
DS166006	DS10020	0.00	A22/6353	B	19	35	18	17	67	WS	4.4	C L	Brown sandy, gravelly, CLAY
DS166025	DS10019	1.00	A22/6356	B	13	34	15	19	53	WS	4.4	C L	Brown sandy, gravelly, CLAY
DS166078	DS10013	0.00	A22/6357	B	17	37	17	20	59	WS	4.4	C I	Brown sandy, gravelly, CLAY
TP147204	AA178601	0.50	A22/3288	B	24	27	18	9	76	WS	4.4	C L	Brown sandy gravelly CLAY
TP148005	0	0.50	A22/2628	D	14	34	18	16	59	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP148005	0	2.00	A22/2629	D	13	28	14	14	61	WS	4.4	C L	Grey sandy gravelly CLAY
TP148104	0	0.40	A22/2625	D	16	33	17	16	62	WS	4.4	C L	Brown sandy gravelly CLAY
TP148205	0	1.50	A22/2622	D	13	30	15	15	65	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP148304	AA179482	2.50	A22/3291	B	13	28	14	14	58	WS	4.4	C L	Brown sandy gravelly CLAY
TP148304	AA179483	3.50	A22/3292	B	9.6	27	15	12	47	WS	4.4	C L	Brown sandy gravelly CLAY
TP148403	AA179485	1.50	A22/3293	B	17	30	17	13	80	WS	4.4	C L	Brown sandy gravelly CLAY
TP148403	AA179486	2.50	A22/3294	B	13	29	17	12	18	WS	4.4	C L	Brown sandy gravelly CLAY
TP148504	0	1.50	A22/3295	D	17	33	16	17	61	WS	4.4	C L	Grey sandy gravelly CLAY
TP148600	AA175194	0.50	A22/3295	B	13	27	15	12	48	WS	4.4	C L	Brown sandy gravelly CLAY
TP148704	AA175188	0.50	A22/3297	B	14	32	16	16	47	WS	4.4	C L	Brown sandy gravelly CLAY
TP148704	AA175189	1.50	A22/3299	B	12	26	14	12	52	WS	4.4	C L	Grey sandy gravelly CLAY
TP148802	AA158210	2.20	A22/3320	B	15	30	15	15	76	WS	4.4	C L	Brown sandy gravelly CLAY
TP148903	AA158205	0.50	A22/3302	B	20	26	21	15	74	WS	4.4	C L	Brown sandy gravelly CLAY
TP149004	AA158202	0.90	A22/3303	B	17	32	18	14	56	WS	4.4	C L	Brown sandy gravelly CLAY
TP149004	AA158204	2.60	A22/3305	B	13	27	15	12	55	WS	4.4	C L	Brown sandy gravelly CLAY
TP149130	AA158213	1.20	A22/3306	B	9.1	32	18	14	33	WS	4.4	C L	Brown sandy gravelly CLAY
TP149200	AA158217	2.50	A22/3308	B	13	29	16	13	45	WS	4.4	C L	Brown sandy gravelly CLAY
TP149304	AA158218	0.50	A22/3309	B	15	36	19	17	61	WS	4.4	C I	Brown sandy gravelly CLAY
TP149373	AA158222	1.80	A22/3212	B	12	26	13	13	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP149505	AA158225	1.90	A22/3314	B	15	45	18	27	55	WS	4.4	C I	Brown sandy gravelly CLAY
TP149604	AA158227	1.50	A22/3315	B	16	35	21	14	51	WS	4.4	C L	Brown sandy gravelly CLAY
TP149705	AA158230	1.00	A22/3317	B	19	35	17	18	64	WS	4.4	C L	Brown sandy gravelly CLAY
TP149705	AA158231	2.00	A22/3318	B	14	35	20	15	73	WS	4.4	C L	Brown sandy gravelly CLAY
TP149803	AA158233	0.80	A22/3321	B	13	27	15	12	81	WS	4.4	C L	Brown sandy gravelly CLAY
TP149803	AA158234	2.00	A22/3322	B	9.5	27	16	11	36	WS	4.4	C L	Brown sandy gravelly CLAY
TP149904	AA158236	0.50	A22/3323	B	16	36	17	19	71	WS	4.4	C I	Brown sandy gravelly CLAY
TP149904	AA158237	2.00	A22/3324	B	14	28	13	15	48	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP149986	AA158239	1.80	A22/3325	B	13	30	16	14	62	WS	4.4	C L	Brown sandy gravelly CLAY
TP150104	AA152191	2.50	A22/3228	B	14	27	15	12	77	WS	4.4	C L	Brown sandy gravelly CLAY
TP150190	AA178607	1.50	A22/3329	B	14	32	17	15	78	WS	4.4	C L	Brown sandy gravelly CLAY
TP150190	AA178608	3.00	A22/3330	B	27	42	20	22	89	WS	4.4	C I	Brown sandy gravelly CLAY
TP150295	0	0.50	A22/3331	D	19	28	16	12	56	WS	4.4	C L	Grey sandy gravelly CLAY
TP150490	AA179488	1.50	A22/3334	B	10	26	16	10	30	WS	4.4	C L	Brown sandy gravelly CLAY
TP150590	AA156002	1.60	A22/3335	B	15	31	16	15	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP150590	AA156003	2.20	A22/3336	B	14	32	17	15	36	WS	4.4	C L	Brown sandy gravelly CLAY
TP150702	AA158248	1.60	A22/3337	B	14	28	14	14	69	WS	4.4	C L	Brown sandy gravelly CLAY
TP150702	AA158249	2.00	A22/3338	B	13	29	16	13	54	WS	4.4	C L	Brown sandy gravelly CLAY

TP150800	AA158245	1.70	A22/3339	B	15	47	18	29	44	WS	4.4	C I	Brown sandy gravelly CLAY
TP150900	AA158242	1.60	A22/3341	B	14	33	18	15	54	WS	4.4	C L	Brown sandy gravelly CLAY
TP151000	0	1.50	A22/3342	D	20	26	NP	NP	43	WS	4.4		Grey silty sandy GRAVEL
TP151000	AA152194	2.50	A22/3343	B	10	29	15	14	57	WS	4.4	C L	Brown sandy gravelly CLAY
TP151095	0	1.50	A22/3344	D	23	34	17	17	58	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP151095	AA152197	2.50	A22/3345	B	10	32	15	17	57	WS	4.4	C L	Brown sandy gravelly CLAY
TP151178	0	1.50	A22/3346	D	22	30	17	13	62	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP151178	AA170150	3.50	A22/3347	B	9.6	31	14	17	60	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP151301	AA170152	1.50	A22/3348	B	12	28	15	13	63	WS	4.4	C L	Brown sandy gravelly CLAY
TP151301	AA170153	2.50	A22/3349	B	8.4	25	12	13	57	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP151412	AA170155	1.50	A22/3350	B	14	29	16	13	73	WS	4.4	C L	Brown sandy gravelly CLAY
TP151412	AA170156	2.50	A22/3351	B	10.1	25	13	12	51	WS	4.4	C L	Brown sandy gravelly CLAY
TP151503	AA170199	1.50	A22/3352	B	11	28	16	12	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP151503	AA170200	2.50	A22/3353	B	7.2	25	12	13	57	WS	4.4	C L	Brown sandy gravelly CLAY
TP151602	AA170196	1.50	A22/3354	B	13	31	16	15	65	WS	4.4	C L	Brown sandy gravelly CLAY
TP151602	AA170197	2.50	A22/3355	B	12	29	15	14	46	WS	4.4	C L	Brown sandy gravelly CLAY
TP151737	AA175216	0.50	A22/3356	B	18	31	14	17	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP151737	AA175217	2.50	A22/3357	B	10	28	15	13	59	WS	4.4	C L	Brown sandy gravelly CLAY
TP151799	0	0.50	A22/3366	D	19	29	15	14	53	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP151799	AA175219	2.50	A22/3359	B	10	27	14	13	48	WS	4.4	C L	Brown sandy gravelly CLAY
TP151882	AA175202	0.50	A22/3360	B	13	35	18	17	71	WS	4.4	C L	Brown sandy gravelly CLAY
TP151882	AA175203	2.50	A22/3361	B	9.4	26	14	12	44	WS	4.4	C L	Grey Brown sandy gravelly CLAY
TP151901	AA175200	0.50	A22/3362	B	20	35	17	18	80	WS	4.4	C L	Brown sandy gravelly CLAY
TP151901	AA175201	2.50	A22/3363	B	9.1	29	14	15	55	WS	4.4	C L	Brown sandy gravelly CLAY
TP151906	AA175205	1.50	A22/3365	B	13	28	15	13	59	WS	4.4	C L	Brown sandy gravelly CLAY
TP151961	AA175207	1.50	A22/3366	B	11	25	13	12	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP152002	AA175199	1.50	A22/3367	B	9.1	21	NP	NP	59	WS	4.4		Grey sandy gravelly SILT
TP152045	AA175210	2.50	A22/3369	B	9.2	27	14	13	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP152102	AA175197	2.50	A22/3371	B	8.7	31	15	16	69	WS	4.4	C L	Brown sandy gravelly CLAY
TP152295	AA175214	2.50	A22/3374	B	18	30	16	14	93	WS	4.4	C L	Brown sandy gravelly CLAY
TP152405	AA175221	2.50	A22/3377	B	13	27	14	13	75	WS	4.4	C L	Grey Brown sandy gravelly CLAY
TP152699	AA175235	2.50	A22/3381	B	8.8	25	13	12	48	WS	4.4	C L	Brown sandy gravelly CLAY
TP152806	AA175237	1.50	A22/3382	B	12	30	16	14	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP152806	AA175238	3.50	A22/3383	B	7.2	21	12	9	40	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP152901	AA175240	1.50	A22/3384	B	12	29	15	14	65	WS	4.4	C L	Brown sandy gravelly CLAY
TP152901	AA175241	2.50	A22/3385	B	11	24	13	11	58	WS	4.4	C L	Brown sandy gravelly CLAY
TP152989	AA175231	0.50	A22/3386	B	16	26	NP	NP	66	WS	4.4		Brown sandy gravelly SILT
TP152989	AA175232	2.50	A22/3387	B	12	29	16	13	57	WS	4.4	C L	Brown sandy gravelly CLAY
TP153098	AA175229	0.50	A22/3388	B	23	40	18	22	80	WS	4.4	C I	Brown sandy gravelly CLAY
TP153098	AA175230	2.50	A22/3389	B	9.4	25	13	12	60	WS	4.4	C L	Brown sandy gravelly CLAY
TP153199	AA175228	2.50	A22/3391	B	16	34	19	15	53	WS	4.4	C L	Brown sandy gravelly CLAY
TP153301	AA175226	2.50	A22/3393	B	34	33	NP	NP	88	WS	4.4		Grey sandy gravelly SILT
TP156000	AA175186	1.50	A22/3393	B	12	31	16	15	45	WS	4.4	C L	Brown sandy gravelly CLAY
TP156000	AA175187	2.50	A22/3394	B	7.7	24	12	12	54	WS	4.4	C L	Brown sandy gravelly CLAY
TP156099	AA175184	2.50	A22/3395	B	7.1	27	14	13	40	WS	4.4	C L	Brown sandy gravelly CLAY

TP156204	AA175182	2.50	A22/3397	B	8.7	22	13	9	48	WS	4.4	C L	Brown sandy gravelly CLAY
TP156299	AA175179	0.50	A22/3398	B	12	30	18	12	54	WS	4.4	C L	Brown sandy gravelly CLAY
TP156398	AA175178	2.50	A22/3401	B	8.1	24	13	11	42	WS	4.4	C L	Brown sandy gravelly CLAY
TP156499	AA175176	2.50	A22/3402	B	17	33	19	14	59	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP156601	AA175173	1.50	A22/3403	B	10	30	14	16	51	WS	4.4	C L	Brown sandy gravelly CLAY
TP156601	AA175174	2.50	A22/3404	B	11	24	13	11	56	WS	4.4	C L	Brown sandy gravelly CLAY
TP156701	AA170165	2.50	A22/3405	B	9.6	26	14	12	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP156803	AA170161	1.50	A22/3407	B	8.5	24	13	11	62	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP156803	0	2.50	A22/3407	D	16	25	13	12	63	WS	4.4	C L	Black sandy gravelly CLAY
TP156895	AA170159	2.50	A22/3410	B	13	27	13	14	78	WS	4.4	C L	Brown sandy gravelly CLAY
TP156965	AA170168	2.50	A22/3411	B	9.5	25	13	12	46	WS	4.4	C L	Grey Brown sandy gravelly CLAY
TP157100	AA170171	2.50	A22/3412	B	12	27	14	13	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP157202	AA170173	1.00	A22/3413	B	17	32	15	17	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP157202	AA170174	2.50	A22/3414	B	9.4	28	14	14	57	WS	4.4	C L	Brown sandy gravelly CLAY
TP157300	AA170176	1.50	A22/4574	B	23	31	16	15	55	WS	4.4	C L	Brown sandy gravelly CLAY
TP157300	AA170177	2.50	A22/4575	B	11	25	14	11	56	WS	4.4	C L	Brown sandy gravelly CLAY
TP157403	AA170179	1.50	A22/3415	B	11	27	15	12	53	WS	4.4	C L	Brown sandy gravelly CLAY
TP157403	AA170180	2.50	A22/3416	B	9	25	14	11	51	WS	4.4	C L	Brown sandy gravelly CLAY
TP157502	AA170182	1.50	A22/3417	B	14	25	13	12	80	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP157502	AA170183	2.50	A22/3418	B	12	28	14	14	67	WS	4.4	C L	Brown sandy gravelly CLAY
TP157585	AA170185	2.50	A22/3420	B	9.4	27	14	13	45	WS	4.4	C L	Brown sandy gravelly CLAY
TP157697	AA170193	1.50	A22/3421	B	13	26	14	12	68	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP157697	AA170194	2.50	A22/3422	B	11	25	14	11	68	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP157813	AA170190	1.50	A22/3423	B	13	25	14	11	61	WS	4.4	C L	Brown sandy gravelly CLAY
TP157813	AA170191	2.50	A22/3424	B	9.2	26	14	12	48	WS	4.4	C L	Brown sandy gravelly CLAY
TP157895	AA170187	1.50	A22/3425	B	14	40	19	21	43	WS	4.4	C I	Brown sandy gravelly CLAY
TP157895	AA170188	2.50	A22/3426	B	10	25	14	11	38	WS	4.4	C L	Brown sandy gravelly CLAY
TP159013	AA179458	0.50	A22/3427	B	16	29	16	13	65	WS	4.4	C L	Brown sandy gravelly CLAY
TP159013	AA179460	2.00	A22/3428	B	13	30	14	16	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP159100	AA179455	1.00	A22/3429	B	15	30	15	15	64	WS	4.4	C L	Brown sandy gravelly CLAY
TP159100	AA179457	3.00	A22/3430	B	11	28	14	14	63	WS	4.4	C L	Brown sandy gravelly CLAY
TP159203	AA179453	2.00	A22/3431	B	13	27	15	12	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP160696	AA175153	2.50	A22/3437	B	13	32	16	16	37	WS	4.4	C L	Brown sandy gravelly CLAY
TP160795	AA175156	2.50	A22/3438	B	9.9	33	18	15	31	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP160895	AA175159	2.50	A22/3440	B	11	25	13	12	58	WS	4.4	C L	Brown sandy gravelly CLAY
TP160993	AA175161	1.50	A22/3441	B	24	31	18	13	84	WS	4.4	C L	Brown sandy gravelly CLAY
TP160993	0	2.50	A22/3442	D	24	33	17	16	99	WS	4.4	C L	Brown sandy gravelly CLAY
TP161109	AA175165	3.00	A22/3444	B	13	30	15	15	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP161199	AA175167	1.50	A22/3445	B	17	30	15	15	80	WS	4.4	C L	Brown sandy gravelly CLAY
TP161199	AA175168	3.50	A22/3446	B	13	30	14	16	55	WS	4.4	C L	Brown sandy gravelly CLAY
TP161292	AA175171	2.50	A22/3448	B	13	24	13	11	54	WS	4.4	C L	Grey brown sandy gravelly CLAY
TP161469	0	0.80	A22/6489	D	32	44	20	24	70	WS	4.4	C I	Brown sandy gravelly CLAY
TP161469	0	1.80	A22/6490	D	45	65	NP	NP	79	WS	4.4		Brown sandy gravelly SILT
TP161858	0	0.50	A22/6493	D	8.6	47	22	25	53	WS	4.4	C I	Brown sandy gravelly CLAY
TP161858	0	2.10	A22/6494	D	50	55	NP	NP	98	WS	4.4		Grey brown SILT

TP162008	0	0.50	A22/6497	D	44	62	29	33	92	WS	4.4	C H	Brown sandy gravelly CLAY
TP162008	0	1.00	A22/6498	D	49	50	NP	NP	98	WS	4.4		Brown sandy gravelly SILT
TP162045	0	0.50	A22/6501	D	35	44	25	19	98	WS	4.4	C I	Brown sandy gravelly CLAY
TP162103	0	0.50	A22/6504	D	52	60	NP	NP	88	WS	4.4		Brown sandy gravelly SILT
TP162602	0	1.40	A22/6512	D	17	43	21	22	41	WS	4.4	C I	Grey brown sandy gravelly CLAY
TP162699	0	2.70	A22/6513	D	23	33	15	18	99	WS	4.4	C L	Brown sandy gravelly CLAY
TP163301	AA179462	1.00	A22/3449	B	23	41	19	22	59	WS	4.4	C I	Grey/brown sandy gravelly CLAY
TP163403	AA179465	1.00	A22/3450	B	10	28	16	12	37	WS	4.4	C L	Brown sandy gravelly CLAY
TP163502	AA179468	1.00	A22/3451	B	18	35	22	13	79	WS	4.4	C L	Brown sandy gravelly CLAY
TP163605	AA179470	1.00	A22/3452	B	12	30	16	14	46	WS	4.4	C L	Brown sandy gravelly CLAY
TP163696	AA179475	2.00	A22/3453	B	23	47	23	24	61	WS	4.4	C I	Brown sandy gravelly CLAY
TP163799	AA179476	0.50	A22/3454	B	22	46	NP	NP	52	WS	4.4		Grey/brown sandy gravelly SILT
TP163799	AA179478	2.00	A22/3455	B	11	30	15	15	39	WS	4.4	C L	Brown sandy gravelly CLAY
TP164905	0	0.50	A22/6441	D	15	32	15	17	59	WS	4.4	C L	Brown sandy gravelly CLAY
TP164905	0	1.00	A22/6442	D	19	35	18	17	45	WS	4.4	C L	Brown sandy gravelly CLAY
TP165010	0	0.70	A22/6444	D	10	22	11	11	49	WS	4.4	C L	Brown sandy gravelly CLAY
TP165105	0	0.40	A22/6446	D	12	26	15	11	60	WS	4.4	C L	Brown sandy gravelly CLAY
TP165204	0	0.50	A22/6449	D	23	38	21	17	52	WS	4.4	C I	Brown sandy gravelly CLAY
TP165314	0	0.40	A22/6452	D	15	25	11	14	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP166562	0	1.40	A22/2618	D	16	31	17	14	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP166697	0	1.40	A22/2620	D	13	33	15	18	59	WS	4.4	C L	Brown sandy gravelly CLAY
TP166772	0	0.50	A22/2615	D	15	35	18	17	69	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP166867	0	1.50	A22/2616	D	11	38	19	19	44	WS	4.4	C I	Brown sandy gravelly CLAY
TP167031	0	0.50	A22/2605	D	15	38	20	18	61	WS	4.4	C I	Brown sandy gravelly CLAY
TP167031	0	1.90	A22/2606	D	14	31	16	16	56	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP167205	0	0.50	A22/2608	D	16	35	17	18	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP167205	0	2.10	A22/2609	D	7.3	31	17	14	40	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP167384	0	0.50	A22/2603	D	15	29	16	13	72	WS	4.4	C L	Brown sandy gravelly CLAY
TP168033	0	0.50	A22/2610	D	11	32	18	14	44	WS	4.4	C L	Brown sandy gravelly CLAY
TP168033	0	1.70	A22/2611	D	12	50	23	27	40	WS	4.4	C I	Grey/brown sandy gravelly CLAY
TP168041	0	2.20	A22/2614	D	12	32	16	16	47	WS	4.4	C L	Grey/brown sandy gravelly CLAY
TP168241	0	1.80	A22/2602	D	15	23	NP	NP	63	WS	4.4		Grey brown sandy gravelly SILT
TP168340	0	0.50	A22/2599	D	15	26	14	12	69	WS	4.4	C L	Brown sandy gravelly CLAY

Preparation: WS - Wet sieved

AR - As received

NP - Non plastic

Liquid Limit 4.3 Cone Penetrometer definitive method

Clause: 4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed

U - Undisturbed

Remarks:

Reports Combined:R138419A,R148419,R134964,R143917,R138420A, R138420,R135907,R135908R138421 to R138427, R138791 to R138796, R138428R143916,R138430,R138431R138429, R141722,R141723,R141721,R141717,R141724 to R141729,R134959 To R134962, R143948 R143949 R134960.

Results relate only to the specimen tested,in as received condition unless otherwise noted.

NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.

Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

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IGSL Ltd Materials Laboratory

Persons authorized to approve reports

H Byrne (Laboratory Manager)

Approved by	Date	Page
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1337

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	91	
28	87	
20	83	
14	79	
10	74	
6.3	70	
5	68	
3.35	65	
2	61	
1.18	58	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	40	
0.063	28	SILT/CLAY
0.038	24	
0.027	23	
0.017	21	
0.010	18	
0.007	17	
0.005	14	
0.002	9	

Contract No.	23560	Report No.	R137441	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163799			
Sample No.*	AA179476	Lab. Sample No.		A22/3454
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	28/06/2022	Date Testing started		28/06/2022
Description:	Grey/brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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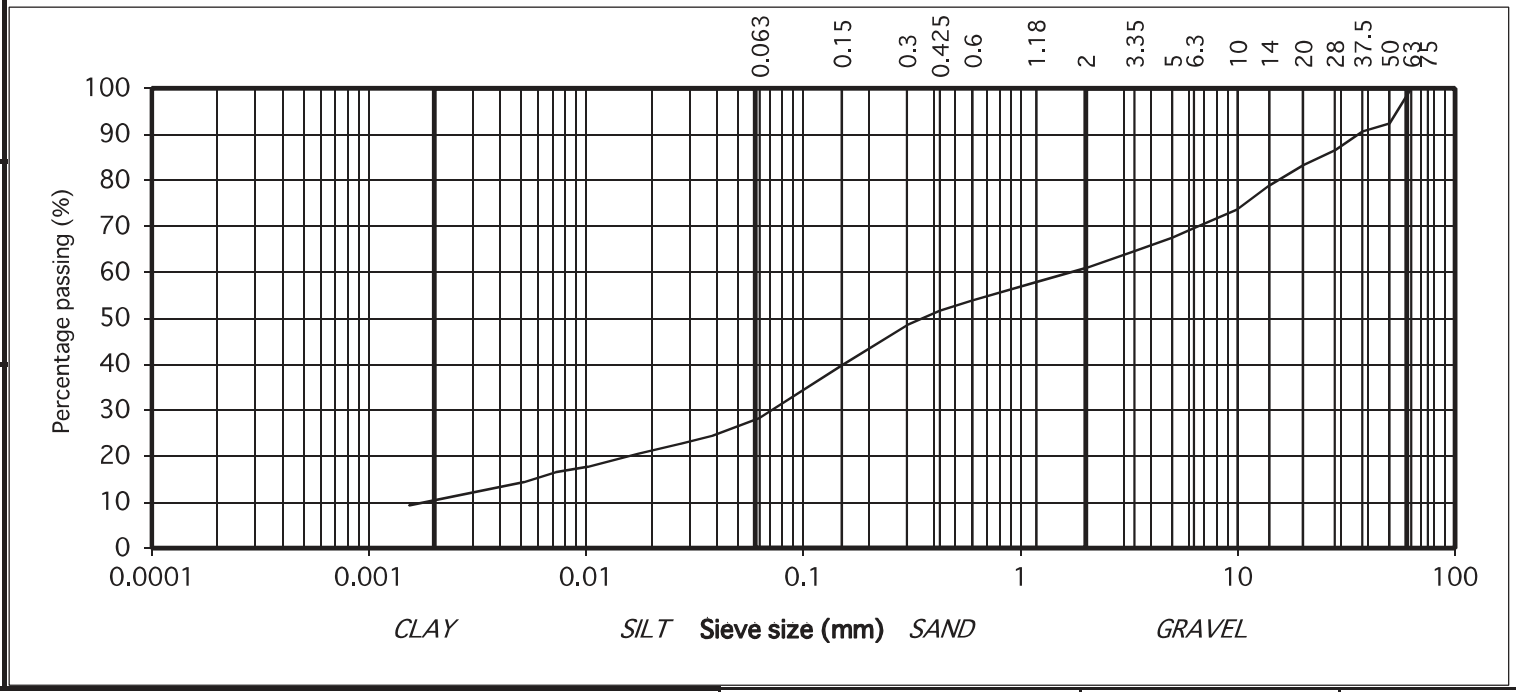
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	19/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	95	
20	87	
14	81	
10	76	
6.3	69	
5	65	
3.35	62	
2	56	
1.18	52	SAND
0.6	46	
0.425	43	
0.3	40	
0.15	35	
0.063	29	SILT/CLAY
0.040	28	
0.029	25	
0.018	20	
0.011	18	
0.008	15	
0.005	13	
0.002	8	

Contract No.	23560	Report No.	R137442	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163799			
Sample No.*	AA179478	Lab. Sample No.		A22/3455
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	25/06/2022	Date Testing started		25/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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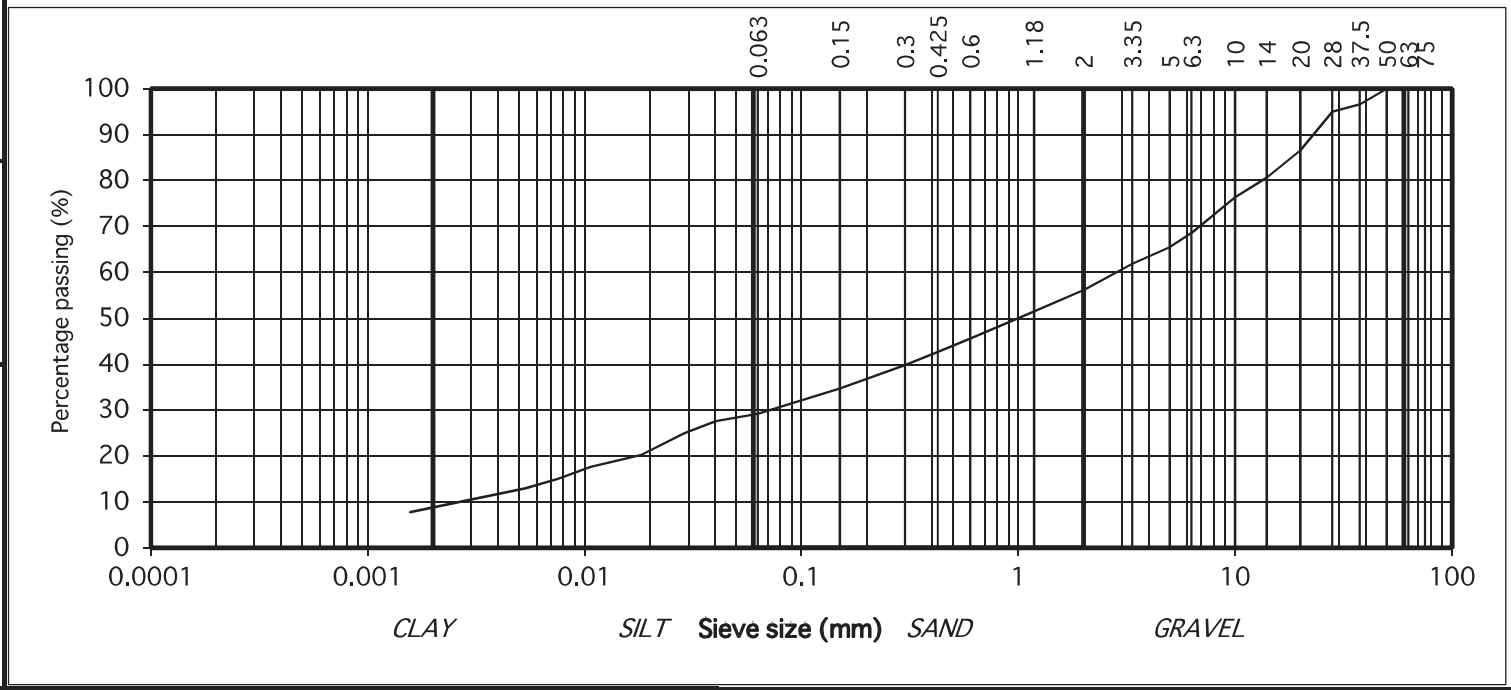
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	90	
50	84	GRAVEL
37.5	79	
28	75	
20	71	
14	67	
10	63	
6.3	59	
5	57	
3.35	55	
2	52	
1.18	49	SAND
0.6	46	
0.425	44	
0.3	42	
0.15	37	
0.063	31	SILT/CLAY
0.037	25	
0.027	23	
0.017	20	
0.010	18	
0.007	16	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R141675	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP165010			
Sample No.*	AA174058	Lab. Sample No.		A22/6443
Sample Type:	B			
Depth* (m)	0.70	Customer:	Ervia	
Date Received	25/11/2022	Date Testing started		25/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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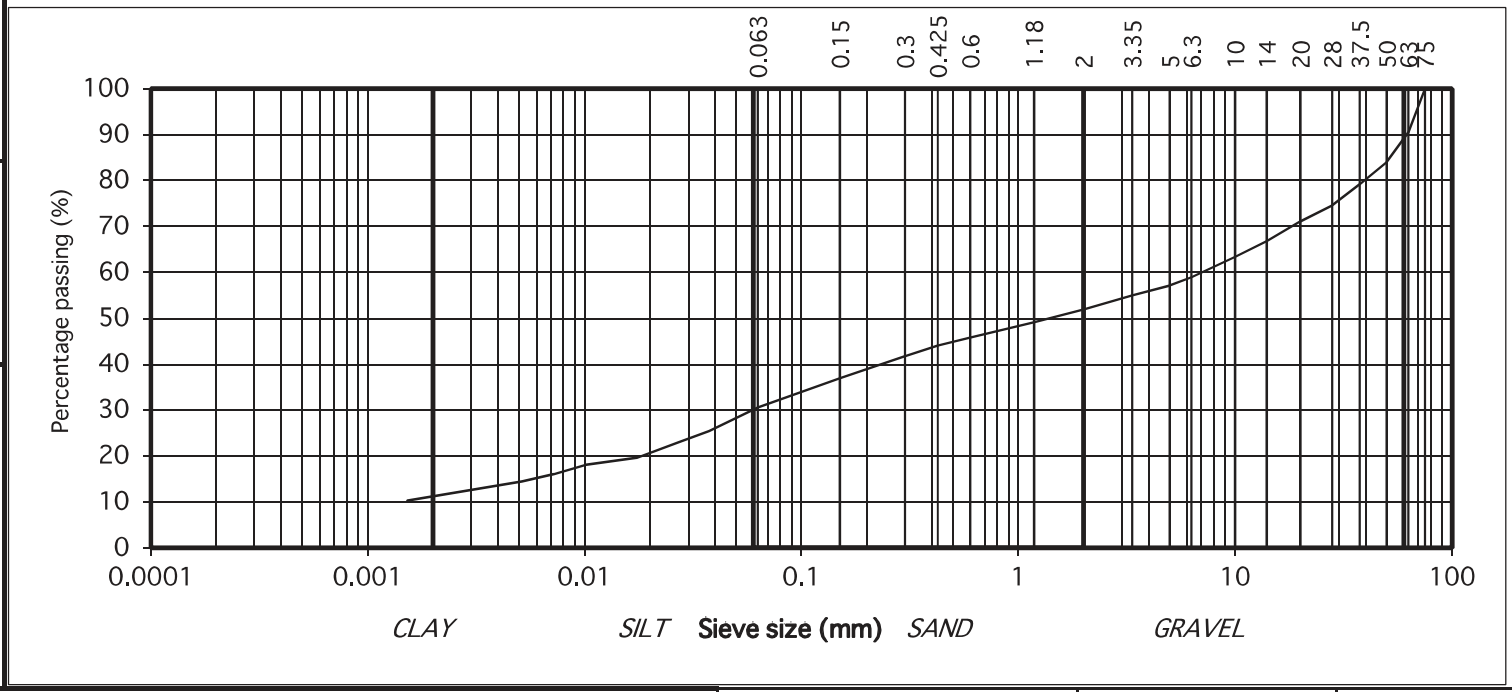

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	85	
28	83	
20	77	
14	73	
10	70	
6.3	65	
5	64	
3.35	60	
2	57	
1.18	54	SAND
0.6	50	
0.425	48	
0.3	45	
0.15	40	
0.063	34	SILT/CLAY
0.037	28	
0.027	25	
0.017	22	
0.010	19	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R141674	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP164905			
Sample No.*	AA174056	Lab. Sample No.		A22/6441
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	24/11/2022	Date Testing started		24/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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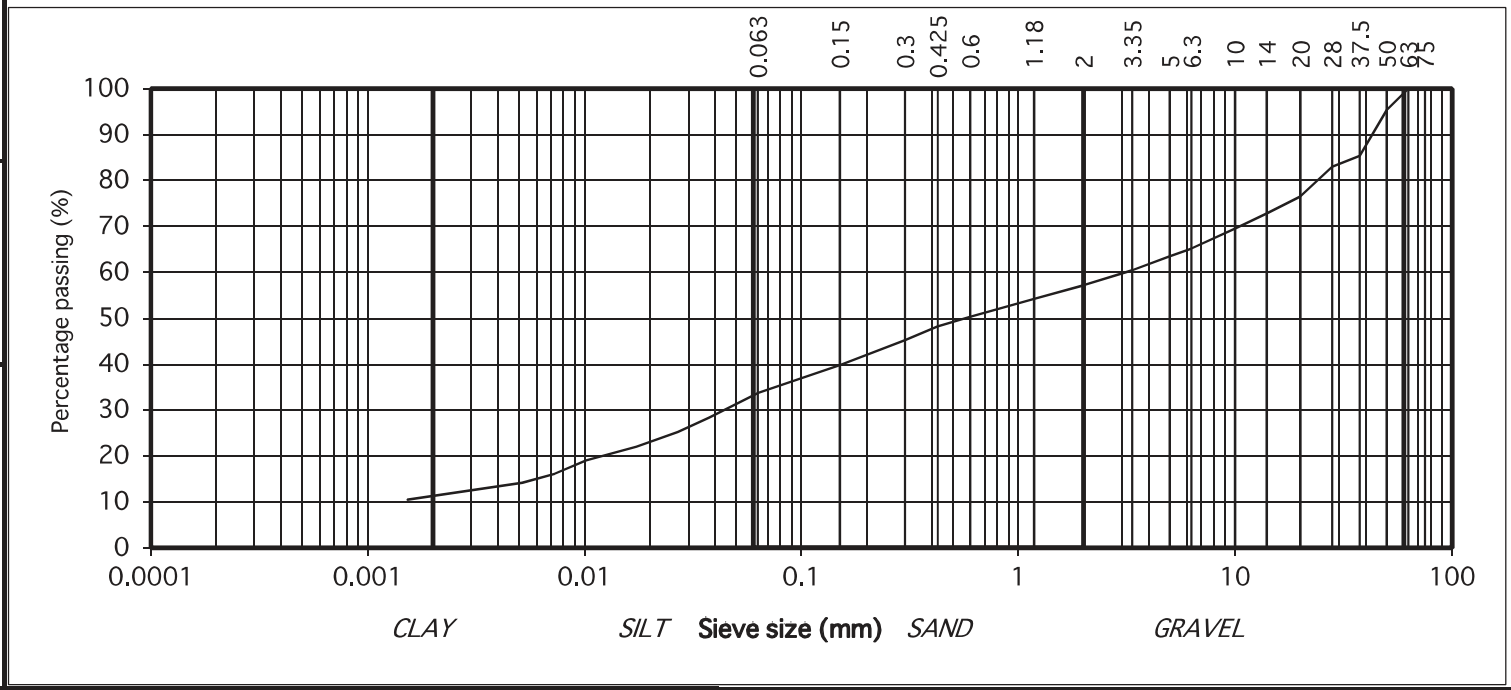
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	85	
20	83	
14	78	
10	74	
6.3	71	
5	69	
3.35	67	
2	64	
1.18	61	SAND
0.6	59	
0.425	58	
0.3	56	
0.15	52	
0.063	43	SILT/CLAY
0.038	36	
0.027	33	
0.017	30	
0.010	26	
0.007	23	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R141676	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP165105			
Sample No.*	AA174059	Lab. Sample No.		A22/6445
Sample Type:	B			
Depth* (m)	0.40	Customer:	Ervia	
Date Received	25/11/2022	Date Testing started		25/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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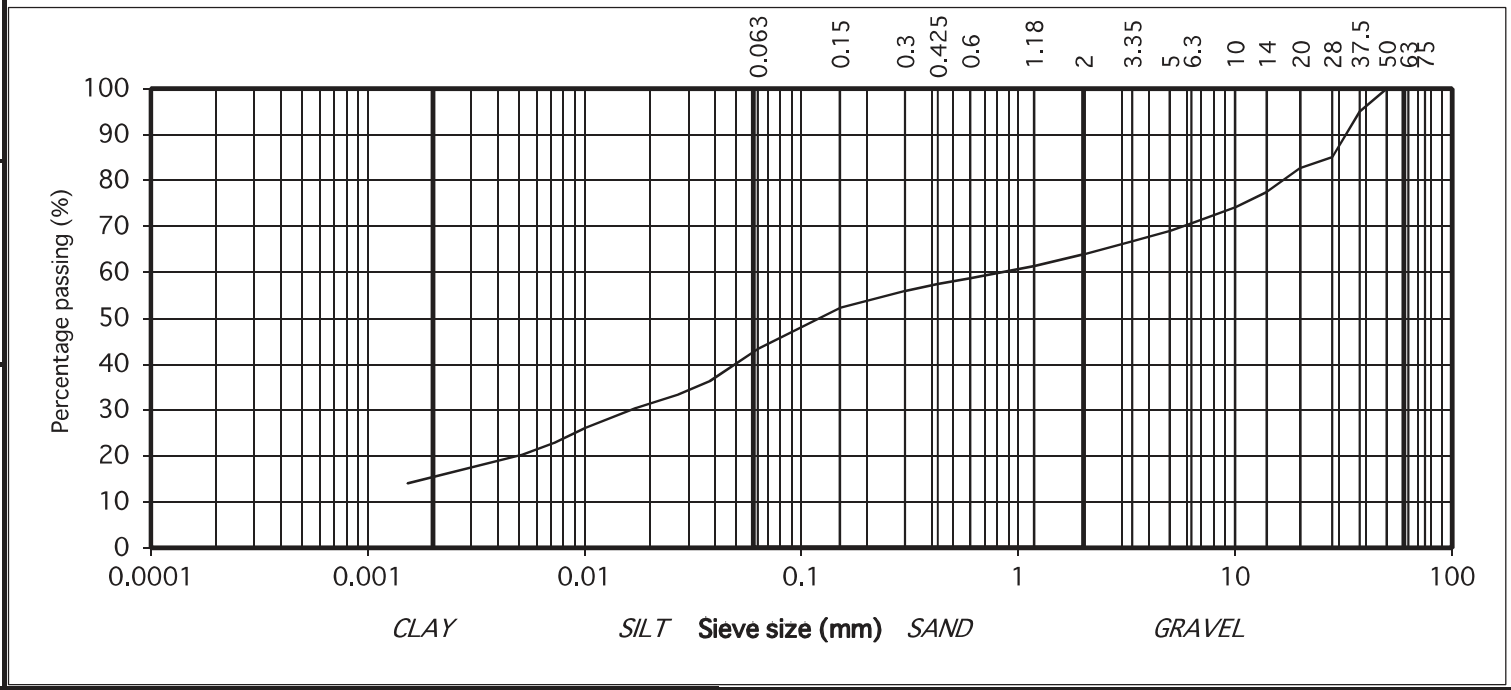
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	91	
10	83	
6.3	75	
5	73	
3.35	66	
2	61	
1.18	58	SAND
0.6	56	
0.425	55	
0.3	54	
0.15	53	
0.063	49	SILT/CLAY
0.037	43	
0.027	38	
0.017	34	
0.010	28	
0.007	23	
0.005	19	
0.002	14	

Contract No.	23560	Report No.	R141551	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP165204			
Sample No.*	AA174060	Lab. Sample No.		A22/6447
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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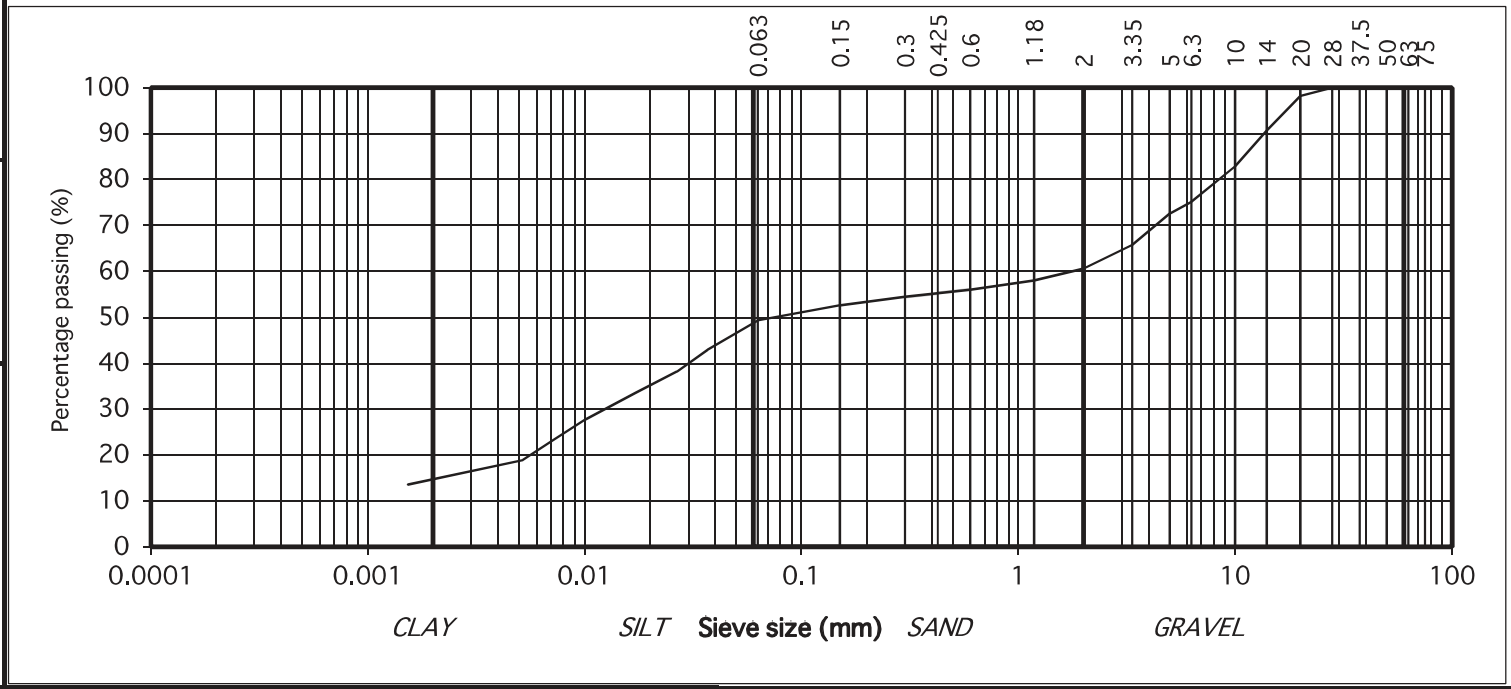
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	89	
20	82	
14	79	
10	76	
6.3	73	
5	71	
3.35	69	
2	67	
1.18	65	SAND
0.6	62	
0.425	61	
0.3	58	
0.15	52	
0.063	41	SILT/CLAY
0.038	37	
0.027	33	
0.017	28	
0.010	21	
0.007	18	
0.005	16	
0.002	11	

Contract No.	23560	Report No.	R135029	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166562			
Sample No.*	AA174864	Lab. Sample No.		A22/2618
Sample Type:	B			
Depth* (m)	1.40	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		16/05/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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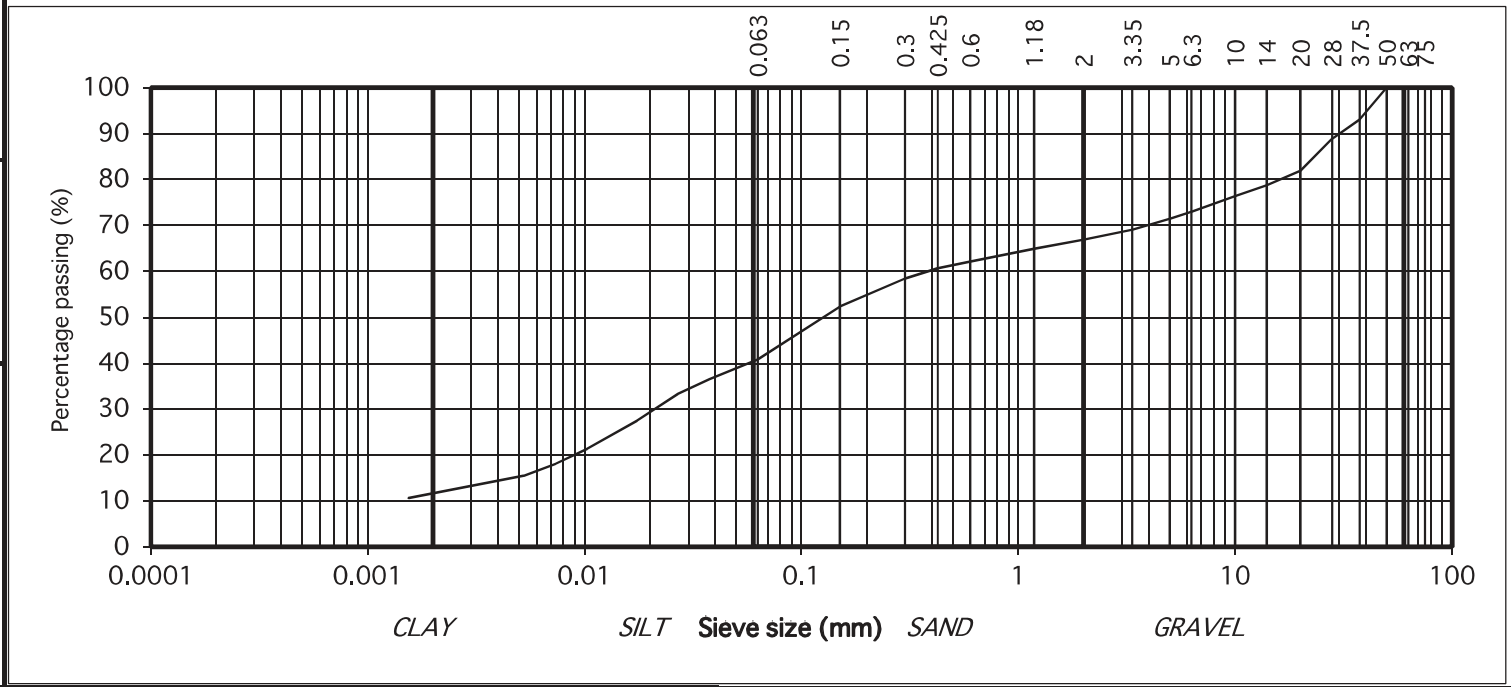
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	92	
20	86	
14	82	
10	79	
6.3	75	
5	73	
3.35	70	
2	67	
1.18	65	SAND
0.6	61	
0.425	59	
0.3	56	
0.15	51	
0.063	41	SILT/CLAY
0.037	36	
0.026	33	
0.017	29	
0.010	25	
0.007	22	
0.005	18	
0.002	11	

Contract No.	23560	Report No.	R141552	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP165314			
Sample No.*	AA174062	Lab. Sample No.		A22/6452
Sample Type:	B			
Depth* (m)	0.40	Customer:	Ervia	
Date Received	25/11/2022	Date Testing started		25/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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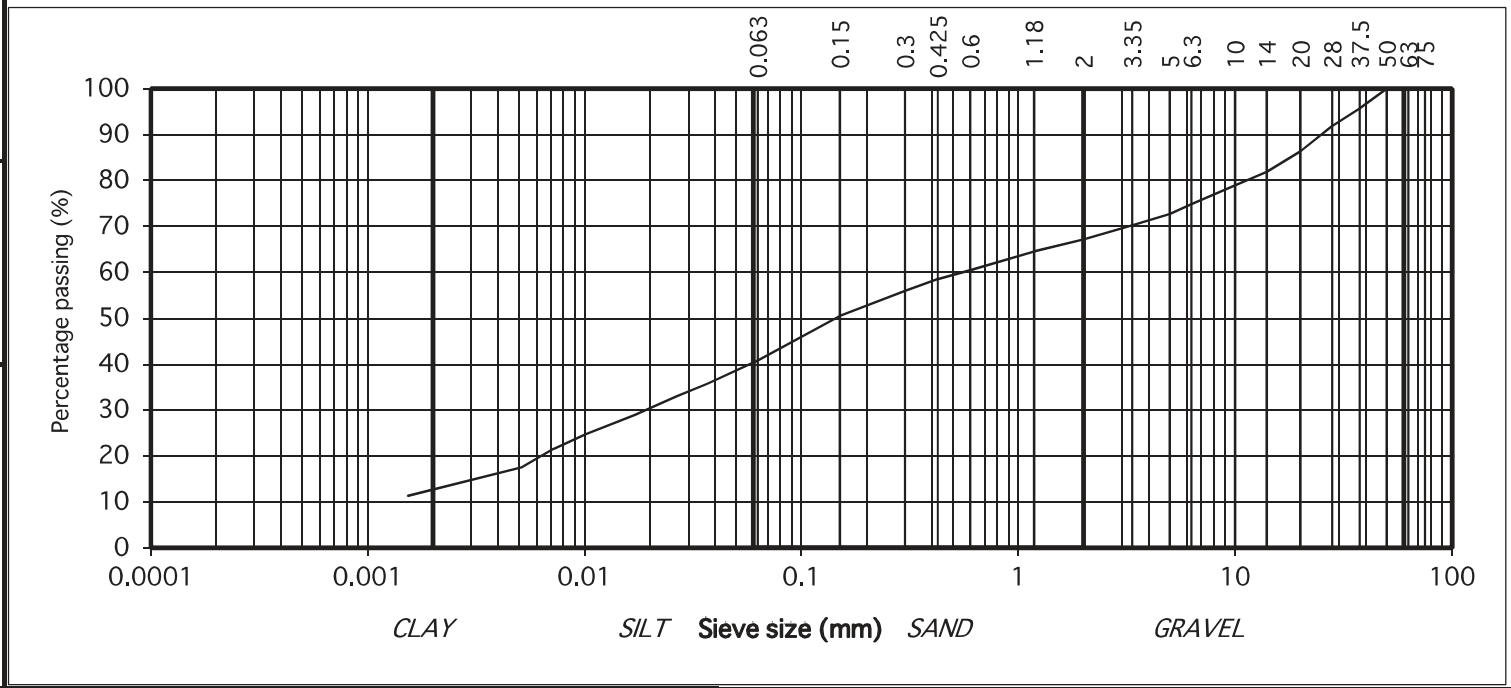

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

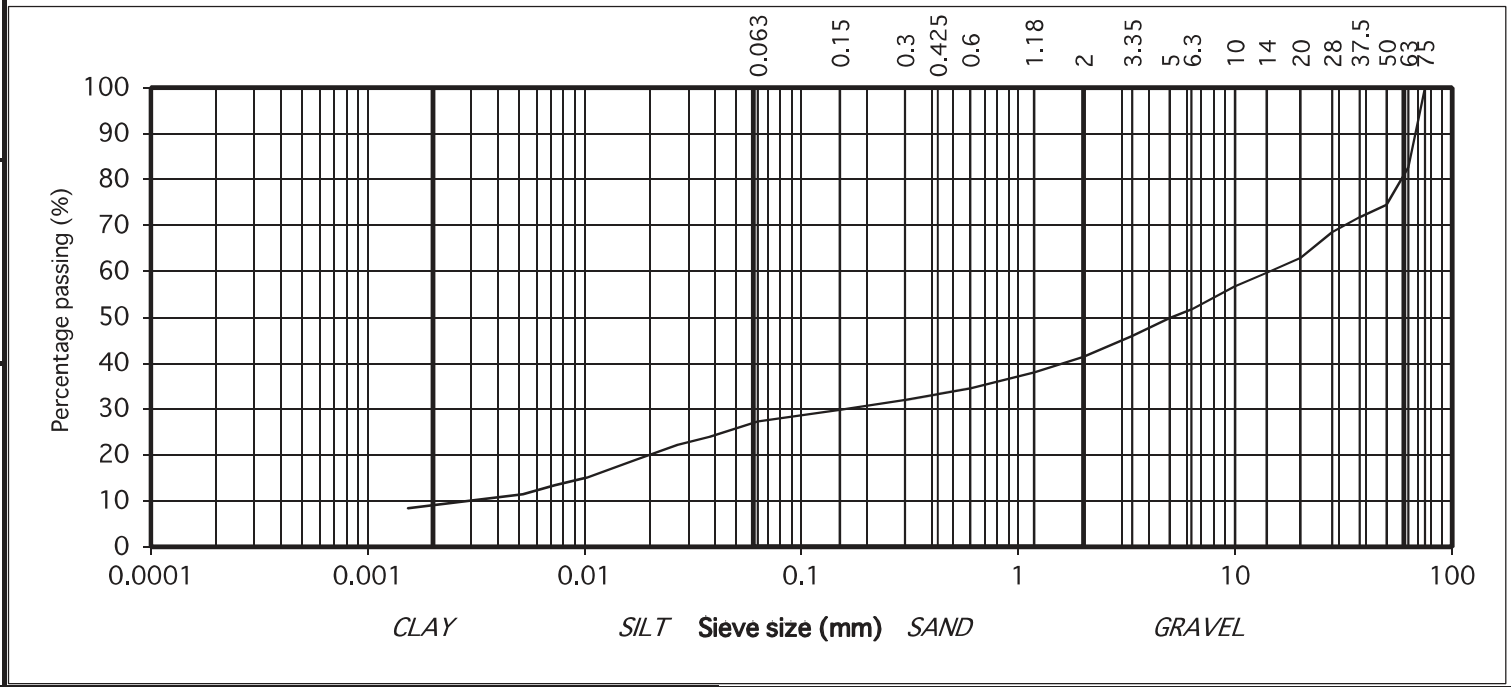
particle size	% passing	
75	100	COBBLES
63	83	
50	75	GRAVEL
37.5	72	
28	69	
20	63	
14	60	
10	57	
6.3	52	
5	50	
3.35	46	
2	41	
1.18	38	SAND
0.6	35	
0.425	33	
0.3	32	
0.15	30	
0.063	27	SILT/CLAY
0.038	24	
0.027	22	
0.017	19	
0.010	15	
0.007	13	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R135030	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166562			
Sample No.*	AA174865	Lab. Sample No.		A22/2619
Sample Type:	B			
Depth* (m)	2.10	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		16/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	79	COBBLES
63	62	
50	62	GRAVEL
37.5	59	
28	57	
20	55	
14	50	
10	47	
6.3	44	
5	43	
3.35	41	
2	38	
1.18	36	SAND
0.6	33	
0.425	32	
0.3	31	
0.15	29	
0.063	26	SILT/CLAY
0.037	22	
0.027	20	
0.017	18	
0.010	15	
0.007	14	
0.005	13	
0.001	11	

Contract No.	23560	Report No.	R134927	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166697			
Sample No.*	AA174868	Lab. Sample No.		A22/2621
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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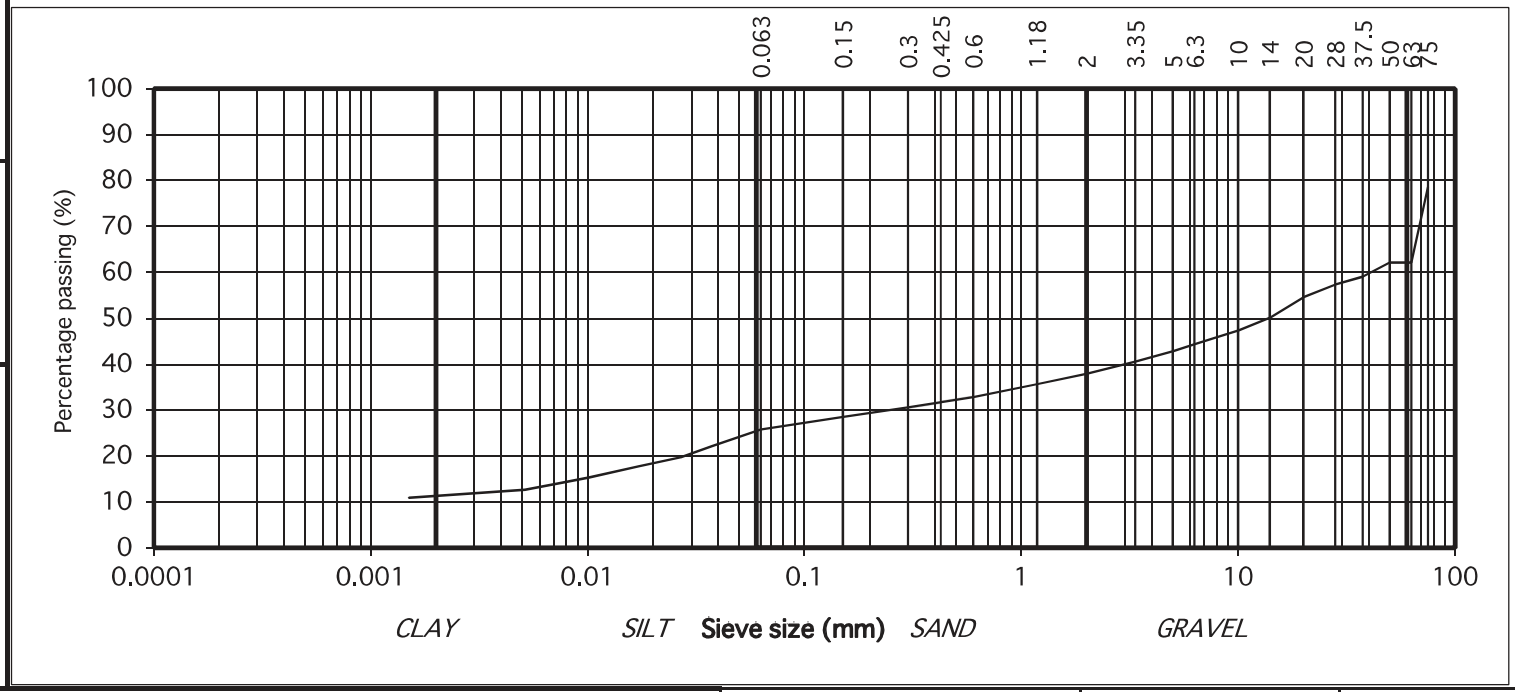
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	94	
28	89	
20	84	
14	81	
10	79	
6.3	75	
5	73	
3.35	69	
2	64	
1.18	59	SAND
0.6	54	
0.425	52	
0.3	50	
0.15	47	
0.063	42	SILT/CLAY
0.038	36	
0.027	33	
0.017	28	
0.010	25	
0.007	21	
0.005	18	
0.002	12	

Contract No.	23560	Report No.	R135031	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166697			
Sample No.*	AA174867	Lab. Sample No.		A22/2620
Sample Type:	B			
Depth* (m)	1.40	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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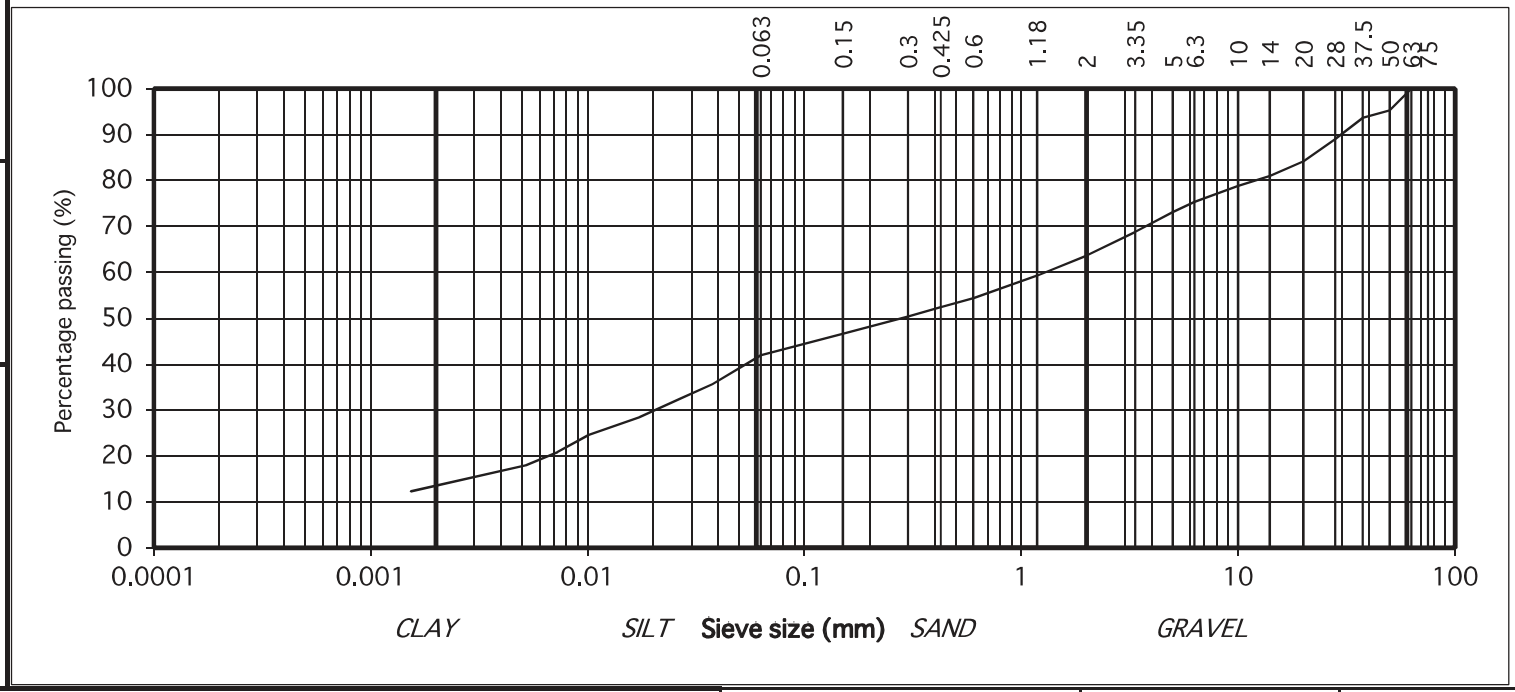
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	87	
20	86	
14	83	
10	80	
6.3	77	
5	75	
3.35	72	
2	69	
1.18	67	SAND
0.6	63	
0.425	62	
0.3	60	
0.15	57	
0.063	51	SILT/CLAY
0.037	44	
0.027	39	
0.017	34	
0.010	30	
0.007	26	
0.005	22	
0.002	15	

Contract No.	23560	Report No.	R134934	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166772			
Sample No.*	AA173606	Lab. Sample No.		A22/2615
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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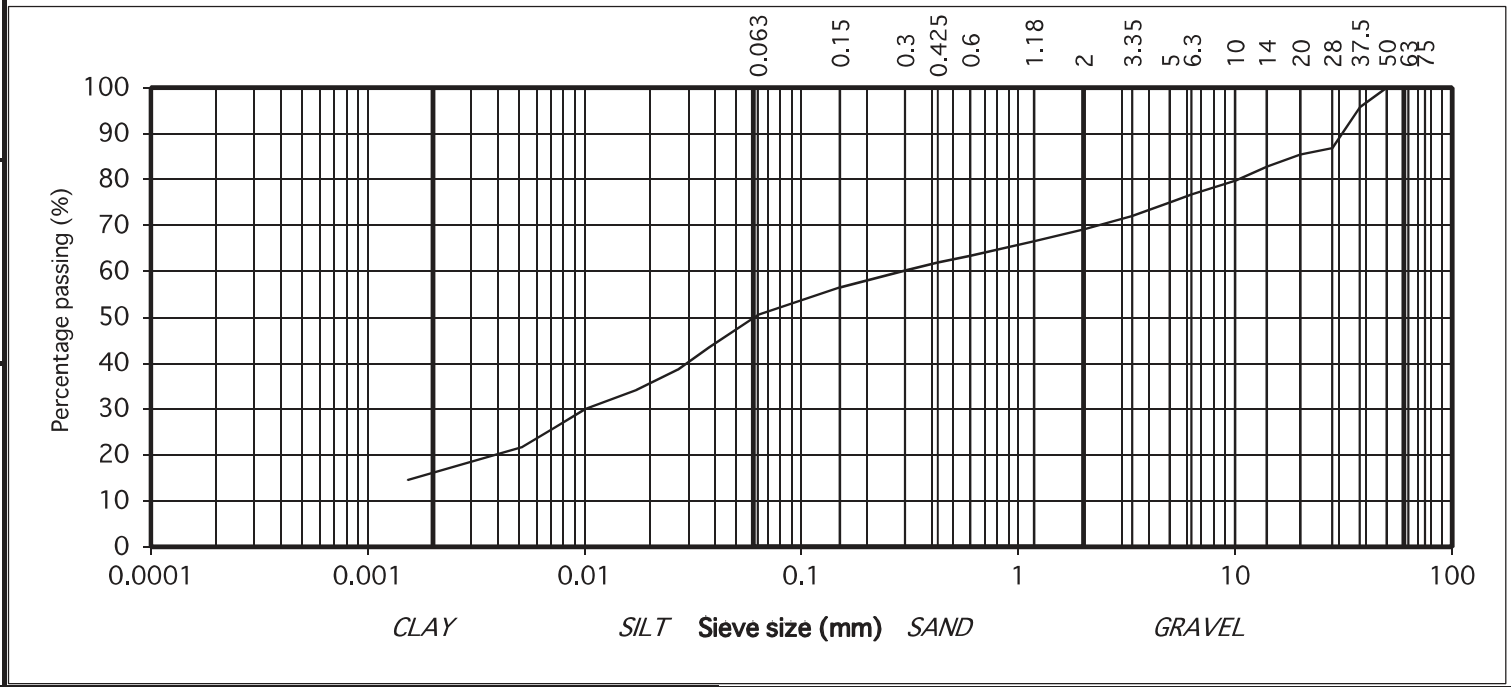

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Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	95	
28	89	
20	84	
14	77	
10	70	
6.3	67	
5	64	
3.35	55	
2	46	
1.18	39	SAND
0.6	32	
0.425	30	
0.3	29	
0.15	27	
0.063	26	SILT/CLAY
0.038	24	
0.027	22	
0.017	20	
0.010	18	
0.007	16	
0.005	14	
0.002	12	

Contract No.	23560	Report No.	R134931	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166867			
Sample No.*	AA173611	Lab. Sample No.		A22/2619
Sample Type:	B			
Depth* (m)	2.20	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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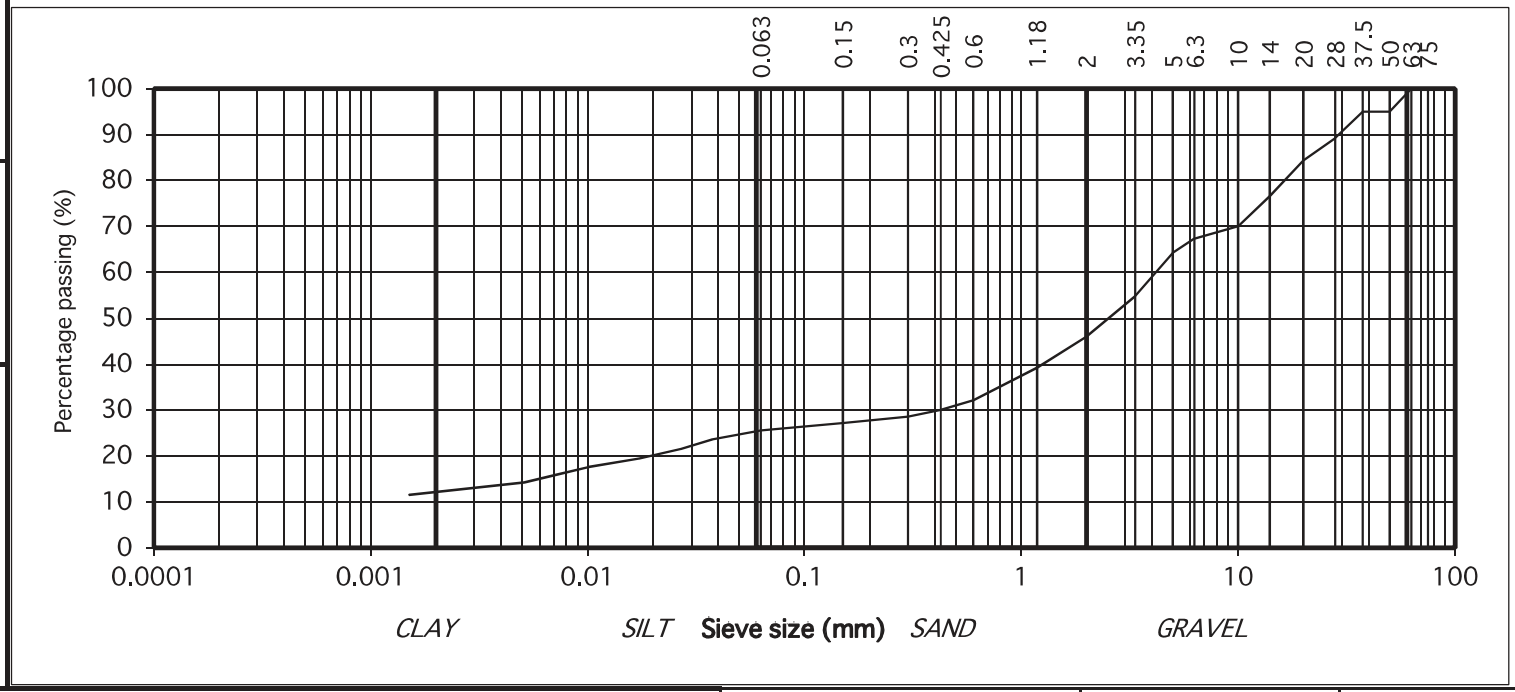
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	80	COBBLES
63	72	
50	72	GRAVEL
37.5	72	
28	65	
20	62	
14	56	
10	54	
6.3	51	
5	49	
3.35	46	
2	43	
1.18	40	SAND
0.6	37	
0.425	35	
0.3	34	
0.15	31	
0.063	28	SILT/CLAY
0.037	24	
0.027	22	
0.017	19	
0.010	17	
0.007	15	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R134932	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP166867			
Sample No.*	AA173610	Lab. Sample No.		A22/2616
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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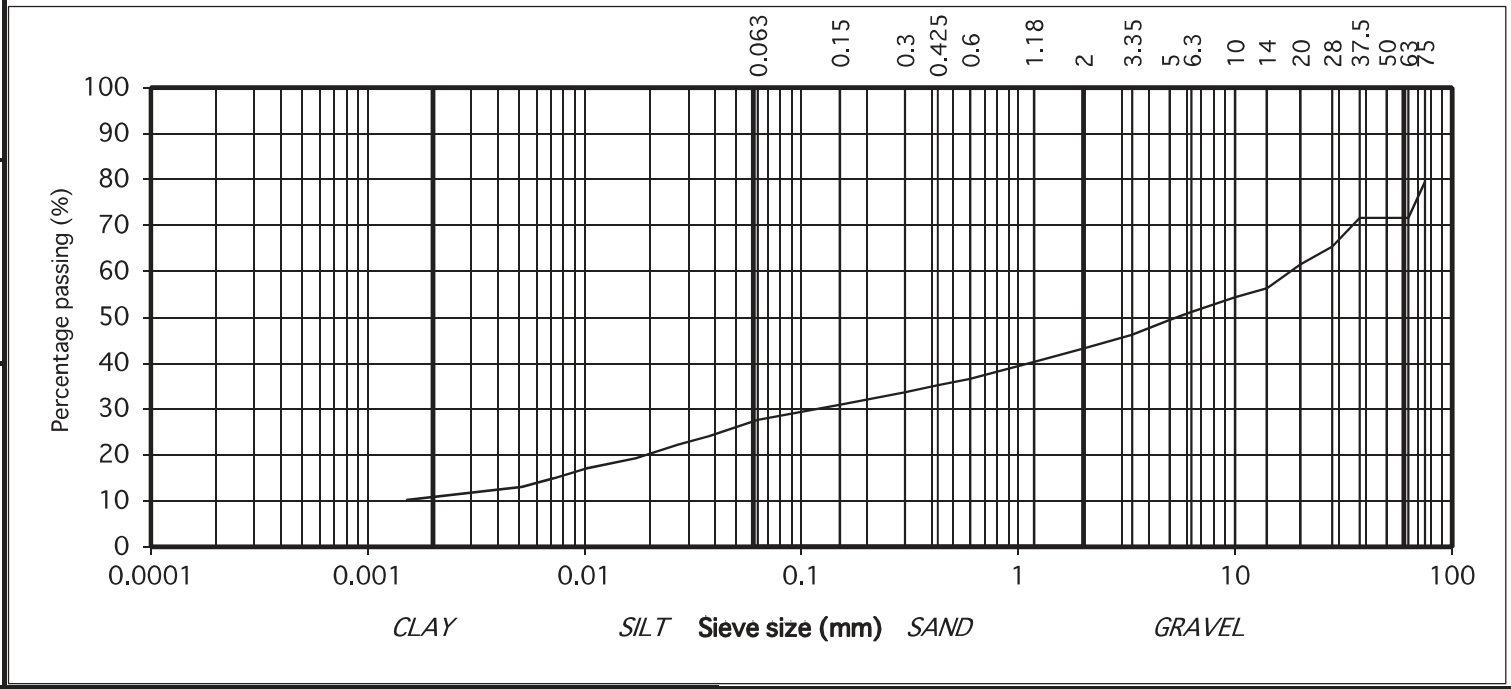
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

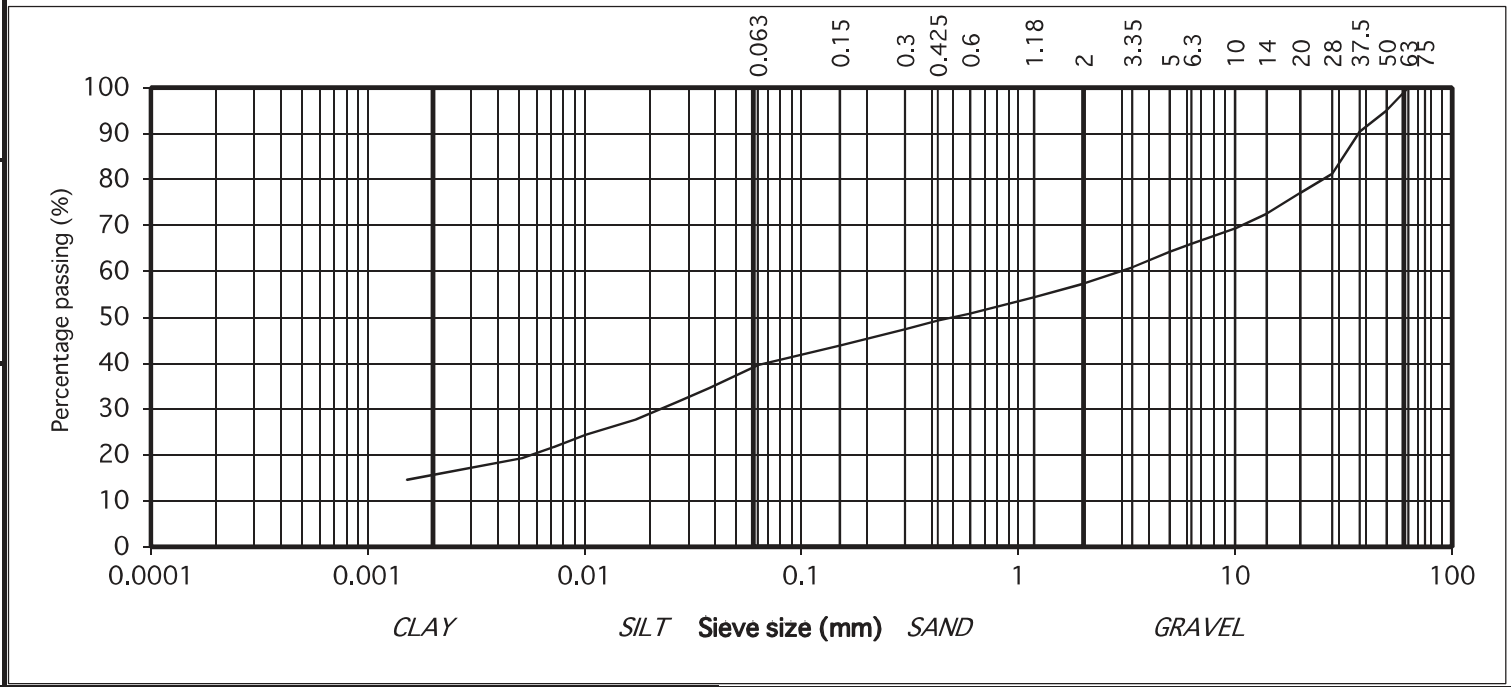
particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	91	
28	81	
20	77	
14	73	
10	69	
6.3	66	
5	64	
3.35	61	
2	57	
1.18	54	SAND
0.6	51	
0.425	49	
0.3	47	
0.15	44	
0.063	40	SILT/CLAY
0.037	35	
0.027	32	
0.017	28	
0.010	24	
0.007	22	
0.005	19	
0.002	15	

Contract No.	23560	Report No.	R135032	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP167031			
Sample No.*	AA174857	Lab. Sample No.		A22/2605
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	92	
14	88	
10	84	
6.3	78	
5	76	
3.35	72	
2	66	
1.18	62	SAND
0.6	56	
0.425	54	
0.3	52	
0.15	48	
0.063	42	SILT/CLAY
0.037	37	
0.027	33	
0.017	29	
0.010	26	
0.007	23	
0.005	21	
0.002	15	

Contract No.	23560	Report No.	R135033	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP167205			
Sample No.*	AA174860	Lab. Sample No.		A22/2608
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown/grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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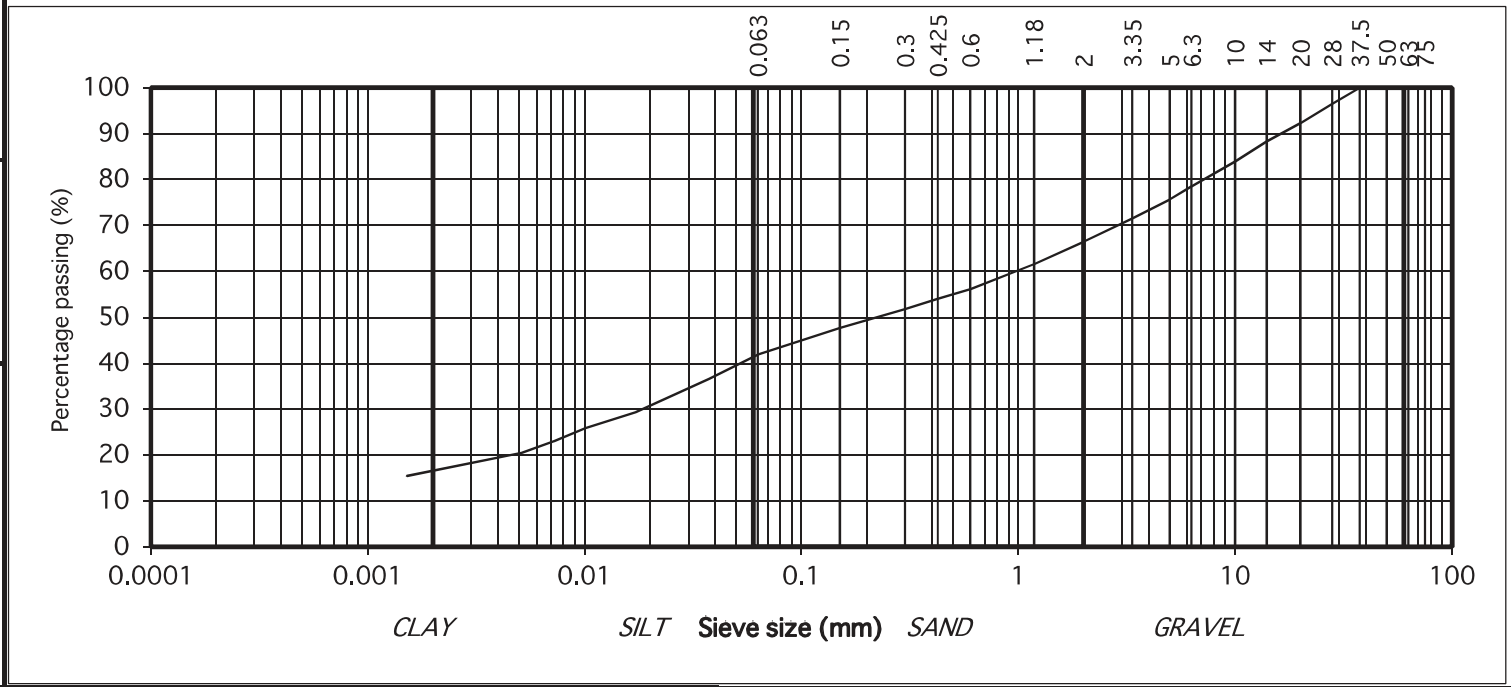
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	85	
14	82	
10	78	
6.3	73	
5	70	
3.35	67	
2	62	
1.18	58	SAND
0.6	53	
0.425	50	
0.3	48	
0.15	42	
0.063	35	SILT/CLAY
0.037	32	
0.027	30	
0.017	26	
0.010	22	
0.007	19	
0.005	17	
0.002	12	

Contract No.	23560	Report No.	R143956	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP167031			
Sample No.*	AA174858	Lab. Sample No.		A22/2606
Sample Type:	B			
Depth* (m)	1.90	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		07/05/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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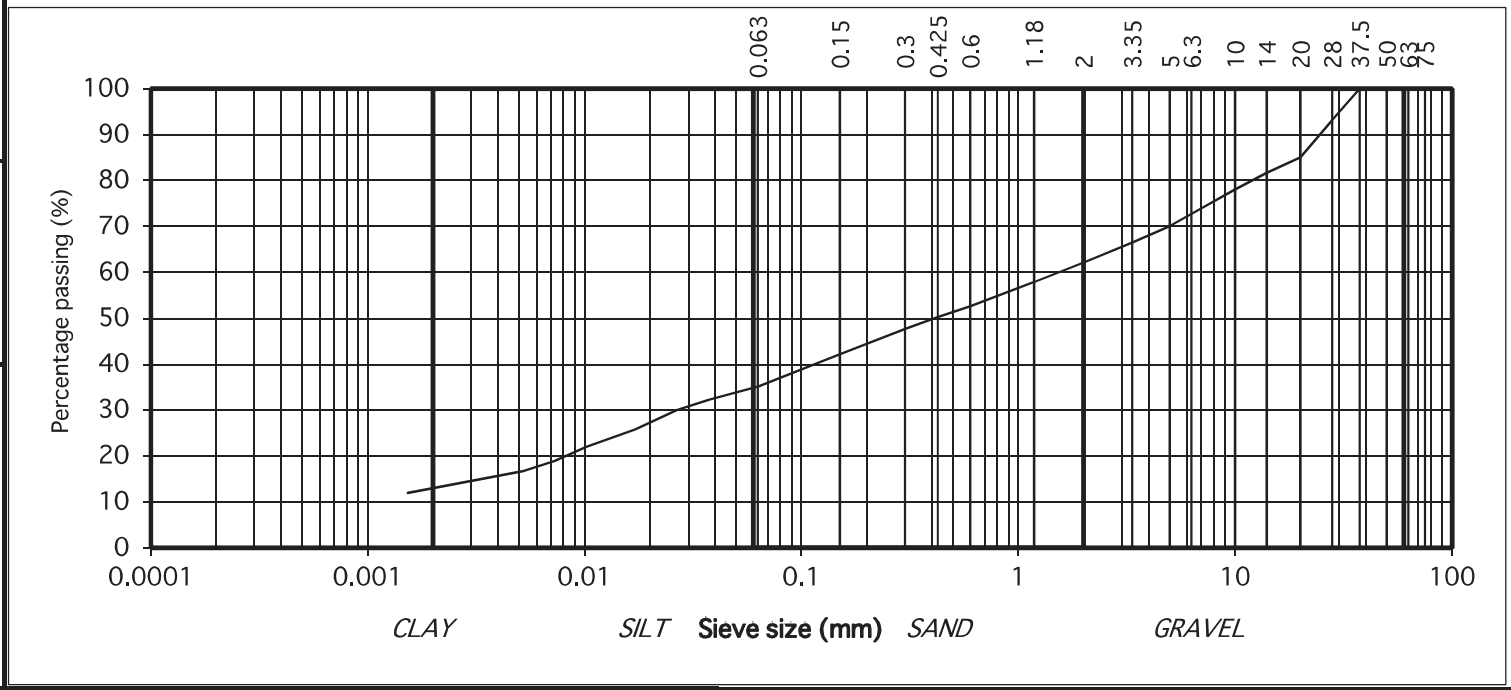
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	84	
50	84	GRAVEL
37.5	78	
28	68	
20	64	
14	58	
10	53	
6.3	48	
5	45	
3.35	41	
2	37	
1.18	33	SAND
0.6	29	
0.425	27	
0.3	26	
0.15	23	
0.063	20	SILT/CLAY
0.037	18	
0.027	16	
0.017	15	
0.010	13	
0.007	12	
0.005	10	
0.002	8	

Contract No.	23560	Report No.	R134926	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP167205			
Sample No.*	AA174862	Lab. Sample No.		A22/2609
Sample Type:	B			
Depth* (m)	2.10	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Grey/brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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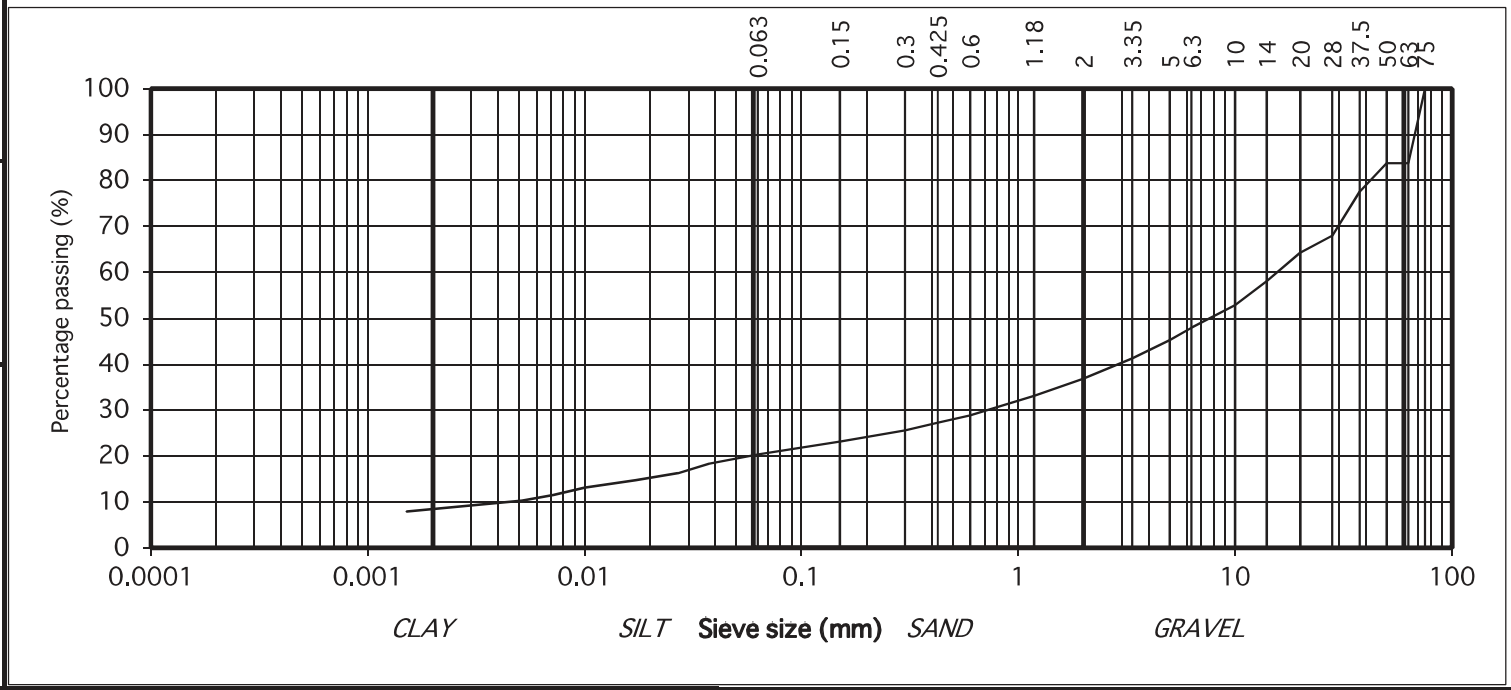
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	91	
14	87	
10	84	
6.3	81	
5	80	
3.35	78	
2	76	
1.18	74	SAND
0.6	72	
0.425	70	
0.3	68	
0.15	59	
0.063	47	SILT/CLAY
0.037	40	
0.027	35	
0.017	31	
0.010	27	
0.007	23	
0.005	19	
0.002	14	

Contract No.	23560	Report No.	R135034	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP167384			
Sample No.*	AA174855	Lab. Sample No.		A22/2603
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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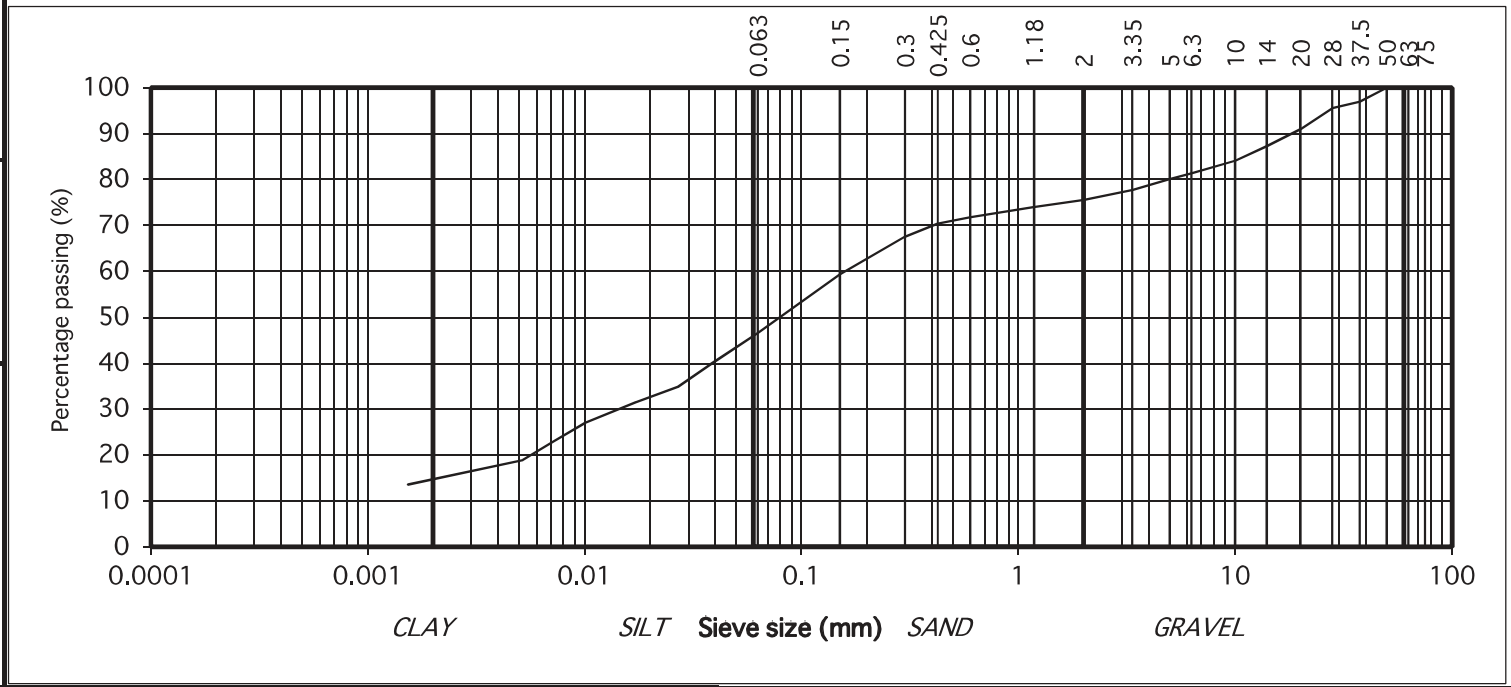
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	94	
50	94	GRAVEL
37.5	85	
28	79	
20	70	
14	59	
10	52	
6.3	44	
5	41	
3.35	35	
2	31	
1.18	28	SAND
0.6	23	
0.425	21	
0.3	18	
0.15	15	
0.063	11	SILT/CLAY
0.037	9	
0.027	8	
0.017	7	
0.010	6	
0.007	5	
0.005	4	
0.002	3	

Contract No.	23560	Report No.	R135035
Contract Name:	WSP - Lot 3		
BH/TP* :	TP167384		
Sample No.*	AA174856	Lab. Sample No.	A22/2604
Sample Type:	B		
Depth* (m)	2.10	Customer:	Ervia
Date Received	04/05/2022	Date Testing started	13/05/2022
Description:	Brown clayey/silty, very sandy, GRAVEL with some cobbles		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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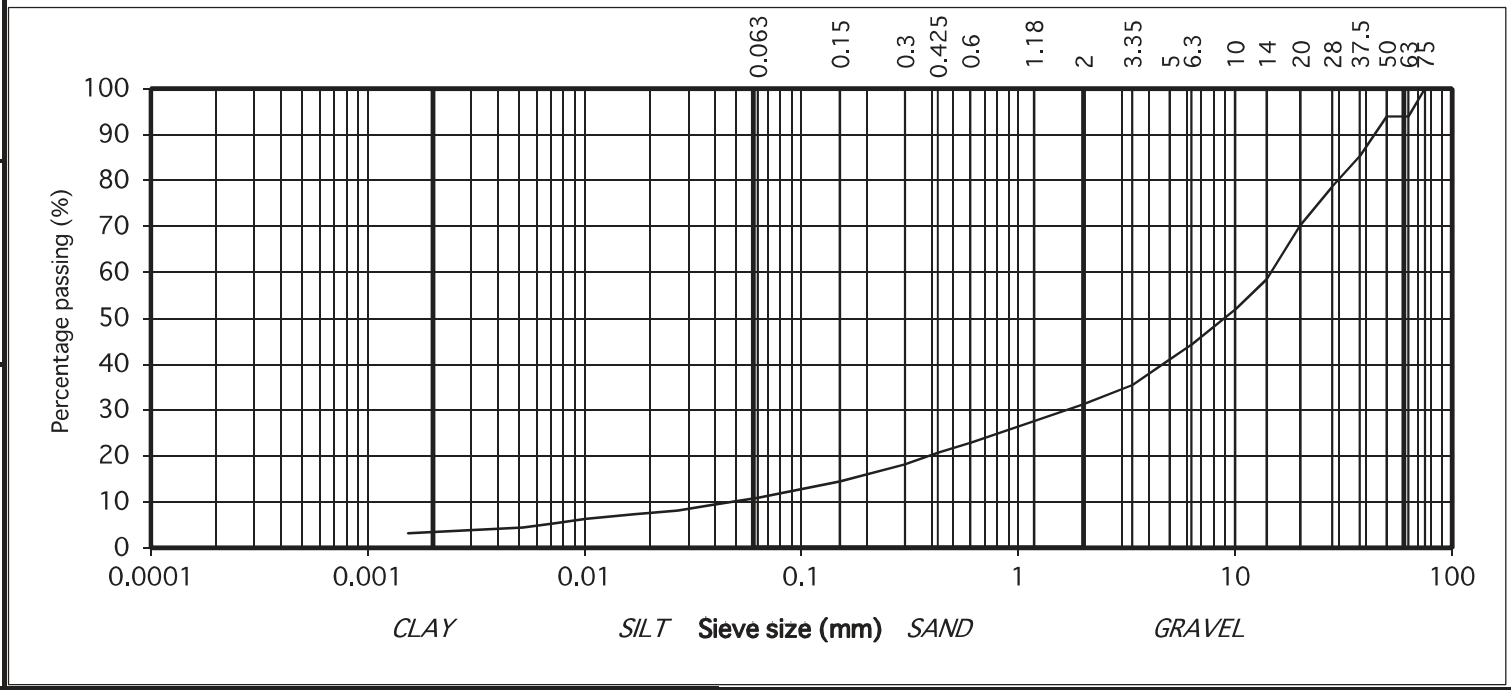
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	85	
28	83	
20	75	
14	66	
10	62	
6.3	56	
5	53	
3.35	48	
2	42	
1.18	38	SAND
0.6	34	
0.425	32	
0.3	30	
0.15	26	
0.063	22	SILT/CLAY
0.038	19	
0.027	17	
0.017	15	
0.010	14	
0.007	12	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R135036	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168033			
Sample No.*	AA174863	Lab. Sample No.		A22/2610
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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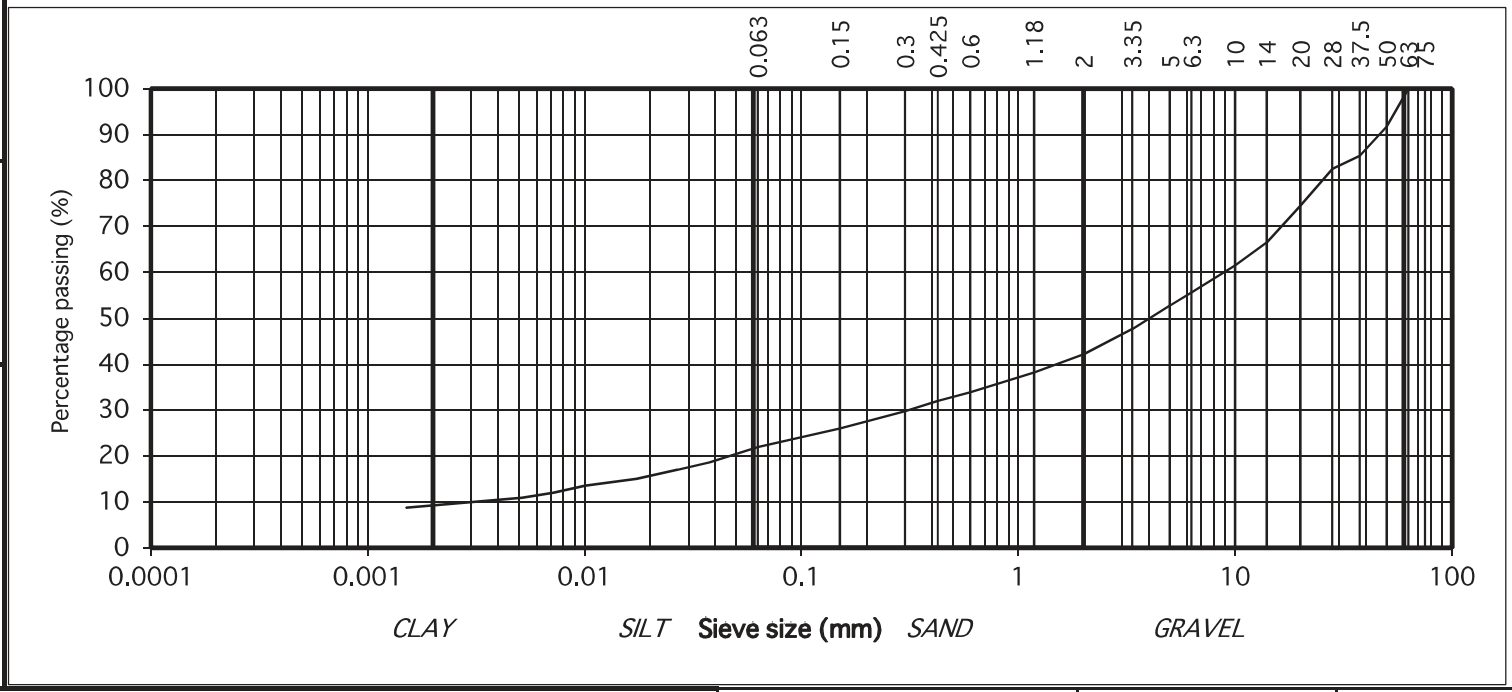
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	89	GRAVEL
37.5	85	
28	82	
20	76	
14	67	
10	63	
6.3	57	
5	55	
3.35	50	
2	45	
1.18	40	SAND
0.6	35	
0.425	33	
0.3	31	
0.15	27	
0.063	23	SILT/CLAY
0.038	20	
0.027	18	
0.017	16	
0.010	13	
0.007	12	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R134929	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168033			
Sample No.*	AA174864	Lab. Sample No.		A22/2610
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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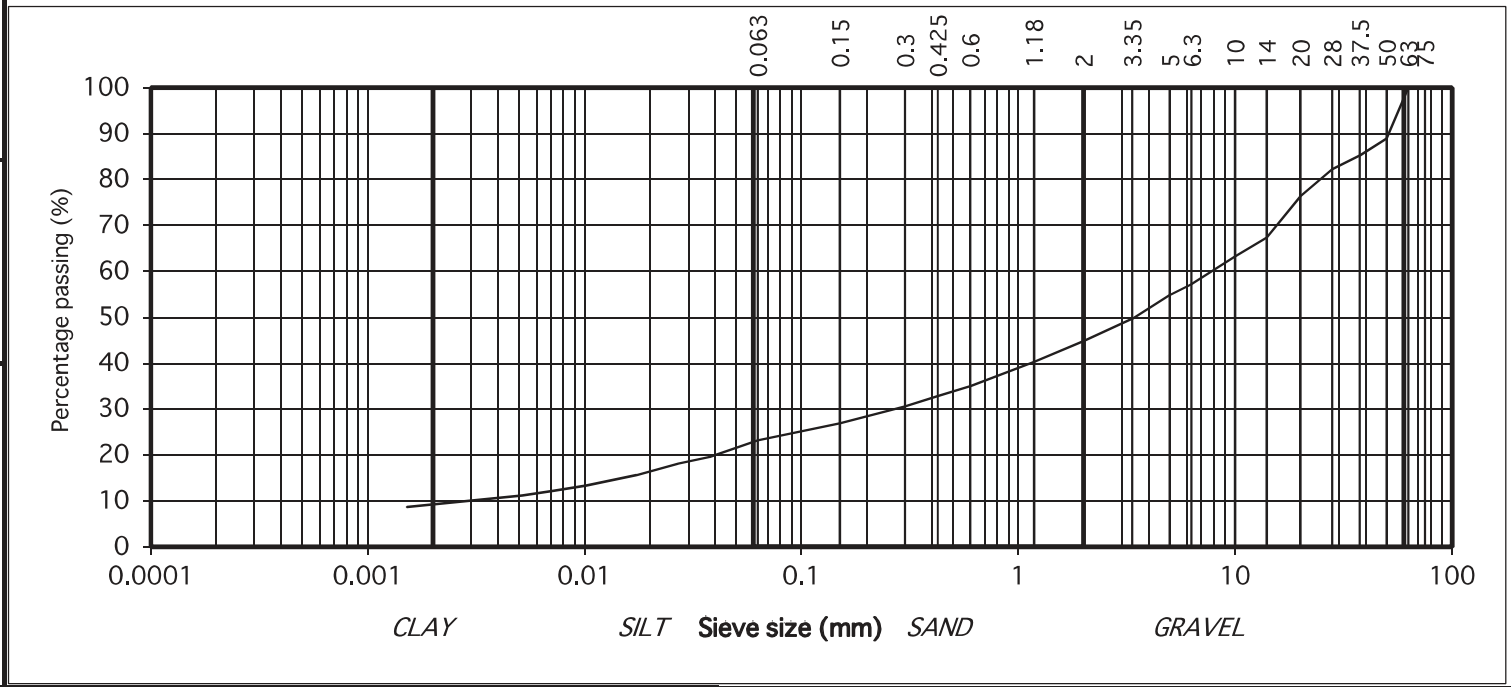
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	92	
28	85	
20	81	
14	77	
10	72	
6.3	65	
5	62	
3.35	56	
2	52	
1.18	43	SAND
0.6	37	
0.425	33	
0.3	28	
0.15	20	
0.063	14	SILT/CLAY
0.037	13	
0.027	12	
0.017	11	
0.010	10	
0.007	9	
0.005	8	
0.001	6	

Contract No.	23560	Report No.	R135037	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168041			
Sample No.*	AA174865	Lab. Sample No.		A22/2612
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

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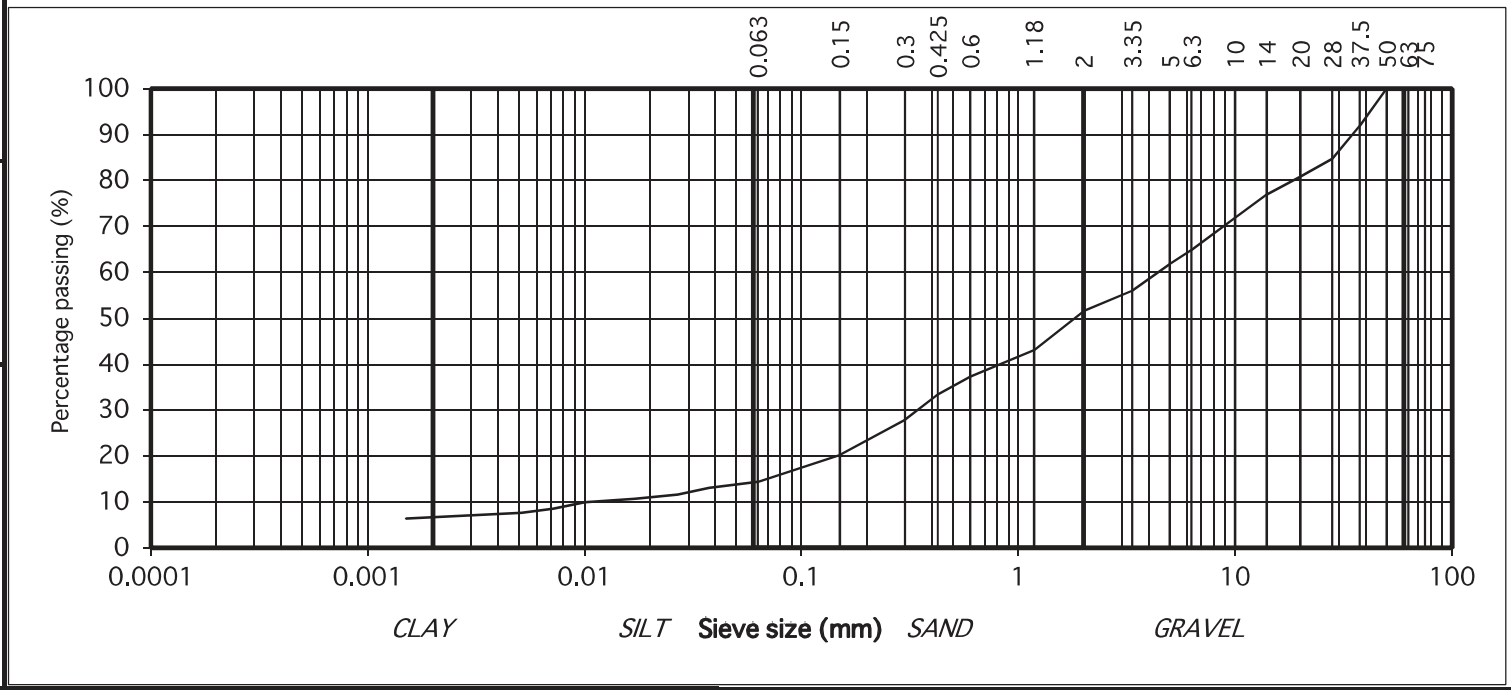

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	93	
28	89	
20	86	
14	85	
10	84	
6.3	82	
5	82	
3.35	81	
2	80	
1.18	79	SAND
0.6	78	
0.425	77	
0.3	75	
0.15	50	
0.063	21	SILT/CLAY
0.037	16	
0.027	13	
0.017	12	
0.010	10	
0.007	9	
0.005	8	
0.002	7	

Contract No.	23560	Report No.	R135038	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168241			
Sample No.*	AA174853	Lab. Sample No.		A22/2601
Sample Type:	B			
Depth* (m)	0.60	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Grey Brown sandy, slightly gravelly, SILT/CLAY			

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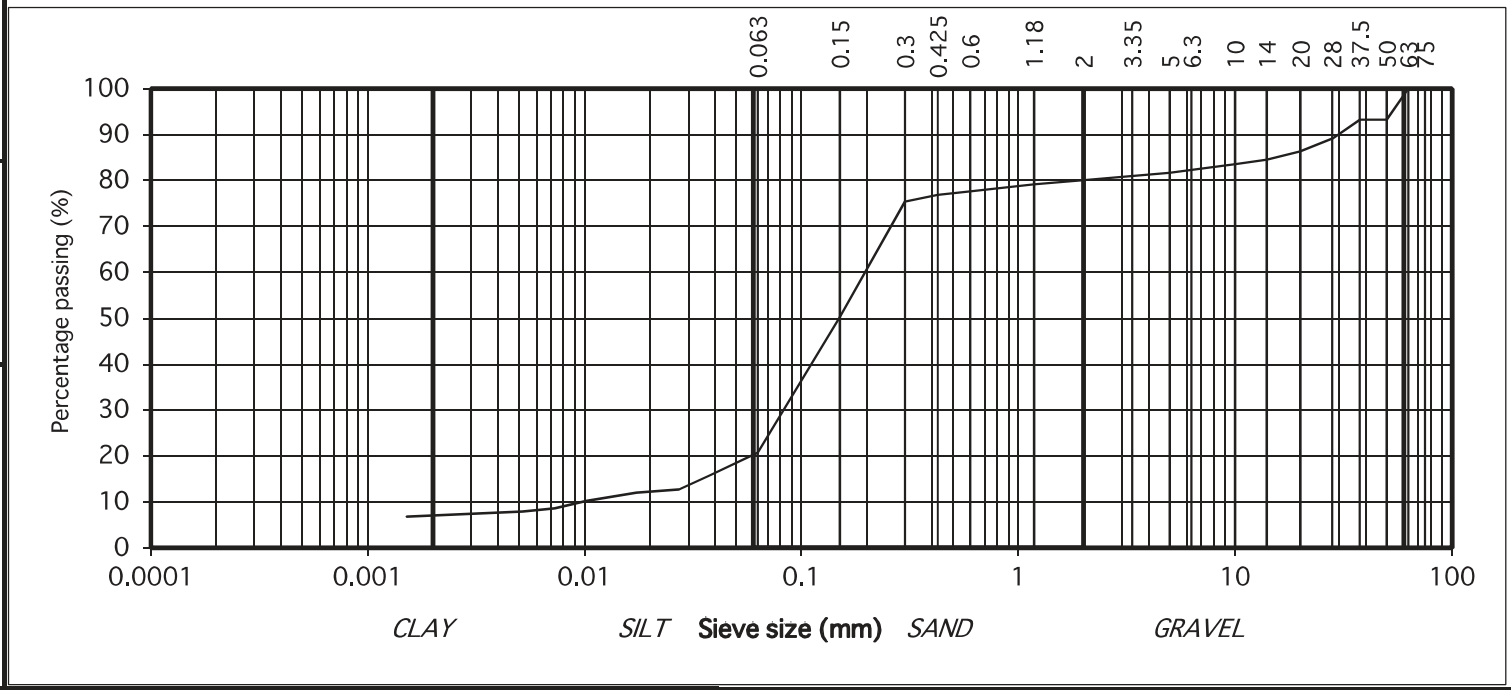

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	94	
20	89	
14	87	
10	85	
6.3	83	
5	82	
3.35	79	
2	77	
1.18	75	SAND
0.6	73	
0.425	71	
0.3	69	
0.15	56	
0.063	34	SILT/CLAY
0.037	28	
0.027	25	
0.017	21	
0.010	18	
0.007	16	
0.005	14	
0.002	12	

Contract No.	23560	Report No.	R135039	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168241			
Sample No.*	AA174854	Lab. Sample No.		A22/2602
Sample Type:	B			
Depth* (m)	1.80	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Grey Brown sandy, slightly gravelly, SILT/CLAY			

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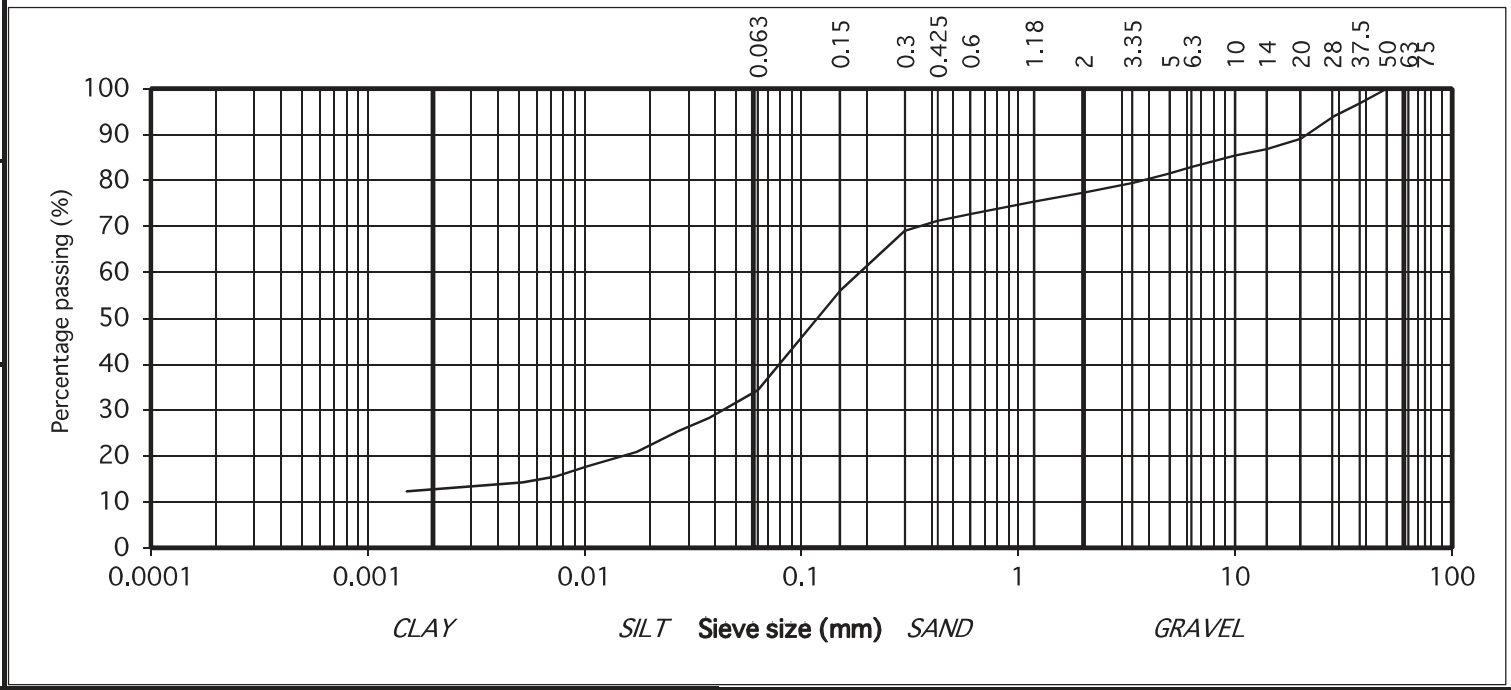

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	93	
20	92	
14	91	
10	87	
6.3	85	
5	84	
3.35	83	
2	82	
1.18	80	SAND
0.6	77	
0.425	75	
0.3	71	
0.15	60	
0.063	38	SILT/CLAY
0.038	30	
0.027	27	
0.017	23	
0.010	19	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R134924	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168340			
Sample No.*	AA174851	Lab. Sample No.		A22/2599
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

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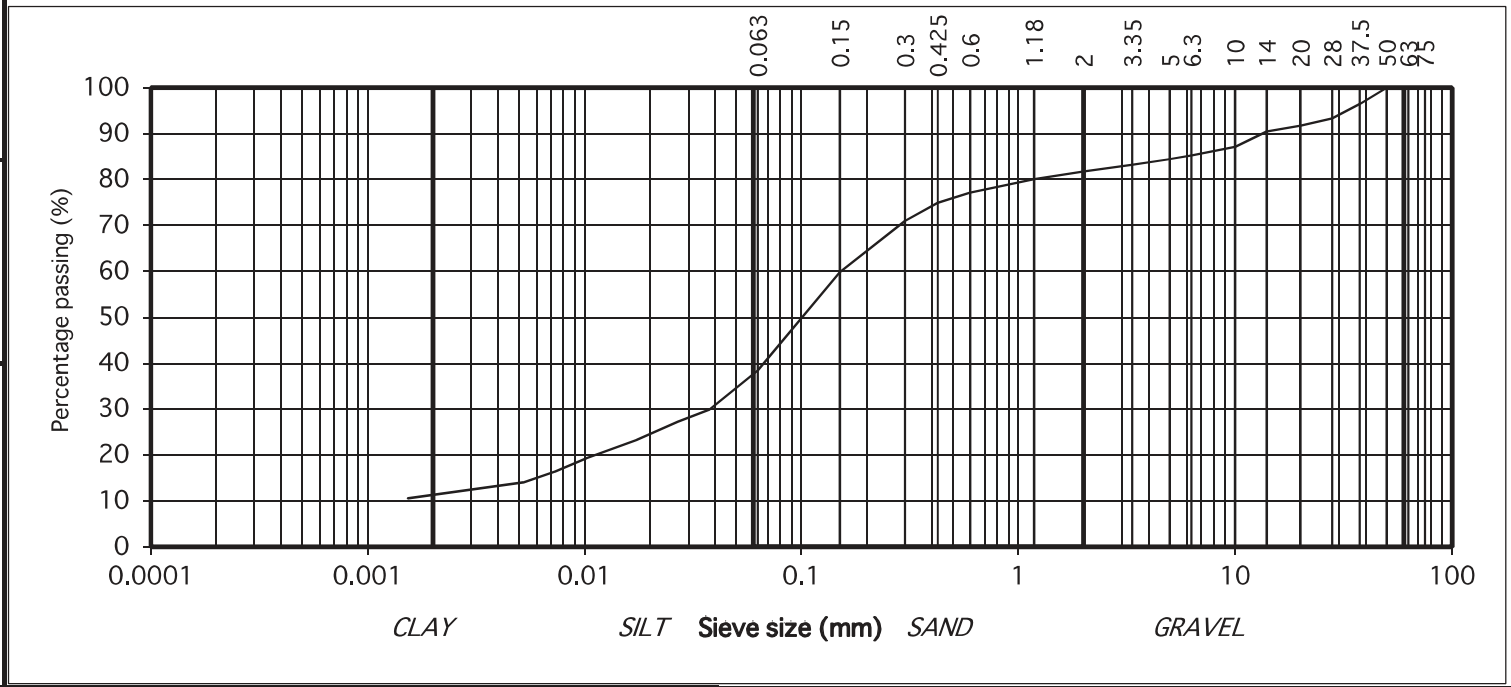

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	90	
28	87	
20	80	
14	68	
10	62	
6.3	54	
5	49	
3.35	44	
2	39	
1.18	34	SAND
0.6	28	
0.425	25	
0.3	22	
0.15	17	
0.063	12	SILT/CLAY
0.037	10	
0.027	9	
0.017	8	
0.010	7	
0.007	6	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R135040	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP168340			
Sample No.*	AA174852	Lab. Sample No.		A22/2600
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		13/05/2022
Description:	Grey Brown clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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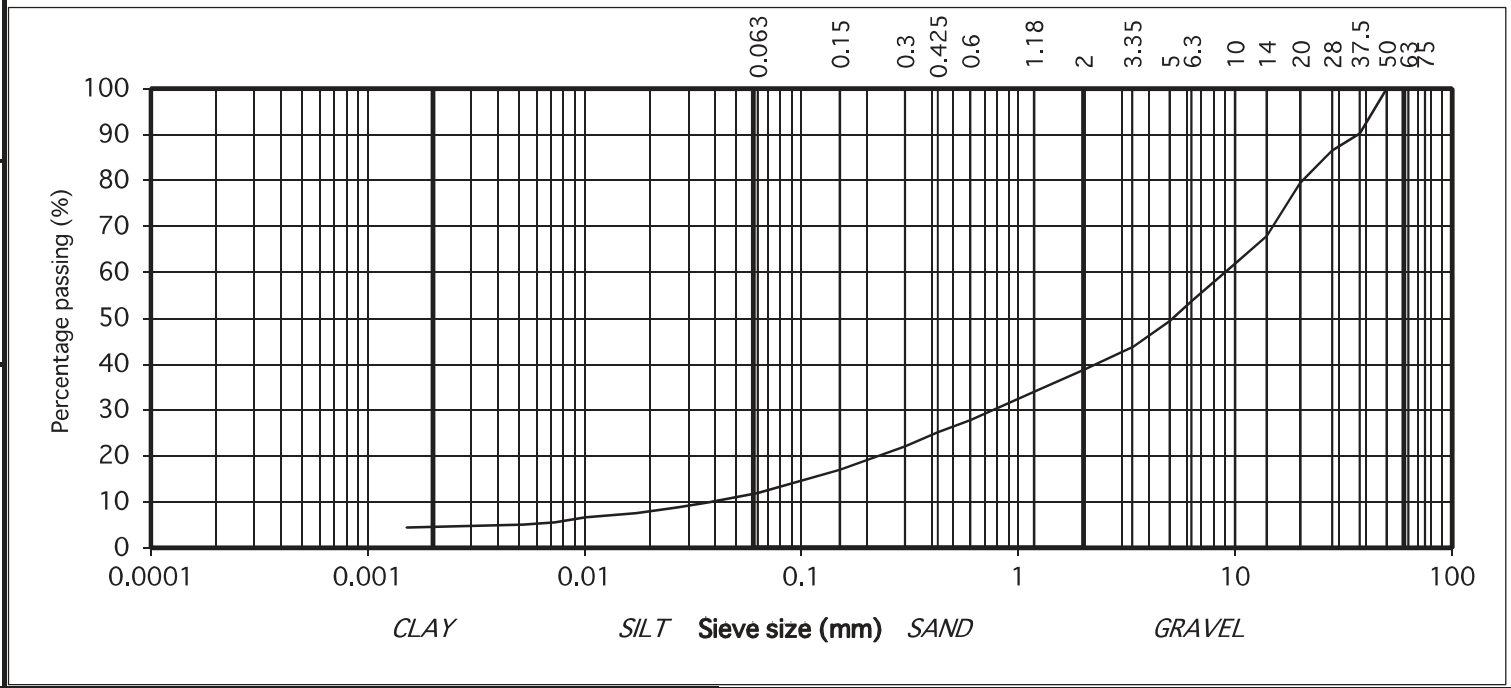

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	96	
14	94	
10	91	
6.3	88	
5	87	
3.35	85	
2	83	
1.18	81	SAND
0.6	78	
0.425	76	
0.3	74	
0.15	70	
0.063	65	SILT/CLAY
0.037	59	
0.027	52	
0.018	38	
0.010	29	
0.007	25	
0.005	20	
0.002	11	

Contract No.	23560	Report No.	R141681	
Contract Name:	WSP - Lot 3			
BH/TP* :	Bh148707			
Sample No.*	173323	Lab. Sample No.		A22/6472
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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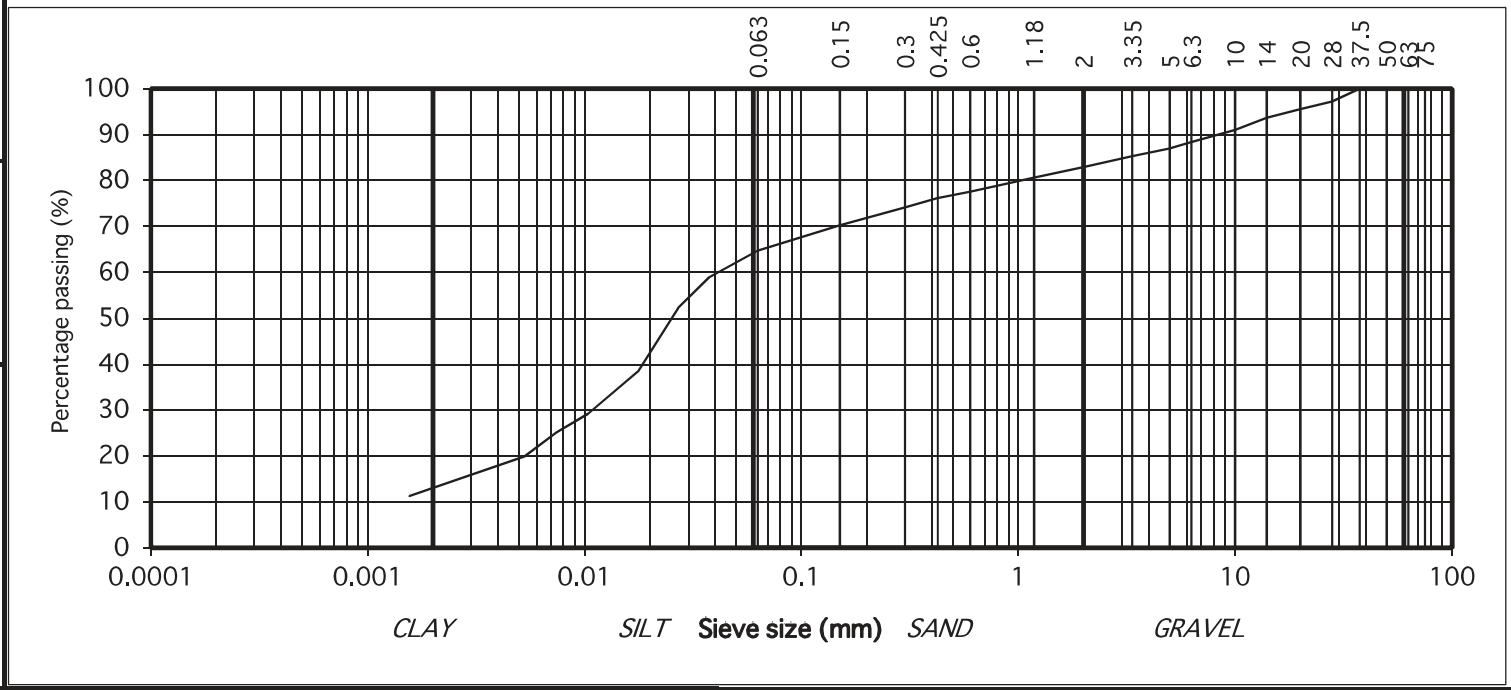

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Approved by:	Date:	Page no:
	20/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	87	
20	76	
14	68	
10	61	
6.3	53	
5	50	
3.35	46	
2	41	
1.18	37	SAND
0.6	31	
0.425	29	
0.3	26	
0.15	20	
0.063	14	SILT/CLAY
0.040	11	
0.028	10	
0.018	9	
0.010	8	
0.007	7	
0.005	6	
0.002	4	

Contract No.	23560	Report No.	R139299	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149101			
Sample No.*	179103	Lab. Sample No.		A22/4095
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Grey clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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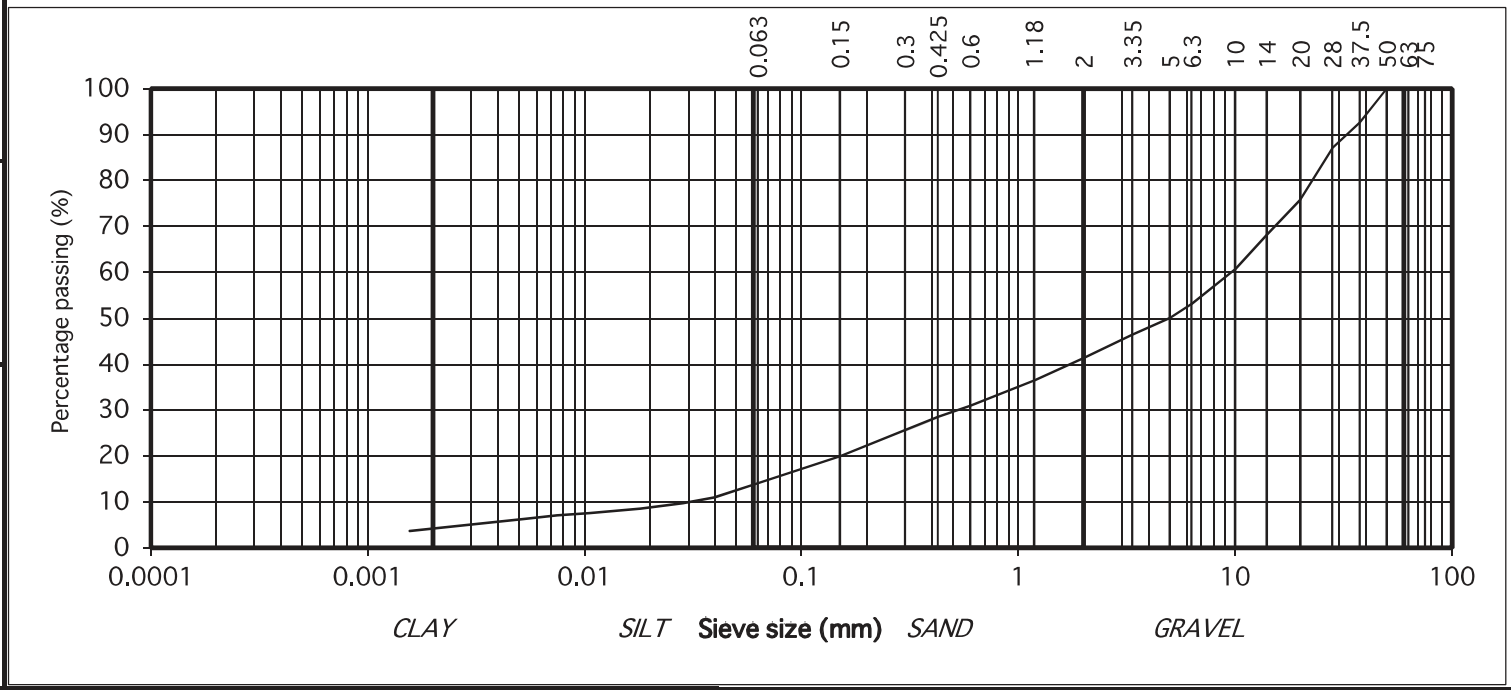

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	94	
20	91	
14	87	
10	84	
6.3	80	
5	78	
3.35	77	
2	74	
1.18	72	SAND
0.6	69	
0.425	67	
0.3	65	
0.15	61	
0.063	55	SILT/CLAY
0.037	49	
0.027	44	
0.017	39	
0.010	33	
0.007	28	
0.005	25	
0.002	17	

Contract No.	23560	Report No.	R141557	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH148707			
Sample No.*	173326	Lab. Sample No.		A22/6473
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Grey Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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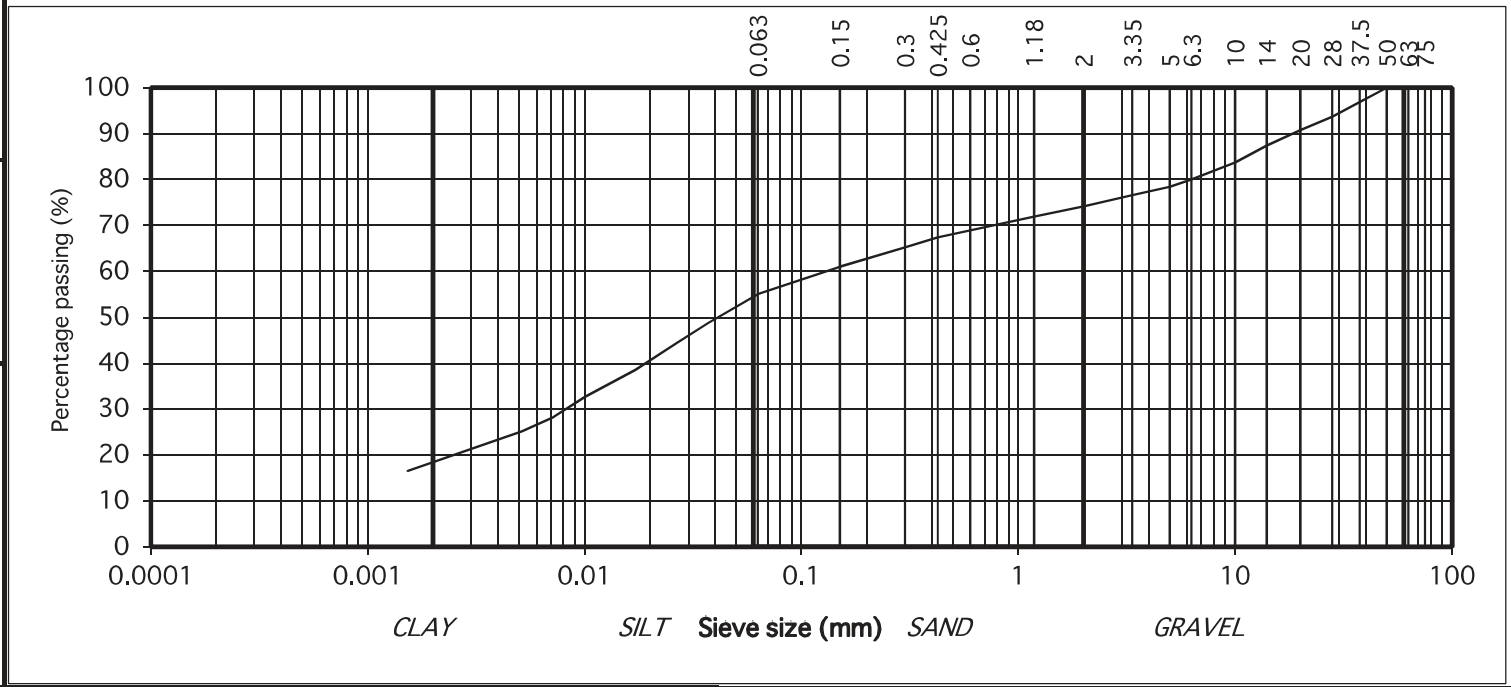
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

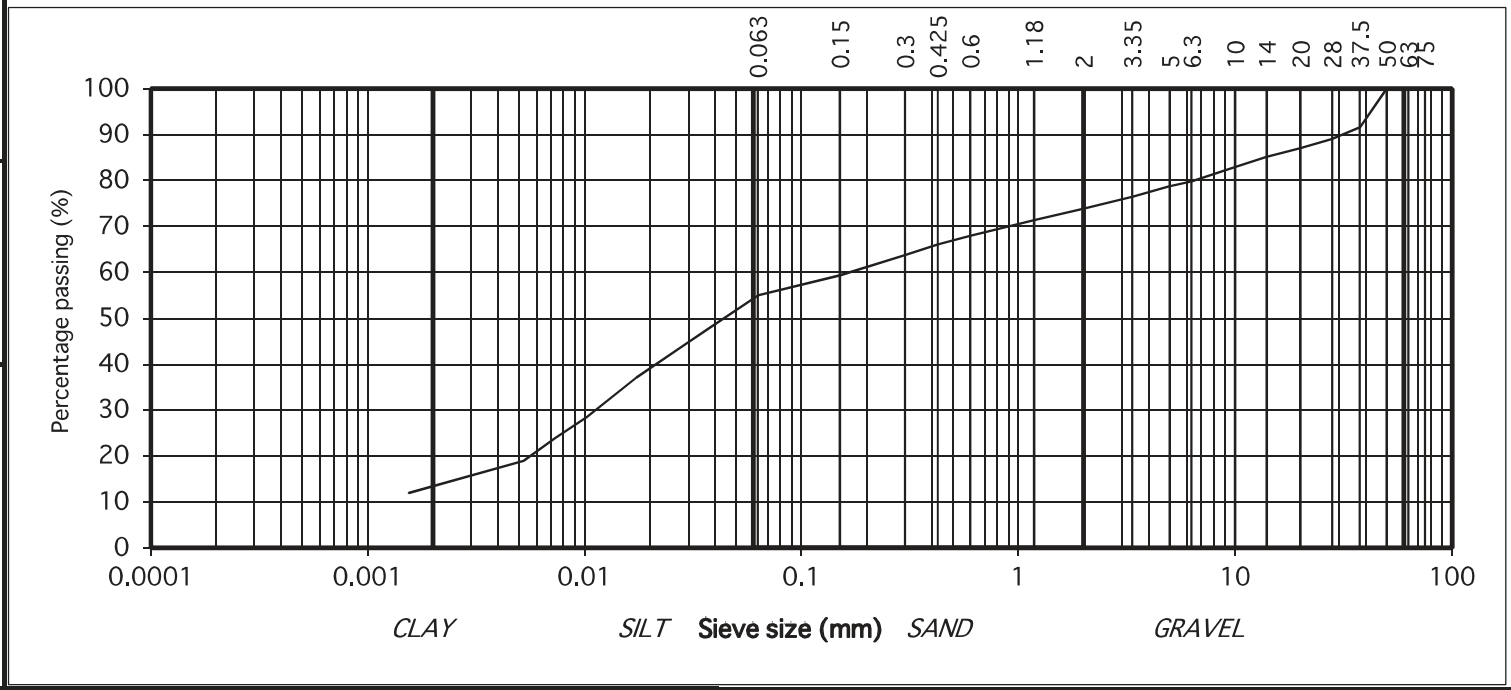
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	92	
28	89	
20	87	
14	85	
10	83	
6.3	80	
5	79	
3.35	76	
2	74	
1.18	71	SAND
0.6	68	
0.425	66	
0.3	64	
0.15	59	
0.063	55	SILT/CLAY
0.037	48	
0.027	43	
0.017	37	
0.010	28	
0.007	24	
0.005	19	
0.002	12	

Contract No.	23560	Report No.	R141701	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149101			
Sample No.*	179102	Lab. Sample No.		A22/6576
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	85	
50	85	GRAVEL
37.5	78	
28	78	
20	75	
14	69	
10	65	
6.3	61	
5	59	
3.35	56	
2	51	
1.18	47	SAND
0.6	42	
0.425	40	
0.3	37	
0.15	30	
0.063	22	SILT/CLAY
0.038	18	
0.027	16	
0.017	14	
0.010	13	
0.007	11	
0.005	9	
0.002	7	

Contract No.	23560	Report No.	R138497
Contract Name:	WSP - Lot 3		
BH/TP* :	BH149101		
Sample No.*	179104	Lab. Sample No.	A22/4096
Sample Type:	B		
Depth* (m)	3.00	Customer:	Ervia
Date Received	14/07/2022	Date Testing started	14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles		
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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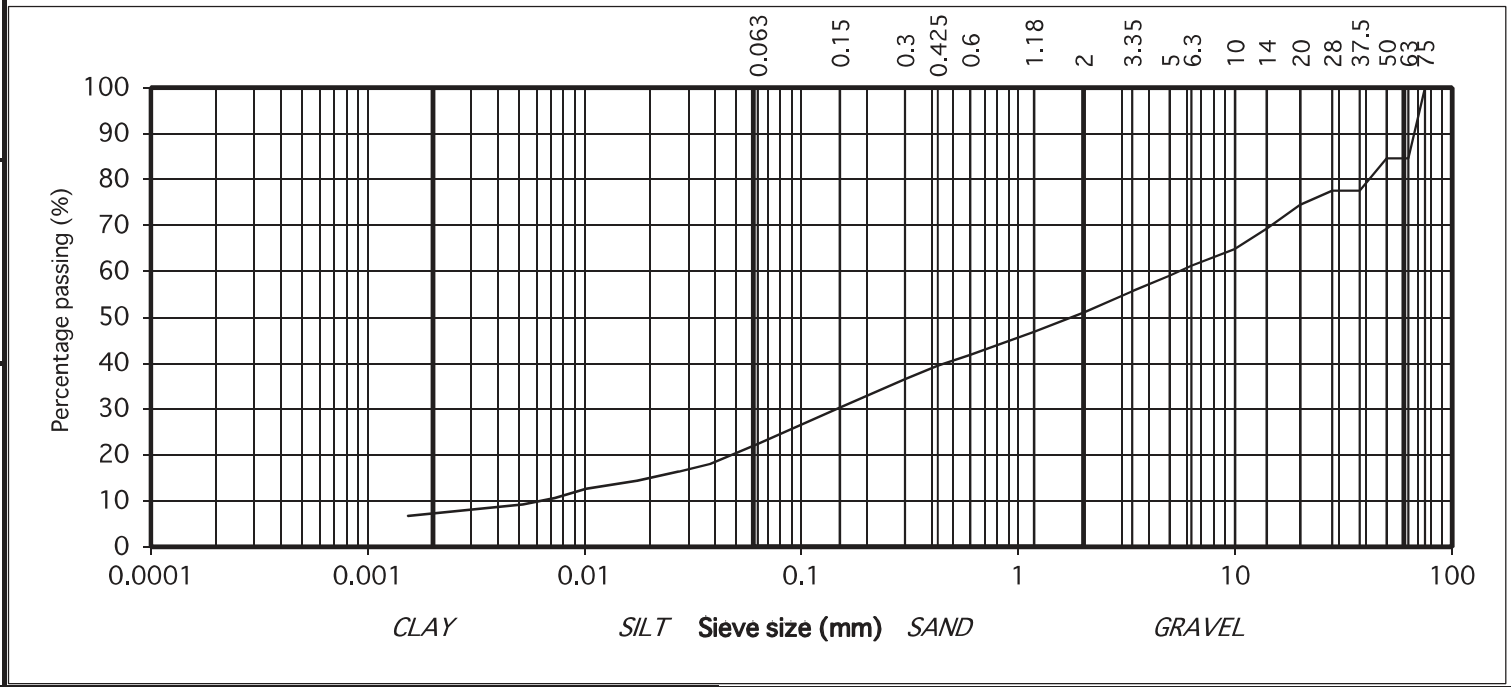

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	93	
20	82	
14	79	
10	74	
6.3	68	
5	66	
3.35	63	
2	57	
1.18	51	SAND
0.6	45	
0.425	43	
0.3	40	
0.15	35	
0.063	28	SILT/CLAY
0.038	22	
0.027	20	
0.017	17	
0.010	15	
0.007	14	
0.005	12	
0.002	10	

Contract No.	23560	Report No.	R138498	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149101			
Sample No.*	179105	Lab. Sample No.		A22/4097
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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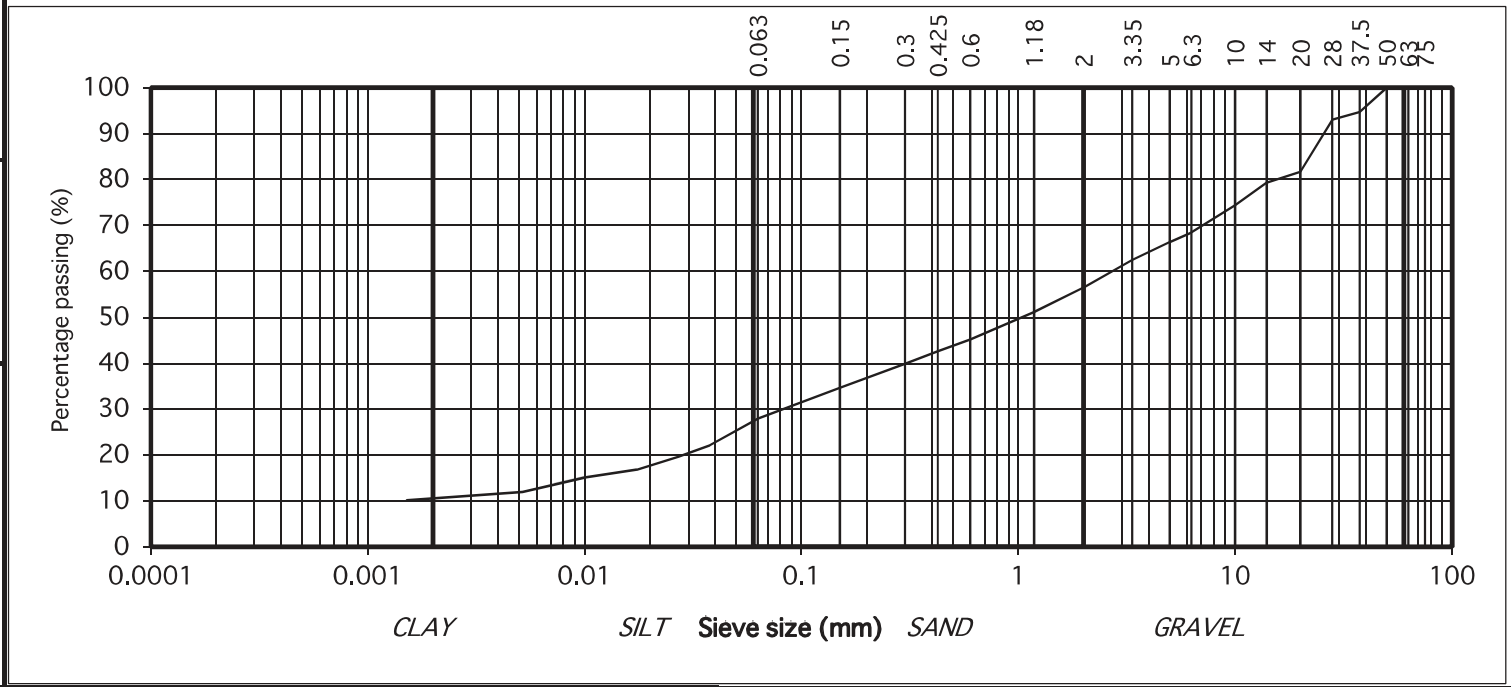

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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

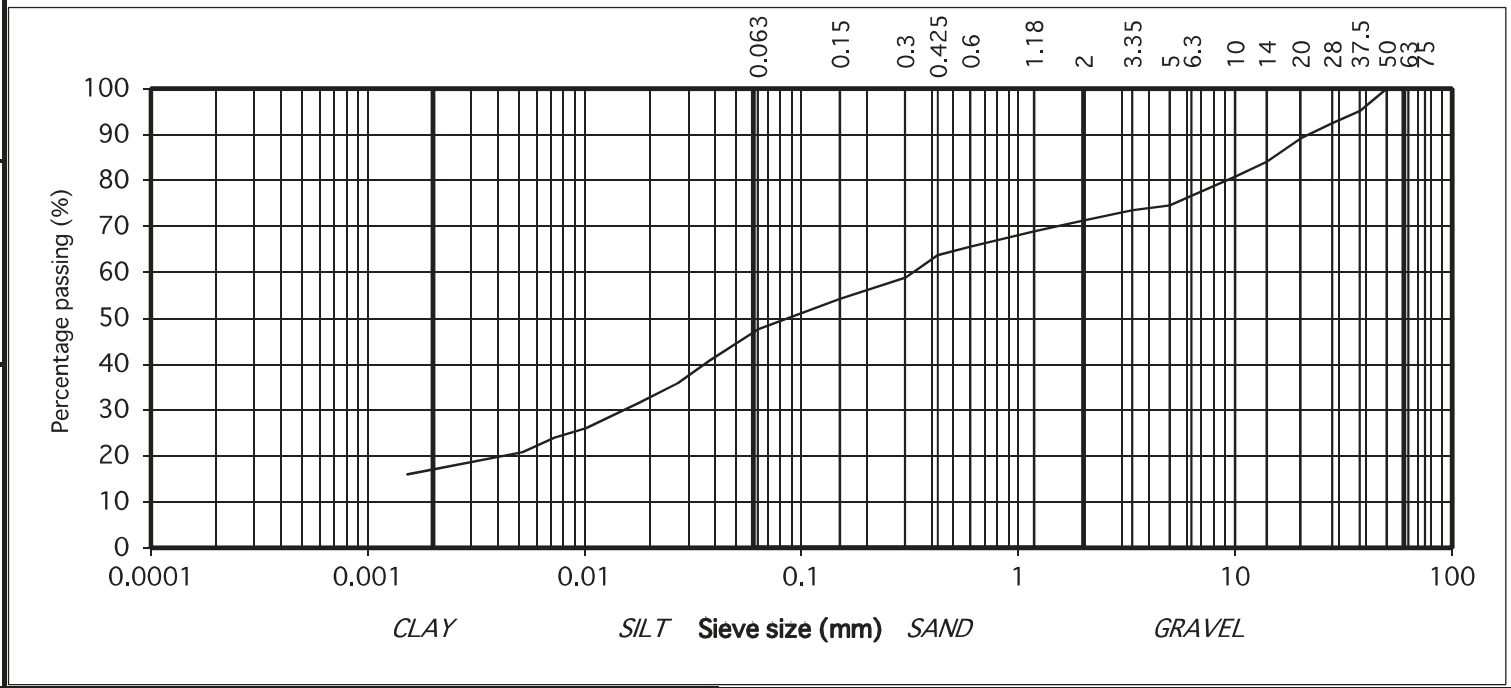
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	93	
20	89	
14	84	
10	81	
6.3	77	
5	75	
3.35	74	
2	71	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	59	
0.15	54	
0.063	48	SILT/CLAY
0.037	41	
0.027	36	
0.017	31	
0.010	26	
0.007	24	
0.005	21	
0.002	16	

Contract No.	23560	Report No.	R141555	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149273			
Sample No.*	179107	Lab. Sample No.		A22/6466
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	09/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

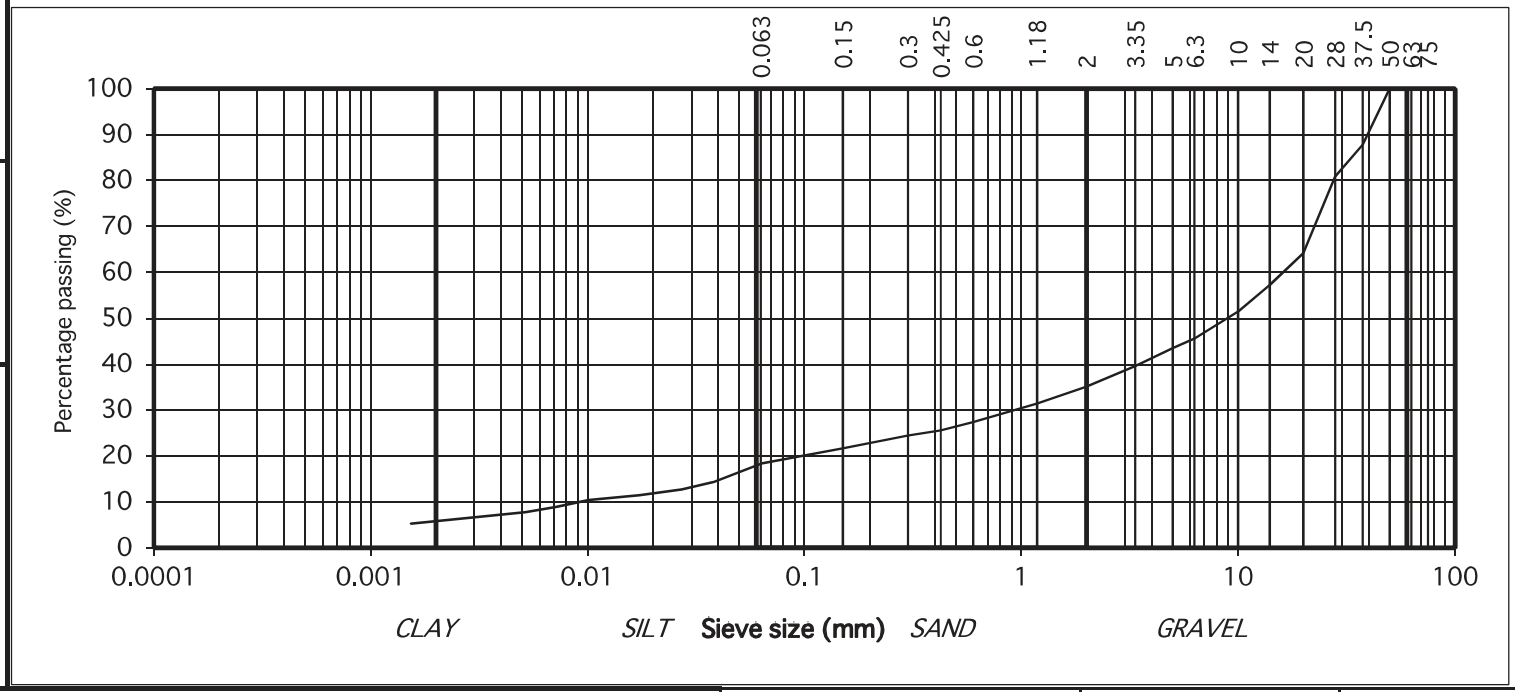
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	88	
28	81	
20	64	
14	57	
10	51	
6.3	46	
5	44	
3.35	40	
2	35	
1.18	31	SAND
0.6	27	
0.425	26	
0.3	24	
0.15	22	
0.063	18	SILT/CLAY
0.038	14	
0.027	13	
0.017	12	
0.010	10	
0.007	9	
0.005	8	
0.002	5	

Contract No.	23560	Report No.	R141679
Contract Name:	WSP - Lot 3		
BH/TP* :	BH149273		
Sample No.*	179109	Lab. Sample No.	A22/6465
Sample Type:	B		
Depth* (m)	2.00	Customer:	Ervia
Date Received	25/11/2022	Date Testing started	25/11/2022
Description:	Brown clayey/silty, sandy, GRAVEL		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	20/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	89	
50	89	GRAVEL
37.5	86	
28	86	
20	82	
14	80	
10	77	
6.3	74	
5	72	
3.35	72	
2	70	
1.18	68	SAND
0.6	65	
0.425	63	
0.3	61	
0.15	57	
0.063	49	SILT/CLAY
0.037	42	
0.027	38	
0.017	33	
0.010	29	
0.007	24	
0.005	21	
0.002	14	

Contract No.	23560	Report No.	R141428	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149406			
Sample No.*	179111	Lab. Sample No.		A22/6476
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	21/11/2022	Date Testing started		21/11/2022
Description:	Grey Brown slightly sandy, slightly gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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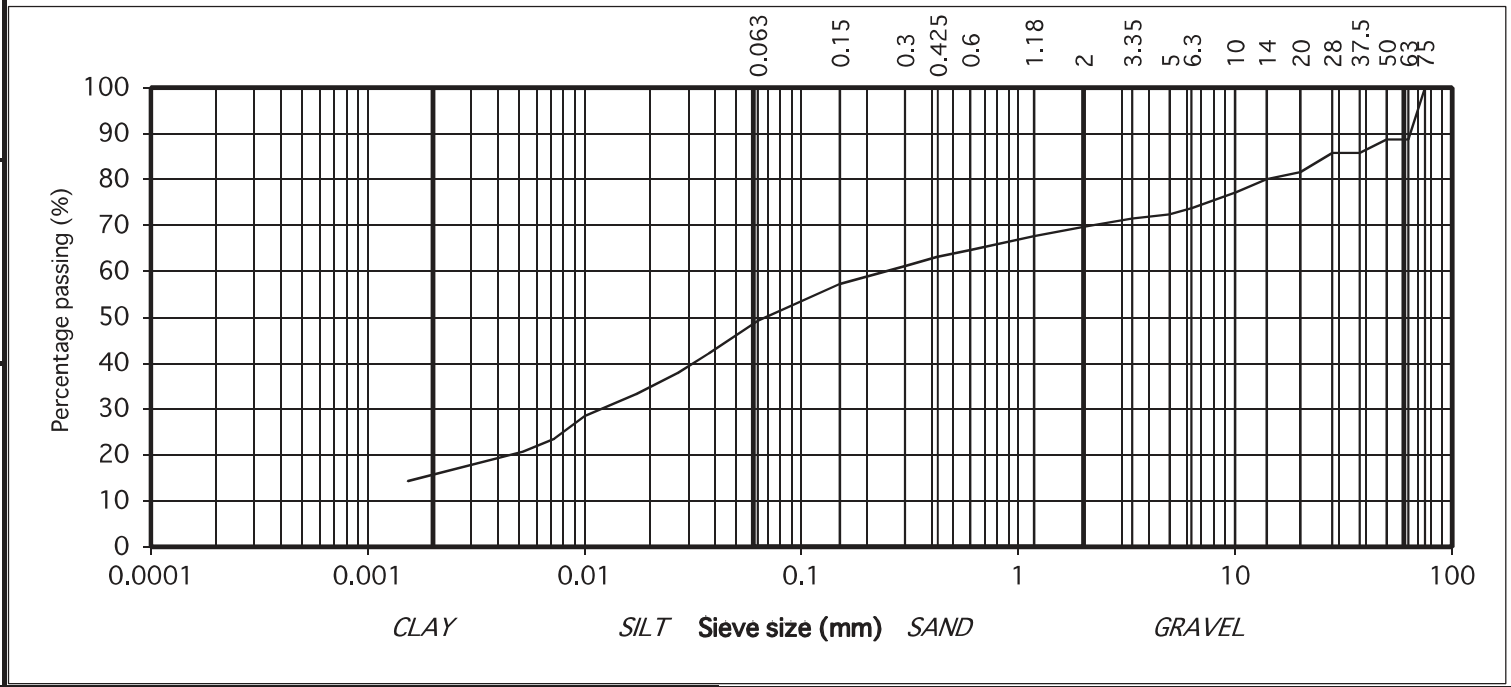


IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	09/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

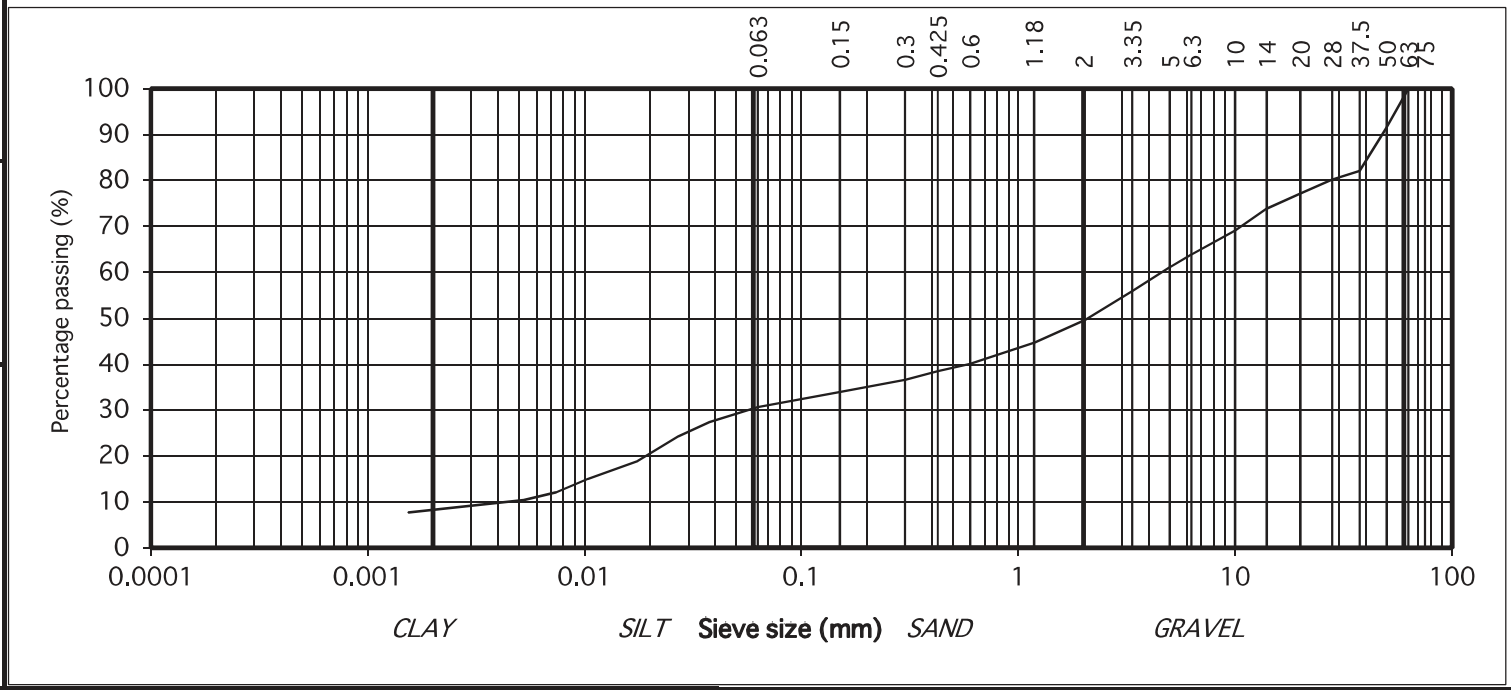
particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	82	
28	80	
20	77	
14	74	
10	69	
6.3	64	
5	61	
3.35	56	
2	50	
1.18	45	SAND
0.6	40	
0.425	39	
0.3	37	
0.15	34	
0.063	31	SILT/CLAY
0.038	27	
0.027	24	
0.018	19	
0.010	15	
0.007	12	
0.005	10	
0.002	8	

Contract No.	23560	Report No.	R141682	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149406			
Sample No.*	179112	Lab. Sample No.		A22/6477
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	25/11/2022	Date Testing started		25/11/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

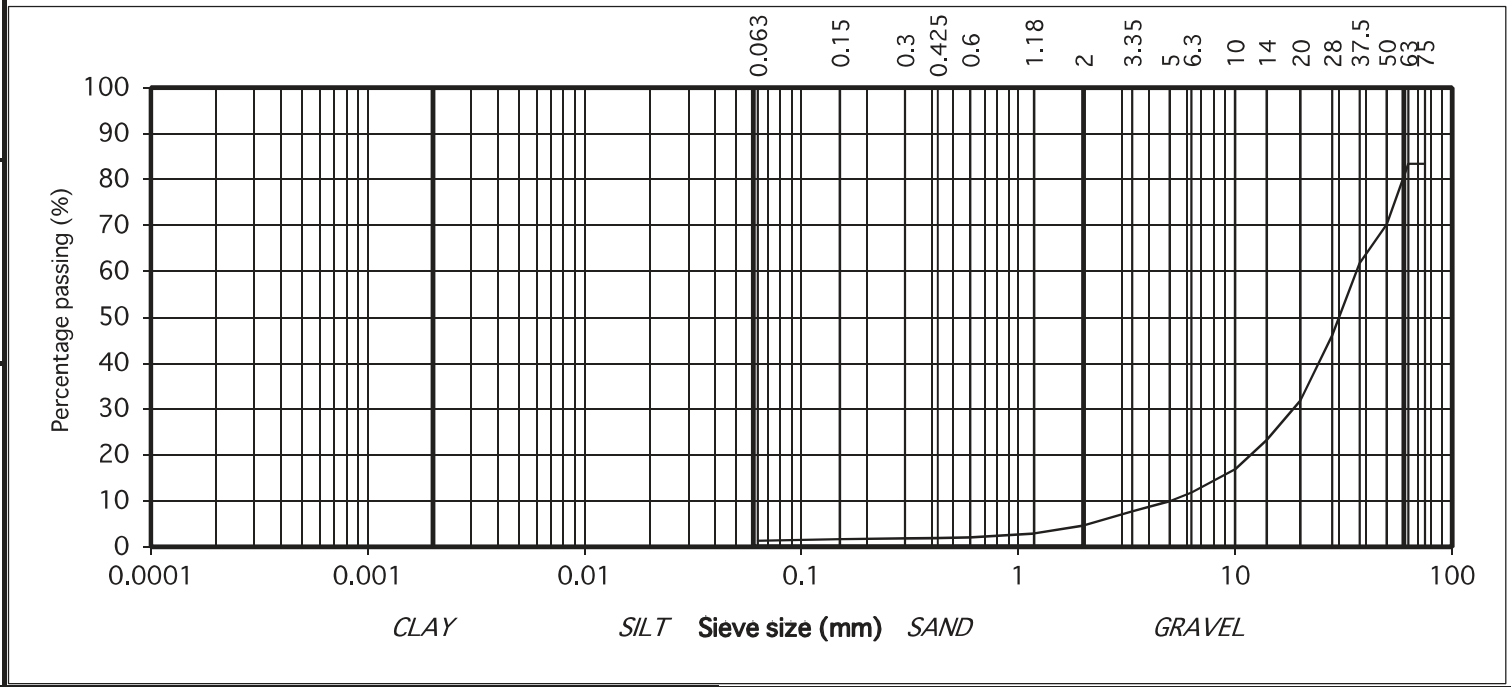
particle size	% passing	
75	83	COBBLES
63	83	
50	70	GRAVEL
37.5	62	
28	46	
20	32	
14	23	
10	17	
6.3	12	
5	10	
3.35	8	
2	5	
1.18	3	SAND
0.6	2	
0.425	2	
0.3	2	
0.15	2	
0.063	1	SILT/CLAY

Contract No.	23560	Report No.	R141429
Contract Name:	WSP - Lot 3		
BH/TP* :	BH149406		
Sample No.*	179113	Lab. Sample No.	A22/6478
Sample Type:	B		
Depth* (m)	3.00	Customer:	Ervia
Date Received	23/11/2022	Date Testing started	23/11/2022
Description:	Grey Brown slightly clayey/silty, slightly sandy, GRAVEL with some cobbles		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

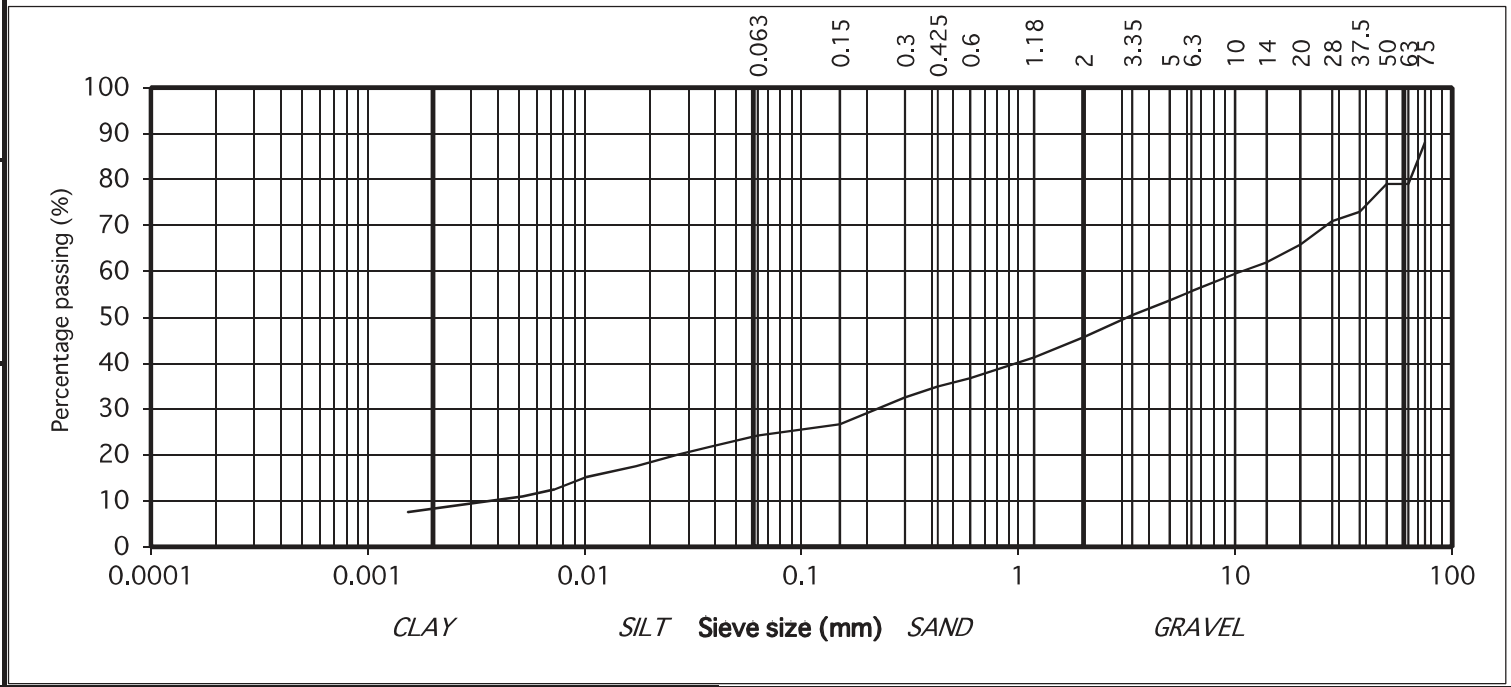
particle size	% passing	
75	88	COBBLES
63	79	
50	79	GRAVEL
37.5	73	
28	71	
20	66	
14	62	
10	60	
6.3	56	
5	54	
3.35	50	
2	46	
1.18	41	SAND
0.6	37	
0.425	35	
0.3	33	
0.15	27	
0.063	24	SILT/CLAY
0.037	22	
0.027	20	
0.017	18	
0.010	15	
0.007	13	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R141430	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149804			
Sample No.*	179116	Lab. Sample No.		A22/6482
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	89	
20	83	
14	75	
10	69	
6.3	64	
5	62	
3.35	58	
2	54	
1.18	50	SAND
0.6	46	
0.425	44	
0.3	42	
0.15	38	
0.063	34	SILT/CLAY
0.038	30	
0.027	27	
0.017	24	
0.010	20	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R141684	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH149804			
Sample No.*	179118	Lab. Sample No.		A22/6484
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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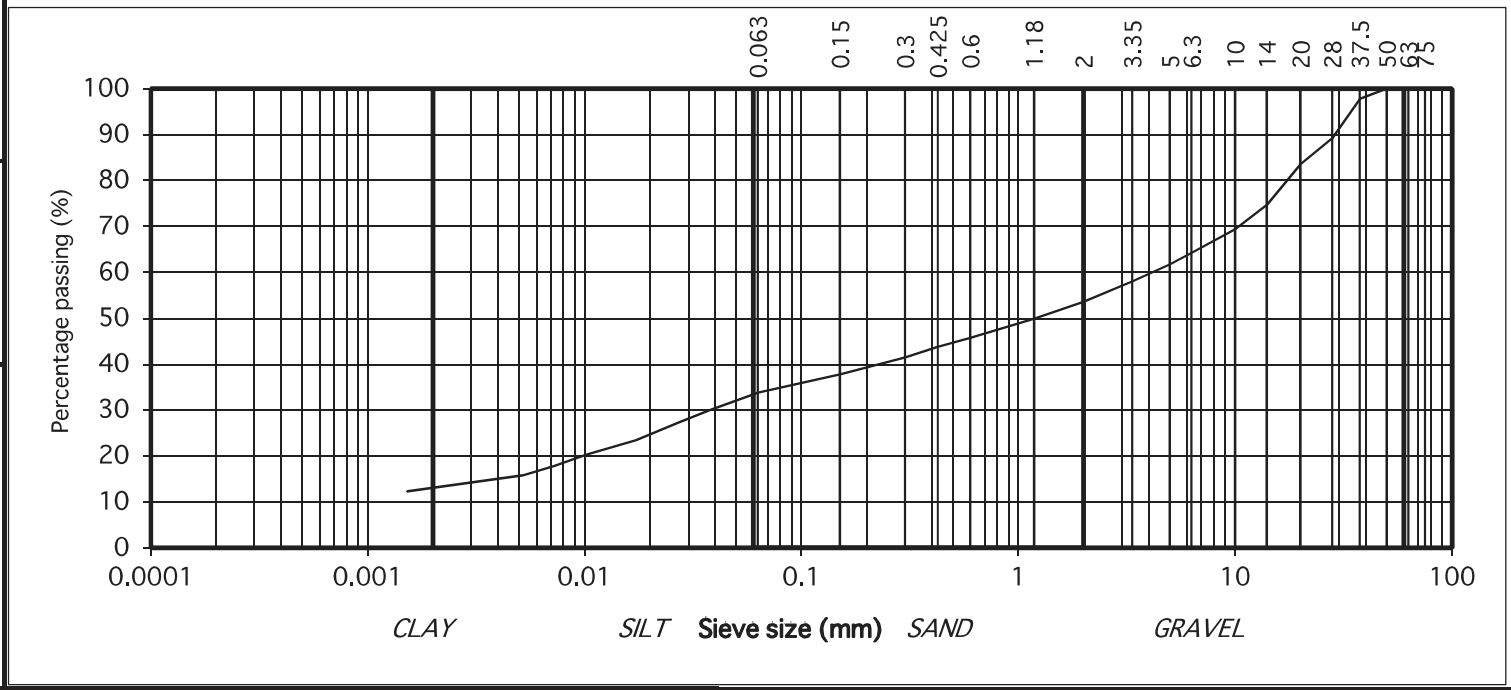
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	93	
28	91	
20	88	
14	86	
10	85	
6.3	83	
5	82	
3.35	81	
2	79	
1.18	78	SAND
0.6	76	
0.425	75	
0.3	74	
0.15	72	
0.063	68	SILT/CLAY
0.039	62	
0.028	58	
0.018	46	
0.011	37	
0.007	30	
0.005	24	
0.002	14	

Contract No.	23560	Report No.	R136478	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150204			
Sample No.*	AA179161	Lab. Sample No.		A22/2418
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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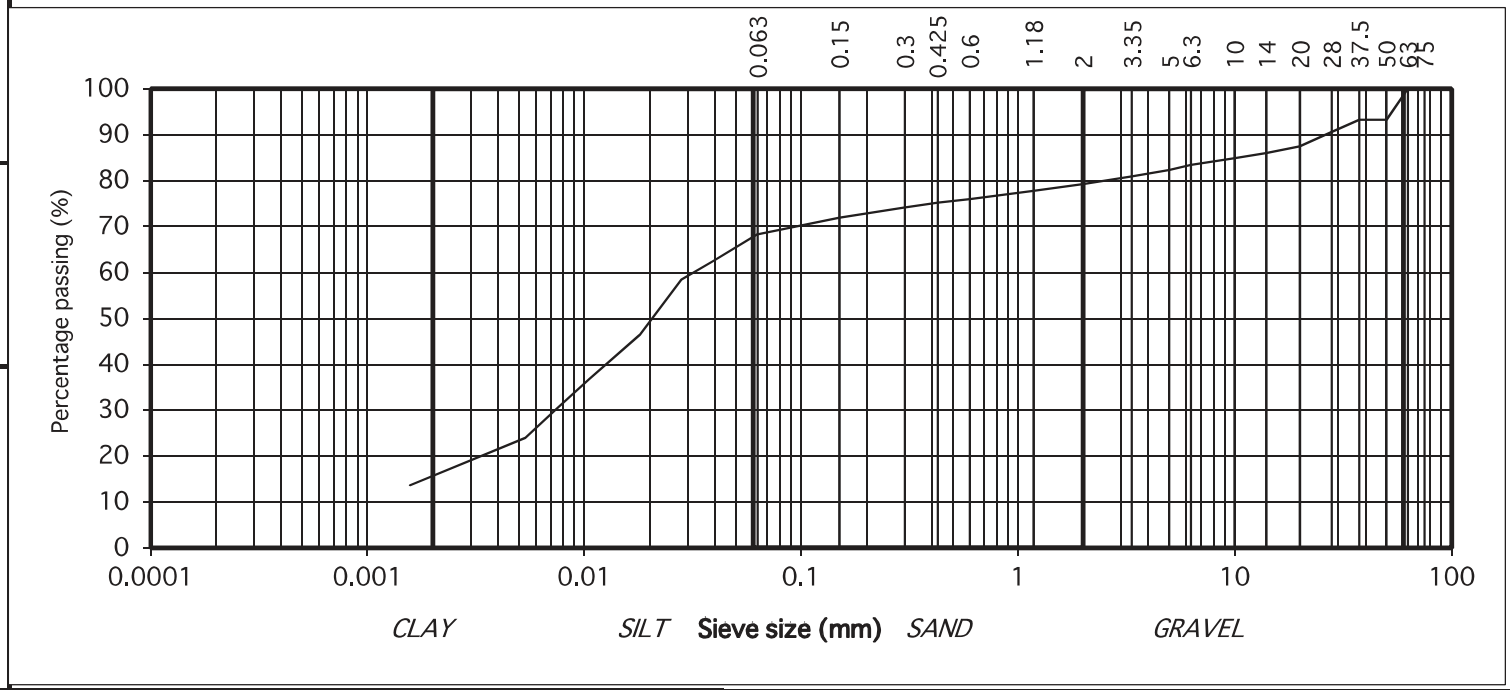

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	98	
14	95	
10	91	
6.3	85	
5	82	
3.35	76	
2	72	
1.18	68	SAND
0.6	64	
0.425	62	
0.3	58	
0.15	50	
0.063	44	SILT/CLAY
0.037	39	
0.027	36	
0.017	31	
0.010	28	
0.007	25	
0.005	21	
0.002	14	

Contract No.	23560	Report No.	R135792	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150204			
Sample No.*	AA179159	Lab. Sample No.		A22/2416
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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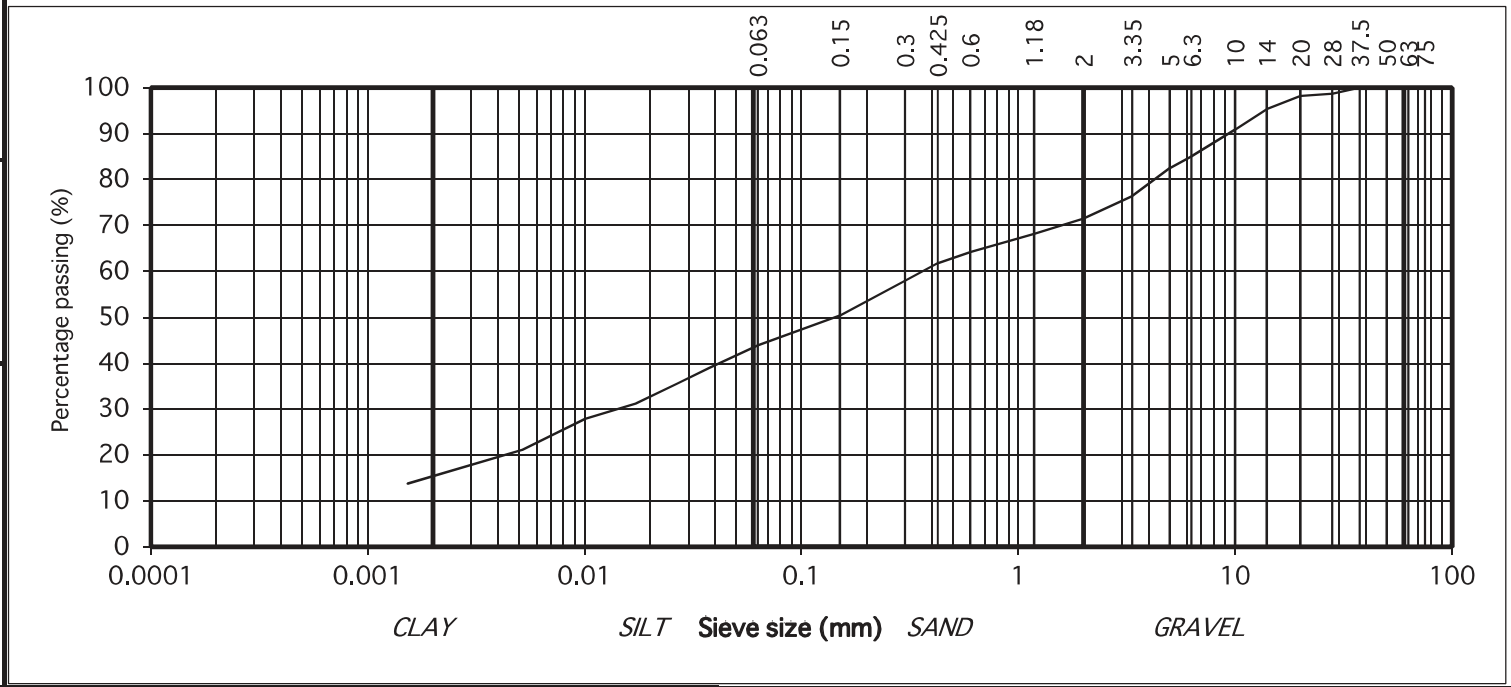
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	85	COBBLES
63	85	
50	75	GRAVEL
37.5	46	
28	22	
20	11	
14	6	
10	4	
6.3	2	
5	2	
3.35	1	
2	1	
1.18	1	SAND
0.6	0	
0.425	0	
0.3	0	
0.15	0	
0.063	0	SILT/CLAY

Contract No.	23560	Report No.	R138499
Contract Name:	WSP - Lot 3		
BH/TP* :	BH150204		
Sample No.*	AA179162	Lab. Sample No.	A22/4102
Sample Type:	B		
Depth* (m)	3.00	Customer:	Ervia
Date Received	14/07/2022	Date Testing started	14/07/2022
Description:	Brown slightly sandy, GRAVEL with some cobbles		

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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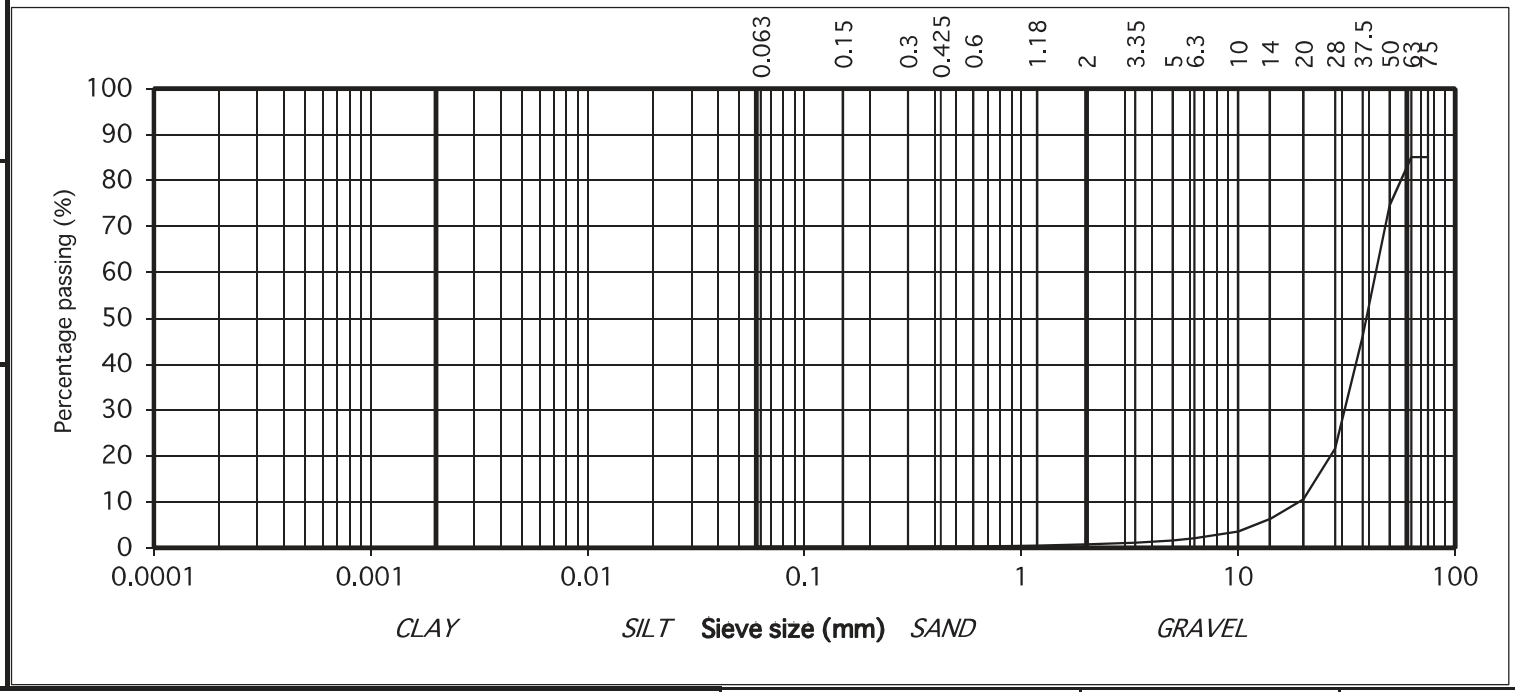

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	84	COBBLES
63	76	
50	22	GRAVEL
37.5	11	
28	5	
20	2	
14	1	
10	1	
6.3	1	
5	1	
3.35	1	
2	1	
1.18	0	SAND
0.6	0	
0.425	0	
0.3	0	
0.15	0	
0.063	0	SILT/CLAY

Contract No.	23560	Report No.	R135793	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150204			
Sample No.*	AA179163	Lab. Sample No.		A22/2419
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Grey slightly sandy, GRAVEL with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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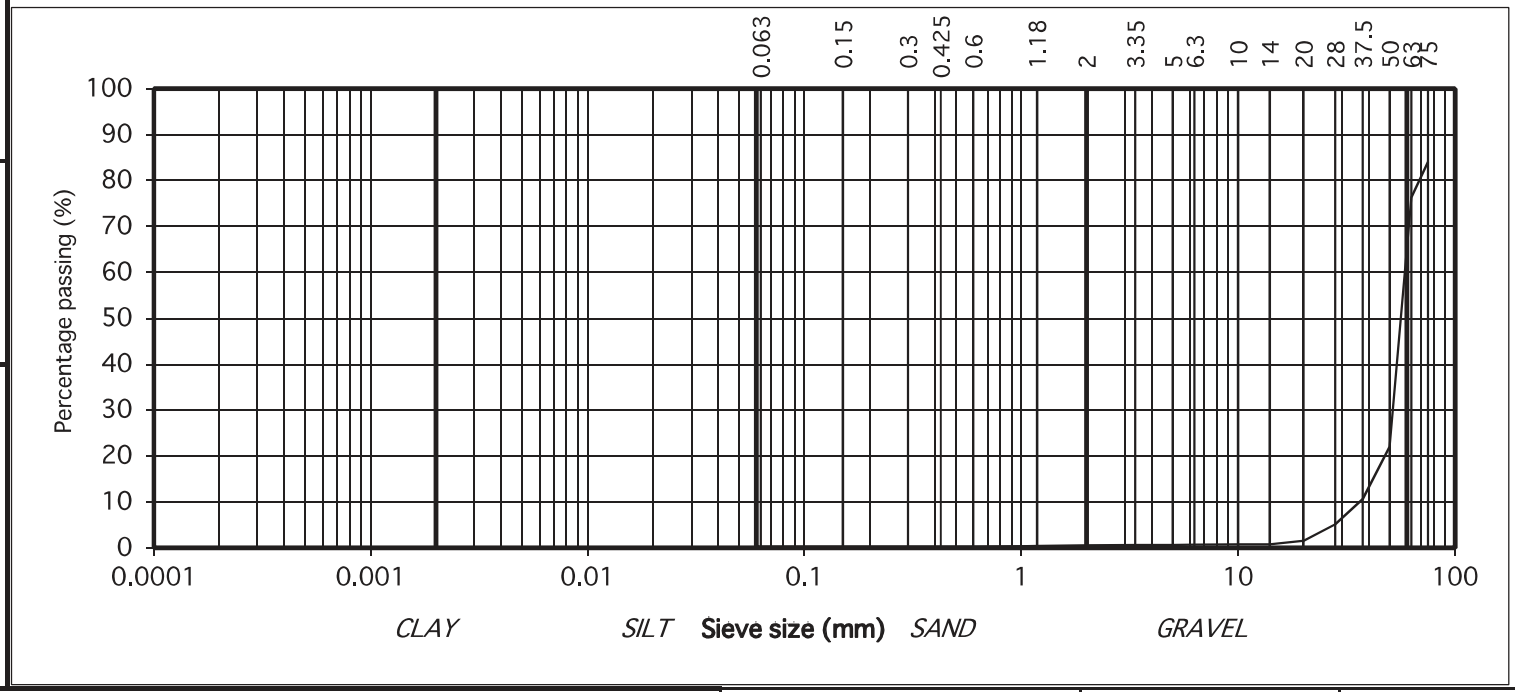
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	91	
14	89	
10	89	
6.3	85	
5	83	
3.35	79	
2	74	
1.18	69	SAND
0.6	65	
0.425	63	
0.3	61	
0.15	57	
0.063	53	SILT/CLAY
0.038	47	
0.027	41	
0.017	37	
0.010	31	
0.007	26	
0.005	22	
0.002	15	

Contract No.	23560	Report No.	R135795	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150554			
Sample No.*	AA174196	Lab. Sample No.		A22/2405
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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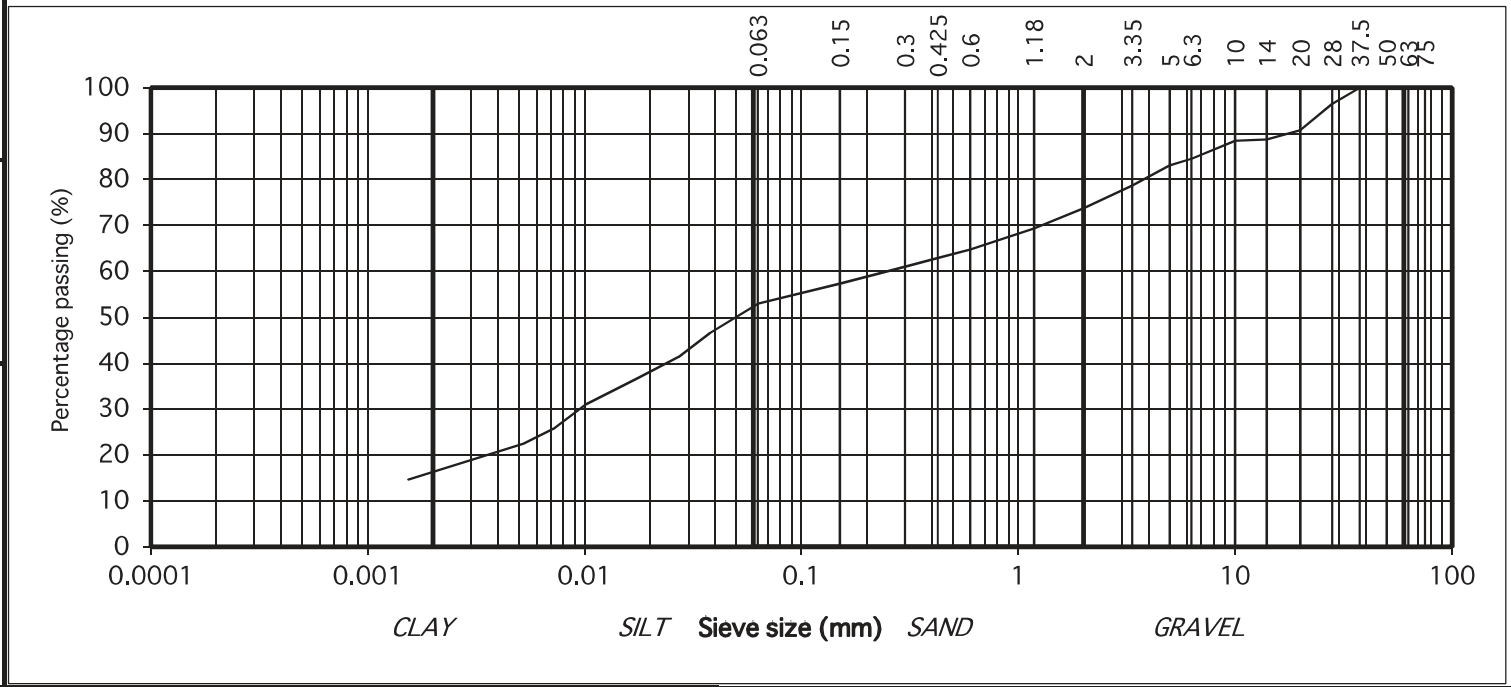

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	82	COBBLES
63	62	
50	62	GRAVEL
37.5	44	
28	34	
20	28	
14	26	
10	24	
6.3	22	
5	21	
3.35	19	
2	18	
1.18	16	SAND
0.6	15	
0.425	15	
0.3	14	
0.15	13	
0.063	11	SILT/CLAY
0.038	9	
0.027	9	
0.017	7	
0.010	6	
0.007	6	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R135799	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150291			
Sample No.*	AA174194	Lab. Sample No.		A22/2404
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Brown clayey/silty, sandy, GRAVEL with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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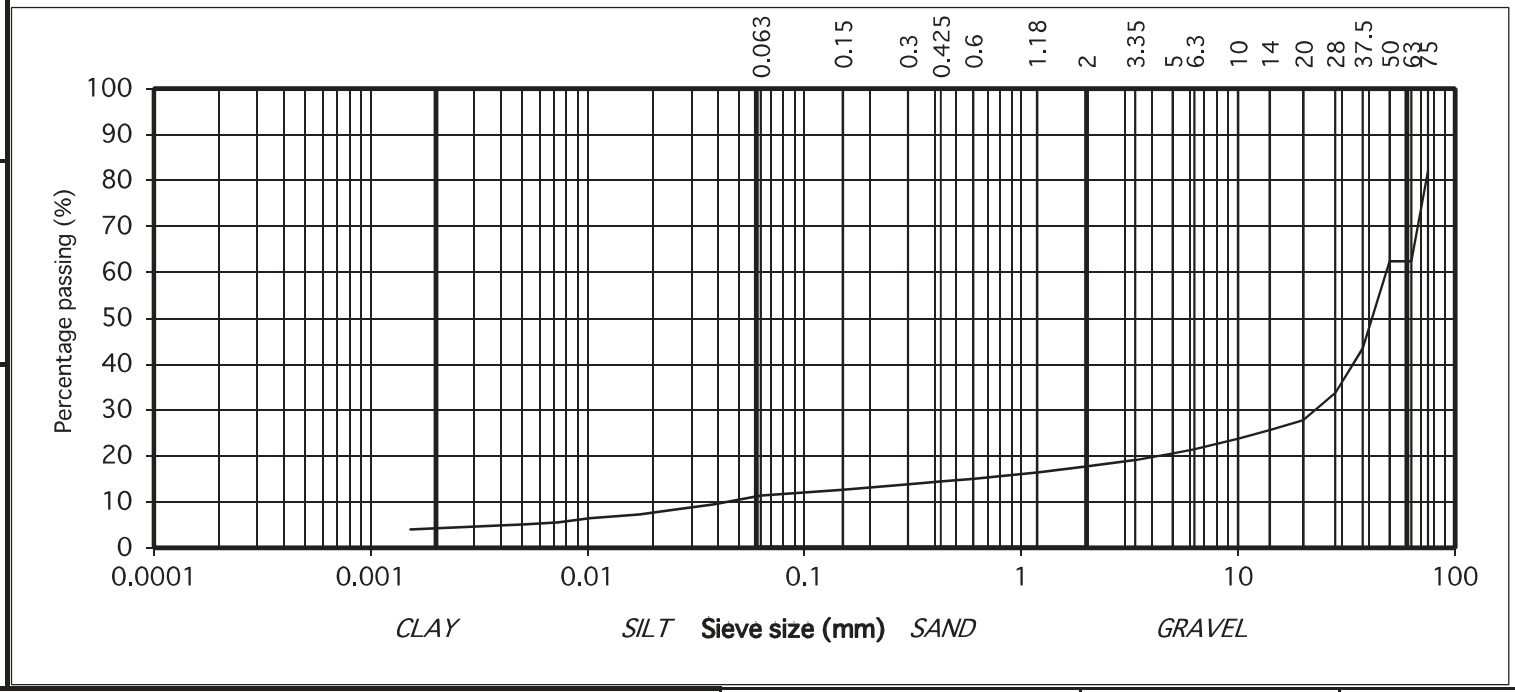

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	76	
50	64	GRAVEL
37.5	56	
28	56	
20	52	
14	49	
10	46	
6.3	43	
5	41	
3.35	38	
2	34	
1.18	31	SAND
0.6	28	
0.425	27	
0.3	25	
0.15	22	
0.063	19	SILT/CLAY
0.038	17	
0.027	15	
0.017	13	
0.010	12	
0.007	11	
0.005	9	
0.002	7	

Contract No.	23560	Report No.	R135796	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150554			
Sample No.*	AA174197	Lab. Sample No.		A22/2406
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Brown clayey/silty, sandy, GRAVEL with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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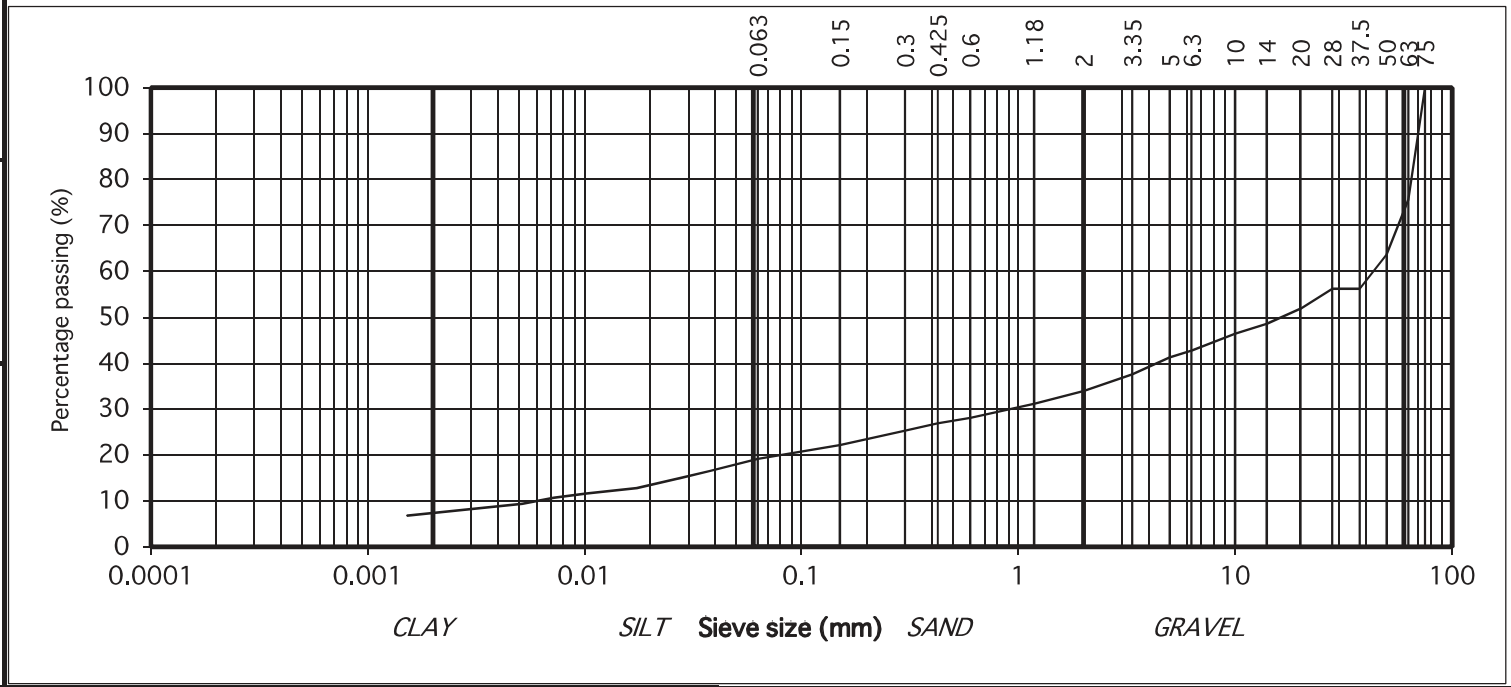
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	74	COBBLES
63	32	
50	19	GRAVEL
37.5	13	
28	8	
20	6	
14	4	
10	3	
6.3	3	
5	3	
3.35	3	
2	2	
1.18	2	SAND
0.6	2	
0.425	2	
0.3	2	
0.15	1	
0.063	1	SILT/CLAY

Contract No.	23560	Report No.	R135797	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150554			
Sample No.*	AA174198	Lab. Sample No.		A22/2407
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	COBBLES with brown slightly clayey/silty, slightly sandy, gravel			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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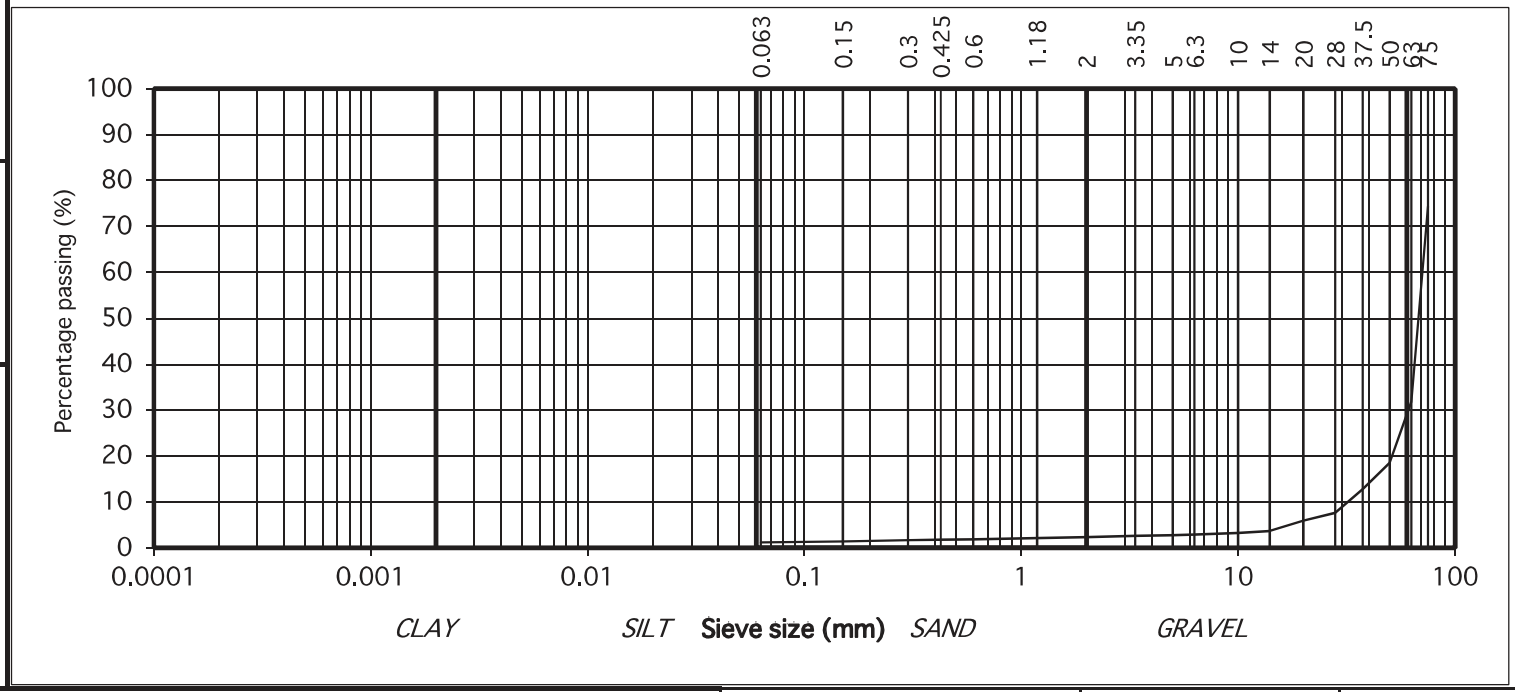
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

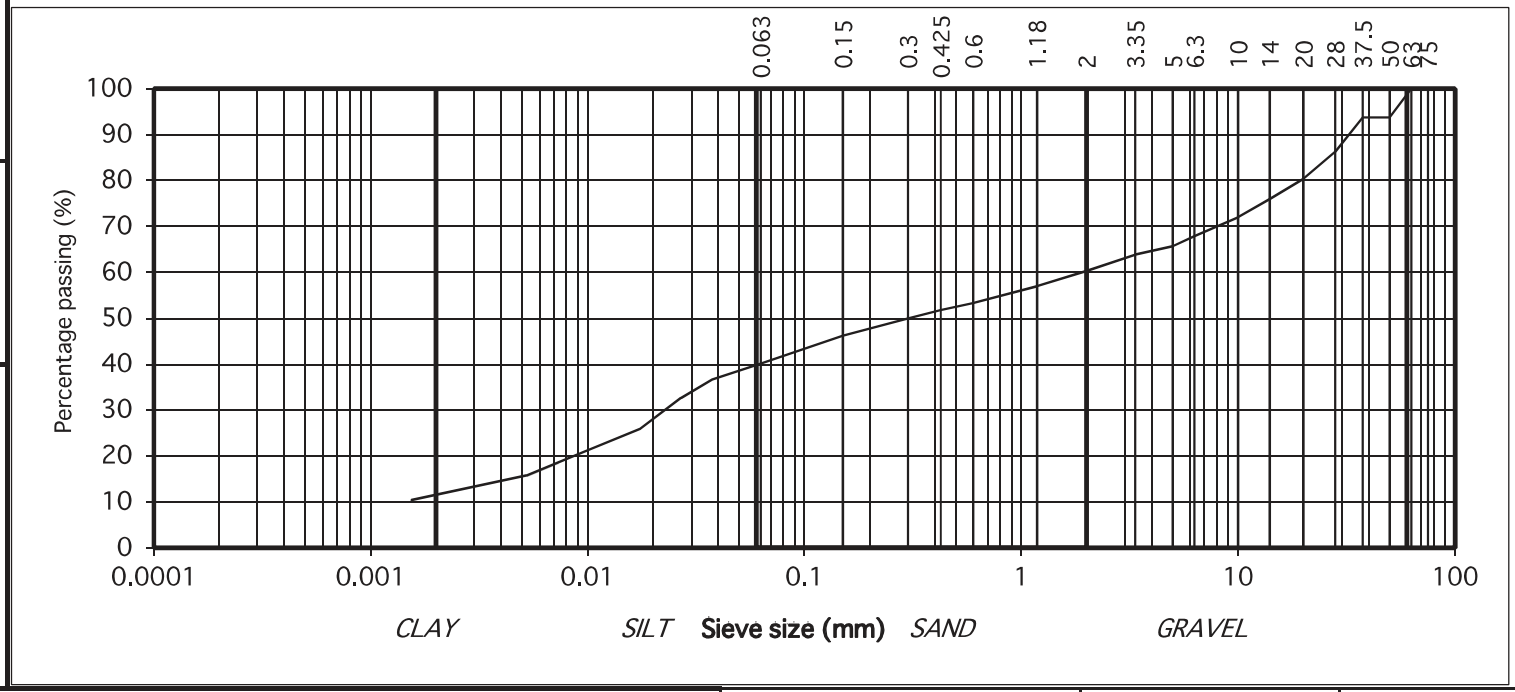
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	94	
28	86	
20	80	
14	76	
10	72	
6.3	68	
5	66	
3.35	64	
2	60	
1.18	57	SAND
0.6	53	
0.425	52	
0.3	50	
0.15	46	
0.063	40	SILT/CLAY
0.037	37	
0.027	33	
0.017	26	
0.010	22	
0.007	19	
0.005	16	
0.002	10	

Contract No.	23560	Report No.	R141704	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150554			
Sample No.*	174200	Lab. Sample No.		A22/6593
Sample Type:	B			
Depth* (m)	5.00	Customer:	Ervia	
Date Received	28/11/2022	Date Testing started		28/11/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	89	
50	89	GRAVEL
37.5	79	
28	77	
20	74	
14	67	
10	63	
6.3	60	
5	58	
3.35	54	
2	50	
1.18	47	SAND
0.6	43	
0.425	39	
0.3	37	
0.15	34	
0.063	31	SILT/CLAY
0.038	26	
0.027	23	
0.017	20	
0.010	18	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R141680	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150888			
Sample No.*	173318	Lab. Sample No.		A22/6468
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	18/01/2022	Date Testing started		18/01/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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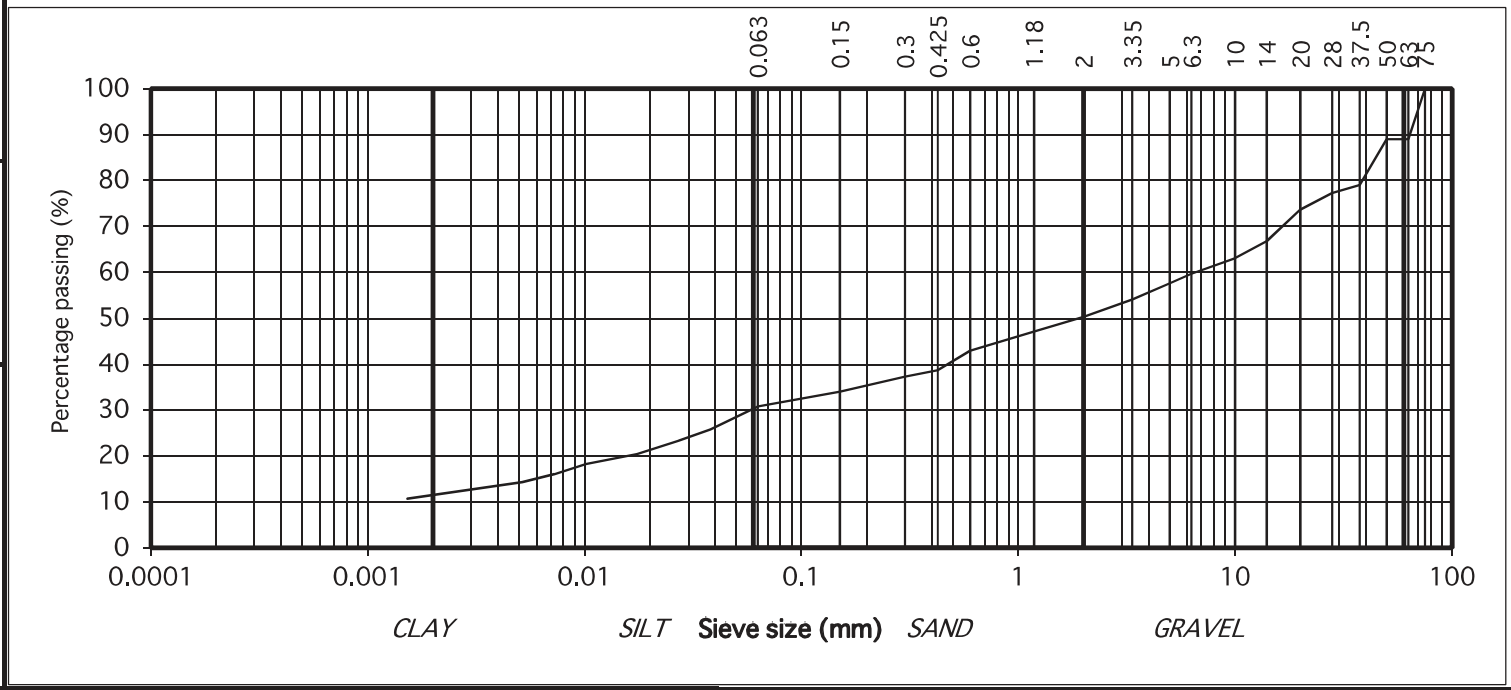

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

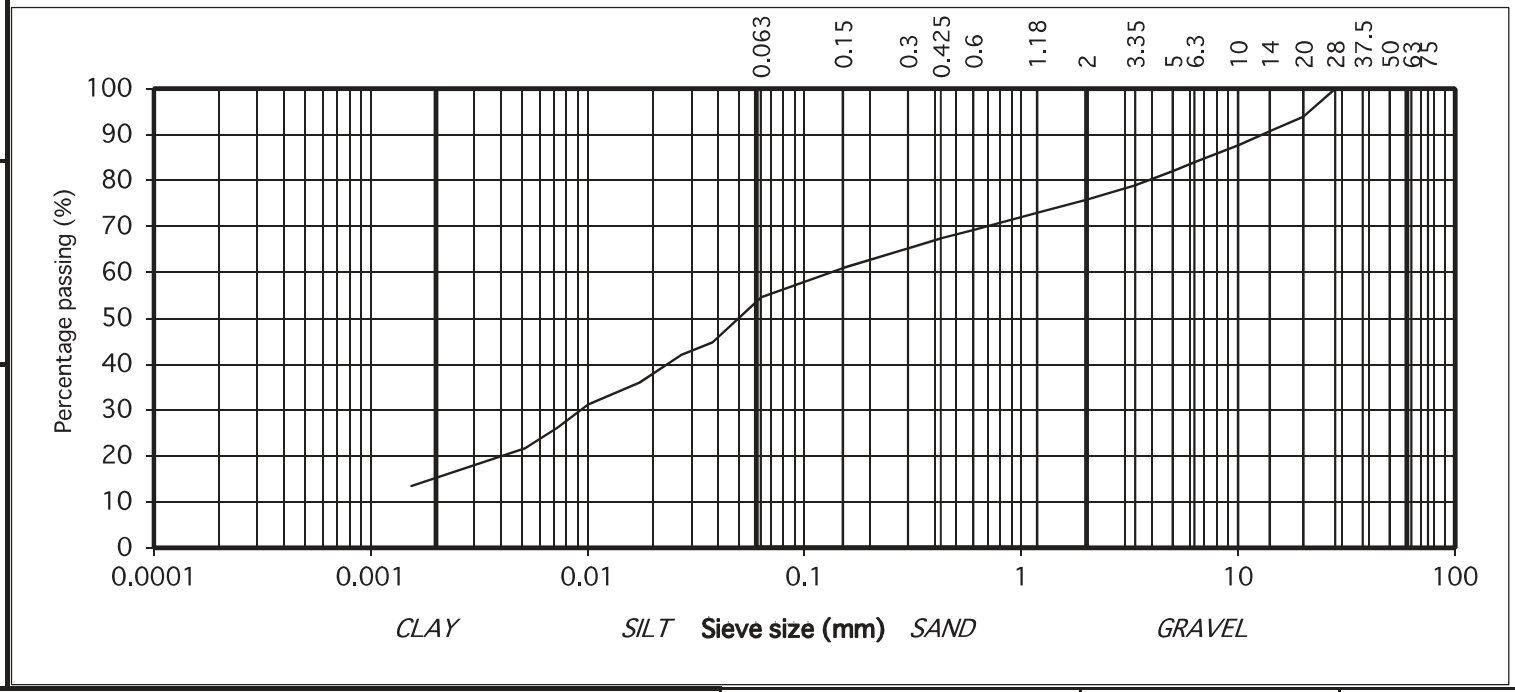
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	94	
14	91	
10	88	
6.3	84	
5	82	
3.35	79	
2	76	
1.18	73	SAND
0.6	69	
0.425	67	
0.3	65	
0.15	61	
0.063	55	SILT/CLAY
0.038	45	
0.027	42	
0.017	36	
0.010	31	
0.007	26	
0.005	22	
0.002	13	

Contract No.	23560	Report No.	R138465	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151188			
Sample No.*	AA173313	Lab. Sample No.		A22/3933
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

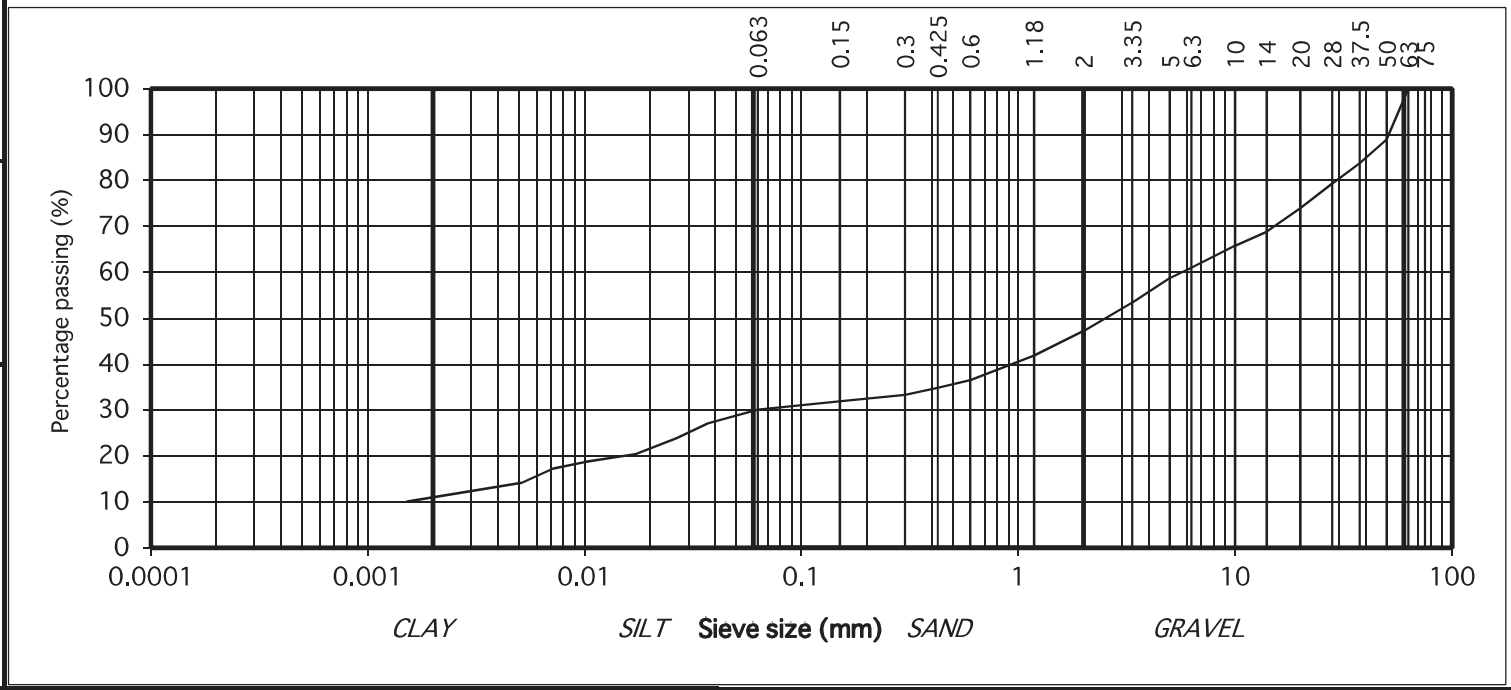
particle size	% passing	
75	100	COBBLES
63	100	
50	89	GRAVEL
37.5	84	
28	79	
20	74	
14	69	
10	66	
6.3	61	
5	59	
3.35	53	
2	47	
1.18	42	SAND
0.6	37	
0.425	35	
0.3	33	
0.15	32	
0.063	30	SILT/CLAY
0.037	27	
0.027	24	
0.017	20	
0.010	19	
0.007	17	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R141556	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH150888			
Sample No.*	173320	Lab. Sample No.		A22/6469
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	21/11/2022	Date Testing started		21/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

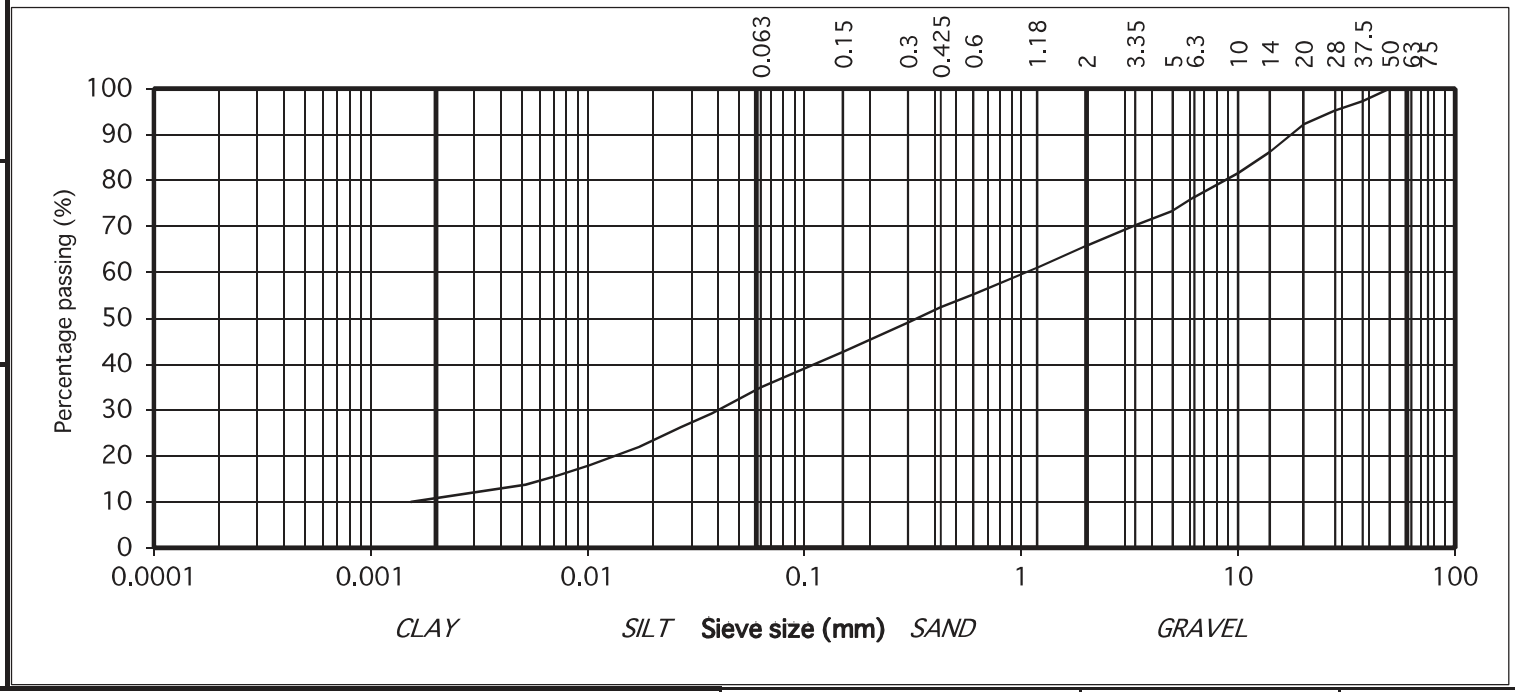
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	95	
20	92	
14	86	
10	82	
6.3	76	
5	73	
3.35	70	
2	66	
1.18	61	SAND
0.6	55	
0.425	52	
0.3	49	
0.15	43	
0.063	35	SILT/CLAY
0.037	29	
0.027	26	
0.017	22	
0.010	18	
0.007	16	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R138466	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151188			
Sample No.*	AA173315	Lab. Sample No.		A22/3936
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	92	
20	84	
14	80	
10	78	
6.3	75	
5	73	
3.35	69	
2	66	
1.18	63	SAND
0.6	60	
0.425	59	
0.3	55	
0.15	51	
0.063	46	SILT/CLAY
0.037	39	
0.027	35	
0.017	30	
0.010	27	
0.007	24	
0.005	21	
0.002	15	

Contract No.	23560	Report No.	R138467	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151688			
Sample No.*	AA173311	Lab. Sample No.		A22/3940
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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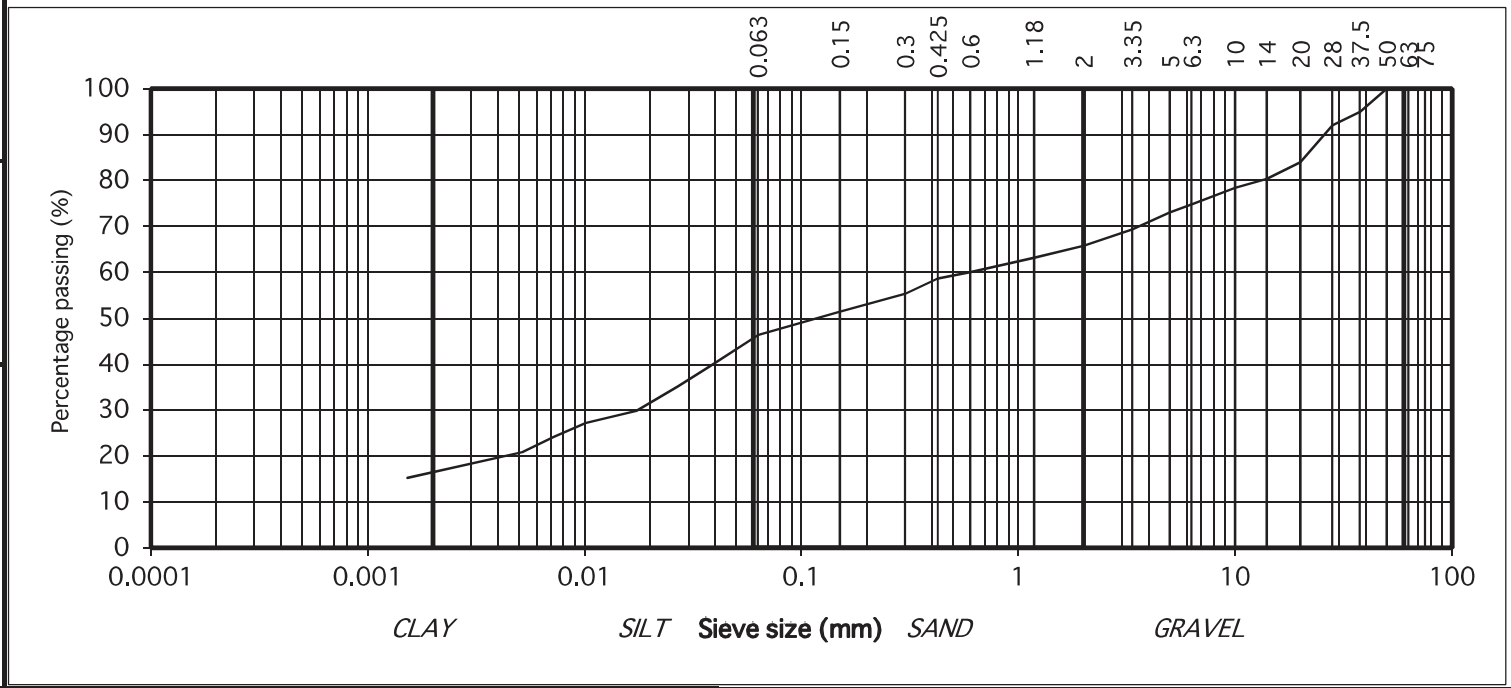
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

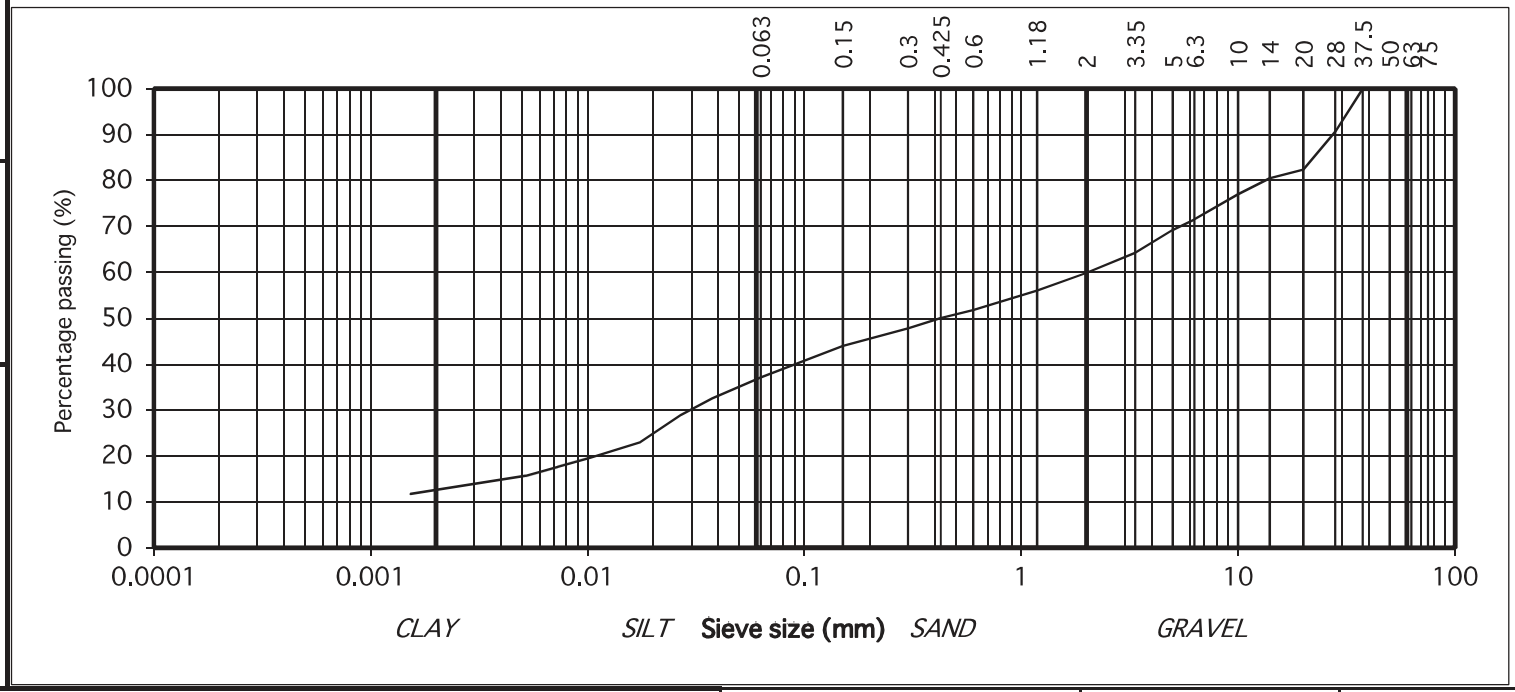
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	91	
20	82	
14	81	
10	77	
6.3	72	
5	69	
3.35	64	
2	60	
1.18	56	SAND
0.6	52	
0.425	50	
0.3	48	
0.15	44	
0.063	37	SILT/CLAY
0.037	33	
0.027	29	
0.017	23	
0.010	20	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R139274	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151688			
Sample No.*	173312	Lab. Sample No.		A22/3941
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

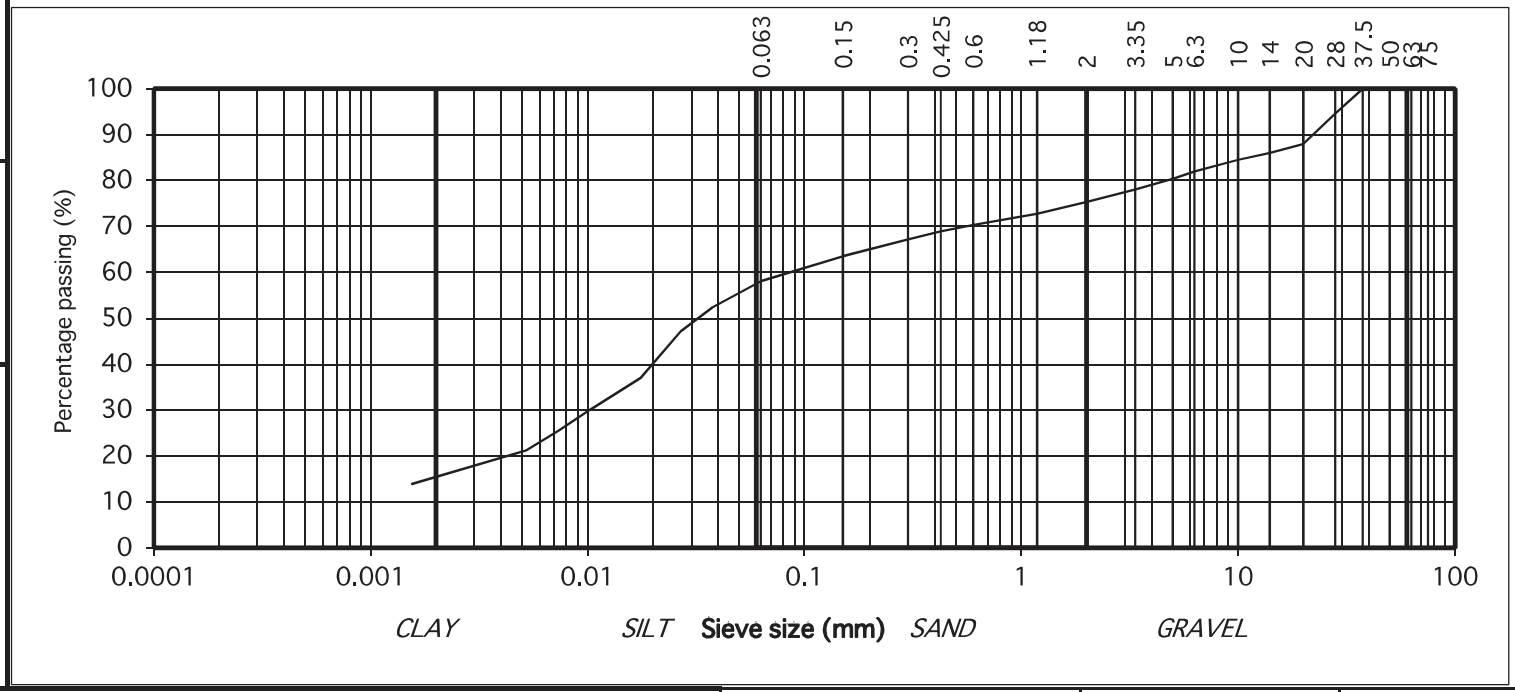
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	95	
20	88	
14	86	
10	85	
6.3	82	
5	80	
3.35	78	
2	75	
1.18	73	SAND
0.6	70	
0.425	69	
0.3	67	
0.15	64	
0.063	58	SILT/CLAY
0.038	52	
0.027	47	
0.018	37	
0.010	30	
0.007	26	
0.005	21	
0.002	14	

Contract No.	23560	Report No.	R139275	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151877			
Sample No.*	173301	Lab. Sample No.		A22/3943
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	06/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

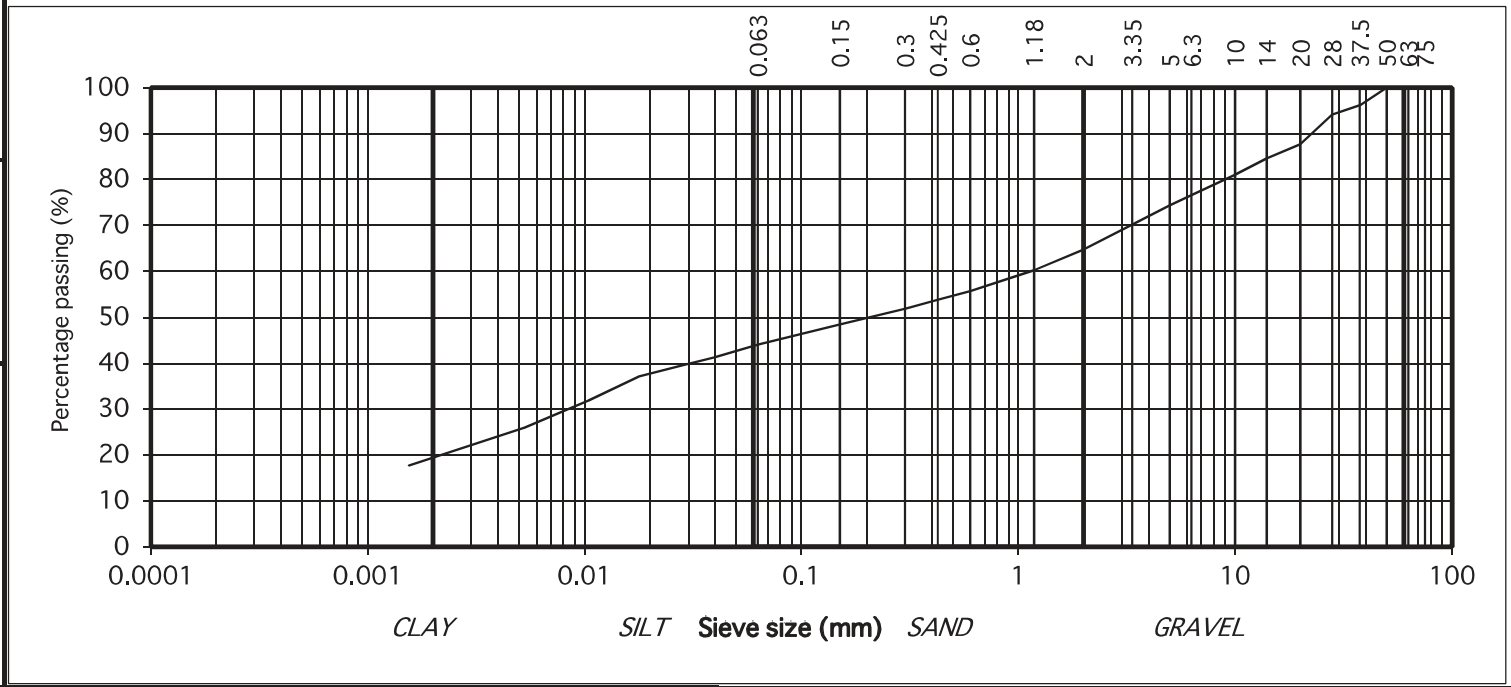
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	94	
20	88	
14	85	
10	81	
6.3	77	
5	74	
3.35	70	
2	65	
1.18	60	SAND
0.6	56	
0.425	54	
0.3	52	
0.15	48	
0.063	44	SILT/CLAY
0.040	41	
0.028	40	
0.018	37	
0.010	32	
0.007	29	
0.005	26	
0.002	18	

Contract No.	23560	Report No.	R138468	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151877			
Sample No.*	AA173304	Lab. Sample No.		A22/3945
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	19/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

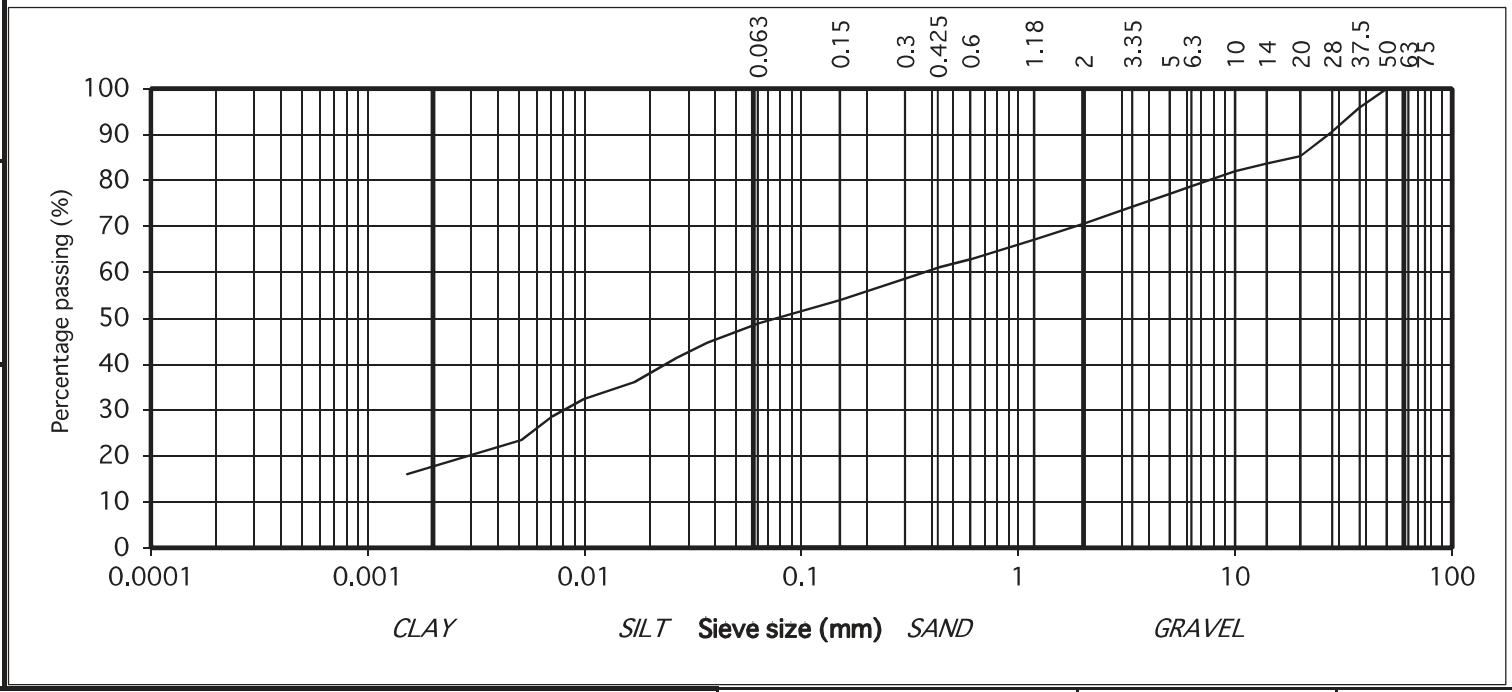
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	91	
20	85	
14	84	
10	82	
6.3	79	
5	77	
3.35	74	
2	71	
1.18	67	SAND
0.6	63	
0.425	61	
0.3	59	
0.15	54	
0.063	49	SILT/CLAY
0.037	45	
0.026	41	
0.017	36	
0.010	32	
0.007	29	
0.005	24	
0.002	16	

Contract No.	23560	Report No.	R138469	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151907			
Sample No.*	AA178040	Lab. Sample No.		A22/3947
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

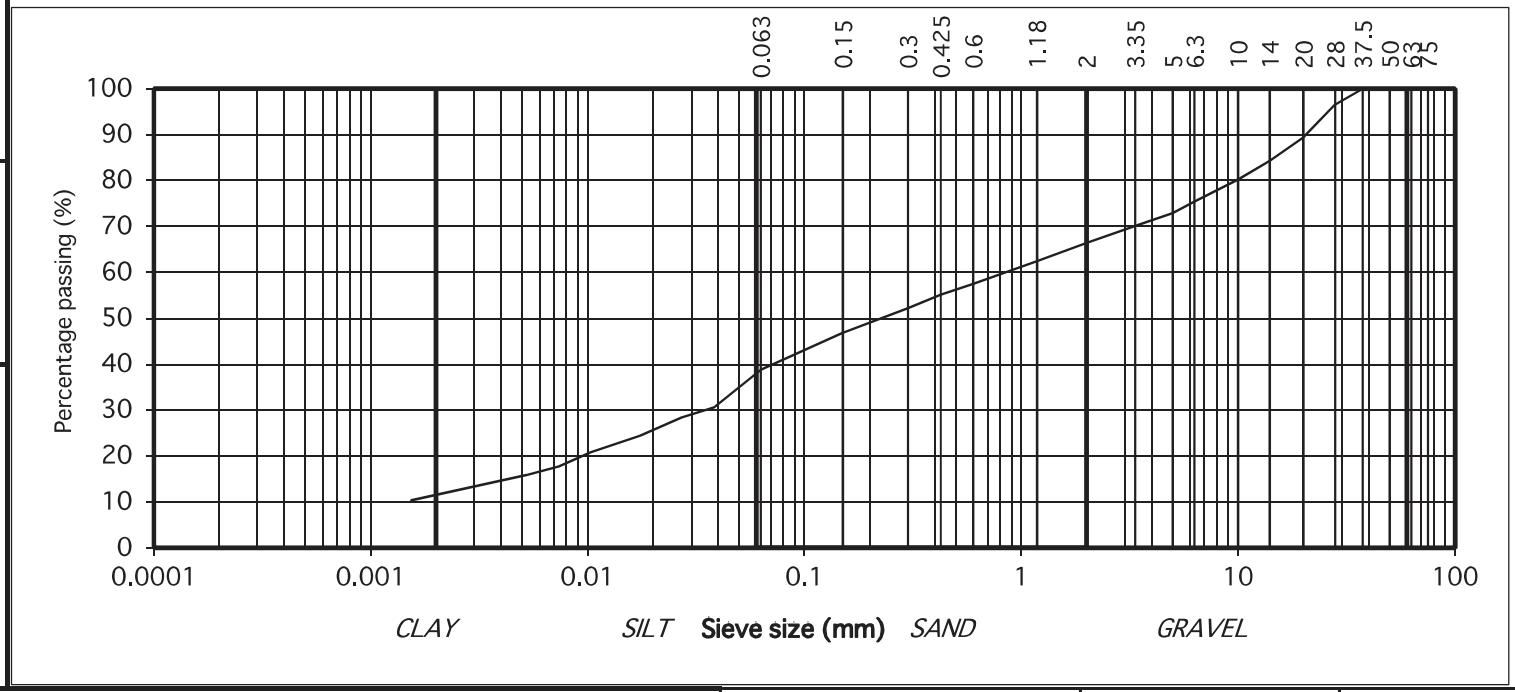
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	89	
14	84	
10	80	
6.3	75	
5	73	
3.35	70	
2	66	
1.18	63	SAND
0.6	57	
0.425	55	
0.3	52	
0.15	47	
0.063	39	SILT/CLAY
0.038	31	
0.027	28	
0.018	24	
0.010	21	
0.007	18	
0.005	16	
0.002	10	

Contract No.	23560	Report No.	R138470	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH151907			
Sample No.*	178042	Lab. Sample No.		A22/3951
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	19/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	95	
10	94	
6.3	91	
5	89	
3.35	87	
2	84	
1.18	80	SAND
0.6	77	
0.425	75	
0.3	72	
0.15	67	
0.063	59	SILT/CLAY
0.038	48	
0.027	43	
0.017	36	
0.010	31	
0.007	25	
0.005	22	
0.002	14	

Contract No.	23560	Report No.	R138471	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152124			
Sample No.*	178035	Lab. Sample No.		A22/3952
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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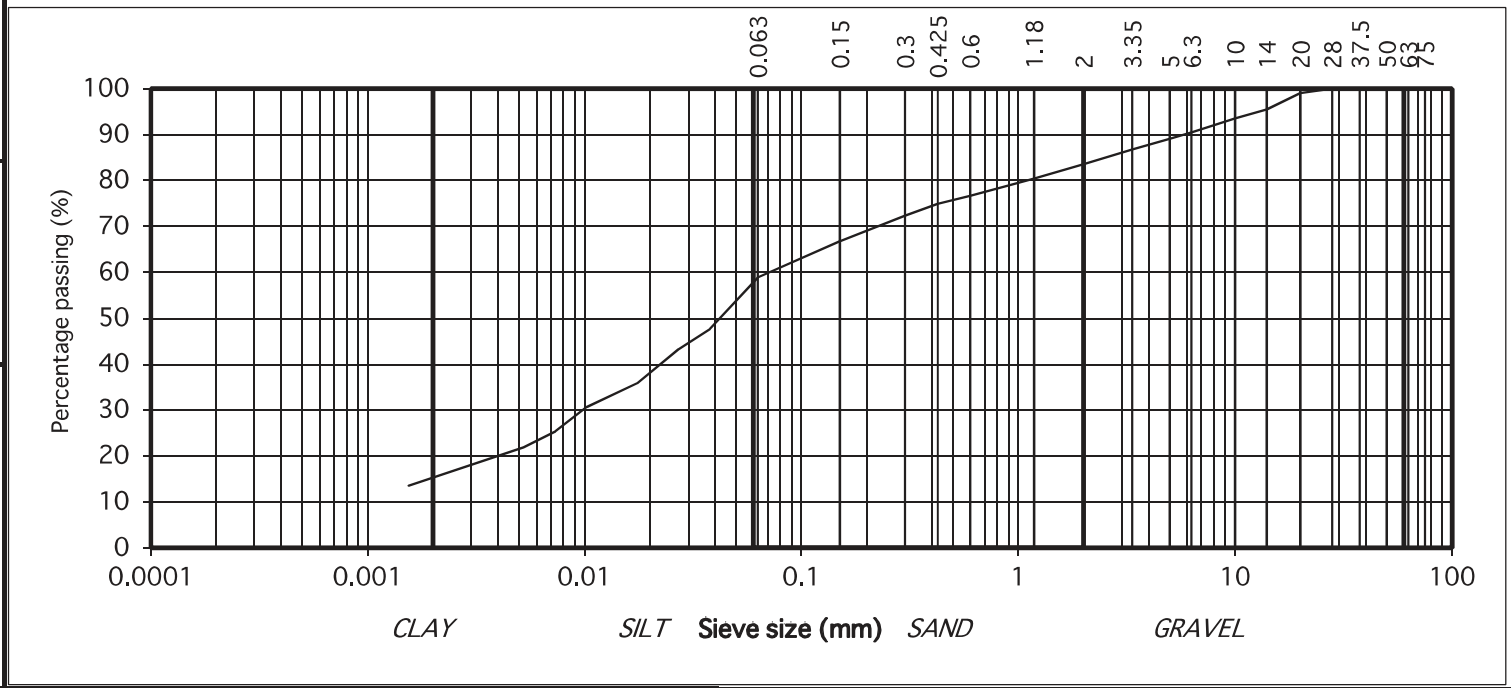

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	87	
28	84	
20	78	
14	72	
10	68	
6.3	62	
5	59	
3.35	56	
2	51	
1.18	48	SAND
0.6	42	
0.425	39	
0.3	36	
0.15	30	
0.063	23	SILT/CLAY
0.039	19	
0.028	17	
0.018	15	
0.010	13	
0.007	12	
0.005	11	
0.002	7	

Contract No.	23560	Report No.	R139276	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152124			
Sample No.*	178038	Lab. Sample No.		A22/3955
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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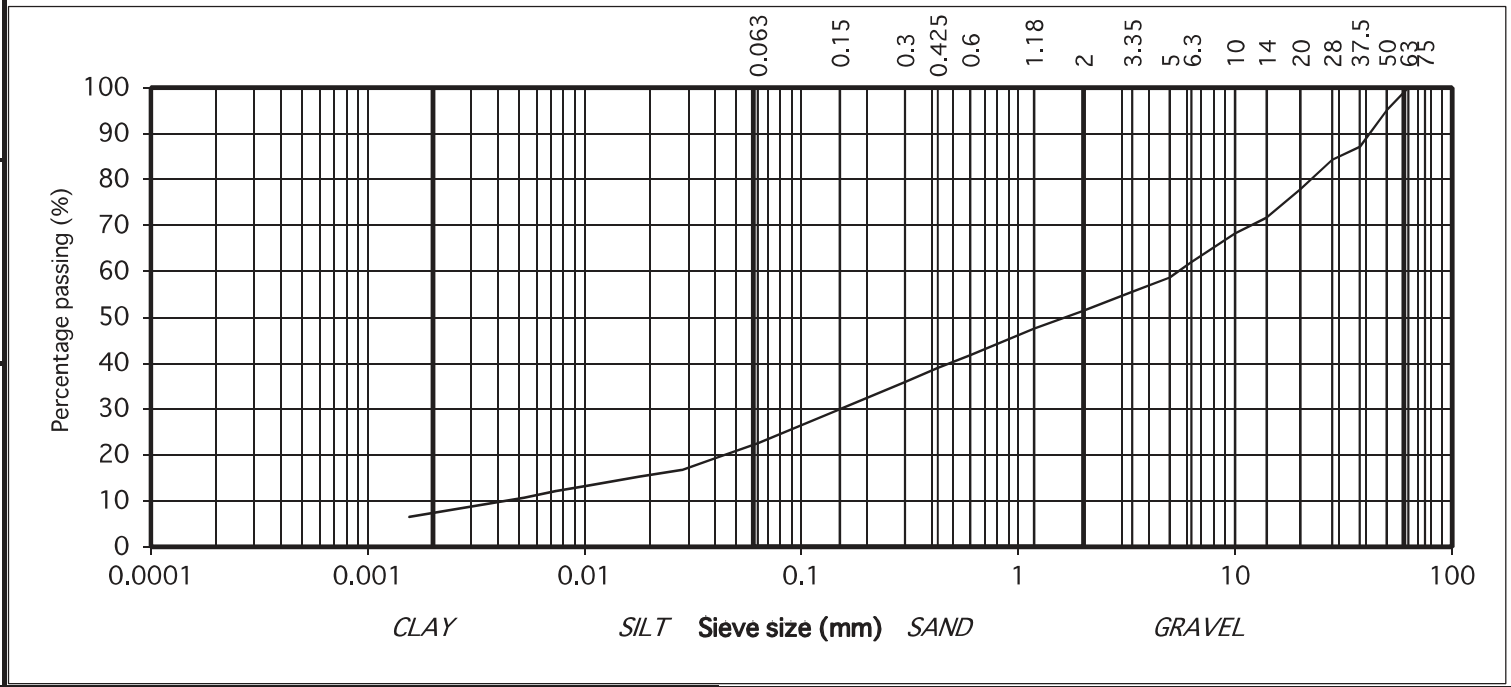

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

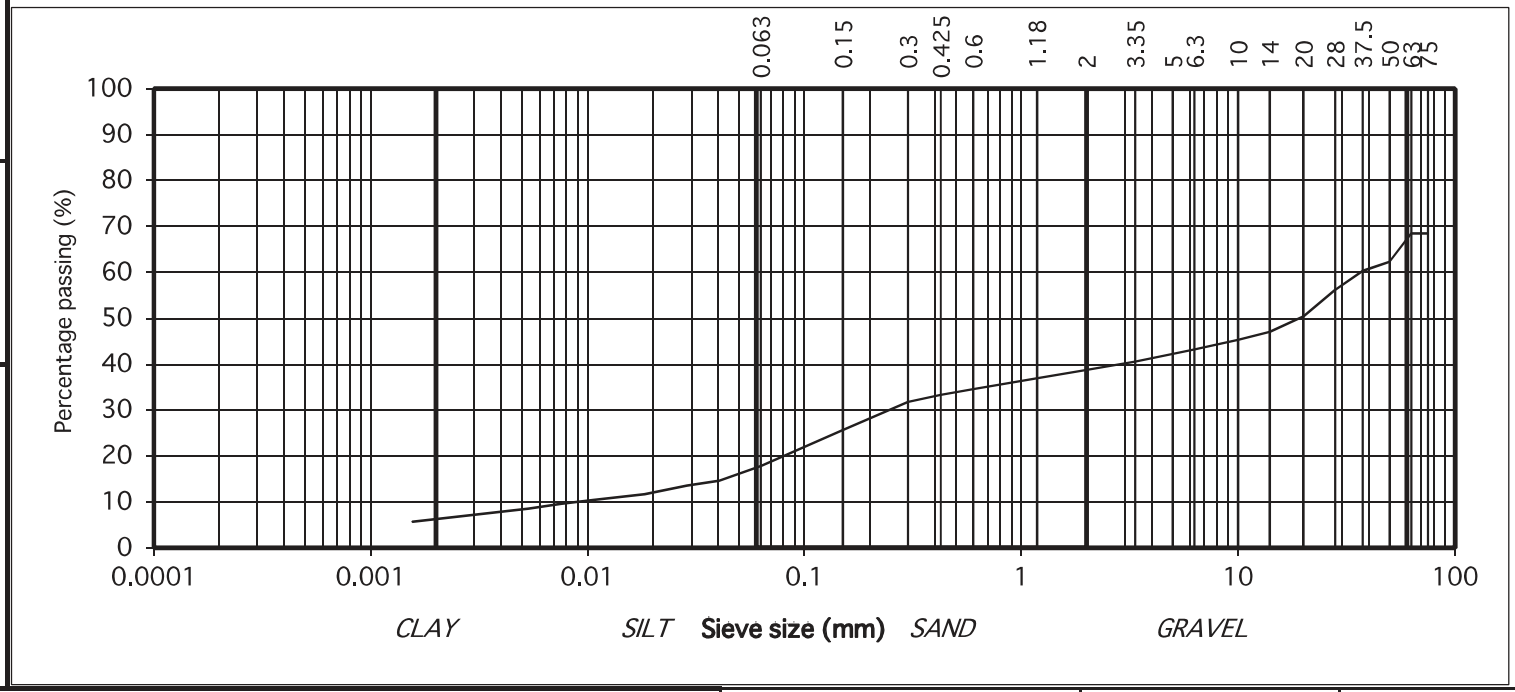
particle size	% passing	
75	68	COBBLES
63	68	
50	62	GRAVEL
37.5	60	
28	56	
20	50	
14	47	
10	45	
6.3	43	
5	42	
3.35	41	
2	39	
1.18	37	SAND
0.6	35	
0.425	33	
0.3	32	
0.15	26	
0.063	18	SILT/CLAY
0.040	15	
0.029	14	
0.018	12	
0.011	10	
0.008	10	
0.005	9	
0.002	6	

Contract No.	23560	Report No.	R138473	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152207			
Sample No.*	AA173308	Lab. Sample No.		A22/3960
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Grey brown clayey/silty, very sandy, GRAVEL with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size di dnot meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	97	
14	92	
10	85	
6.3	76	
5	73	
3.35	68	
2	63	
1.18	57	SAND
0.6	51	
0.425	47	
0.3	43	
0.15	36	
0.063	28	SILT/CLAY
0.037	25	
0.027	22	
0.017	19	
0.010	17	
0.007	14	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R139277	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152207			
Sample No.*	173307	Lab. Sample No.		A22/3956
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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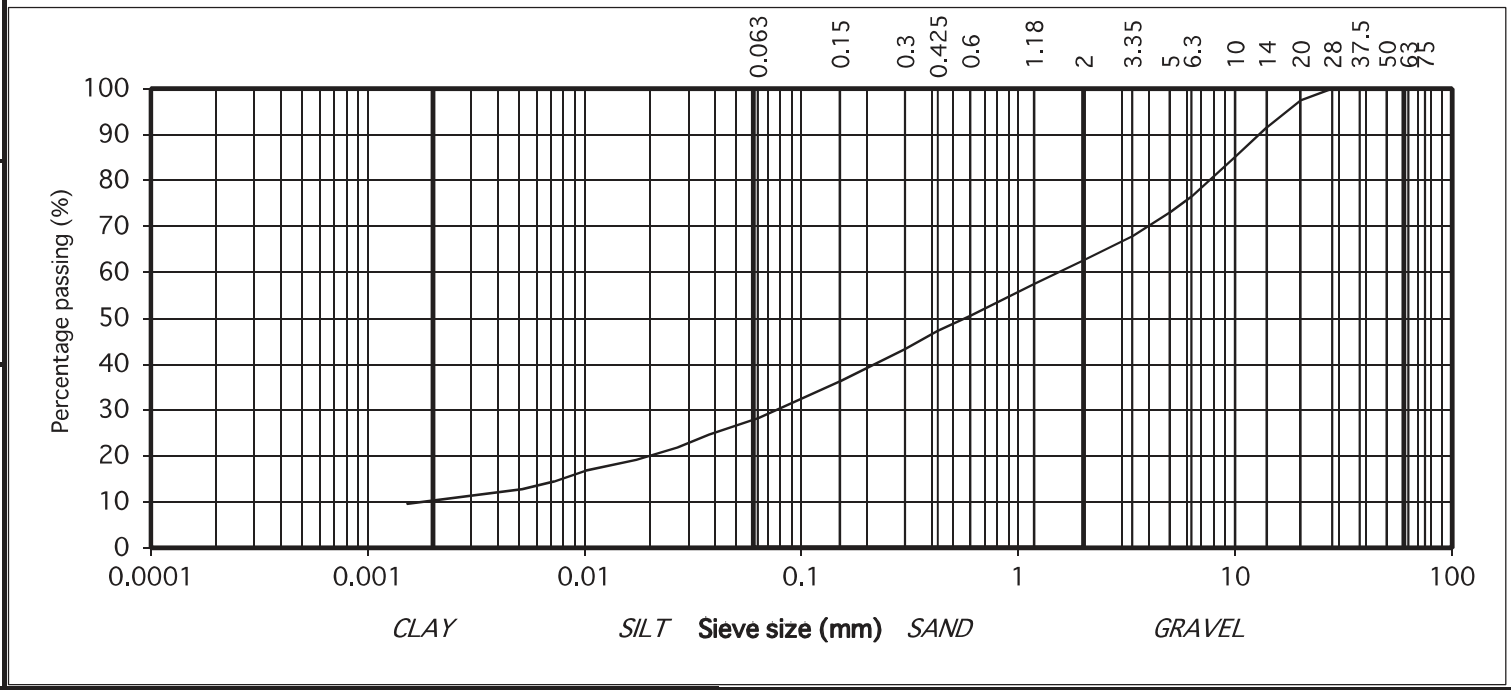
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	79	GRAVEL
37.5	76	
28	62	
20	46	
14	35	
10	28	
6.3	21	
5	19	
3.35	15	
2	13	
1.18	11	SAND
0.6	9	
0.425	8	
0.3	8	
0.15	6	
0.063	5	SILT/CLAY

Contract No. 23560 Report No. R138472
Contract Name: WSP - Lot 3
BH/TP* : BH152207
Sample No.* 173309 Lab. Sample No. A22/3958
Sample Type: B
Depth* (m) 3.00 Customer: Ervia
Date Received 14/07/2022 Date Testing started 14/07/2022
Description: Grey brown slightly clayey/silty, sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size di dnot meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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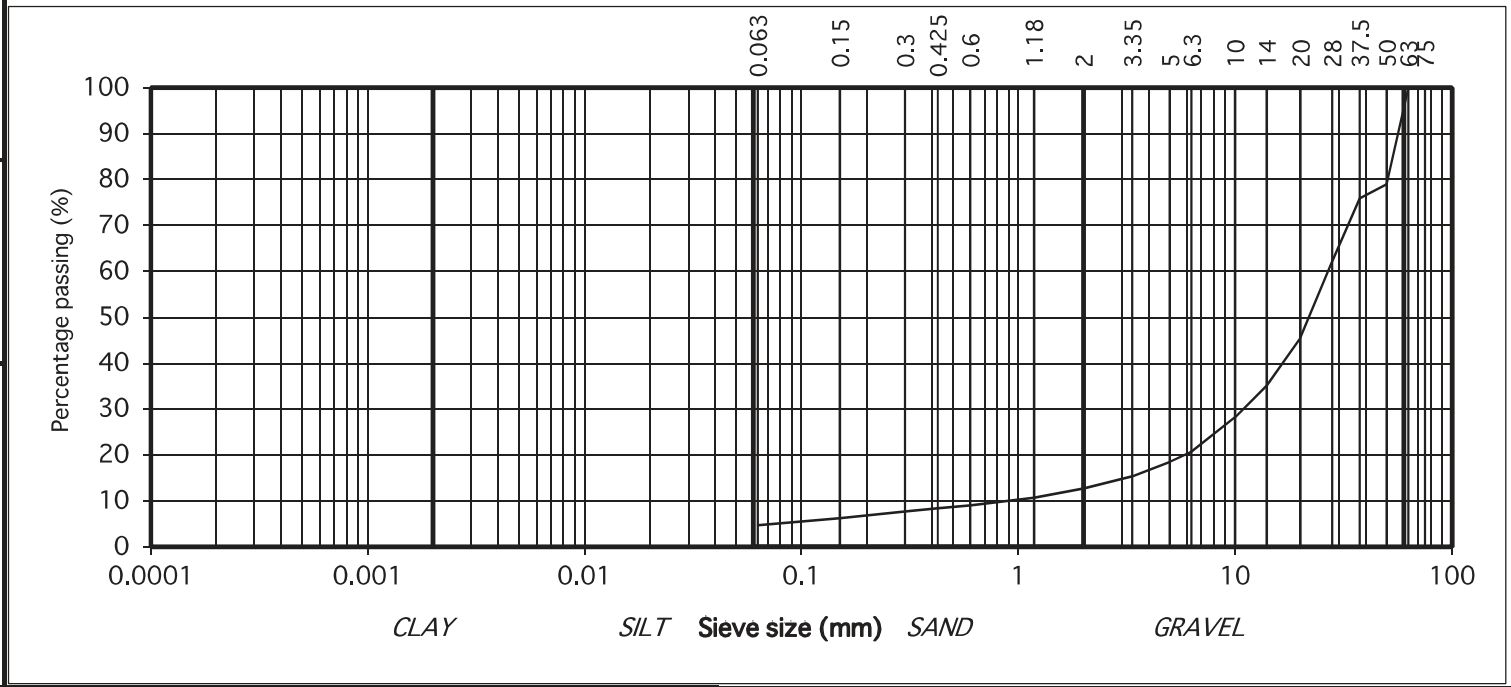

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	90	
28	83	
20	76	
14	69	
10	65	
6.3	59	
5	57	
3.35	52	
2	48	
1.18	44	SAND
0.6	40	
0.425	37	
0.3	35	
0.15	31	
0.063	25	SILT/CLAY
0.038	21	
0.027	19	
0.017	16	
0.010	14	
0.007	13	
0.005	11	
0.002	7	

Contract No.	23560	Report No.	R138475	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152315			
Sample No.*	AA178033	Lab. Sample No.		A22/3965
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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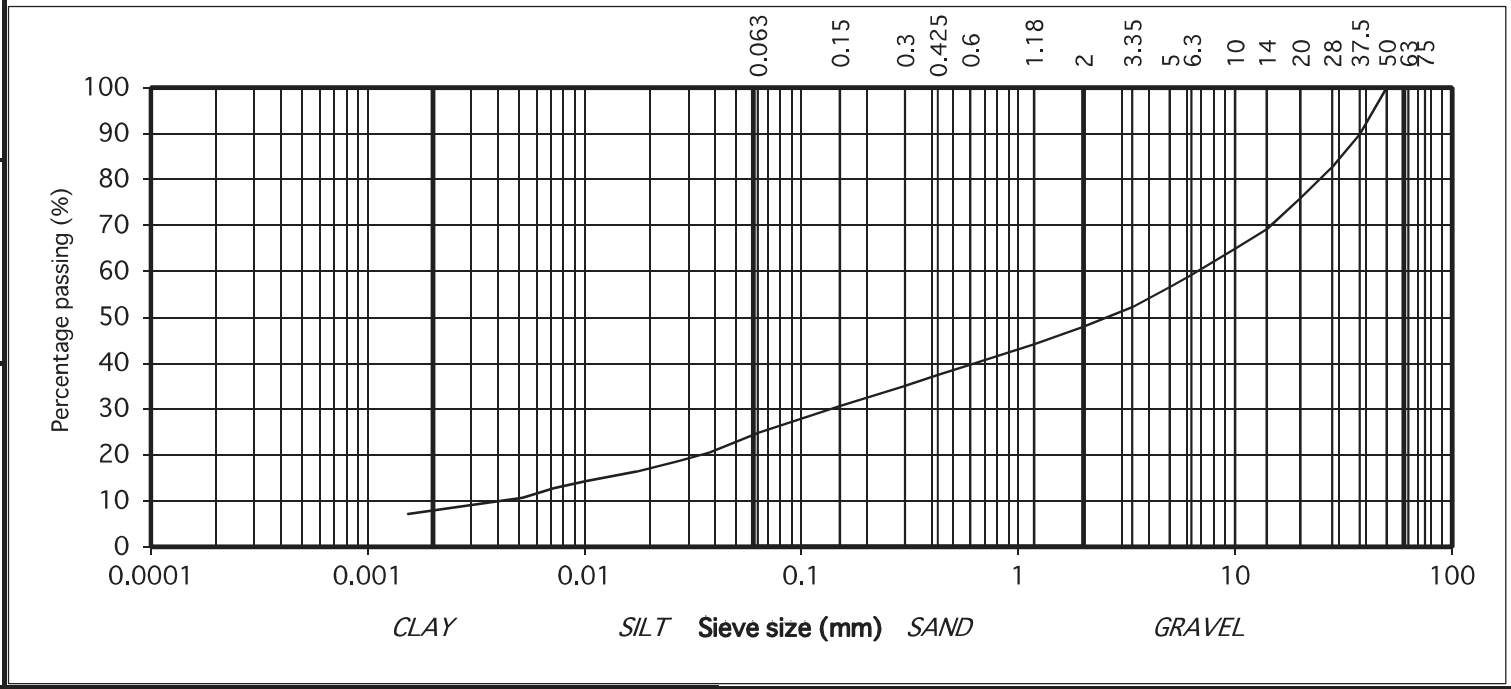
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	94	
14	92	
10	88	
6.3	83	
5	81	
3.35	78	
2	74	
1.18	71	SAND
0.6	68	
0.425	67	
0.3	65	
0.15	60	
0.063	50	SILT/CLAY
0.038	43	
0.027	39	
0.017	34	
0.010	29	
0.007	26	
0.005	22	
0.002	14	

Contract No.	23560	Report No.	R138474	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152315			
Sample No.*	AA178031	Lab. Sample No.		A22/3961
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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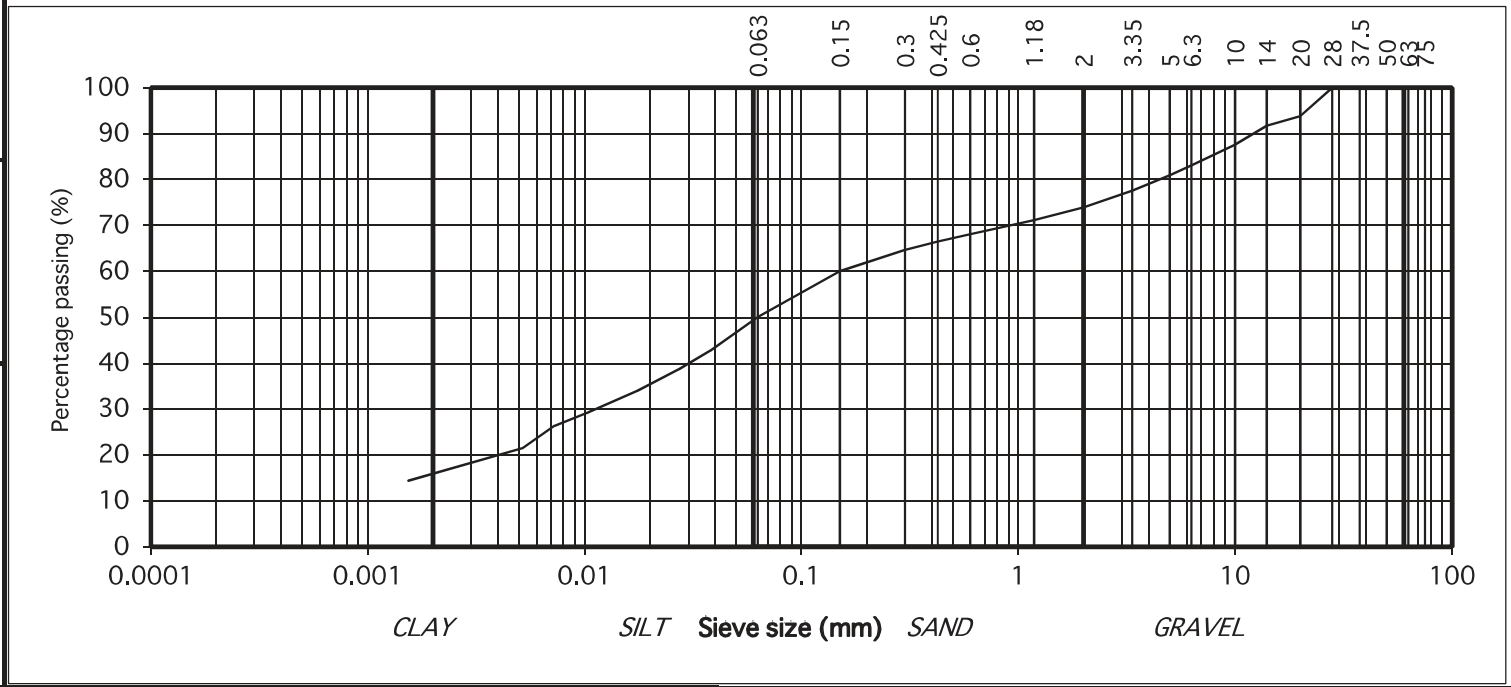
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	94	
28	94	
20	81	
14	78	
10	76	
6.3	72	
5	70	
3.35	68	
2	64	
1.18	62	SAND
0.6	58	
0.425	57	
0.3	54	
0.15	49	
0.063	41	SILT/CLAY
0.038	36	
0.027	34	
0.017	31	
0.010	27	
0.007	24	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R138476	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152702			
Sample No.*	AA178022	Lab. Sample No.		A22/3966
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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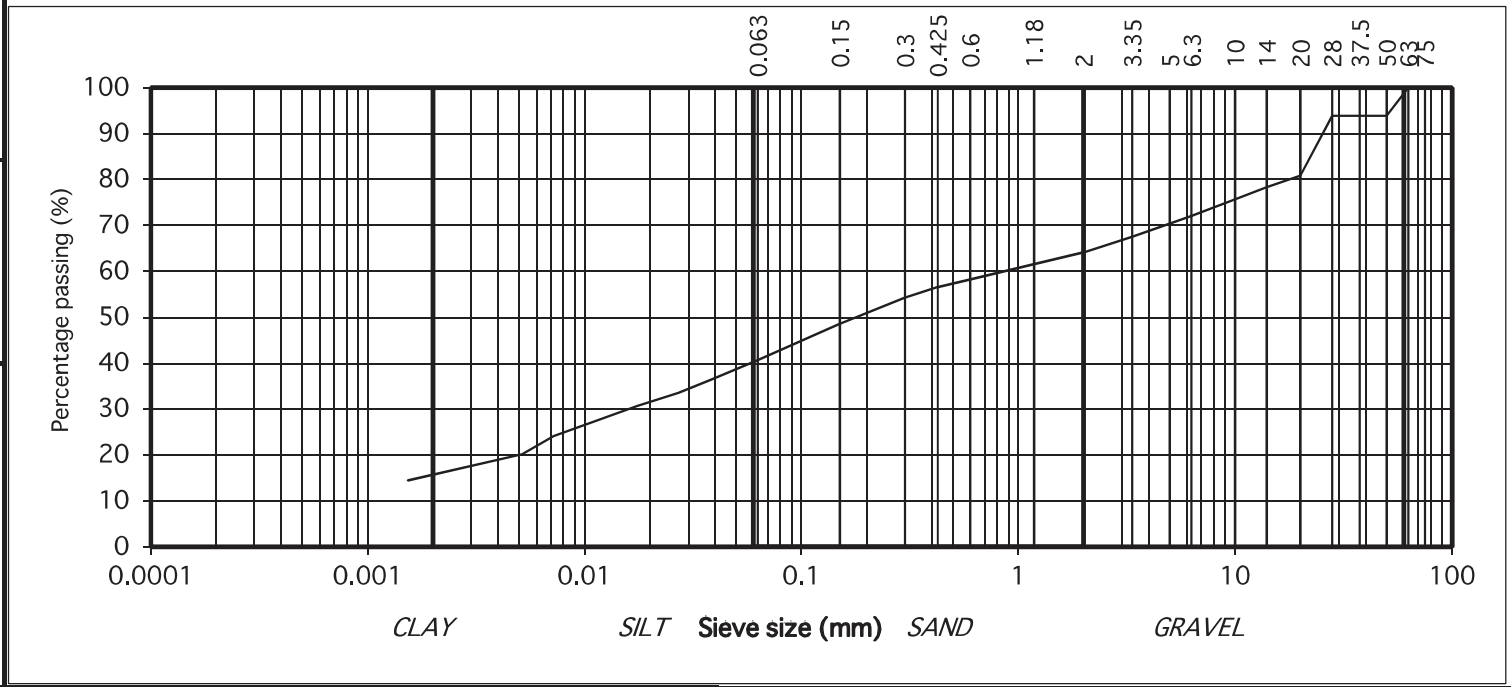
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	87	
20	78	
14	71	
10	67	
6.3	61	
5	59	
3.35	54	
2	49	
1.18	44	SAND
0.6	38	
0.425	35	
0.3	32	
0.15	27	
0.063	21	SILT/CLAY
0.040	18	
0.028	16	
0.018	15	
0.010	13	
0.007	11	
0.005	10	
0.002	8	

Contract No.	23560	Report No.	R138482	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH153150			
Sample No.*	AA178020	Lab. Sample No.		A22/3981
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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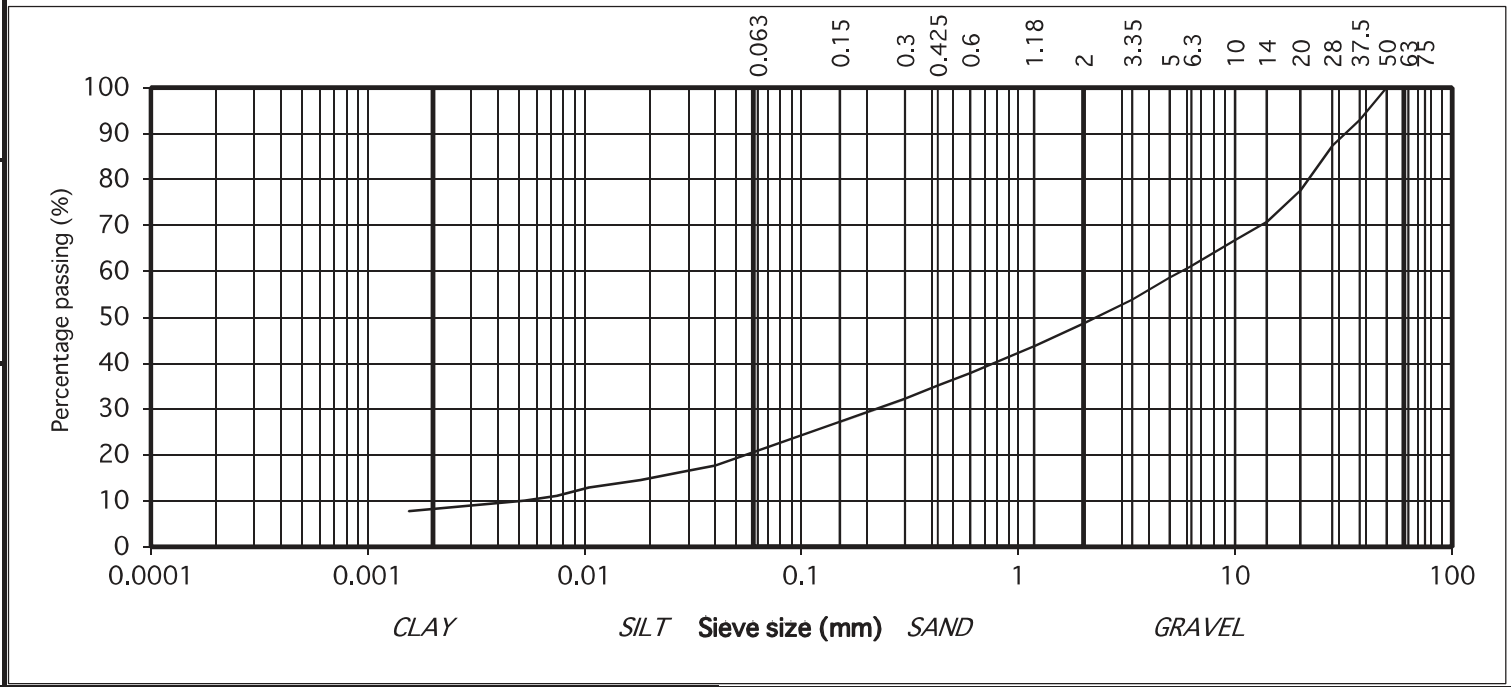

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	84	
28	79	
20	77	
14	76	
10	73	
6.3	70	
5	68	
3.35	64	
2	61	
1.18	58	SAND
0.6	54	
0.425	53	
0.3	51	
0.15	47	
0.063	41	SILT/CLAY
0.039	37	
0.028	33	
0.018	29	
0.010	24	
0.007	20	
0.005	17	
0.002	12	

Contract No.	23560	Report No.	R143930	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152702			
Sample No.*	178023	Lab. Sample No.		A22/3967
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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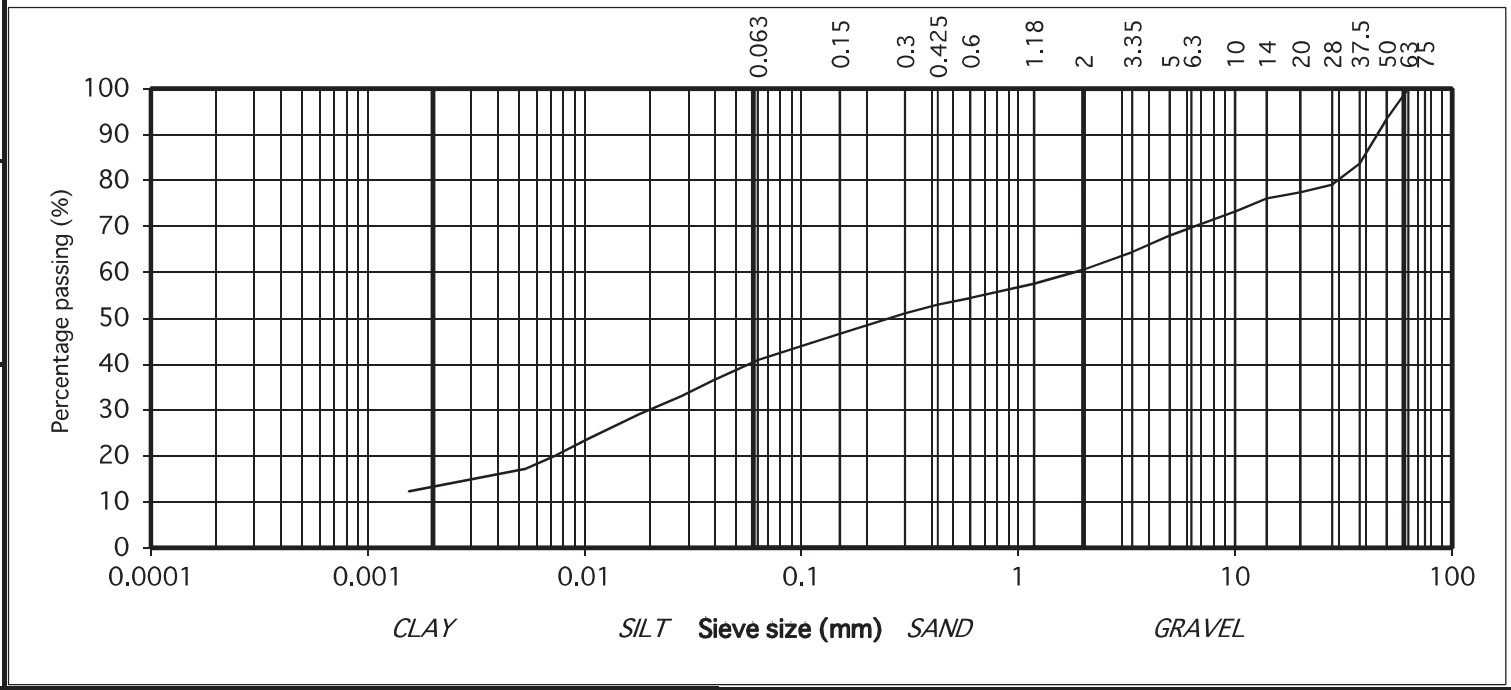
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	90	
20	86	
14	83	
10	81	
6.3	78	
5	77	
3.35	75	
2	72	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	63	
0.15	58	
0.063	53	SILT/CLAY
0.038	47	
0.027	41	
0.017	36	
0.010	31	
0.007	29	
0.005	26	
0.002	19	

Contract No.	23560	Report No.	R138477	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152938			
Sample No.*	AA178025	Lab. Sample No.		A22/3970
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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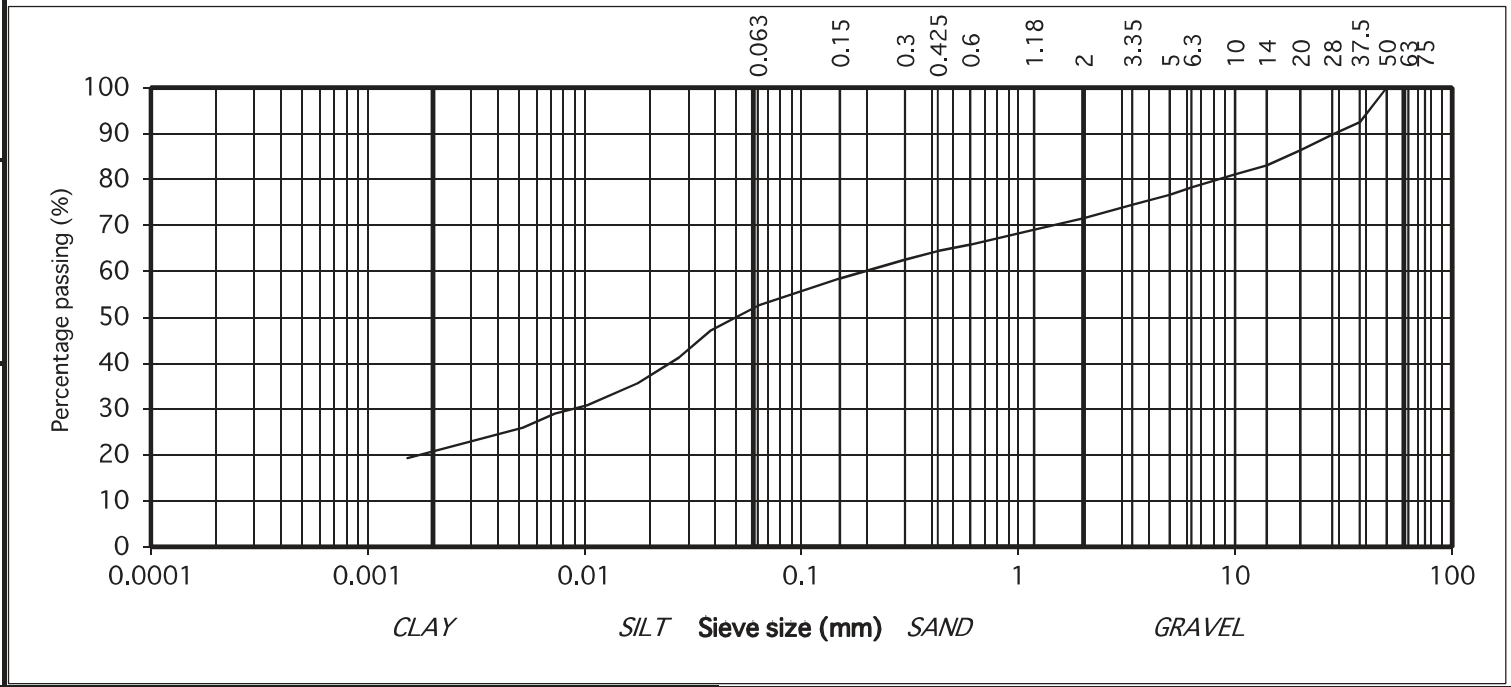
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	73	COBBLES
63	73	
50	73	GRAVEL
37.5	73	
28	70	
20	68	
14	66	
10	63	
6.3	59	
5	58	
3.35	54	
2	51	
1.18	49	SAND
0.6	47	
0.425	43	
0.3	40	
0.15	35	
0.063	29	SILT/CLAY
0.038	26	
0.027	23	
0.017	20	
0.010	17	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R138478	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152938			
Sample No.*	AA178027	Lab. Sample No.		A22/3971
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with many cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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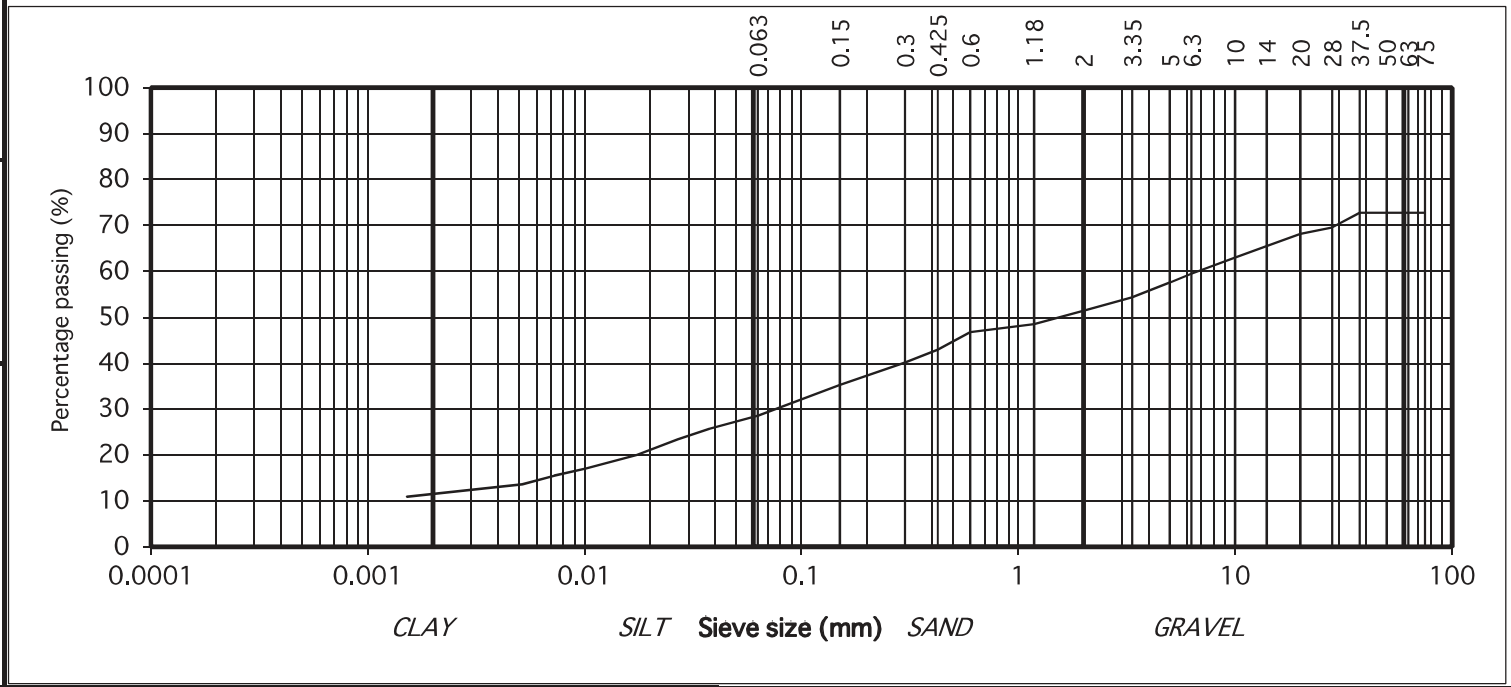

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	91	
28	79	
20	74	
14	69	
10	66	
6.3	62	
5	60	
3.35	56	
2	52	
1.18	48	SAND
0.6	44	
0.425	42	
0.3	40	
0.15	36	
0.063	30	SILT/CLAY
0.037	27	
0.027	24	
0.017	22	
0.010	19	
0.007	16	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R138479	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH152938			
Sample No.*	AA178029	Lab. Sample No.		A22/3972
Sample Type:	B			
Depth* (m)	5.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Grey/brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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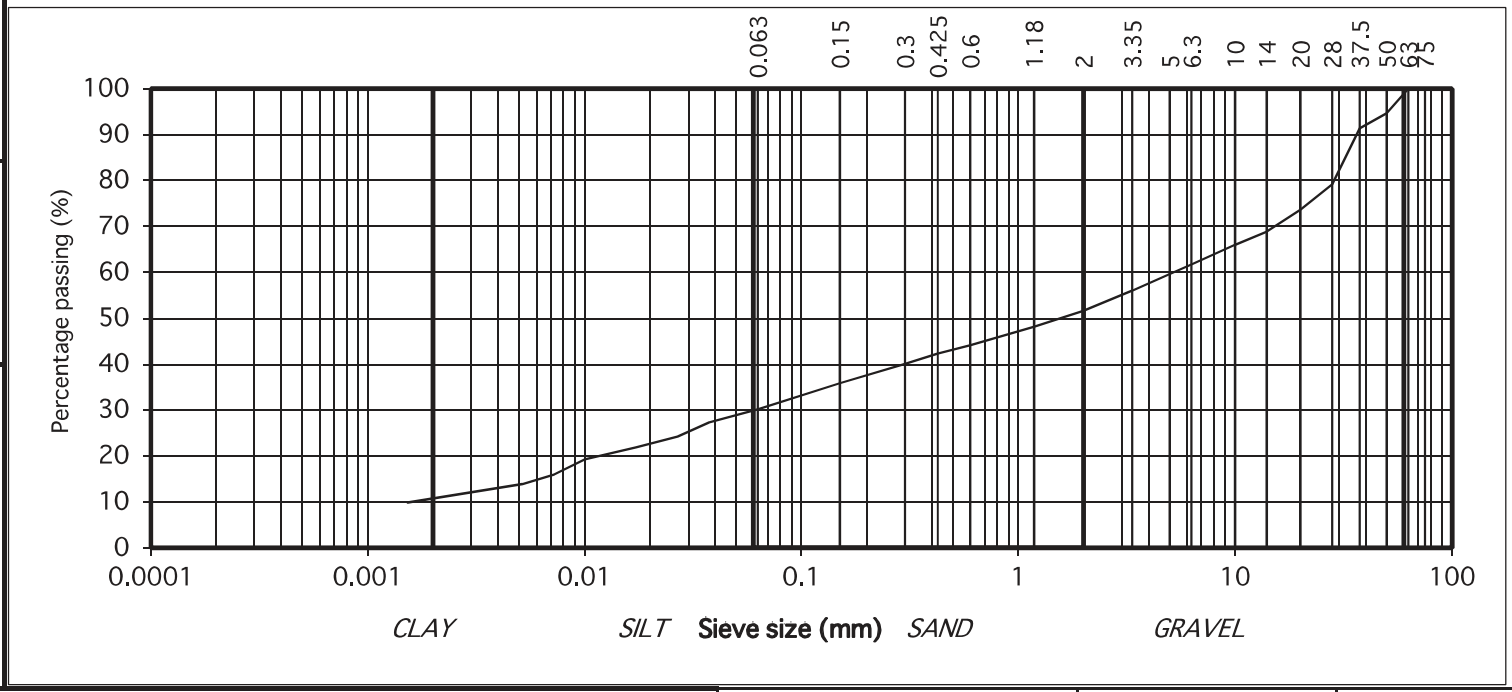
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	94	
14	93	
10	91	
6.3	89	
5	88	
3.35	84	
2	80	
1.18	77	SAND
0.6	73	
0.425	71	
0.3	69	
0.15	63	
0.063	57	SILT/CLAY
0.037	45	
0.027	41	
0.017	38	
0.010	34	
0.007	30	
0.005	27	
0.002	16	

Contract No.	23560	Report No.	R138480	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH153150			
Sample No.*	AA178017	Lab. Sample No.		A22/3976
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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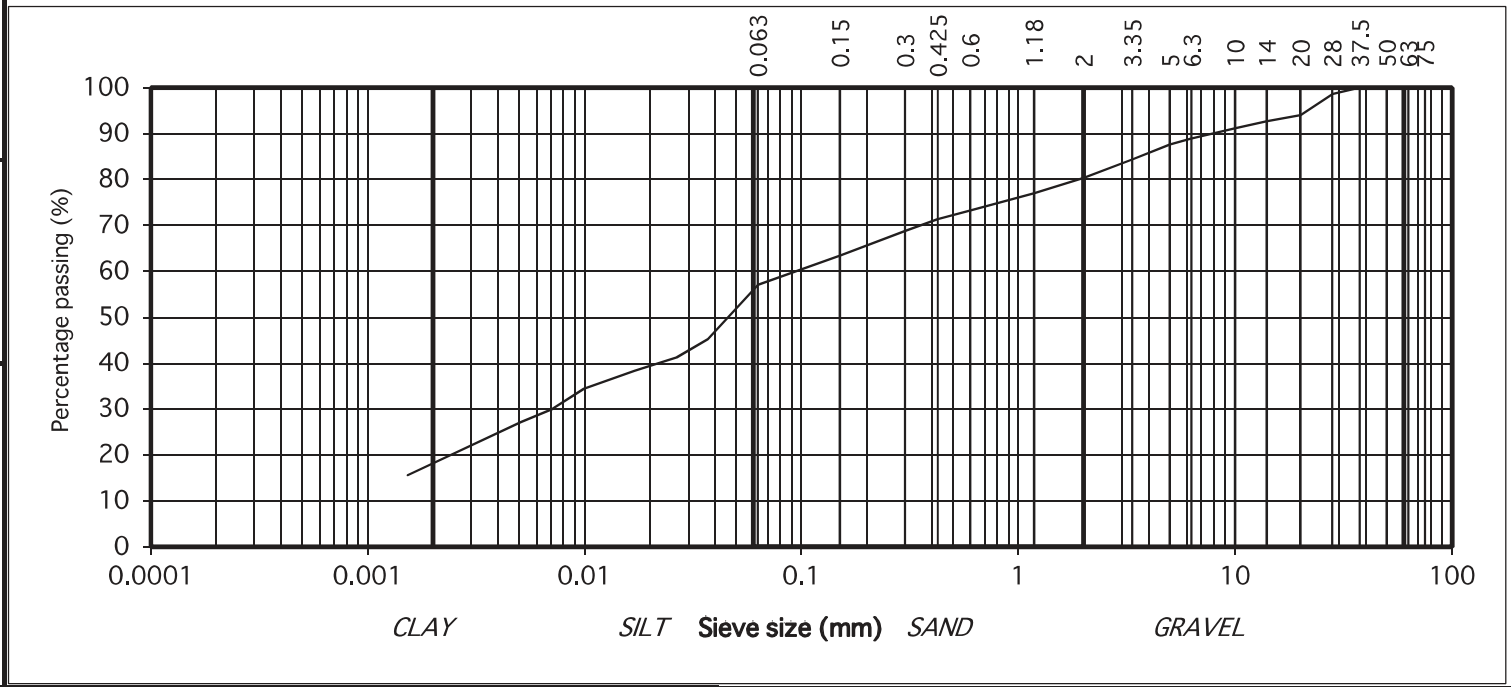
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

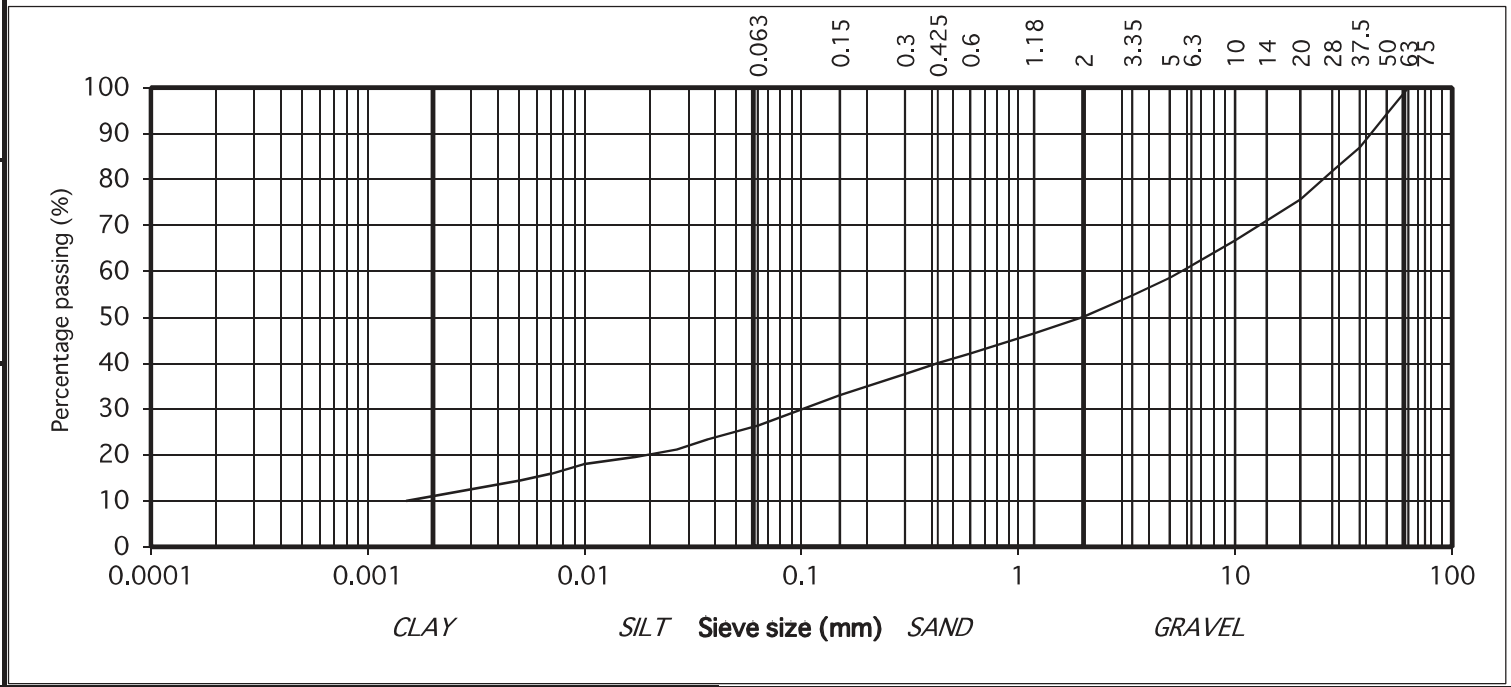
particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	87	
28	82	
20	76	
14	71	
10	67	
6.3	61	
5	59	
3.35	55	
2	50	
1.18	47	SAND
0.6	42	
0.425	40	
0.3	38	
0.15	33	
0.063	26	SILT/CLAY
0.037	23	
0.027	21	
0.017	20	
0.010	18	
0.007	16	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R138481	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH153150			
Sample No.*	AA178018	Lab. Sample No.		A22/3980
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

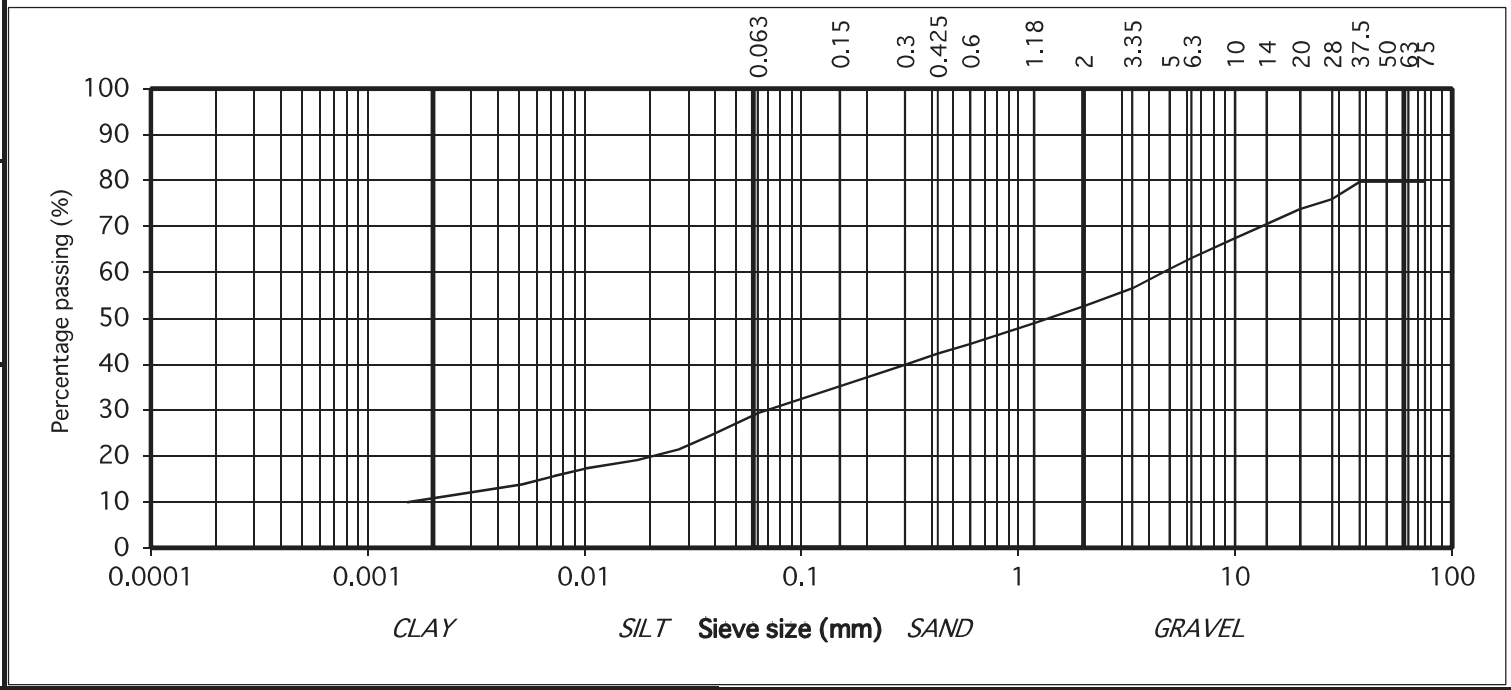
particle size	% passing	
75	80	COBBLES
63	80	
50	80	GRAVEL
37.5	80	
28	76	
20	74	
14	71	
10	67	
6.3	63	
5	61	
3.35	57	
2	53	
1.18	49	SAND
0.6	44	
0.425	42	
0.3	40	
0.15	35	
0.063	29	SILT/CLAY
0.038	24	
0.027	21	
0.017	19	
0.010	17	
0.007	16	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R138783	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH156922			
Sample No.*	173020	Lab. Sample No.		A22/3908
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	18/07/2022	Date Testing started		18/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

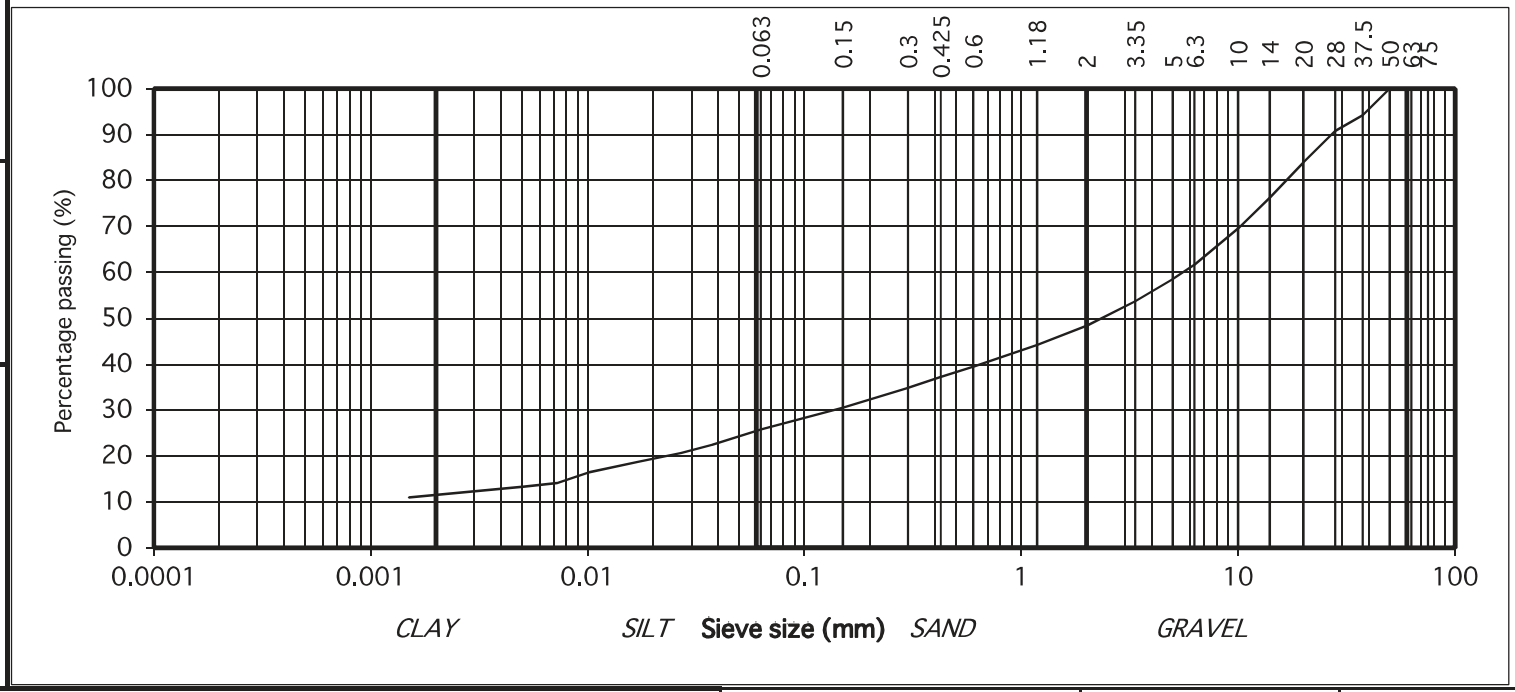
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	91	
20	84	
14	76	
10	70	
6.3	62	
5	59	
3.35	54	
2	48	
1.18	44	SAND
0.6	39	
0.425	37	
0.3	35	
0.15	31	
0.063	26	SILT/CLAY
0.037	22	
0.027	21	
0.017	19	
0.010	16	
0.007	14	
0.005	13	
0.001	11	

Contract No.	23560	Report No.	R138784	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH156922			
Sample No.*	173021	Lab. Sample No.		A22/3909
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	18/07/2022	Date Testing started		18/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	88	GRAVEL
37.5	88	
28	84	
20	74	
14	72	
10	70	
6.3	66	
5	64	
3.35	61	
2	58	
1.18	54	SAND
0.6	51	
0.425	49	
0.3	47	
0.15	43	
0.063	36	SILT/CLAY
0.037	32	
0.027	29	
0.017	26	
0.010	24	
0.007	21	
0.005	20	
0.002	13	

Contract No.	23560	Report No.	R141473	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157032			
Sample No.*	174903	Lab. Sample No.		A22/6603
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	26/11/2022	Date Testing started		26/11/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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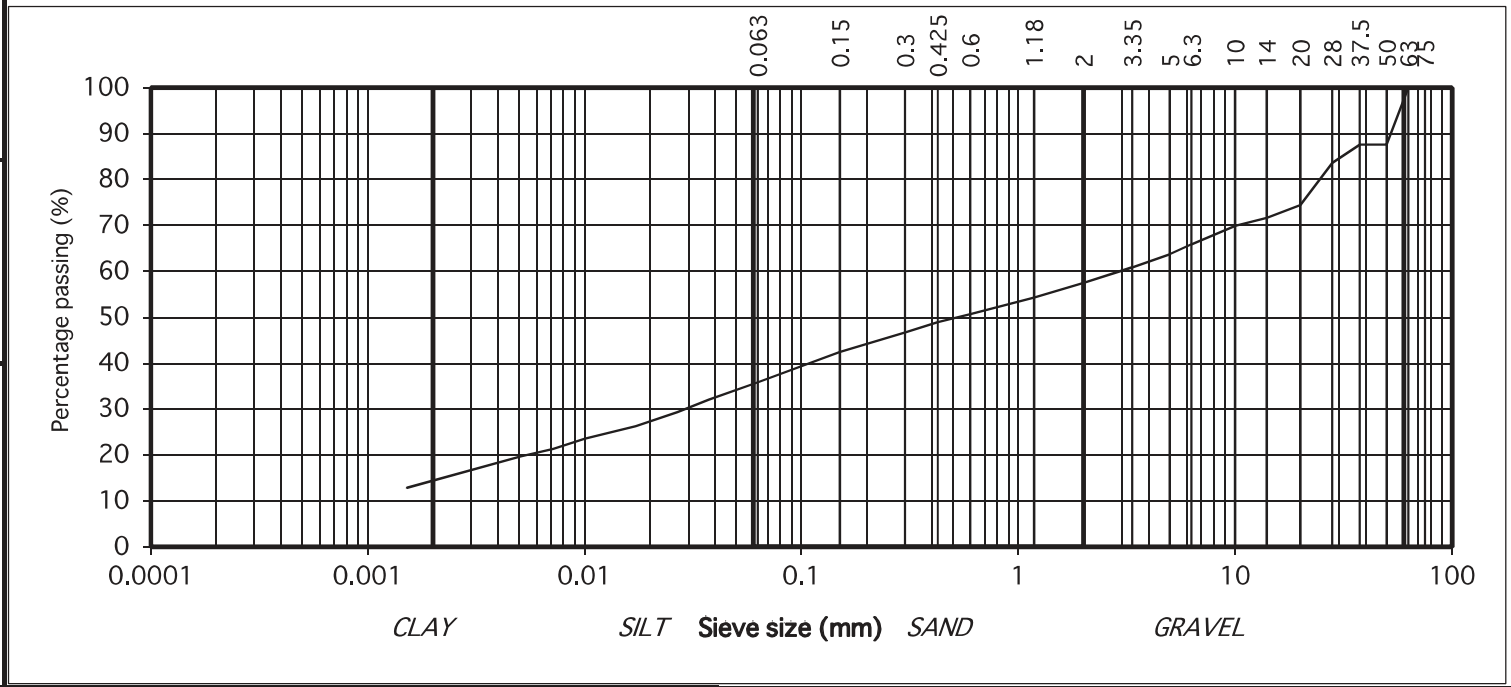
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	85	
28	79	
20	67	
14	65	
10	62	
6.3	59	
5	57	
3.35	54	
2	50	
1.18	48	SAND
0.6	44	
0.425	43	
0.3	41	
0.15	37	
0.063	33	SILT/CLAY
0.038	28	
0.027	25	
0.017	22	
0.010	18	
0.007	16	
0.005	15	
0.002	9	

Contract No.	23560	Report No.	R135788	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH156988			
Sample No.*	AA173009	Lab. Sample No.		A22/2420
Sample Type:	B			
Depth* (m)	6.00	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		25/05/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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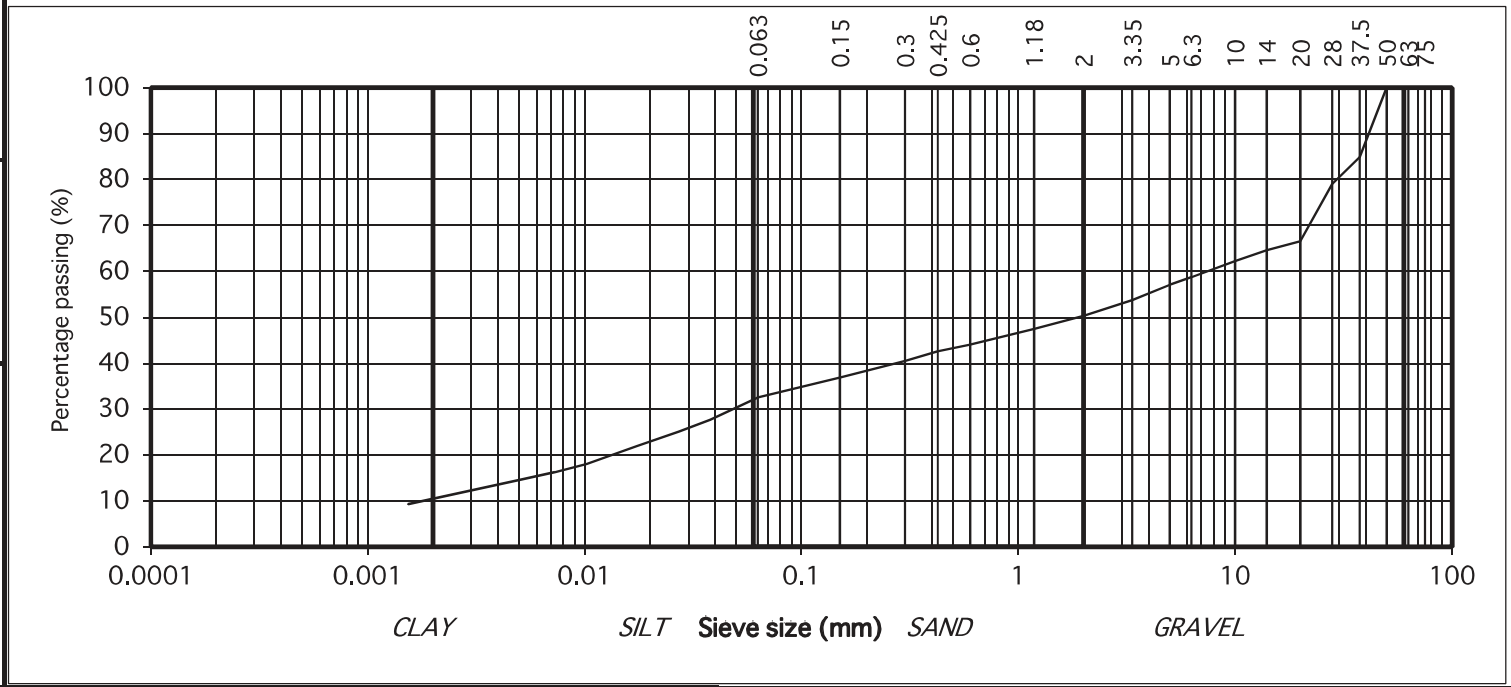
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 I NAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	96	
14	92	
10	89	
6.3	86	
5	85	
3.35	83	
2	82	
1.18	81	SAND
0.6	79	
0.425	78	
0.3	76	
0.15	73	
0.063	66	SILT/CLAY
0.037	59	
0.027	54	
0.017	48	
0.010	42	
0.007	34	
0.005	30	
0.002	18	

Contract No.	23560	Report No.	R141472	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH156988			
Sample No.*	AA173011	Lab. Sample No.		A22/6598
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	26/11/2022	Date Testing started		26/11/2022
Description:	Grey slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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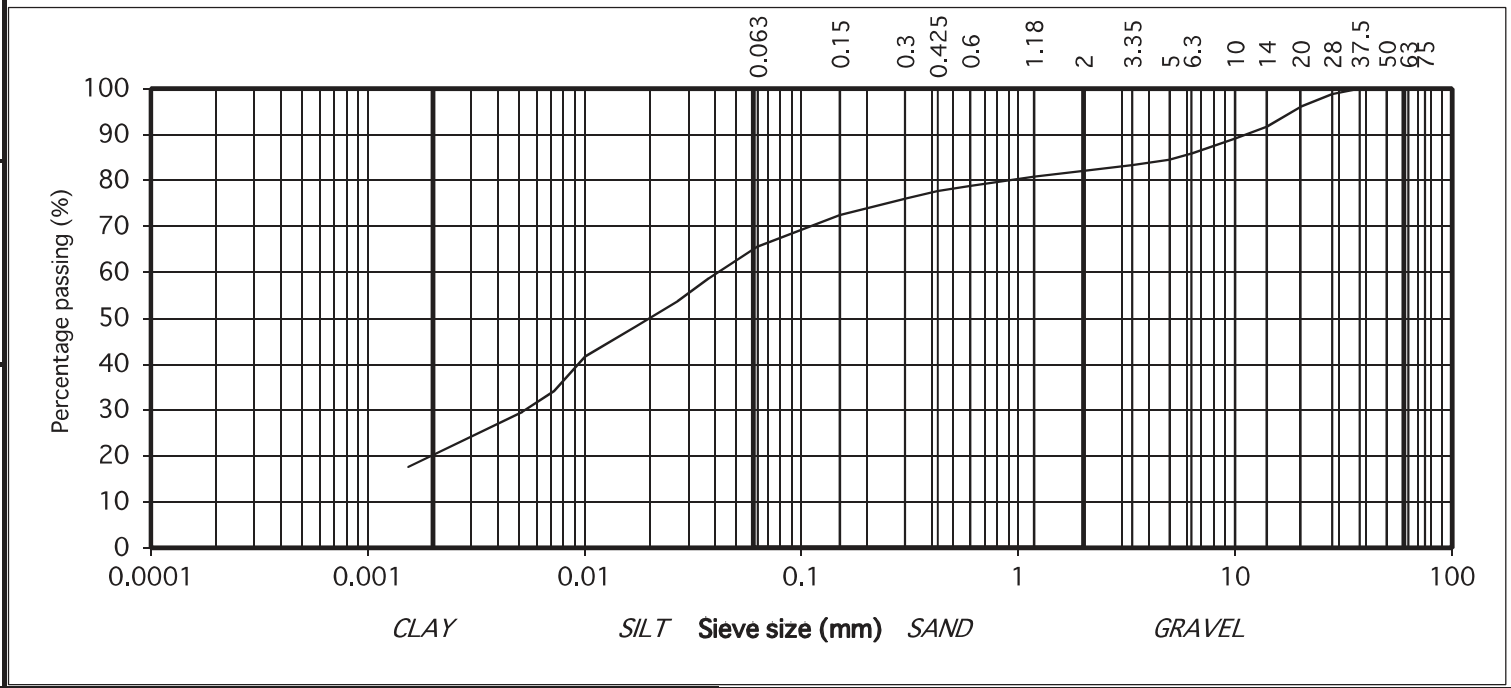

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	93	
28	91	
20	87	
14	83	
10	80	
6.3	74	
5	71	
3.35	68	
2	64	
1.18	61	SAND
0.6	56	
0.425	54	
0.3	52	
0.15	46	
0.063	38	SILT/CLAY
0.037	34	
0.027	31	
0.017	26	
0.010	22	
0.007	18	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R141706	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157032			
Sample No.*	174902	Lab. Sample No.		A22/6601
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	26/11/2022	Date Testing started		26/11/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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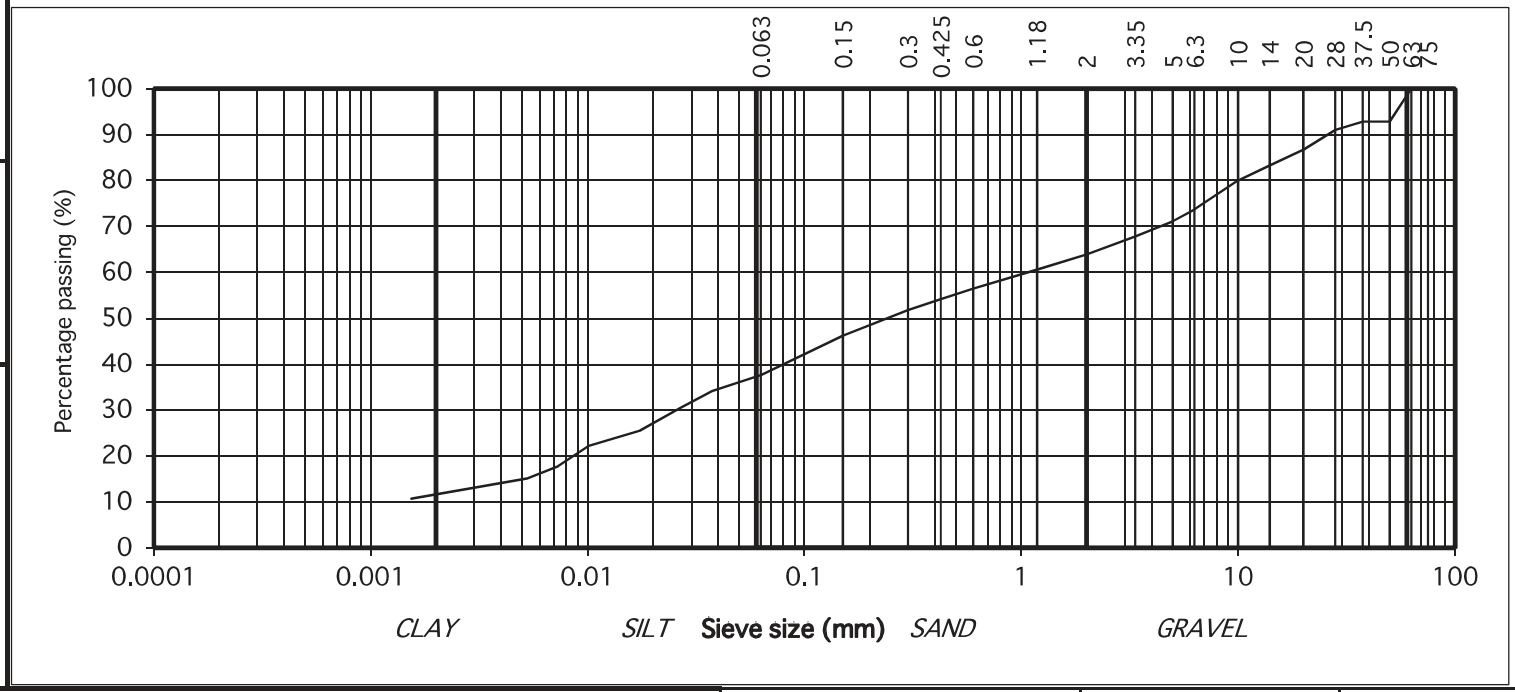
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	98	
10	97	
6.3	96	
5	95	
3.35	94	
2	93	
1.18	91	SAND
0.6	89	
0.425	88	
0.3	86	
0.15	83	
0.063	75	SILT/CLAY
0.038	64	
0.027	57	
0.018	43	
0.010	34	
0.007	26	
0.005	21	
0.002	12	

Contract No.	23560	Report No.	R141474
Contract Name:	WSP - Lot 3		
BH/TP* :	BH157032		
Sample No.*	174904	Lab. Sample No.	A22/6604
Sample Type:	B		
Depth* (m)	3.00	Customer:	Ervia
Date Received	26/11/2022	Date Testing started	26/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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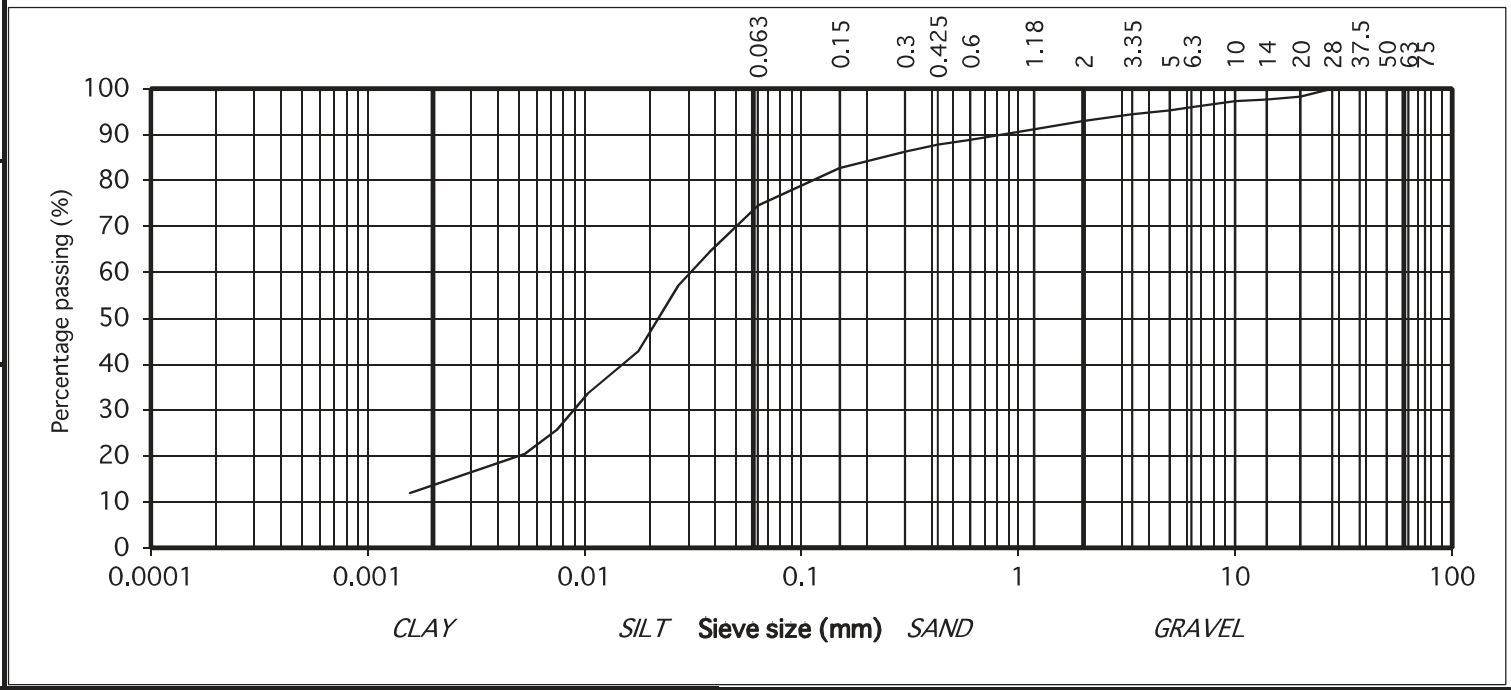
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	98	
6.3	96	
5	95	
3.35	94	
2	93	
1.18	92	SAND
0.6	91	
0.425	90	
0.3	89	
0.15	81	
0.063	52	SILT/CLAY
0.038	43	
0.027	40	
0.017	35	
0.010	30	
0.007	25	
0.005	22	
0.002	15	

Contract No.	23560	Report No.	R139279	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157543			
Sample No.*	178013	Lab. Sample No.		A22/3982
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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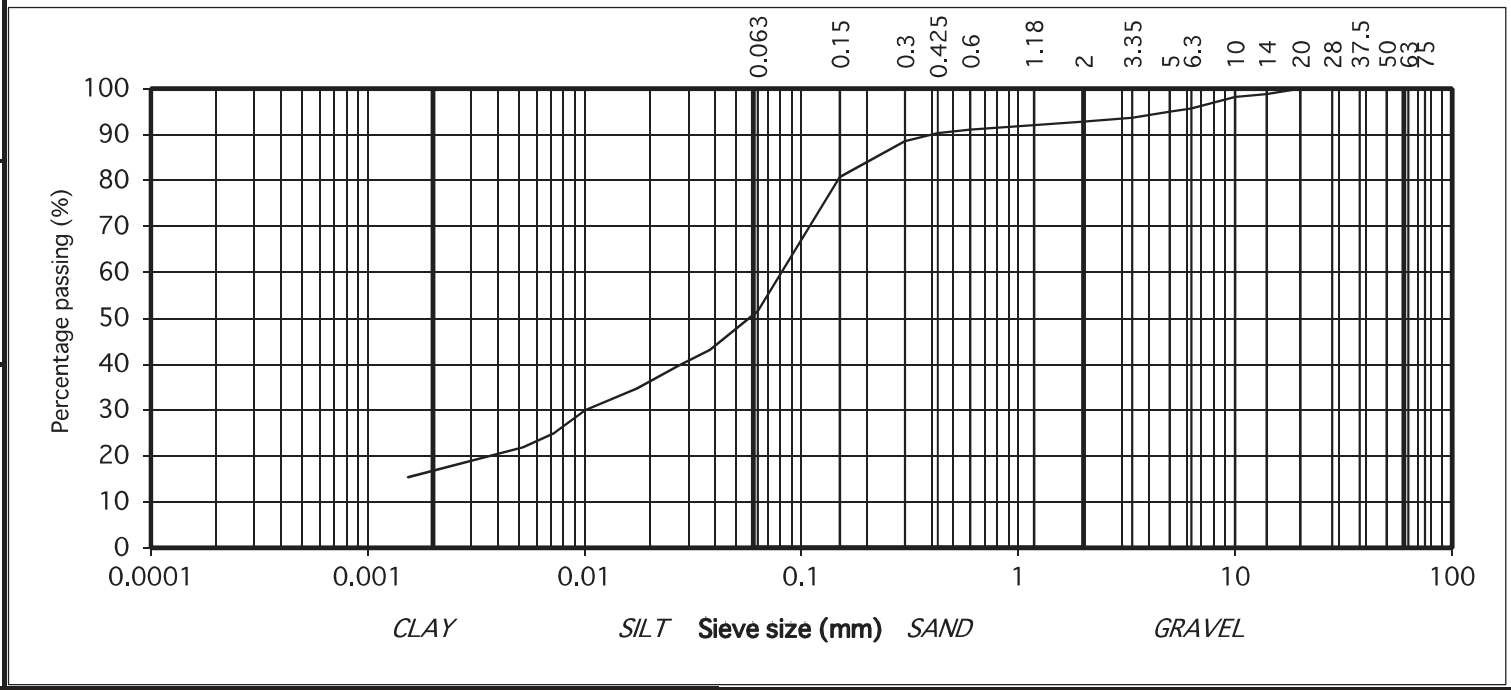
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
H Byrne	06/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	95	
14	92	
10	88	
6.3	84	
5	82	
3.35	78	
2	75	
1.18	71	SAND
0.6	67	
0.425	64	
0.3	62	
0.15	57	
0.063	48	SILT/CLAY
0.038	43	
0.027	38	
0.017	33	
0.010	29	
0.007	26	
0.005	23	
0.002	16	

Contract No.	23560	Report No.	R138483	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157543			
Sample No.*	AA178015	Lab. Sample No.		A22/3985
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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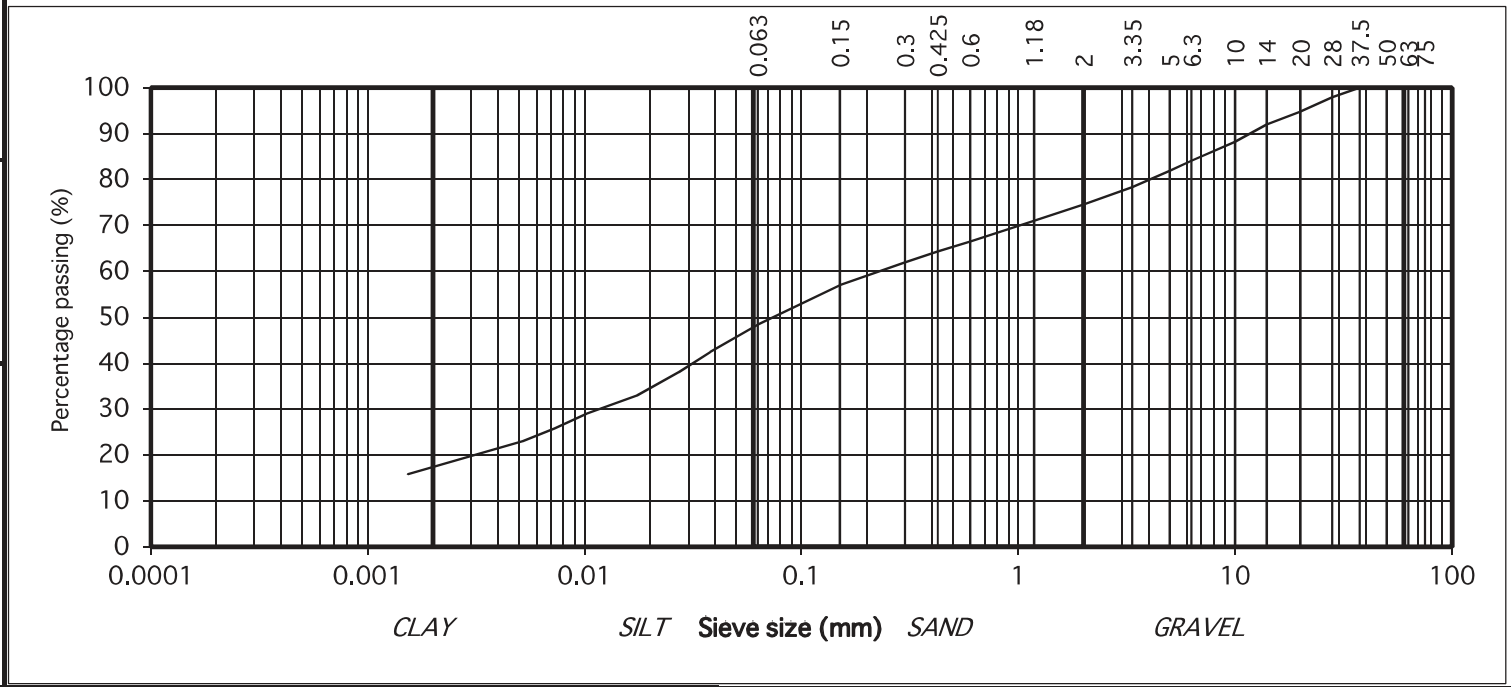
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

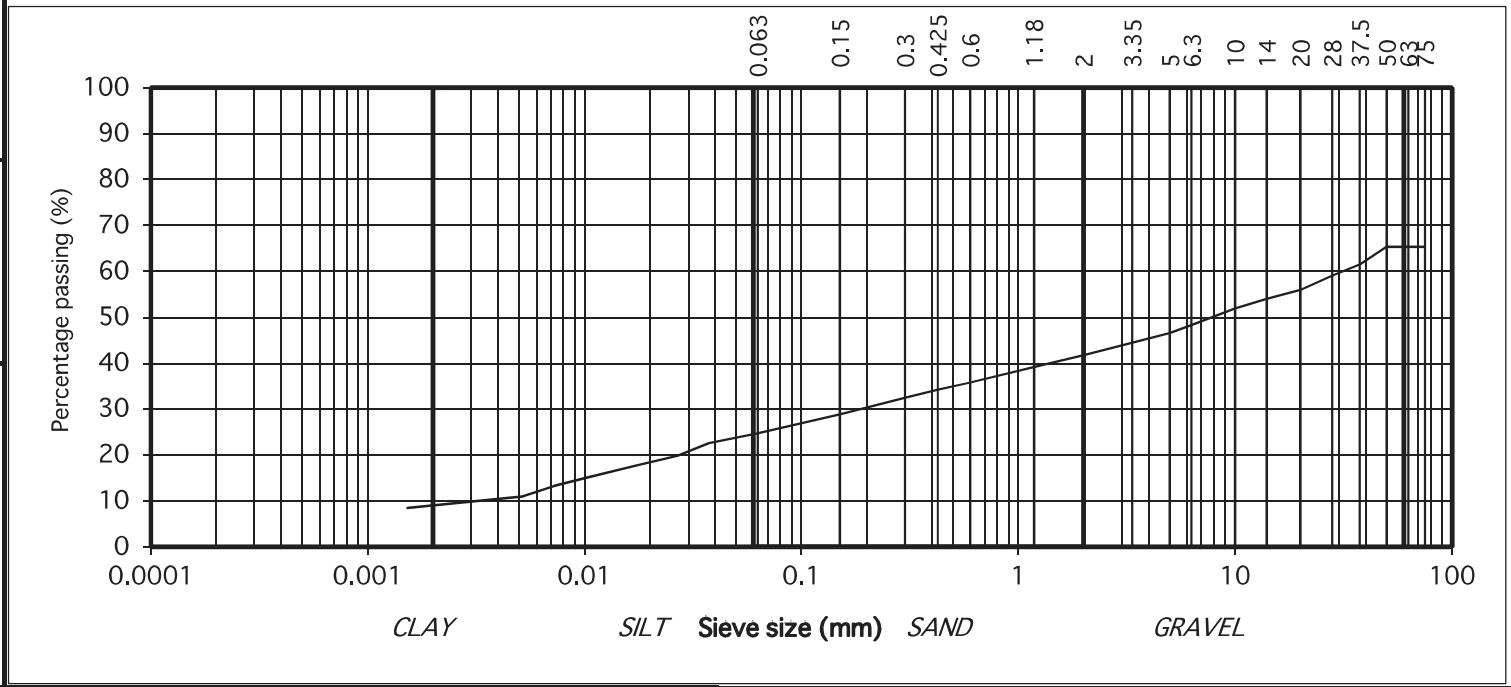
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	65	COBBLES
63	65	
50	65	GRAVEL
37.5	62	
28	59	
20	56	
14	54	
10	52	
6.3	48	
5	47	
3.35	45	
2	42	
1.18	39	SAND
0.6	36	
0.425	34	
0.3	32	
0.15	29	
0.063	25	SILT/CLAY
0.037	23	
0.027	20	
0.017	18	
0.010	15	
0.007	13	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R138785	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157862			
Sample No.*	173041	Lab. Sample No.		A22/3912
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	18/07/2022	Date Testing started		18/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with many cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

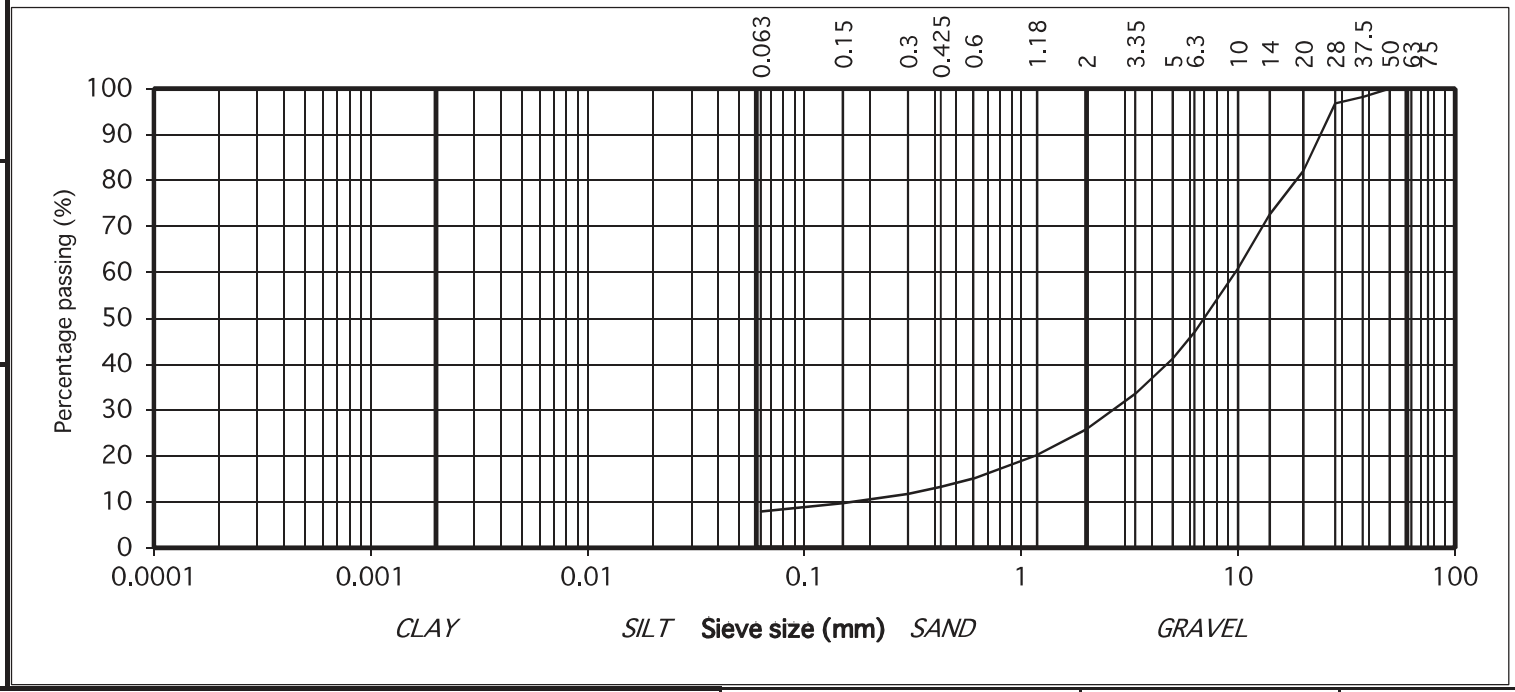
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	97	
20	82	
14	73	
10	61	
6.3	47	
5	41	
3.35	34	
2	26	
1.18	20	SAND
0.6	15	
0.425	13	
0.3	12	
0.15	10	
0.063	8	SILT/CLAY

Contract No.	23560	Report No.	R138786
Contract Name:	WSP - Lot 3		
BH/TP* :	BH157862		
Sample No.*	173043	Lab. Sample No.	A22/3913
Sample Type:	B		
Depth* (m)	3.40	Customer:	Ervia
Date Received	18/07/2022	Date Testing started	18/07/2022
Description:	Brown clayey/silty, sandy, GRAVEL		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

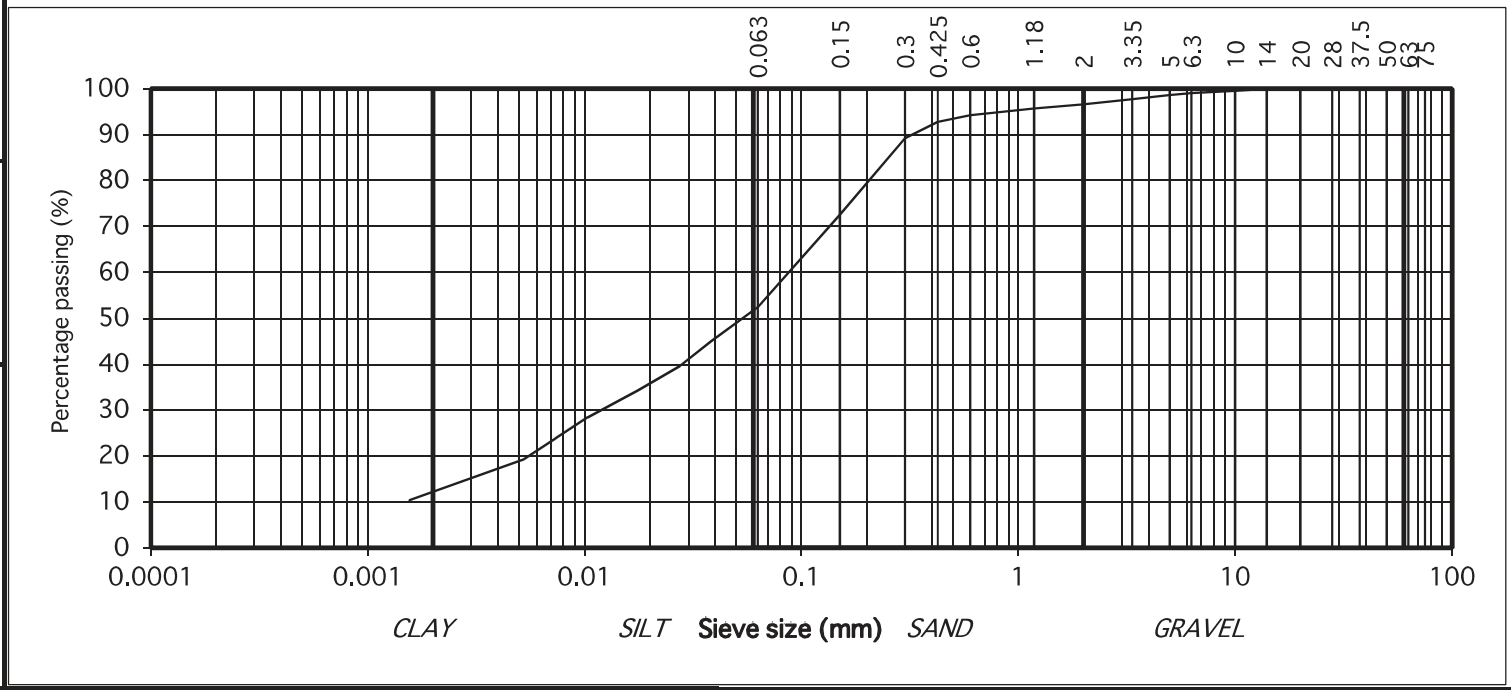
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	99	
5	99	
3.35	98	
2	97	
1.18	96	SAND
0.6	94	
0.425	93	
0.3	89	
0.15	73	
0.063	52	SILT/CLAY
0.038	45	
0.027	40	
0.018	34	
0.010	28	
0.007	24	
0.005	19	
0.002	10	

Contract No.	23560	Report No.	R139302	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157953			
Sample No.*	173045	Lab. Sample No.		A22/4127
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	99	
1.18	99	SAND
0.6	94	
0.425	93	
0.3	84	
0.15	41	
0.063	14	SILT/CLAY
0.041	10	
0.029	9	
0.018	8	
0.011	7	
0.008	6	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R138500	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157953			
Sample No.*	AA173046	Lab. Sample No.		A22/4125
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown clayey/silty, slightly gravelly, SAND			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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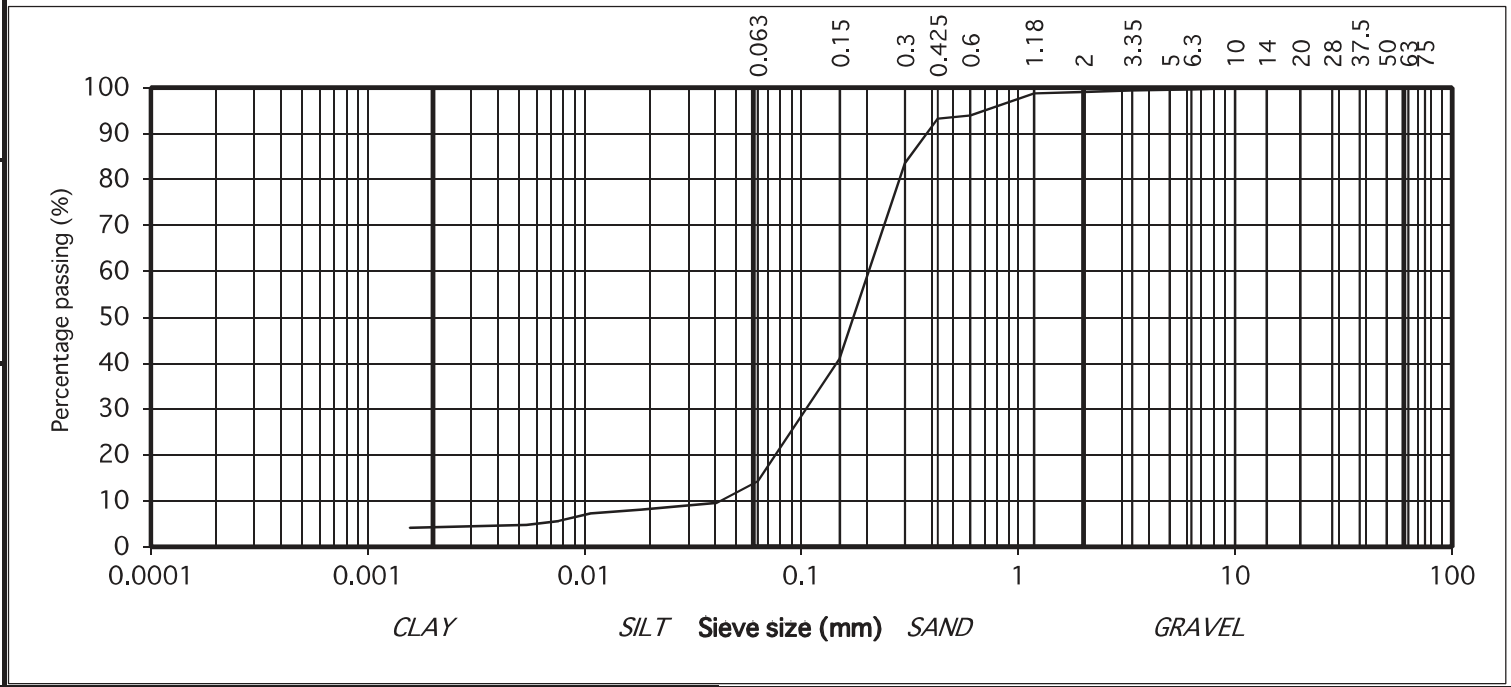

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	76	
50	70	GRAVEL
37.5	70	
28	65	
20	57	
14	53	
10	49	
6.3	44	
5	43	
3.35	40	
2	35	
1.18	28	SAND
0.6	20	
0.425	18	
0.3	17	
0.15	16	
0.063	14	SILT/CLAY
0.038	13	
0.028	11	
0.018	10	
0.010	9	
0.007	8	
0.005	7	
0.002	5	

Contract No.	23560	Report No.	R139303
Contract Name:	WSP - Lot 3		
BH/TP* :	BH157977		
Sample No.*	178001	Lab. Sample No.	A22/4129
Sample Type:	B		
Depth* (m)	2.00	Customer:	Ervia
Date Received	15/07/2022	Date Testing started	15/07/2022
Description:	Brown clayey/silty, very sandy, GRAVEL with many cobbles		
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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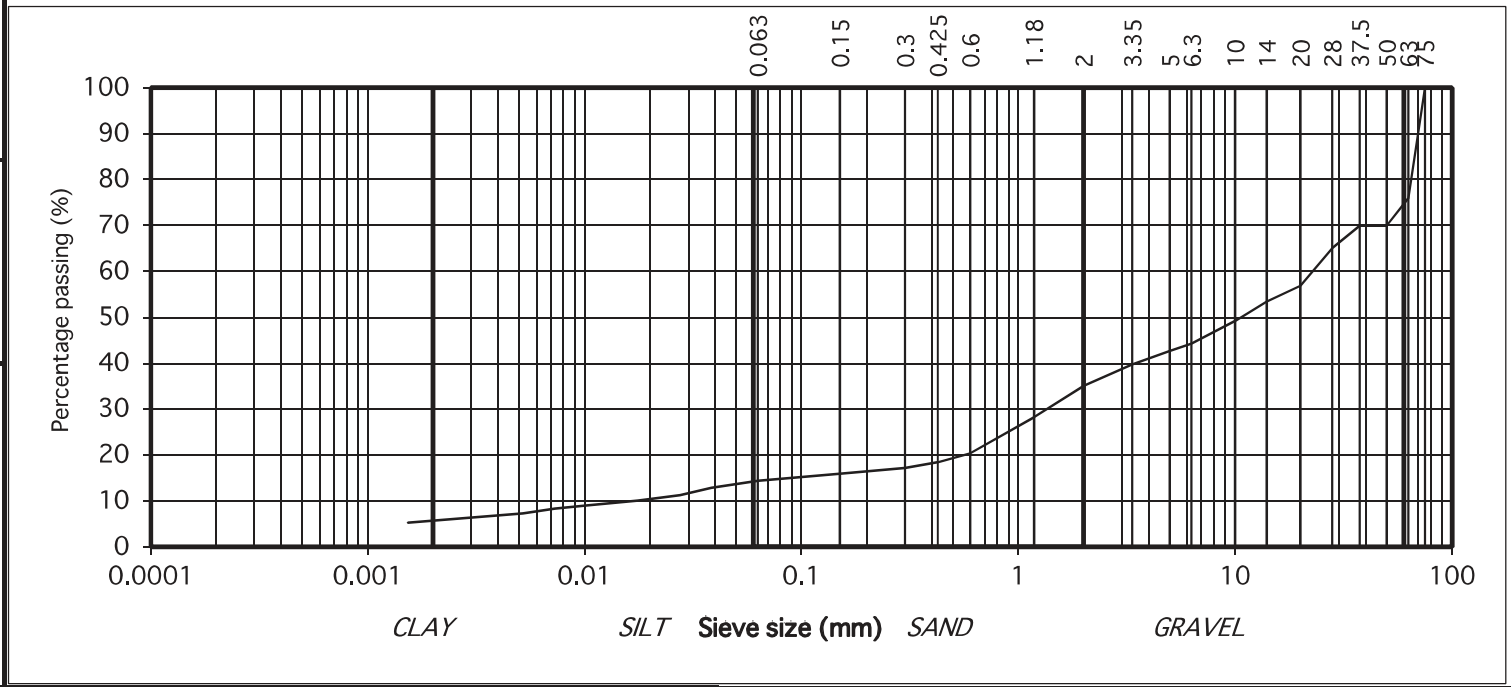

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	88	
20	77	
14	65	
10	56	
6.3	41	
5	35	
3.35	26	
2	18	
1.18	12	SAND
0.6	5	
0.425	3	
0.3	2	
0.15	2	
0.063	1	SILT/CLAY

Contract No.	23560	Report No.	R138501	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157953			
Sample No.*	AA173048	Lab. Sample No.		A22/4126
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly clayey/silty, sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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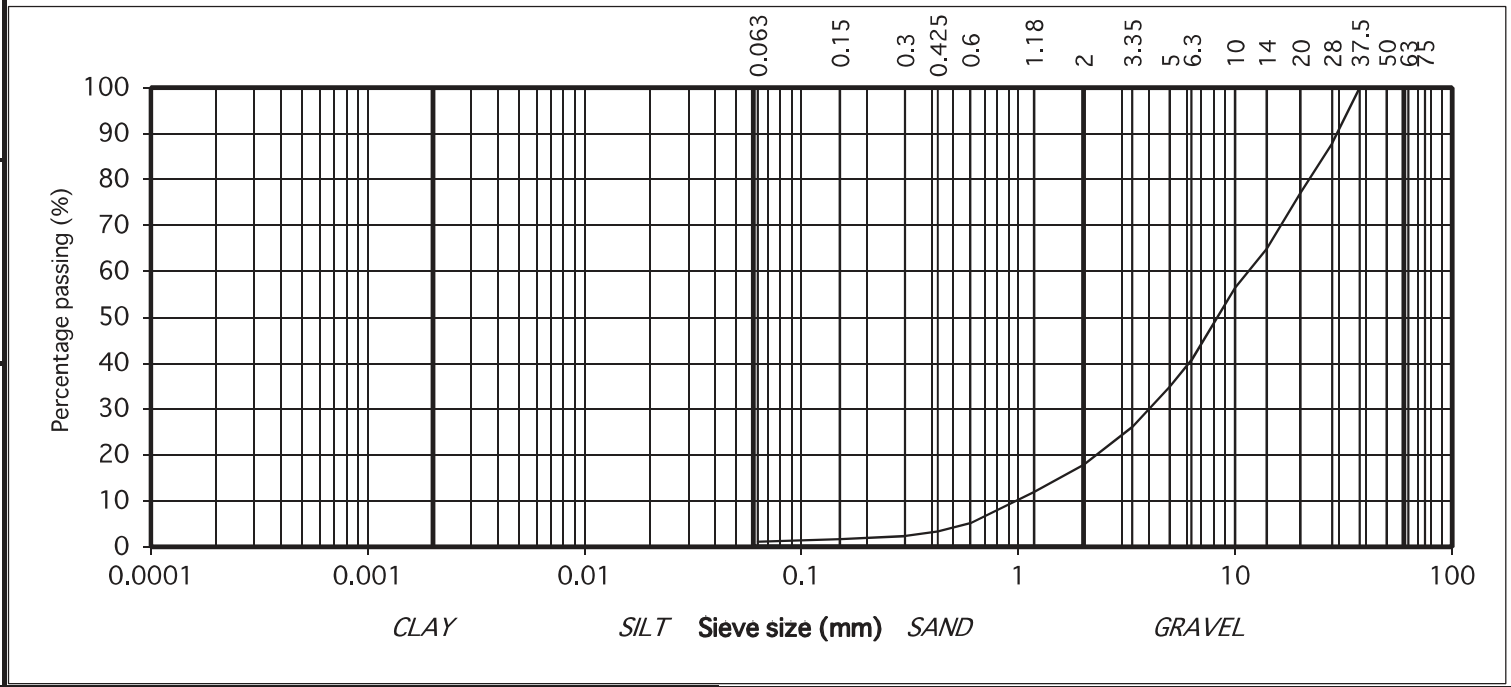
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	88	
20	83	
14	75	
10	69	
6.3	63	
5	60	
3.35	56	
2	51	
1.18	47	SAND
0.6	42	
0.425	40	
0.3	38	
0.15	33	
0.063	28	SILT/CLAY
0.038	25	
0.027	23	
0.017	21	
0.010	19	
0.007	17	
0.005	15	
0.002	12	

Contract No.	23560	Report No.	R139304	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH157977			
Sample No.*	178003	Lab. Sample No.		A22/4132
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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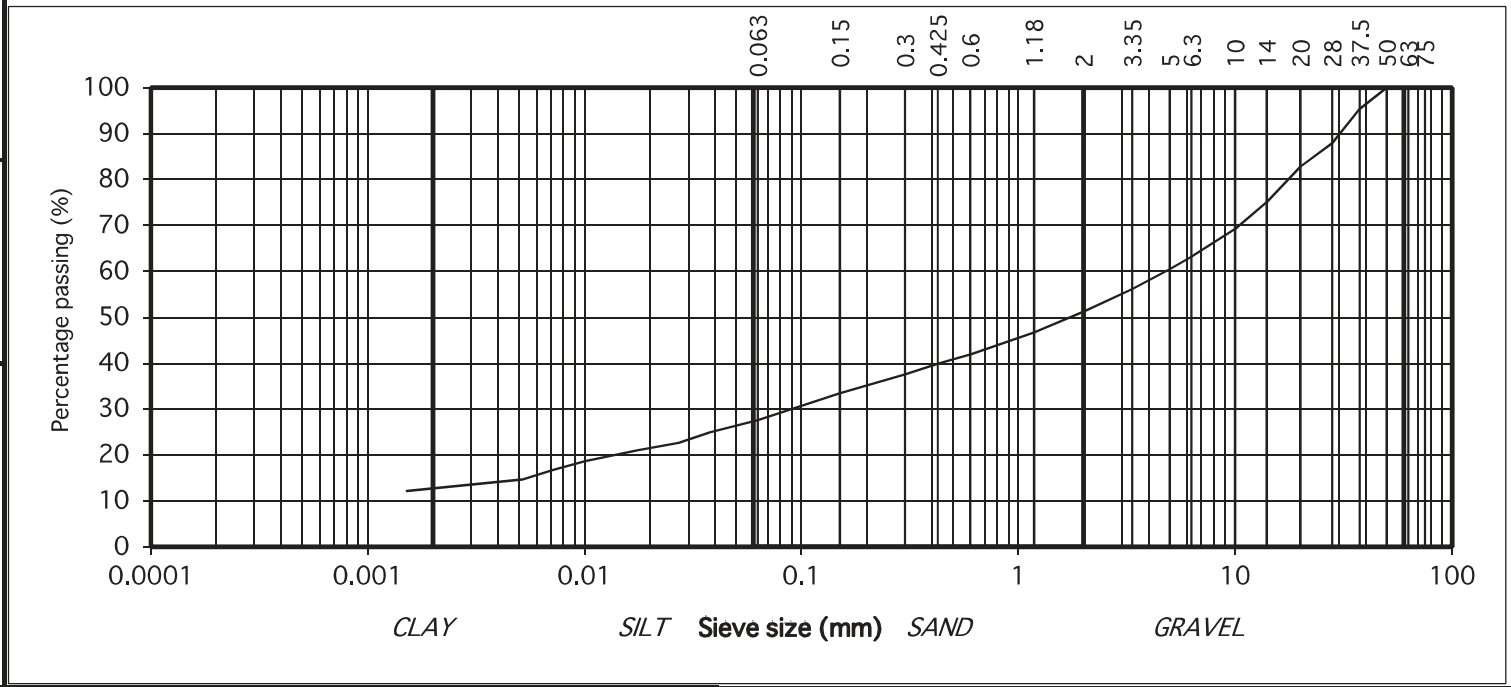
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

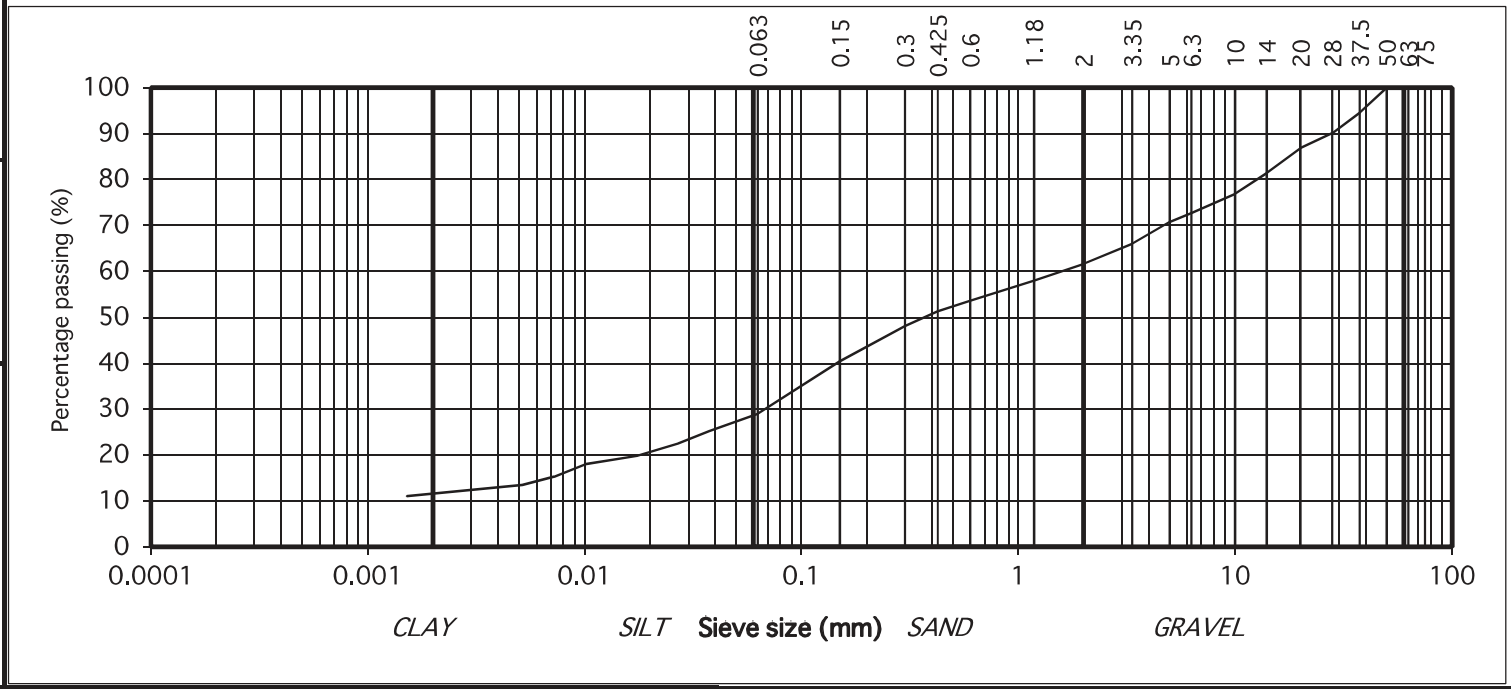
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	90	
20	87	
14	81	
10	77	
6.3	73	
5	71	
3.35	66	
2	62	
1.18	58	SAND
0.6	54	
0.425	51	
0.3	48	
0.15	40	
0.063	29	SILT/CLAY
0.038	25	
0.027	23	
0.017	20	
0.010	18	
0.007	15	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R138787	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH160675			
Sample No.*	173025	Lab. Sample No.		A22/3915
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

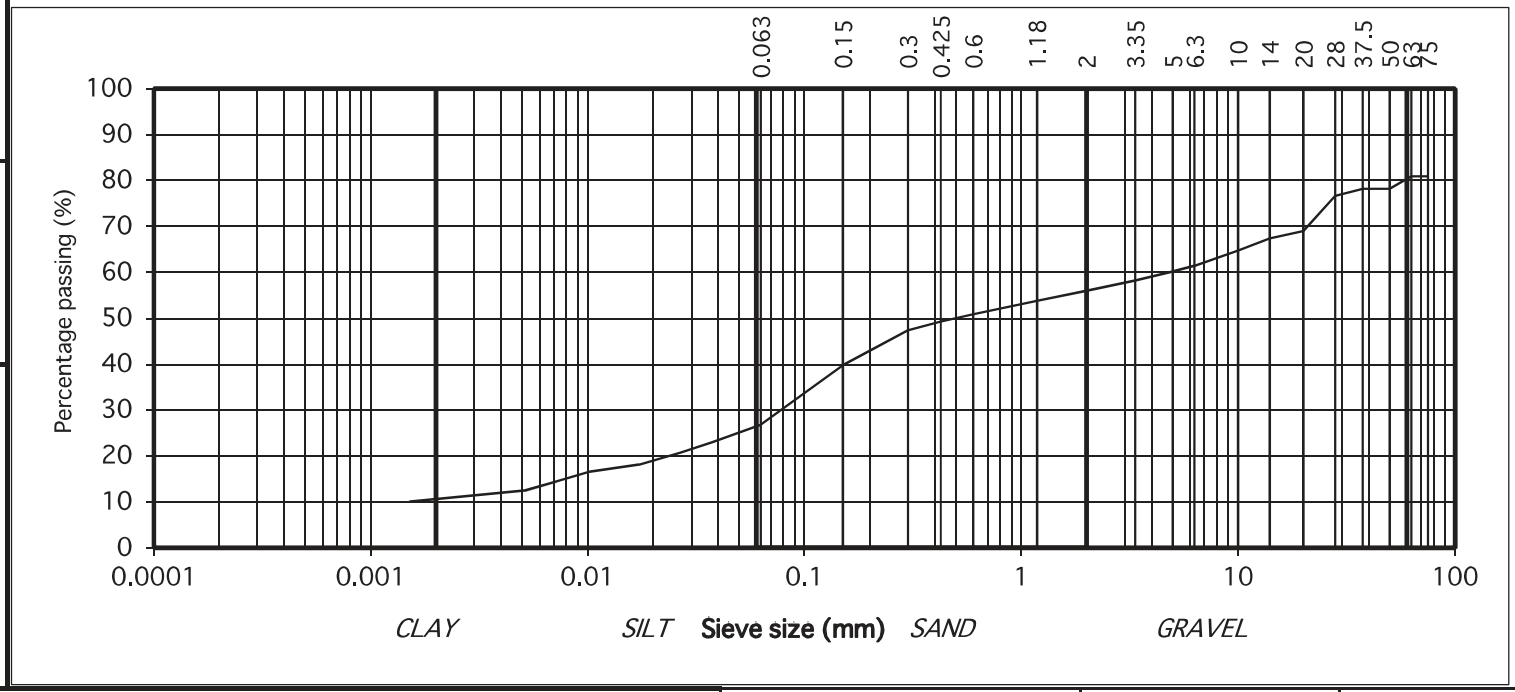
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	81	COBBLES
63	81	
50	78	GRAVEL
37.5	78	
28	77	
20	69	
14	67	
10	65	
6.3	61	
5	60	
3.35	58	
2	56	
1.18	54	SAND
0.6	51	
0.425	49	
0.3	47	
0.15	40	
0.063	27	SILT/CLAY
0.037	23	
0.027	21	
0.017	18	
0.010	17	
0.007	15	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R138789	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161062			
Sample No.*	173035	Lab. Sample No.		A22/3923
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	90	
20	89	
14	86	
10	81	
6.3	76	
5	74	
3.35	71	
2	67	
1.18	61	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	44	
0.063	35	SILT/CLAY
0.038	31	
0.027	28	
0.017	24	
0.010	22	
0.007	19	
0.005	17	
0.002	13	

Contract No.	23560	Report No.	R138788	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH160675			
Sample No.*	173027	Lab. Sample No.		A22/3916
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	15/07/2022	Date Testing started		15/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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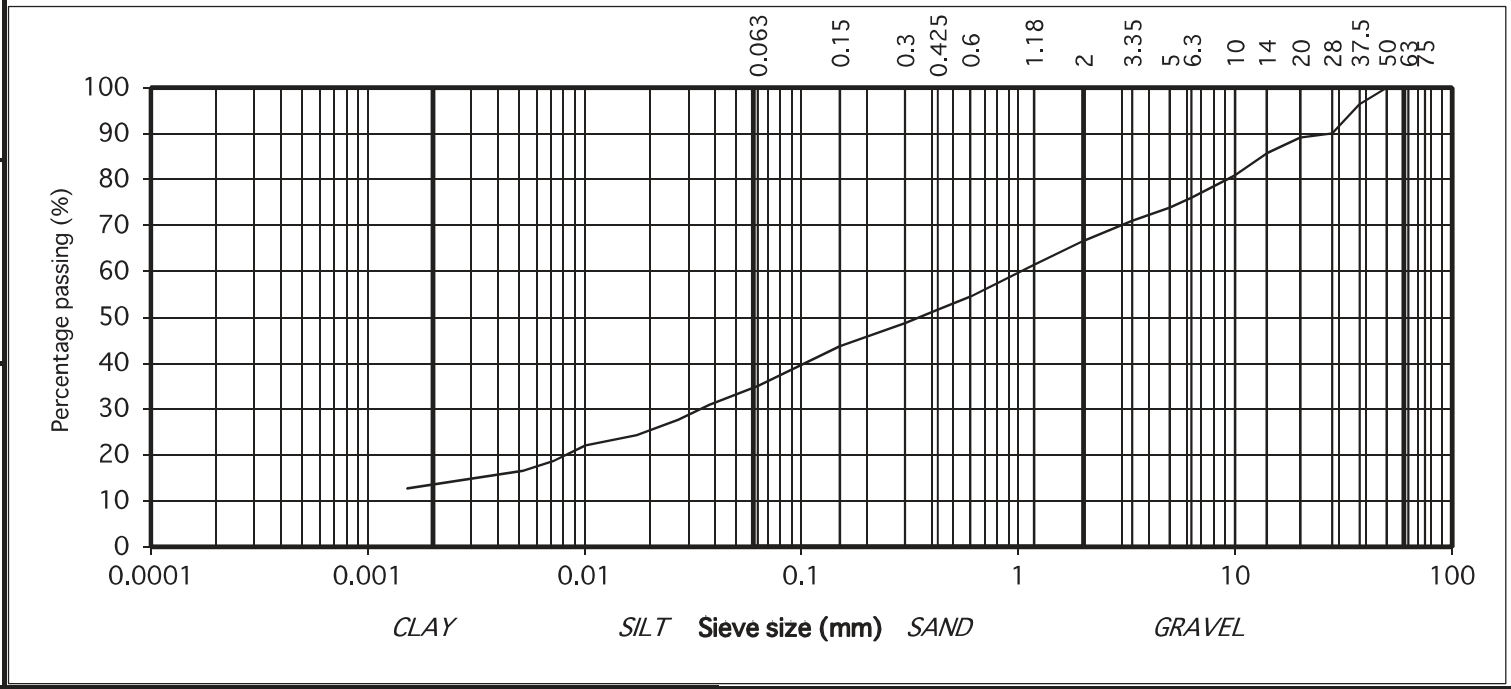
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 SAmple size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	91	GRAVEL
37.5	85	
28	76	
20	60	
14	46	
10	35	
6.3	23	
5	19	
3.35	13	
2	8	
1.18	5	SAND
0.6	4	
0.425	3	
0.3	3	
0.15	3	
0.063	2	SILT/CLAY

Contract No.	23560	Report No.	R137449	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH160756			
Sample No.*	AA173029	Lab. Sample No.		A22/3919
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly clayey/silty, sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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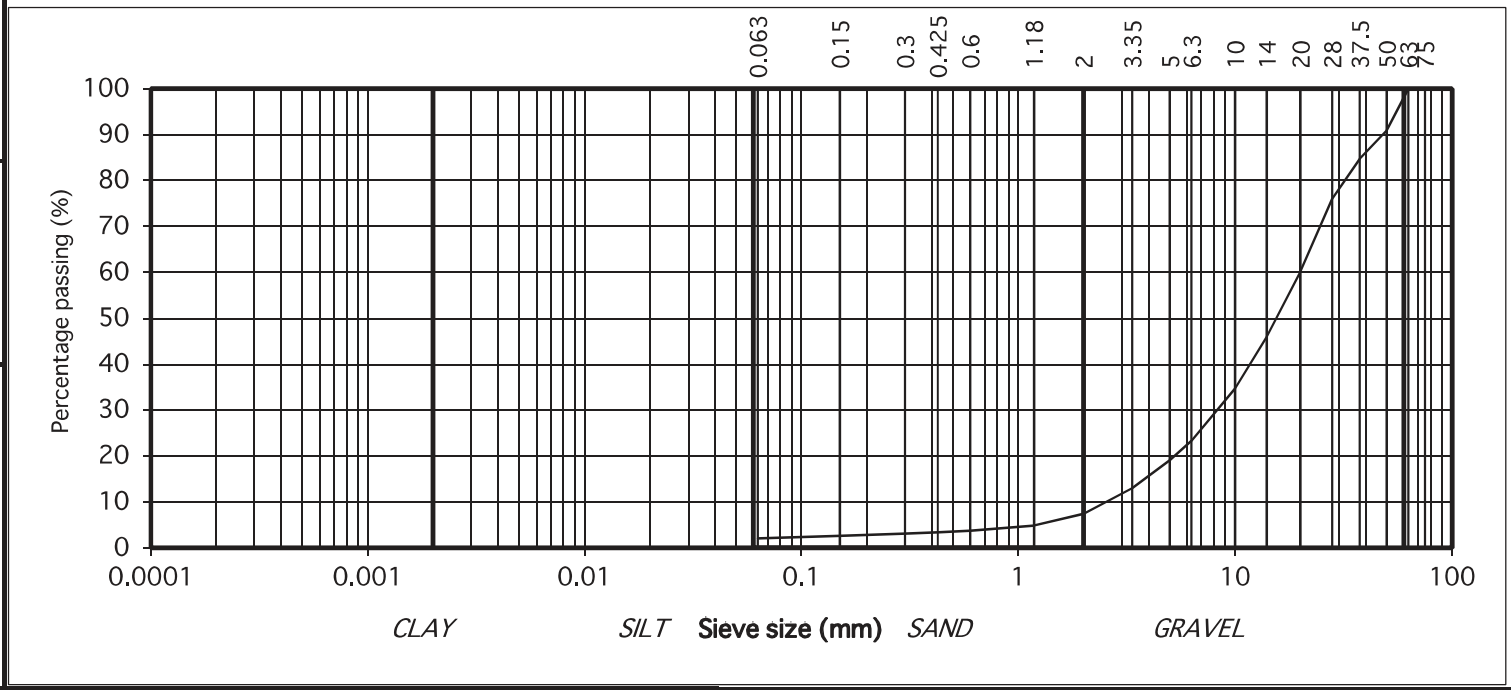

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

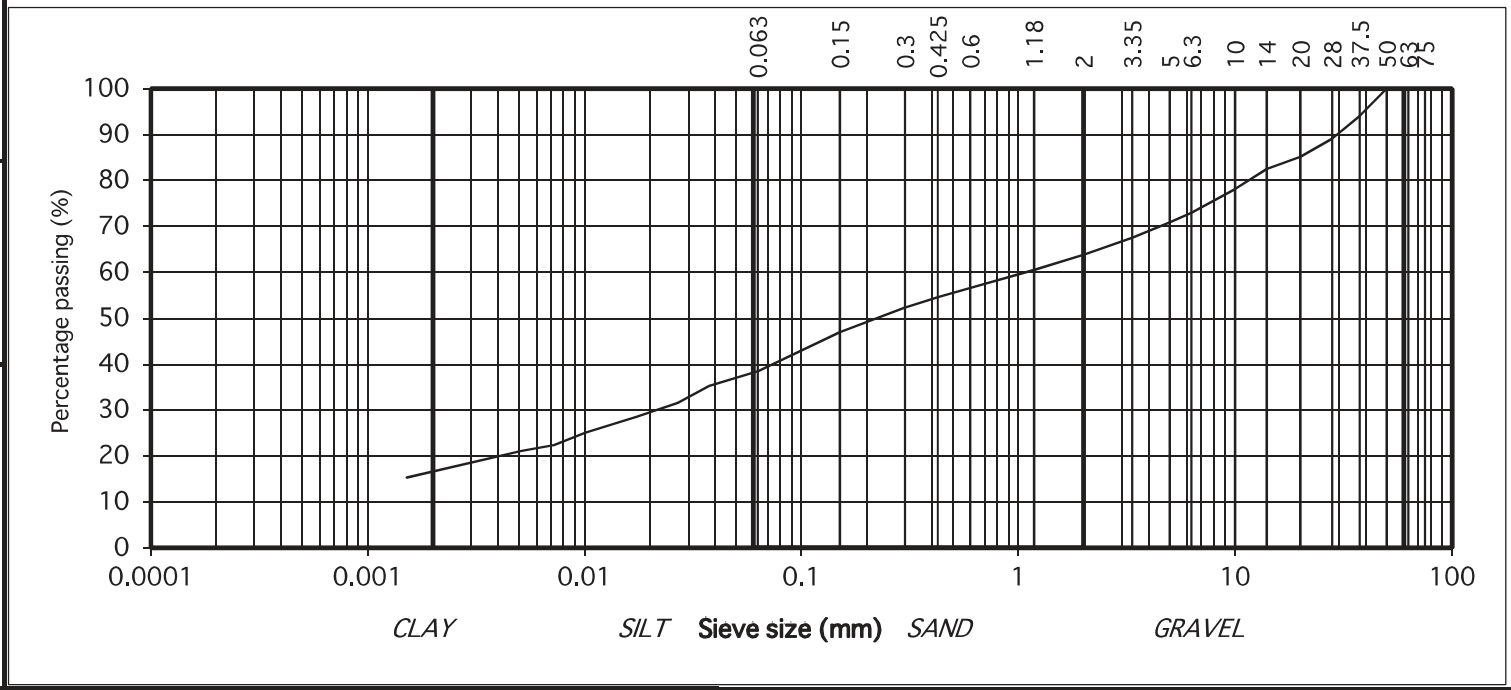
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	89	
20	85	
14	82	
10	78	
6.3	73	
5	71	
3.35	68	
2	64	
1.18	61	SAND
0.6	57	
0.425	55	
0.3	52	
0.15	47	
0.063	39	SILT/CLAY
0.037	35	
0.027	32	
0.017	29	
0.010	25	
0.007	22	
0.005	21	
0.002	15	

Contract No.	23560	Report No.	R143914	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161062			
Sample No.*	173036	Lab. Sample No.		A22/3921
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	91	
20	89	
14	85	
10	80	
6.3	76	
5	74	
3.35	70	
2	65	
1.18	60	SAND
0.6	54	
0.425	52	
0.3	51	
0.15	48	
0.063	43	SILT/CLAY
0.038	39	
0.027	36	
0.017	33	
0.010	30	
0.007	27	
0.005	23	
0.002	16	

Contract No.	23560	Report No.	R143914	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161062			
Sample No.*	173038	Lab. Sample No.		A22/3922
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Black slightly sandy, gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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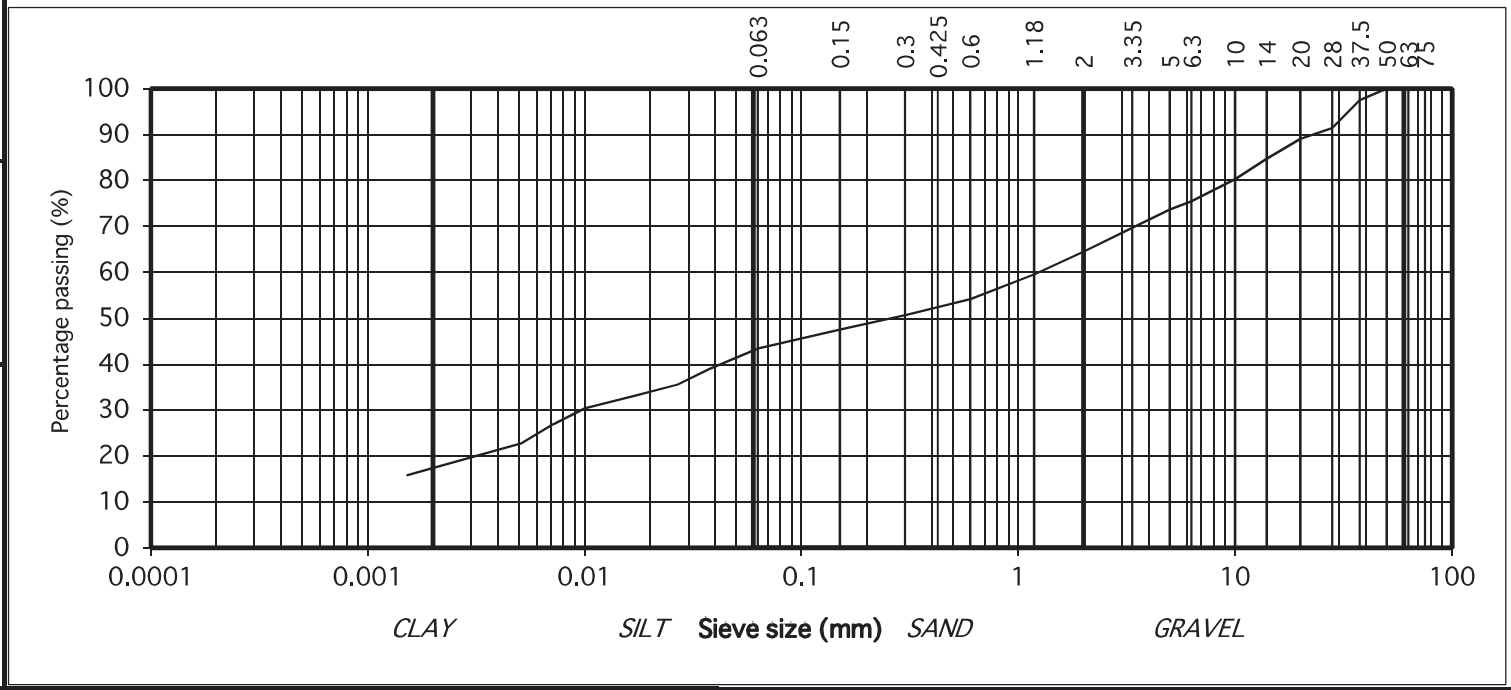

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

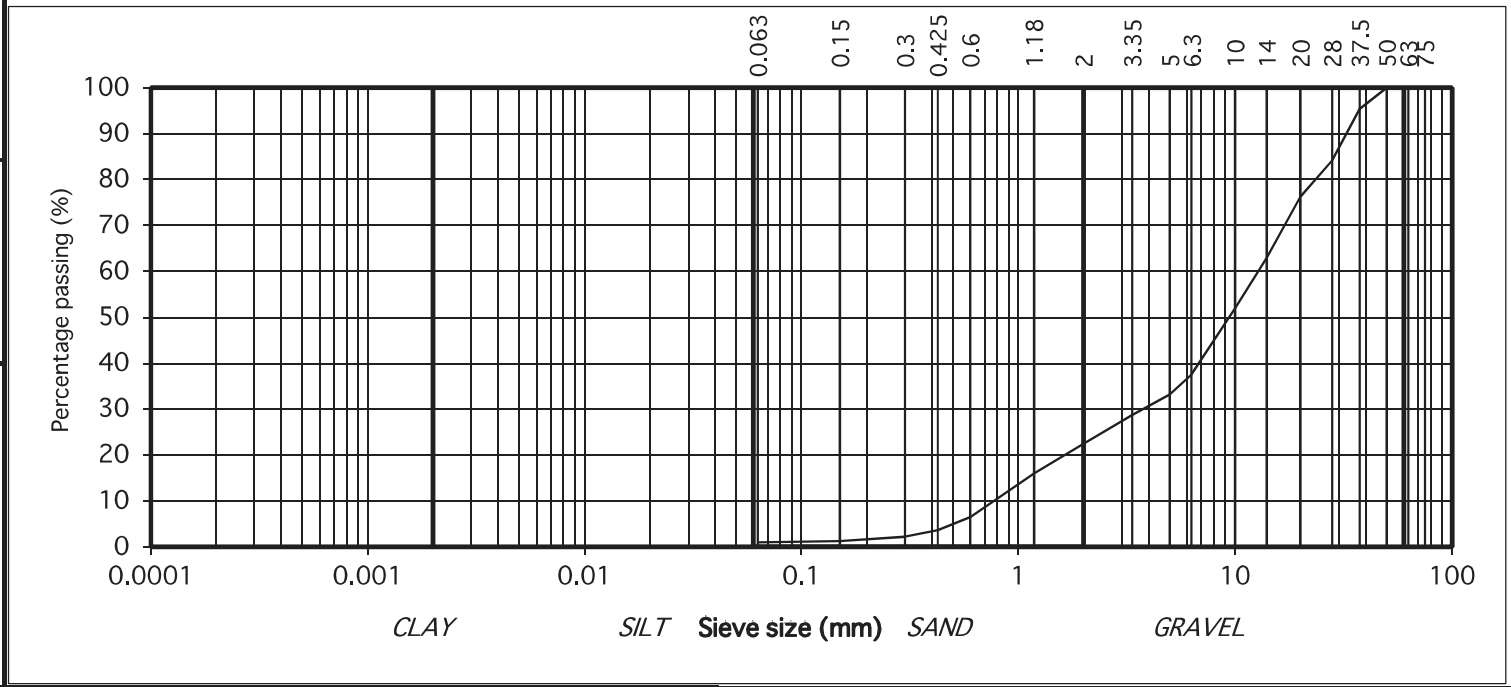
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	84	
20	76	
14	63	
10	52	
6.3	38	
5	33	
3.35	29	
2	22	
1.18	16	SAND
0.6	7	
0.425	4	
0.3	2	
0.15	1	
0.063	1	SILT/CLAY

Contract No.	23560	Report No.	R139272
Contract Name:	WSP - Lot 3		
BH/TP* :	BH161293		
Sample No.*	173032	Lab. Sample No.	A22/3928
Sample Type:	B		
Depth* (m)	3.00	Customer:	Ervia
Date Received	14/07/2022	Date Testing started	14/07/2022
Description:	Brown slightly clayey/silty, very sandy, GRAVEL		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	90	
20	77	
14	66	
10	59	
6.3	50	
5	46	
3.35	43	
2	38	
1.18	34	SAND
0.6	25	
0.425	19	
0.3	14	
0.15	10	
0.063	7	SILT/CLAY

Contract No.	23560	Report No.	R138790
Contract Name:	WSP - Lot 3		
BH/TP* :	BH161293		
Sample No.*	173031	Lab. Sample No.	A22/3927
Sample Type:	B		
Depth* (m)	2.00	Customer:	Ervia
Date Received	15/07/2022	Date Testing started	15/07/2022
Description:	Brown clayey/silty, very sandy, GRAVEL		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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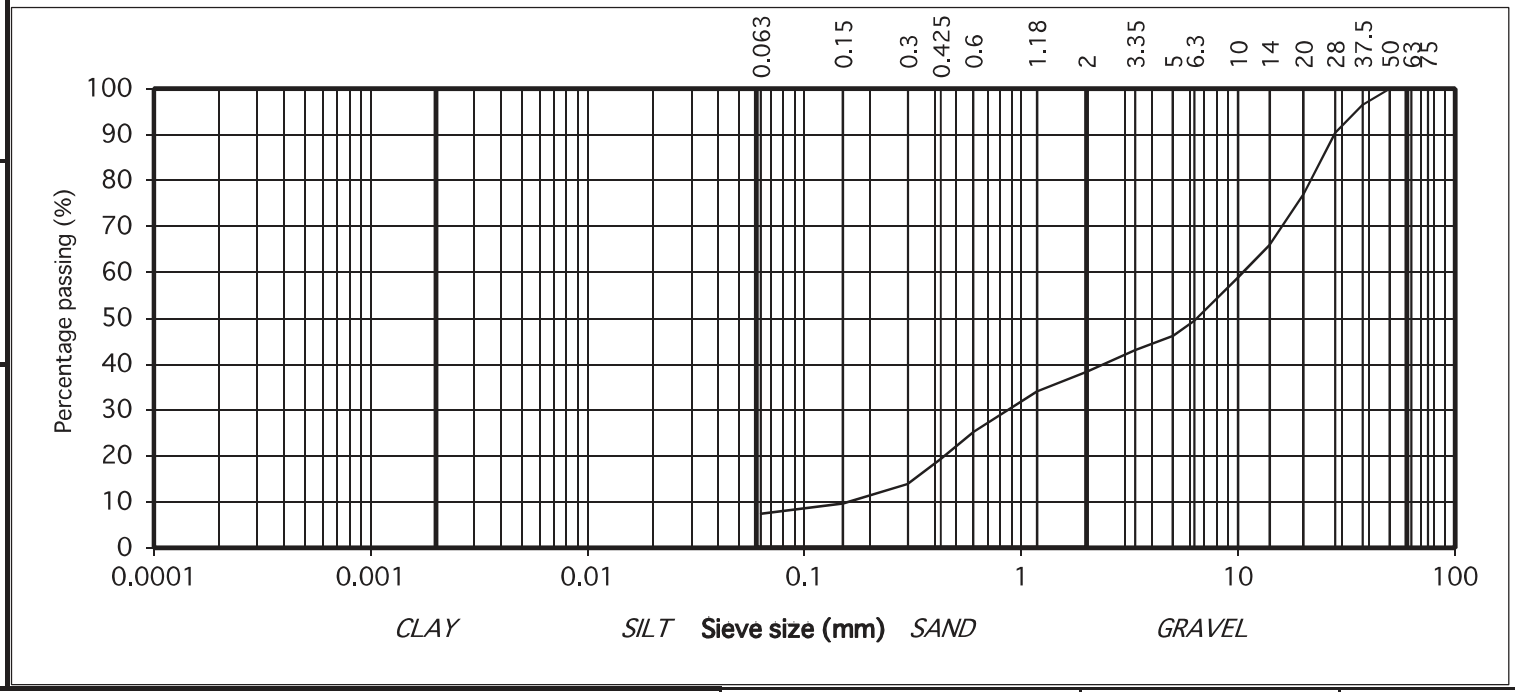
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	74	COBBLES
63	74	
50	74	GRAVEL
37.5	71	
28	70	
20	66	
14	65	
10	63	
6.3	60	
5	59	
3.35	57	
2	54	
1.18	51	SAND
0.6	47	
0.425	45	
0.3	43	
0.15	37	
0.063	29	SILT/CLAY
0.038	24	
0.027	23	
0.017	22	
0.010	18	
0.007	17	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R138464	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161293			
Sample No.*	173033	Lab. Sample No.		A22/3929
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with many cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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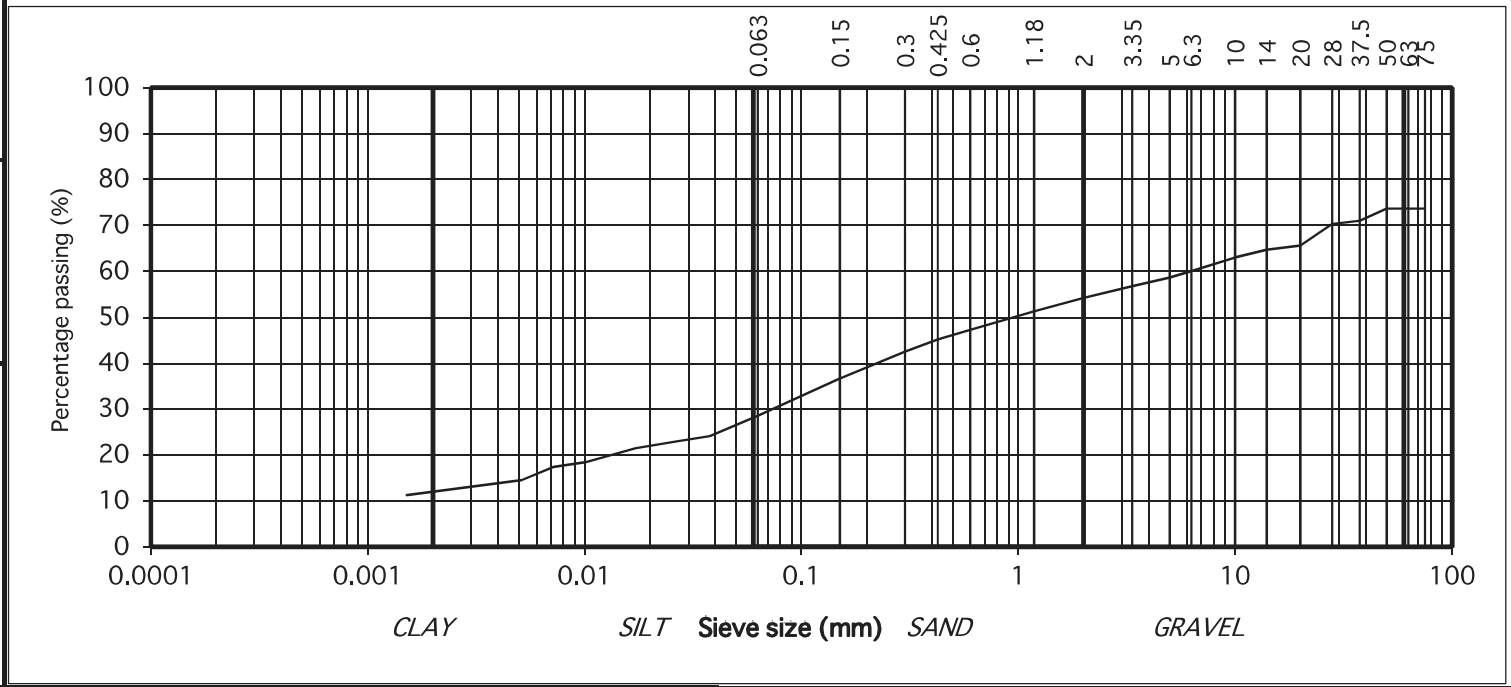

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	99	
1.18	97	SAND
0.6	95	
0.425	93	
0.3	91	
0.15	84	
0.063	64	SILT/CLAY
0.037	55	
0.027	47	
0.018	38	
0.010	29	
0.007	25	
0.005	19	
0.002	12	

Contract No. 23560 Report No. R141710
Contract Name: WSP - Lot 3
BH/TP* : BH161865
Sample No.* 178321 Lab. Sample No. A22/6672
Sample Type: B
Depth* (m) 1.00 Customer: Ervia
Date Received 28/11/2022 Date Testing started 28/11/2022
Description: Brown slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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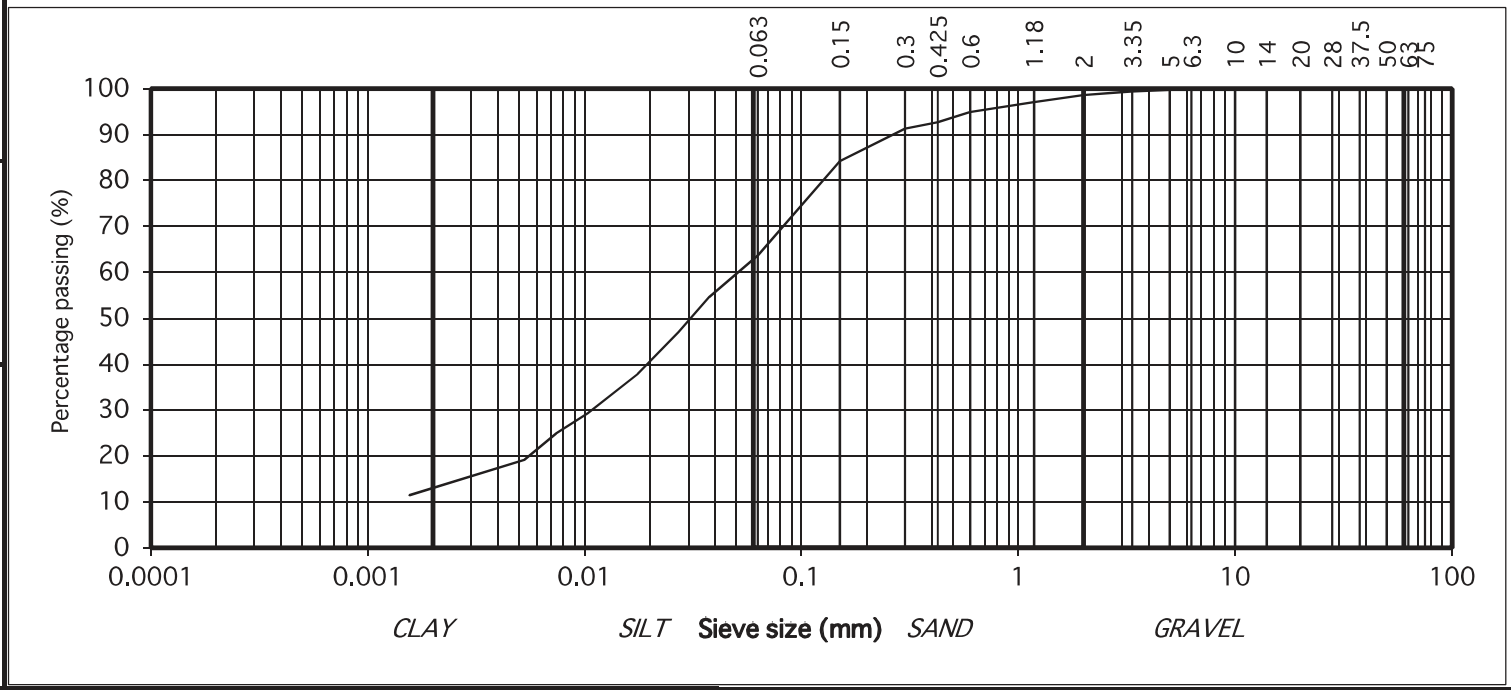

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	98	
1.18	97	SAND
0.6	96	
0.425	95	
0.3	95	
0.15	93	
0.063	72	SILT/CLAY
0.037	60	
0.027	51	
0.018	41	
0.010	31	
0.007	25	
0.005	19	
0.002	10	

Contract No. 23560 Report No. R141711
Contract Name: WSP - Lot 3
BH/TP* : BH161865
Sample No.* 178322 Lab. Sample No. A22/6673
Sample Type: B
Depth* (m) 2.00 Customer: Ervia
Date Received 23/11/2022 Date Testing started 23/11/2022
Description: Grey Brown slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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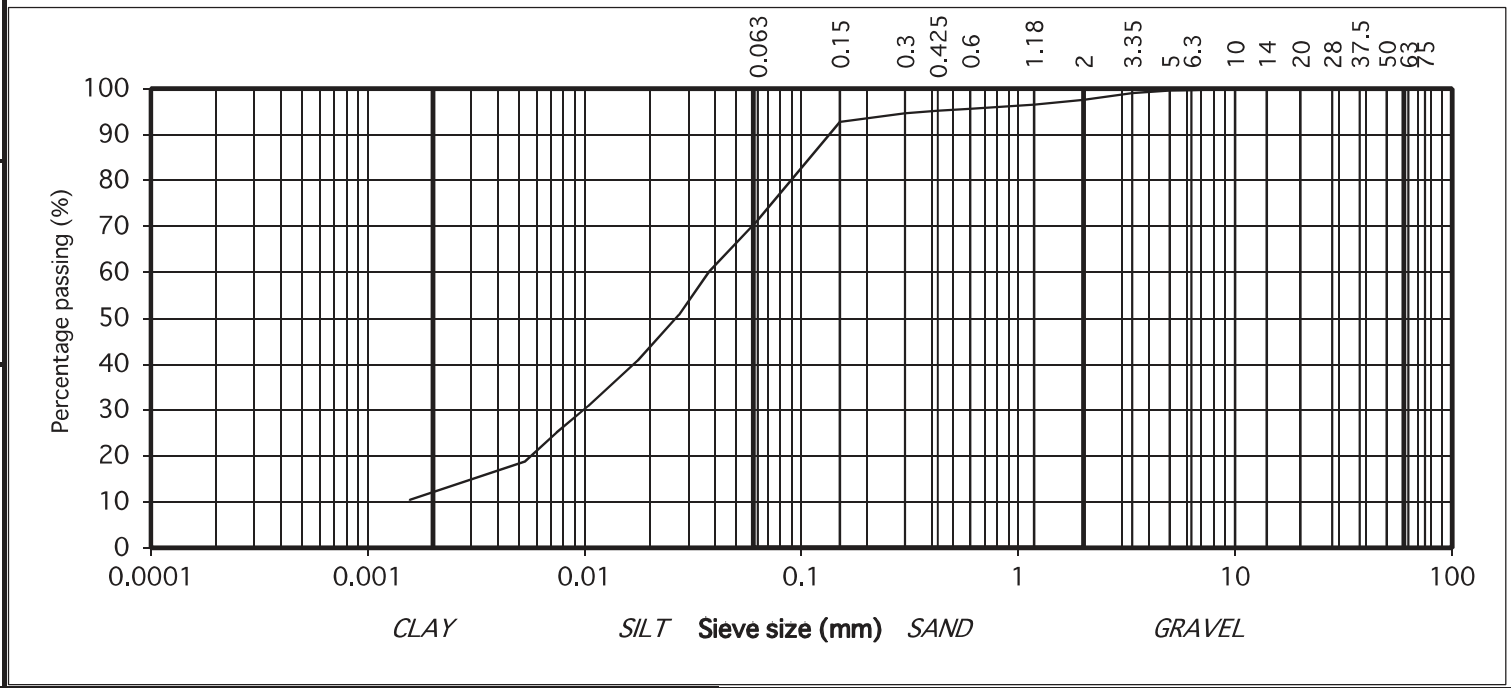

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	98	
6.3	96	
5	96	
3.35	95	
2	94	
1.18	92	SAND
0.6	85	
0.425	80	
0.3	75	
0.15	67	
0.063	51	SILT/CLAY
0.038	44	
0.027	40	
0.017	34	
0.010	27	
0.007	23	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R141497	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161865			
Sample No.*	178323	Lab. Sample No.		A22/6674
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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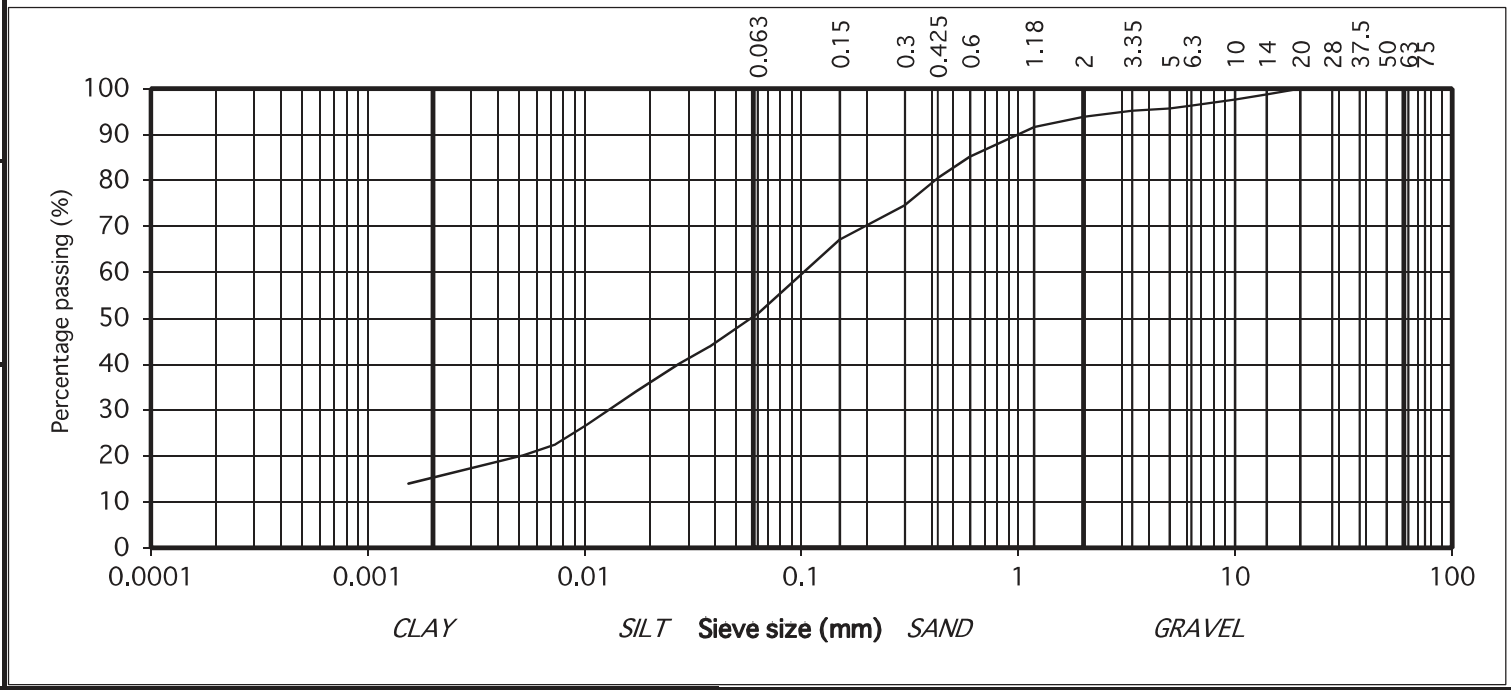
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	99	
6.3	99	
5	99	
3.35	99	
2	99	
1.18	98	SAND
0.6	98	
0.425	97	
0.3	96	
0.15	93	
0.063	88	SILT/CLAY
0.038	80	
0.028	66	
0.018	54	
0.010	48	
0.007	41	
0.005	33	
0.002	13	

Contract No.	23560	Report No.	R141498	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH161865			
Sample No.*	178324	Lab. Sample No.		A22/6675
Sample Type:	B			
Depth* (m)	4.00	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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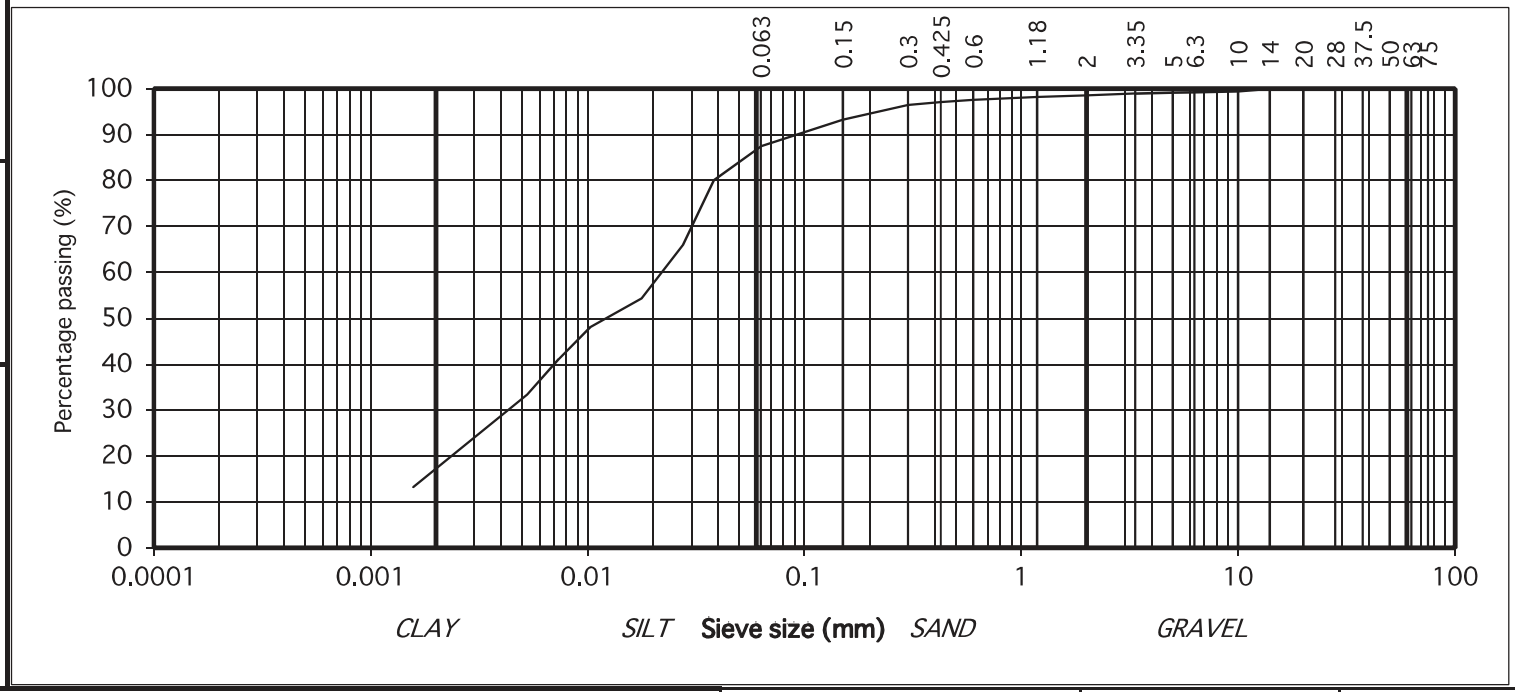
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	80	COBBLES
63	71	
50	62	GRAVEL
37.5	55	
28	44	
20	29	
14	24	
10	19	
6.3	16	
5	14	
3.35	13	
2	11	
1.18	9	SAND
0.6	8	
0.425	8	
0.3	7	
0.15	7	
0.063	6	SILT/CLAY

Contract No.	23560	Report No.	R139306
Contract Name:	WSP - Lot 3		
BH/TP* :	BH163860		
Sample No.*	178006	Lab. Sample No.	A22/4137
Sample Type:	B		
Depth* (m)	1.80	Customer:	Ervia
Date Received	15/07/2022	Date Testing started	15/07/2022
Description:	Grey Brown clayey/silty, slightly sandy, GRAVEL with many cobbles		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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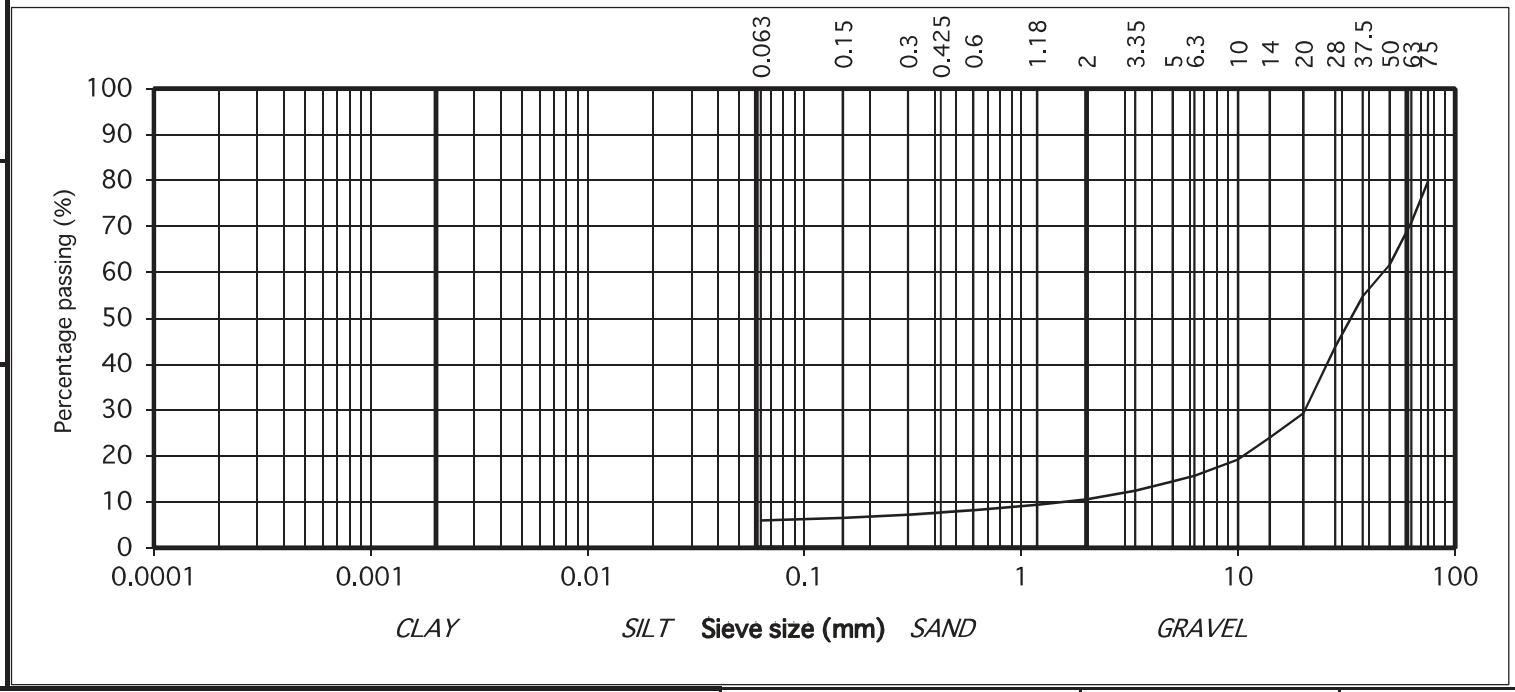
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	93	
28	93	
20	91	
14	86	
10	81	
6.3	75	
5	73	
3.35	68	
2	64	
1.18	59	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	43	
0.063	36	SILT/CLAY
0.037	30	
0.027	28	
0.017	25	
0.010	20	
0.007	17	
0.005	16	
0.002	11	

Contract No.	23560	Report No.	R139305	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH163697			
Sample No.*	178008	Lab. Sample No.		A22/4134
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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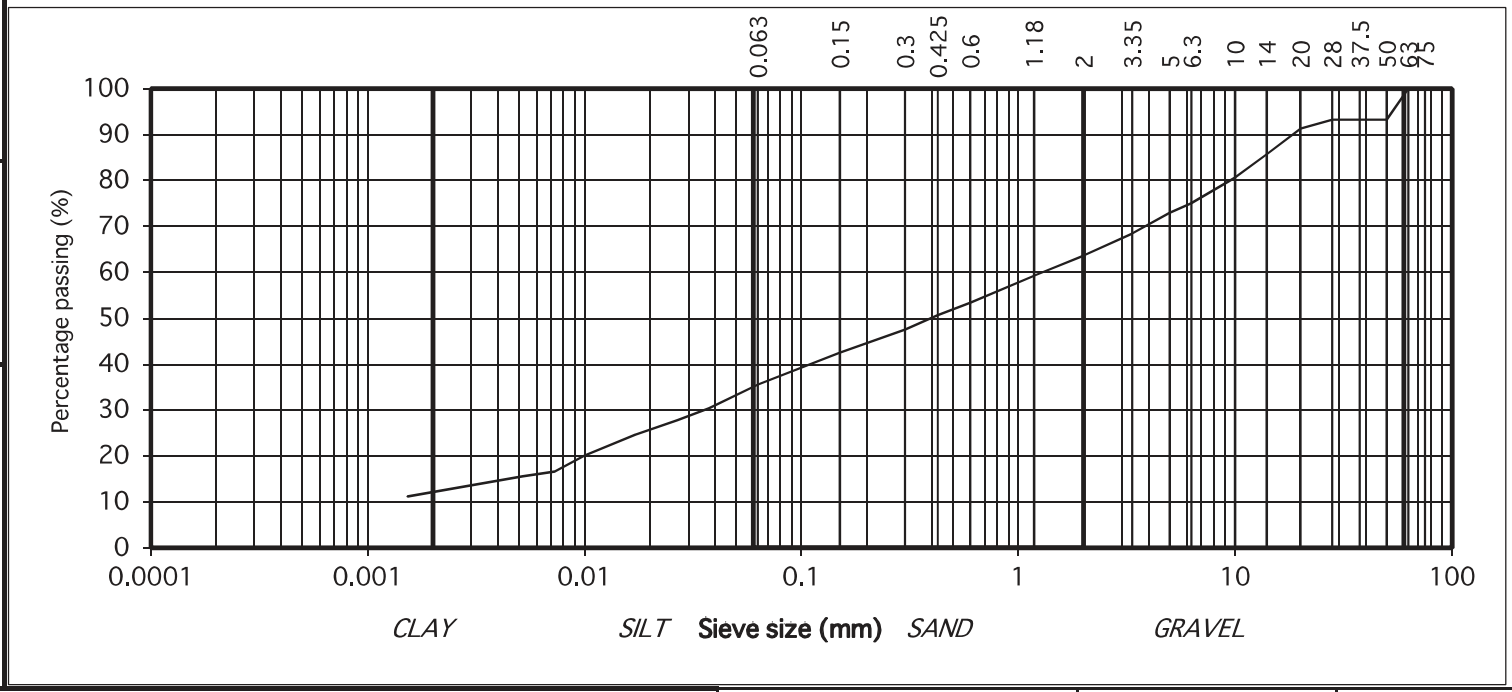
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	84	
14	80	
10	77	
6.3	75	
5	74	
3.35	73	
2	72	
1.18	71	SAND
0.6	70	
0.425	69	
0.3	68	
0.15	65	
0.063	59	SILT/CLAY
0.038	52	
0.027	48	
0.017	43	
0.010	37	
0.007	32	
0.005	26	
0.002	16	

Contract No. 23560 Report No. R141499
Contract Name: WSP - Lot 3
BH/TP* : BH165006A
Sample No.* 179119 Lab. Sample No. A22/6678
Sample Type: B
Depth* (m) 0.50 Customer: Ervia
Date Received 24/11/2022 Date Testing started 24/11/2022
Description: Brown slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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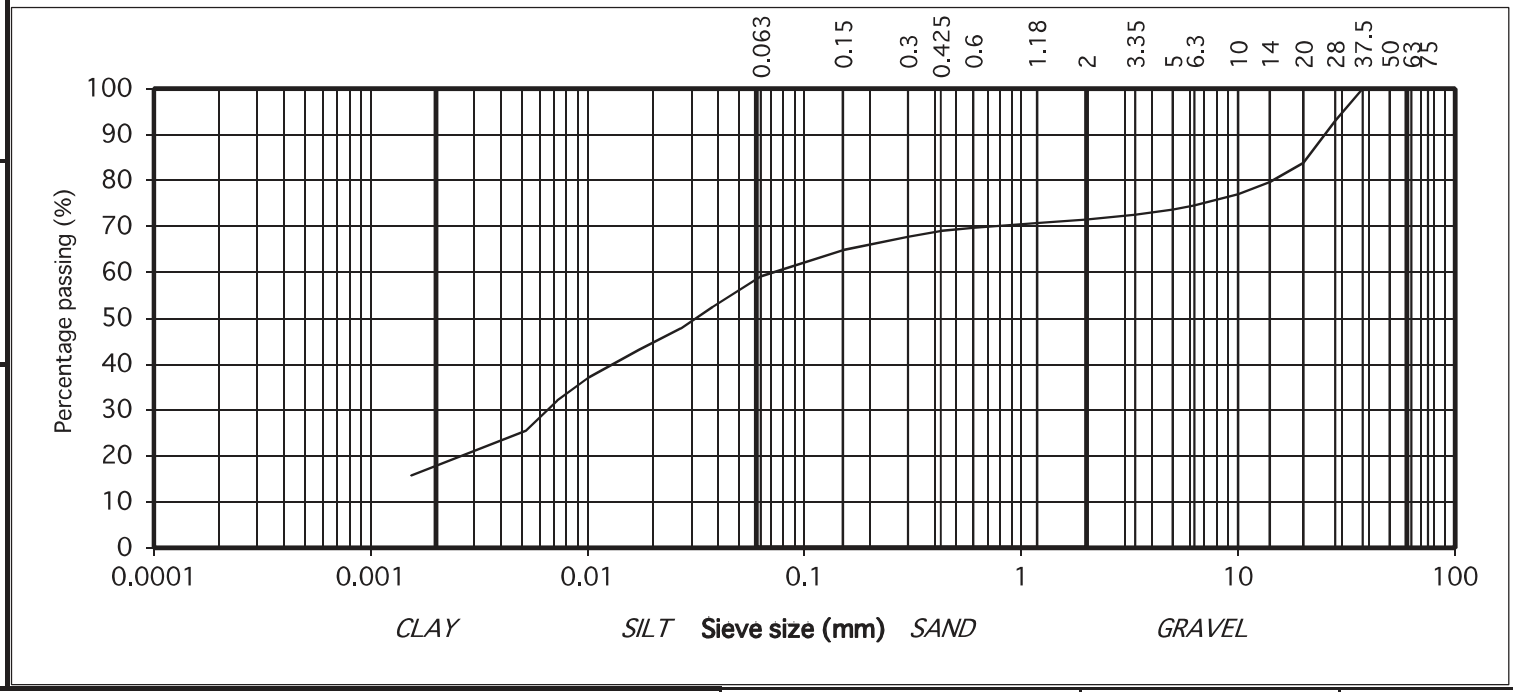

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	84	
14	80	
10	77	
6.3	75	
5	74	
3.35	73	
2	72	
1.18	71	SAND
0.6	70	
0.425	69	
0.3	68	
0.15	65	
0.063	59	SILT/CLAY
0.038	52	
0.027	48	
0.017	43	
0.010	37	
0.007	32	
0.005	26	
0.002	16	

Contract No. 23560 Report No. R141500
Contract Name: WSP - Lot 3
BH/TP* : BH165317
Sample No.* 179122 Lab. Sample No. A22/6681
Sample Type: B
Depth* (m) 1.20 Customer: Ervia
Date Received 23/11/2022 Date Testing started 23/11/2022
Description: Brown slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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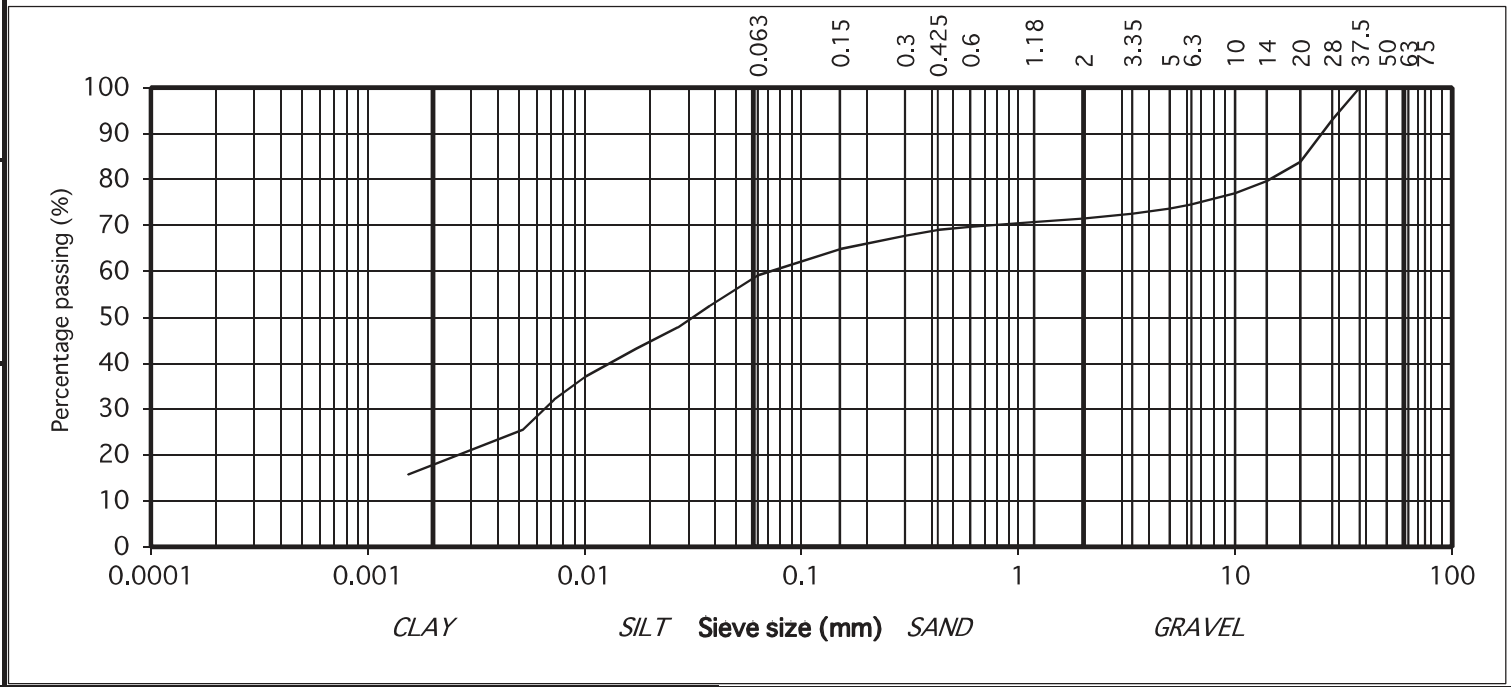

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

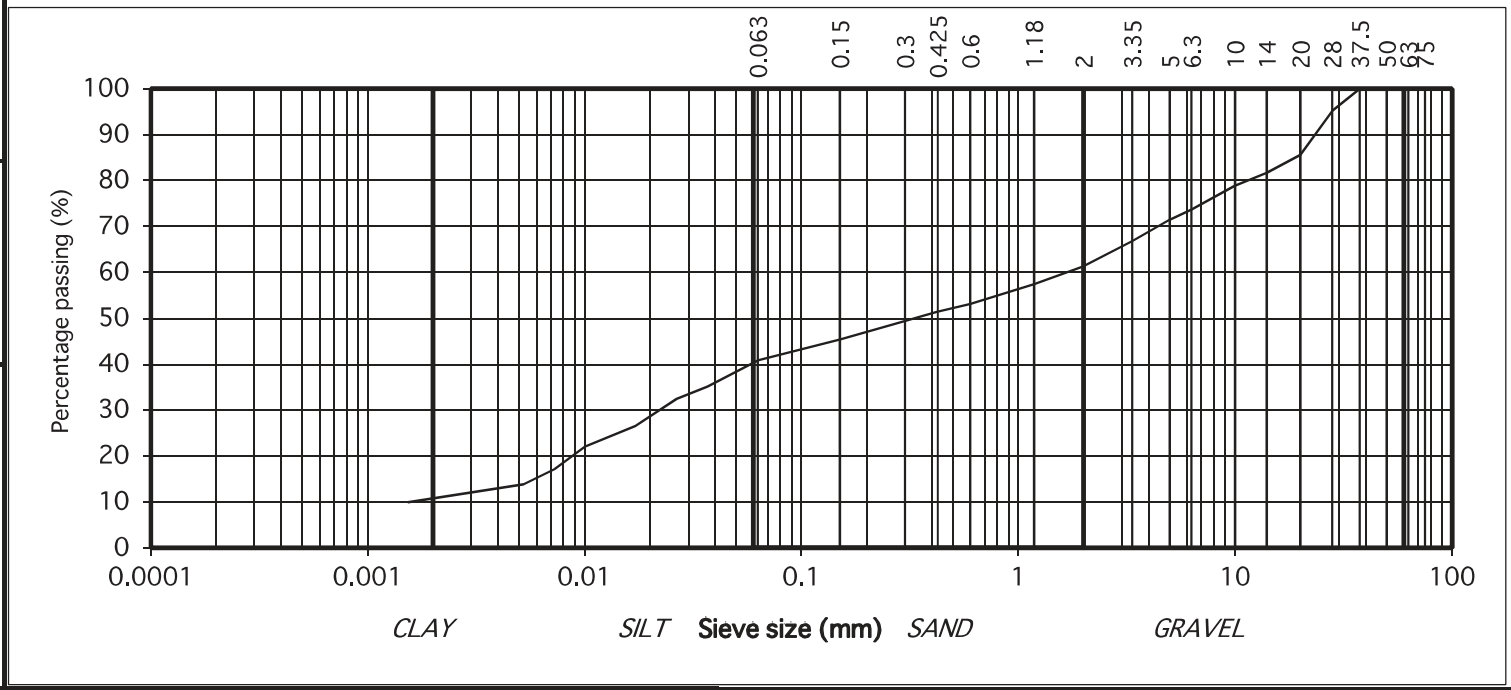
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	95	
20	86	
14	82	
10	79	
6.3	74	
5	71	
3.35	67	
2	61	
1.18	57	SAND
0.6	53	
0.425	51	
0.3	49	
0.15	45	
0.063	41	SILT/CLAY
0.037	35	
0.026	32	
0.017	27	
0.010	22	
0.007	17	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R144028	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH167255			
Sample No.*	151402	Lab. Sample No.		A22/2371
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Black slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

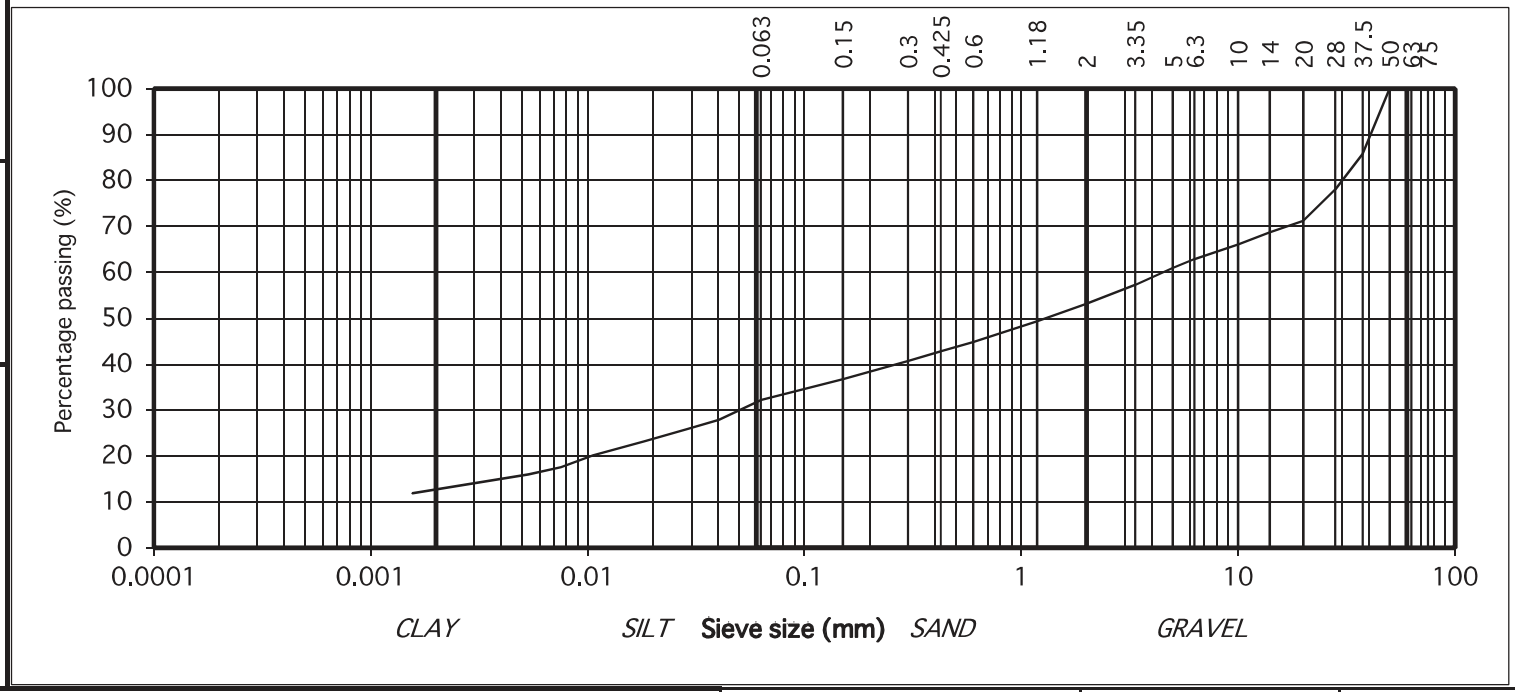
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	86	
28	78	
20	71	
14	69	
10	66	
6.3	63	
5	61	
3.35	57	
2	53	
1.18	49	SAND
0.6	45	
0.425	43	
0.3	41	
0.15	37	
0.063	32	SILT/CLAY
0.040	28	
0.029	26	
0.018	23	
0.011	20	
0.008	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R144026	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH166526			
Sample No.*	151413	Lab. Sample No.		A22/2369
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

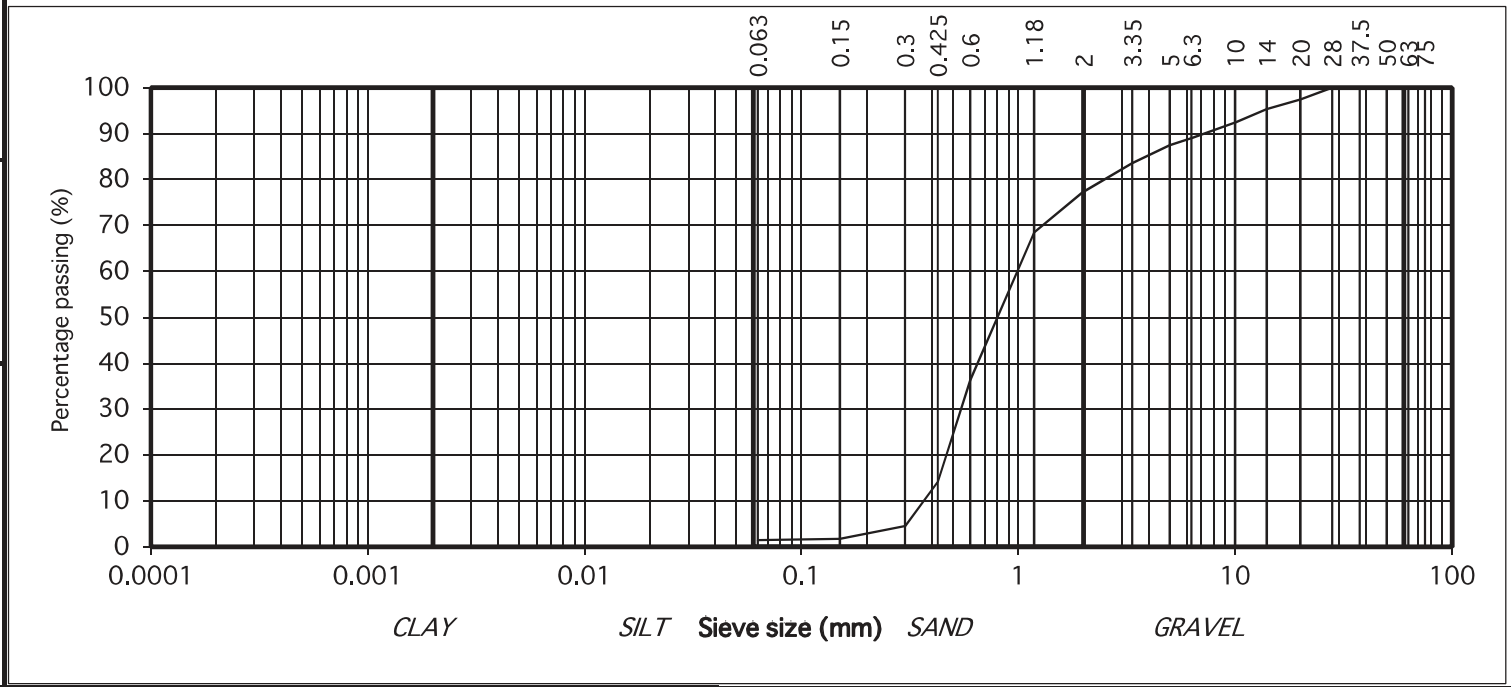
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	97	
14	95	
10	92	
6.3	89	
5	88	
3.35	84	
2	77	
1.18	68	SAND
0.6	36	
0.425	14	
0.3	5	
0.15	2	
0.063	1	SILT/CLAY

Contract No.	23560	Report No.	R144027
Contract Name:	WSP - Lot 3		
BH/TP* :	BH166722		
Sample No.*	151411	Lab. Sample No.	A22/2370
Sample Type:	B		
Depth* (m)	1.10	Customer:	Ervia
Date Received	15/06/2022	Date Testing started	15/06/2022
Description:	Grey brown slightly clayey/silty, very gravelly, SAND		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	86	
20	79	
14	75	
10	72	
6.3	69	
5	67	
3.35	64	
2	60	
1.18	56	SAND
0.6	52	
0.425	50	
0.3	49	
0.15	45	
0.063	42	SILT/CLAY
0.036	39	
0.026	36	
0.017	31	
0.010	27	
0.007	23	
0.005	19	
0.002	14	

Contract No. 23560 Report No. R144029
Contract Name: WSP - Lot 3
BH/TP* : BH167255
Sample No.* 151404 Lab. Sample No. A22/2372
Sample Type: B
Depth* (m) 3.00 Customer: Ervia
Date Received 15/06/2022 Date Testing started 15/06/2022
Description: Black slightly sandy, gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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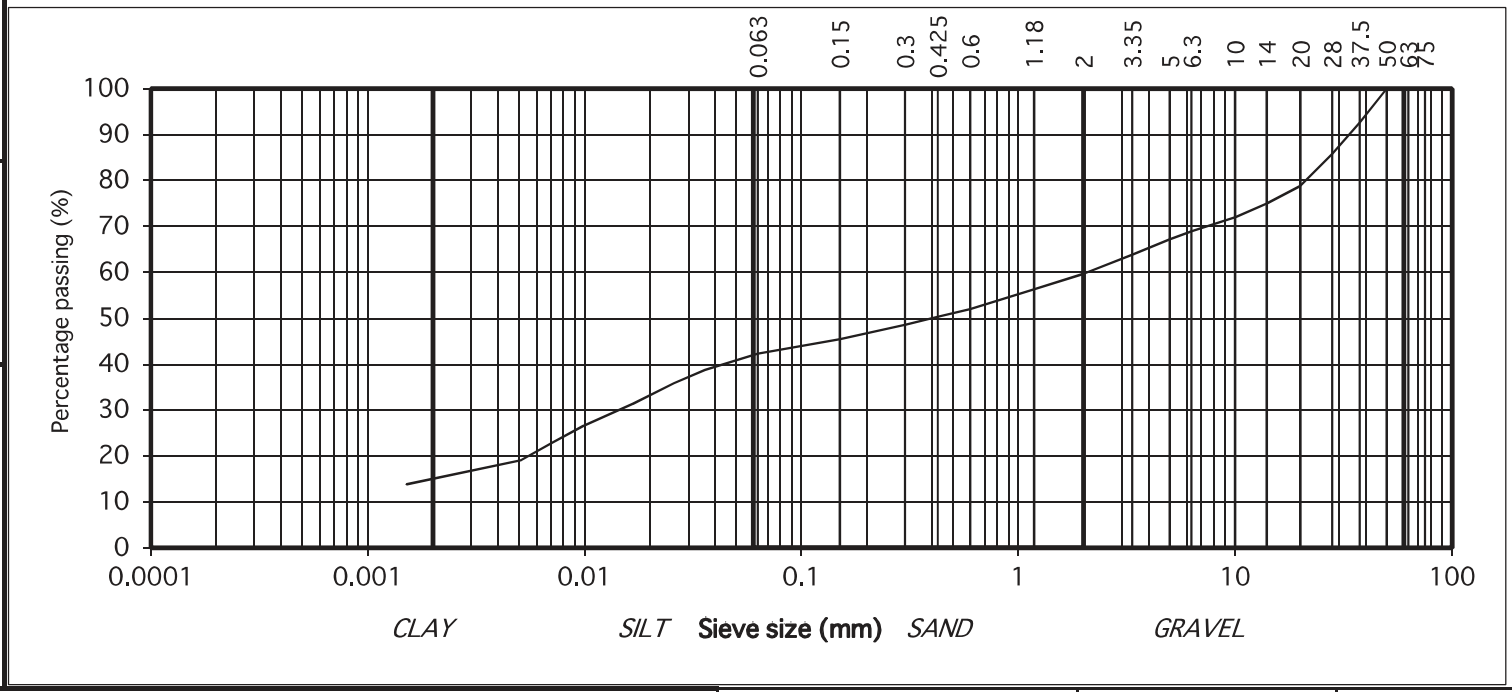

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	83	
50	71	GRAVEL
37.5	56	
28	48	
20	42	
14	38	
10	35	
6.3	33	
5	31	
3.35	29	
2	27	
1.18	25	SAND
0.6	23	
0.425	22	
0.3	21	
0.15	19	
0.063	16	SILT/CLAY
0.036	15	
0.026	14	
0.016	13	
0.010	12	
0.007	11	
0.005	10	
0.001	8	

Contract No.	23560	Report No.	R144030	
Contract Name:	WSP - Lot 3			
BH/TP* :	BH168286			
Sample No.*	151407	Lab. Sample No.		A22/2373
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Black clayey/silty, sandy, GRAVEL with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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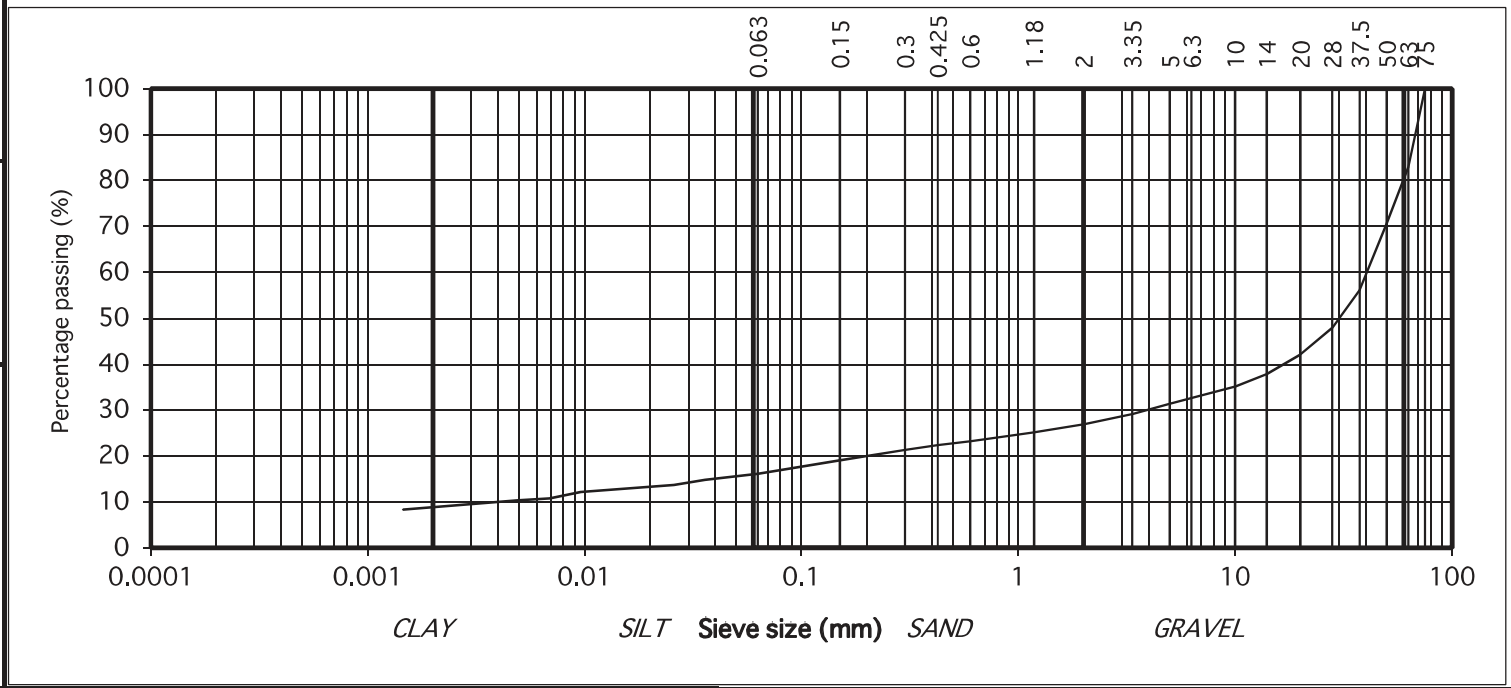

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	99	
1.18	97	SAND
0.6	95	
0.425	94	
0.3	93	
0.15	85	
0.063	73	SILT/CLAY
0.037	61	
0.027	54	
0.017	49	
0.010	41	
0.007	35	
0.005	29	
0.002	13	

Contract No.	23560	Report No.	R141258	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS161402			
Sample No.*	DS10006	Lab. Sample No.		A22/6346
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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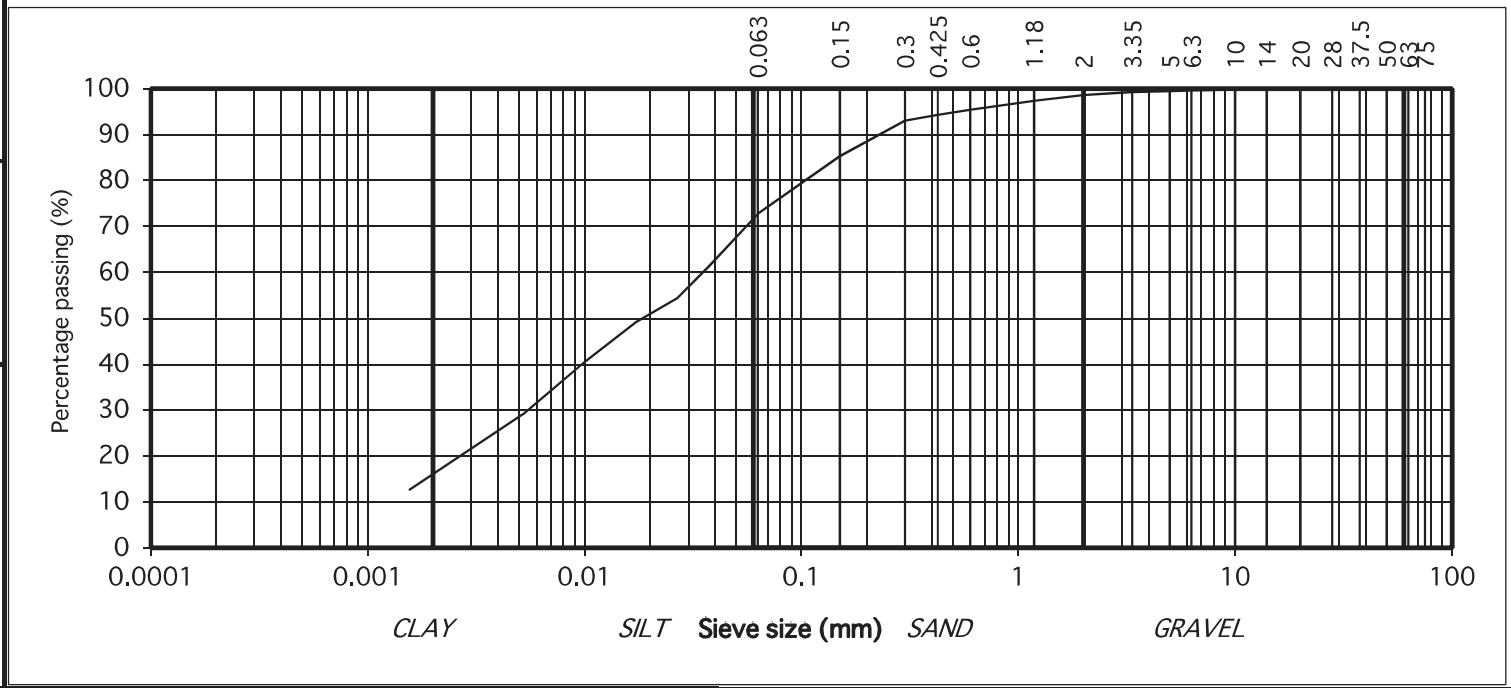

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	92	
20	88	
14	83	
10	81	
6.3	77	
5	74	
3.35	70	
2	66	
1.18	63	SAND
0.6	58	
0.425	56	
0.3	54	
0.15	50	
0.063	44	SILT/CLAY
0.037	39	
0.027	35	
0.017	31	
0.010	26	
0.007	22	
0.005	19	
0.002	9	

Contract No.	23560	Report No.	R141259	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS165890			
Sample No.*	DS10002	Lab. Sample No.		A22/6350
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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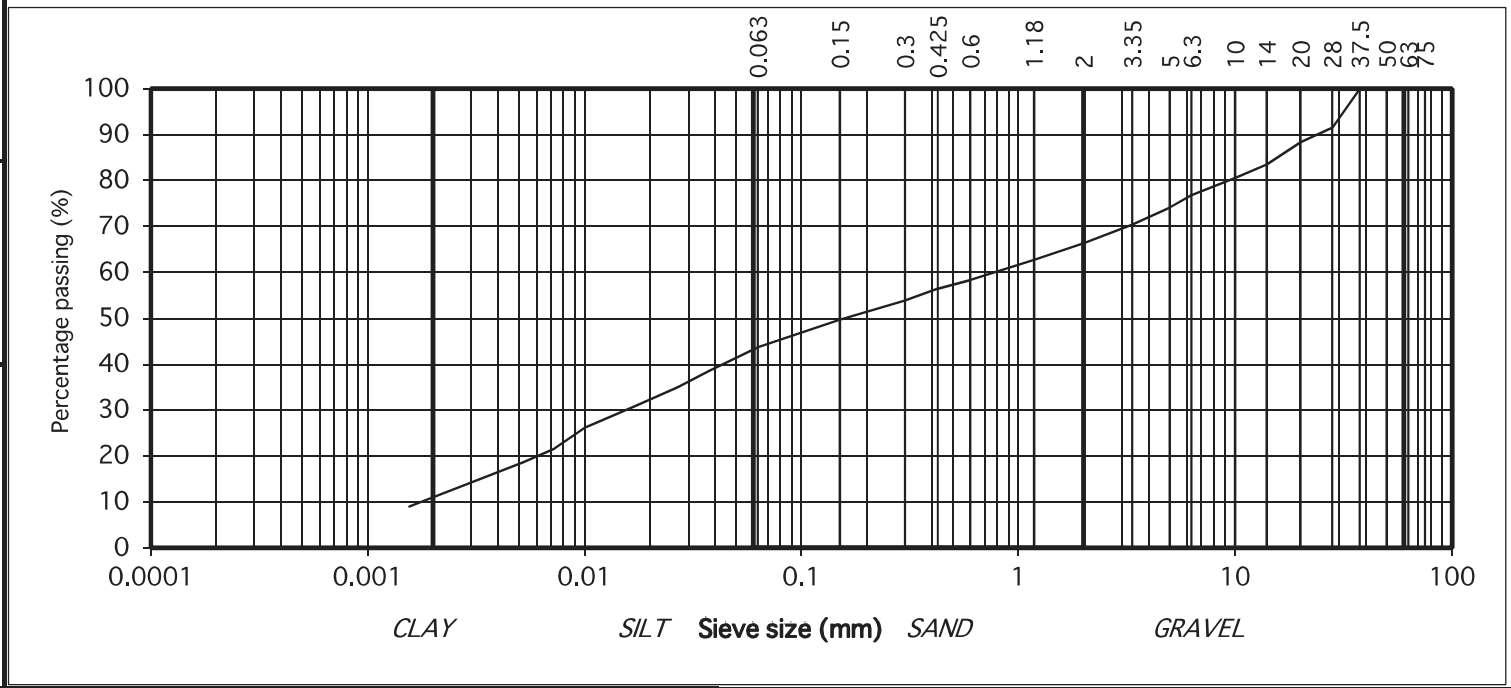

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	87	
14	83	
10	79	
6.3	79	
5	76	
3.35	72	
2	68	
1.18	64	SAND
0.6	59	
0.425	57	
0.3	54	
0.15	48	
0.063	41	SILT/CLAY
0.038	37	
0.027	34	
0.017	28	
0.010	25	
0.007	22	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R141260	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS165906			
Sample No.*	DS10003	Lab. Sample No.		A22/6351
Sample Type:	B			
Depth* (m)	0.0-1.0	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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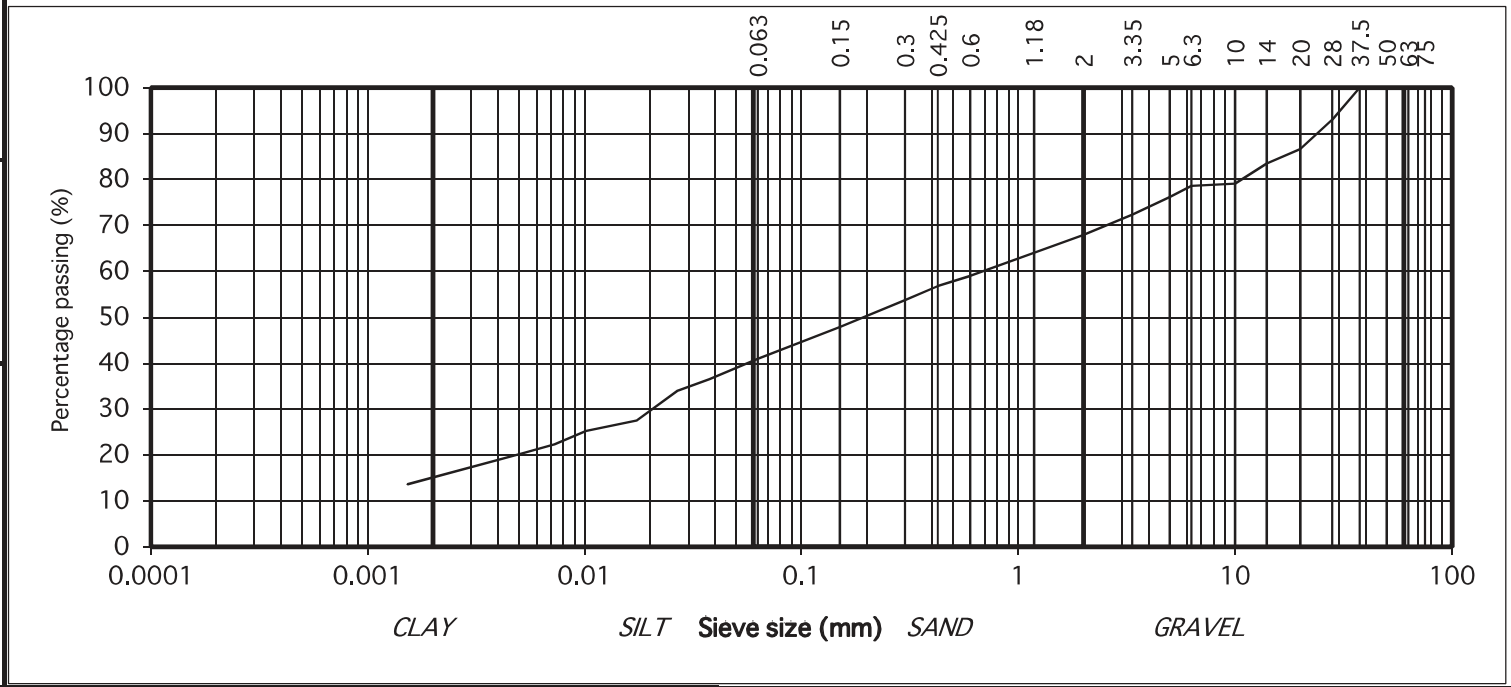
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	89	GRAVEL
37.5	89	
28	82	
20	77	
14	74	
10	71	
6.3	67	
5	65	
3.35	63	
2	60	
1.18	57	SAND
0.6	54	
0.425	52	
0.3	51	
0.15	47	
0.063	43	SILT/CLAY
0.038	36	
0.027	33	
0.017	29	
0.010	25	
0.007	21	
0.005	19	
0.002	14	

Contract No.	23560	Report No.	R141262	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS166025			
Sample No.*	DS10018	Lab. Sample No.		A22/6355
Sample Type:	B			
Depth* (m)	0.0-1.0	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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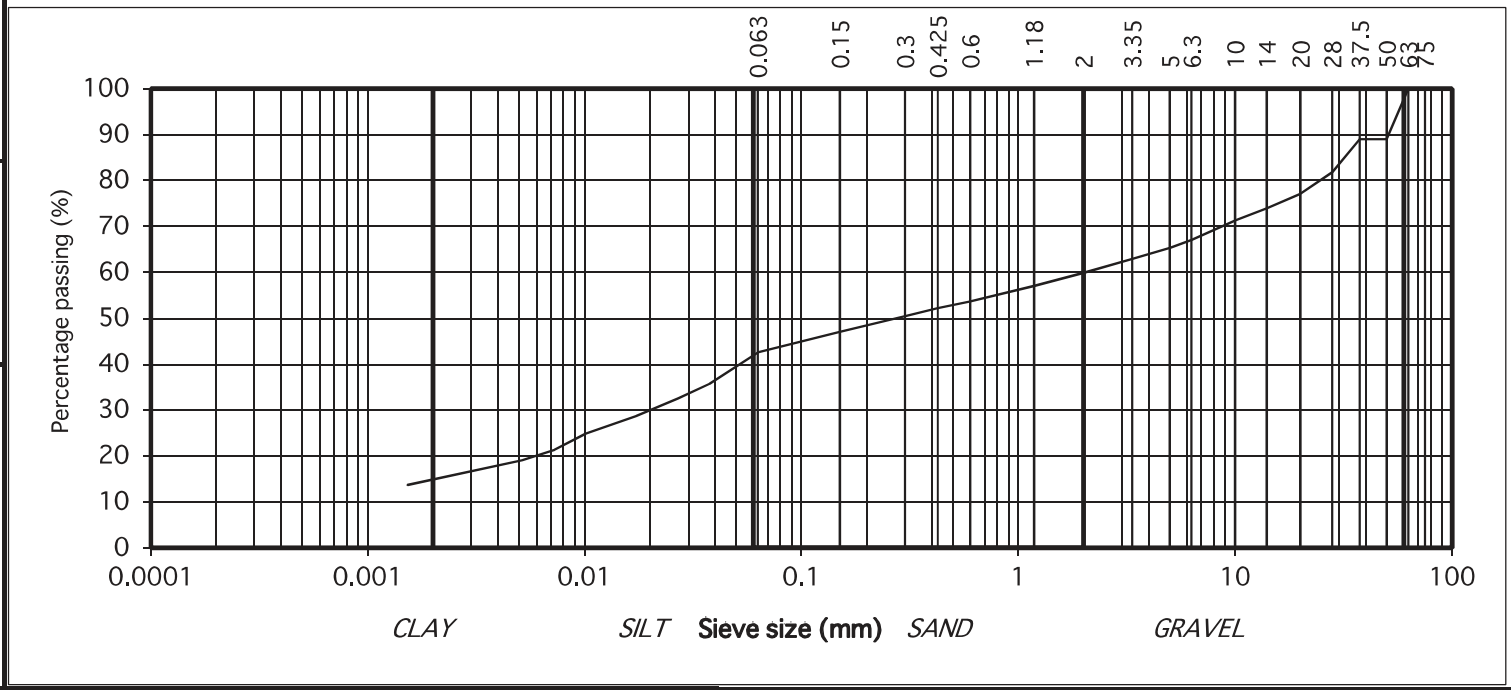

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	89	
14	86	
10	85	
6.3	83	
5	81	
3.35	79	
2	77	
1.18	75	SAND
0.6	73	
0.425	72	
0.3	69	
0.15	67	
0.063	63	SILT/CLAY
0.038	55	
0.027	48	
0.017	41	
0.010	37	
0.007	33	
0.005	31	
0.002	20	

Contract No.	23560	Report No.	R141261	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS166006			
Sample No.*	DS10021	Lab. Sample No.		A22/6354
Sample Type:	B			
Depth* (m)	1.0-1.8	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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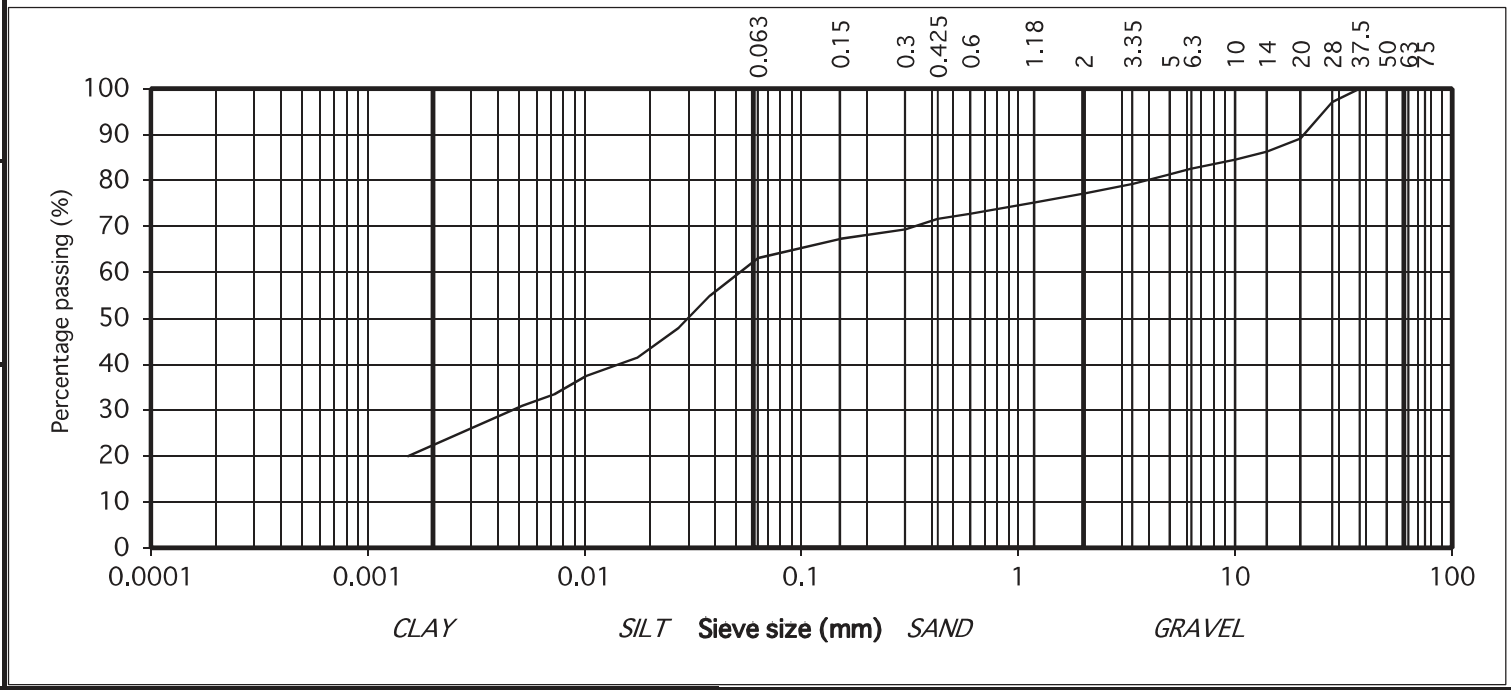
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	87	
28	77	
20	74	
14	68	
10	64	
6.3	58	
5	55	
3.35	52	
2	48	
1.18	45	SAND
0.6	41	
0.425	39	
0.3	38	
0.15	34	
0.063	30	SILT/CLAY
0.037	26	
0.027	24	
0.017	21	
0.010	18	
0.007	15	
0.005	13	
0.002	9	

Contract No.	23560	Report No.	R141263	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS166078			
Sample No.*	DS10014	Lab. Sample No.		A22/6358
Sample Type:	B			
Depth* (m)	1.0-1.8	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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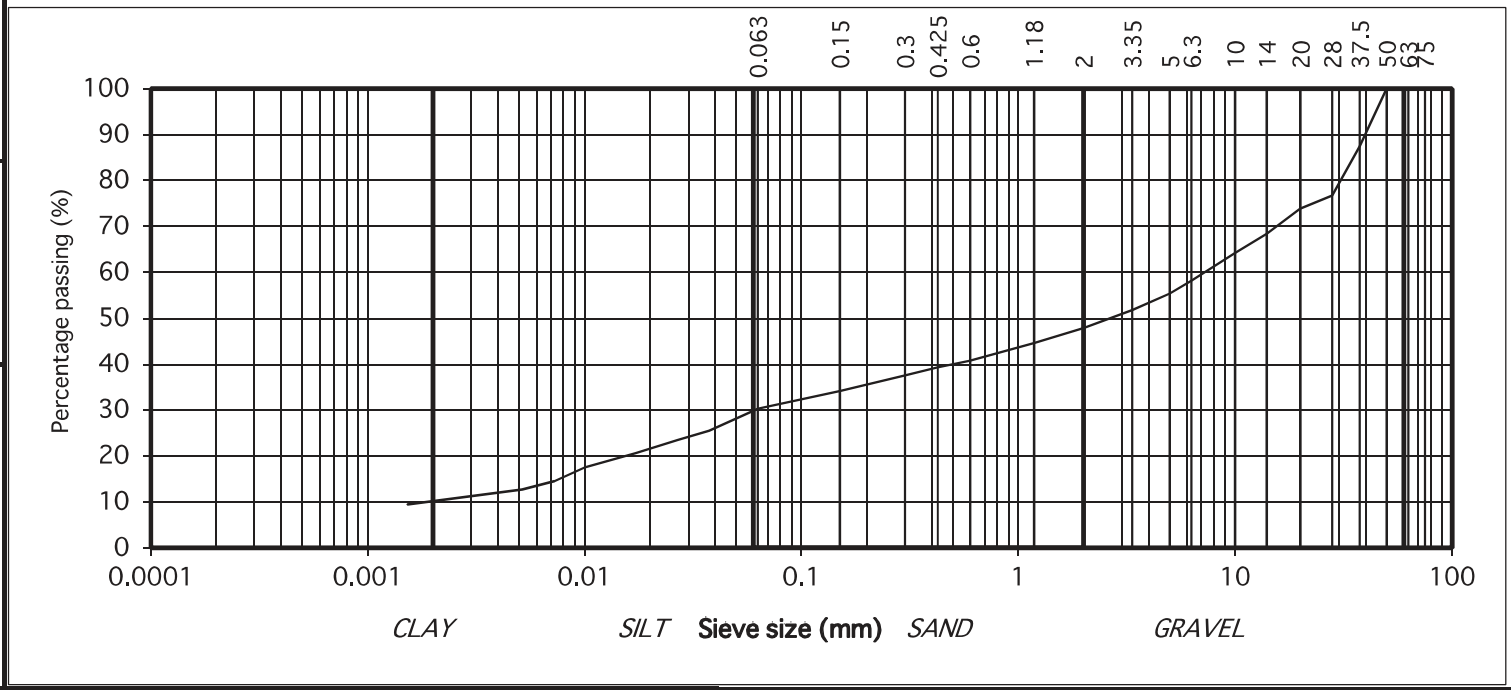
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	95	
10	91	
6.3	85	
5	79	
3.35	75	
2	70	
1.18	66	SAND
0.6	61	
0.425	59	
0.3	57	
0.15	52	
0.063	46	SILT/CLAY
0.037	38	
0.027	33	
0.018	26	
0.010	21	
0.007	17	
0.005	14	
0.002	7	

Contract No.	23560	Report No.	R141264	
Contract Name:	WSP - Lot 3			
BH/TP* :	DS166356			
Sample No.*	DS10008	Lab. Sample No.		A22/6359
Sample Type:	B			
Depth* (m)	0.0-1.0	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Grey slightly sandy, slightly gravelly, SILT/CLAY			

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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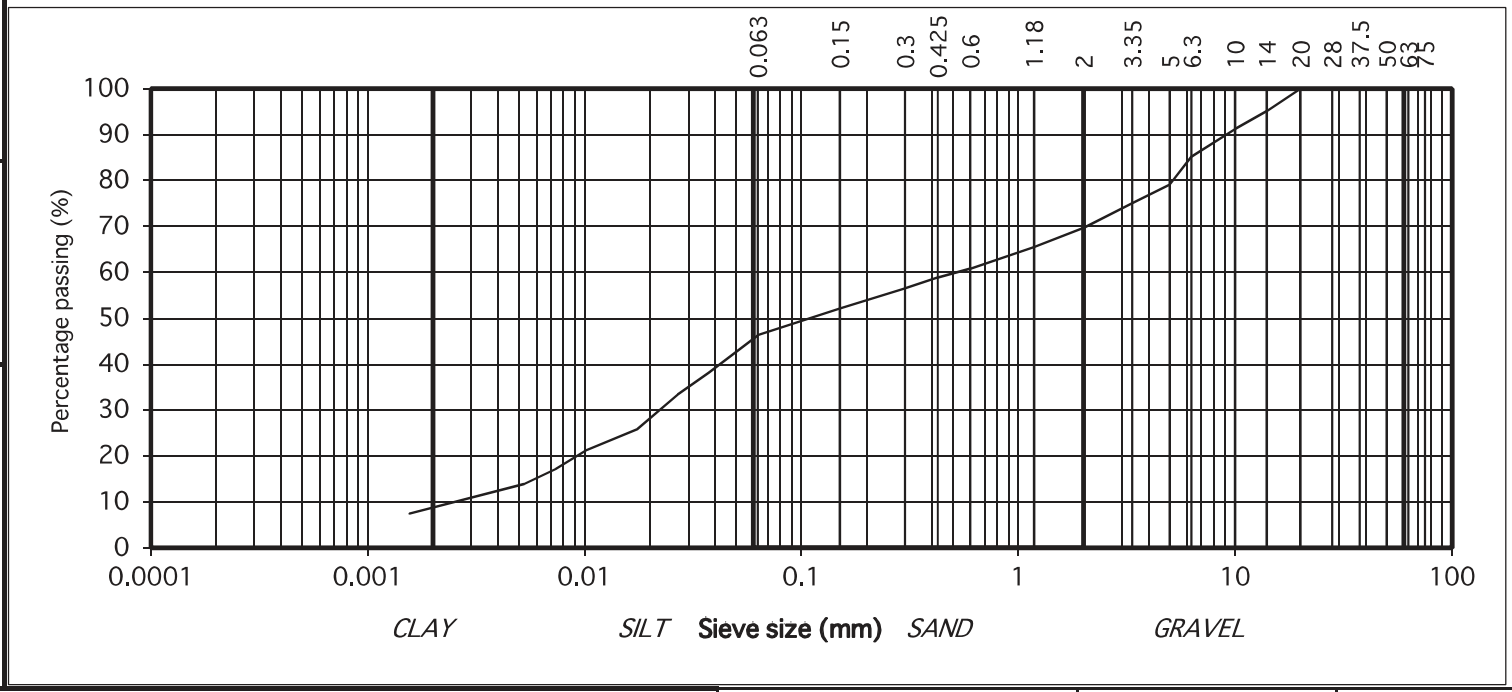

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

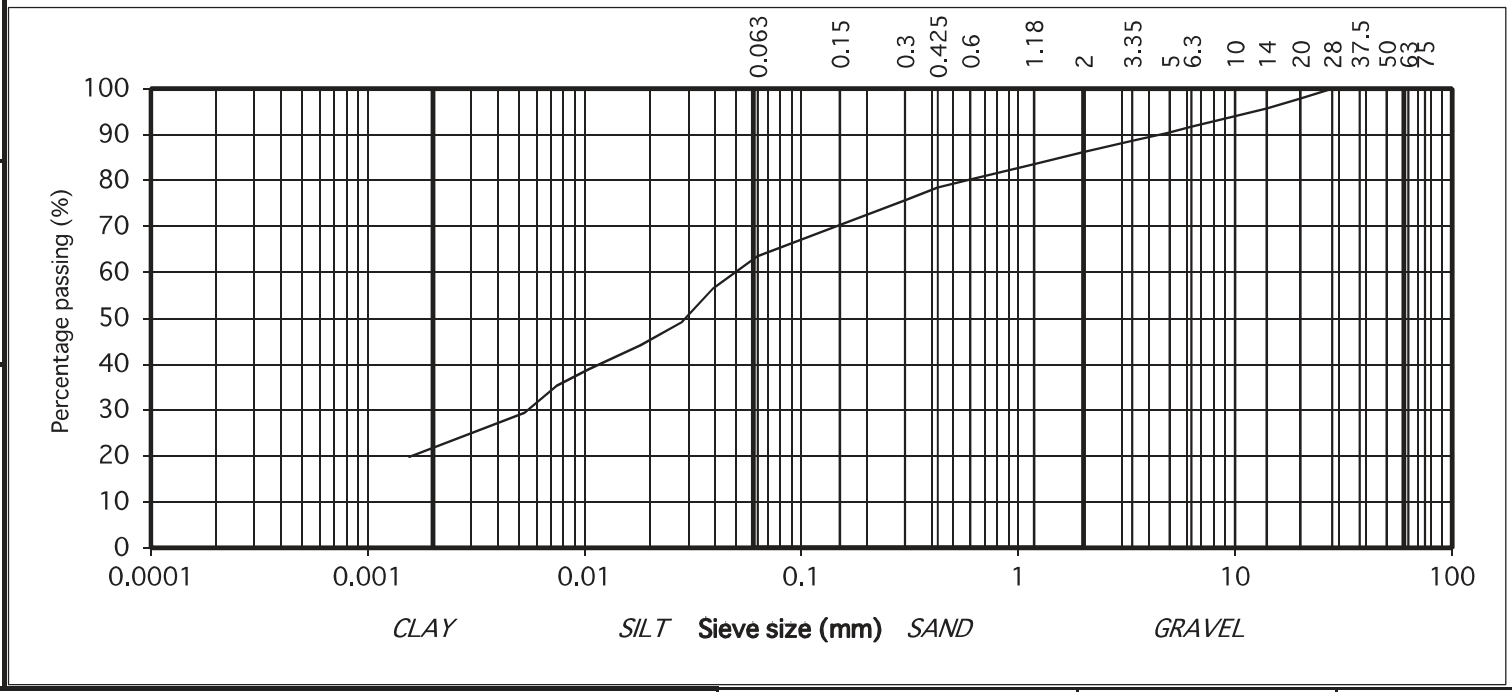
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	96	
10	94	
6.3	92	
5	91	
3.35	89	
2	86	
1.18	84	SAND
0.6	80	
0.425	78	
0.3	76	
0.15	70	
0.063	64	SILT/CLAY
0.039	57	
0.028	49	
0.018	44	
0.010	39	
0.007	35	
0.005	29	
0.002	20	

Contract No.	23560	Report No.	R137379	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP147204			
Sample No.*	AA178601	Lab. Sample No.		A22/3288
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	92	
28	91	
20	88	
14	84	
10	81	
6.3	76	
5	75	
3.35	72	
2	70	
1.18	67	SAND
0.6	64	
0.425	62	
0.3	58	
0.15	47	
0.063	35	SILT/CLAY
0.038	29	
0.027	26	
0.017	23	
0.010	20	
0.007	18	
0.005	16	
0.002	10	

Contract No.	23560	Report No.	R143965	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148005			
Sample No.*	AA173618	Lab. Sample No.		A22/2625
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Grey brown sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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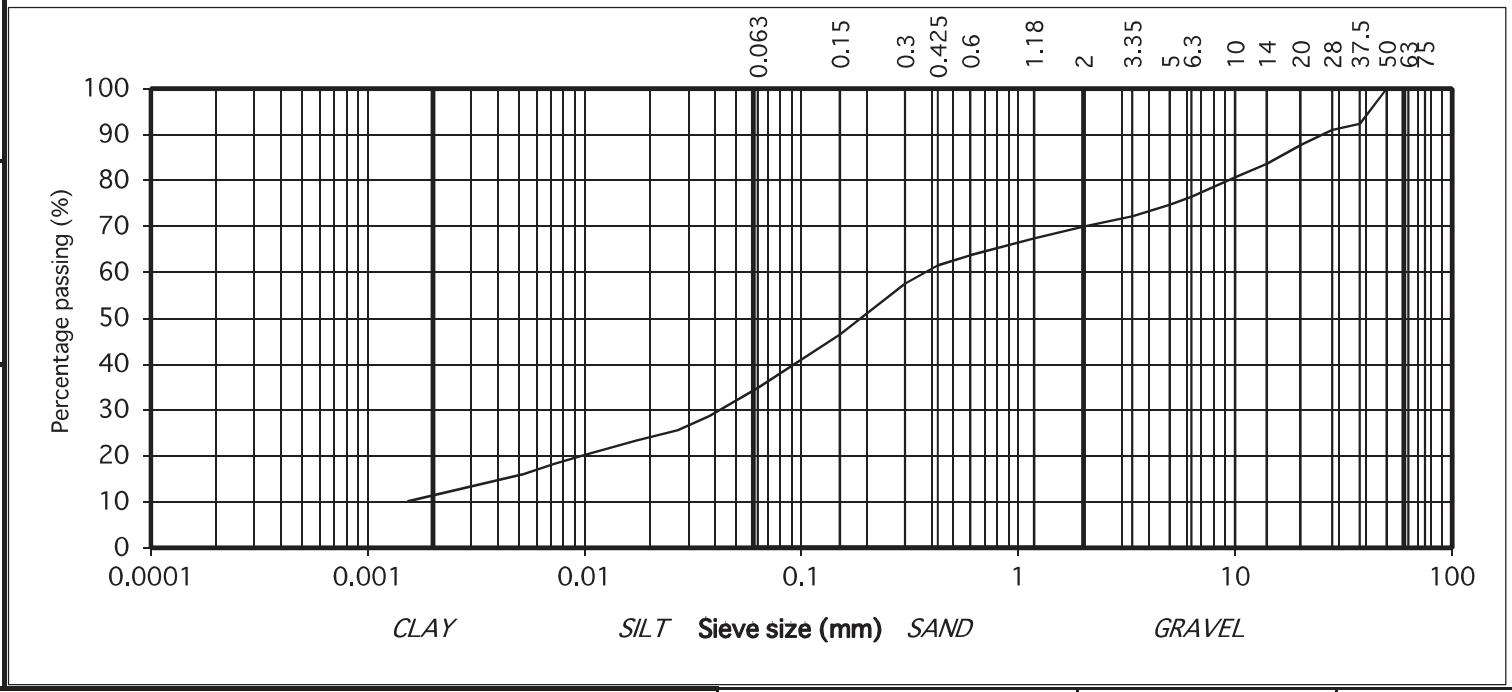

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Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	90	
28	86	
20	76	
14	71	
10	67	
6.3	62	
5	59	
3.35	54	
2	48	
1.18	42	SAND
0.6	37	
0.425	34	
0.3	31	
0.15	26	
0.063	20	SILT/CLAY
0.040	16	
0.029	15	
0.018	14	
0.011	13	
0.007	12	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R137373	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP147204			
Sample No.*	AA178602	Lab. Sample No.		A22/3289
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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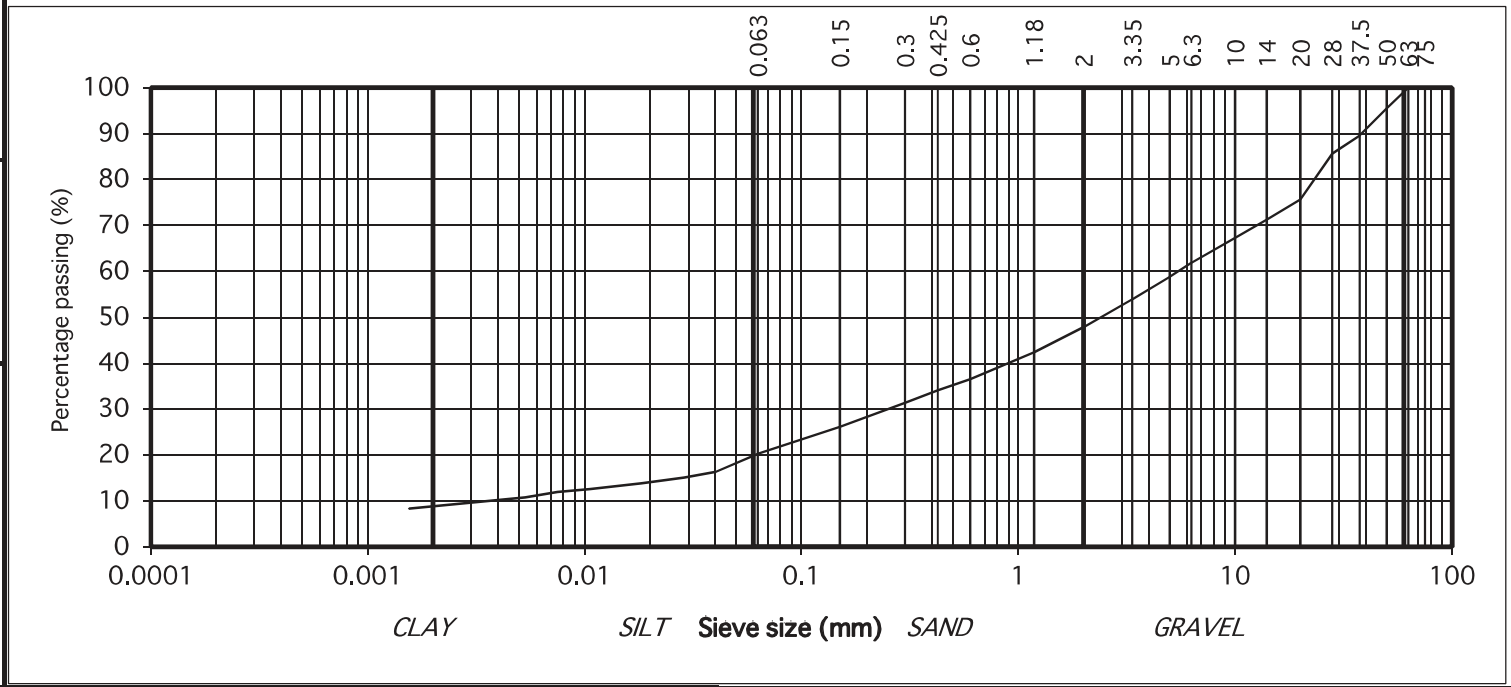
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	95	
14	93	
10	90	
6.3	87	
5	86	
3.35	84	
2	82	
1.18	79	SAND
0.6	74	
0.425	72	
0.3	68	
0.15	59	
0.063	48	SILT/CLAY
0.038	38	
0.027	33	
0.017	29	
0.010	25	
0.007	22	
0.005	19	
0.002	14	

Contract No.	23560	Report No.	R143966	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148005			
Sample No.*	AA173619	Lab. Sample No.		A22/2626
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Grey slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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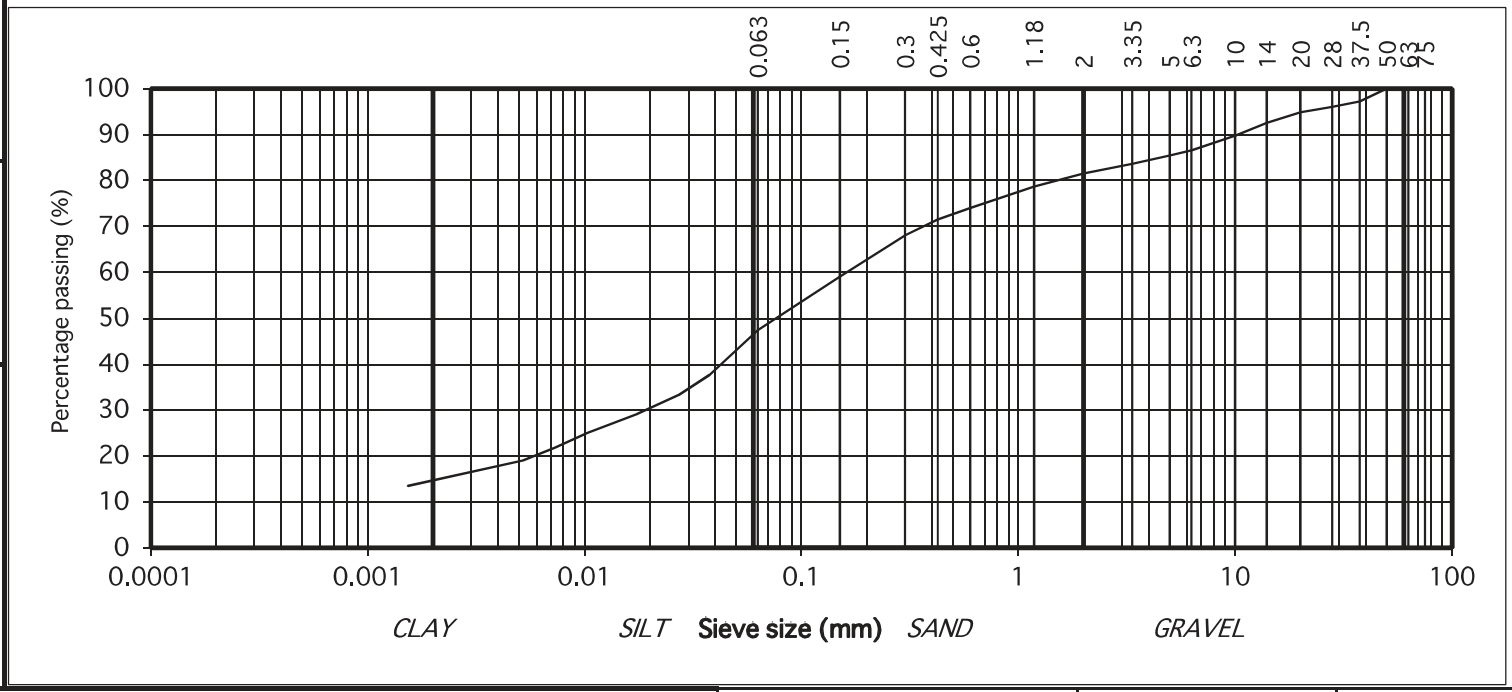

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Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	79	GRAVEL
37.5	53	
28	43	
20	40	
14	38	
10	35	
6.3	33	
5	32	
3.35	30	
2	28	
1.18	27	SAND
0.6	25	
0.425	24	
0.3	22	
0.15	19	
0.063	14	SILT/CLAY
0.038	12	
0.027	11	
0.017	9	
0.010	8	
0.007	7	
0.005	6	
0.002	4	

Contract No.	23560	Report No.	R143967	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148104			
Sample No.*	AA173617	Lab. Sample No.		A22/2624
Sample Type:	B			
Depth* (m)	2.60	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Grey clayey/silty, sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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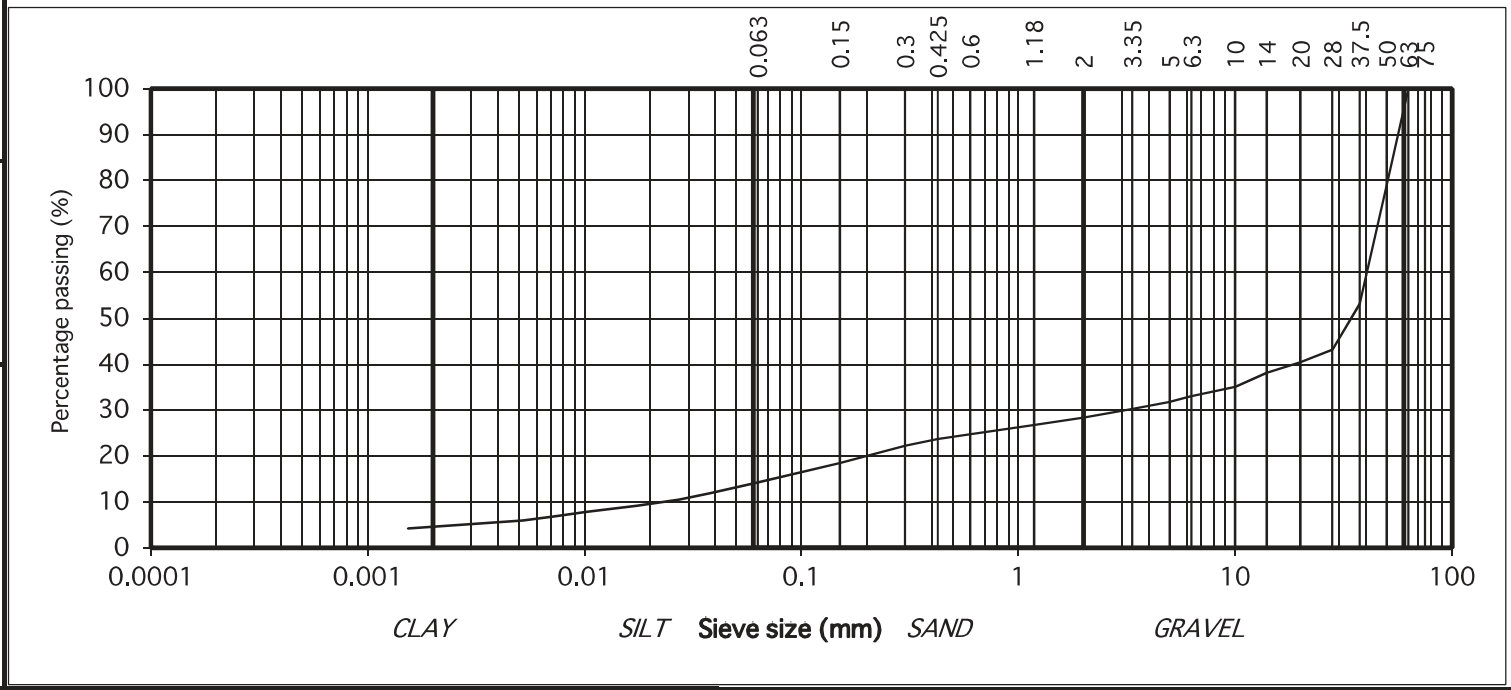
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	94	
10	92	
6.3	90	
5	89	
3.35	87	
2	85	
1.18	83	SAND
0.6	79	
0.425	76	
0.3	73	
0.15	64	
0.063	54	SILT/CLAY
0.038	45	
0.027	40	
0.017	37	
0.010	32	
0.007	29	
0.005	25	
0.002	16	

Contract No.	23560	Report No.	R143964	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148104			
Sample No.*	AA173616	Lab. Sample No.		A22/2623
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/05/2022	Date Testing started		12/05/2022
Description:	Grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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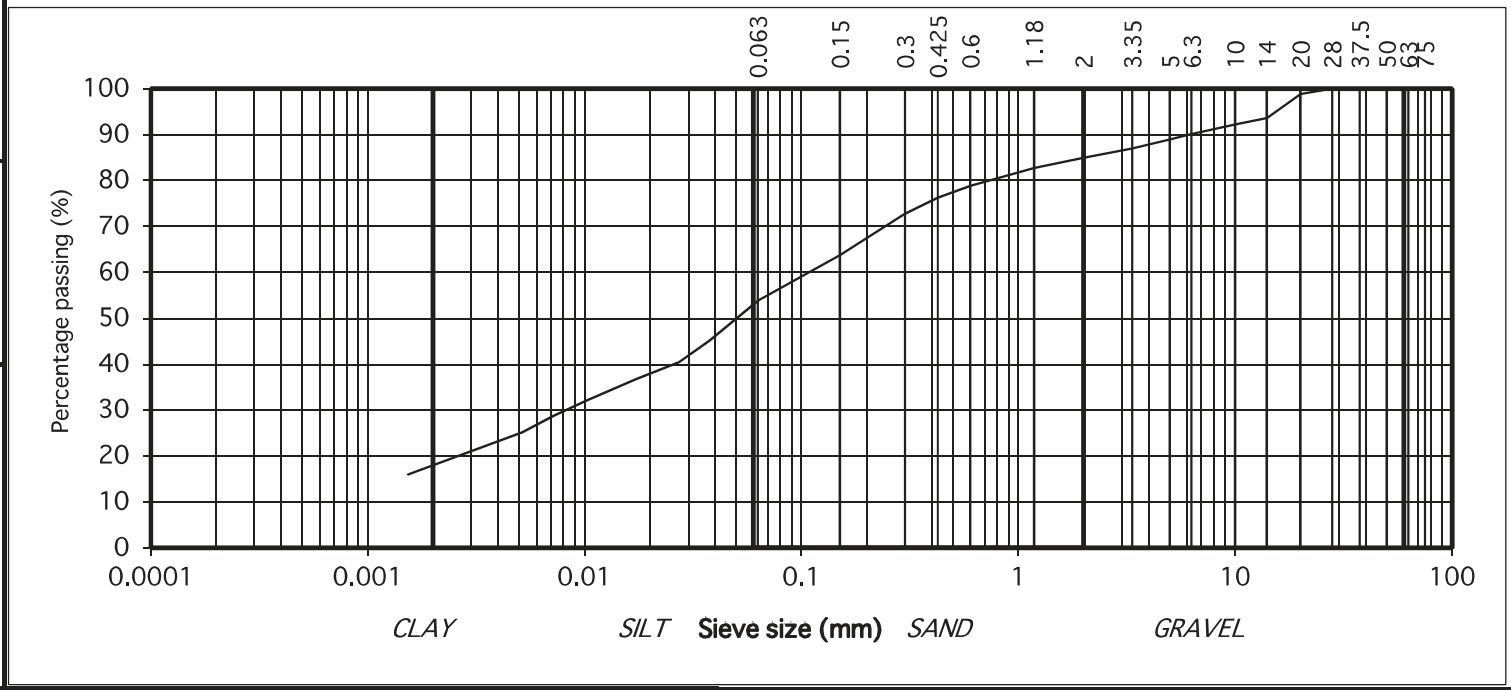
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	94	
10	92	
6.3	90	
5	89	
3.35	87	
2	85	
1.18	83	SAND
0.6	79	
0.425	76	
0.3	73	
0.15	64	
0.063	54	SILT/CLAY
0.037	46	
0.027	42	
0.017	39	
0.010	36	
0.007	33	
0.005	29	
0.001	24	

Contract No. 23560 Report No. R143963
Contract Name: WSP - Lot 3
BH/TP* : TP148205
Sample No.* AA173613 Lab. Sample No. A22/2622
Sample Type: B
Depth* (m) 1.50 Customer: Ervia
Date Received 04/05/2022 Date Testing started 12/05/2022
Description: Grey slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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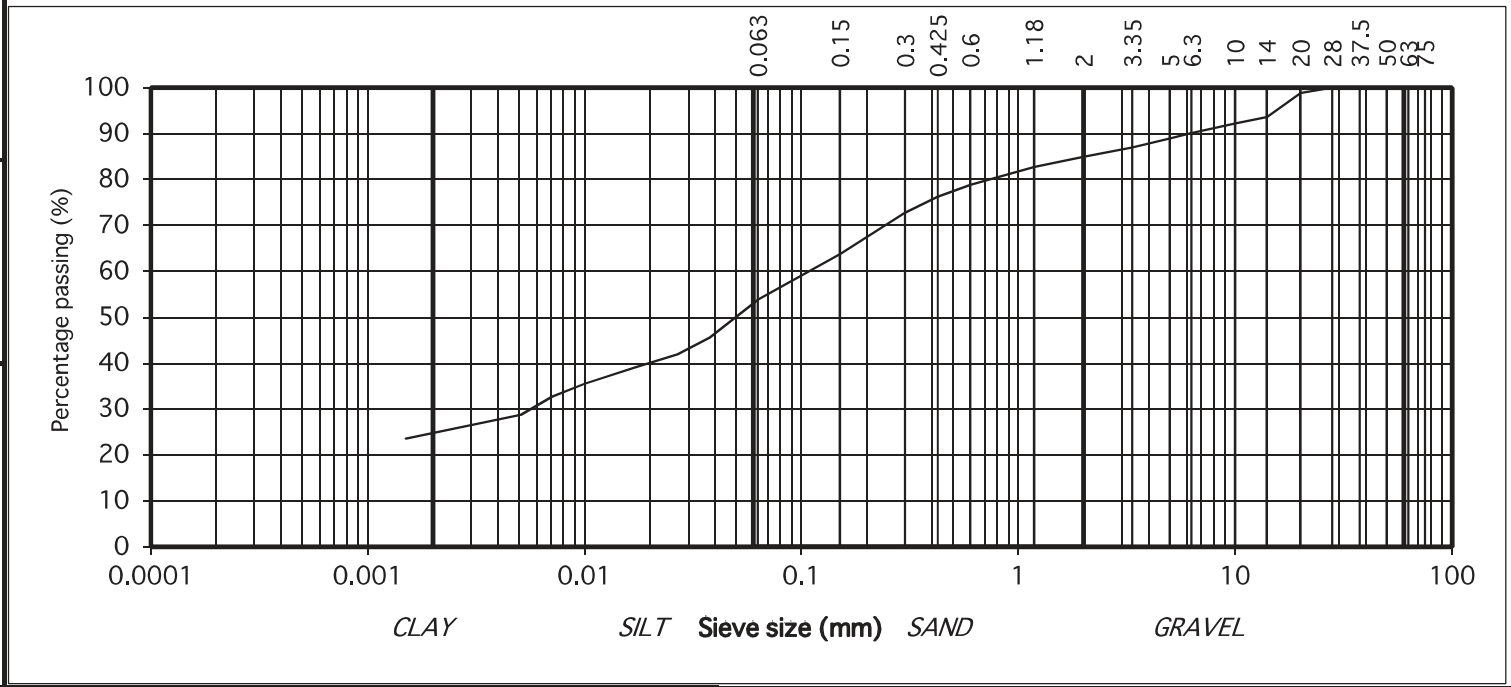


IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	02/06/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

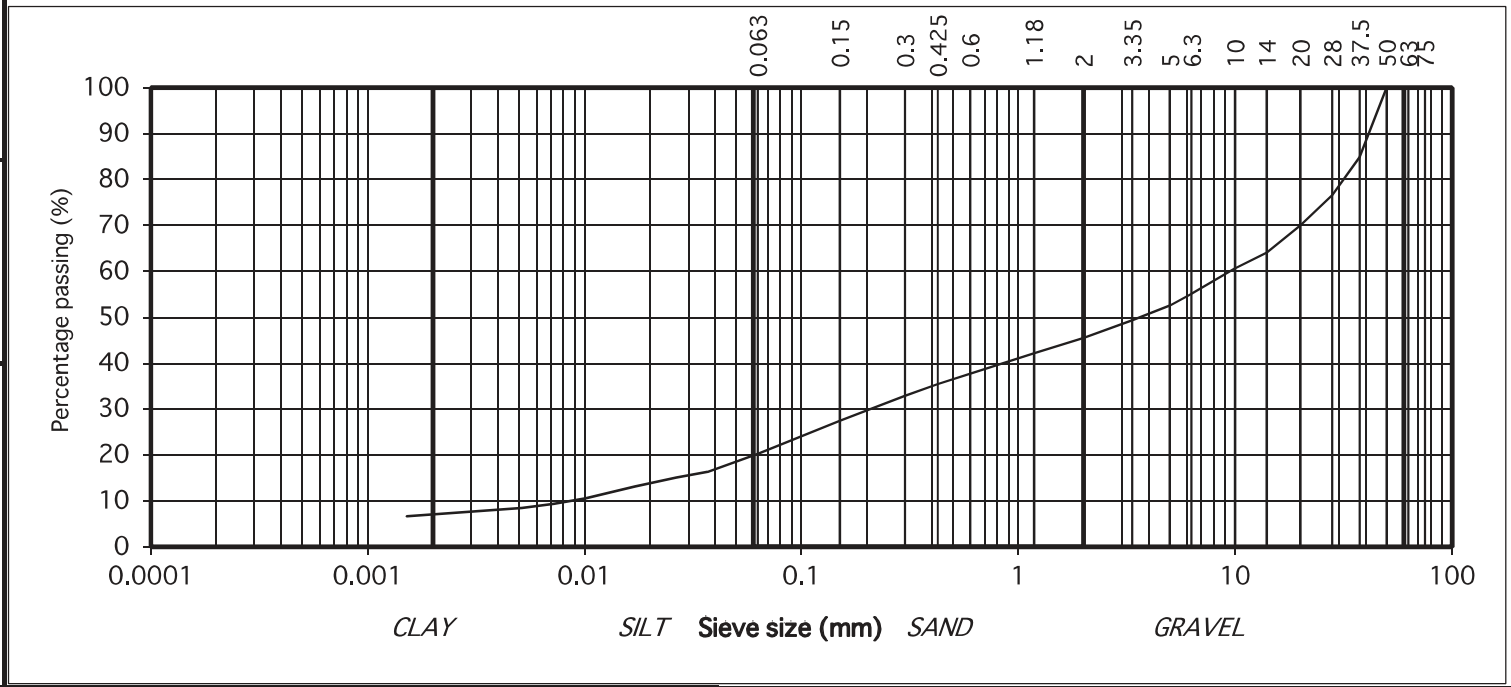
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	85	
28	77	
20	70	
14	64	
10	61	
6.3	55	
5	53	
3.35	49	
2	46	
1.18	42	SAND
0.6	38	
0.425	36	
0.3	33	
0.15	27	
0.063	20	SILT/CLAY
0.037	16	
0.026	15	
0.017	13	
0.010	11	
0.007	9	
0.005	9	
0.002	7	

Contract No.	23560	Report No.	R137380	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148304			
Sample No.*	AA179483	Lab. Sample No.		A22/3292
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

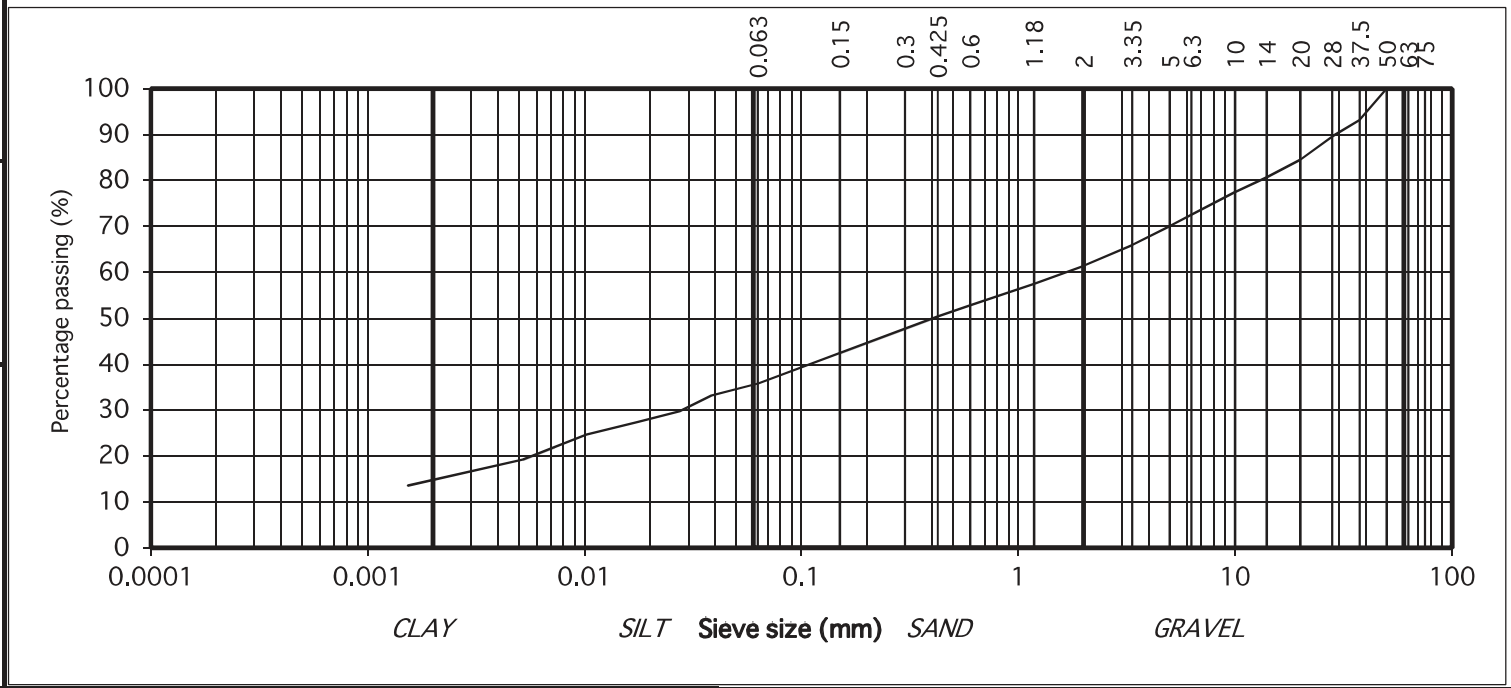
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	90	
20	85	
14	81	
10	78	
6.3	73	
5	70	
3.35	66	
2	61	
1.18	58	SAND
0.6	53	
0.425	50	
0.3	48	
0.15	43	
0.063	36	SILT/CLAY
0.038	33	
0.027	30	
0.017	27	
0.010	25	
0.007	22	
0.005	19	
0.002	14	

Contract No.	23560	Report No.	R137164	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148304			
Sample No.*	AA179482	Lab. Sample No.		A22/3291
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/07/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

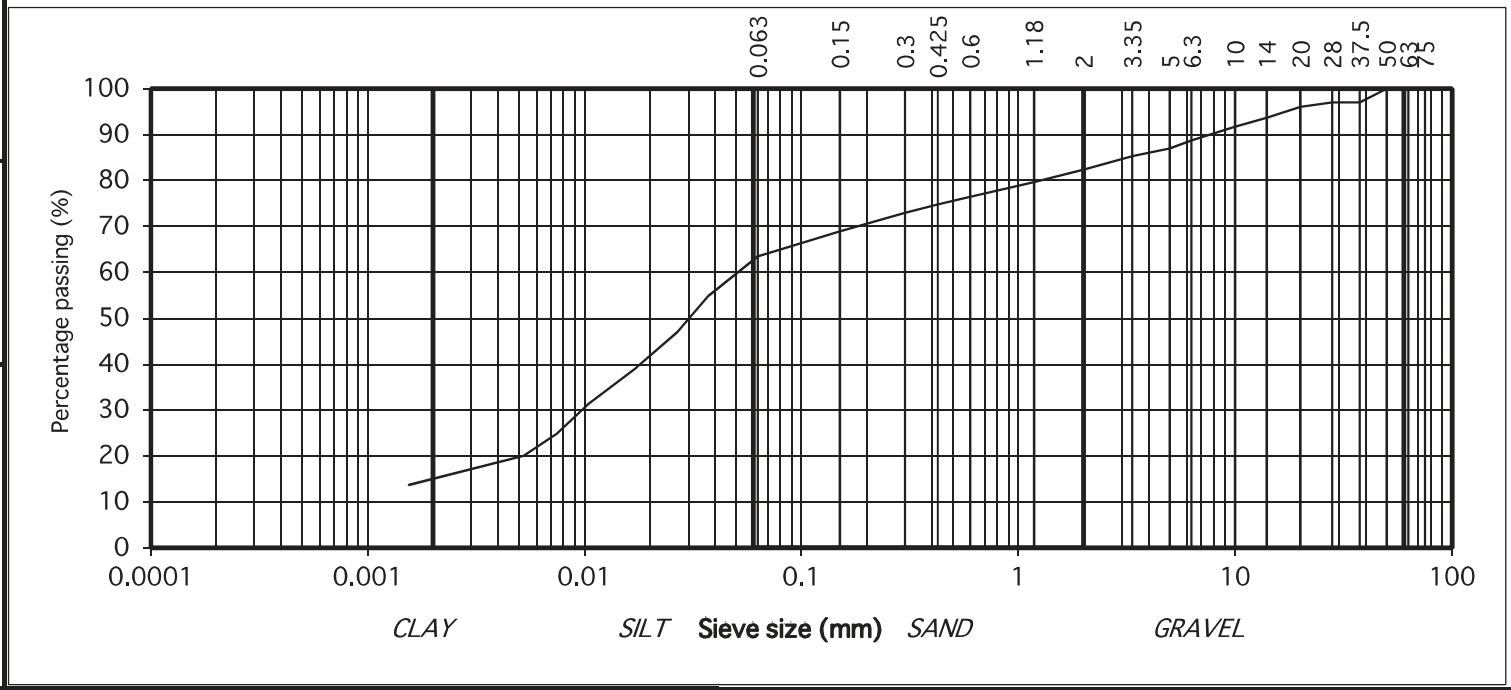
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	97	
20	96	
14	94	
10	92	
6.3	89	
5	87	
3.35	85	
2	82	
1.18	80	SAND
0.6	76	
0.425	75	
0.3	73	
0.15	69	
0.063	64	SILT/CLAY
0.037	55	
0.027	47	
0.017	39	
0.010	31	
0.007	25	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R137381	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148403			
Sample No.*	AA179485	Lab. Sample No.		A22/3293
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	13/07/2022	Date Testing started		13/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

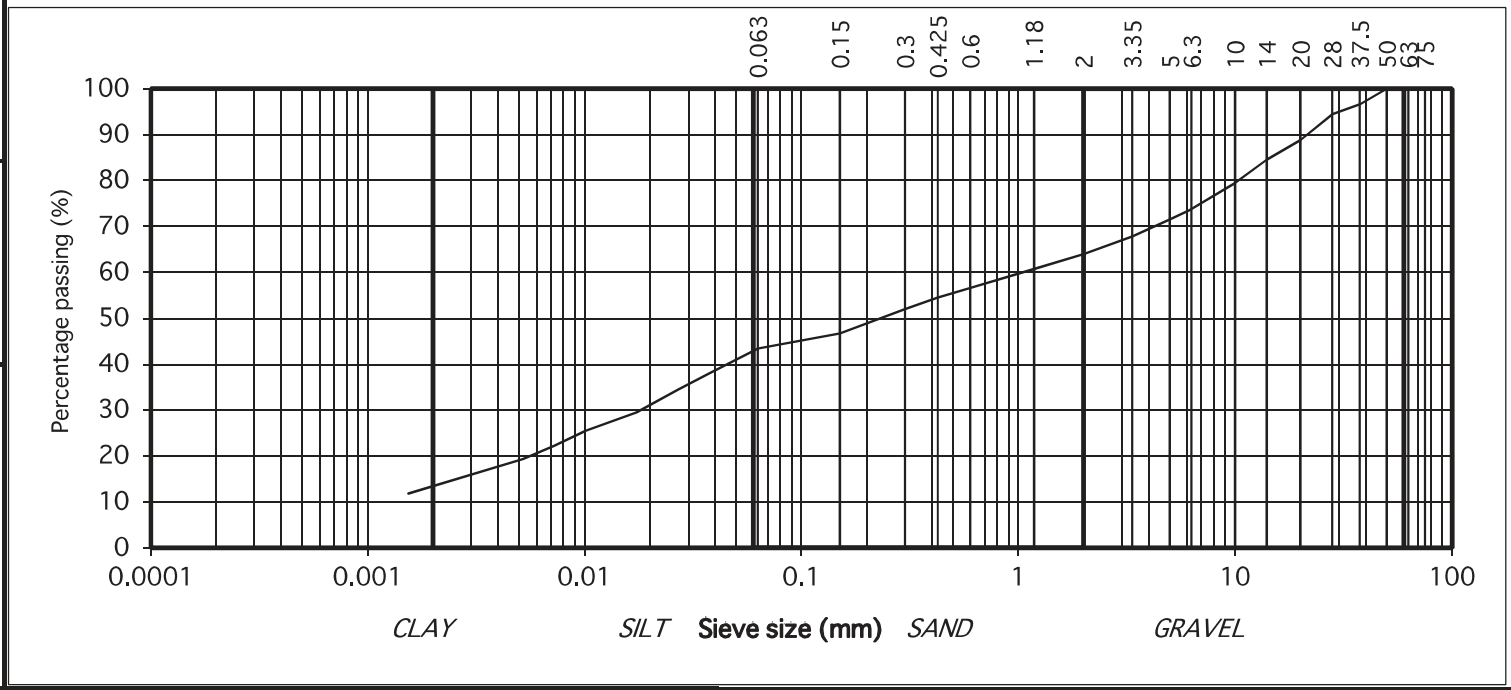
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	94	
20	89	
14	85	
10	79	
6.3	74	
5	72	
3.35	68	
2	64	
1.18	61	SAND
0.6	57	
0.425	55	
0.3	52	
0.15	47	
0.063	43	SILT/CLAY
0.037	38	
0.027	34	
0.017	30	
0.010	26	
0.007	22	
0.005	19	
0.002	12	

Contract No.	23560	Report No.	R139545	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148600			
Sample No.*	AA175194	Lab. Sample No.		A22/3295
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	14/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	86	
28	81	
20	74	
14	69	
10	63	
6.3	57	
5	54	
3.35	50	
2	45	
1.18	40	SAND
0.6	35	
0.425	33	
0.3	31	
0.15	26	
0.063	19	SILT/CLAY
0.039	17	
0.028	16	
0.018	15	
0.010	13	
0.007	12	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R137382	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148403			
Sample No.*	AA179486	Lab. Sample No.		A22/3294
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	25/06/2022	Date Testing started		25/06/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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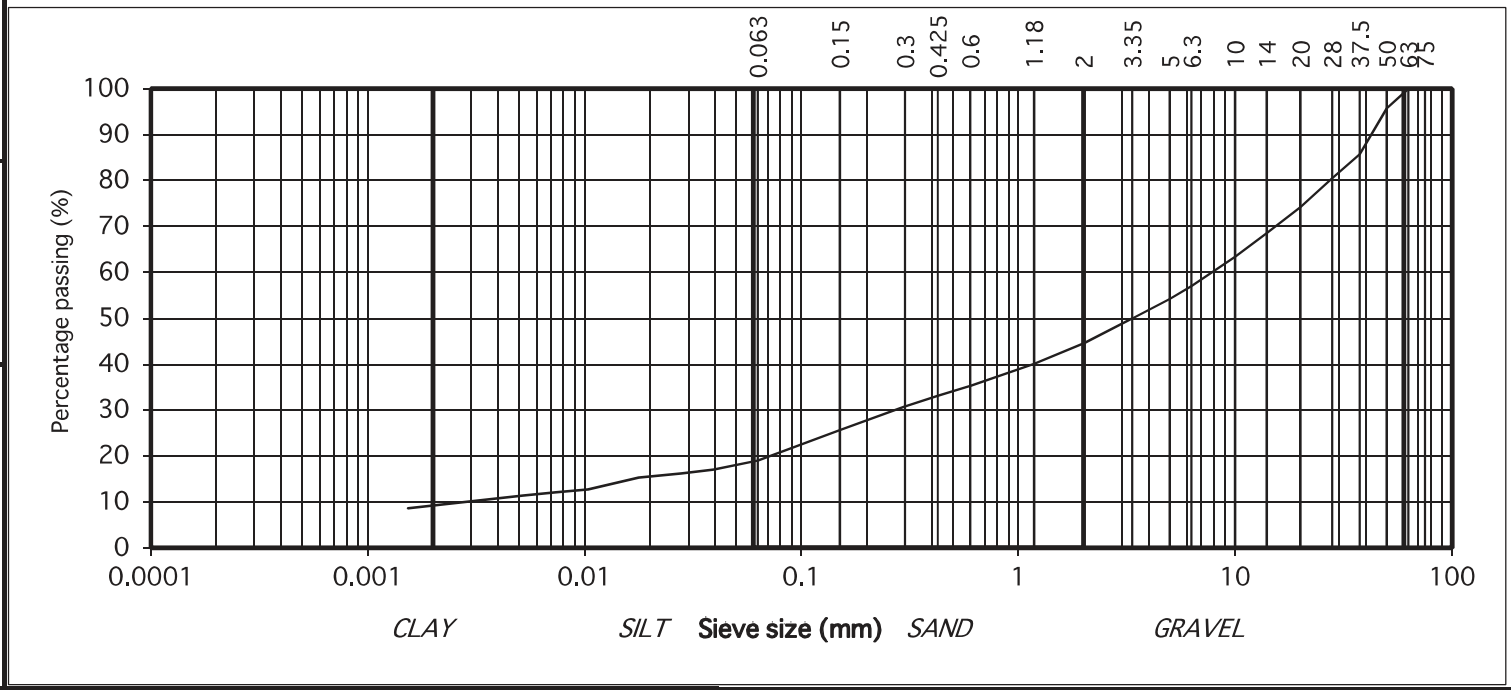
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	91	
20	87	
14	81	
10	77	
6.3	72	
5	70	
3.35	66	
2	60	
1.18	55	SAND
0.6	49	
0.425	46	
0.3	43	
0.15	38	
0.063	34	SILT/CLAY
0.037	31	
0.027	29	
0.017	25	
0.010	21	
0.007	19	
0.005	17	
0.002	12	

Contract No.	23560	Report No.	R143976	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148504			
Sample No.*	AA175192	Lab. Sample No.		A22/3395
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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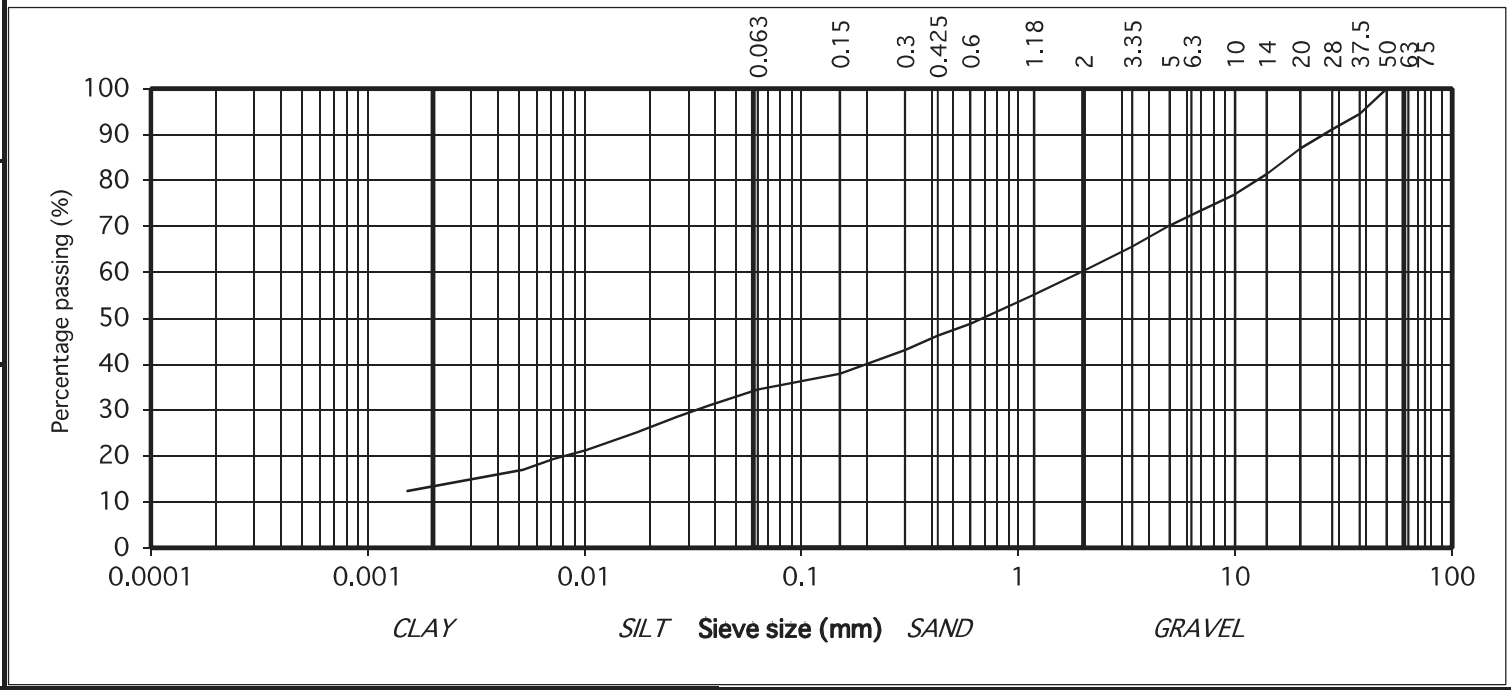
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	89	
28	78	
20	72	
14	66	
10	59	
6.3	53	
5	50	
3.35	45	
2	40	
1.18	36	SAND
0.6	31	
0.425	28	
0.3	25	
0.15	20	
0.063	15	SILT/CLAY
0.037	13	
0.027	12	
0.017	10	
0.010	9	
0.007	7	
0.005	7	
0.002	4	

Contract No.	23560	Report No.	R139531	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148600			
Sample No.*	AA175195	Lab. Sample No.		A22/3296
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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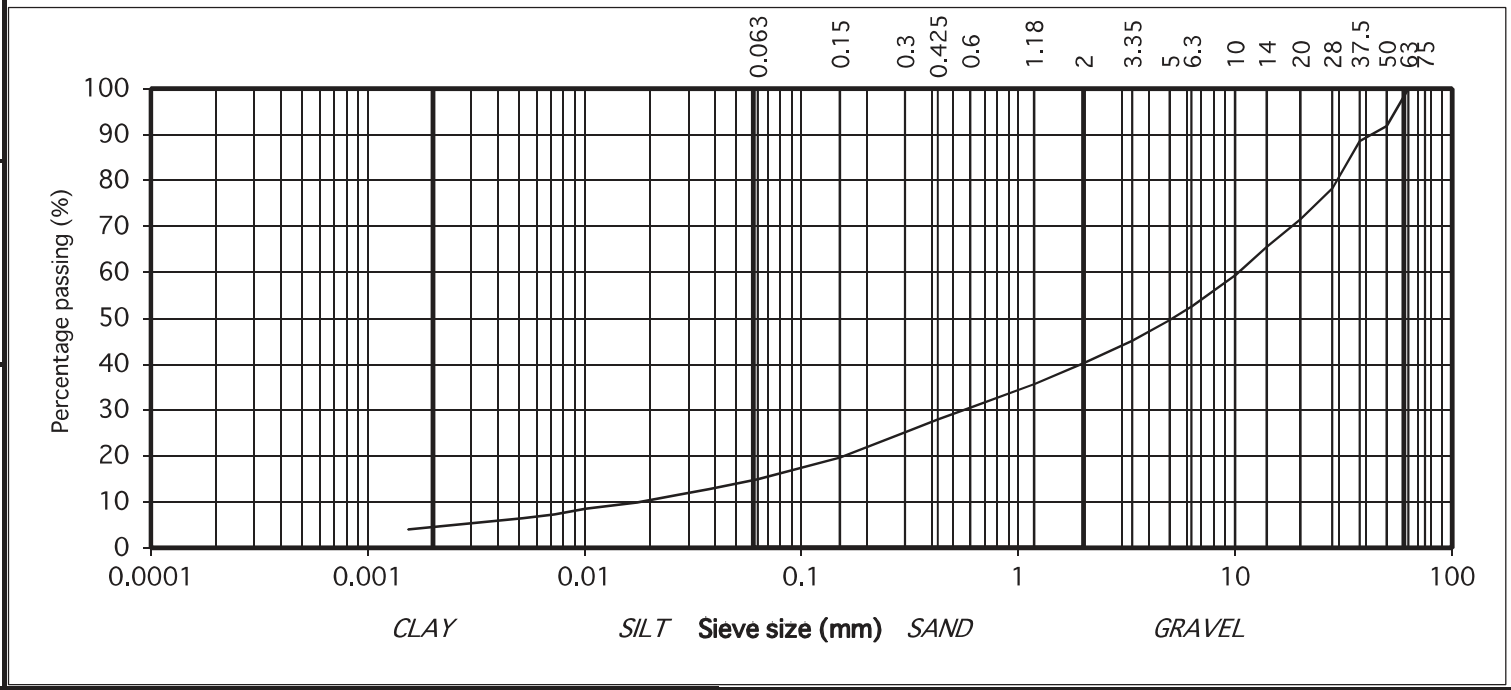
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	97	
20	93	
14	90	
10	86	
6.3	79	
5	76	
3.35	70	
2	64	
1.18	59	SAND
0.6	52	
0.425	48	
0.3	41	
0.15	30	
0.063	22	SILT/CLAY
0.037	18	
0.027	17	
0.017	15	
0.010	13	
0.007	11	
0.005	10	
0.002	7	

Contract No.	23560	Report No.	R139525	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148704			
Sample No.*	AA175188	Lab. Sample No.		A22/3297
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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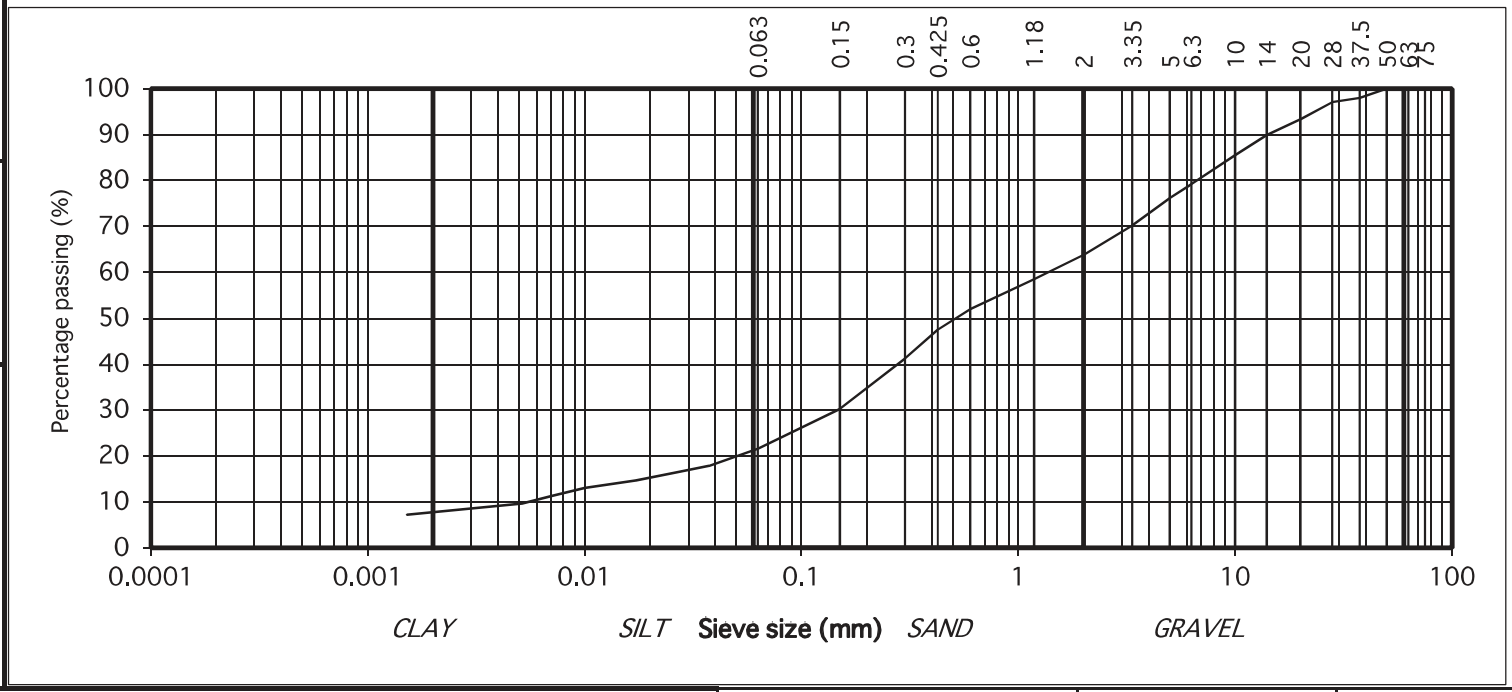
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	89	
14	86	
10	83	
6.3	80	
5	78	
3.35	76	
2	74	
1.18	72	SAND
0.6	69	
0.425	68	
0.3	66	
0.15	63	
0.063	57	SILT/CLAY
0.035	48	
0.025	44	
0.016	40	
0.010	34	
0.007	31	
0.005	27	
0.001	19	

Contract No.	23560	Report No.	R135231	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148802			
Sample No.*	AA158210	Lab. Sample No.		A22/3320
Sample Type:	B			
Depth* (m)	2.20	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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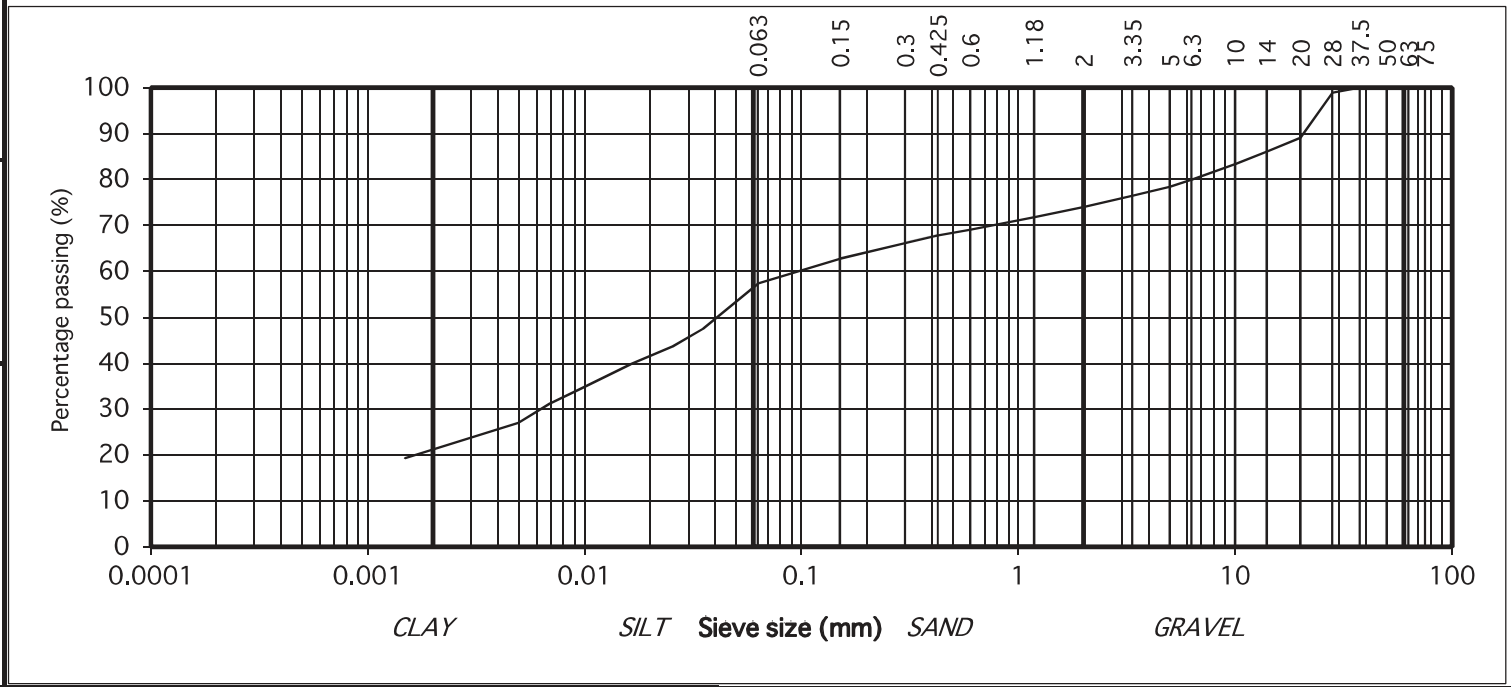
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	98	
20	96	
14	95	
10	93	
6.3	88	
5	85	
3.35	79	
2	72	
1.18	65	SAND
0.6	53	
0.425	45	
0.3	37	
0.15	31	
0.063	28	SILT/CLAY
0.038	23	
0.027	21	
0.017	18	
0.010	16	
0.007	14	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R139526	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148704			
Sample No.*	AA175190	Lab. Sample No.		A22/3299
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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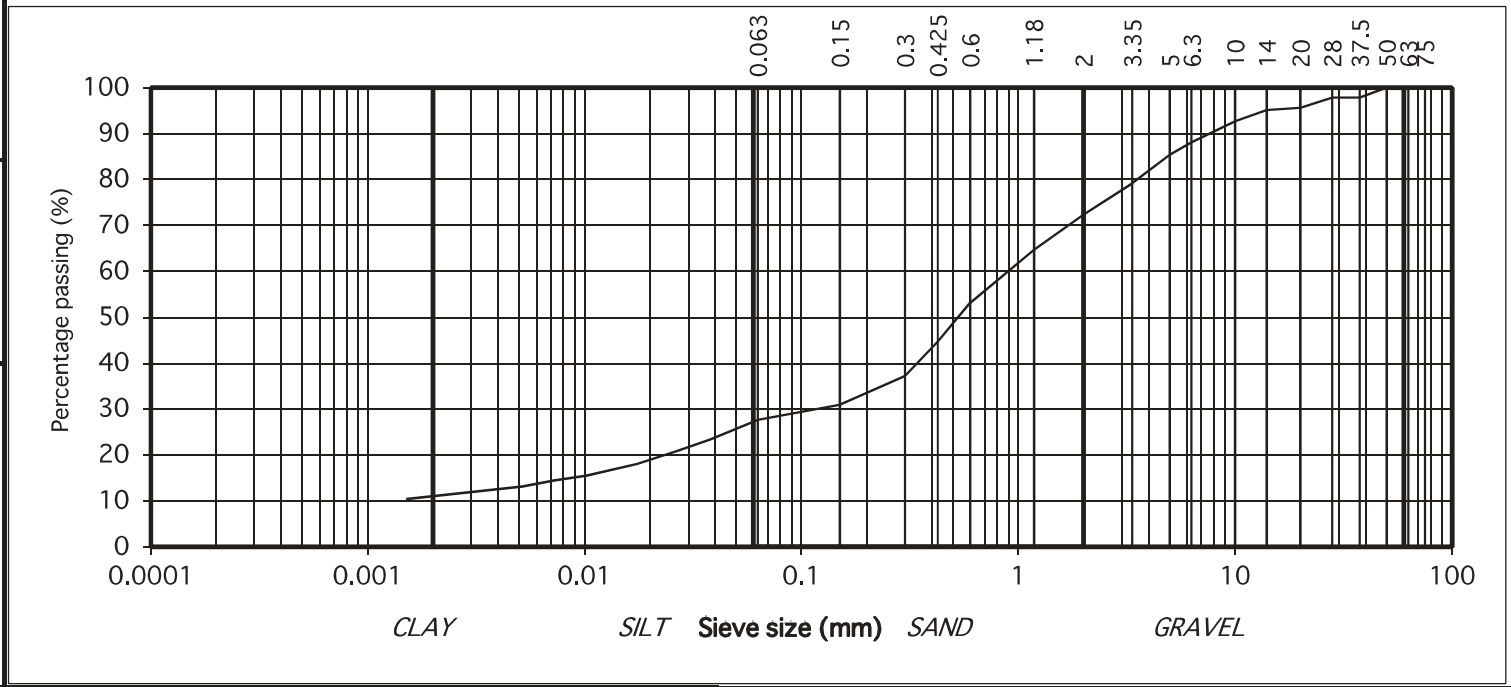
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	85	
28	83	
20	80	
14	76	
10	73	
6.3	69	
5	67	
3.35	63	
2	58	
1.18	52	SAND
0.6	45	
0.425	42	
0.3	40	
0.15	35	
0.063	33	SILT/CLAY
0.038	29	
0.027	27	
0.017	24	
0.010	20	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R143977	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148903			
Sample No.*	AA158206	Lab. Sample No.		A22/3300
Sample Type:	B			
Depth* (m)	0.80	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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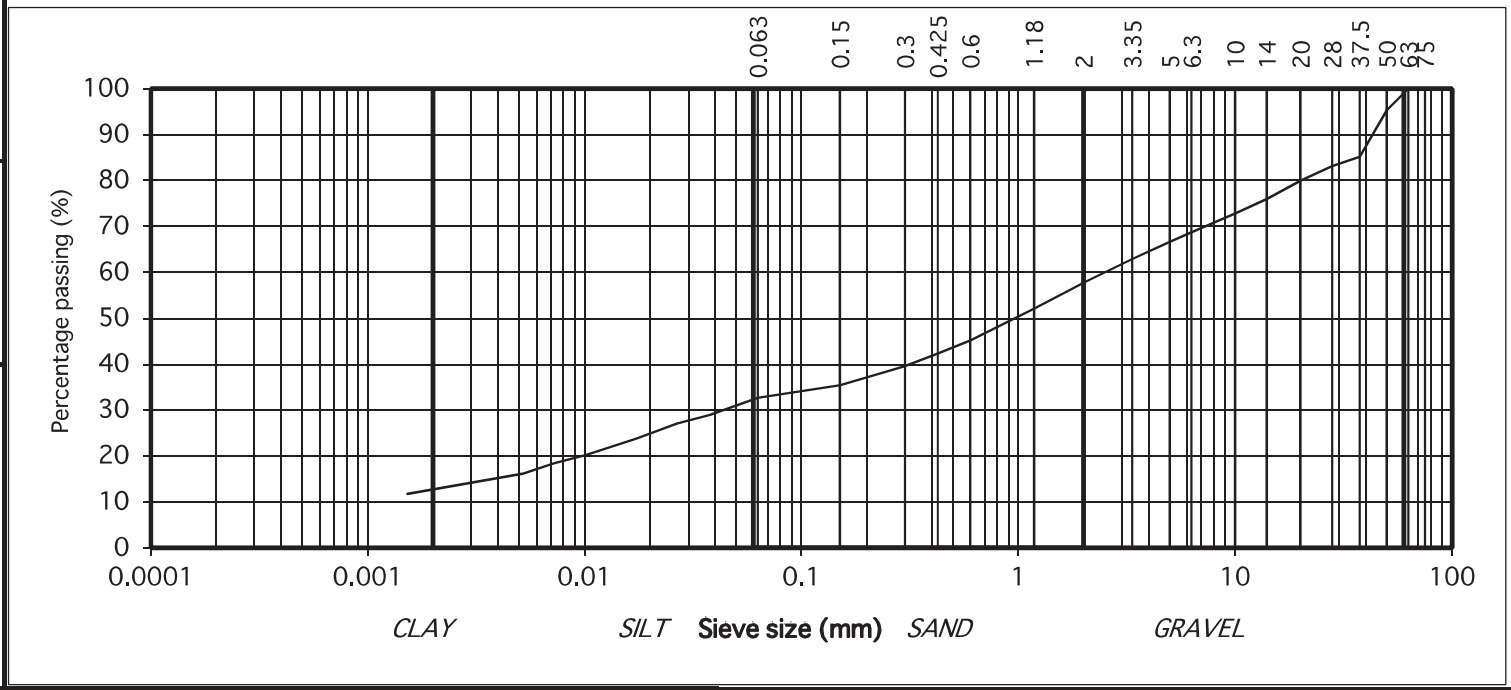
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	94	
28	86	
20	81	
14	79	
10	77	
6.3	73	
5	72	
3.35	69	
2	66	
1.18	64	SAND
0.6	61	
0.425	59	
0.3	57	
0.15	53	
0.063	46	SILT/CLAY
0.037	41	
0.027	37	
0.017	32	
0.010	28	
0.007	24	
0.005	22	
0.002	16	

Contract No.	23560	Report No.	R137383	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149004			
Sample No.*	AA158202	Lab. Sample No.		A22/3303
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	16/06/2022	Date Testing started		16/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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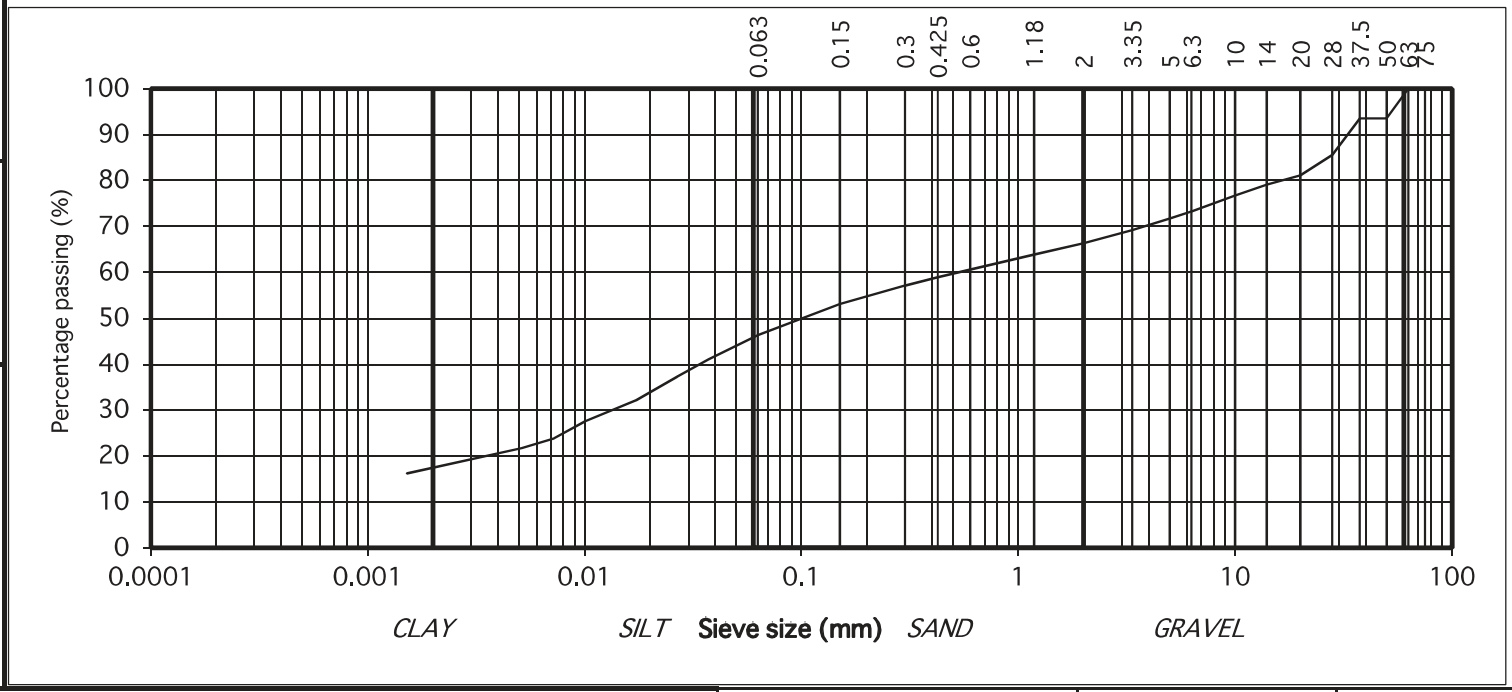
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	90	
50	90	GRAVEL
37.5	88	
28	84	
20	77	
14	73	
10	69	
6.3	66	
5	64	
3.35	61	
2	58	
1.18	55	SAND
0.6	51	
0.425	49	
0.3	47	
0.15	42	
0.063	35	SILT/CLAY
0.037	32	
0.027	30	
0.017	25	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R135221	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148903			
Sample No.*	AA158207	Lab. Sample No.		A22/3301
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	25/06/2022	Date Testing started		25/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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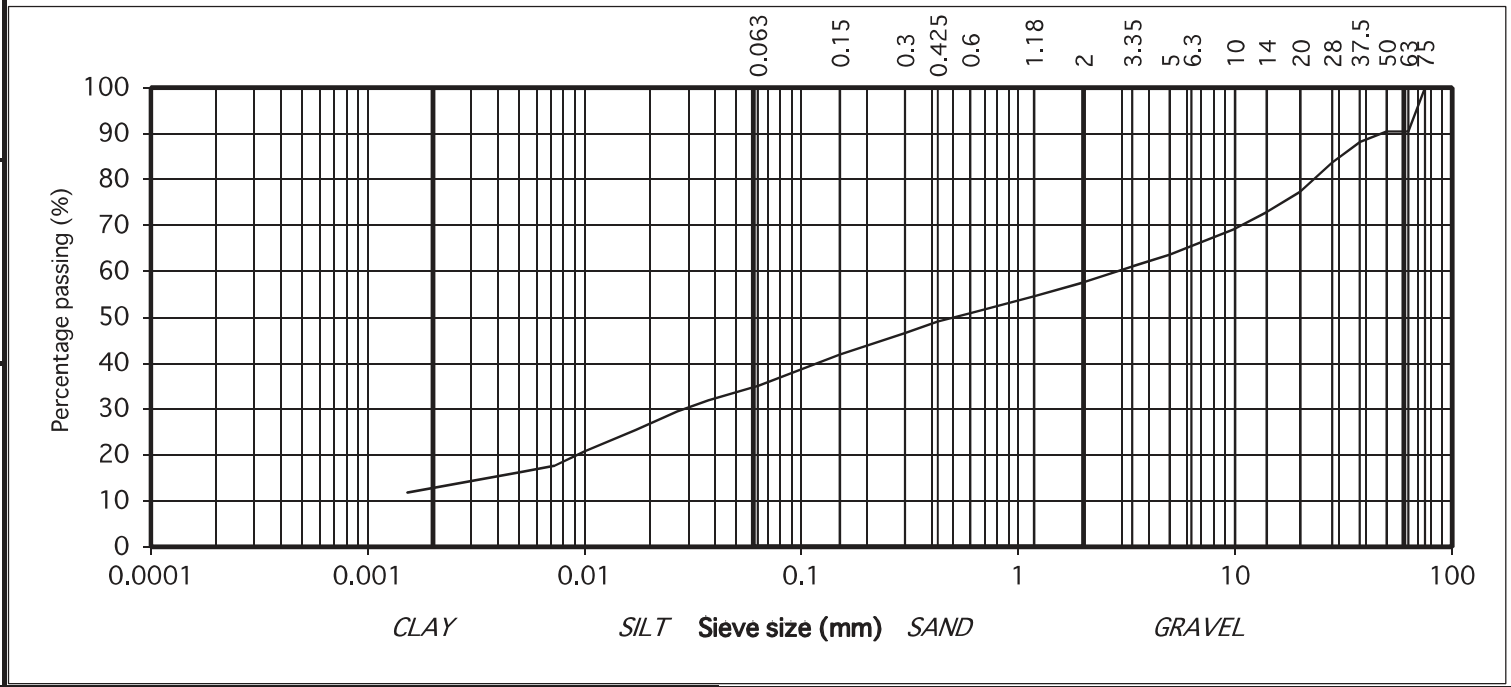

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	93	
20	88	
14	85	
10	82	
6.3	76	
5	74	
3.35	70	
2	65	
1.18	60	SAND
0.6	55	
0.425	52	
0.3	49	
0.15	43	
0.063	36	SILT/CLAY
0.038	31	
0.027	28	
0.018	24	
0.010	22	
0.007	19	
0.005	16	
0.002	13	

Contract No.	23560	Report No.	R135254	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149004			
Sample No.*	AA158204	Lab. Sample No.		A22/3305
Sample Type:	B			
Depth* (m)	2.60	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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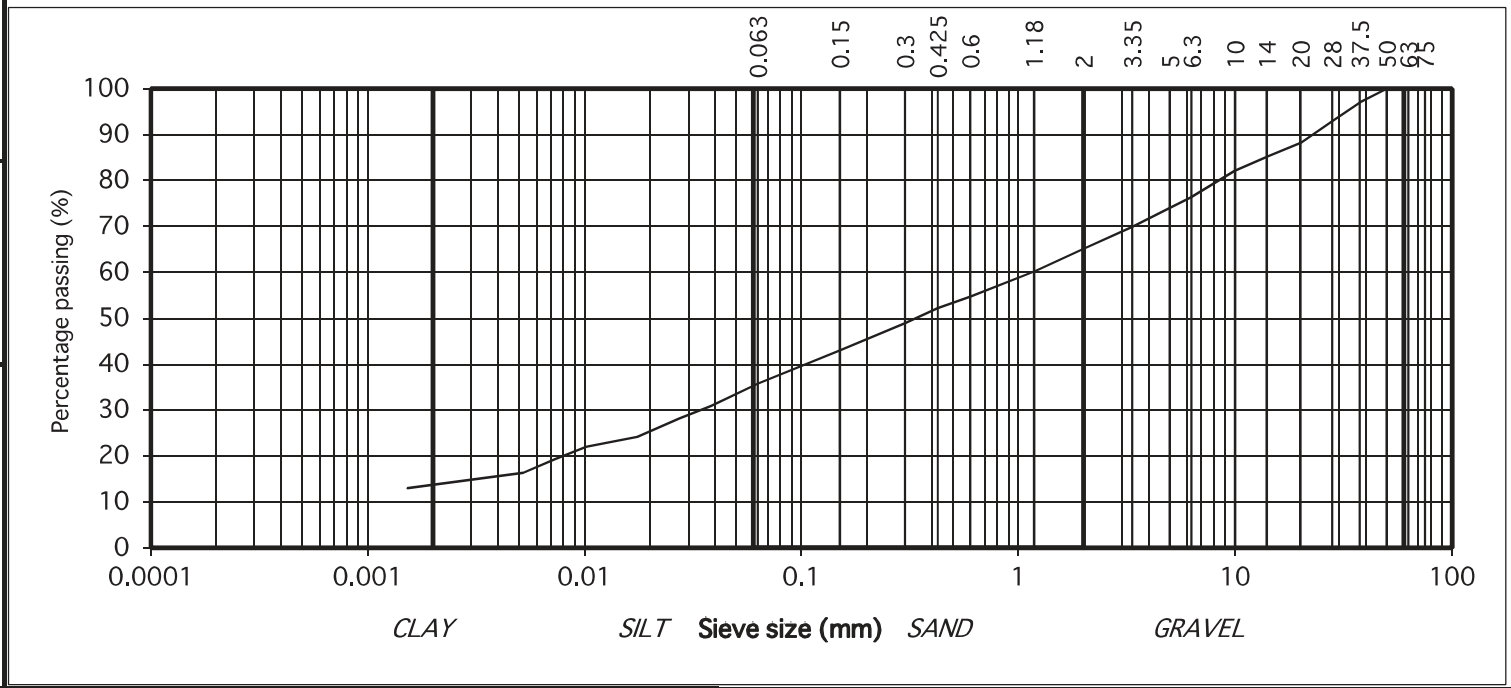

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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	81	
28	74	
20	69	
14	63	
10	59	
6.3	53	
5	50	
3.35	46	
2	41	
1.18	36	SAND
0.6	31	
0.425	29	
0.3	25	
0.15	20	
0.063	15	SILT/CLAY
0.040	13	
0.029	11	
0.018	10	
0.011	9	
0.008	7	
0.005	6	
0.002	5	

Contract No.	23560	Report No.	R135222	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149130			
Sample No.*	AA158213	Lab. Sample No.		A22/3306
Sample Type:	B			
Depth* (m)	1.20	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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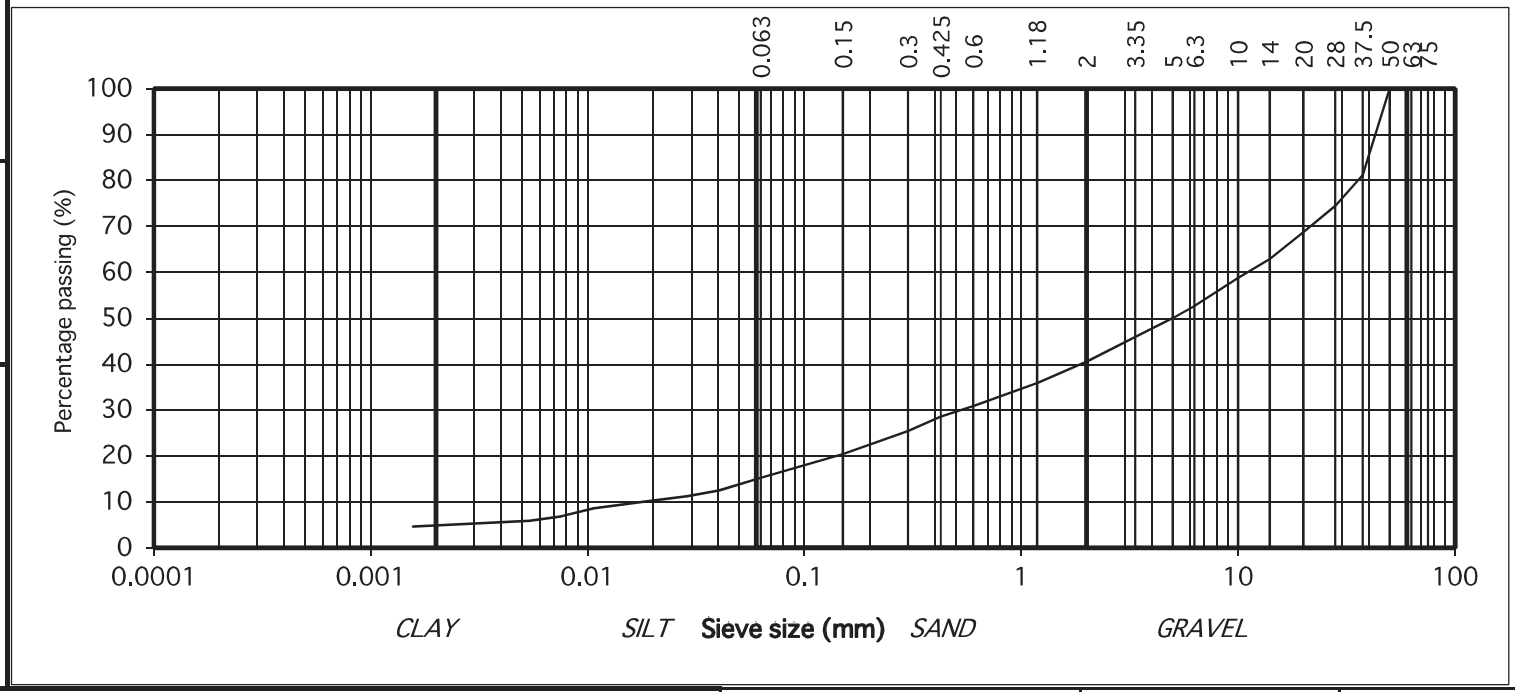
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of bS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	92	
50	92	GRAVEL
37.5	87	
28	84	
20	73	
14	68	
10	62	
6.3	56	
5	53	
3.35	49	
2	45	
1.18	41	SAND
0.6	36	
0.425	34	
0.3	31	
0.15	26	
0.063	20	SILT/CLAY
0.039	18	
0.028	17	
0.018	15	
0.010	13	
0.007	11	
0.005	9	
0.002	8	

Contract No.	23560	Report No.	R137384	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149200			
Sample No.*	AA158216	Lab. Sample No.		A22/3307
Sample Type:	B			
Depth* (m)	1.30	Customer:	Ervia	
Date Received	16/06/2022	Date Testing started		16/06/2022
Description:	Brown clayey/silty, very sandy, GRAVEL with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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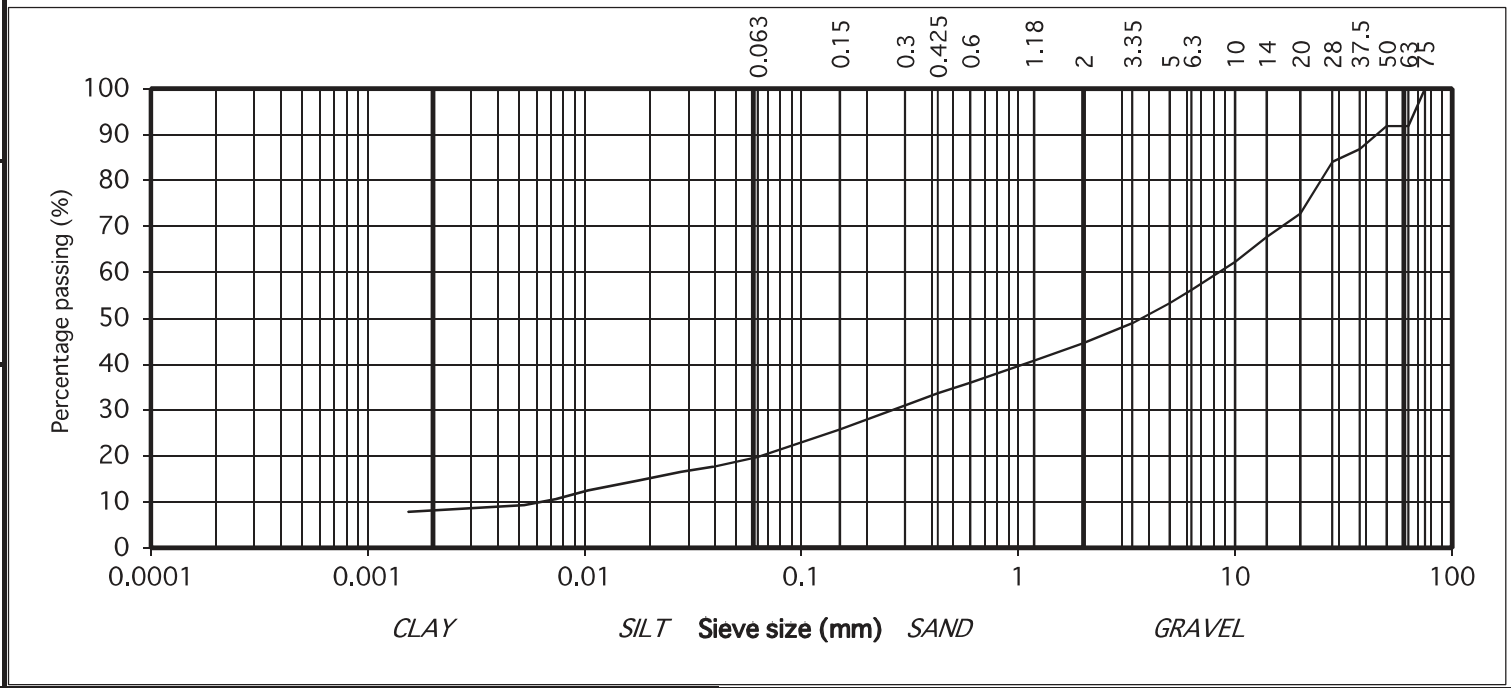

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

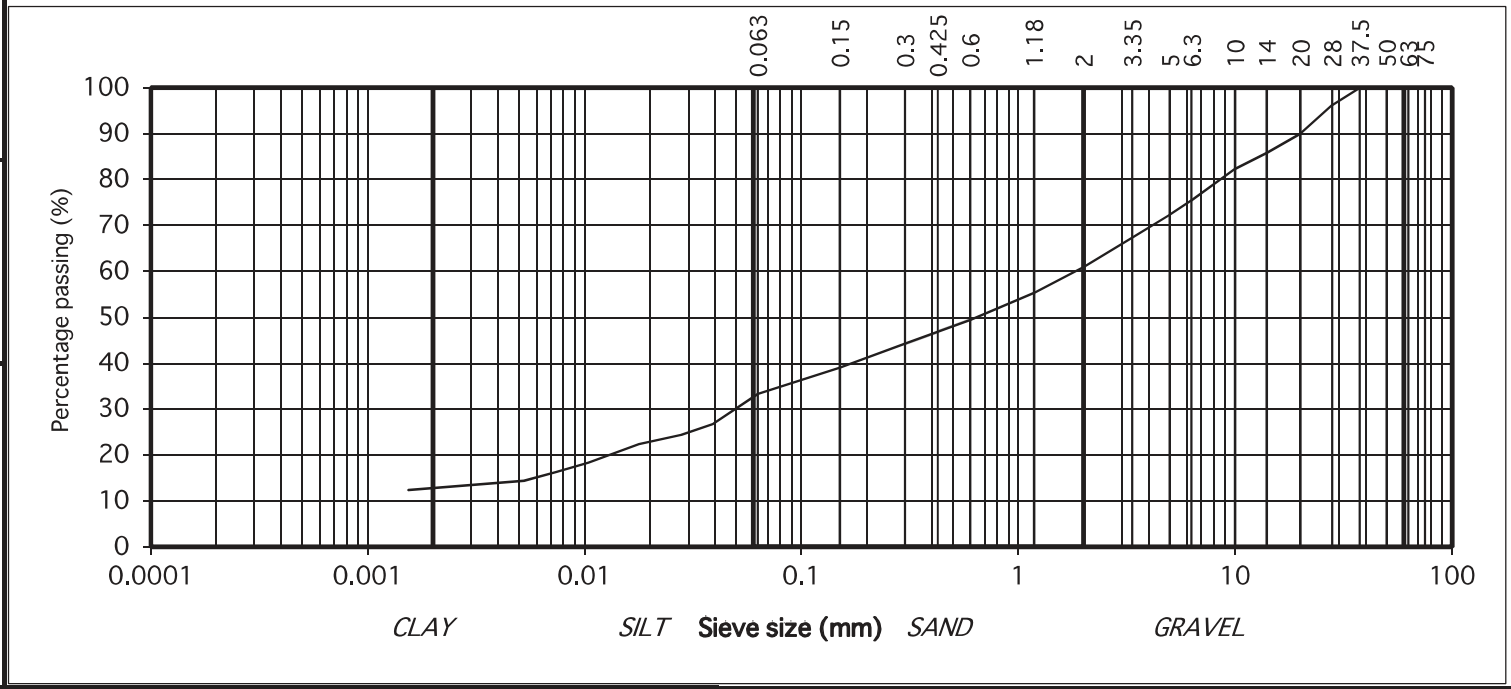
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	90	
14	86	
10	82	
6.3	75	
5	72	
3.35	67	
2	61	
1.18	55	SAND
0.6	49	
0.425	47	
0.3	44	
0.15	39	
0.063	33	SILT/CLAY
0.039	27	
0.028	24	
0.018	22	
0.010	18	
0.007	16	
0.005	14	
0.002	12	

Contract No.	23560	Report No.	R137385	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149200			
Sample No.*	AA158217	Lab. Sample No.		A22/3308
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/06/2022	Date Testing started		16/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	80	
28	70	
20	64	
14	60	
10	57	
6.3	54	
5	52	
3.35	50	
2	48	
1.18	46	SAND
0.6	43	
0.425	42	
0.3	40	
0.15	37	
0.063	31	SILT/CLAY
0.037	27	
0.027	25	
0.017	23	
0.010	19	
0.007	17	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R135223	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149304			
Sample No.*	AA158218	Lab. Sample No.		A22/3309
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Grey/Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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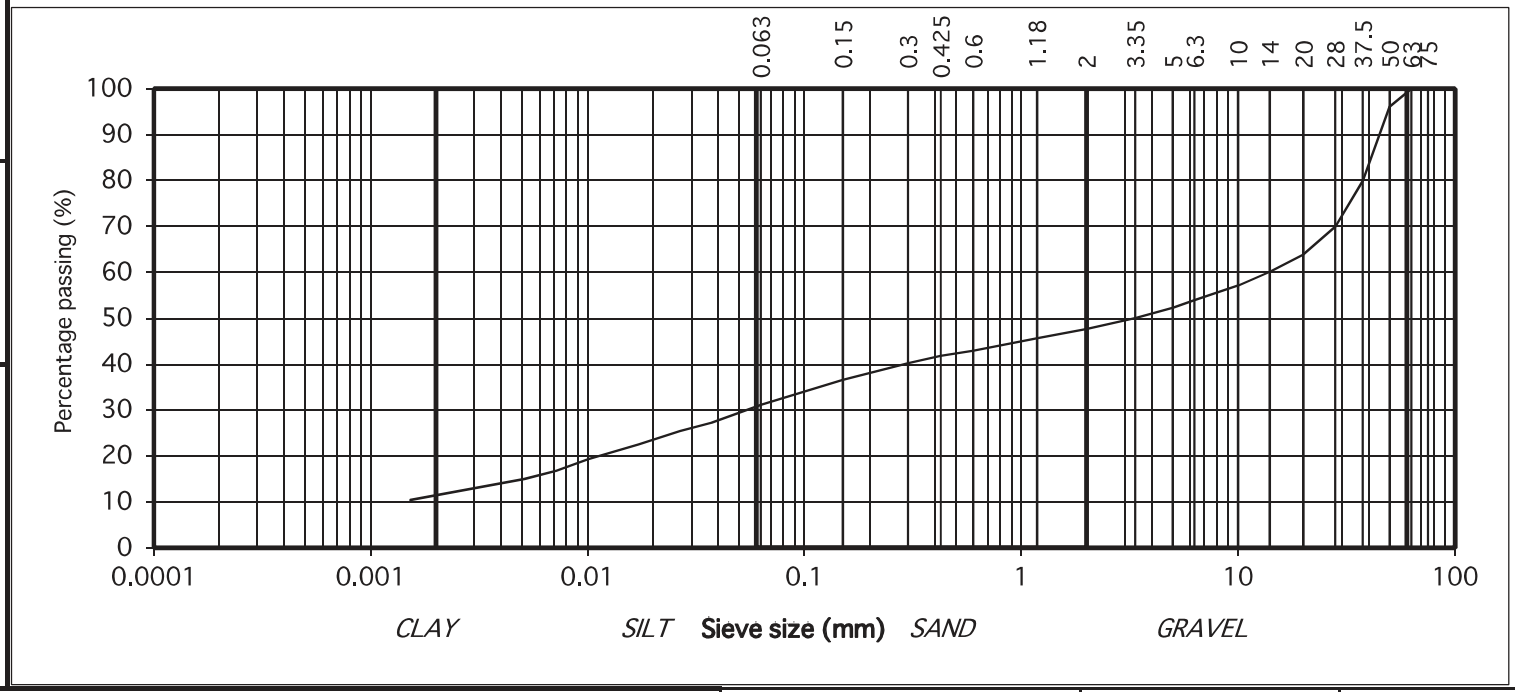
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

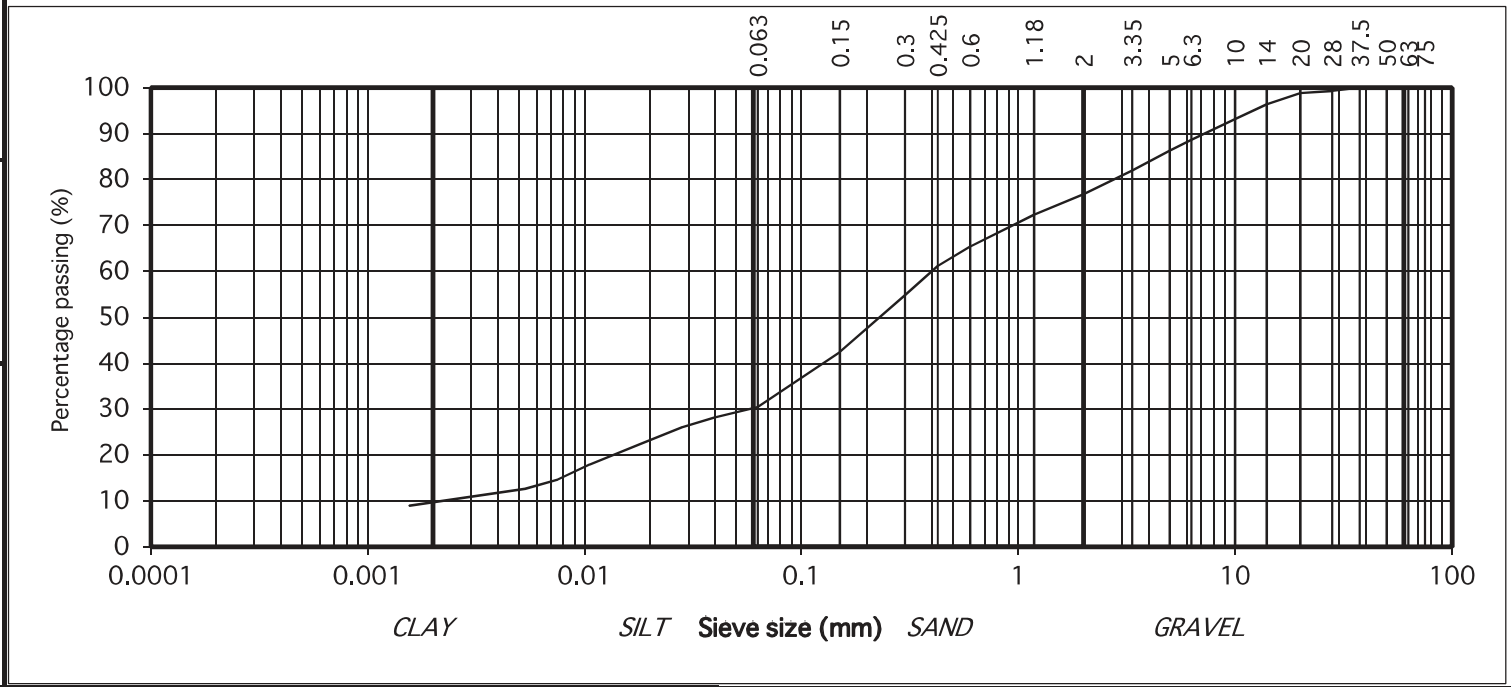
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	99	
14	96	
10	93	
6.3	89	
5	86	
3.35	82	
2	77	
1.18	72	SAND
0.6	65	
0.425	61	
0.3	55	
0.15	42	
0.063	30	SILT/CLAY
0.040	28	
0.028	26	
0.018	22	
0.011	18	
0.008	15	
0.005	13	
0.002	9	

Contract No.	23560	Report No.	R135225	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149373			
Sample No.*	AA158220	Lab. Sample No.		A22/3311
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	88	
20	80	
14	76	
10	72	
6.3	68	
5	66	
3.35	63	
2	60	
1.18	57	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	45	
0.063	39	SILT/CLAY
0.037	32	
0.027	29	
0.017	27	
0.010	23	
0.007	20	
0.005	18	
0.002	13	

Contract No.	23560	Report No.	R135224	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149304			
Sample No.*	AA158219	Lab. Sample No.		A22/3310
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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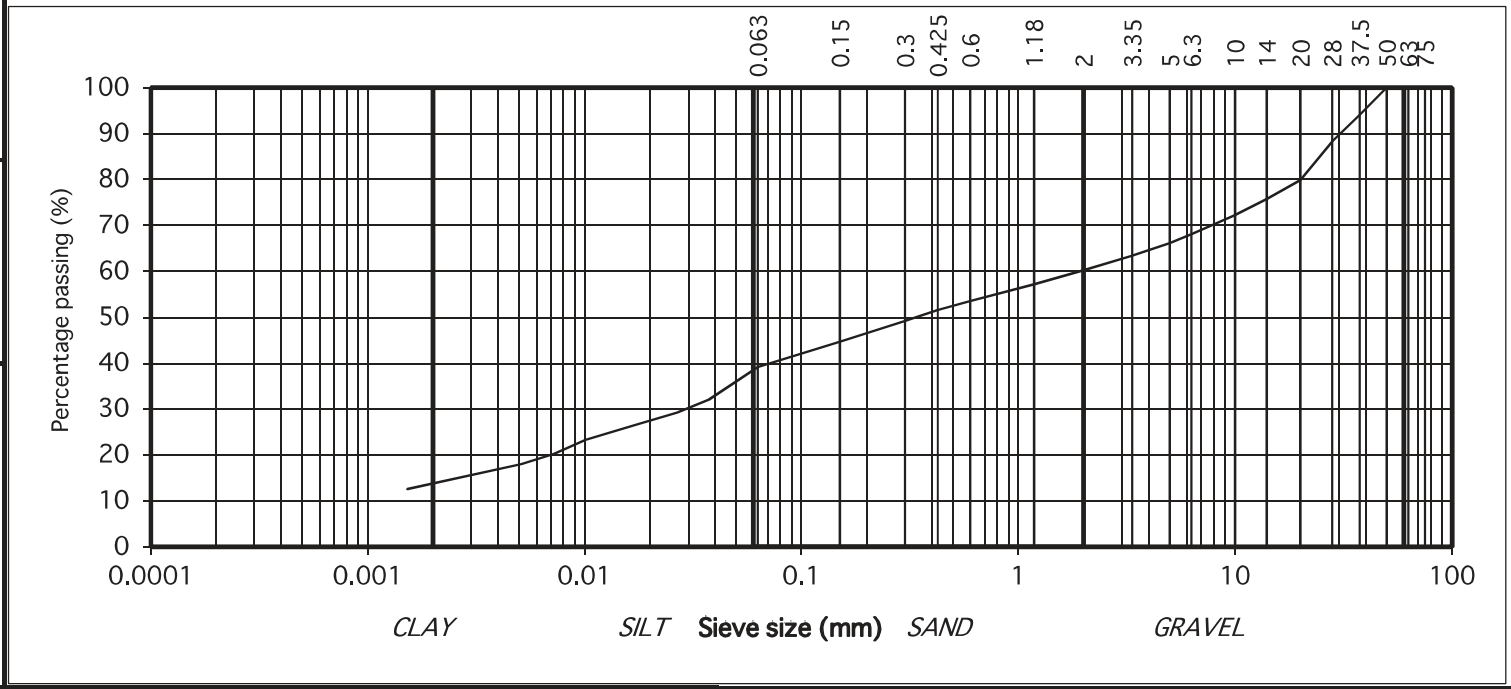
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	93	
20	87	
14	84	
10	81	
6.3	78	
5	76	
3.35	74	
2	71	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	62	
0.15	58	
0.063	52	SILT/CLAY
0.036	45	
0.026	41	
0.017	39	
0.010	33	
0.007	29	
0.005	25	
0.001	19	

Contract No.	23560	Report No.	R135218	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149373			
Sample No.*	AA158222	Lab. Sample No.		A22/3212
Sample Type:	B			
Depth* (m)	1.80	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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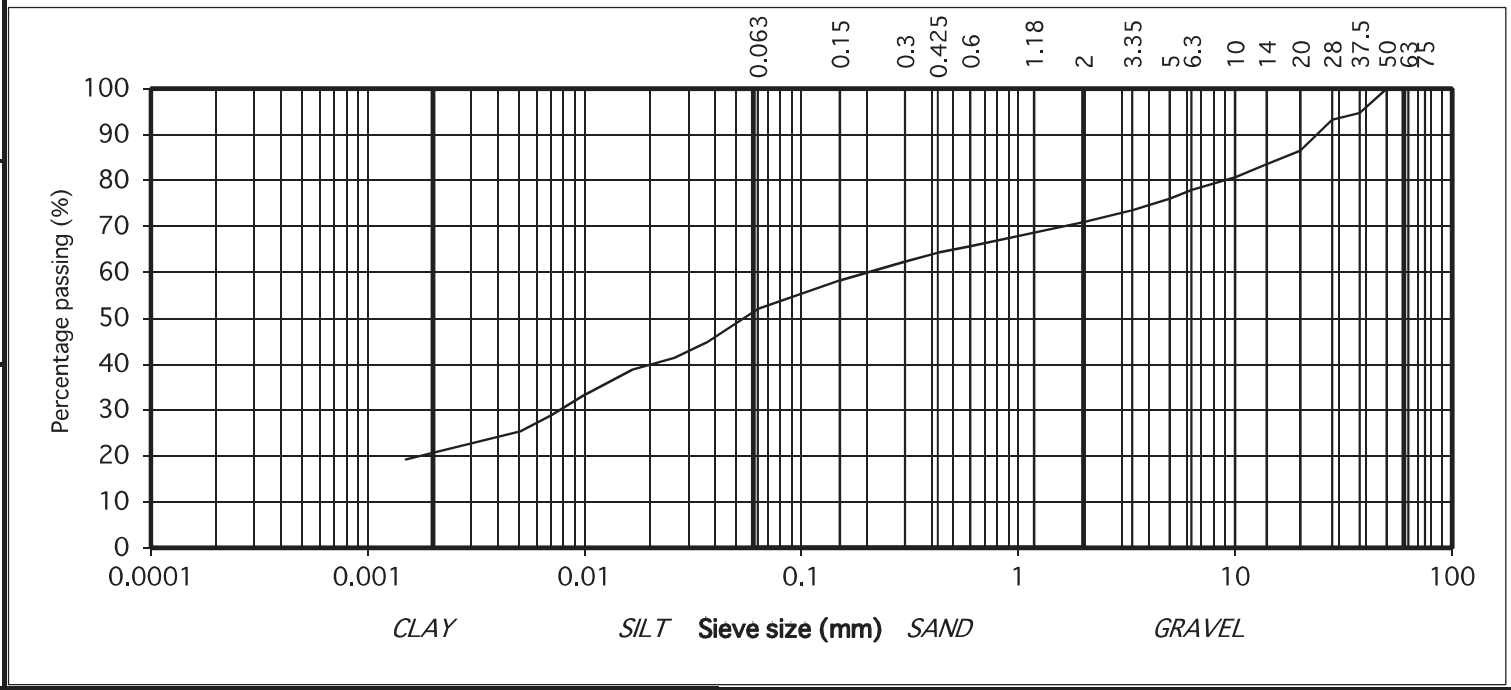
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	87	
28	81	
20	69	
14	66	
10	61	
6.3	58	
5	56	
3.35	54	
2	52	
1.18	49	SAND
0.6	46	
0.425	45	
0.3	43	
0.15	41	
0.063	37	SILT/CLAY
0.036	34	
0.026	32	
0.017	28	
0.010	23	
0.007	21	
0.005	18	
0.001	14	

Contract No.	23560	Report No.	R135226	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149505			
Sample No.*	AA158225	Lab. Sample No.		A22/3314
Sample Type:	B			
Depth* (m)	1.90	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Grey/Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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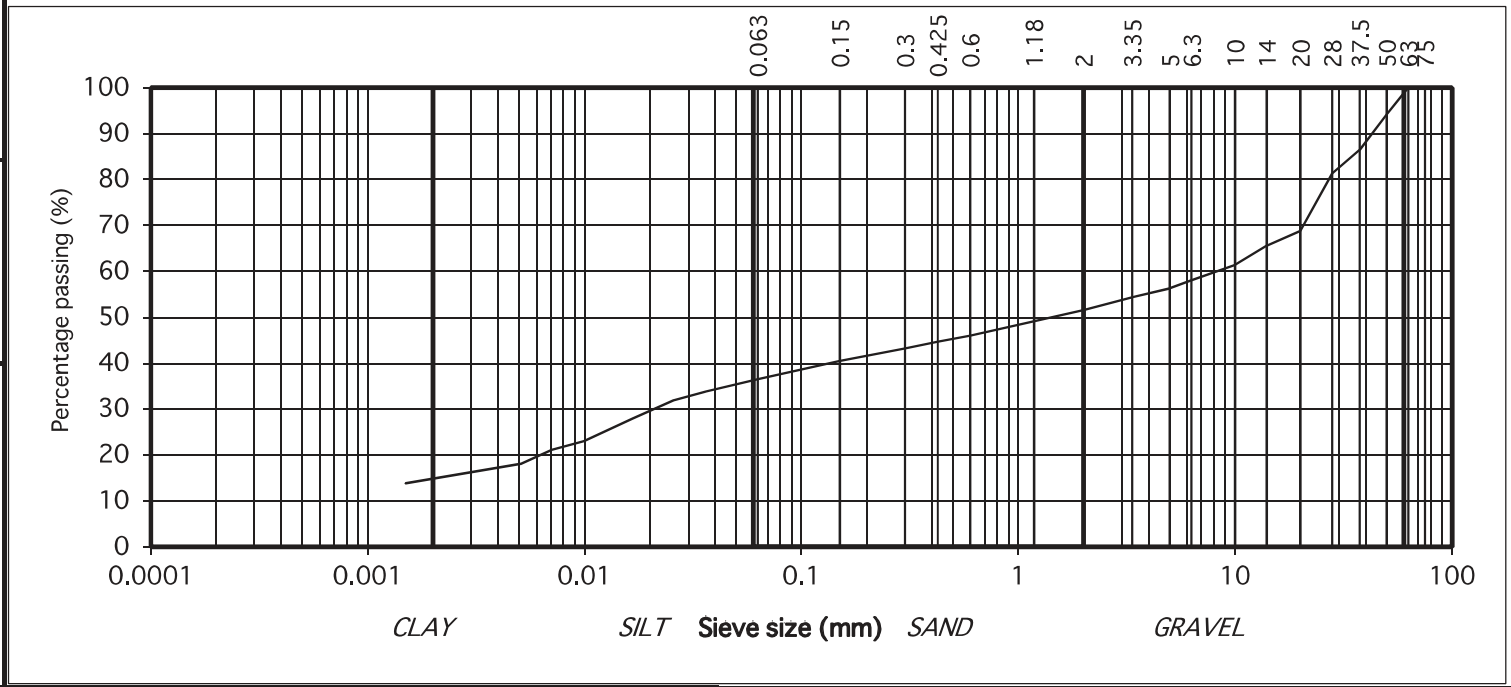
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

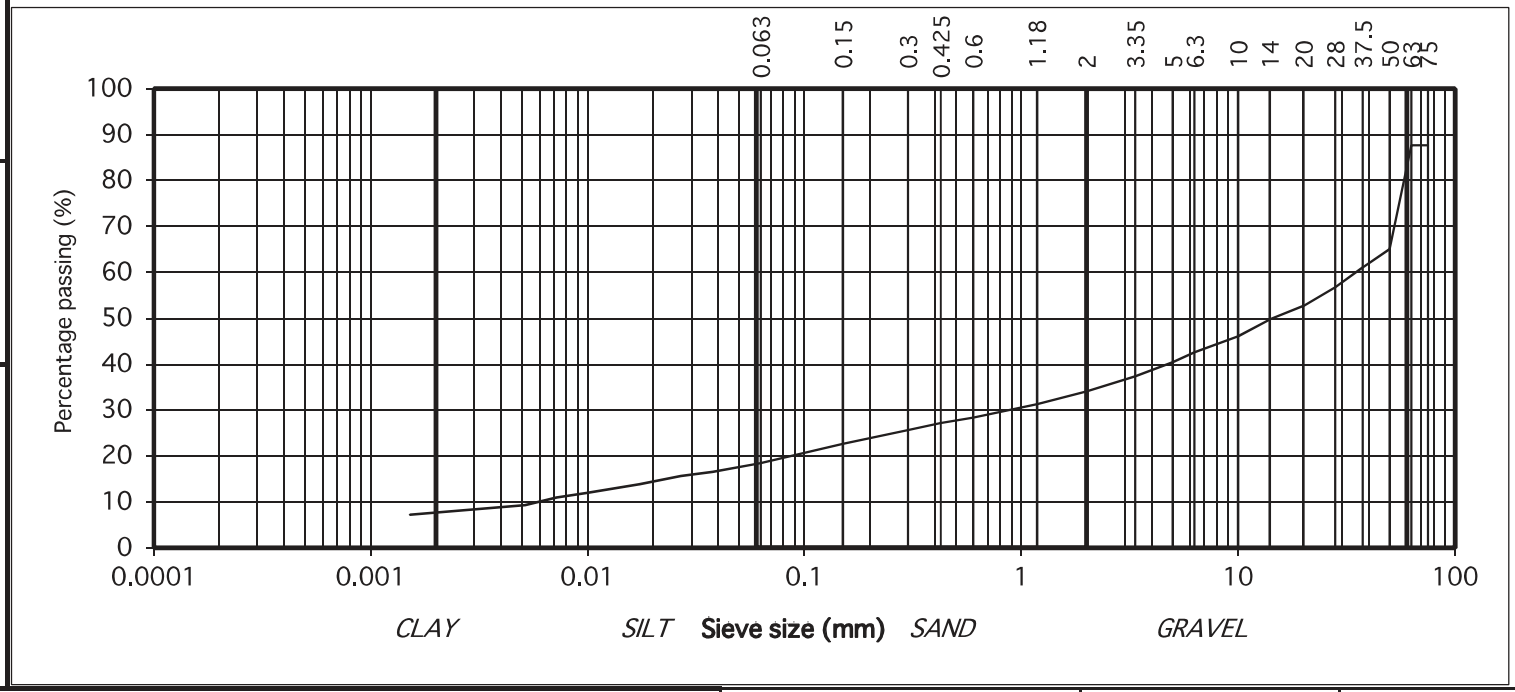
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	88	COBBLES
63	88	
50	65	GRAVEL
37.5	61	
28	57	
20	53	
14	50	
10	46	
6.3	43	
5	40	
3.35	37	
2	34	
1.18	31	SAND
0.6	28	
0.425	27	
0.3	26	
0.15	23	
0.063	18	SILT/CLAY
0.038	17	
0.027	16	
0.017	14	
0.010	12	
0.007	11	
0.005	9	
0.002	7	

Contract No.	23560	Report No.	R135228	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149604			
Sample No.*	AA158228	Lab. Sample No.		A22/3316
Sample Type:	B			
Depth* (m)	1.90	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown clayey/silty, sandy, GRAVEL with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	85	COBBLES
63	81	
50	73	GRAVEL
37.5	73	
28	67	
20	60	
14	55	
10	52	
6.3	48	
5	46	
3.35	43	
2	39	
1.18	36	SAND
0.6	33	
0.425	32	
0.3	31	
0.15	27	
0.063	22	SILT/CLAY
0.038	20	
0.027	19	
0.017	16	
0.010	14	
0.007	13	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R135227	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149604			
Sample No.*	AA158227	Lab. Sample No.		A22/3315
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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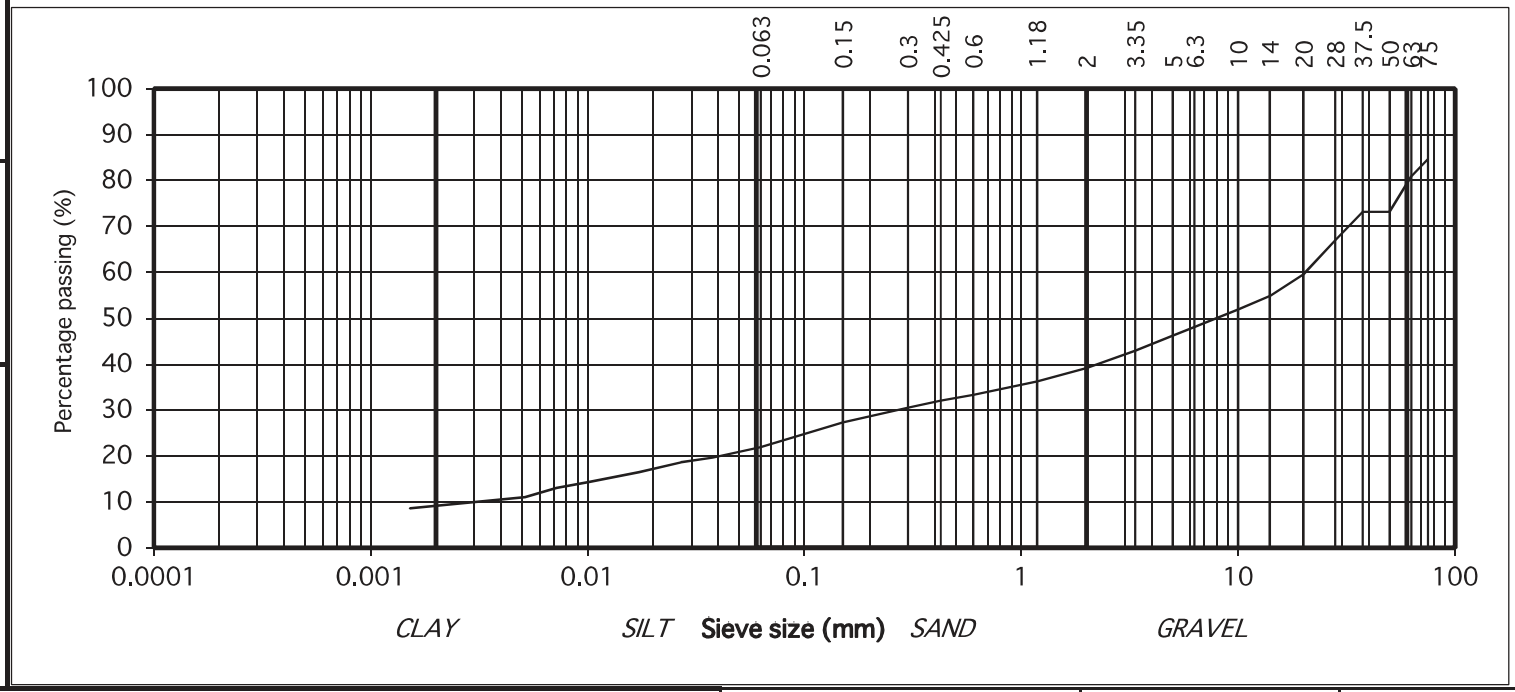
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	90	
20	86	
14	85	
10	83	
6.3	79	
5	78	
3.35	76	
2	73	
1.18	71	SAND
0.6	68	
0.425	66	
0.3	64	
0.15	60	
0.063	53	SILT/CLAY
0.035	47	
0.025	44	
0.016	39	
0.010	35	
0.007	32	
0.005	27	
0.002	16	

Contract No.	23560	Report No.	R135229	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149705			
Sample No.*	AA158230	Lab. Sample No.		A22/3317
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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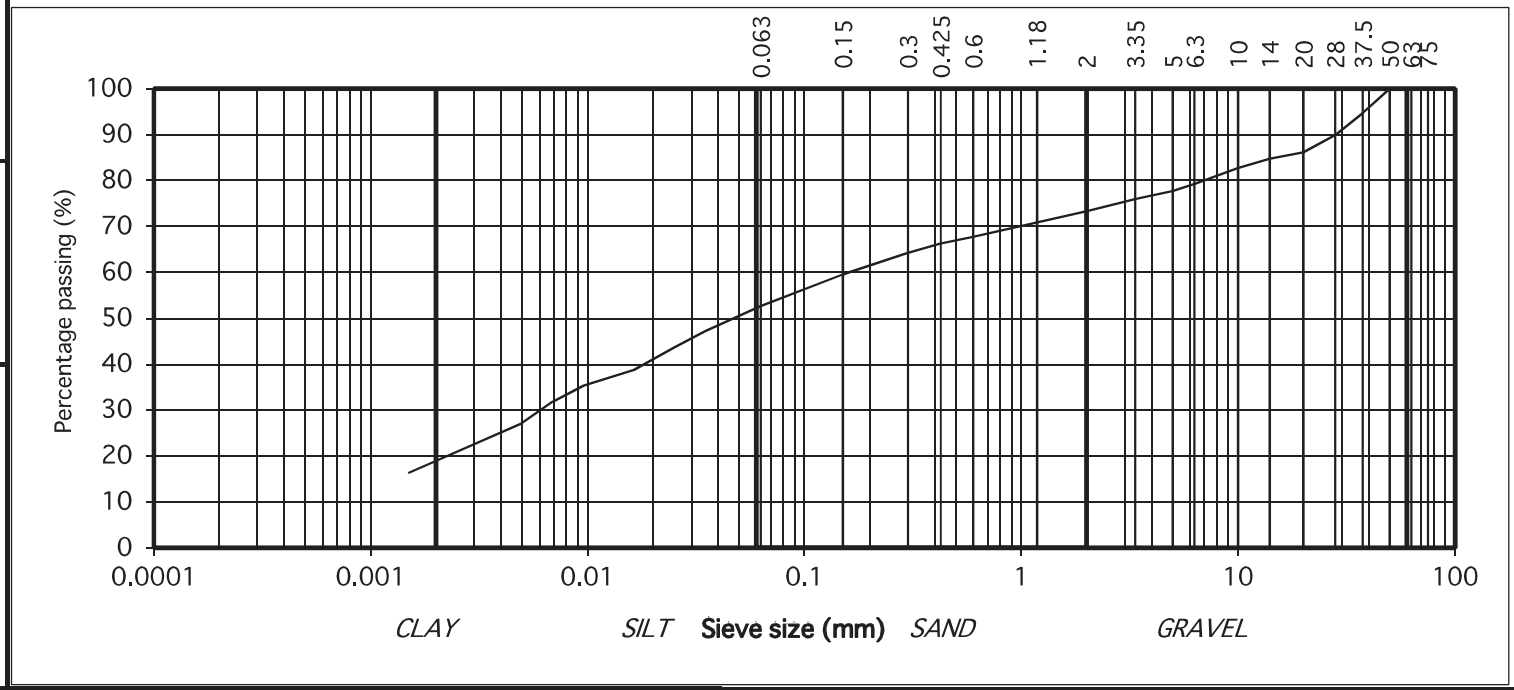
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

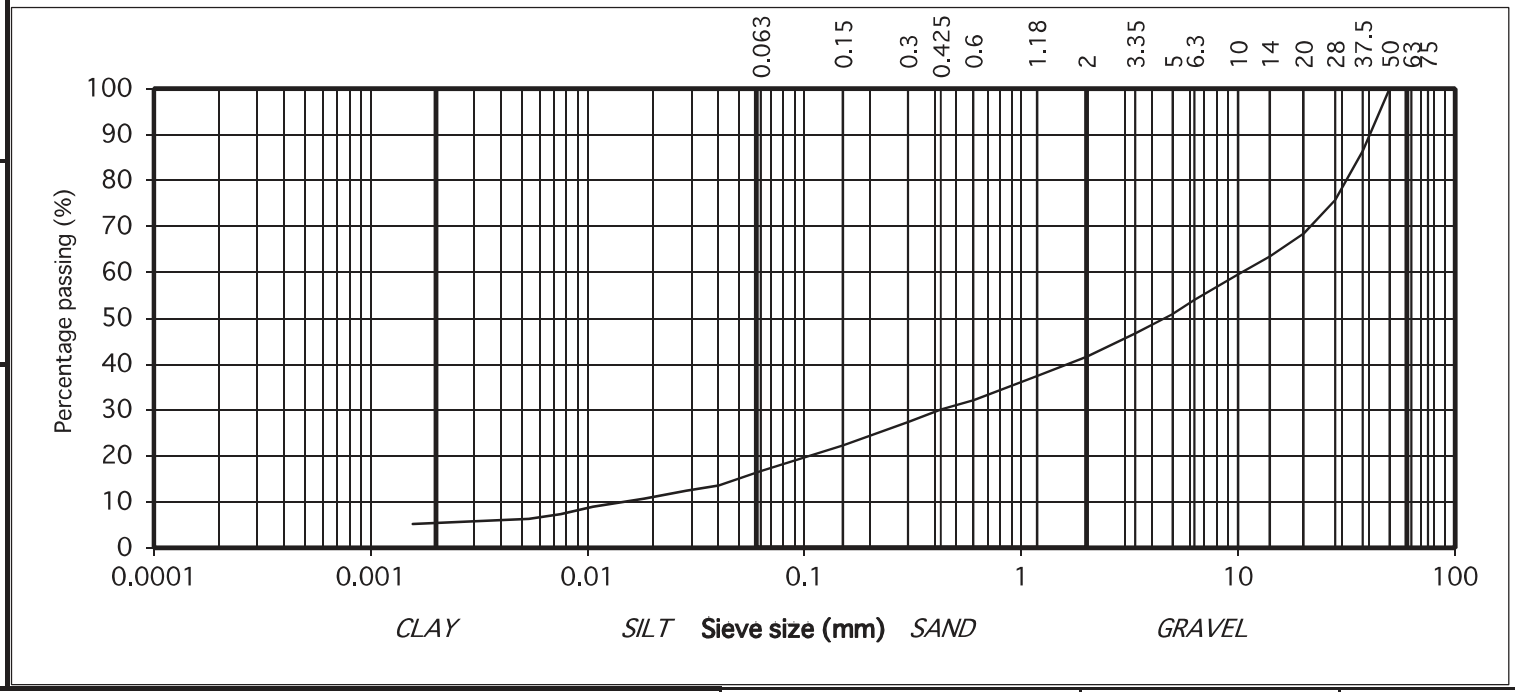
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	86	
28	76	
20	68	
14	63	
10	60	
6.3	54	
5	51	
3.35	47	
2	42	
1.18	37	SAND
0.6	32	
0.425	30	
0.3	27	
0.15	22	
0.063	17	SILT/CLAY
0.040	14	
0.028	12	
0.018	11	
0.011	9	
0.008	7	
0.005	6	
0.002	5	

Contract No.	23560	Report No.	R135233	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP148803			
Sample No.*	AA158234	Lab. Sample No.		A22/3322
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	83	
28	80	
20	73	
14	68	
10	64	
6.3	58	
5	56	
3.35	53	
2	48	
1.18	45	SAND
0.6	40	
0.425	39	
0.3	37	
0.15	33	
0.063	28	SILT/CLAY
0.039	23	
0.028	21	
0.018	19	
0.010	16	
0.007	14	
0.005	12	
0.002	8	

Contract No.	23560	Report No.	R135230	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149705			
Sample No.*	AA158231	Lab. Sample No.		A22/3318
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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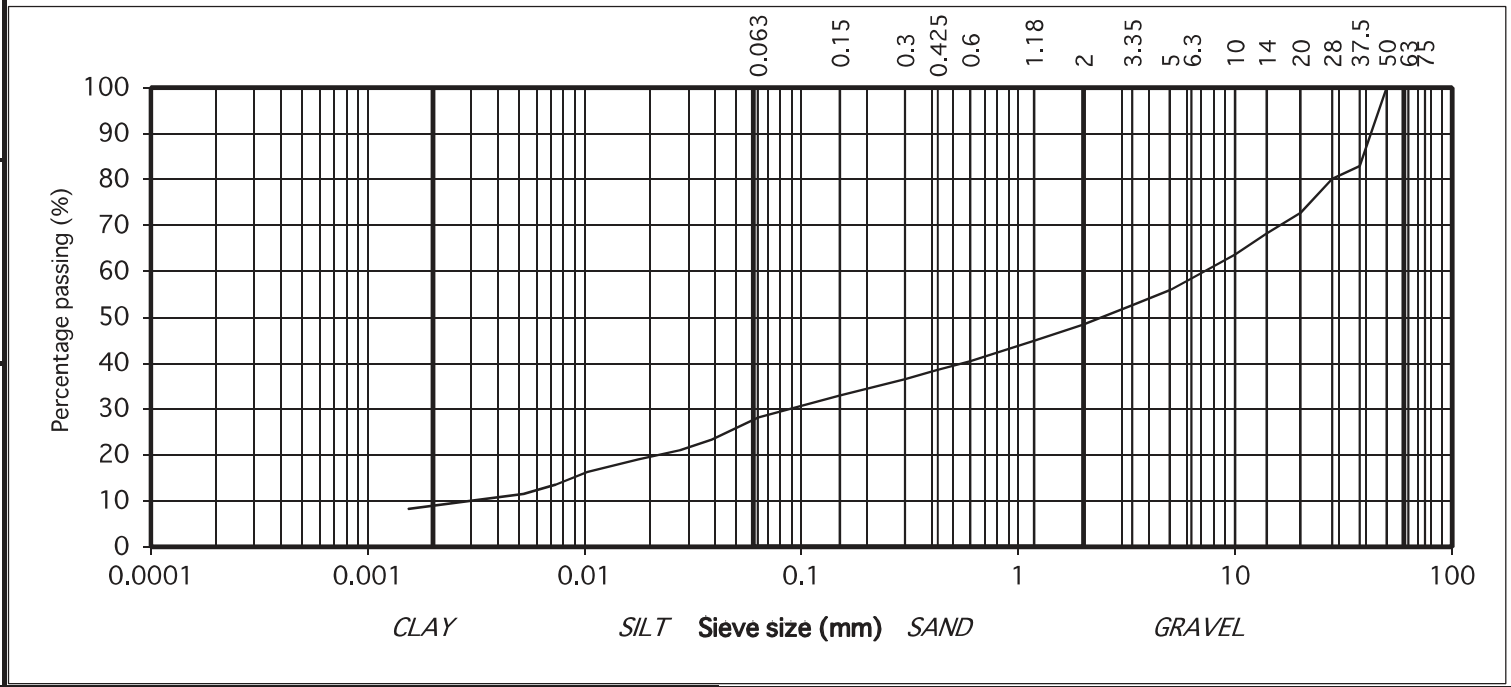
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	91	
14	88	
10	85	
6.3	82	
5	80	
3.35	77	
2	73	
1.18	70	SAND
0.6	66	
0.425	64	
0.3	62	
0.15	57	
0.063	50	SILT/CLAY
0.036	42	
0.026	39	
0.017	35	
0.010	29	
0.007	26	
0.005	22	
0.002	12	

Contract No.	23560	Report No.	R135234	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149904			
Sample No.*	AA158236	Lab. Sample No.		A22/3323
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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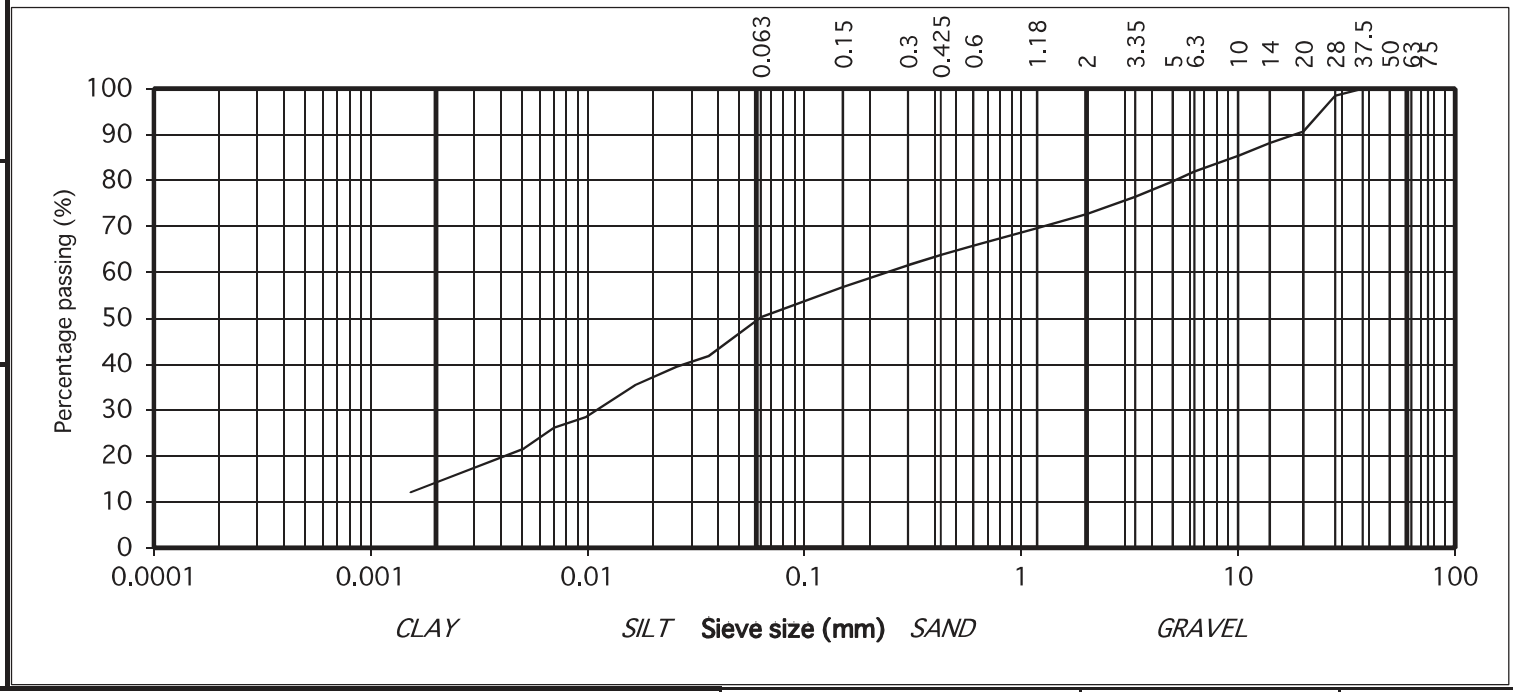
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	94	
14	93	
10	90	
6.3	87	
5	85	
3.35	82	
2	78	
1.18	73	SAND
0.6	66	
0.425	62	
0.3	55	
0.15	46	
0.063	29	SILT/CLAY
0.038	23	
0.028	21	
0.018	19	
0.010	16	
0.007	14	
0.005	12	
0.002	10	

Contract No.	23560	Report No.	R135235	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149986			
Sample No.*	AA158240	Lab. Sample No.		A22/3326
Sample Type:	B			
Depth* (m)	2.90	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Grey Brown sandy, slightly gravelly, SILT/CLAY			

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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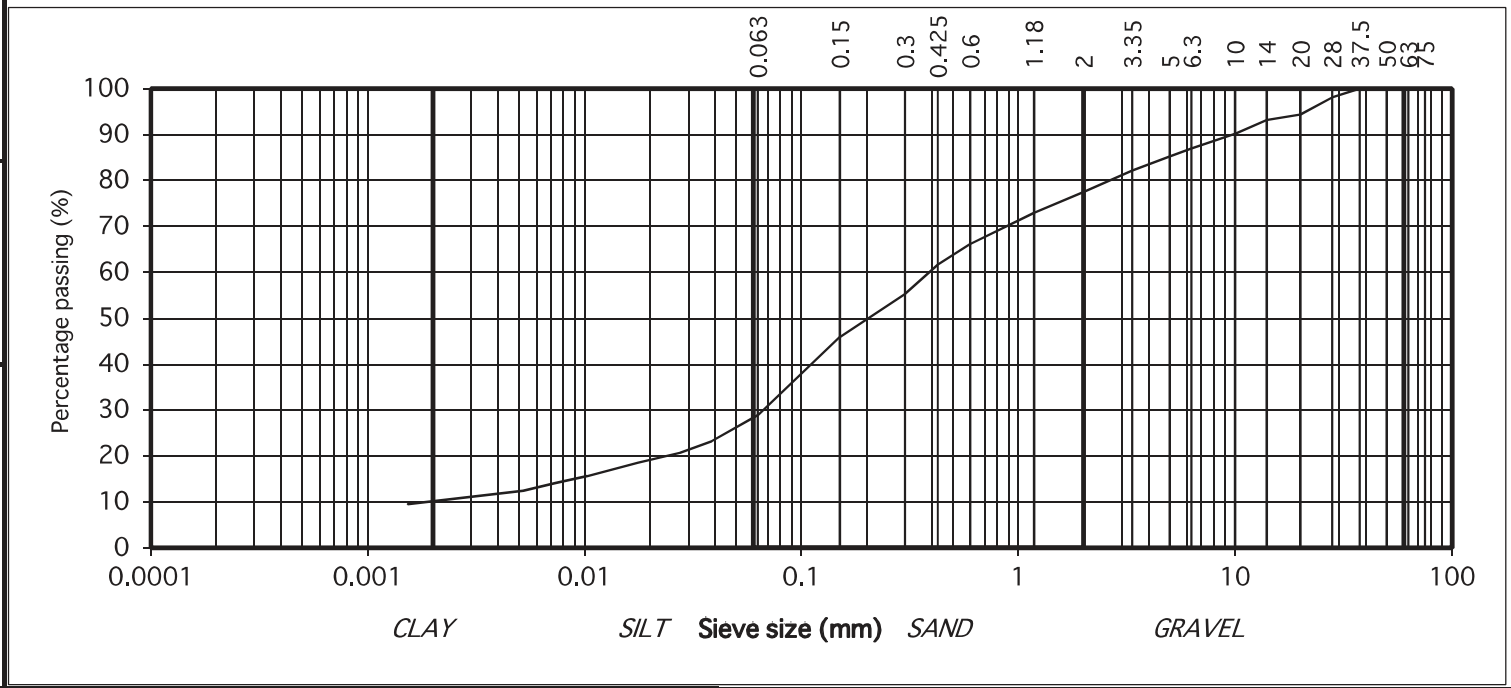

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	90	
50	90	GRAVEL
37.5	86	
28	84	
20	78	
14	73	
10	71	
6.3	65	
5	62	
3.35	57	
2	53	
1.18	48	SAND
0.6	44	
0.425	42	
0.3	39	
0.15	35	
0.063	30	SILT/CLAY
0.037	27	
0.027	24	
0.017	21	
0.010	17	
0.007	16	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R137386	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149904			
Sample No.*	AA158237	Lab. Sample No.		A22/3324
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/06/2022	Date Testing started		14/06/2022
Description:	Grey Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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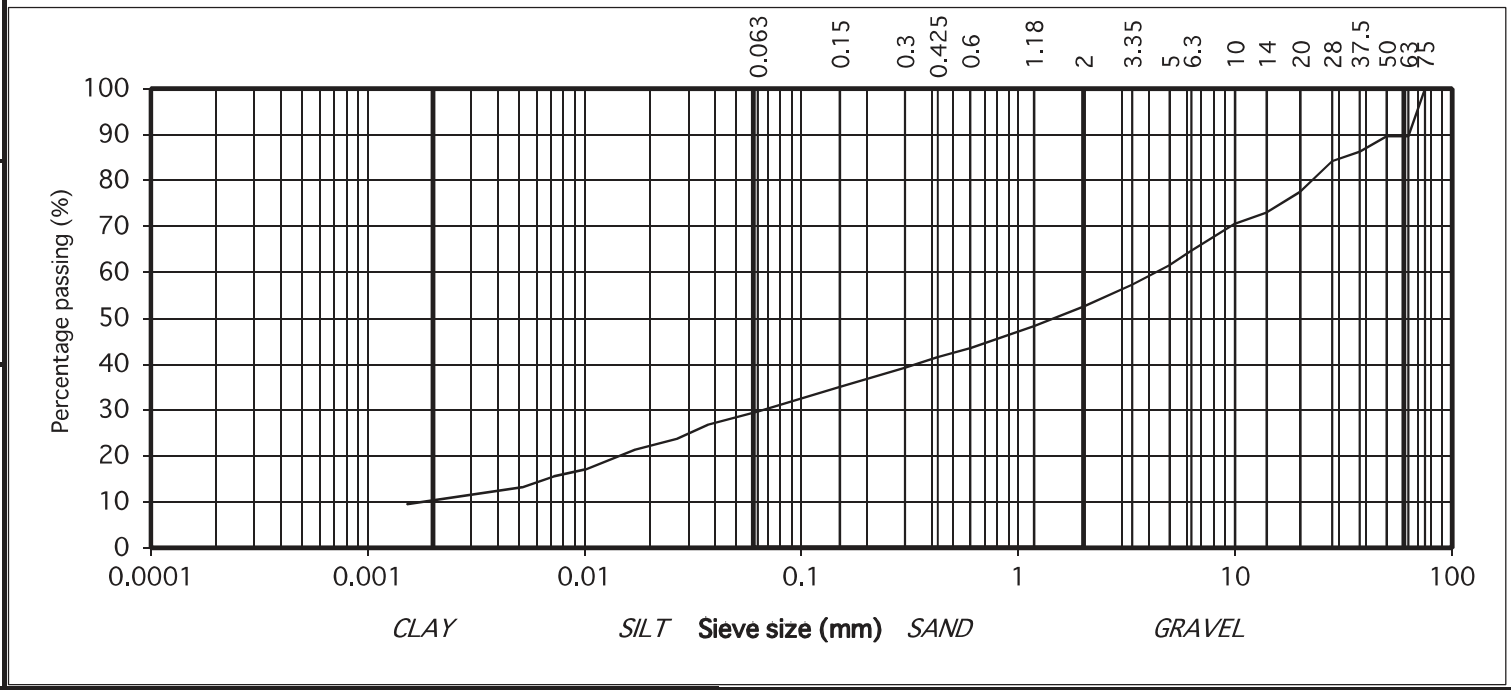
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	87	GRAVEL
37.5	87	
28	86	
20	85	
14	82	
10	80	
6.3	77	
5	76	
3.35	73	
2	71	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	62	
0.15	59	
0.063	54	SILT/CLAY
0.038	47	
0.027	42	
0.018	36	
0.010	29	
0.007	27	
0.005	22	
0.002	16	

Contract No.	23560	Report No.	R135255	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP149986			
Sample No.*	AA158239	Lab. Sample No.		A22/3325
Sample Type:	B			
Depth* (m)	1.80	Customer:	Ervia	
Date Received	15/06/2022	Date Testing started		15/06/2022
Description:	Grey Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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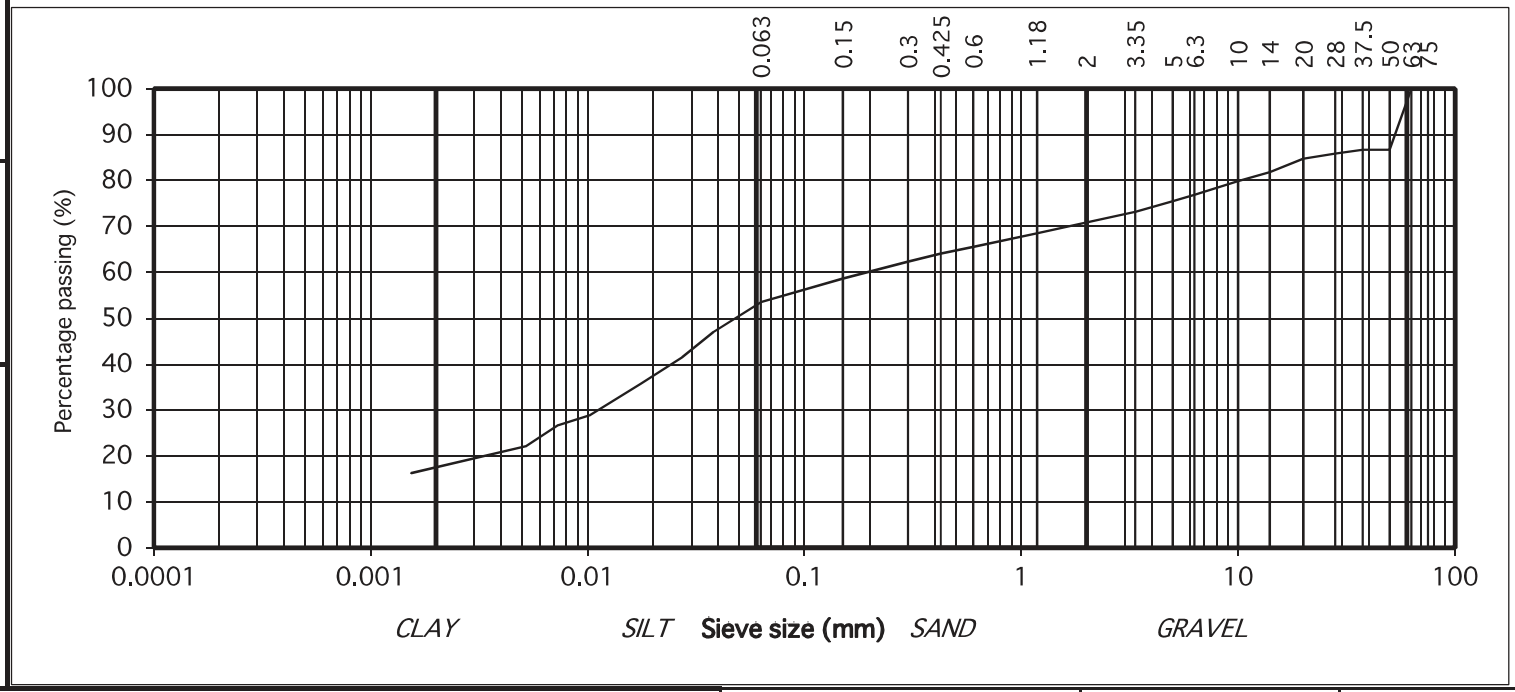
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	96	
20	92	
14	89	
10	86	
6.3	83	
5	81	
3.35	79	
2	76	
1.18	74	SAND
0.6	70	
0.425	69	
0.3	66	
0.15	58	
0.063	50	SILT/CLAY
0.036	45	
0.026	42	
0.017	40	
0.010	37	
0.007	35	
0.005	32	
0.001	22	

Contract No.	23560	Report No.	R137406	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150104			
Sample No.*	AA152191	Lab. Sample No.		A22/3328
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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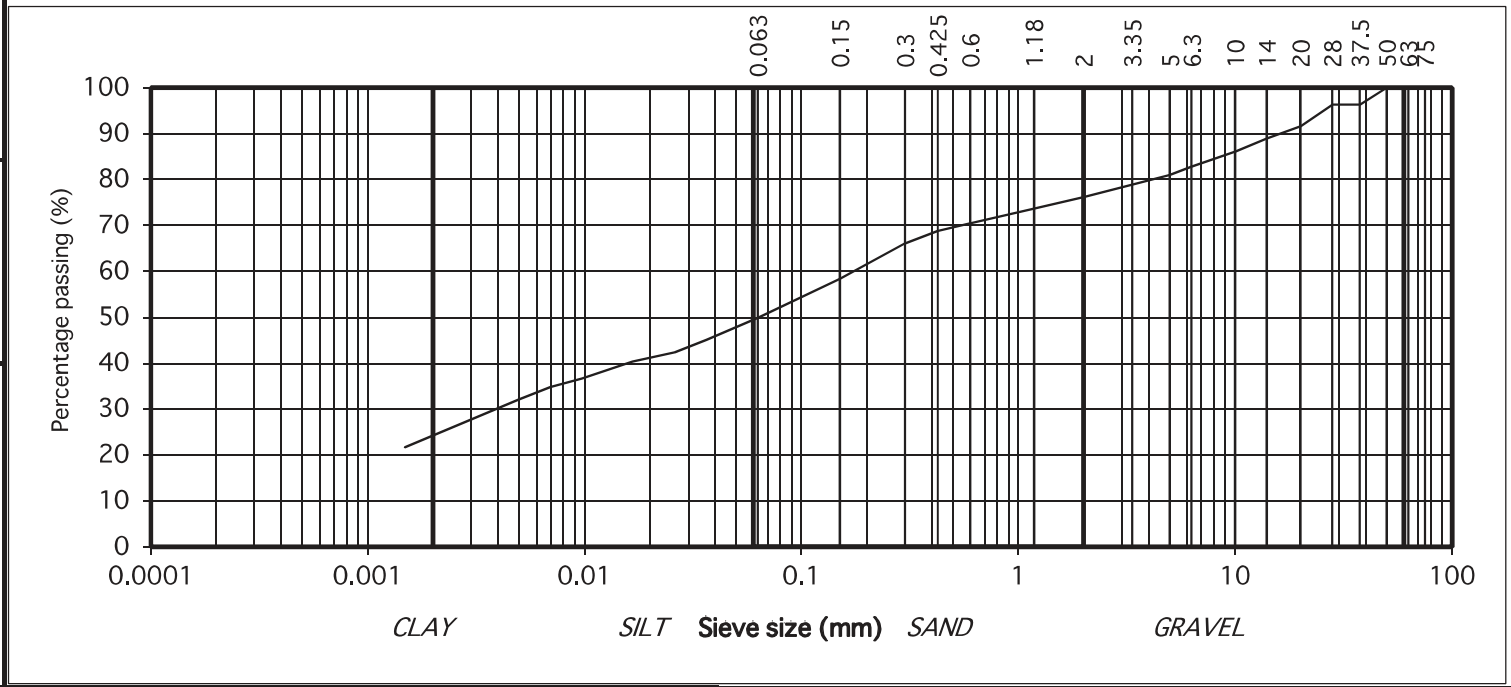
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	95	
14	92	
10	91	
6.3	88	
5	87	
3.35	85	
2	82	
1.18	80	SAND
0.6	77	
0.425	76	
0.3	74	
0.15	70	
0.063	65	SILT/CLAY
0.035	59	
0.025	56	
0.016	51	
0.010	45	
0.007	39	
0.005	34	
0.001	24	

Contract No.	23560	Report No.	R137389	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150190			
Sample No.*	AA178607	Lab. Sample No.		A22/3339
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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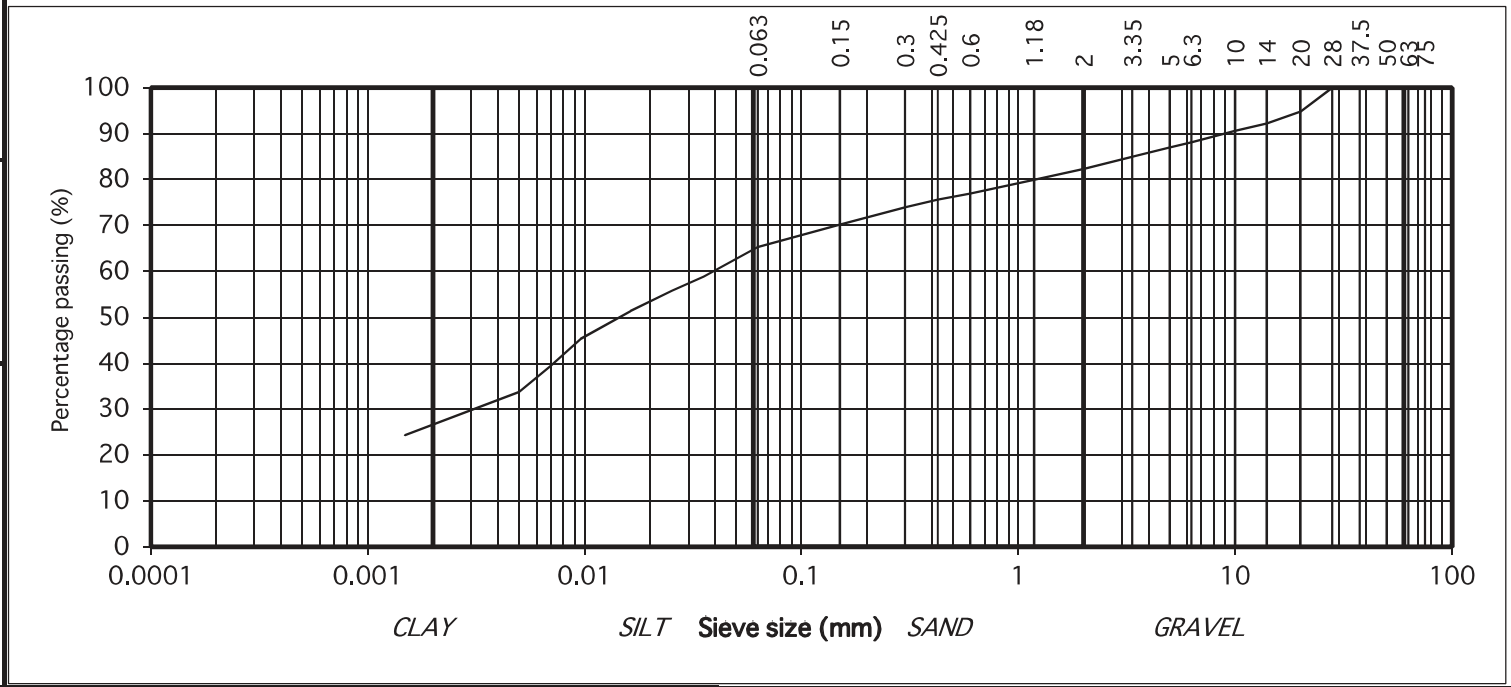
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	91	
28	88	
20	86	
14	83	
10	80	
6.3	77	
5	75	
3.35	71	
2	65	
1.18	61	SAND
0.6	55	
0.425	52	
0.3	49	
0.15	43	
0.063	38	SILT/CLAY
0.038	32	
0.027	29	
0.017	26	
0.010	23	
0.007	21	
0.005	19	
0.002	13	

Contract No.	23560	Report No.	R143980	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150295			
Sample No.*	AA178604	Lab. Sample No.		A22/3331
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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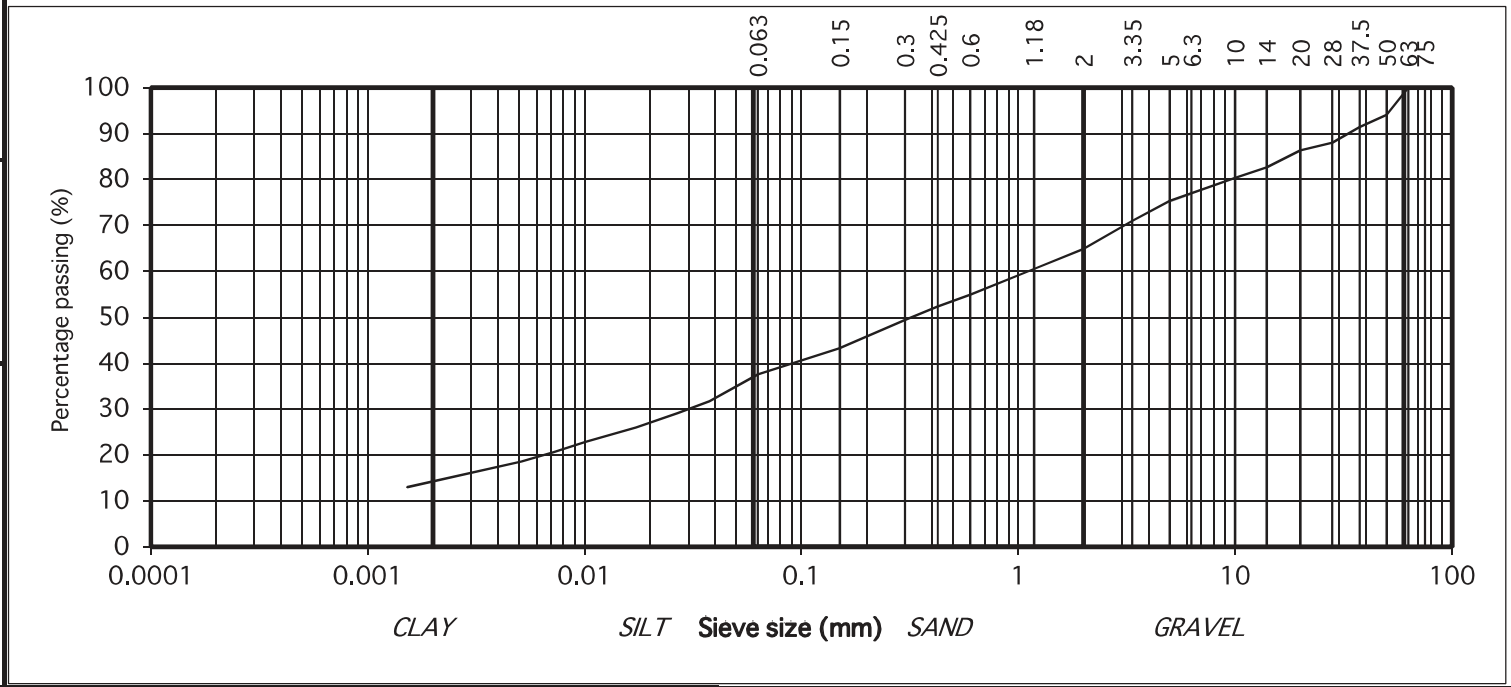

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	94	
14	93	
10	92	
6.3	91	
5	91	
3.35	90	
2	90	
1.18	89	SAND
0.6	89	
0.425	88	
0.3	88	
0.15	88	
0.063	86	SILT/CLAY
0.029	80	
0.021	78	
0.014	76	
0.008	71	
0.006	68	
0.004	63	
0.001	40	

Contract No.	23560	Report No.	R137387	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150190			
Sample No.*	AA178608	Lab. Sample No.		A22/3330
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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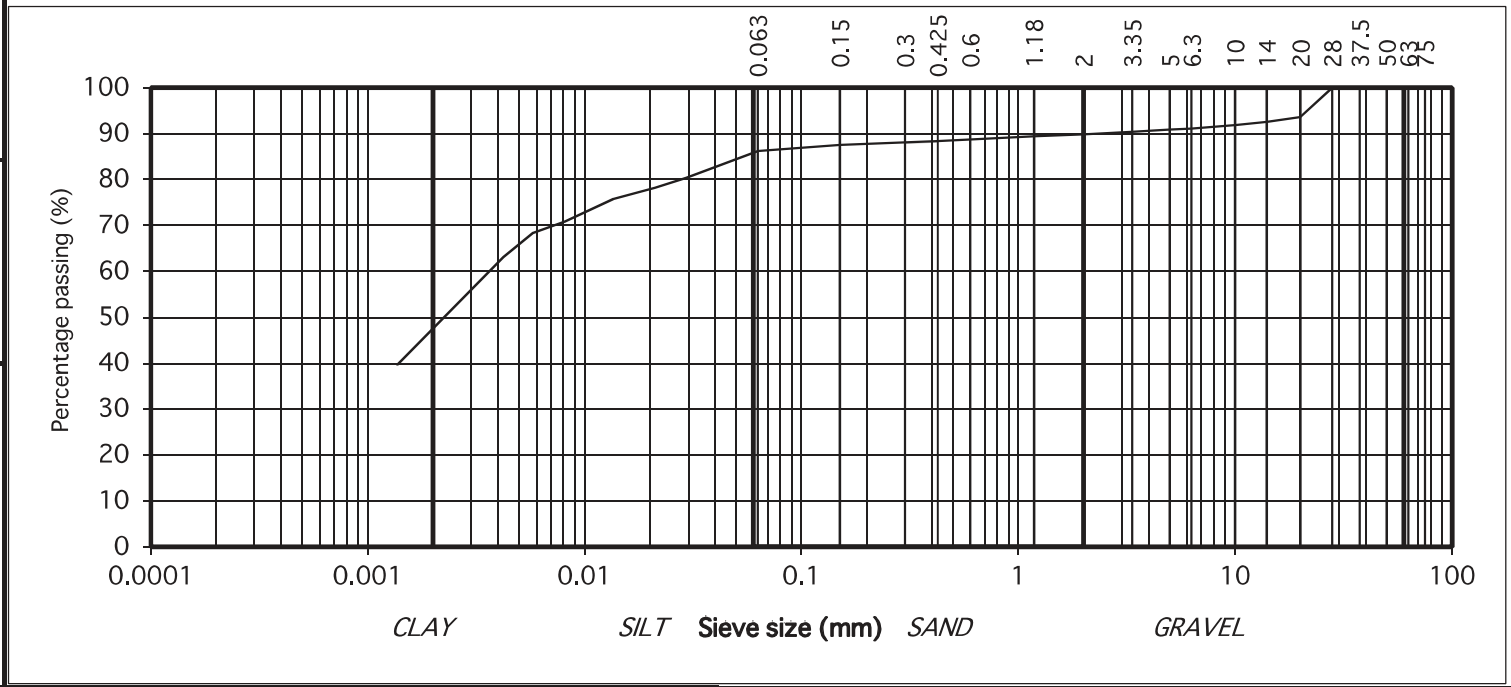

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	85	GRAVEL
37.5	58	
28	48	
20	38	
14	33	
10	29	
6.3	25	
5	23	
3.35	20	
2	18	
1.18	16	SAND
0.6	15	
0.425	14	
0.3	14	
0.15	13	
0.063	12	SILT/CLAY
0.038	11	
0.027	10	
0.018	9	
0.010	7	
0.007	5	
0.005	5	
0.002	3	

Contract No.	23560	Report No.	R137388	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150295			
Sample No.*	AA178605	Lab. Sample No.		A22/3332
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown clayey/silty, sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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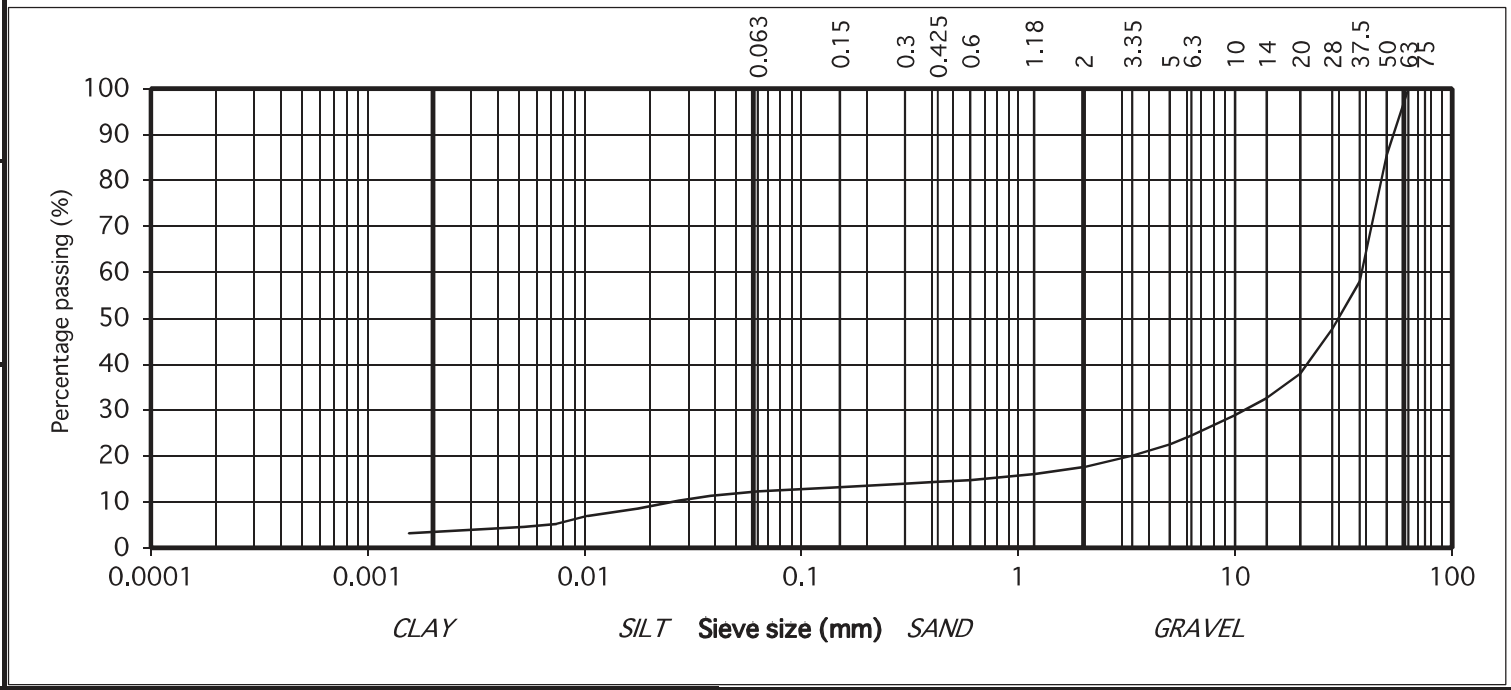

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	97	GRAVEL
37.5	92	
28	86	
20	79	
14	73	
10	68	
6.3	59	
5	54	
3.35	45	
2	34	
1.18	24	SAND
0.6	17	
0.425	16	
0.3	14	
0.15	13	
0.063	11	SILT/CLAY
0.040	10	
0.028	9	
0.018	8	
0.011	7	
0.007	6	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R137390	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150400			
Sample No.*	AA179490	Lab. Sample No.		A22/3333
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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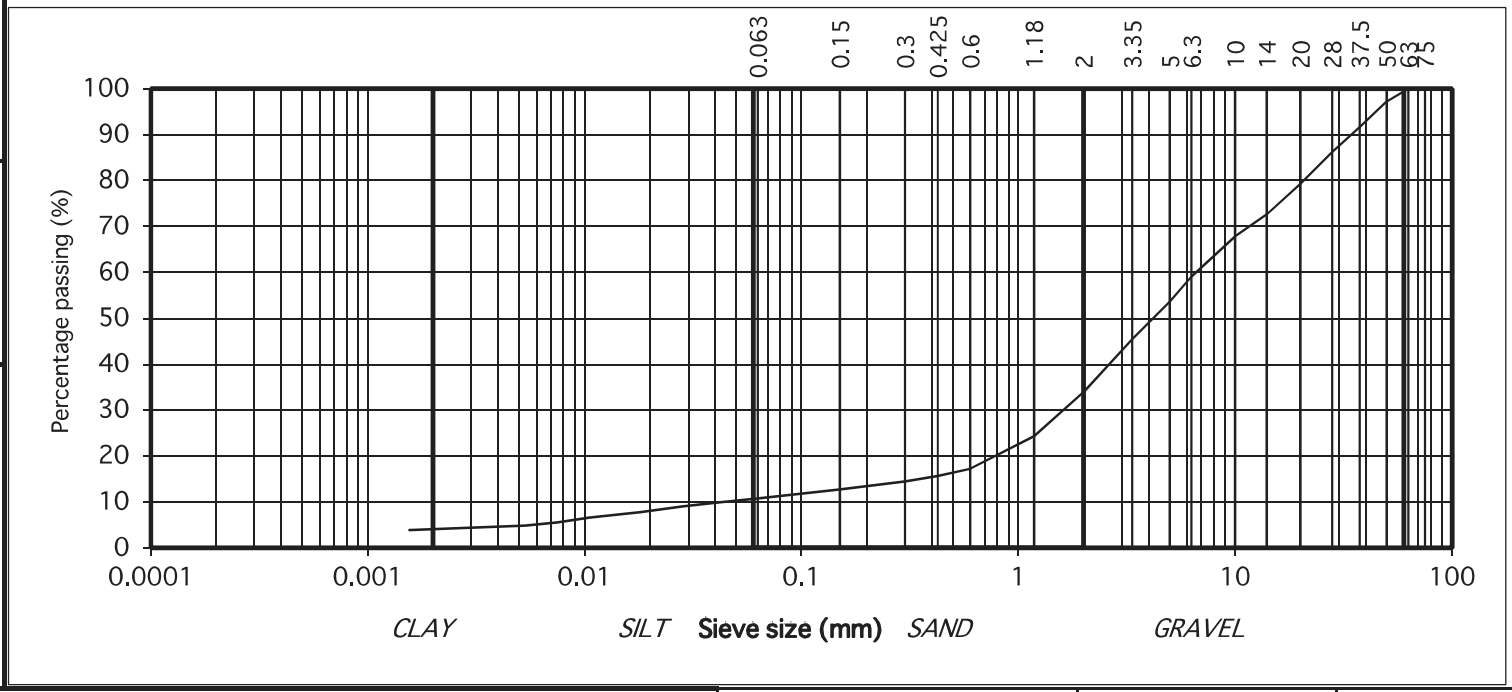

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	97	
20	93	
14	92	
10	89	
6.3	86	
5	84	
3.35	82	
2	78	
1.18	76	SAND
0.6	72	
0.425	70	
0.3	68	
0.15	64	
0.063	58	SILT/CLAY
0.035	53	
0.025	50	
0.016	45	
0.010	39	
0.007	35	
0.005	33	
0.001	27	

Contract No.	23560	Report No.	R135236	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150590			
Sample No.*	AA156002	Lab. Sample No.		A22/3335
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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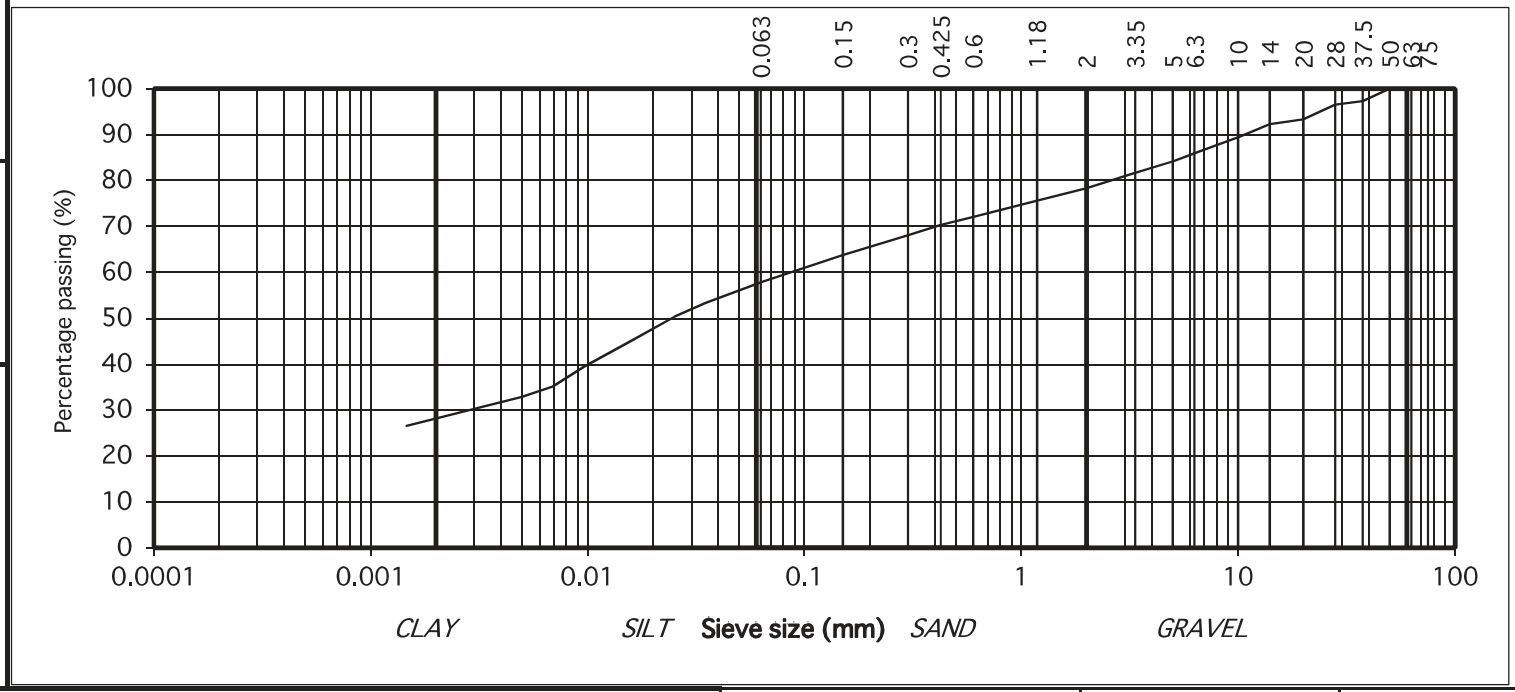
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	91	GRAVEL
37.5	90	
28	82	
20	73	
14	68	
10	64	
6.3	58	
5	55	
3.35	53	
2	48	
1.18	44	SAND
0.6	38	
0.425	35	
0.3	32	
0.15	26	
0.063	19	SILT/CLAY
0.039	17	
0.028	15	
0.018	14	
0.010	13	
0.007	12	
0.005	10	
0.002	8	

Contract No.	23560	Report No.	R137391	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150490			
Sample No.*	AA179488	Lab. Sample No.		A22/3334
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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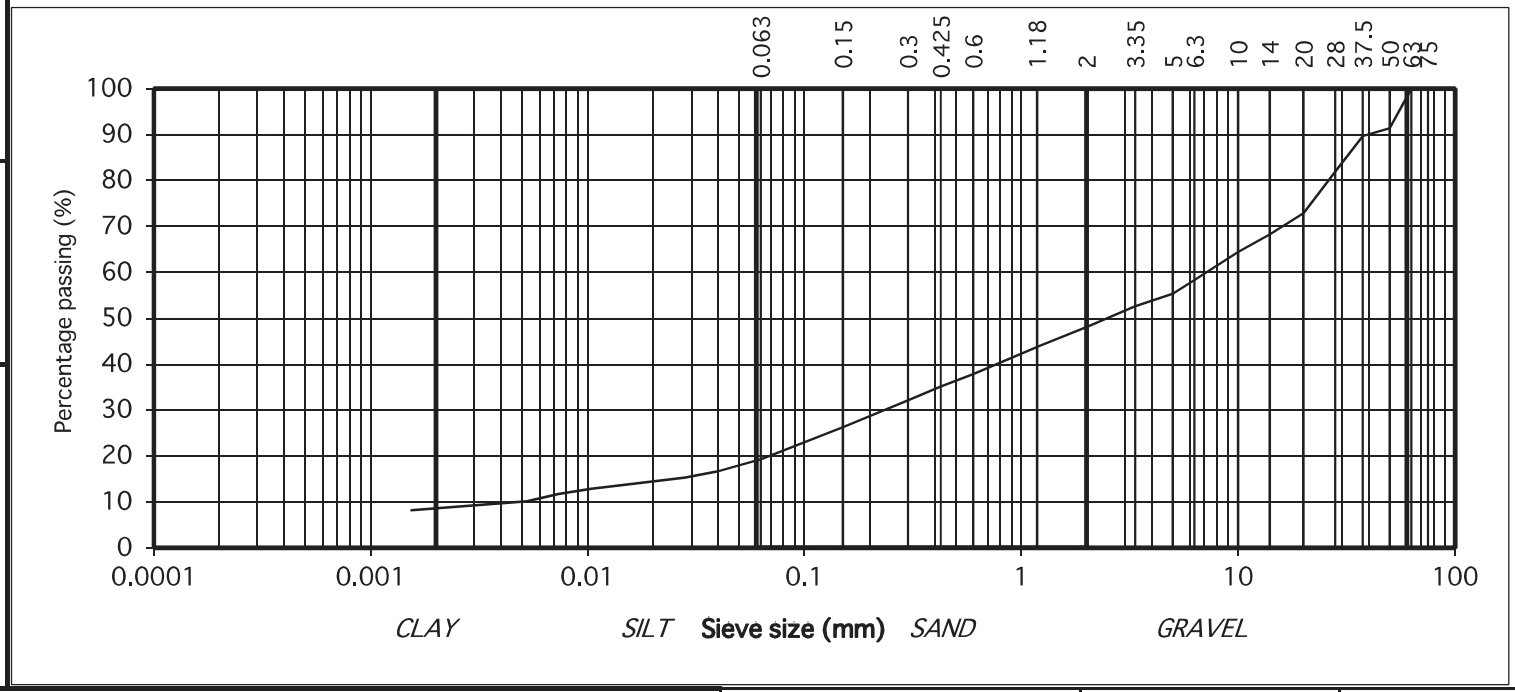
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

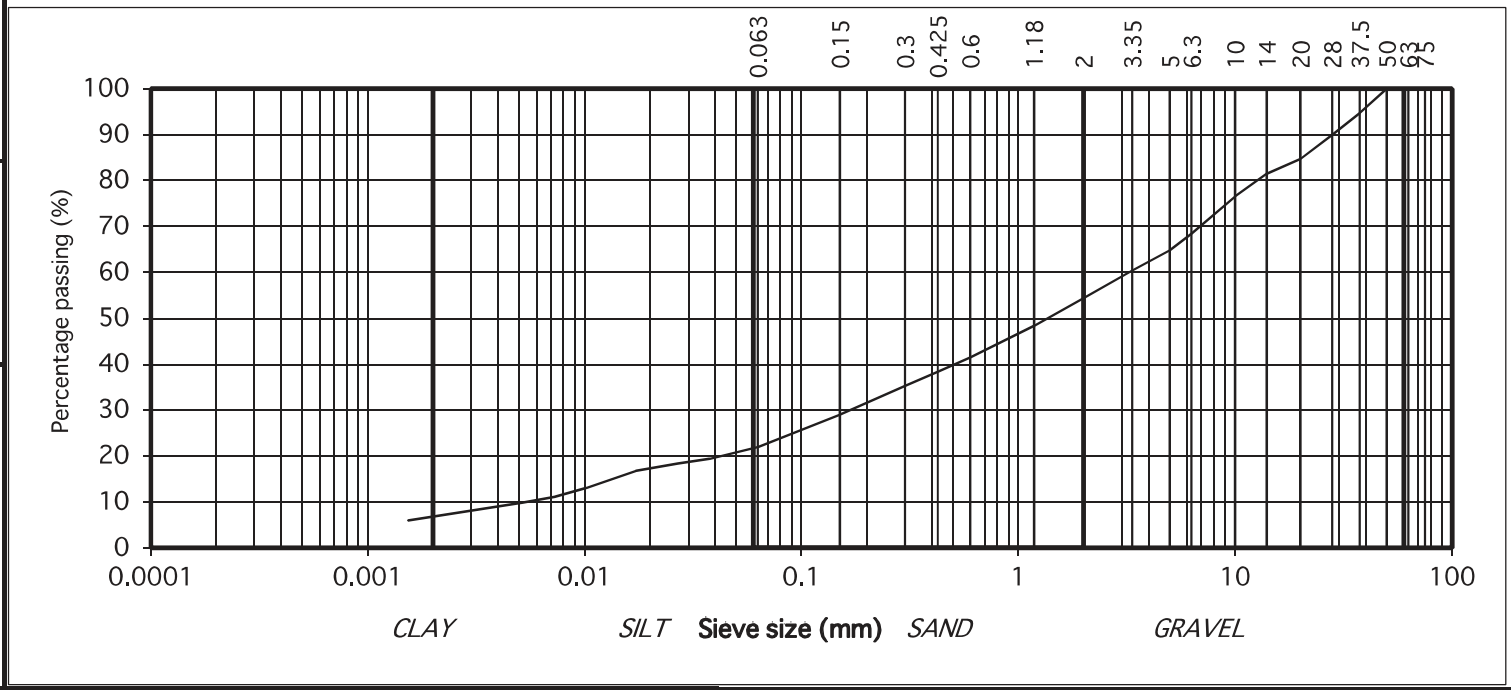
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	90	
20	85	
14	81	
10	77	
6.3	68	
5	65	
3.35	60	
2	54	
1.18	48	SAND
0.6	42	
0.425	38	
0.3	35	
0.15	29	
0.063	22	SILT/CLAY
0.038	19	
0.027	18	
0.017	17	
0.010	13	
0.007	11	
0.005	10	
0.002	6	

Contract No.	23560	Report No.	R137392	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150590			
Sample No.*	AA156003	Lab. Sample No.		A22/3336
Sample Type:	B			
Depth* (m)	2.20	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	88	
20	78	
14	73	
10	69	
6.3	64	
5	62	
3.35	59	
2	55	
1.18	52	SAND
0.6	48	
0.425	47	
0.3	44	
0.15	40	
0.063	34	SILT/CLAY
0.037	30	
0.027	27	
0.017	24	
0.010	19	
0.007	17	
0.005	15	
0.002	12	

Contract No.	23560	Report No.	R135238	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150702			
Sample No.*	AA158249	Lab. Sample No.		A22/3338
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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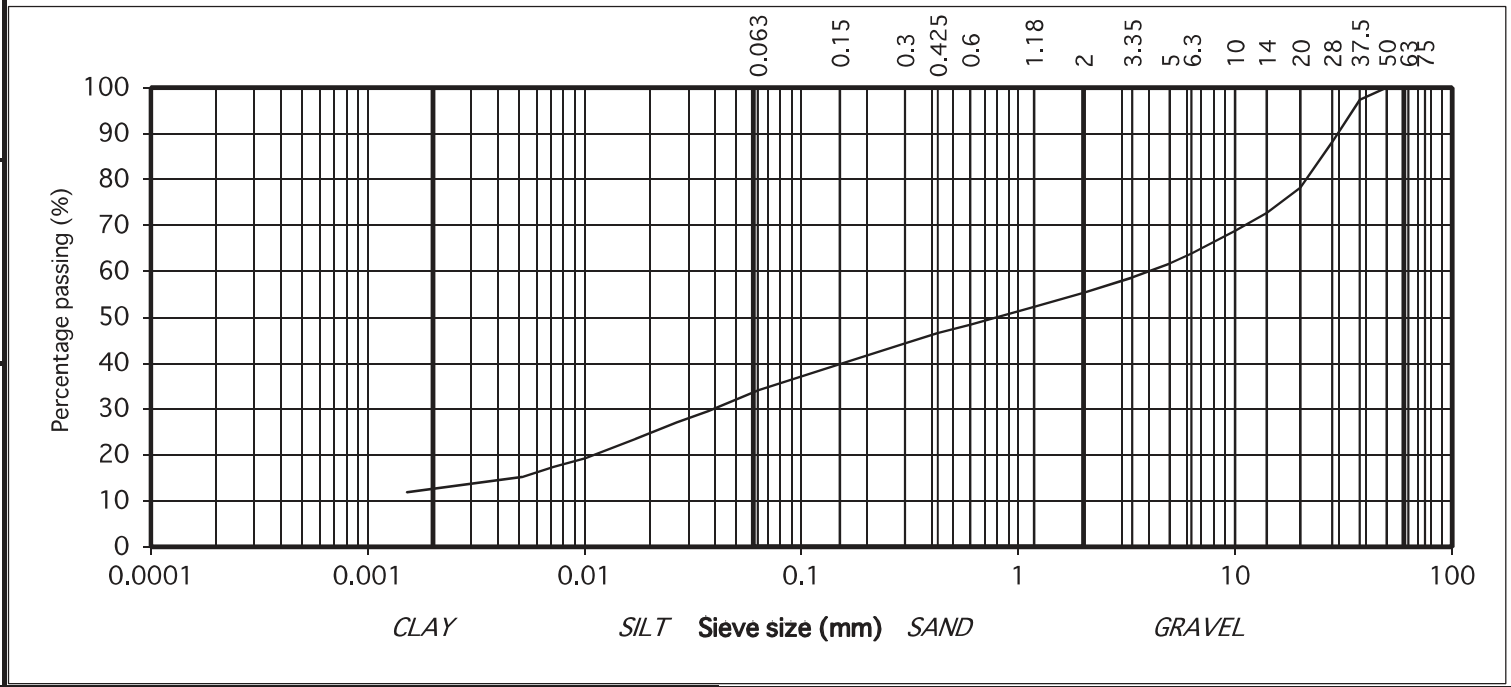
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

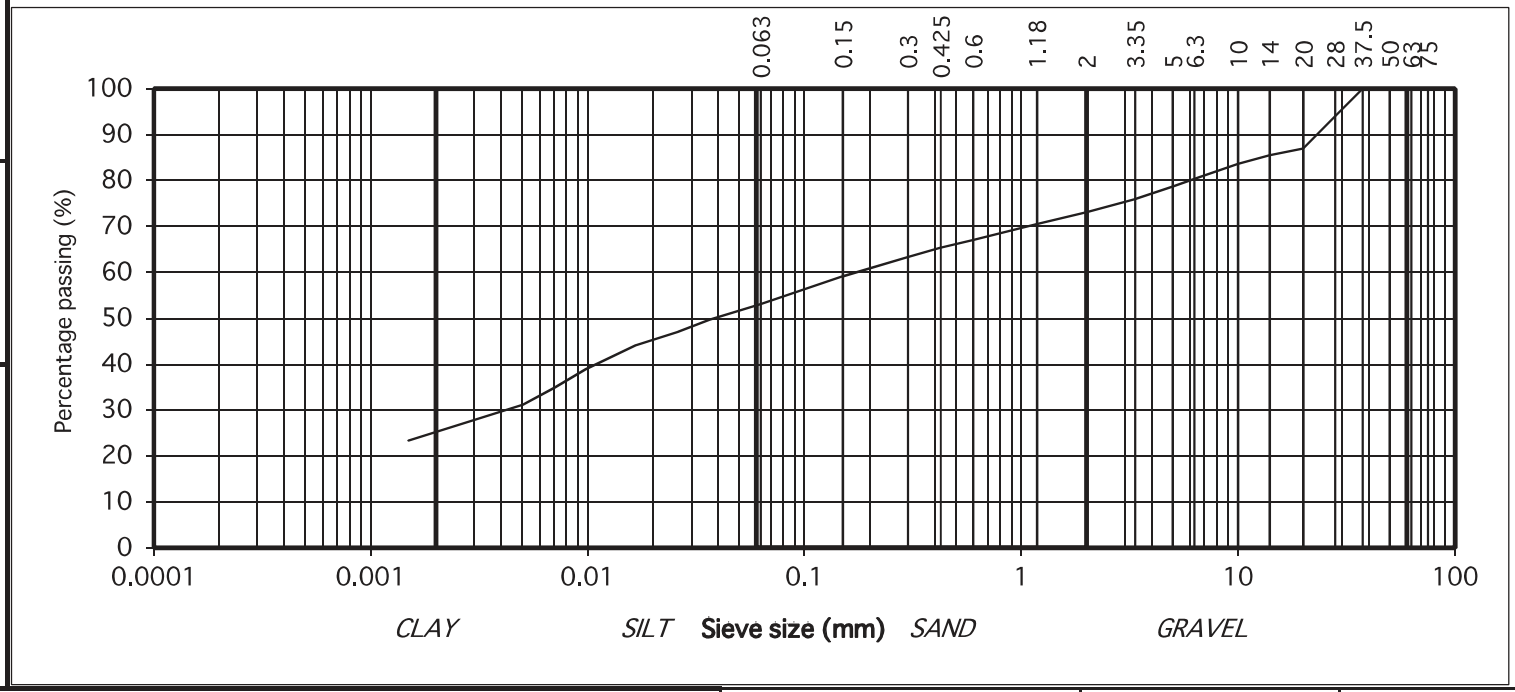
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	94	
20	87	
14	86	
10	84	
6.3	80	
5	79	
3.35	76	
2	73	
1.18	71	SAND
0.6	67	
0.425	65	
0.3	63	
0.15	59	
0.063	53	SILT/CLAY
0.036	50	
0.026	47	
0.017	44	
0.010	39	
0.007	35	
0.005	31	
0.001	23	

Contract No.	23560	Report No.	R135237	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150702			
Sample No.*	AA158248	Lab. Sample No.		A22/3337
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	87	
20	79	
14	74	
10	71	
6.3	66	
5	64	
3.35	61	
2	57	
1.18	54	SAND
0.6	49	
0.425	47	
0.3	44	
0.15	39	
0.063	33	SILT/CLAY
0.038	26	
0.027	24	
0.017	21	
0.010	17	
0.007	15	
0.005	13	
0.002	9	

Contract No.	23560	Report No.	R135239	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150800			
Sample No.*	AA158245	Lab. Sample No.		A22/3339
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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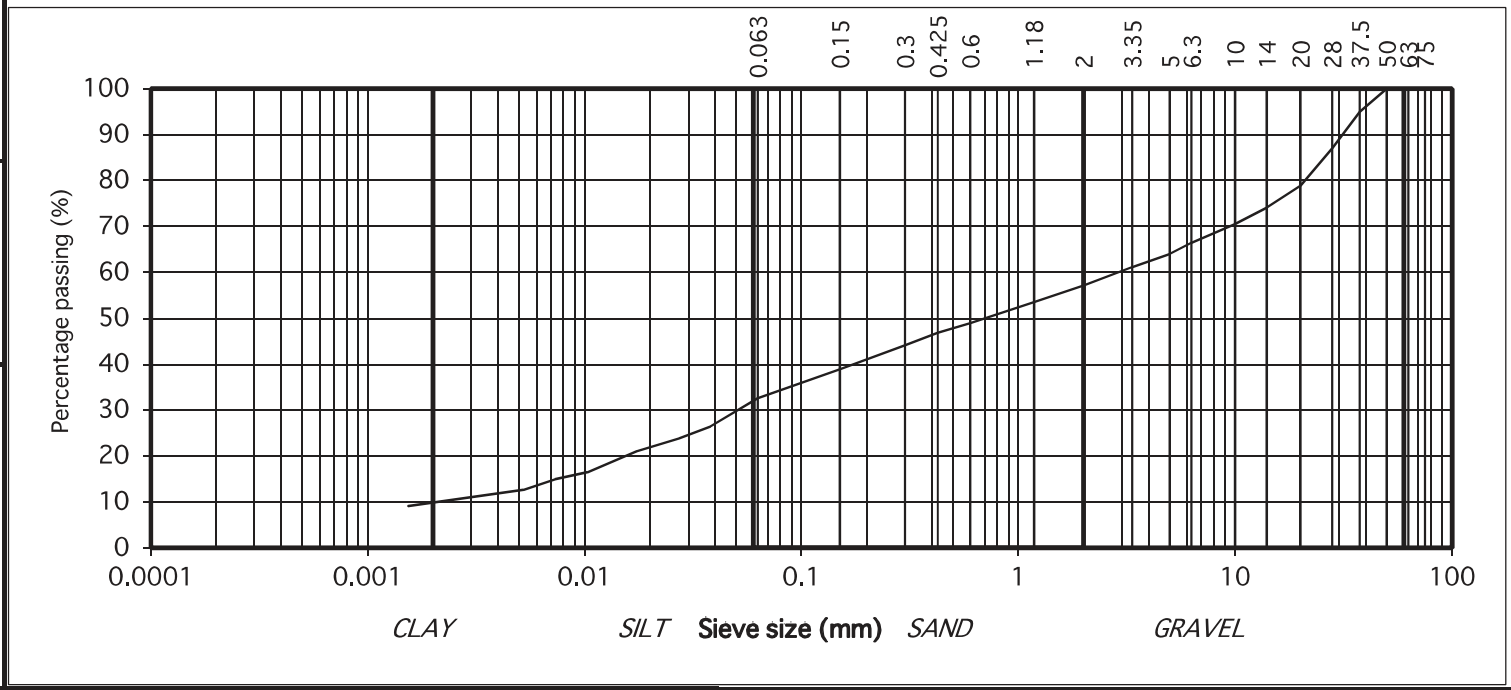
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	65	COBBLES
63	65	
50	65	GRAVEL
37.5	57	
28	50	
20	42	
14	37	
10	33	
6.3	29	
5	27	
3.35	22	
2	16	
1.18	12	SAND
0.6	10	
0.425	10	
0.3	10	
0.15	9	
0.063	9	SILT/CLAY

Contract No.	23560	Report No.	R143981	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151000			
Sample No.*	AA152193	Lab. Sample No.		A22/3342
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey clayey/silty, sandy, GRAVEL with many cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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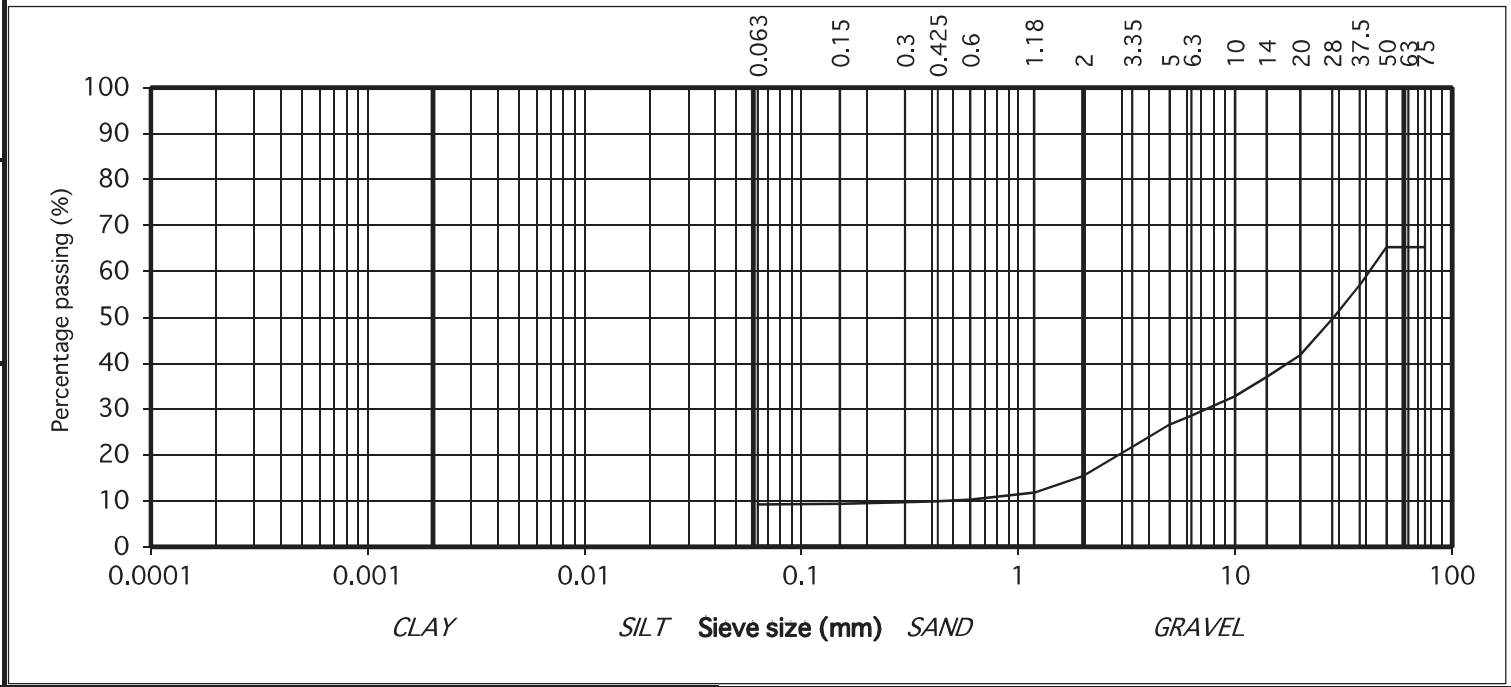

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	87	
28	86	
20	77	
14	74	
10	70	
6.3	65	
5	63	
3.35	59	
2	55	
1.18	52	SAND
0.6	48	
0.425	47	
0.3	45	
0.15	40	
0.063	34	SILT/CLAY
0.037	27	
0.026	26	
0.017	23	
0.010	19	
0.007	15	
0.005	13	
0.002	7	

Contract No.	23560	Report No.	R137393	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP150900			
Sample No.*	AA158242	Lab. Sample No.		A22/3341
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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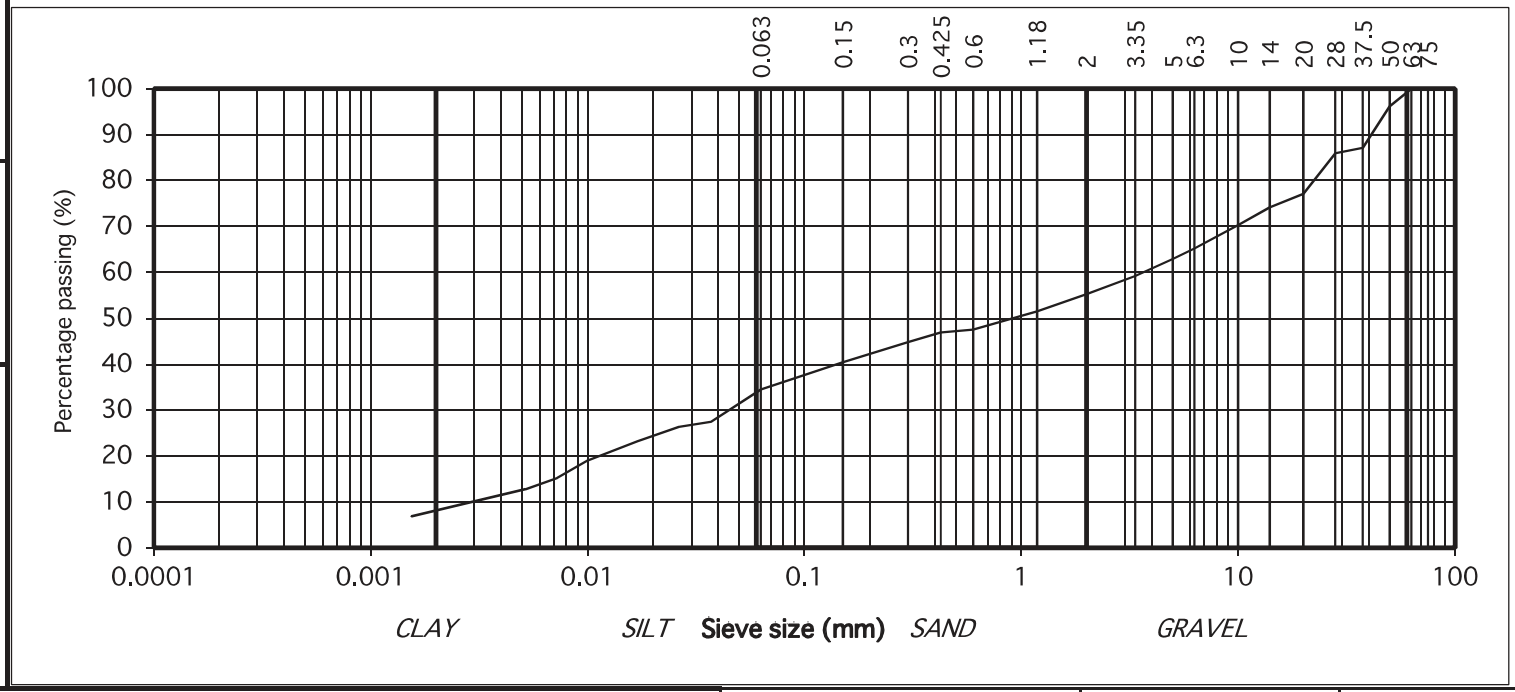
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
H Byrne	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	91	
50	91	GRAVEL
37.5	86	
28	83	
20	72	
14	70	
10	67	
6.3	62	
5	60	
3.35	56	
2	51	
1.18	47	SAND
0.6	43	
0.425	41	
0.3	39	
0.15	36	
0.063	32	SILT/CLAY
0.037	27	
0.026	26	
0.017	24	
0.010	21	
0.007	19	
0.005	17	
0.002	10	

Contract No.	23560	Report No.	R137394	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151000			
Sample No.*	AA152194	Lab. Sample No.		A22/3343
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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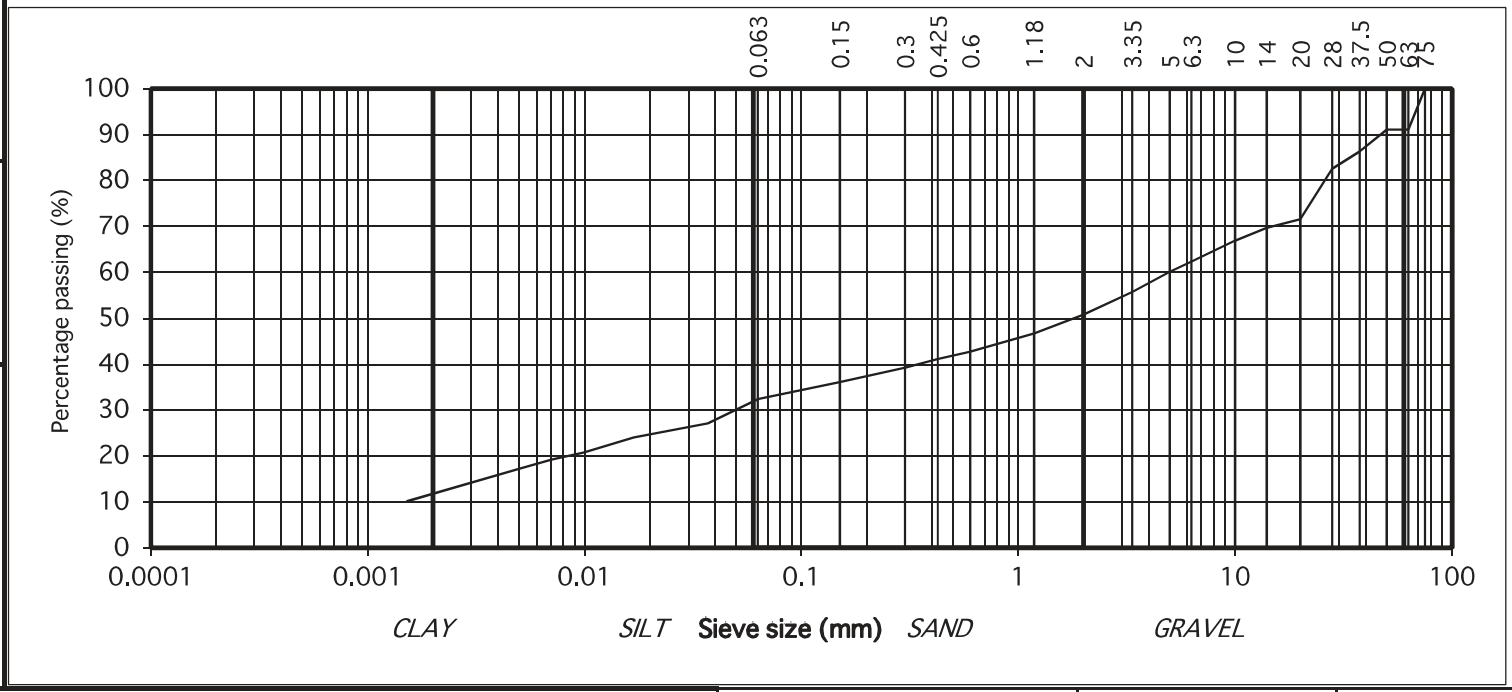

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

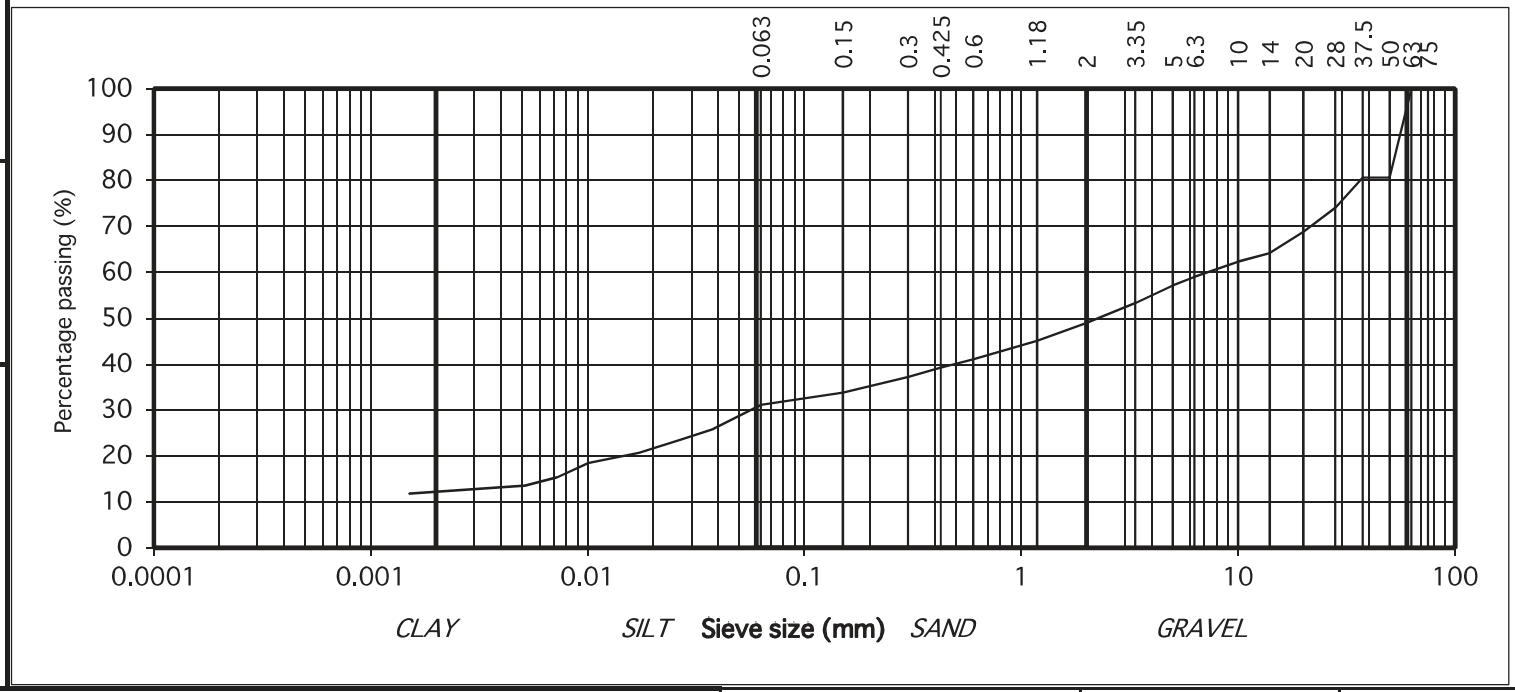
particle size	% passing	
75	100	COBBLES
63	100	
50	81	GRAVEL
37.5	81	
28	74	
20	69	
14	64	
10	62	
6.3	59	
5	57	
3.35	53	
2	49	
1.18	45	SAND
0.6	41	
0.425	39	
0.3	37	
0.15	34	
0.063	31	SILT/CLAY
0.037	26	
0.027	24	
0.017	21	
0.010	18	
0.007	15	
0.005	14	
0.002	12	

Contract No.	23560	Report No.	R143982	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151095			
Sample No.*	AA152196	Lab. Sample No.		A22/3344
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	92	
28	91	
20	85	
14	82	
10	78	
6.3	73	
5	71	
3.35	68	
2	64	
1.18	60	SAND
0.6	55	
0.425	53	
0.3	50	
0.15	46	
0.063	40	SILT/CLAY
0.037	36	
0.026	34	
0.017	31	
0.010	29	
0.007	27	
0.005	25	
0.001	19	

Contract No.	23560	Report No.	R137407	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151095			
Sample No.*	AA152197	Lab. Sample No.		A22/3345
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	12/07/2022	Date Testing started		12/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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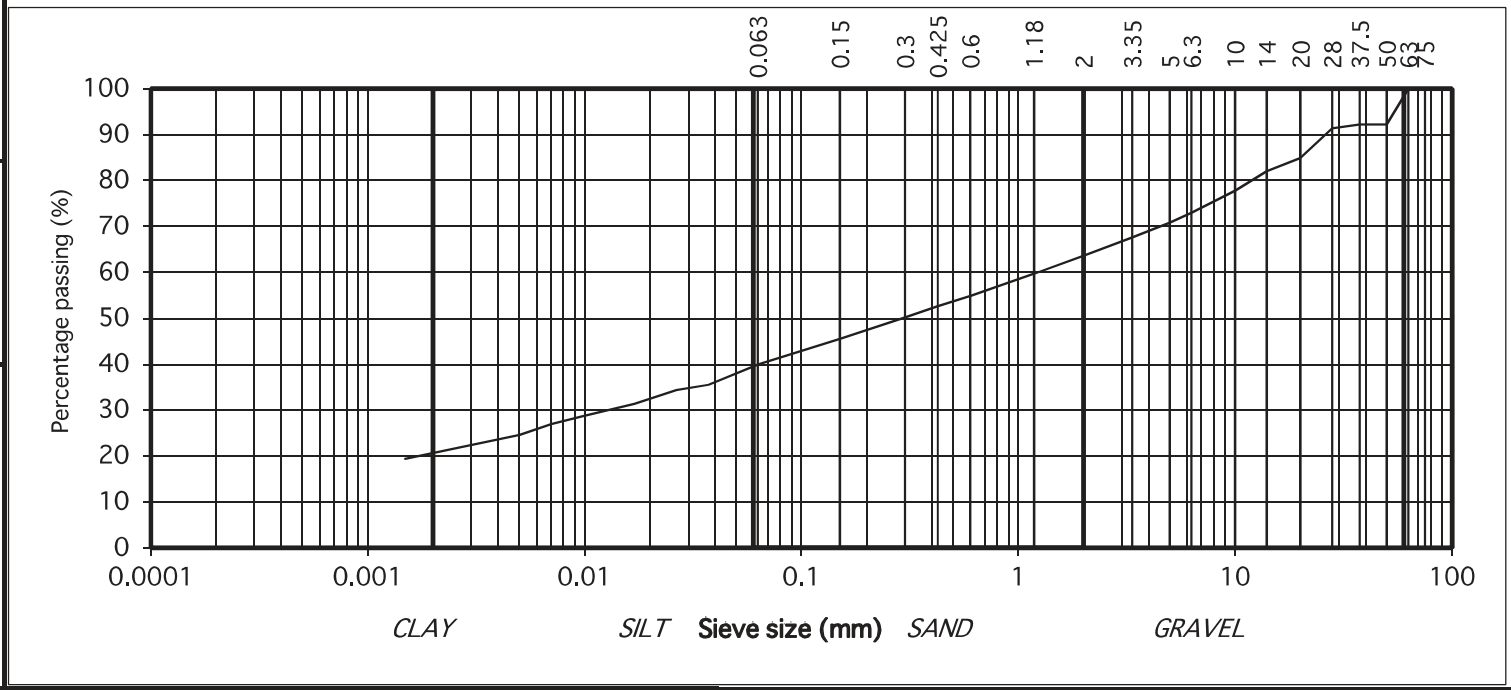
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

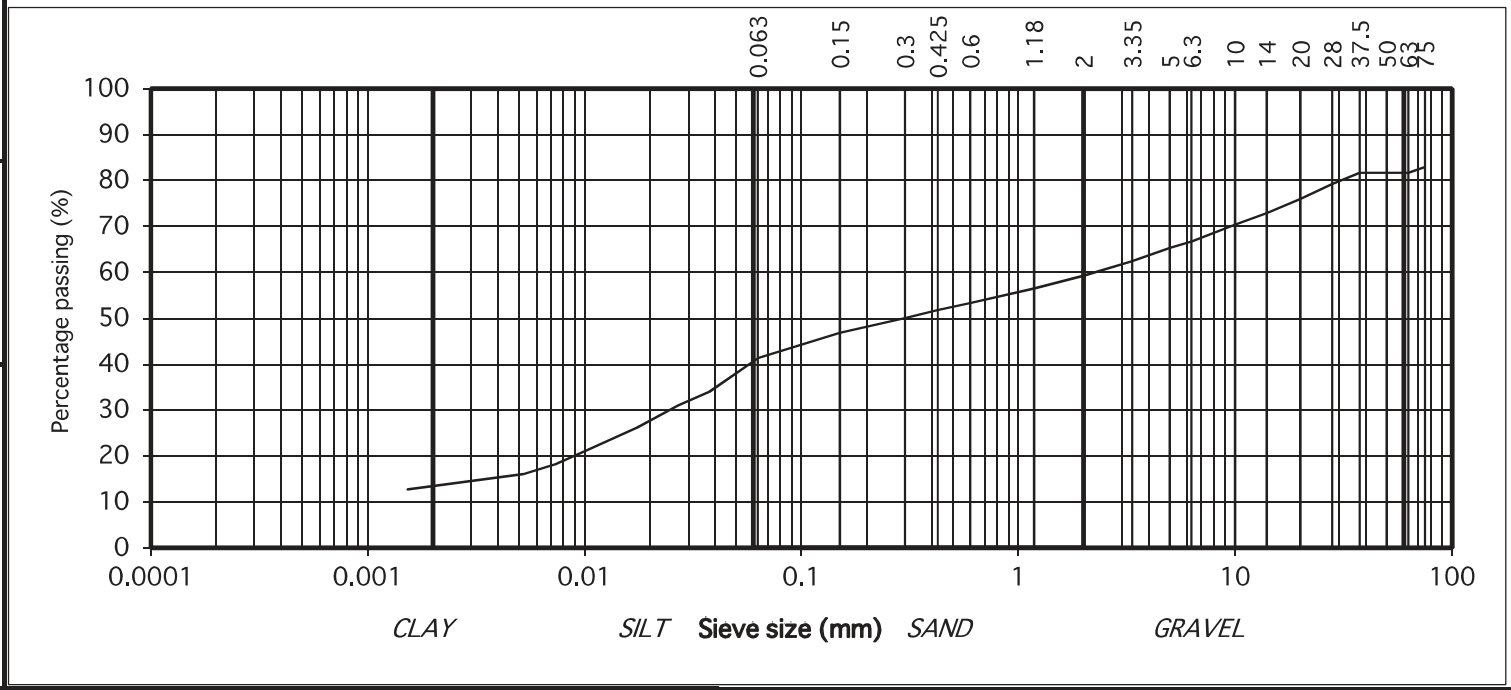
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	83	COBBLES
63	82	
50	82	GRAVEL
37.5	82	
28	79	
20	76	
14	73	
10	70	
6.3	67	
5	65	
3.35	62	
2	59	
1.18	57	SAND
0.6	53	
0.425	52	
0.3	50	
0.15	47	
0.063	41	SILT/CLAY
0.038	34	
0.027	31	
0.017	26	
0.010	21	
0.007	18	
0.005	16	
0.002	13	

Contract No.	23560	Report No.	R138777	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151301			
Sample No.*	AA170152	Lab. Sample No.		A22/3348
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

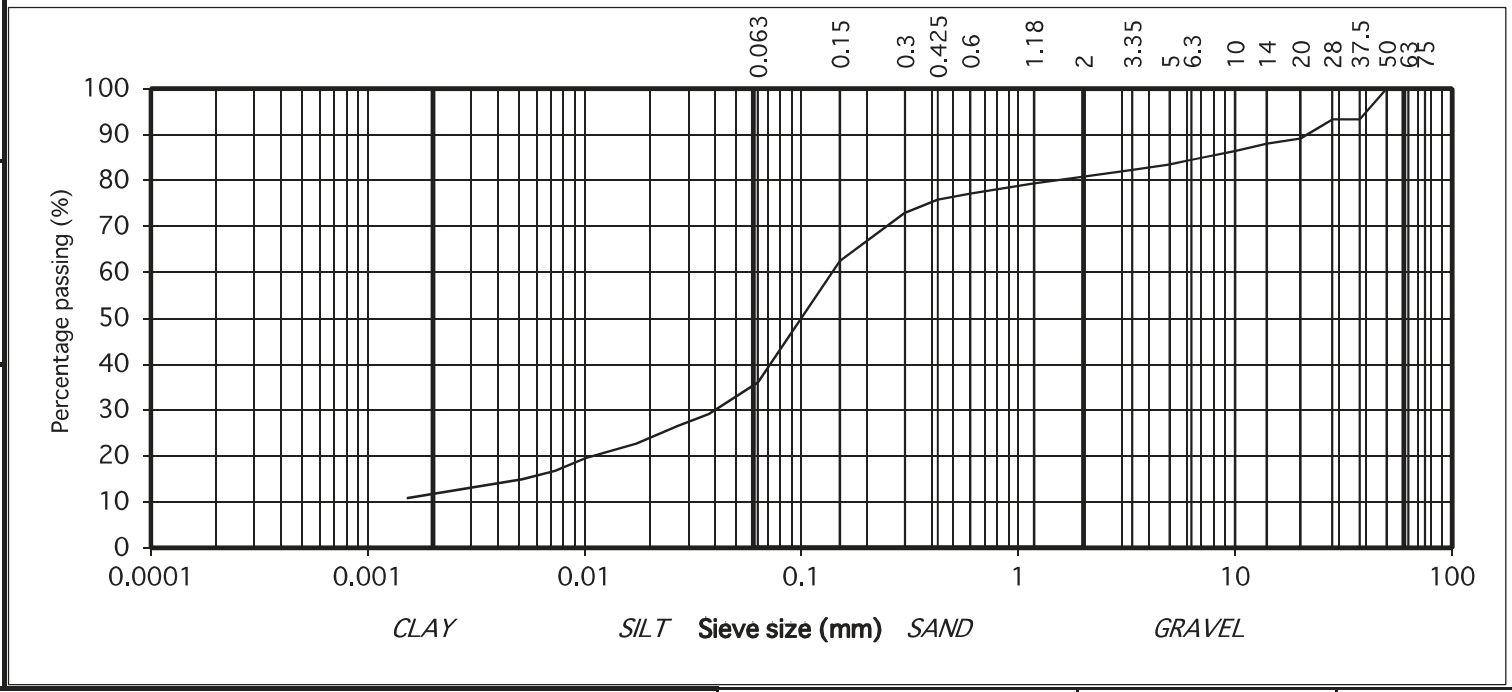
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	93	
20	89	
14	88	
10	86	
6.3	85	
5	83	
3.35	82	
2	81	
1.18	79	SAND
0.6	77	
0.425	76	
0.3	73	
0.15	62	
0.063	36	SILT/CLAY
0.038	29	
0.027	27	
0.017	23	
0.010	20	
0.007	17	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R143983	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151178			
Sample No.*	AA170148	Lab. Sample No.		A22/3346
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

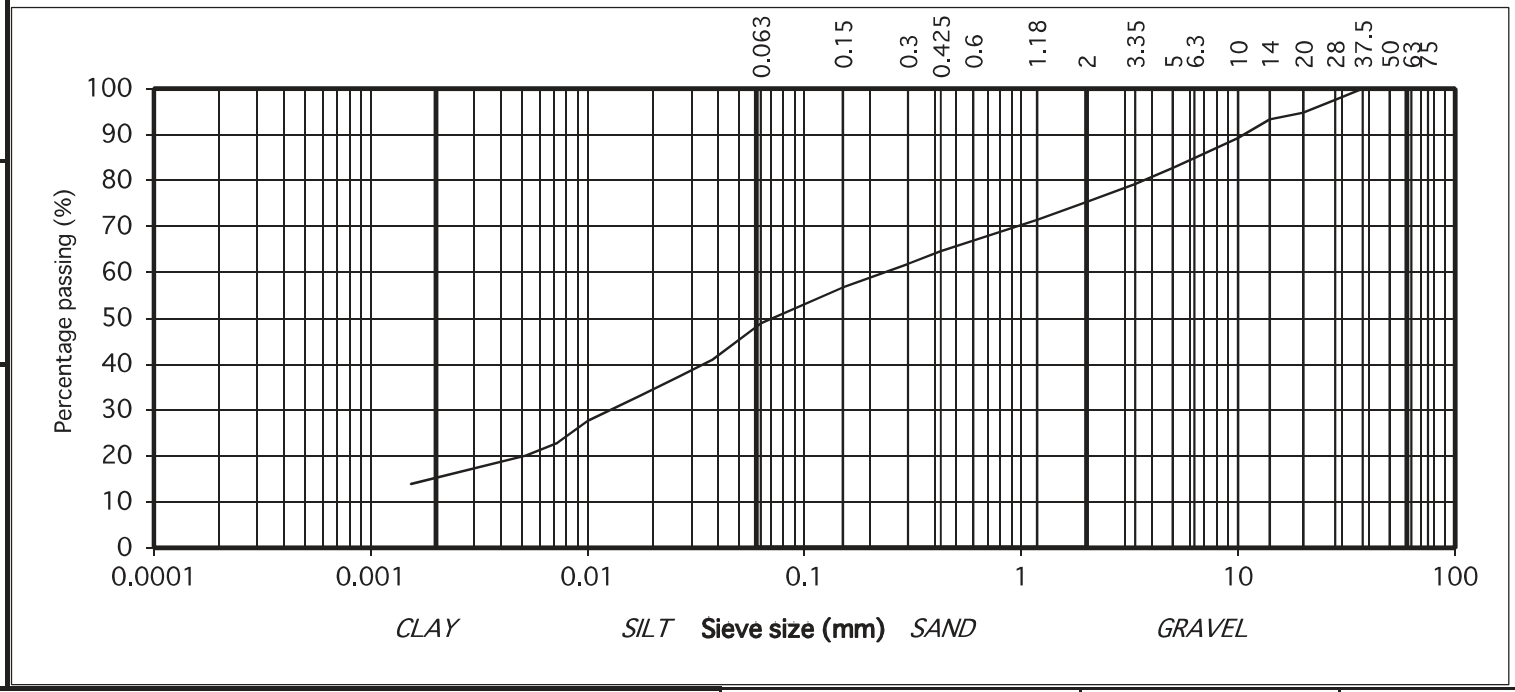
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	95	
14	93	
10	89	
6.3	85	
5	83	
3.35	79	
2	75	
1.18	72	SAND
0.6	67	
0.425	65	
0.3	62	
0.15	57	
0.063	49	SILT/CLAY
0.037	41	
0.027	37	
0.017	33	
0.010	28	
0.007	23	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R137408	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151178			
Sample No.*	AA170150	Lab. Sample No.		A22/3347
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

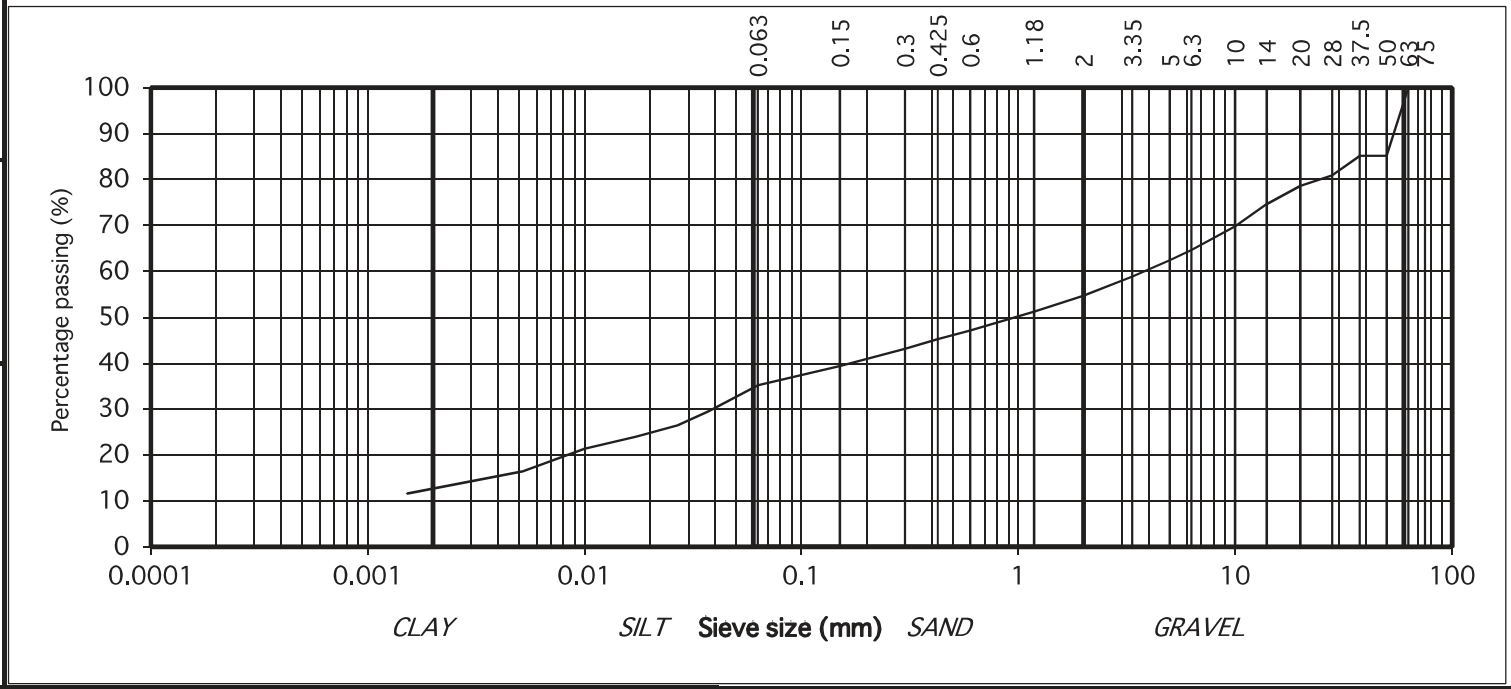
particle size	% passing	
75	100	COBBLES
63	100	
50	85	GRAVEL
37.5	85	
28	81	
20	79	
14	75	
10	70	
6.3	65	
5	62	
3.35	59	
2	55	
1.18	51	SAND
0.6	47	
0.425	45	
0.3	43	
0.15	39	
0.063	35	SILT/CLAY
0.037	30	
0.027	27	
0.017	24	
0.010	21	
0.007	19	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R139521	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151301			
Sample No.*	AA170153	Lab. Sample No.		A22/3349
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

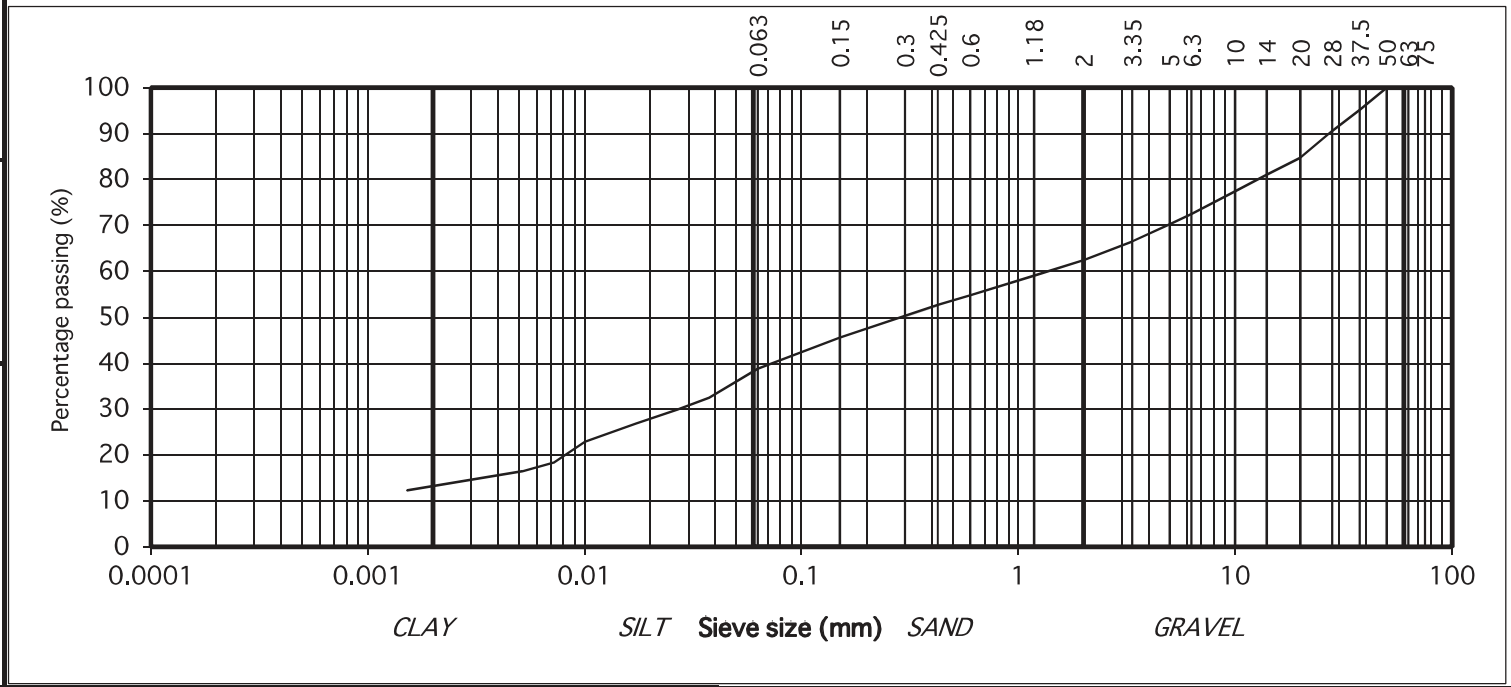
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	91	
20	85	
14	81	
10	77	
6.3	73	
5	70	
3.35	67	
2	62	
1.18	59	SAND
0.6	55	
0.425	53	
0.3	50	
0.15	46	
0.063	39	SILT/CLAY
0.037	32	
0.027	30	
0.017	27	
0.010	23	
0.007	18	
0.005	17	
0.002	12	

Contract No.	23560	Report No.	R137410	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151412			
Sample No.*	AA170156	Lab. Sample No.		A22/3351
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	94	
14	91	
10	89	
6.3	87	
5	85	
3.35	83	
2	80	
1.18	77	SAND
0.6	73	
0.425	71	
0.3	69	
0.15	65	
0.063	58	SILT/CLAY
0.038	50	
0.027	46	
0.017	40	
0.010	35	
0.007	29	
0.005	26	
0.002	15	

Contract No.	23560	Report No.	R137409	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151412			
Sample No.*	AA170155	Lab. Sample No.		A22/3350
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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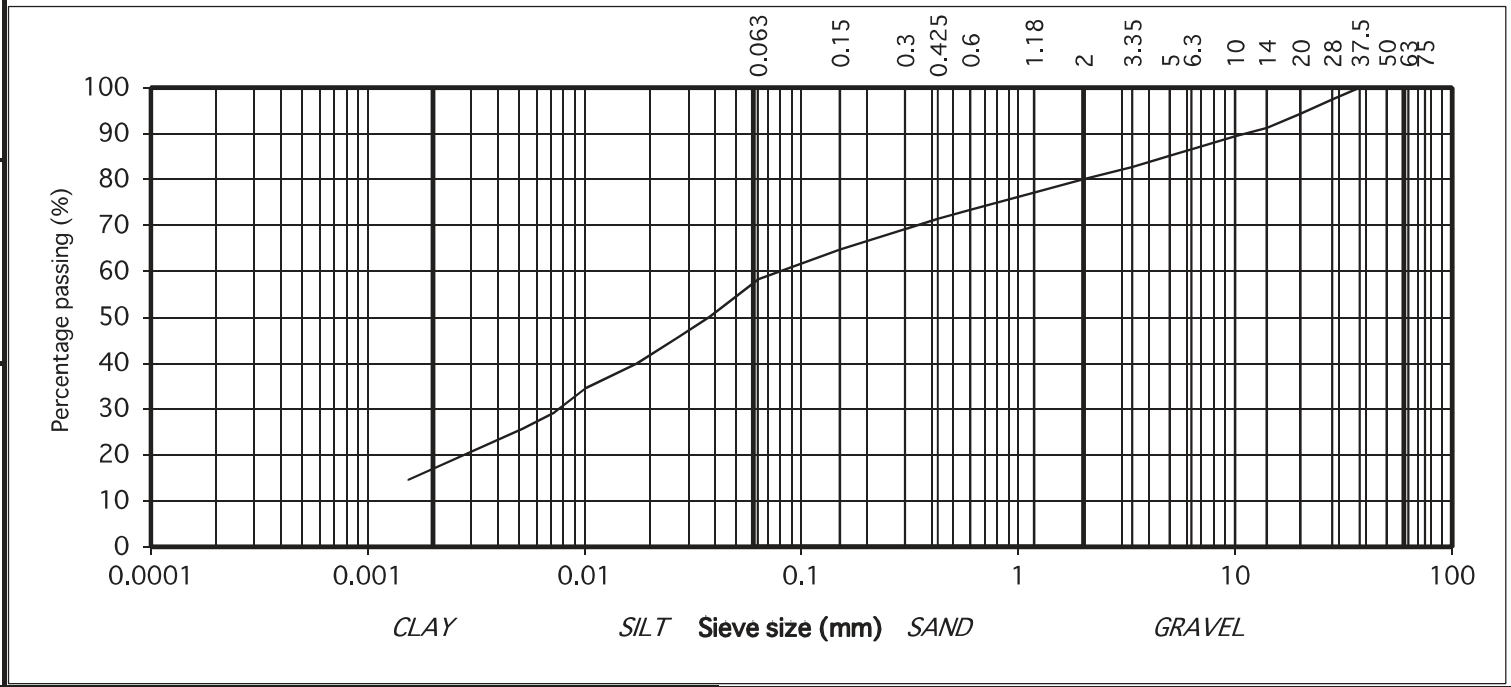
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	74	
28	70	
20	66	
14	64	
10	61	
6.3	58	
5	56	
3.35	53	
2	50	
1.18	47	SAND
0.6	44	
0.425	42	
0.3	41	
0.15	37	
0.063	32	SILT/CLAY
0.037	26	
0.027	23	
0.017	21	
0.010	19	
0.007	17	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R137411	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151503			
Sample No.*	AA170199	Lab. Sample No.		A22/3352
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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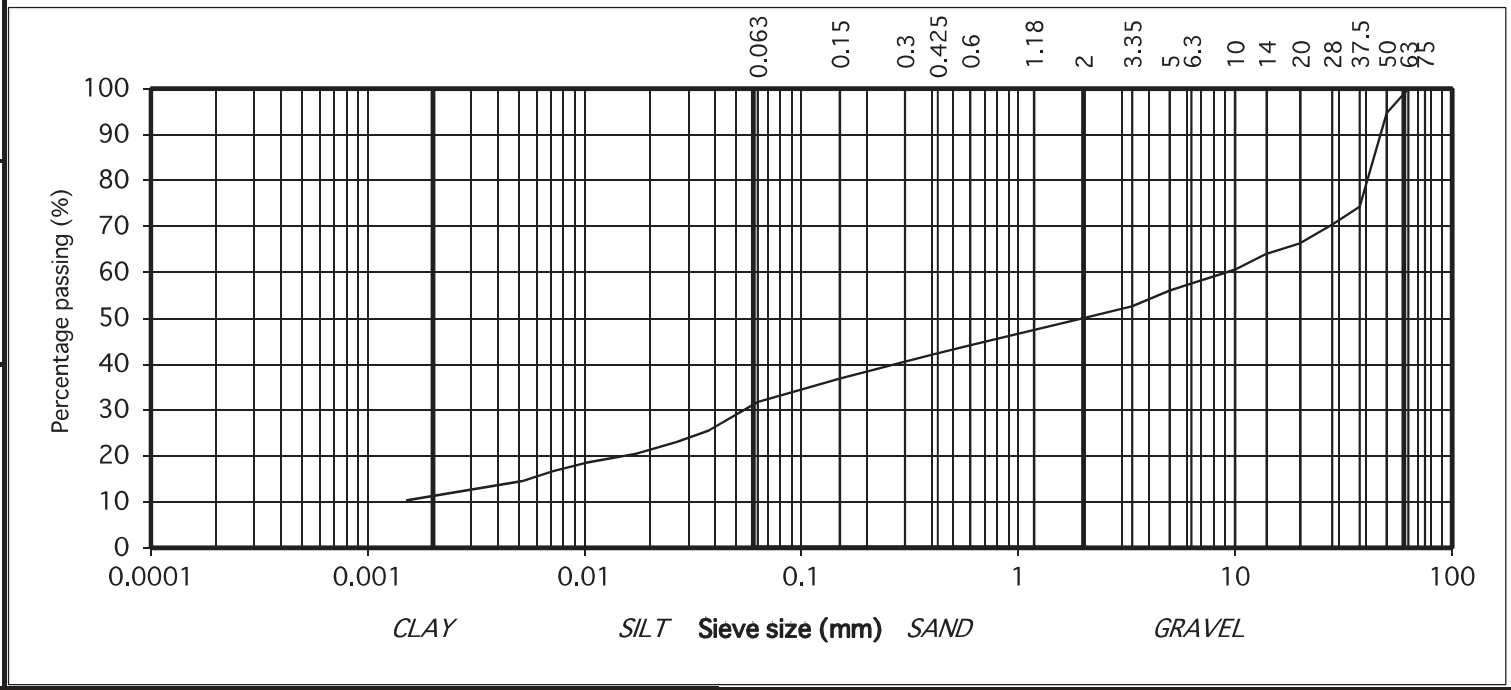
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	89	
28	83	
20	75	
14	71	
10	68	
6.3	64	
5	62	
3.35	59	
2	55	
1.18	52	SAND
0.6	48	
0.425	46	
0.3	44	
0.15	40	
0.063	35	SILT/CLAY
0.038	29	
0.027	26	
0.017	24	
0.010	21	
0.007	19	
0.005	17	
0.002	14	

Contract No.	23560	Report No.	R137412	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151503			
Sample No.*	AA170200	Lab. Sample No.		A22/3353
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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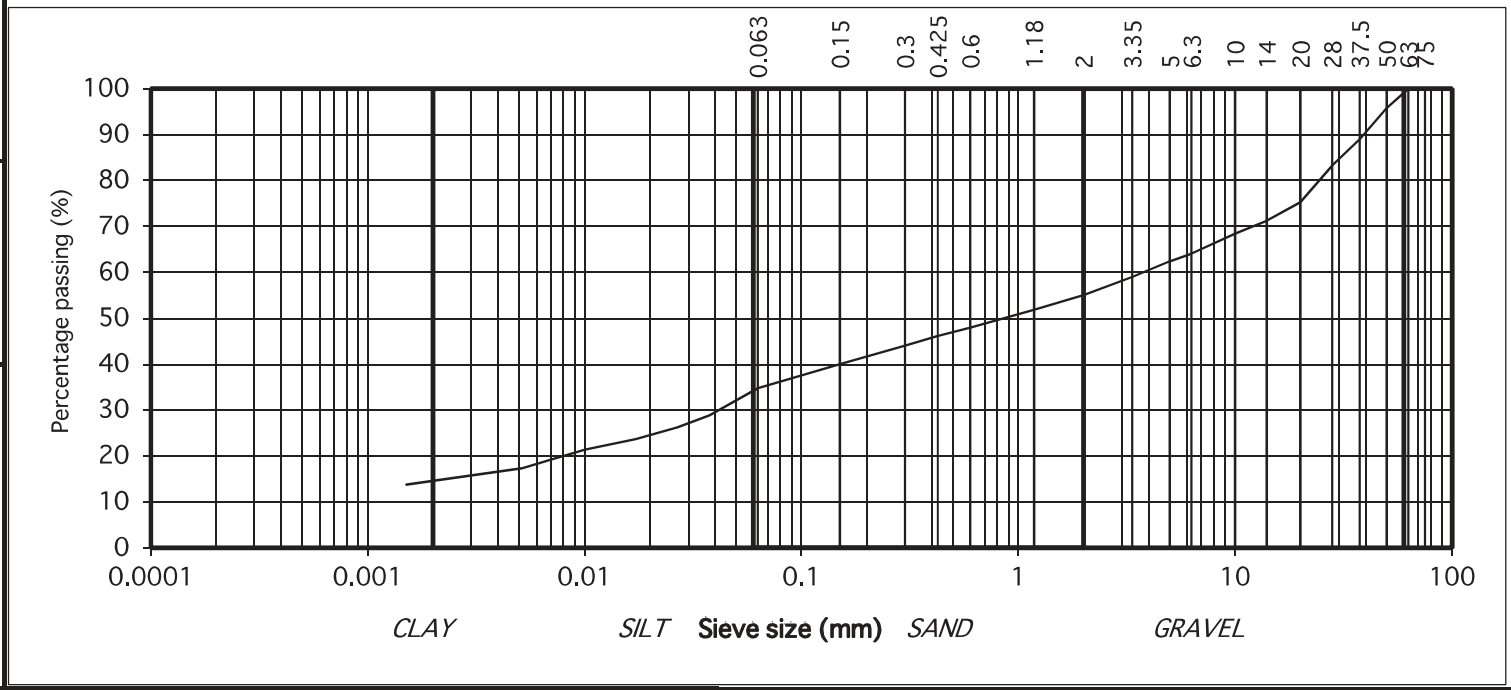
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	98	
14	95	
10	93	
6.3	89	
5	87	
3.35	84	
2	81	
1.18	77	SAND
0.6	74	
0.425	72	
0.3	70	
0.15	65	
0.063	59	SILT/CLAY
0.038	52	
0.027	47	
0.017	41	
0.010	30	
0.007	23	
0.005	20	
0.002	14	

Contract No.	23560	Report No.	R139527	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151737			
Sample No.*	AA175216	Lab. Sample No.		A22/3356
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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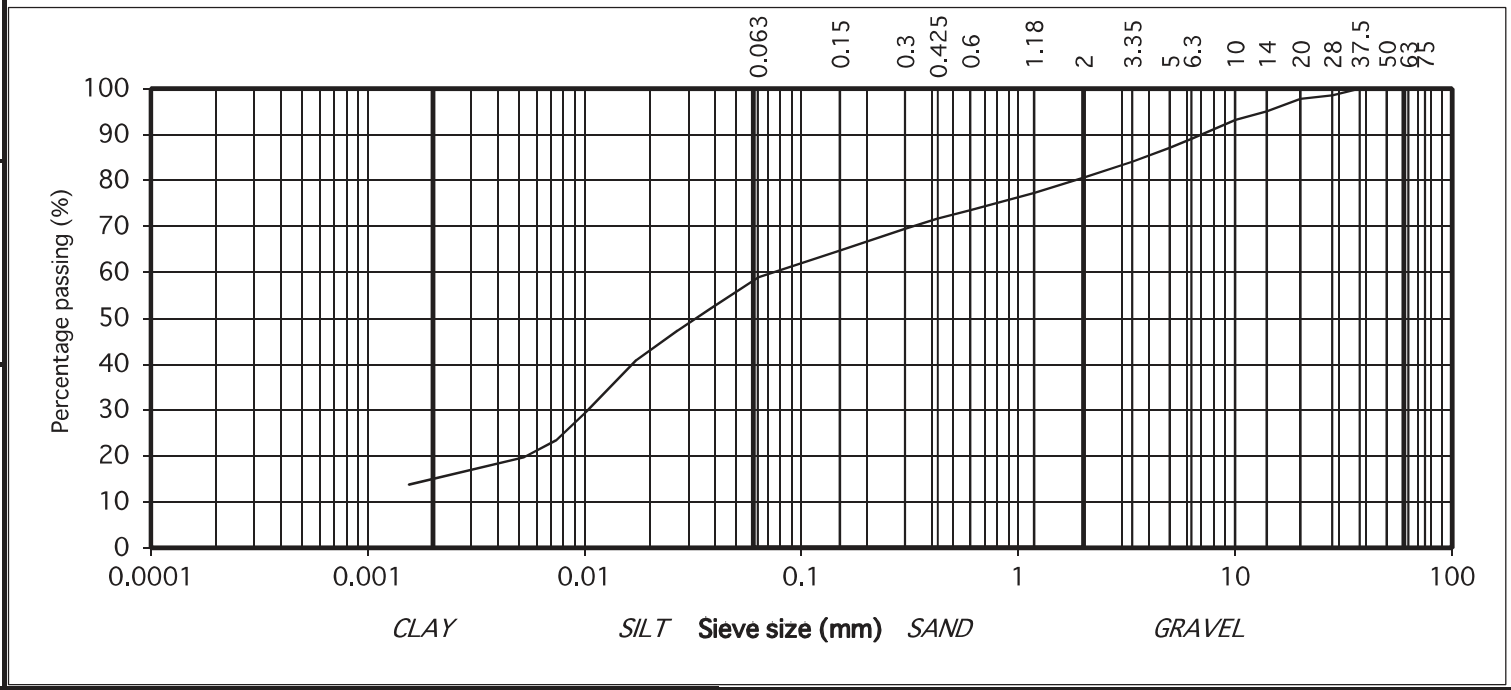
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

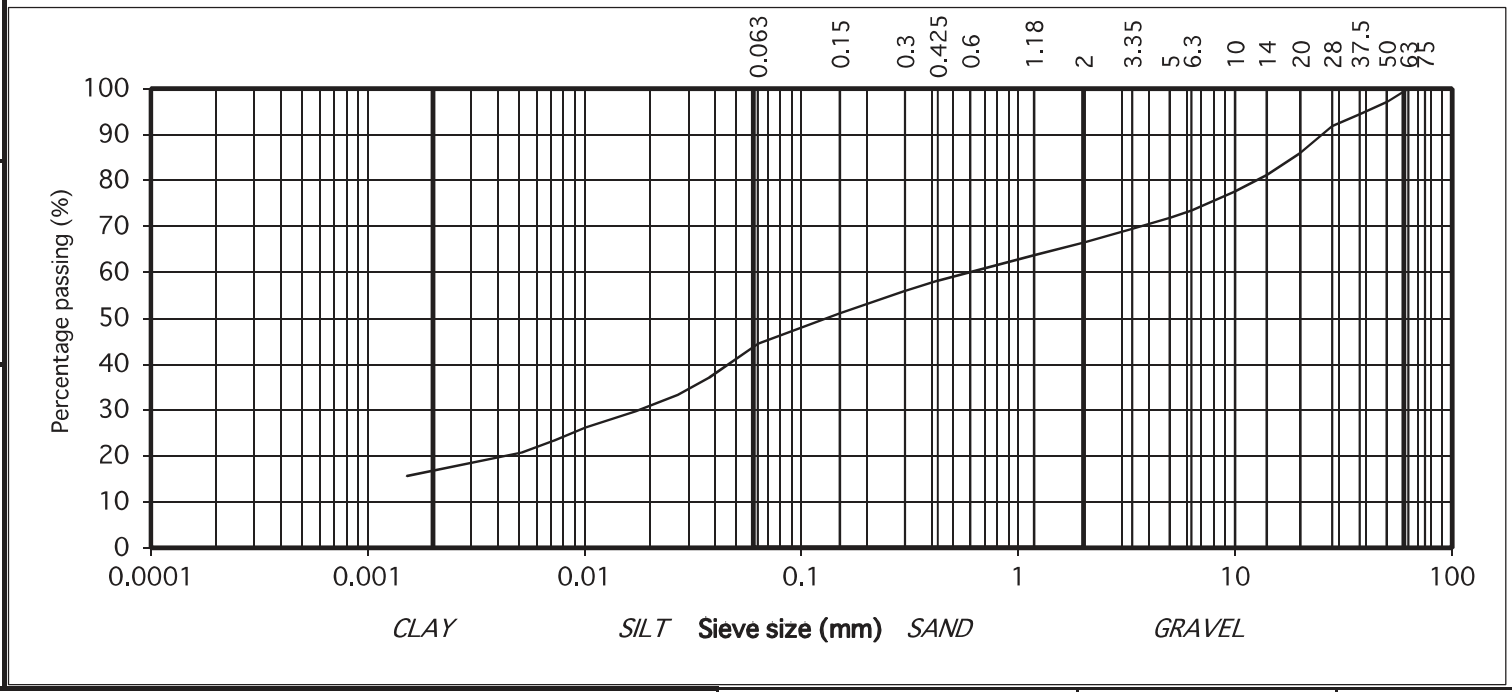
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	97	GRAVEL
37.5	94	
28	92	
20	86	
14	81	
10	78	
6.3	73	
5	72	
3.35	70	
2	67	
1.18	64	SAND
0.6	60	
0.425	58	
0.3	56	
0.15	51	
0.063	44	SILT/CLAY
0.037	37	
0.027	33	
0.017	30	
0.010	26	
0.007	23	
0.005	21	
0.002	16	

Contract No.	23560	Report No.	R138779	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151602			
Sample No.*	AA170196	Lab. Sample No.		A22/3354
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown/grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	87	
20	82	
14	79	
10	75	
6.3	72	
5	70	
3.35	67	
2	64	
1.18	60	SAND
0.6	57	
0.425	55	
0.3	53	
0.15	49	
0.063	43	SILT/CLAY
0.038	36	
0.027	32	
0.017	29	
0.010	24	
0.007	21	
0.005	19	
0.002	13	

Contract No.	23560	Report No.	R137413	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151602			
Sample No.*	AA170197	Lab. Sample No.		A22/3355
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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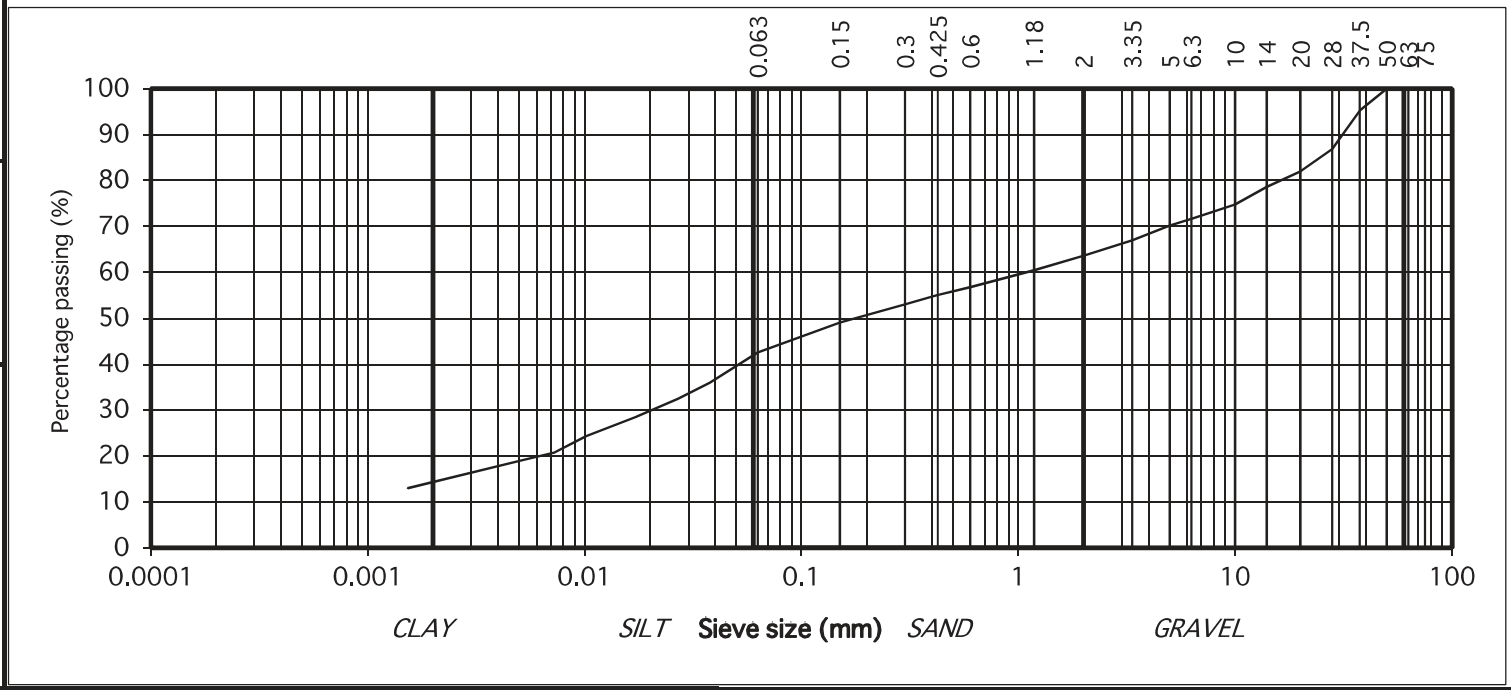
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

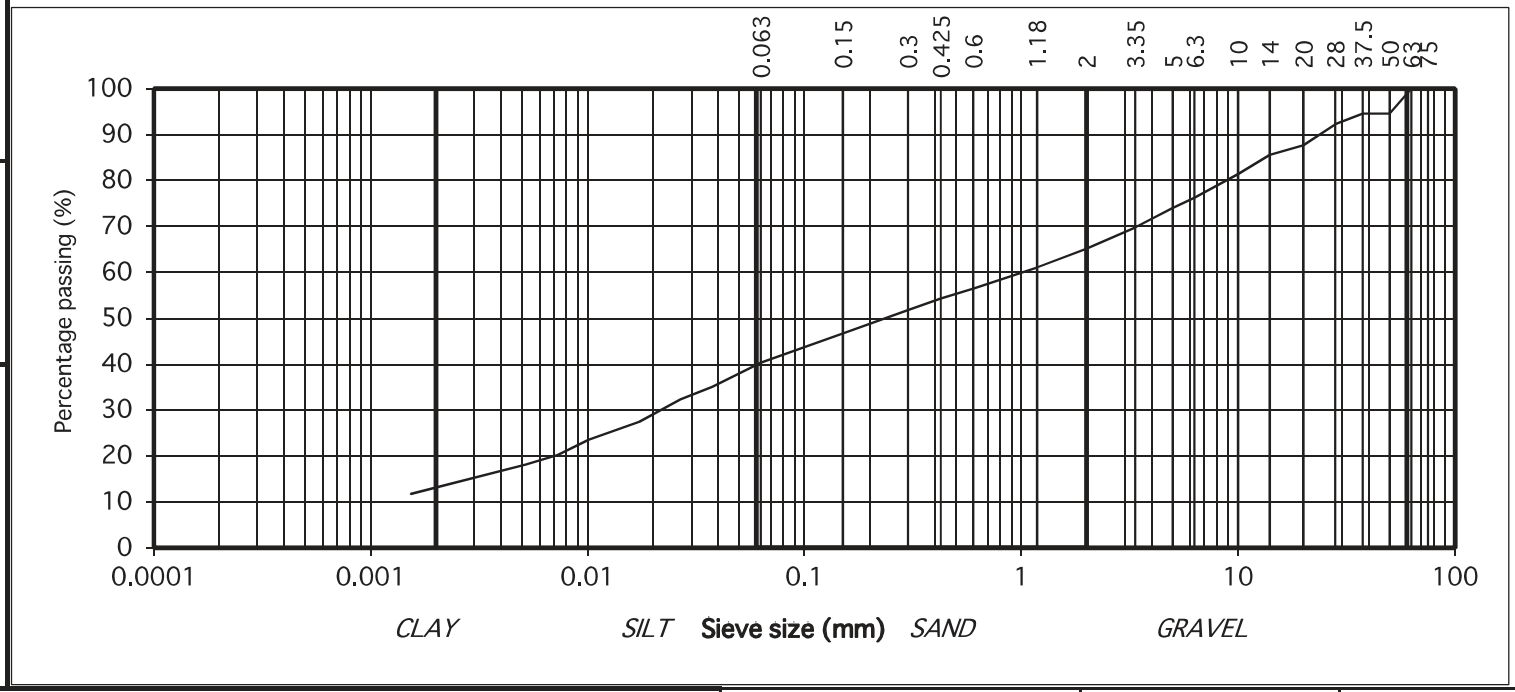
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	95	
28	92	
20	88	
14	86	
10	81	
6.3	76	
5	74	
3.35	70	
2	65	
1.18	61	SAND
0.6	56	
0.425	54	
0.3	52	
0.15	47	
0.063	40	SILT/CLAY
0.037	35	
0.027	32	
0.017	28	
0.010	24	
0.007	20	
0.005	18	
0.002	12	

Contract No.	23560	Report No.	R139532	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151737			
Sample No.*	AA175217	Lab. Sample No.		A22/3357
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

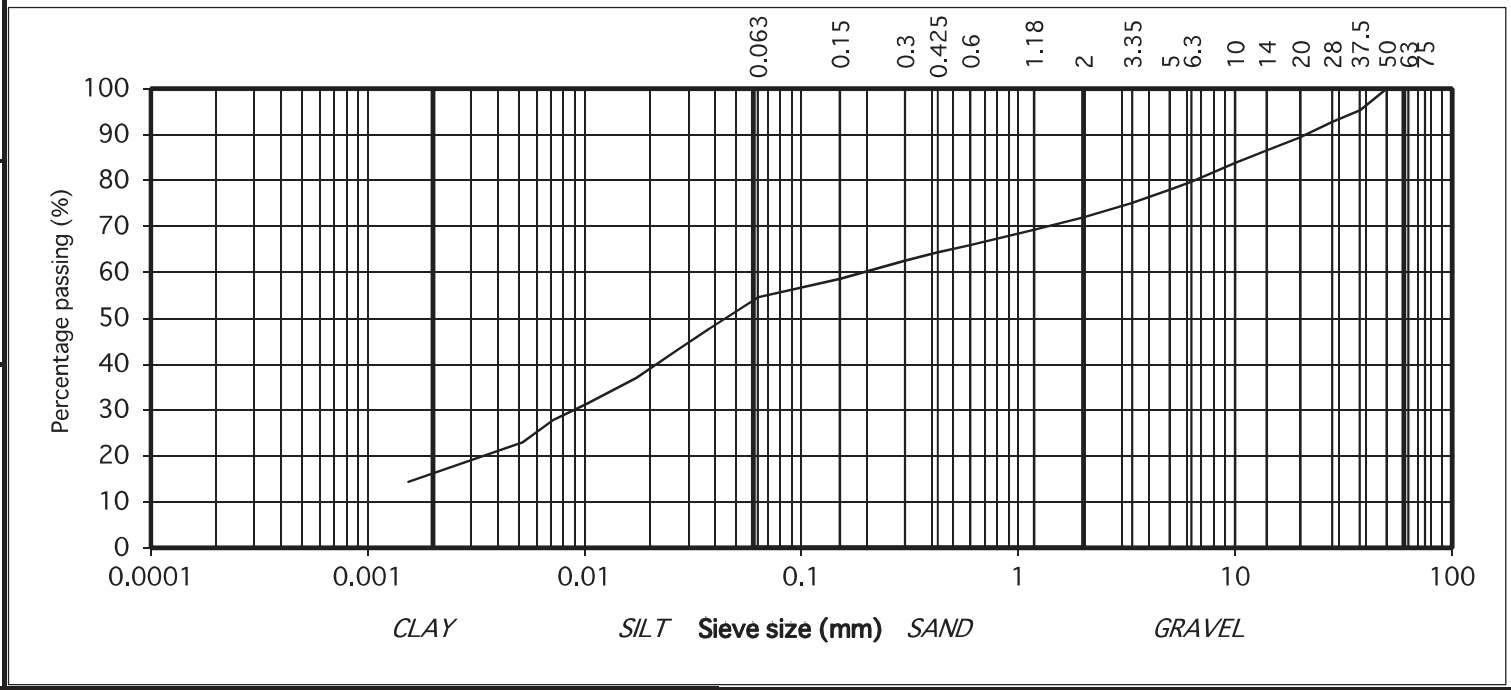
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	93	
20	89	
14	87	
10	84	
6.3	80	
5	78	
3.35	75	
2	72	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	63	
0.15	59	
0.063	55	SILT/CLAY
0.037	48	
0.027	43	
0.017	37	
0.010	31	
0.007	28	
0.005	23	
0.002	14	

Contract No.	23560	Report No.	R139543	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151882			
Sample No.*	AA175202	Lab. Sample No.		A22/3360
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	98	
10	96	
6.3	92	
5	90	
3.35	89	
2	87	
1.18	85	SAND
0.6	79	
0.425	73	
0.3	62	
0.15	42	
0.063	30	SILT/CLAY
0.038	25	
0.027	22	
0.017	19	
0.010	17	
0.007	15	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R143984	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151799			
Sample No.*	AA175218	Lab. Sample No.		A22/3366
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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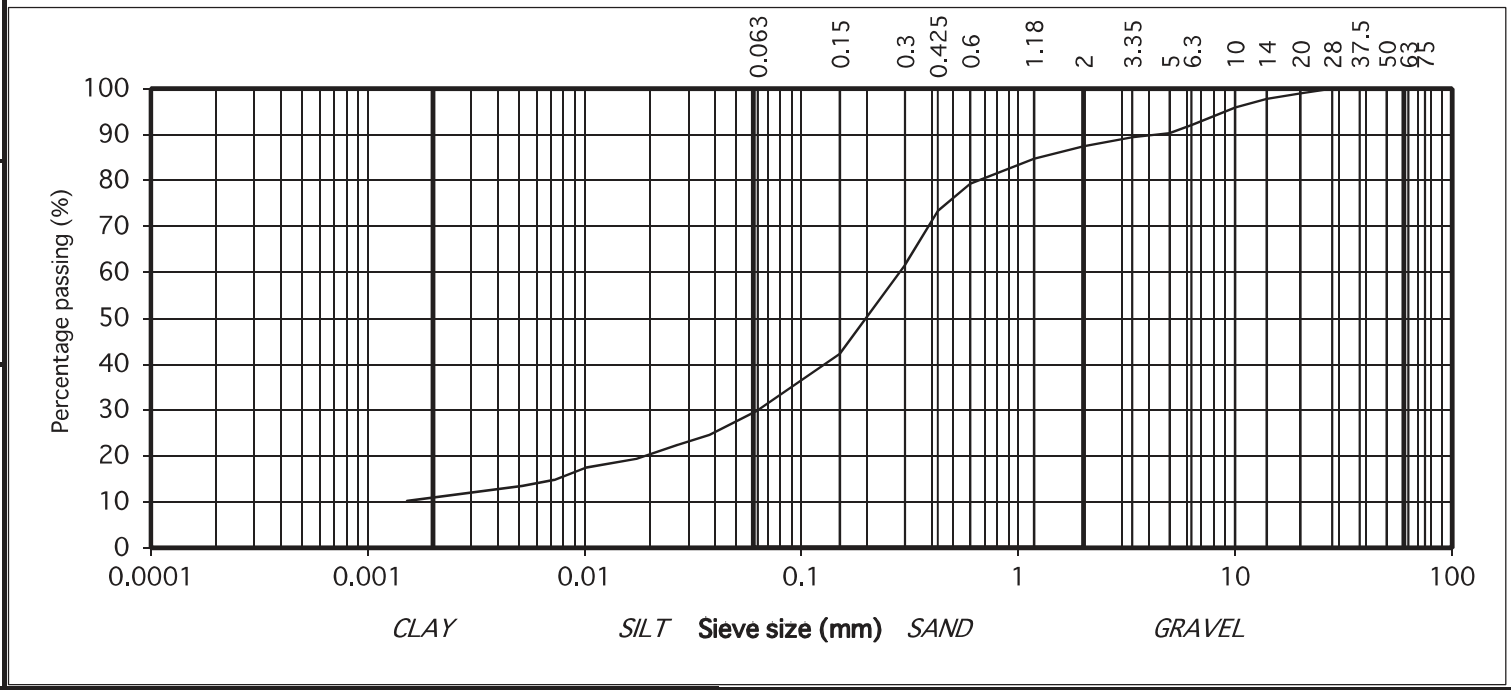
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	87	
20	80	
14	75	
10	71	
6.3	67	
5	64	
3.35	61	
2	57	
1.18	54	SAND
0.6	50	
0.425	48	
0.3	45	
0.15	41	
0.063	38	SILT/CLAY
0.037	32	
0.027	29	
0.017	25	
0.010	20	
0.007	17	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R139524	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151799			
Sample No.*	AA175219	Lab. Sample No.		A22/3359
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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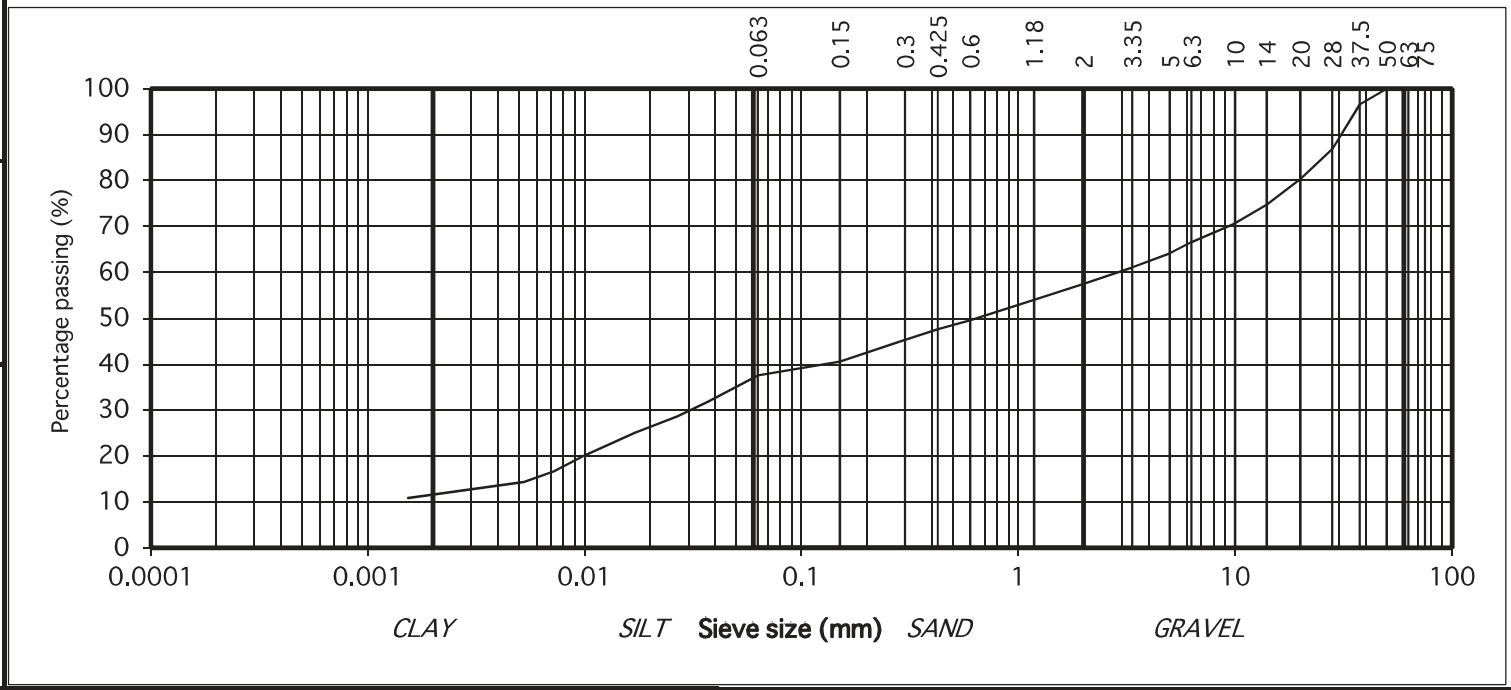
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	90	GRAVEL
37.5	90	
28	84	
20	76	
14	70	
10	66	
6.3	62	
5	60	
3.35	56	
2	52	
1.18	49	SAND
0.6	45	
0.425	42	
0.3	40	
0.15	35	
0.063	30	SILT/CLAY
0.037	25	
0.027	22	
0.017	20	
0.010	18	
0.007	15	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R137414	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151882			
Sample No.*	AA175203	Lab. Sample No.		A22/3361
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

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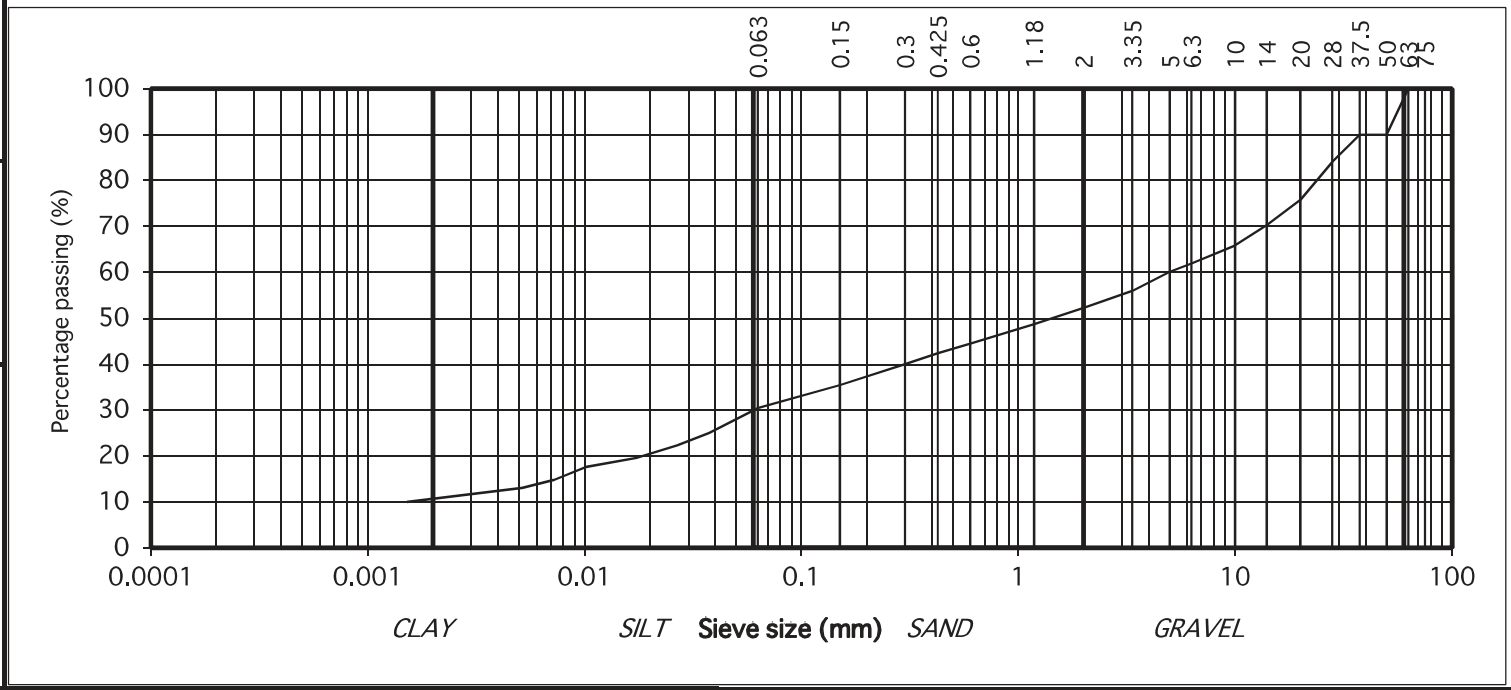
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	98	
14	96	
10	95	
6.3	93	
5	91	
3.35	89	
2	87	
1.18	84	SAND
0.6	81	
0.425	80	
0.3	78	
0.15	75	
0.063	69	SILT/CLAY
0.038	60	
0.027	55	
0.017	45	
0.010	35	
0.007	29	
0.005	24	
0.002	15	

Contract No.	23560	Report No.	R139539	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151901			
Sample No.*	AA175200	Lab. Sample No.		A22/3362
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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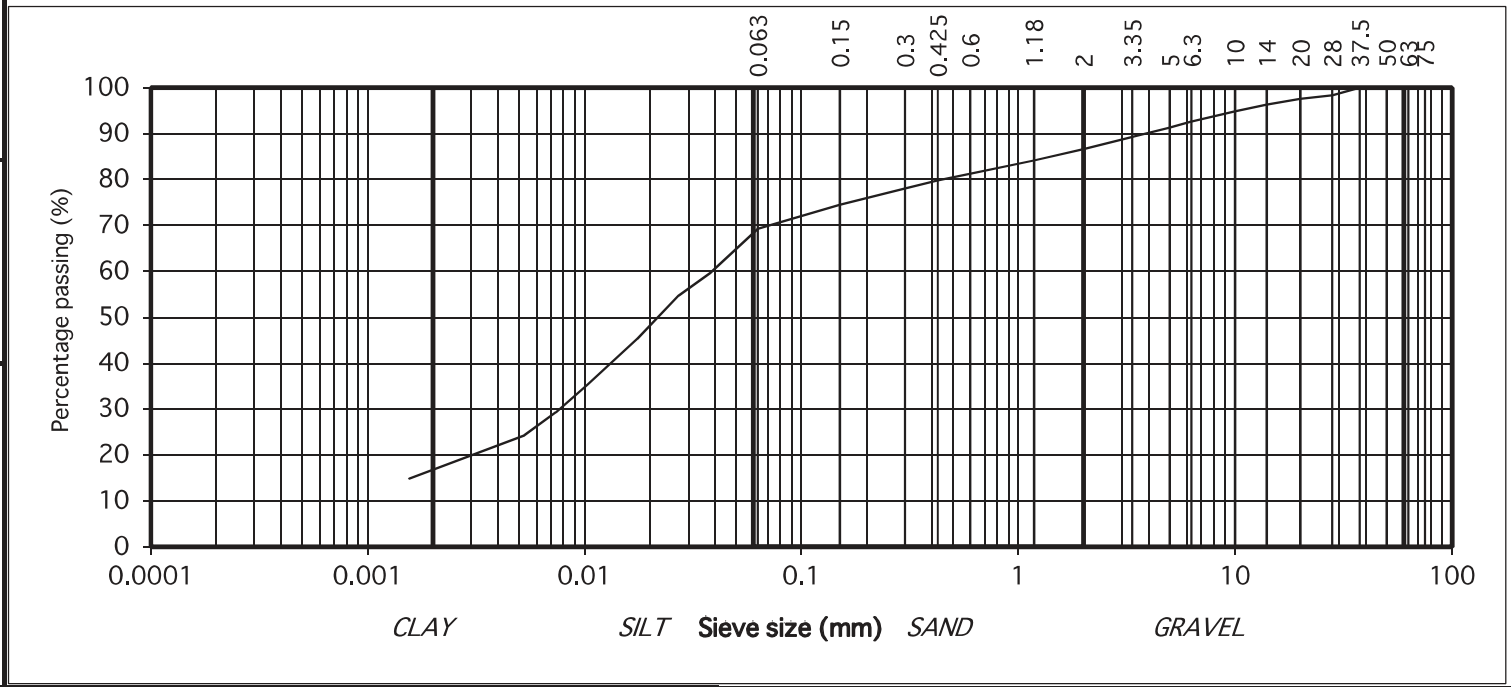

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	91	
14	89	
10	86	
6.3	81	
5	78	
3.35	74	
2	69	
1.18	65	SAND
0.6	60	
0.425	58	
0.3	55	
0.15	52	
0.063	46	SILT/CLAY
0.038	39	
0.027	36	
0.017	31	
0.010	26	
0.007	22	
0.005	20	
0.002	10	

Contract No.	23560	Report No.	R139534	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151906			
Sample No.*	AA175205	Lab. Sample No.		A22/3365
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

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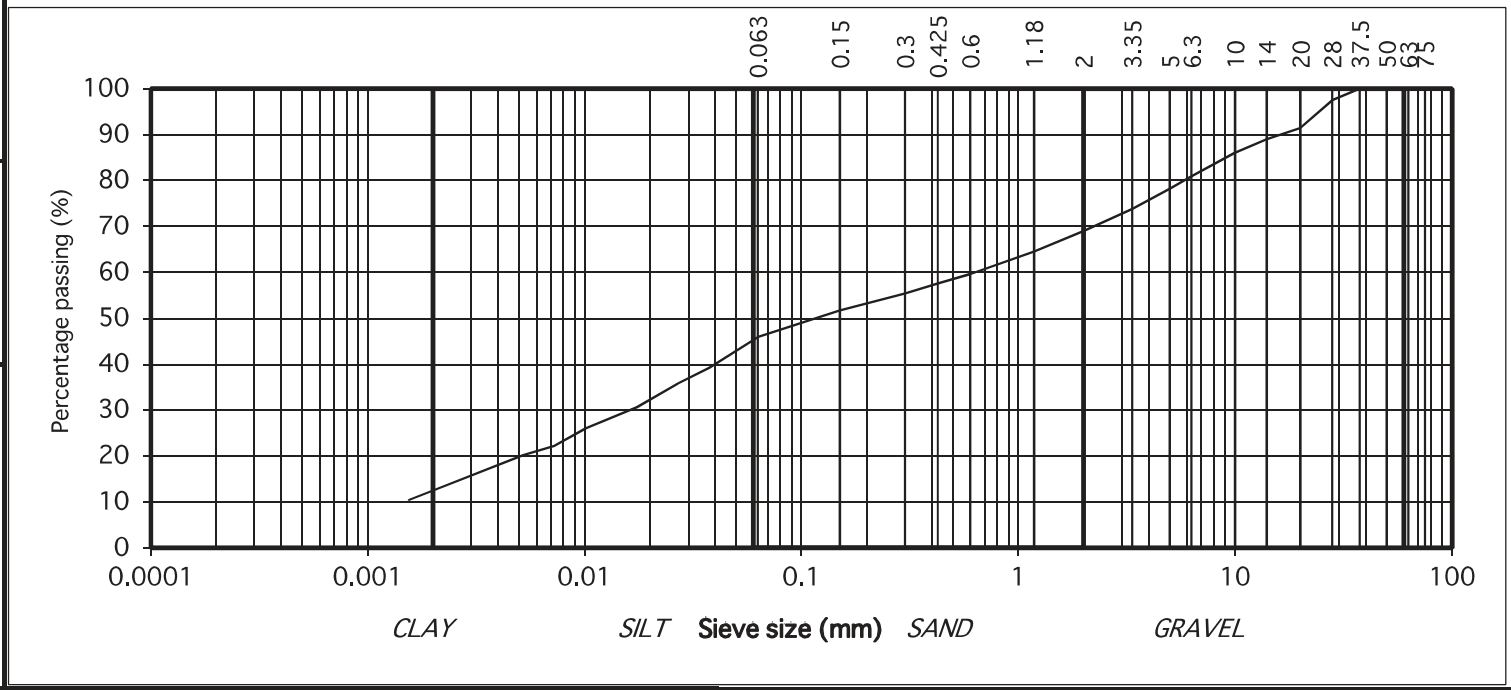

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	87	
28	83	
20	79	
14	74	
10	72	
6.3	68	
5	66	
3.35	62	
2	58	
1.18	54	SAND
0.6	50	
0.425	48	
0.3	46	
0.15	42	
0.063	37	SILT/CLAY
0.037	30	
0.027	27	
0.017	24	
0.010	20	
0.007	17	
0.005	15	
0.002	12	

Contract No.	23560	Report No.	R137415	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151901			
Sample No.*	AA175201	Lab. Sample No.		A22/3363
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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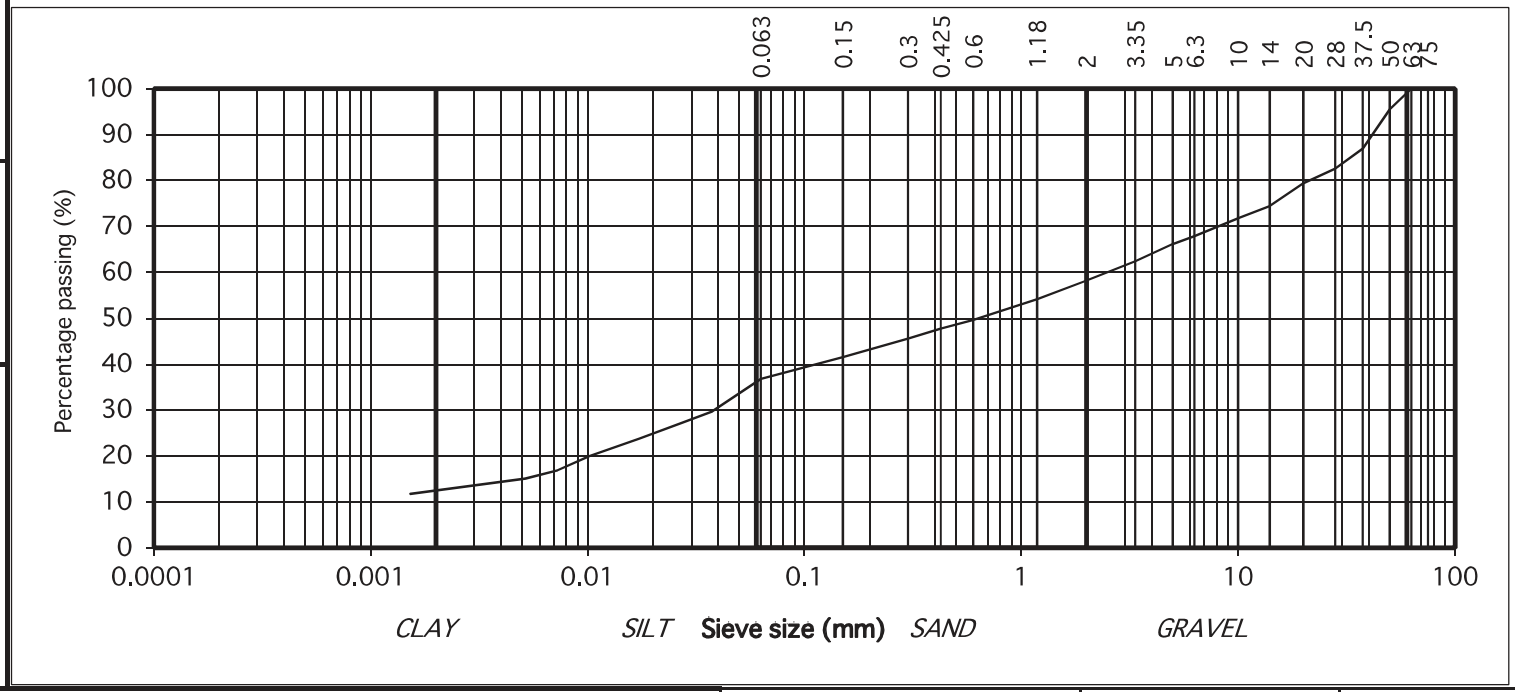
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	91	GRAVEL
37.5	86	
28	84	
20	80	
14	74	
10	71	
6.3	67	
5	64	
3.35	61	
2	57	
1.18	53	SAND
0.6	49	
0.425	46	
0.3	44	
0.15	40	
0.063	35	SILT/CLAY
0.037	28	
0.027	26	
0.017	23	
0.010	20	
0.007	17	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R139538	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP151961			
Sample No.*	AA175207	Lab. Sample No.		A22/3366
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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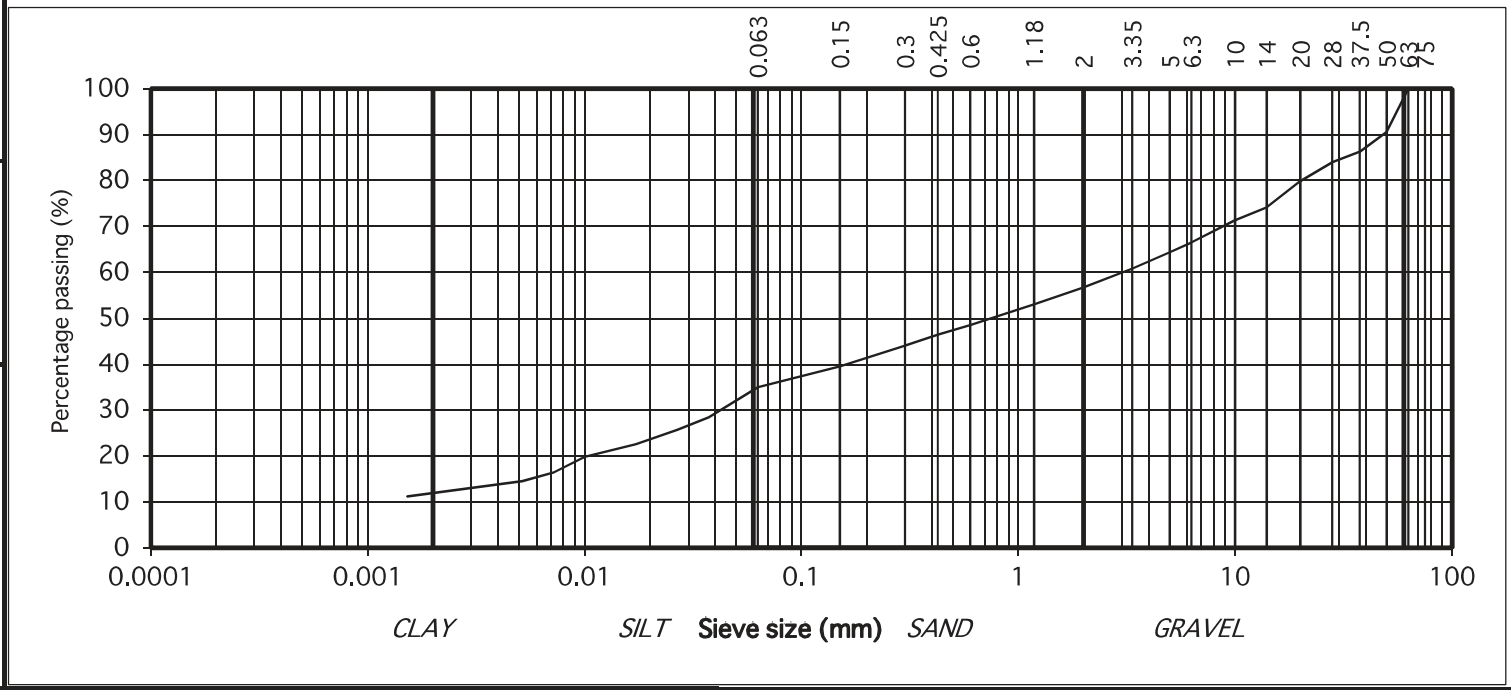

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	90	
28	87	
20	84	
14	79	
10	75	
6.3	70	
5	68	
3.35	63	
2	58	
1.18	53	SAND
0.6	47	
0.425	44	
0.3	41	
0.15	36	
0.063	29	SILT/CLAY
0.037	25	
0.027	23	
0.017	20	
0.010	17	
0.007	15	
0.005	13	
0.002	7	

Contract No.	23560	Report No.	R139535	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152002			
Sample No.*	AA175199	Lab. Sample No.		A22/3367
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey slightly sandy, gravelly, SILT/CLAY			

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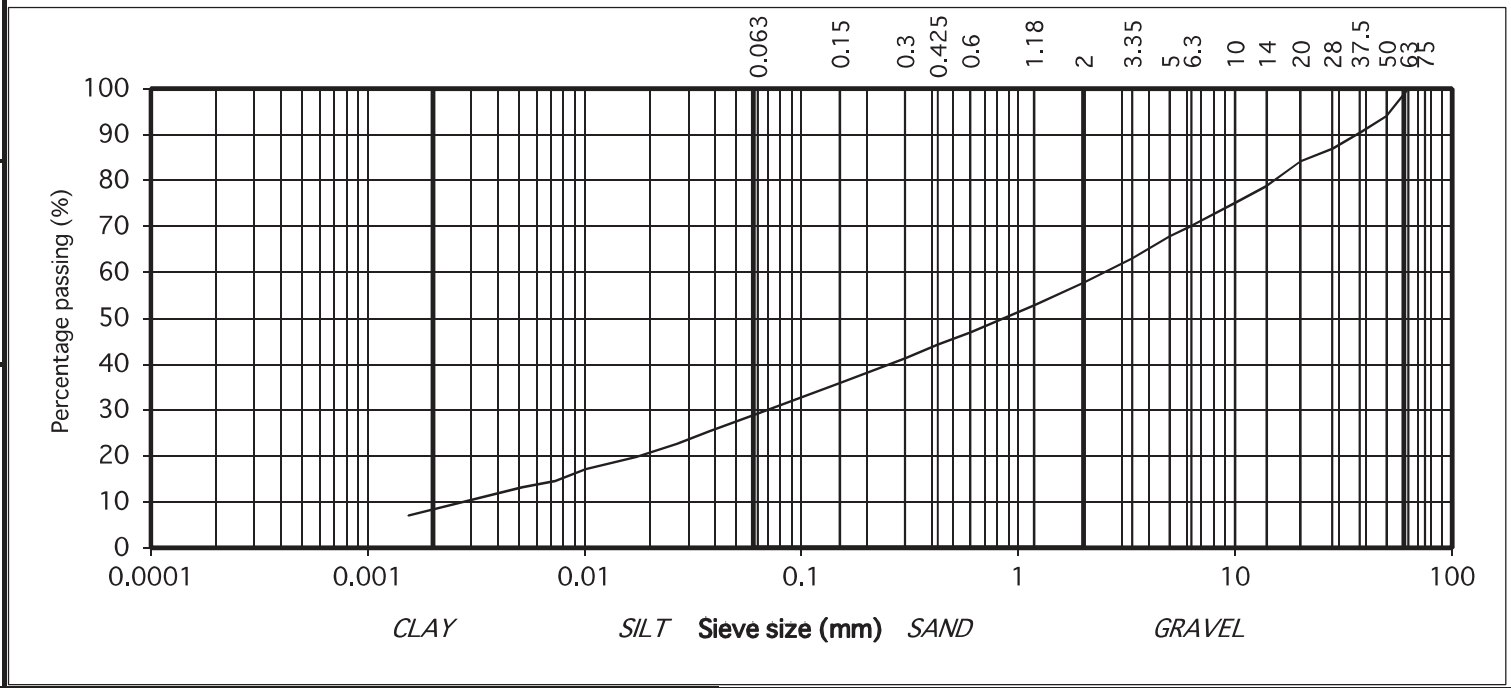

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	94	
28	88	
20	84	
14	79	
10	75	
6.3	71	
5	68	
3.35	64	
2	60	
1.18	57	SAND
0.6	52	
0.425	50	
0.3	48	
0.15	43	
0.063	38	SILT/CLAY
0.037	31	
0.027	27	
0.017	25	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R137416	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152045			
Sample No.*	AA175210	Lab. Sample No.		A22/3365
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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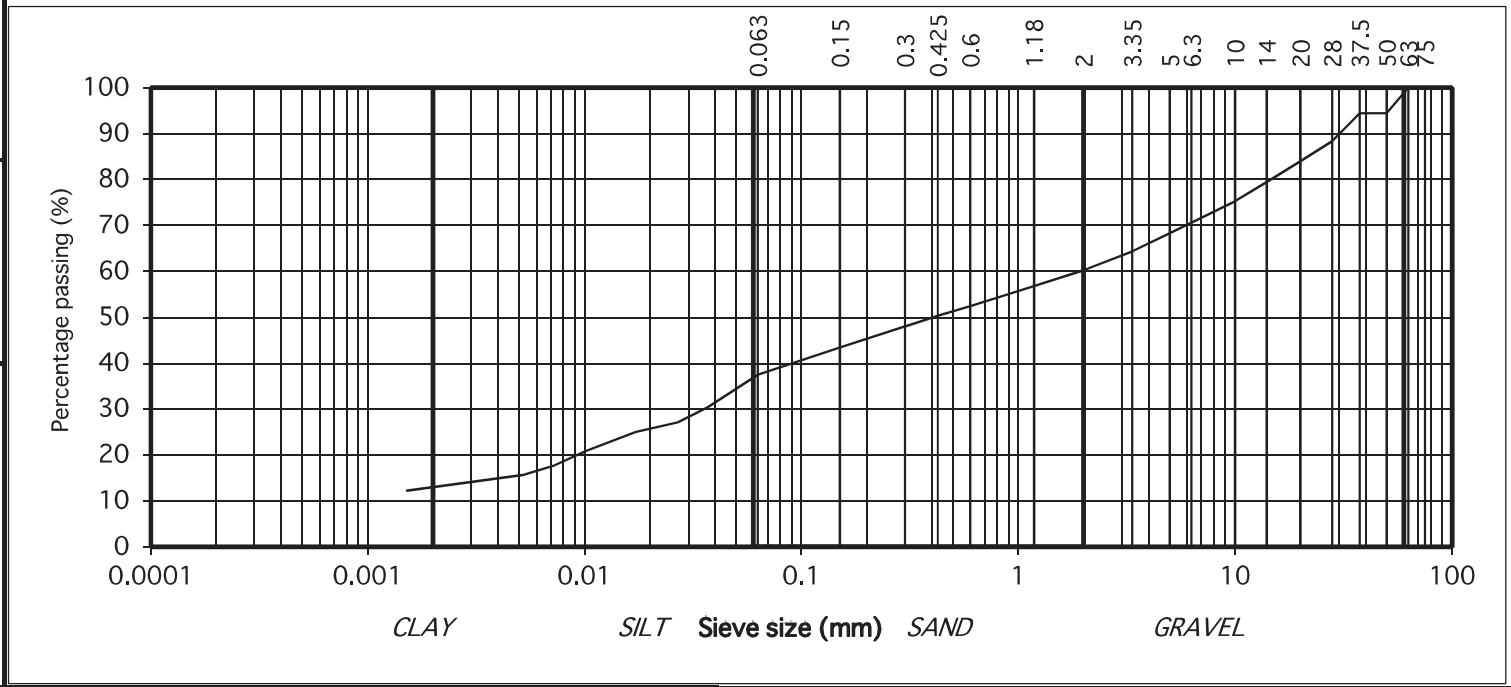

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Approved by:	Date:	Page no:
	08/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	92	
20	85	
14	82	
10	78	
6.3	73	
5	71	
3.35	66	
2	61	
1.18	57	SAND
0.6	52	
0.425	50	
0.3	48	
0.15	43	
0.063	37	SILT/CLAY
0.037	32	
0.027	29	
0.017	24	
0.010	20	
0.007	18	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R139542	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152190			
Sample No.*	AA175212	Lab. Sample No.		A22/3372
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

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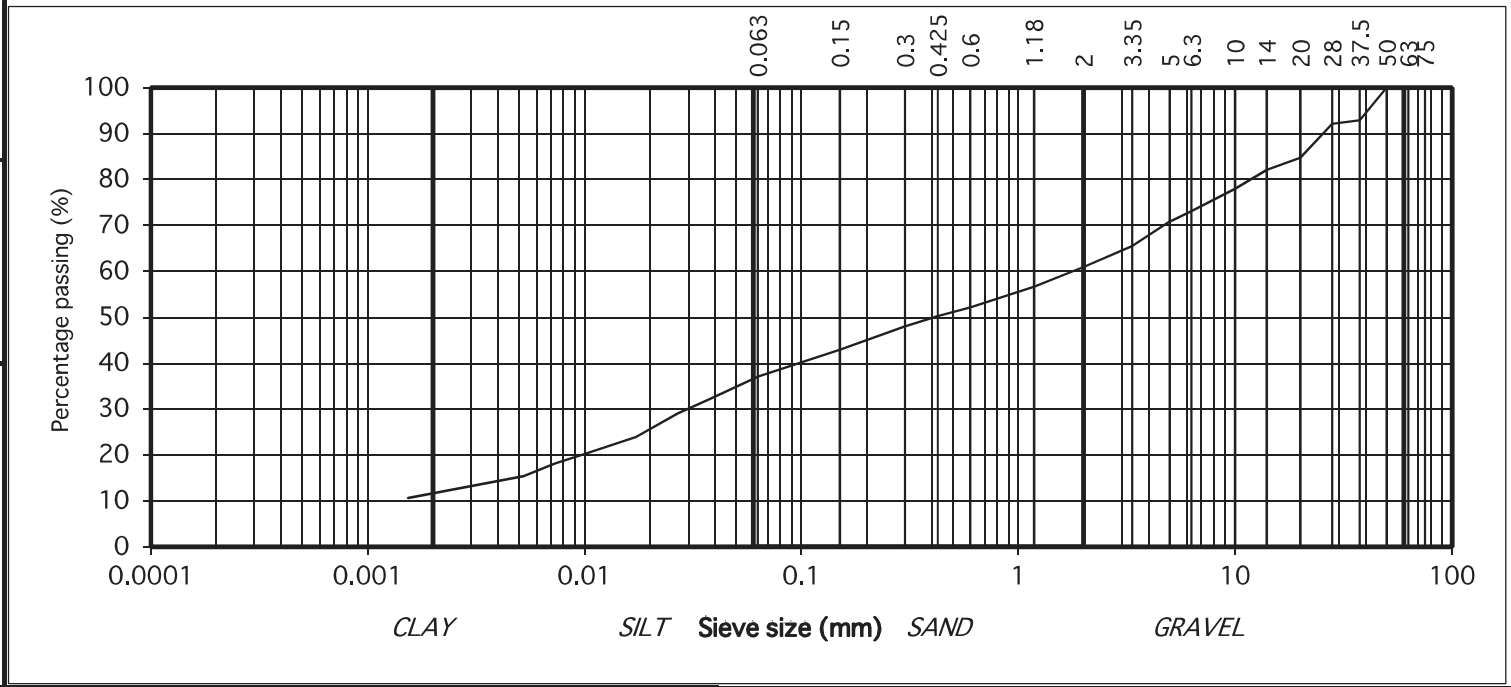

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Approved by:	Date:	Page no:
	14/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	98	
10	97	
6.3	95	
5	95	
3.35	93	
2	91	
1.18	89	SAND
0.6	87	
0.425	85	
0.3	82	
0.15	57	
0.063	33	SILT/CLAY
0.038	26	
0.027	24	
0.017	21	
0.010	18	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R143987	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152102			
Sample No.*	AA175197	Lab. Sample No.		A22/3368
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown sandy, slightly gravelly, SILT/CLAY			

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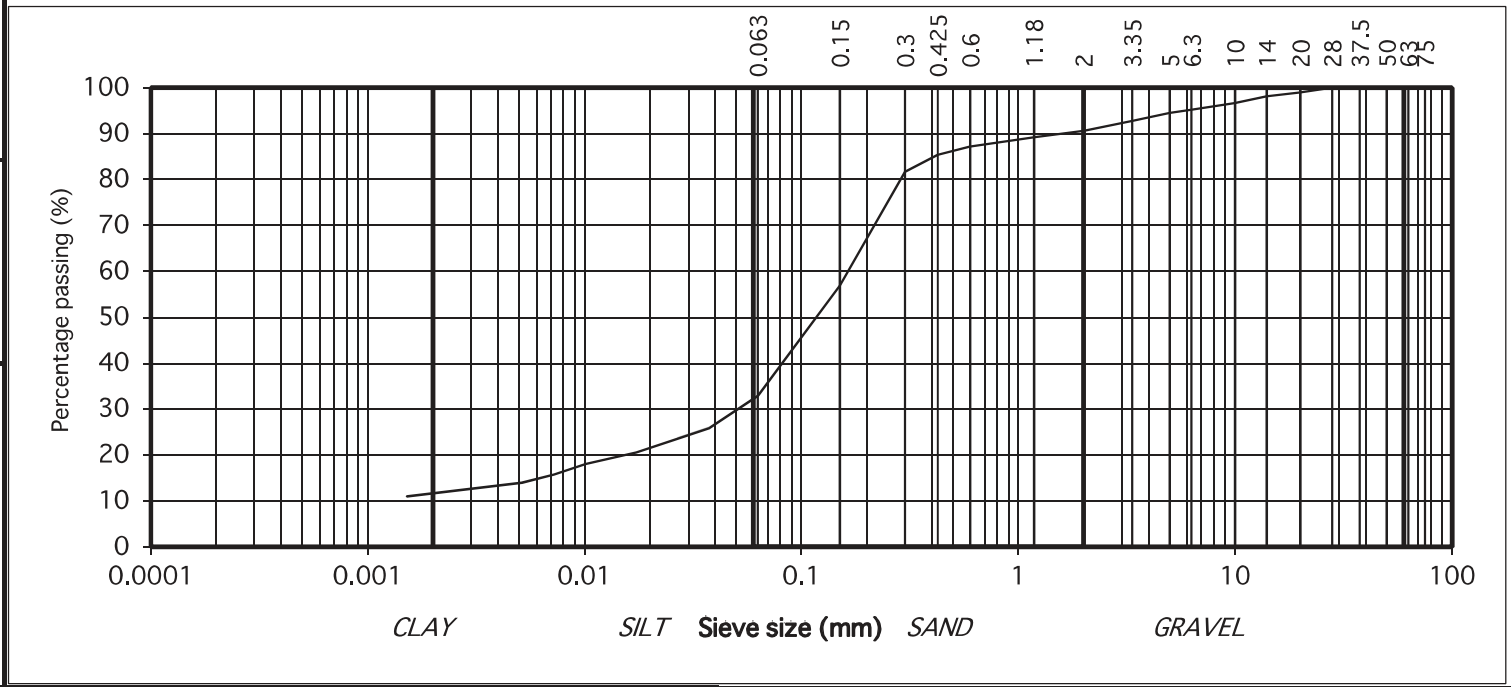

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	97	
14	97	
10	96	
6.3	95	
5	95	
3.35	94	
2	93	
1.18	92	SAND
0.6	91	
0.425	90	
0.3	89	
0.15	85	
0.063	76	SILT/CLAY
0.037	66	
0.026	60	
0.017	51	
0.010	43	
0.007	38	
0.005	33	
0.002	20	

Contract No.	23560	Report No.	R139518	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152295			
Sample No.*	AA175214	Lab. Sample No.		A22/3374
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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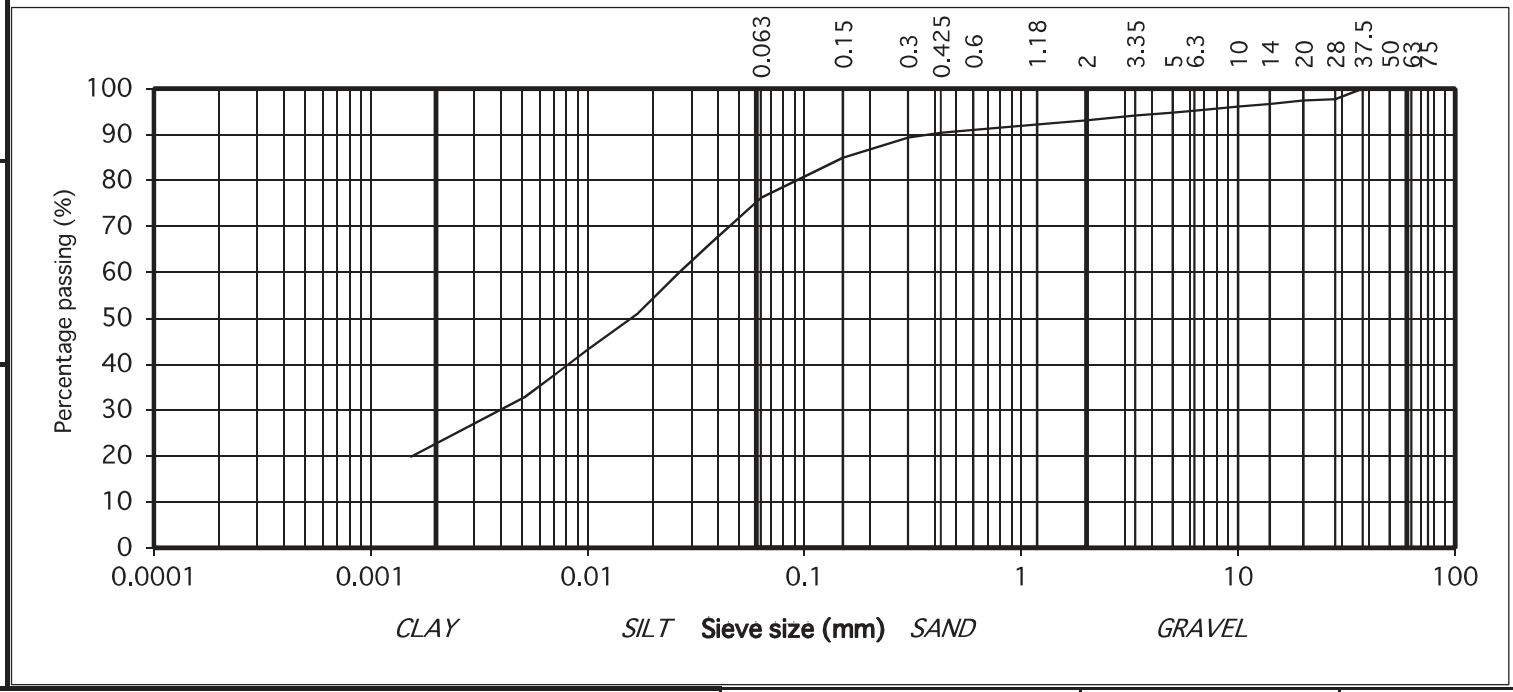
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	99	
5	99	
3.35	98	
2	98	
1.18	97	SAND
0.6	97	
0.425	97	
0.3	96	
0.15	93	
0.063	52	SILT/CLAY
0.037	42	
0.027	39	
0.017	32	
0.010	27	
0.007	21	
0.005	18	
0.002	11	

Contract No.	23560	Report No.	R137417	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152295			
Sample No.*	AA175215	Lab. Sample No.		A22/3375
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Grey brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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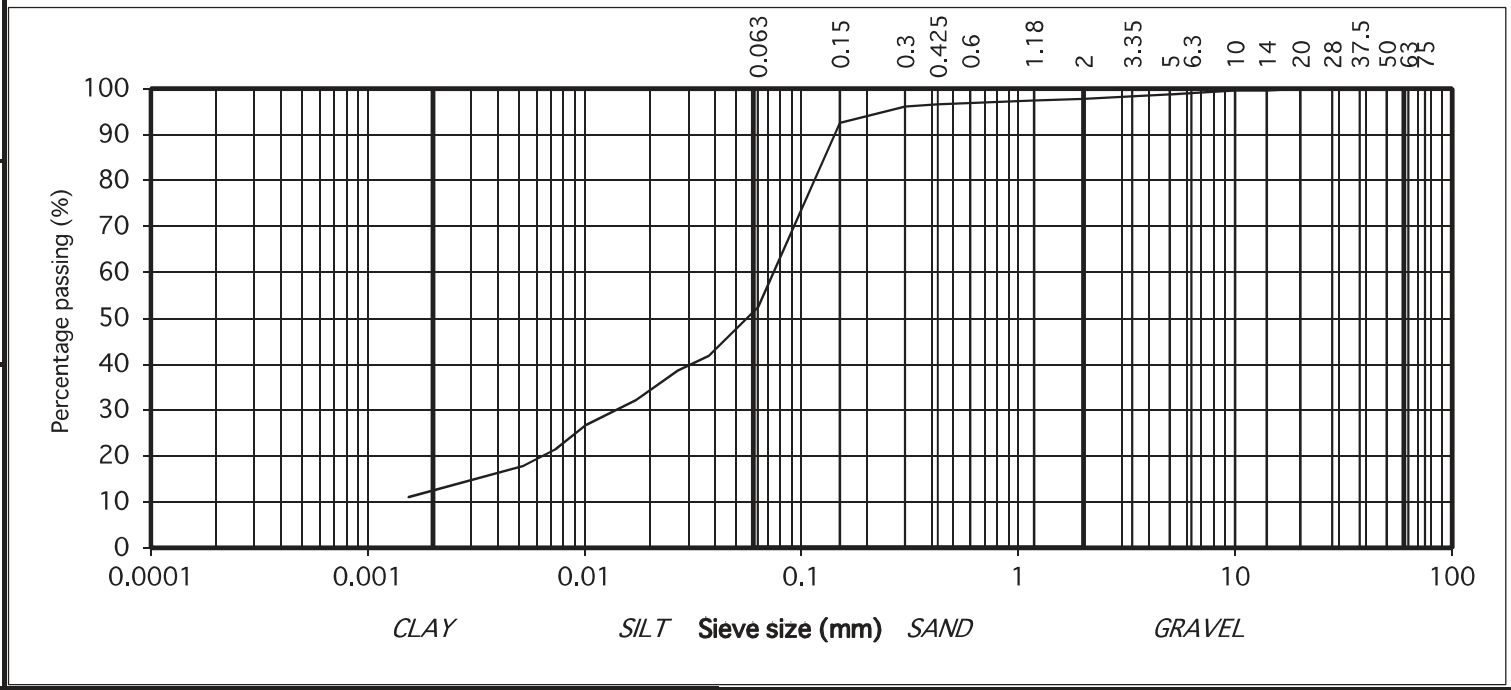
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	89	
20	81	
14	74	
10	70	
6.3	65	
5	63	
3.35	59	
2	54	
1.18	50	SAND
0.6	45	
0.425	43	
0.3	41	
0.15	37	
0.063	32	SILT/CLAY
0.037	26	
0.027	24	
0.017	21	
0.010	18	
0.007	15	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R139537	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152699			
Sample No.*	AA175235	Lab. Sample No.		A22/3381
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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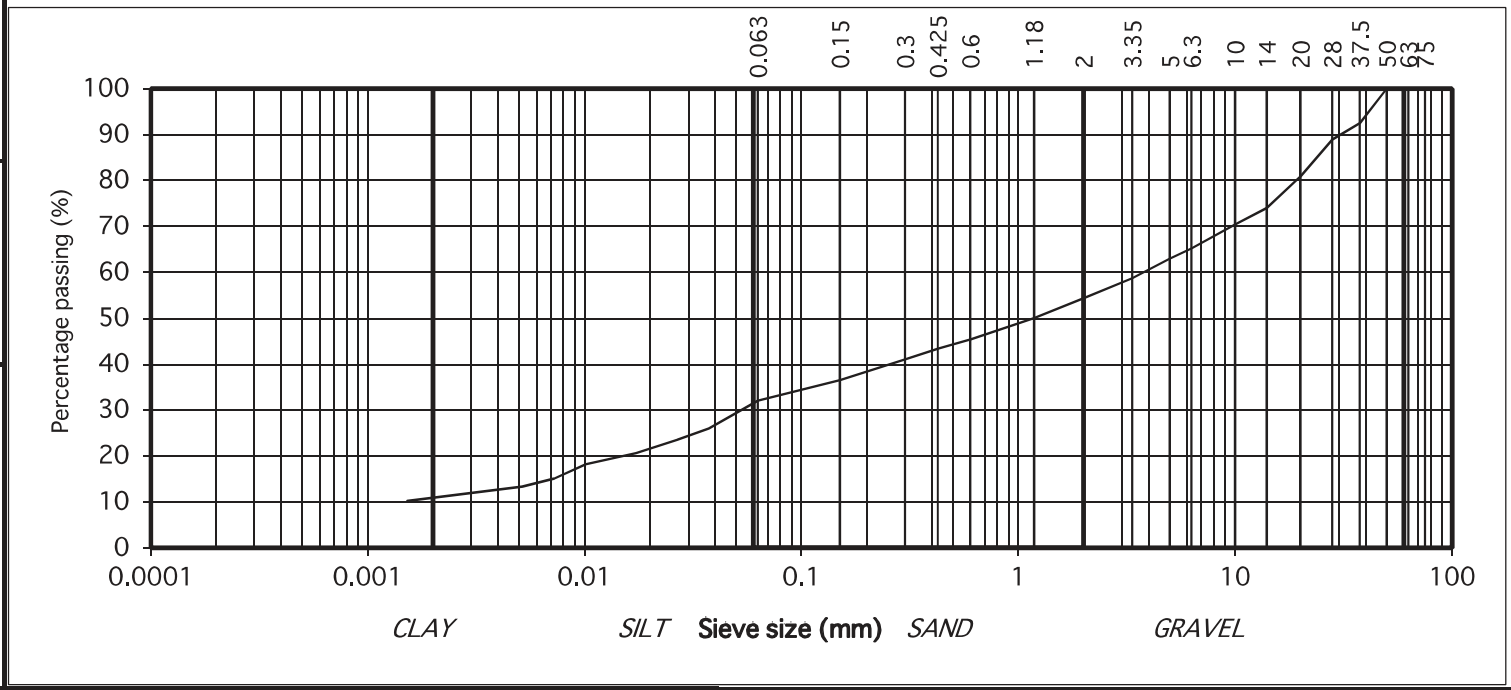
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	97	GRAVEL
37.5	88	
28	76	
20	66	
14	60	
10	54	
6.3	47	
5	44	
3.35	38	
2	33	
1.18	29	SAND
0.6	23	
0.425	21	
0.3	18	
0.15	15	
0.063	11	SILT/CLAY
0.037	9	
0.027	8	
0.017	7	
0.010	6	
0.007	5	
0.005	4	
0.002	2	

Contract No.	23560	Report No.	R137418	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152500			
Sample No.*	AA175224	Lab. Sample No.		A22/3379
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Grey brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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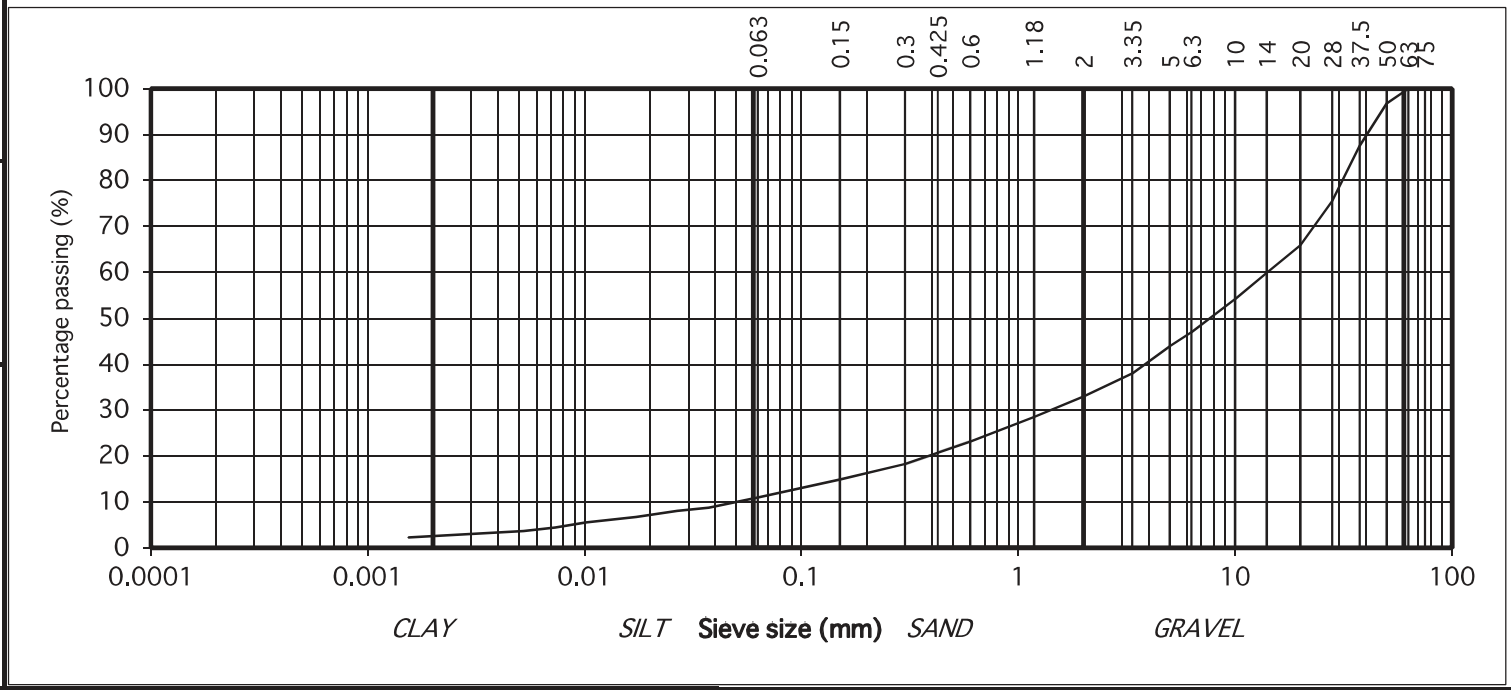
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	95	
20	89	
14	83	
10	79	
6.3	72	
5	70	
3.35	66	
2	61	
1.18	57	SAND
0.6	52	
0.425	49	
0.3	47	
0.15	41	
0.063	36	SILT/CLAY
0.037	32	
0.027	28	
0.017	24	
0.010	21	
0.007	19	
0.005	16	
0.002	10	

Contract No.	23560	Report No.	R139541	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152806			
Sample No.*	AA175237	Lab. Sample No.		A22/3382
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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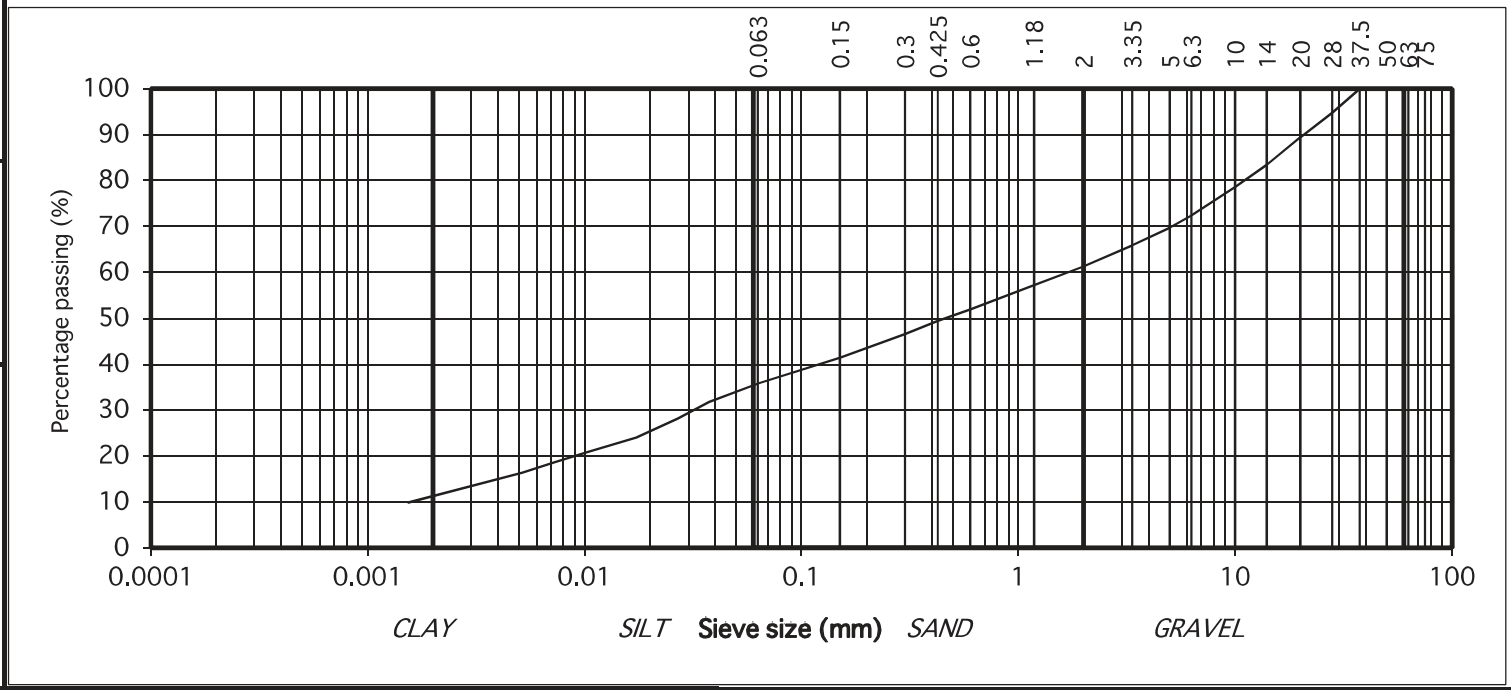
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	87	
14	86	
10	82	
6.3	79	
5	78	
3.35	75	
2	72	
1.18	69	SAND
0.6	66	
0.425	64	
0.3	62	
0.15	56	
0.063	50	SILT/CLAY
0.038	44	
0.027	39	
0.017	34	
0.010	28	
0.007	23	
0.005	19	
0.002	12	

Contract No.	23560	Report No.	R139540	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152901			
Sample No.*	AA175240	Lab. Sample No.		A22/3384
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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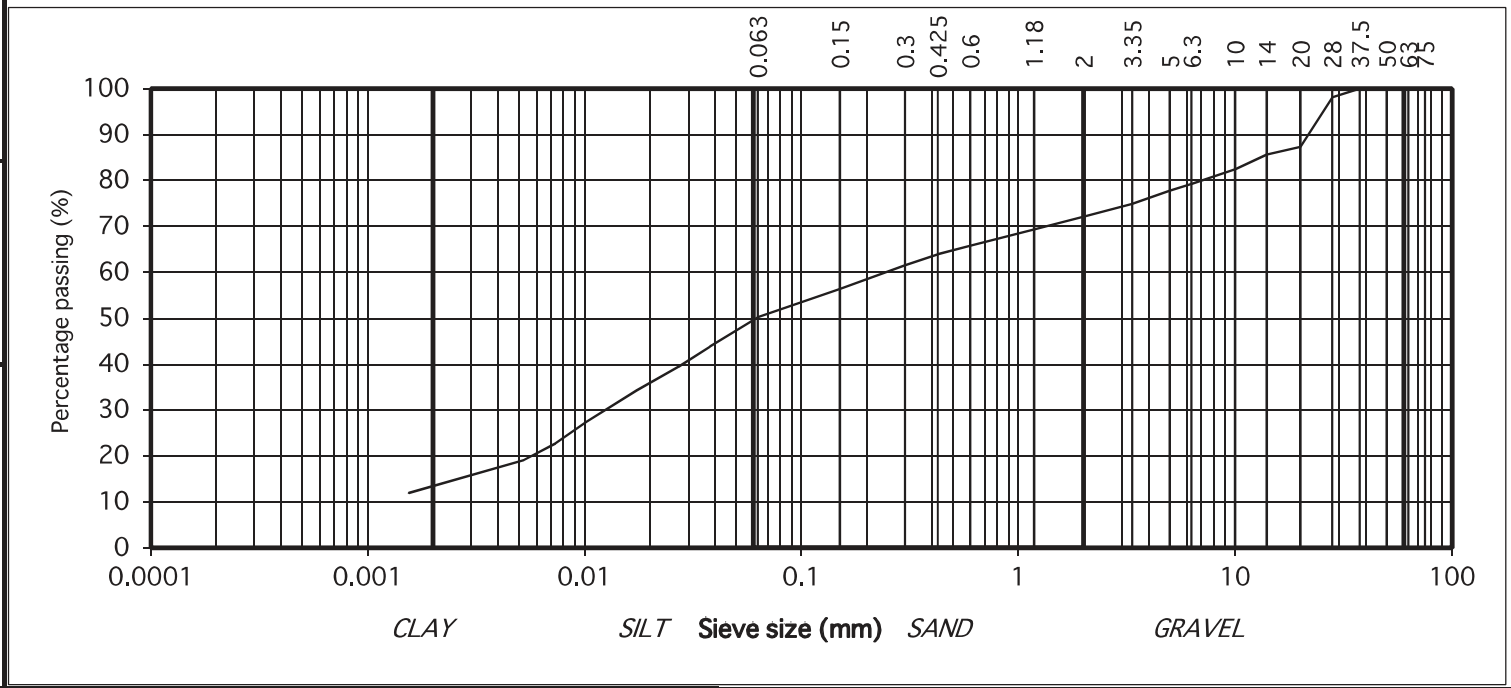

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	87	
28	83	
20	74	
14	70	
10	66	
6.3	61	
5	58	
3.35	54	
2	50	
1.18	47	SAND
0.6	42	
0.425	40	
0.3	37	
0.15	33	
0.063	28	SILT/CLAY
0.037	25	
0.027	23	
0.017	19	
0.010	17	
0.007	15	
0.005	13	
0.002	8	

Contract No.	23560	Report No.	R139533	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152806			
Sample No.*	AA175238	Lab. Sample No.		A22/3383
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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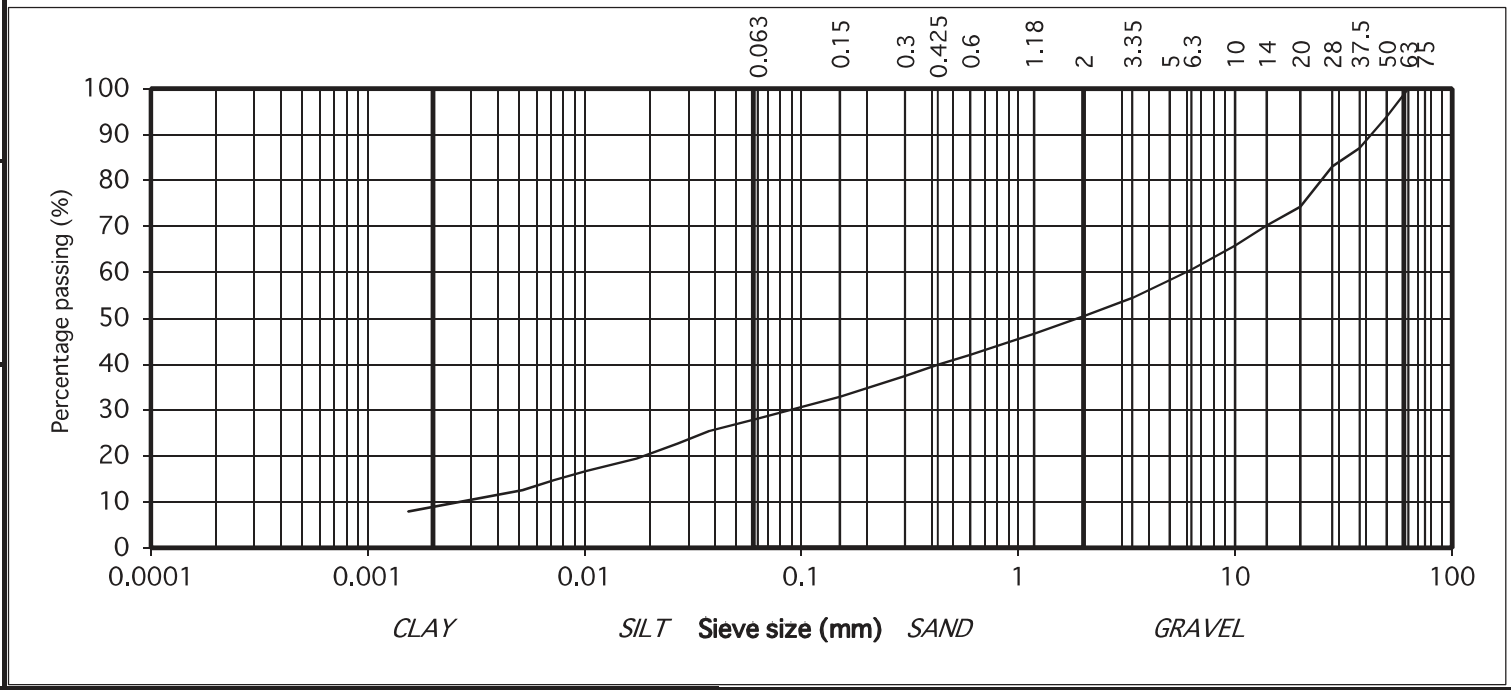

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	94	
20	90	
14	87	
10	84	
6.3	79	
5	76	
3.35	71	
2	65	
1.18	59	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	43	
0.063	38	SILT/CLAY
0.037	33	
0.027	31	
0.017	26	
0.010	23	
0.007	20	
0.005	16	
0.002	10	

Contract No.	23560	Report No.	R143989	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152901			
Sample No.*	AA175241	Lab. Sample No.		A22/3385
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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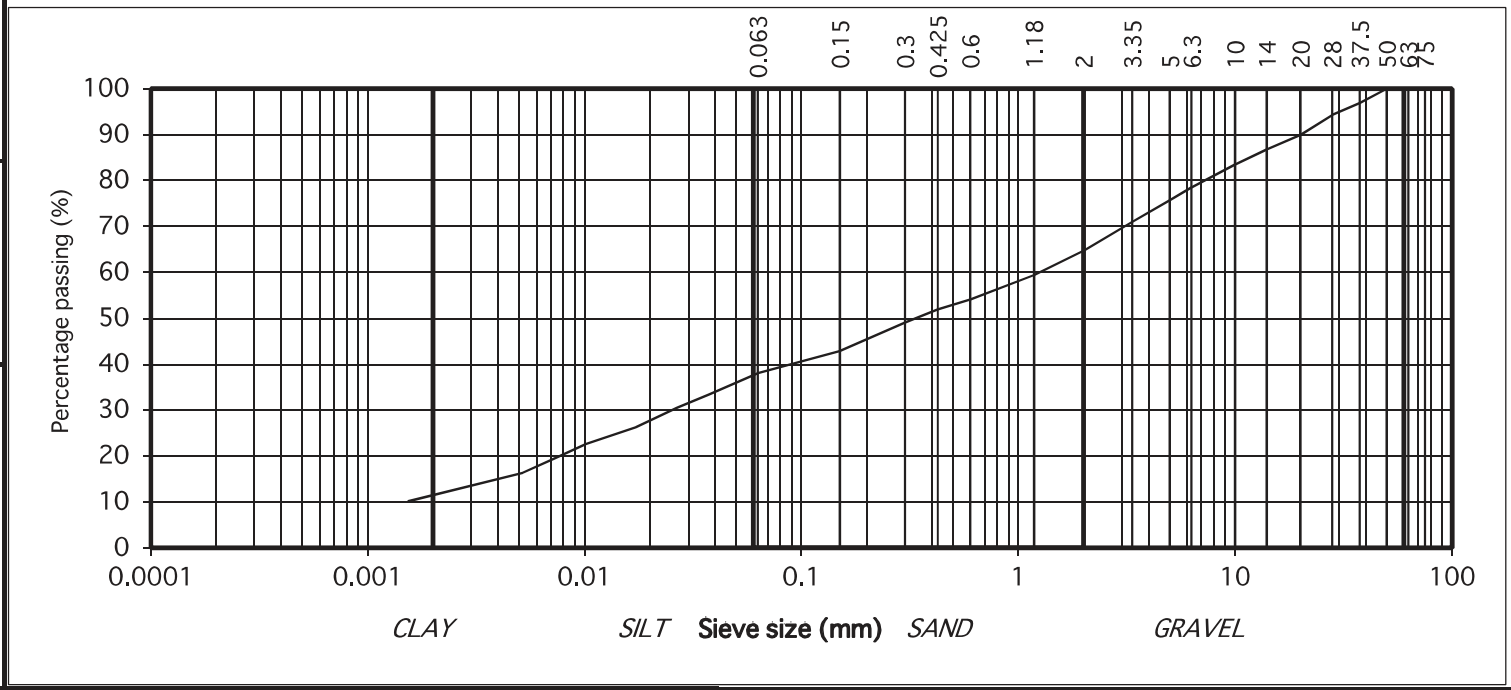

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	93	
14	89	
10	86	
6.3	81	
5	79	
3.35	74	
2	70	
1.18	67	SAND
0.6	63	
0.425	60	
0.3	56	
0.15	48	
0.063	39	SILT/CLAY
0.037	32	
0.027	29	
0.017	26	
0.010	22	
0.007	20	
0.005	18	
0.002	12	

Contract No.	23560	Report No.	R139520	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152989			
Sample No.*	AA175231	Lab. Sample No.		A22/3386
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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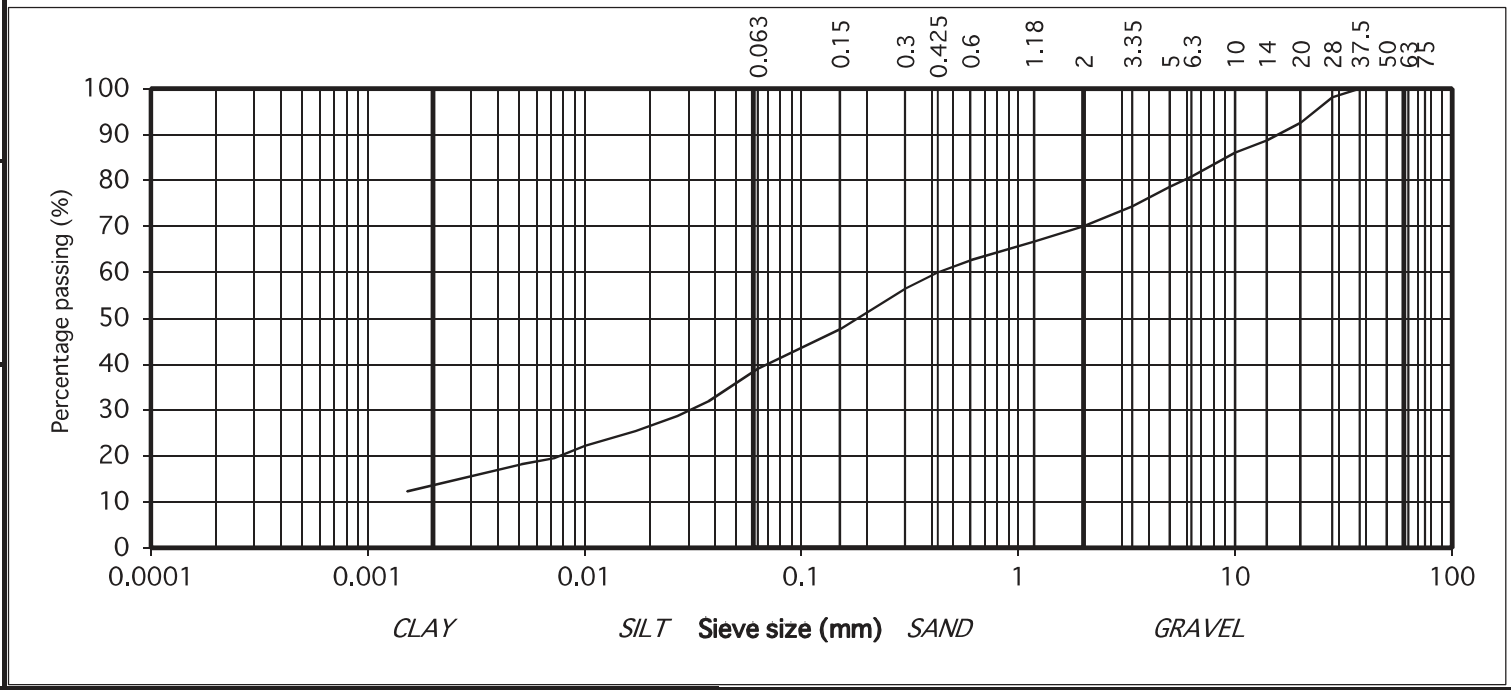

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	90	
20	86	
14	82	
10	79	
6.3	74	
5	72	
3.35	69	
2	65	
1.18	61	SAND
0.6	56	
0.425	54	
0.3	51	
0.15	45	
0.063	39	SILT/CLAY
0.038	35	
0.027	32	
0.017	27	
0.010	23	
0.007	21	
0.005	18	
0.002	12	

Contract No.	23560	Report No.	R139546	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP152989			
Sample No.*	AA175232	Lab. Sample No.		A22/3387
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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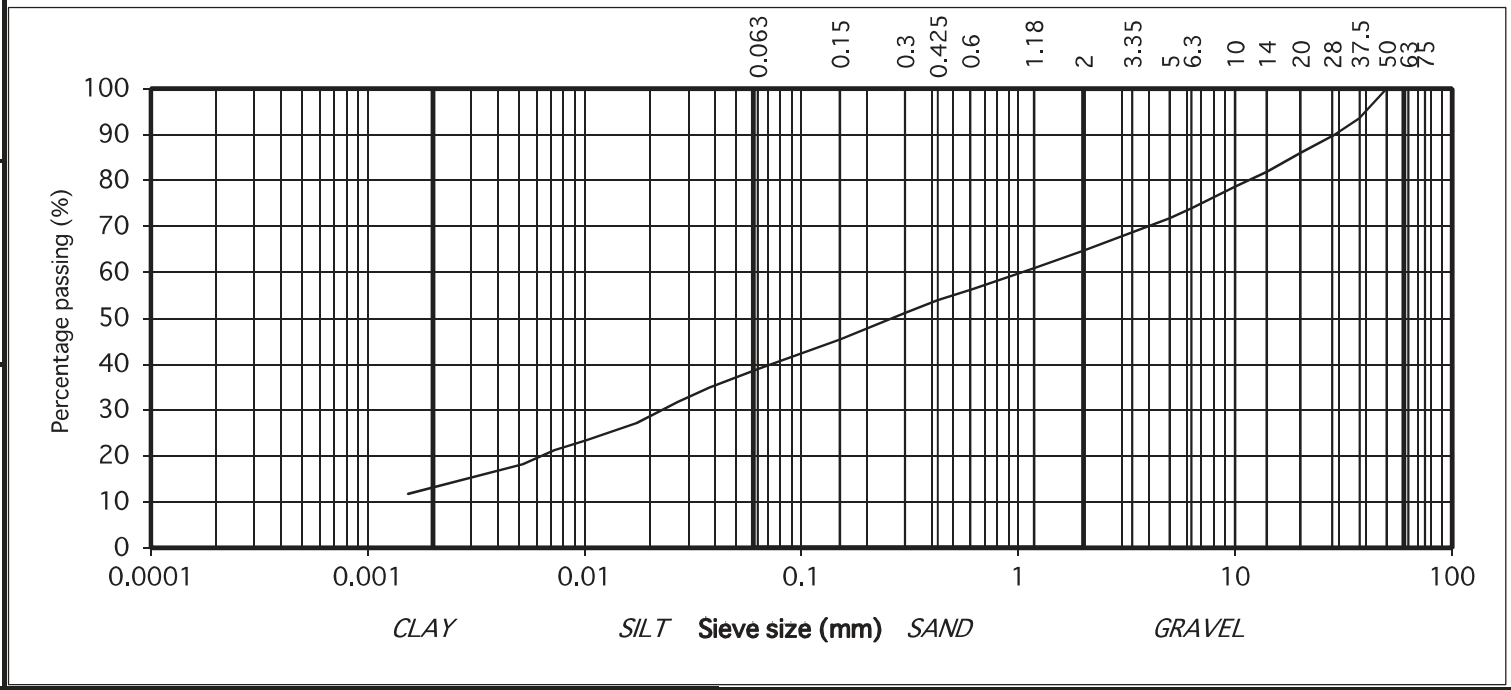

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	98	
14	98	
10	98	
6.3	98	
5	98	
3.35	97	
2	97	
1.18	97	SAND
0.6	96	
0.425	96	
0.3	95	
0.15	94	
0.063	92	SILT/CLAY
0.037	83	
0.026	74	
0.017	61	
0.010	50	
0.007	43	
0.005	35	
0.002	21	

Contract No.	23560	Report No.	R137420	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP153098			
Sample No.*	AA175229	Lab. Sample No.		A22/3388
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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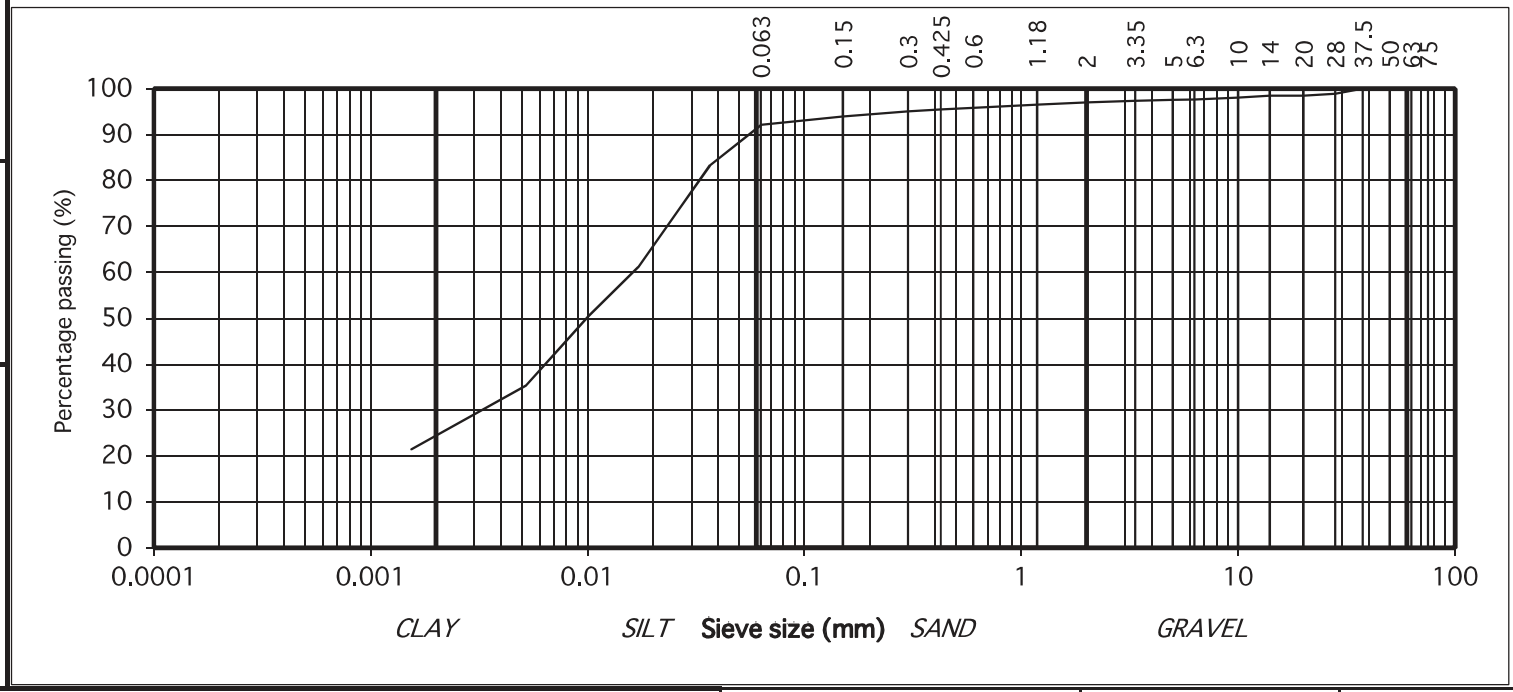

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Approved by:	Date:	Page no:
H Byrne	08/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	84	
14	81	
10	77	
6.3	72	
5	70	
3.35	66	
2	62	
1.18	58	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	43	
0.063	39	SILT/CLAY
0.037	34	
0.027	31	
0.017	27	
0.010	23	
0.007	20	
0.005	18	
0.002	14	

Contract No.	23560	Report No.	R139523	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP153098			
Sample No.*	AA175230	Lab. Sample No.		A22/3389
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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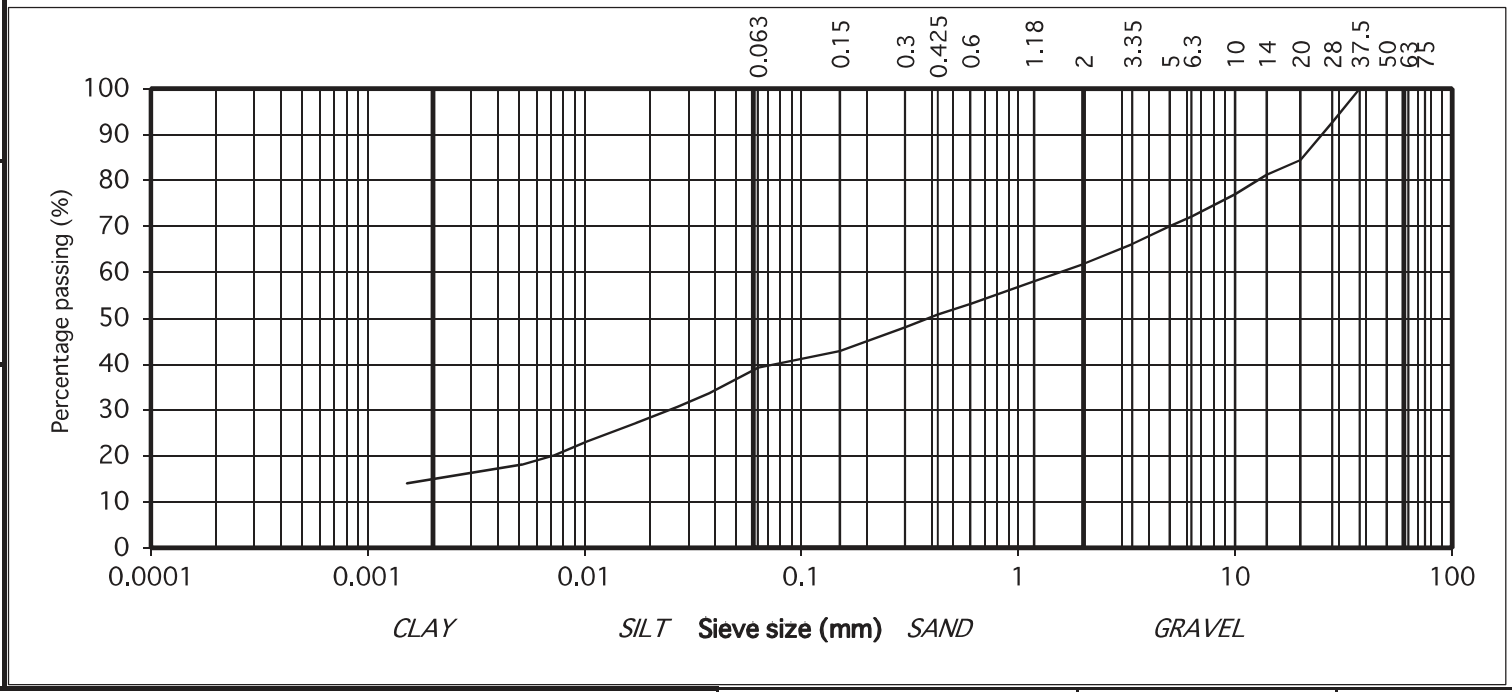

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	93	
20	87	
14	82	
10	78	
6.3	74	
5	72	
3.35	67	
2	63	
1.18	59	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	45	
0.063	38	SILT/CLAY
0.037	33	
0.027	30	
0.017	27	
0.010	23	
0.007	19	
0.005	17	
0.002	13	

Contract No.	23560	Report No.	R137421	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP153199			
Sample No.*	AA175228	Lab. Sample No.		A22/3391
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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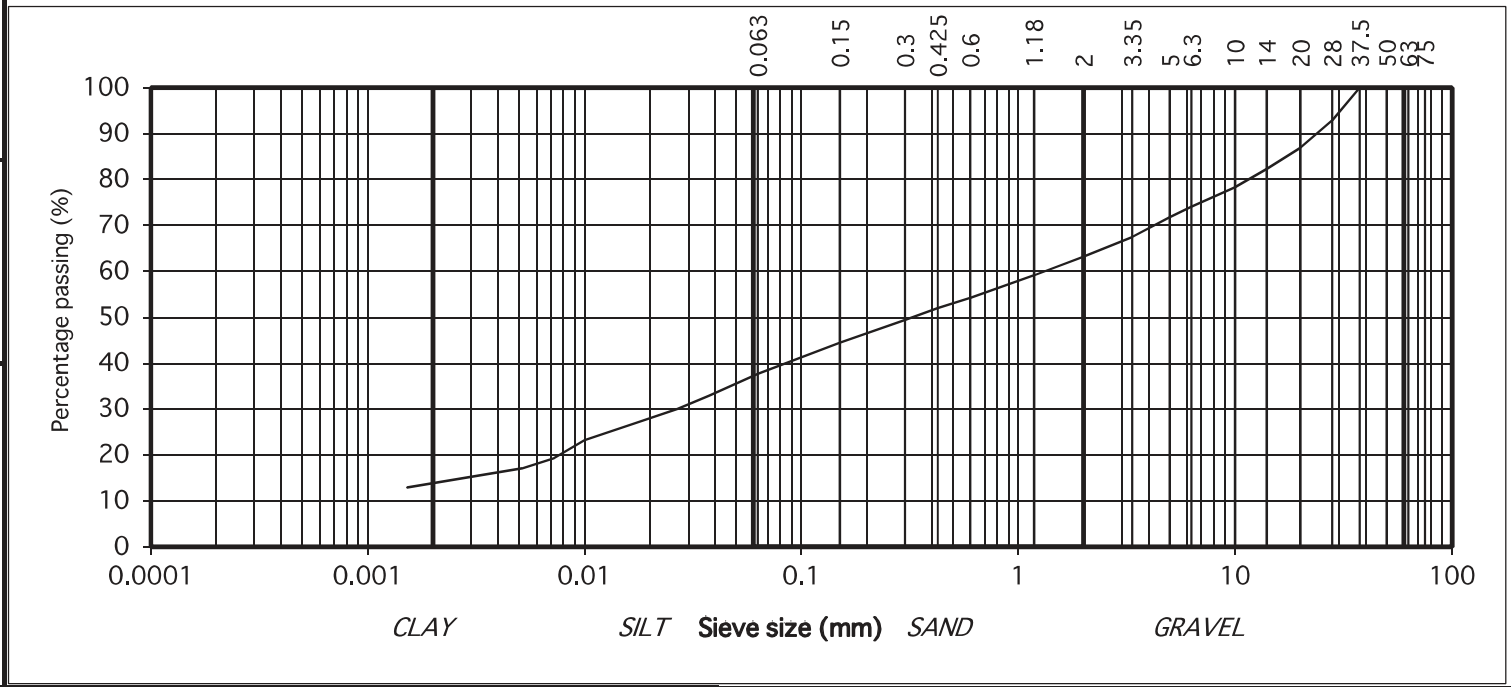
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	99	
6.3	99	
5	98	
3.35	97	
2	96	
1.18	95	SAND
0.6	93	
0.425	92	
0.3	90	
0.15	88	
0.063	86	SILT/CLAY
0.038	78	
0.027	68	
0.017	59	
0.010	47	
0.007	38	
0.005	28	
0.002	13	

Contract No.	23560	Report No.	R143991	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP153301			
Sample No.*	AA175226	Lab. Sample No.		A22/3392
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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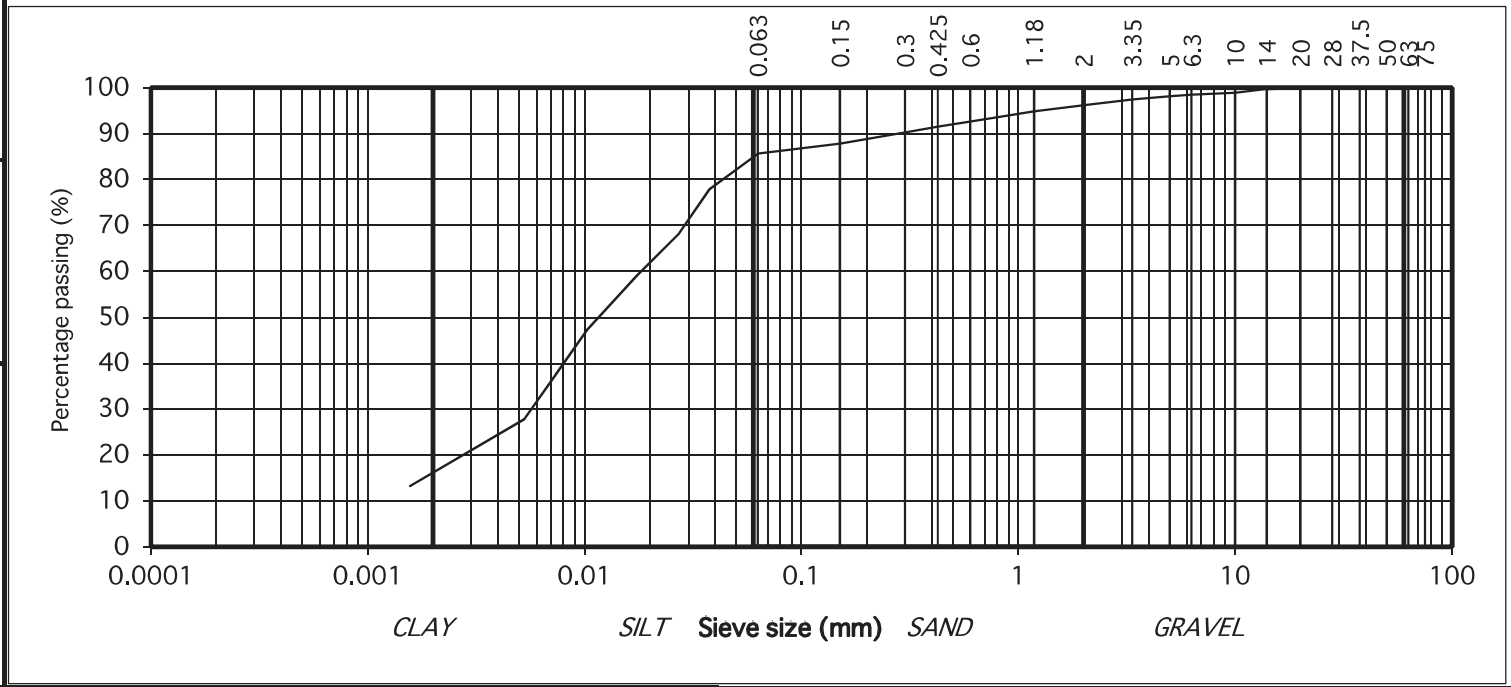
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	94	
20	87	
14	83	
10	77	
6.3	71	
5	68	
3.35	65	
2	61	
1.18	57	SAND
0.6	52	
0.425	50	
0.3	47	
0.15	42	
0.063	35	SILT/CLAY
0.037	29	
0.027	26	
0.017	24	
0.010	21	
0.007	18	
0.005	16	
0.002	11	

Contract No.	23560	Report No.	R137422	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156000			
Sample No.*	AA175186	Lab. Sample No.		A22/3393
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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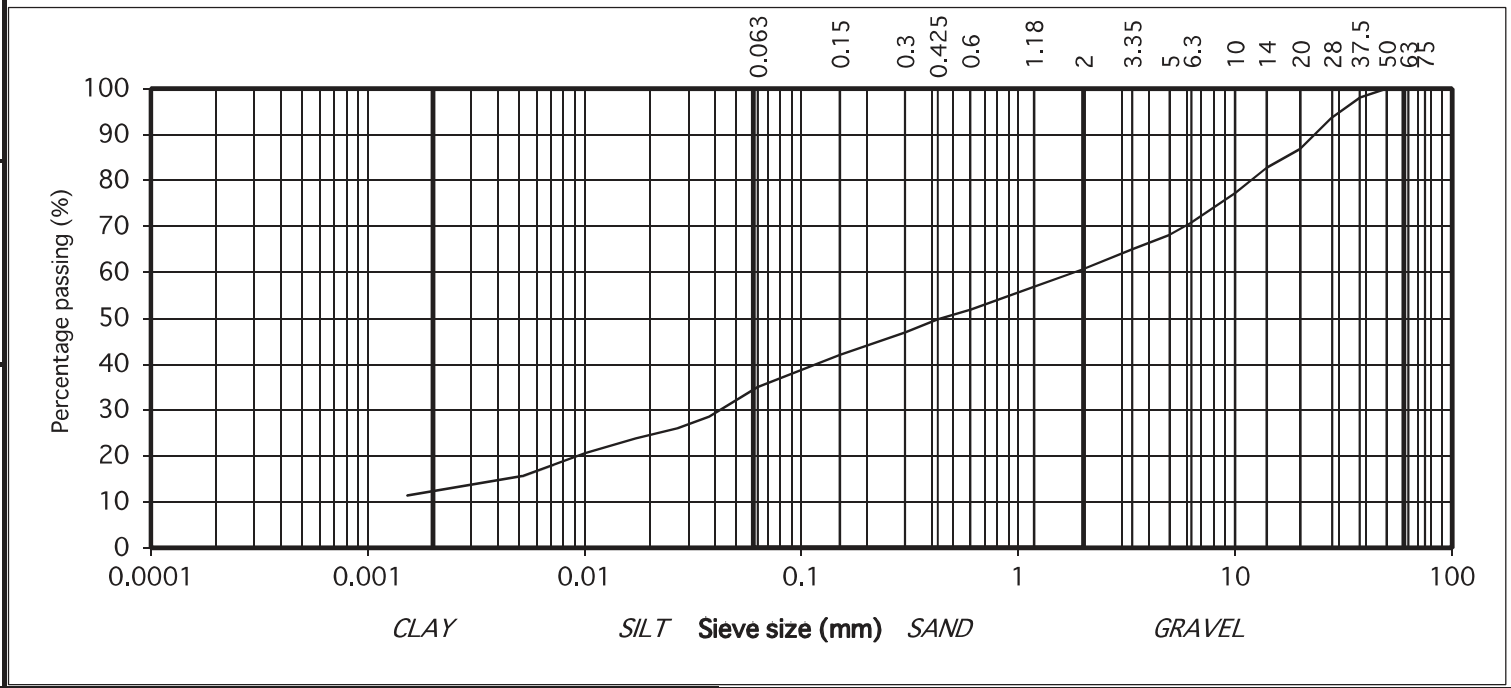
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	90	
50	86	GRAVEL
37.5	76	
28	69	
20	67	
14	61	
10	57	
6.3	51	
5	48	
3.35	46	
2	41	
1.18	38	SAND
0.6	33	
0.425	31	
0.3	29	
0.15	25	
0.063	19	SILT/CLAY
0.037	16	
0.027	14	
0.017	13	
0.010	11	
0.007	10	
0.005	9	
0.002	6	

Contract No.	23560	Report No.	R137423	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156099			
Sample No.*	AA175184	Lab. Sample No.		A22/3395
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown clayey/silty, very sandy, GRAVEL with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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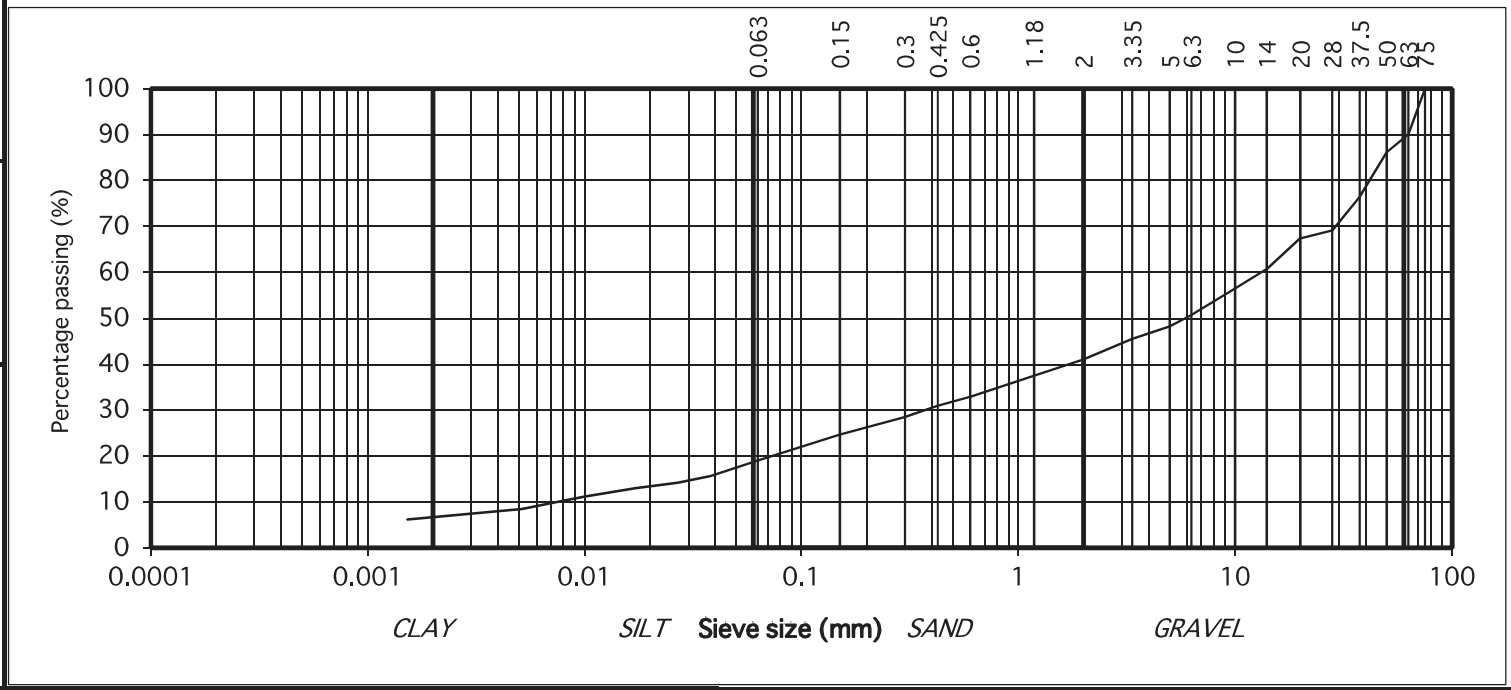
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	91	
50	91	GRAVEL
37.5	87	
28	83	
20	79	
14	74	
10	69	
6.3	64	
5	61	
3.35	57	
2	52	
1.18	48	SAND
0.6	43	
0.425	41	
0.3	39	
0.15	36	
0.063	32	SILT/CLAY
0.037	28	
0.027	26	
0.017	23	
0.010	20	
0.007	17	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R139519	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156000			
Sample No.*	AA175187	Lab. Sample No.		A22/3394
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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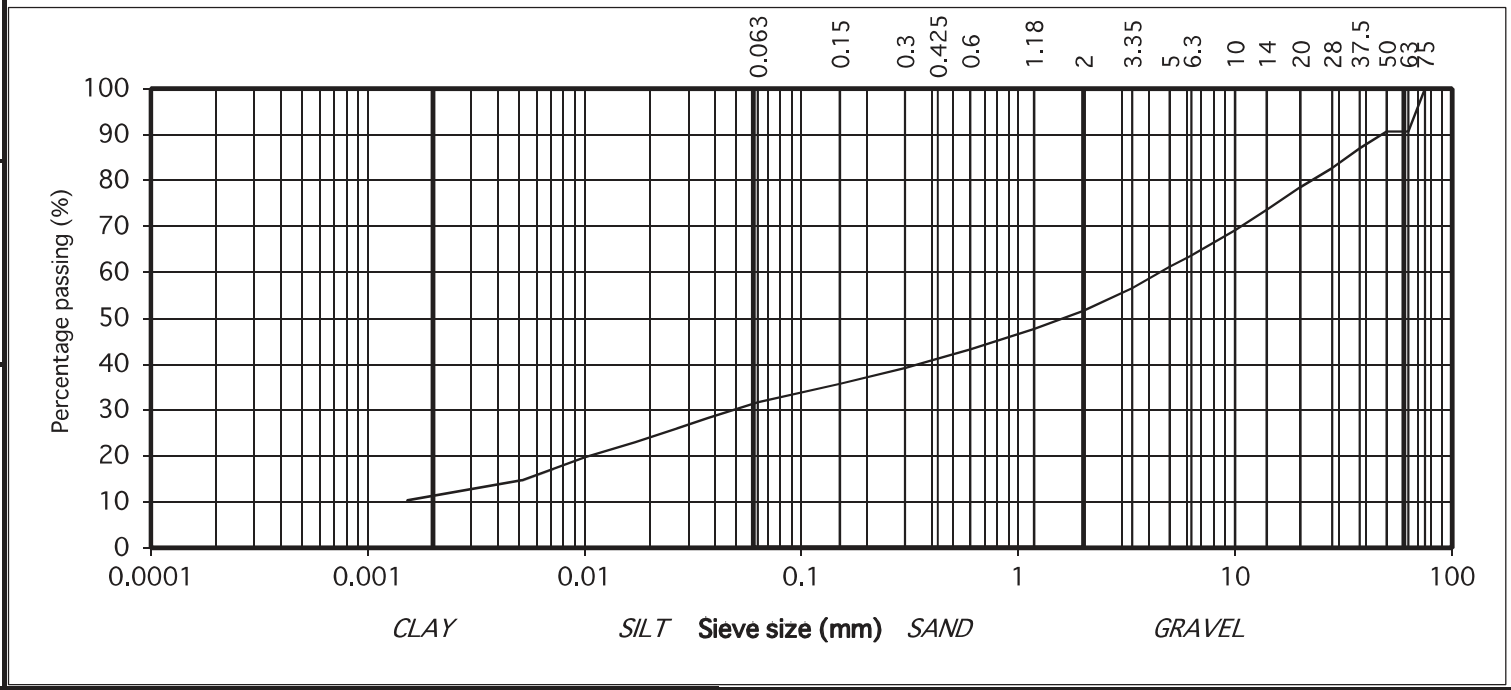
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	89	
14	83	
10	78	
6.3	71	
5	68	
3.35	63	
2	58	
1.18	53	SAND
0.6	47	
0.425	44	
0.3	41	
0.15	34	
0.063	26	SILT/CLAY
0.037	22	
0.027	20	
0.017	17	
0.010	15	
0.007	13	
0.005	12	
0.002	9	

Contract No.	23560	Report No.	R137424	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156204			
Sample No.*	AA175182	Lab. Sample No.		A22/3397
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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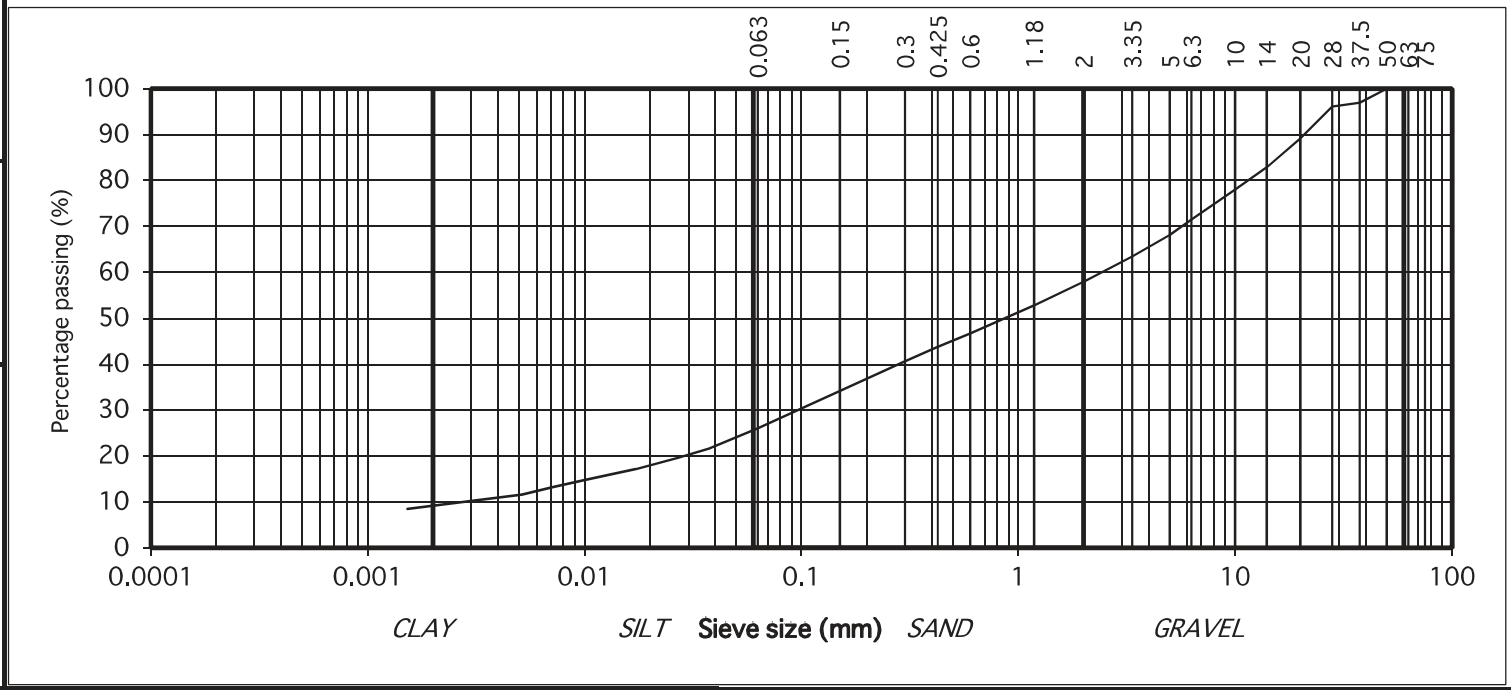
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	89	
50	89	GRAVEL
37.5	86	
28	82	
20	77	
14	73	
10	70	
6.3	65	
5	63	
3.35	60	
2	57	
1.18	53	SAND
0.6	48	
0.425	46	
0.3	44	
0.15	39	
0.063	33	SILT/CLAY
0.037	28	
0.027	26	
0.017	22	
0.010	19	
0.007	17	
0.005	15	
0.002	11	

Contract No. 23560 Report No. R137425
Contract Name: WSP - Lot 3
BH/TP* : TP156299
Sample No.* AA175179 Lab. Sample No. A22/3398
Sample Type: B
Depth* (m) 0.50 Customer: Ervia
Date Received 13/08/2022 Date Testing started 13/08/2022
Description: Brown slightly sandy, gravelly, SILT/CLAY with some cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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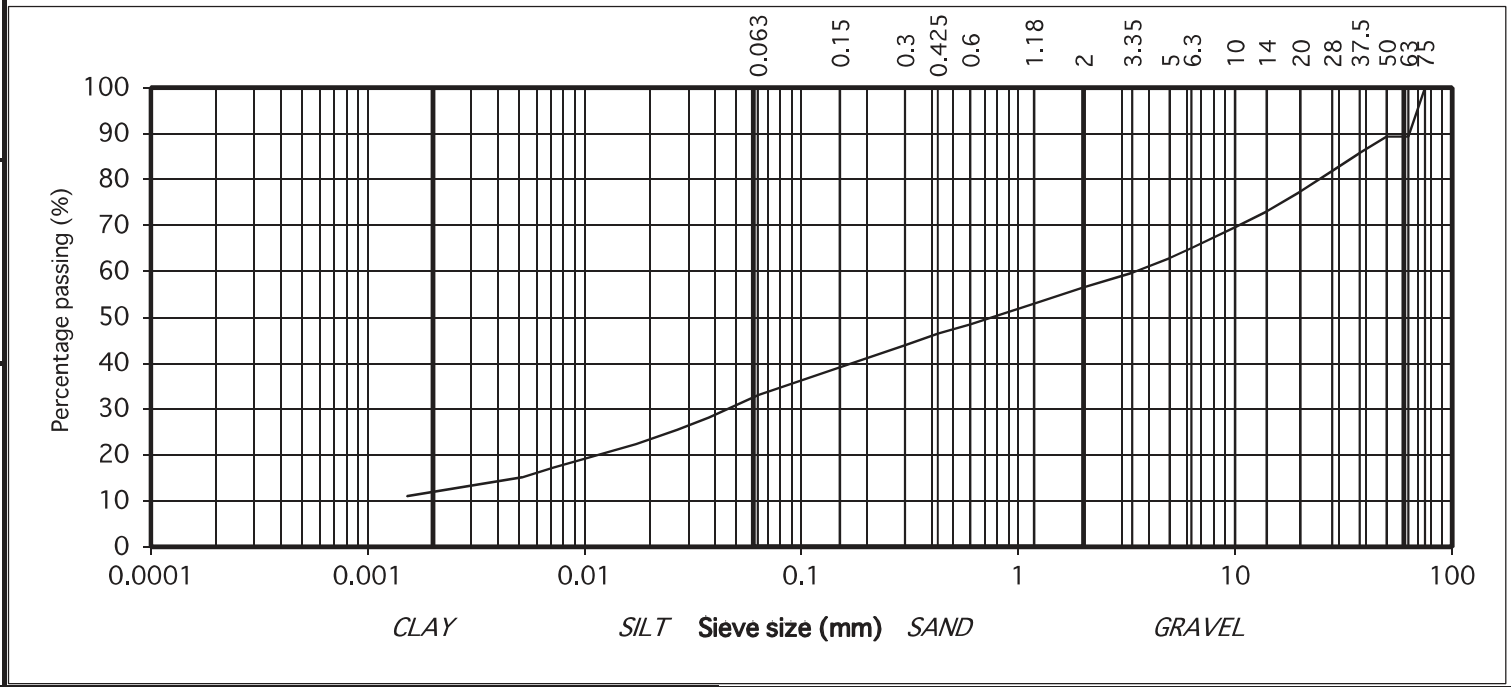

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	86	
20	79	
14	73	
10	69	
6.3	63	
5	60	
3.35	52	
2	43	
1.18	36	SAND
0.6	28	
0.425	23	
0.3	19	
0.15	12	
0.063	7	SILT/CLAY

Contract No.	23560	Report No.	R143993	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156299			
Sample No.*	AA175180	Lab. Sample No.		A22/3399
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey clayey/silty, very sandy, GRAVEL			

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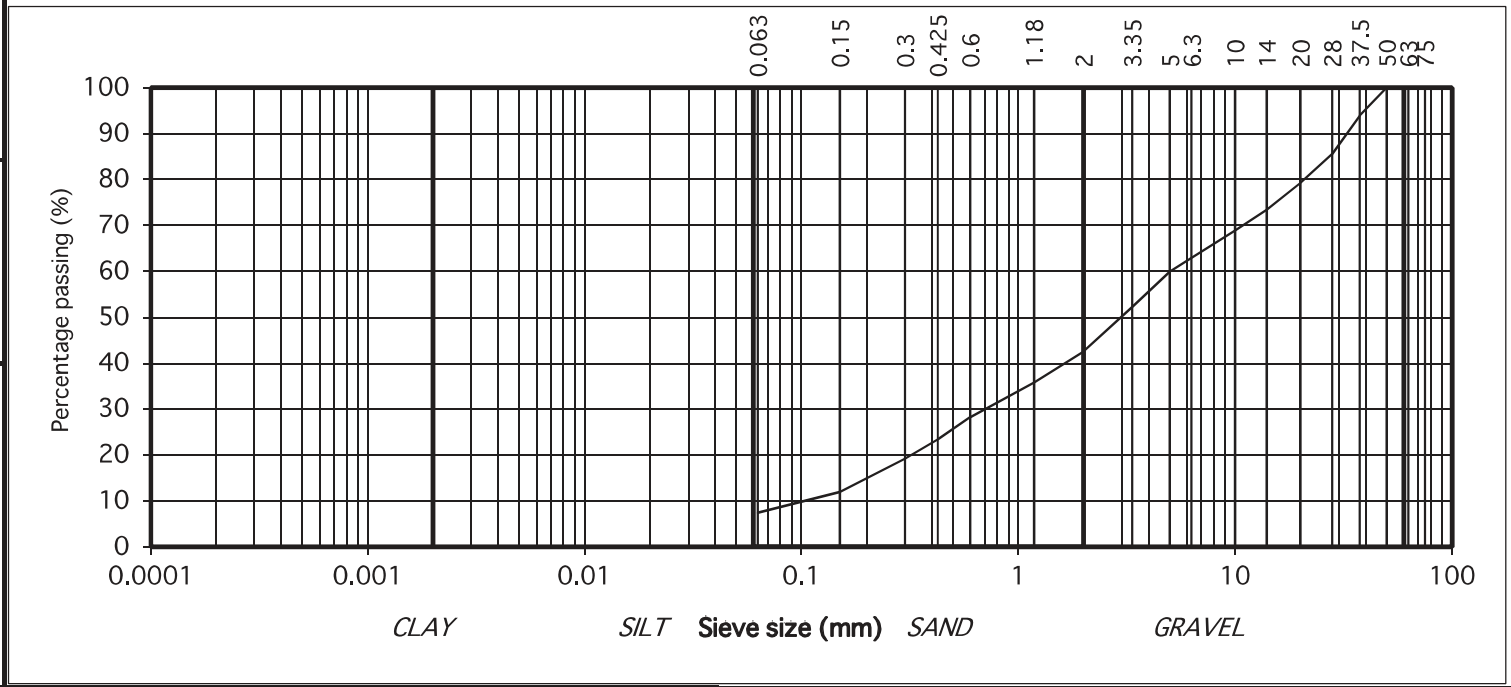
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	92	
50	88	GRAVEL
37.5	88	
28	86	
20	78	
14	73	
10	69	
6.3	63	
5	60	
3.35	55	
2	50	
1.18	45	SAND
0.6	40	
0.425	38	
0.3	35	
0.15	31	
0.063	25	SILT/CLAY
0.037	21	
0.027	19	
0.017	17	
0.010	14	
0.007	12	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R137426	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156398			
Sample No.*	AA175178	Lab. Sample No.		A22/3401
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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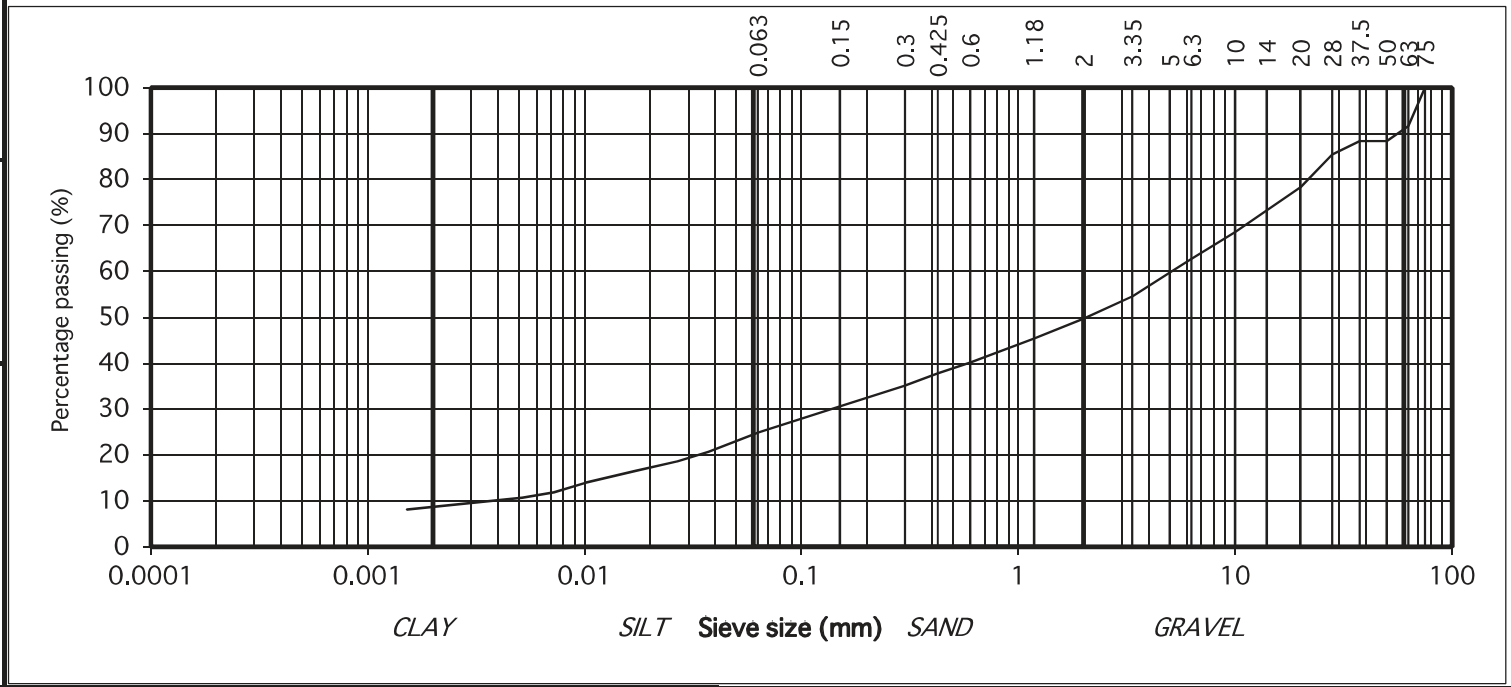

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	12/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	94	
14	91	
10	90	
6.3	87	
5	86	
3.35	83	
2	80	
1.18	77	SAND
0.6	73	
0.425	72	
0.3	70	
0.15	67	
0.063	64	SILT/CLAY
0.037	58	
0.027	51	
0.017	43	
0.010	36	
0.007	29	
0.005	24	
0.002	13	

Contract No.	23560	Report No.	R139528	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156499			
Sample No.*	AA175176	Lab. Sample No.		A22/3402
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown/grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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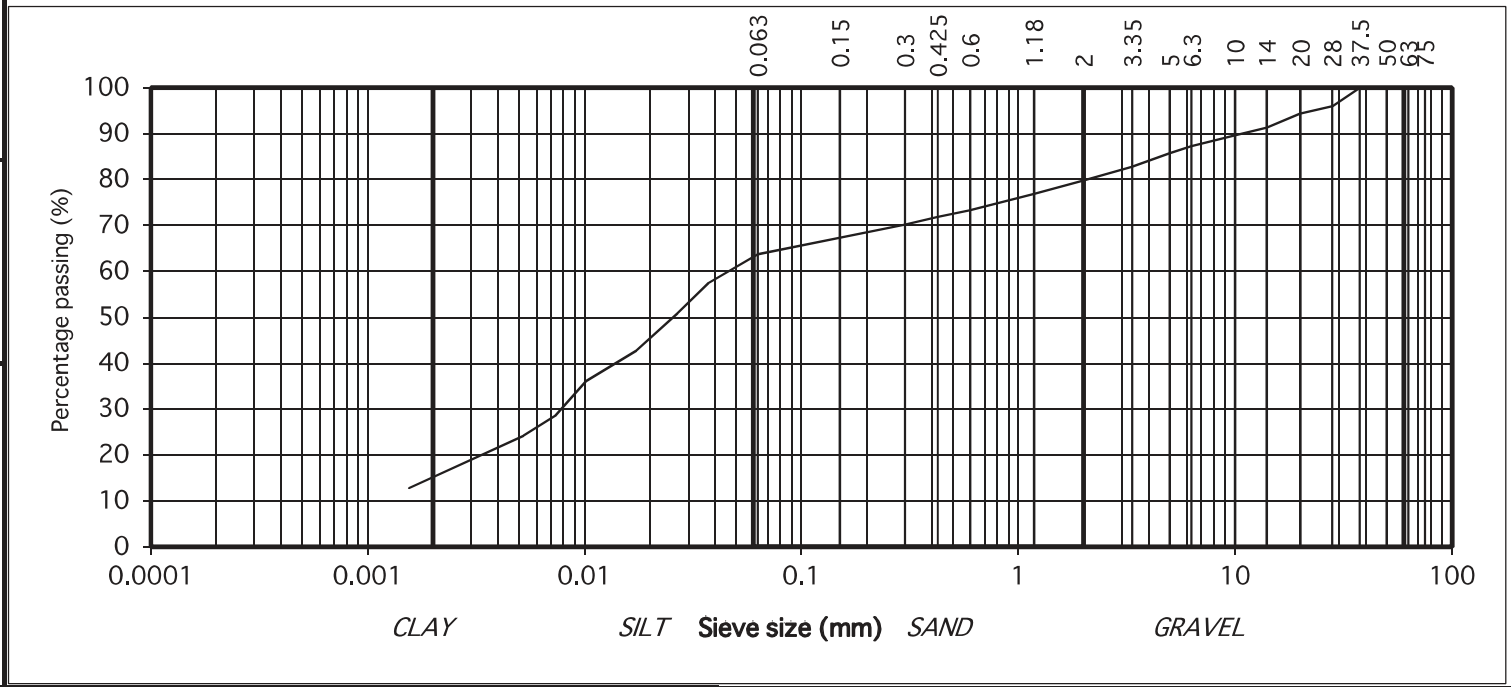

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	14/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	95	
20	91	
14	86	
10	82	
6.3	77	
5	74	
3.35	70	
2	64	
1.18	59	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	43	
0.063	37	SILT/CLAY
0.037	31	
0.027	28	
0.017	25	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R137427	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156601			
Sample No.*	AA175174	Lab. Sample No.		A22/3404
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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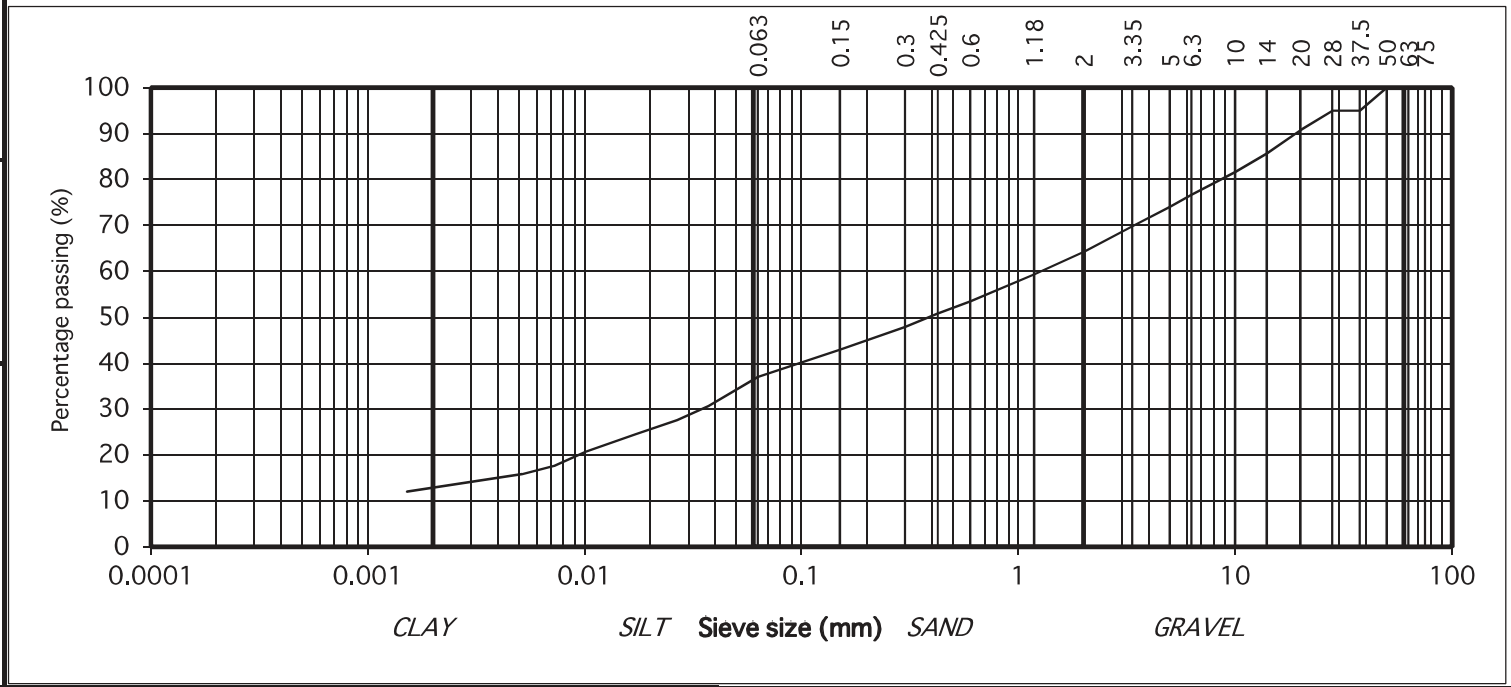

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	87	
28	84	
20	81	
14	77	
10	72	
6.3	67	
5	65	
3.35	61	
2	57	
1.18	53	SAND
0.6	48	
0.425	46	
0.3	43	
0.15	38	
0.063	34	SILT/CLAY
0.037	31	
0.027	29	
0.017	25	
0.010	21	
0.007	19	
0.005	17	
0.002	13	

Contract No.	23560	Report No.	R139522	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156601			
Sample No.*	AA175173	Lab. Sample No.		A22/3403
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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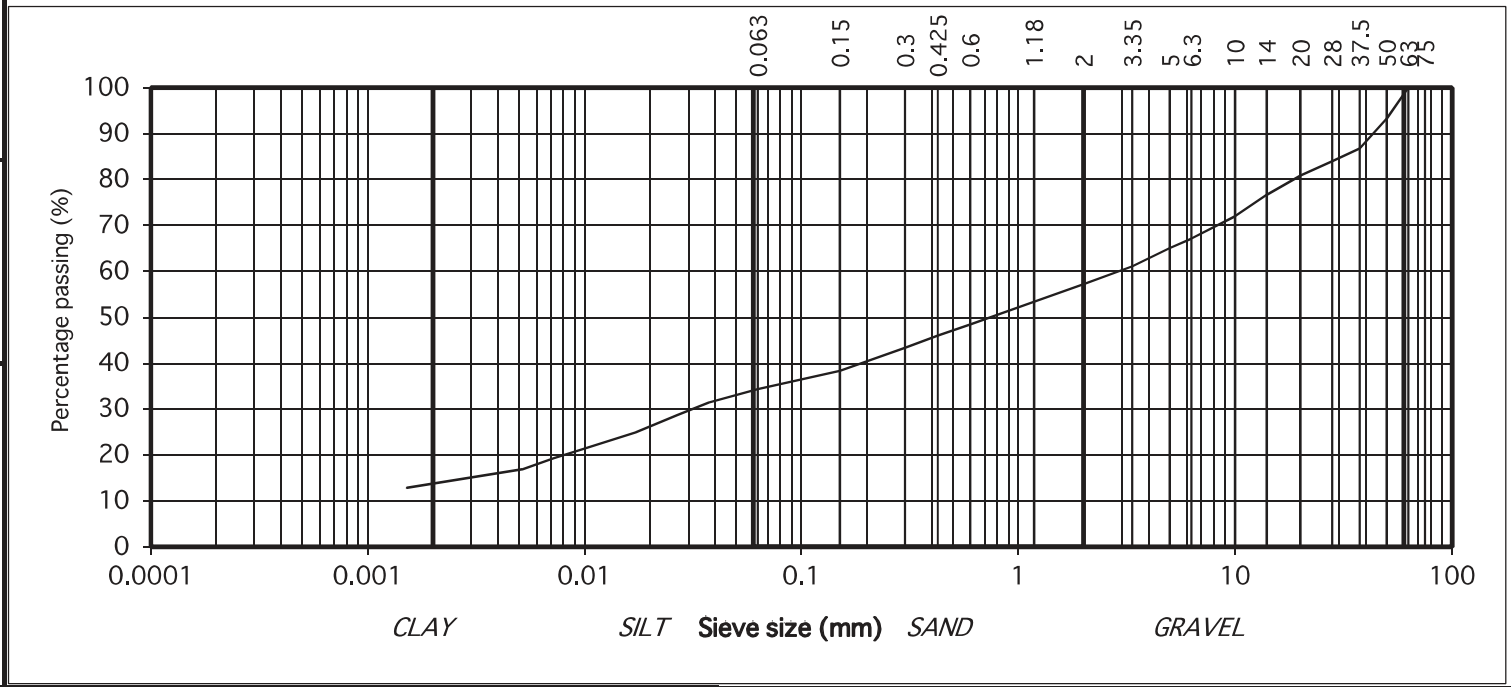

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

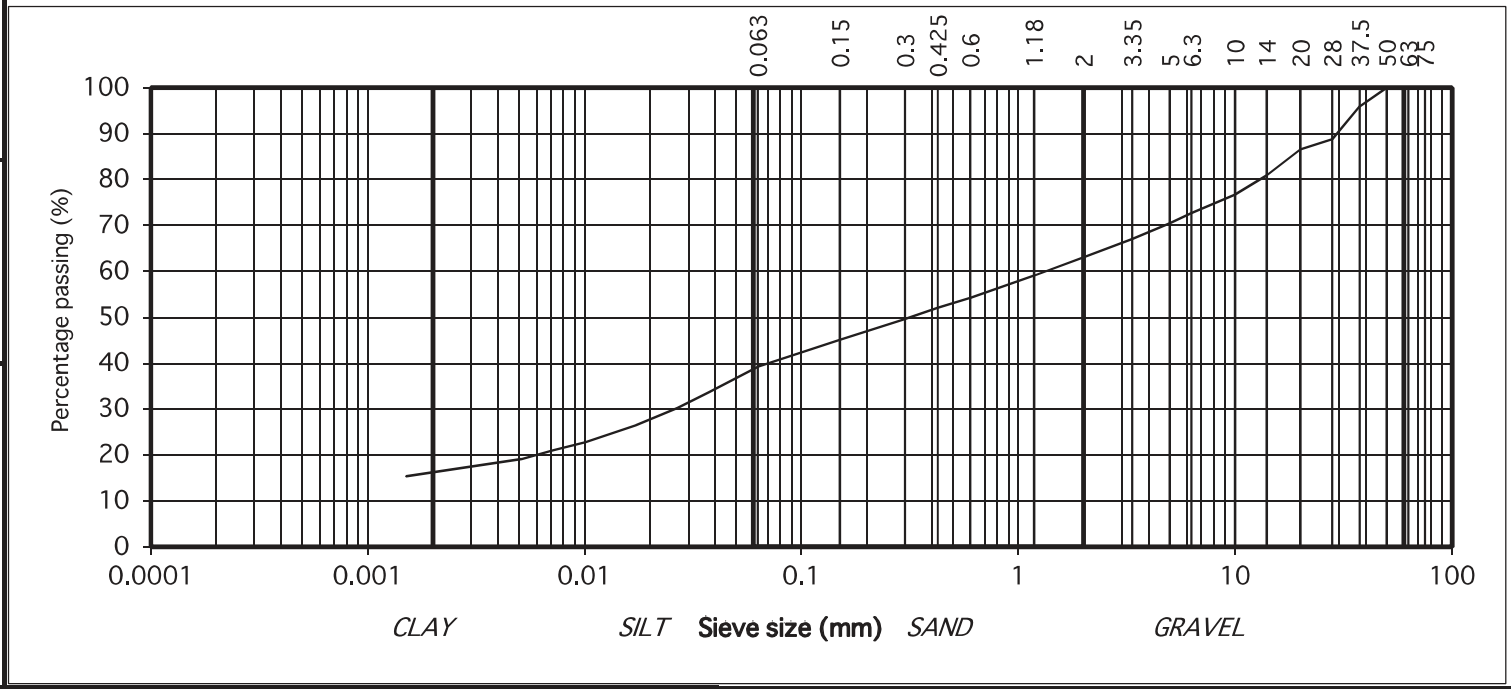
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	89	
20	87	
14	81	
10	77	
6.3	73	
5	71	
3.35	67	
2	63	
1.18	59	SAND
0.6	54	
0.425	52	
0.3	50	
0.15	45	
0.063	39	SILT/CLAY
0.037	34	
0.027	30	
0.017	27	
0.010	23	
0.007	21	
0.005	19	
0.002	15	

Contract No.	23560	Report No.	R137428	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156701			
Sample No.*	AA170165	Lab. Sample No.		A22/3405
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	91	
50	86	GRAVEL
37.5	84	
28	77	
20	75	
14	72	
10	69	
6.3	65	
5	63	
3.35	60	
2	57	
1.18	54	SAND
0.6	50	
0.425	49	
0.3	47	
0.15	43	
0.063	37	SILT/CLAY
0.037	32	
0.027	29	
0.017	25	
0.010	22	
0.007	20	
0.005	18	
0.002	14	

Contract No.	23560	Report No.	R137429	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156803			
Sample No.*	AA170161	Lab. Sample No.		A22/3407
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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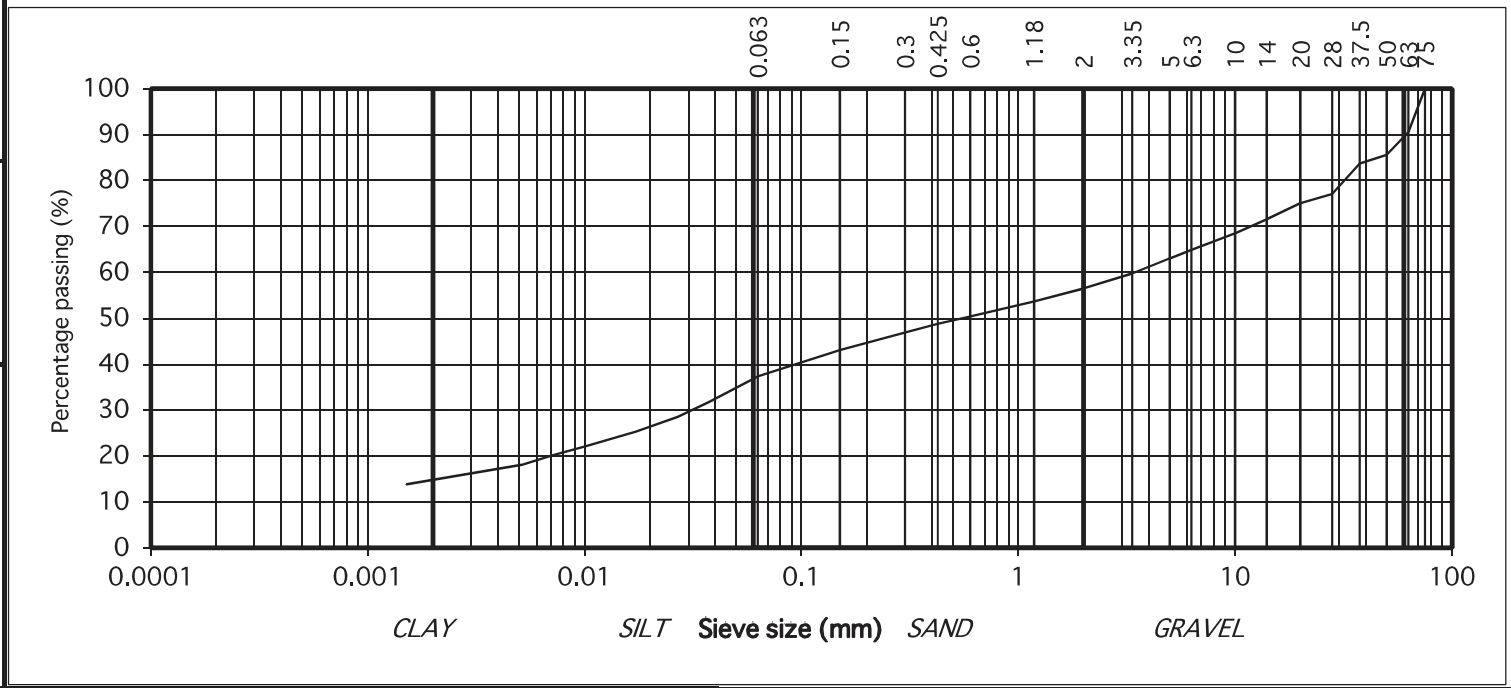

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	87	
28	82	
20	79	
14	76	
10	72	
6.3	69	
5	66	
3.35	61	
2	54	
1.18	49	SAND
0.6	44	
0.425	41	
0.3	37	
0.15	31	
0.063	27	SILT/CLAY
0.038	23	
0.027	21	
0.017	19	
0.010	17	
0.007	15	
0.005	13	
0.002	10	

Contract No.	23560	Report No.	R143996	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156803			
Sample No.*	AA170162	Lab. Sample No.		A22/3407
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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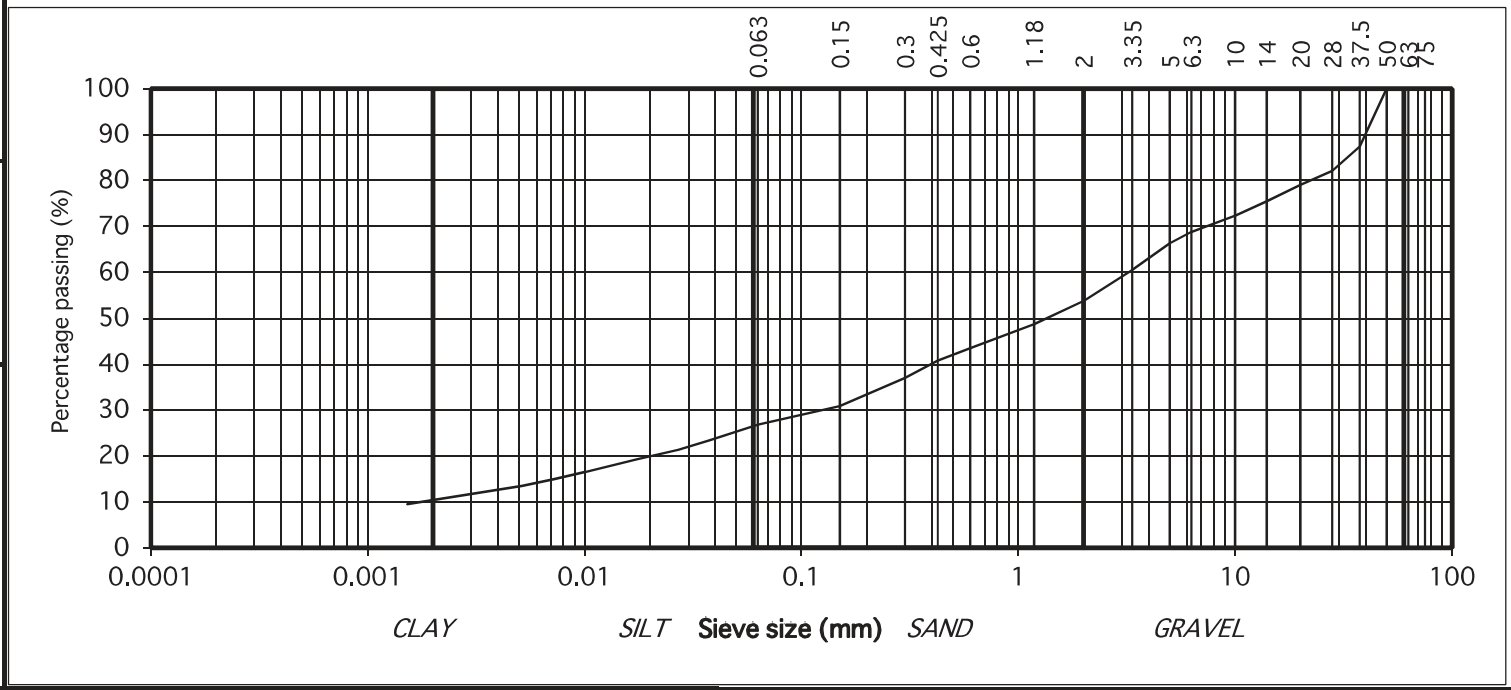
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	94	
20	89	
14	84	
10	79	
6.3	73	
5	71	
3.35	67	
2	63	
1.18	59	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	43	
0.063	35	SILT/CLAY
0.037	30	
0.027	26	
0.017	25	
0.010	22	
0.007	19	
0.005	17	
0.002	13	

Contract No. 23560 Report No. R138754
Contract Name: WSP - Lot 3
BH/TP* : TP156965
Sample No.* AA170168 Lab. Sample No. A22/3411
Sample Type: B
Depth* (m) 2.50 Customer: Ervia
Date Received 08/08/2022 Date Testing started 08/08/2022
Description: Grey/Brown slightly sandy, gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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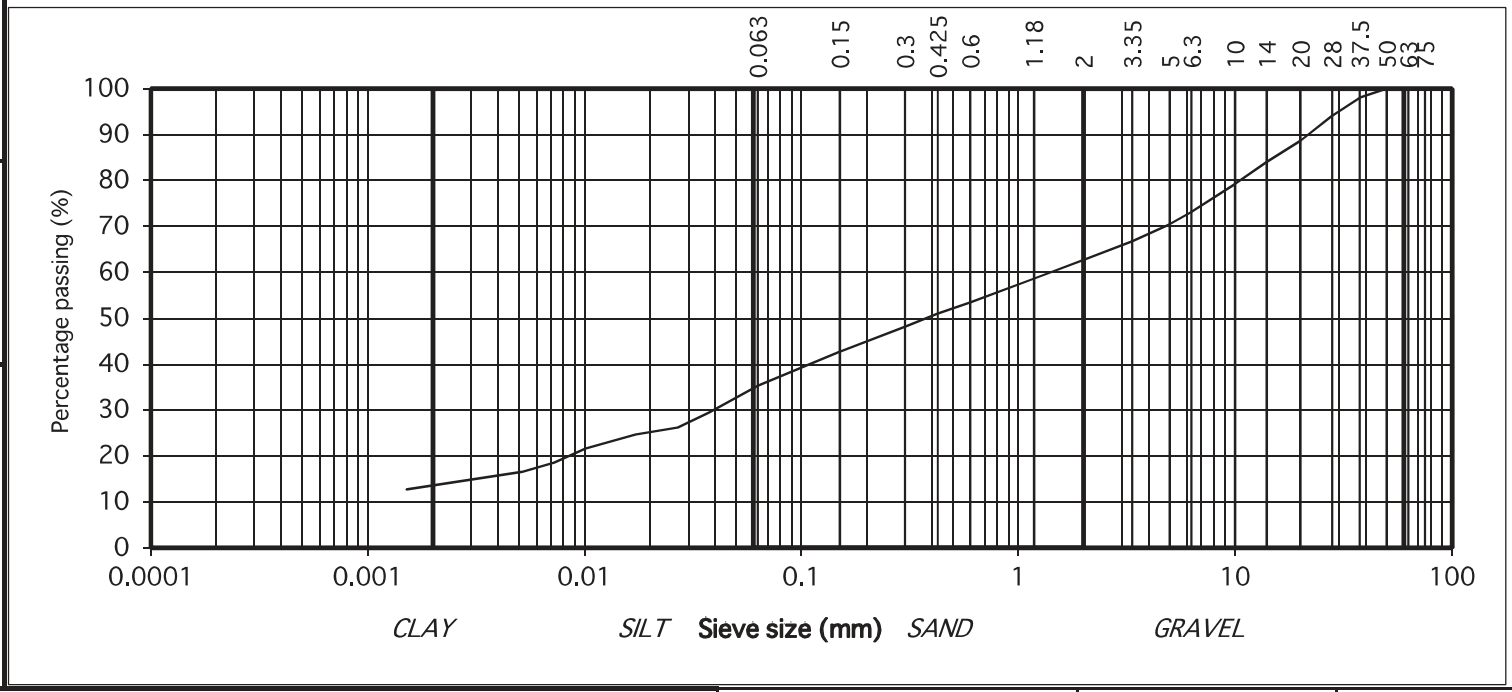

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	92	
14	90	
10	88	
6.3	84	
5	83	
3.35	78	
2	74	
1.18	71	SAND
0.6	68	
0.425	66	
0.3	64	
0.15	60	
0.063	53	SILT/CLAY
0.037	45	
0.027	40	
0.017	35	
0.010	31	
0.007	26	
0.005	22	
0.002	14	

Contract No.	23560	Report No.	R137430	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP156895			
Sample No.*	AA170159	Lab. Sample No.		A22/3410
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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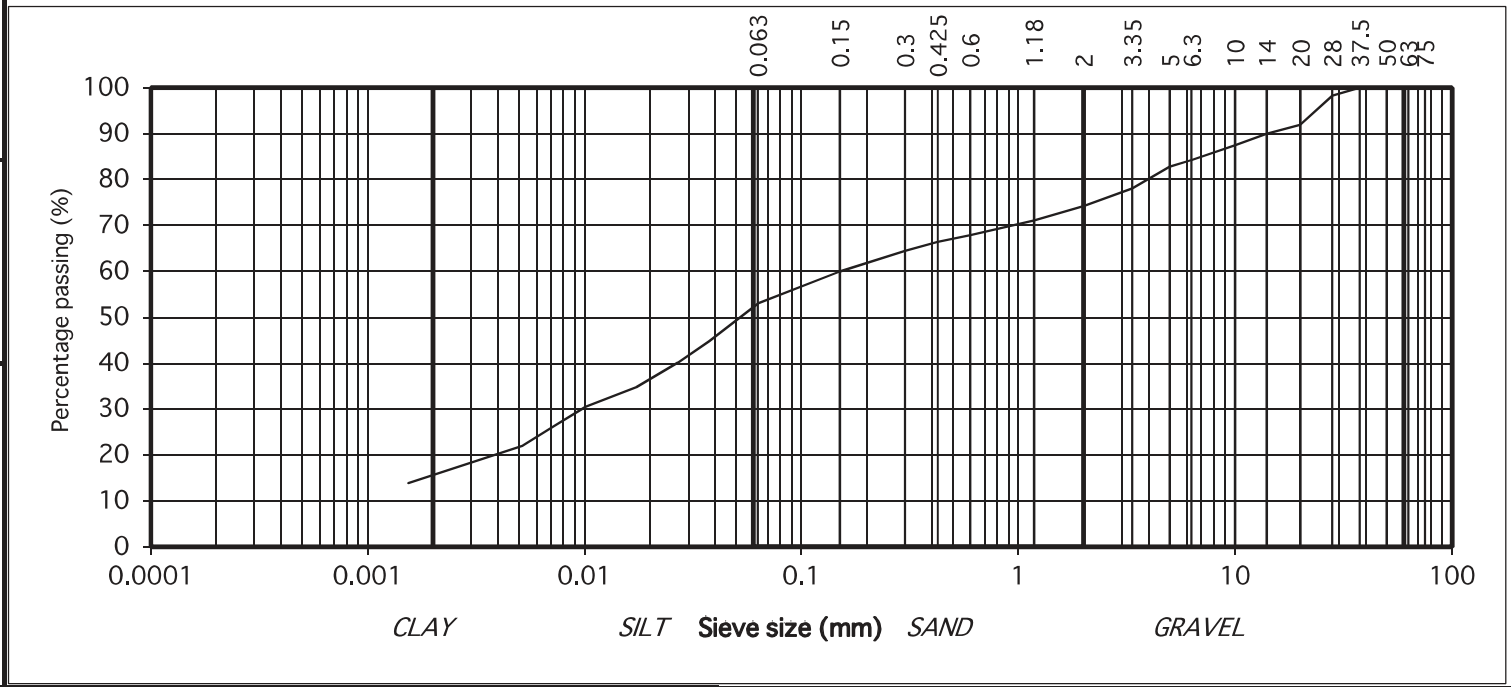
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	89	
20	85	
14	82	
10	79	
6.3	74	
5	72	
3.35	68	
2	63	
1.18	59	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	43	
0.063	36	SILT/CLAY
0.038	30	
0.027	28	
0.017	24	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R138755	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157100			
Sample No.*	AA170171	Lab. Sample No.		A22/3412
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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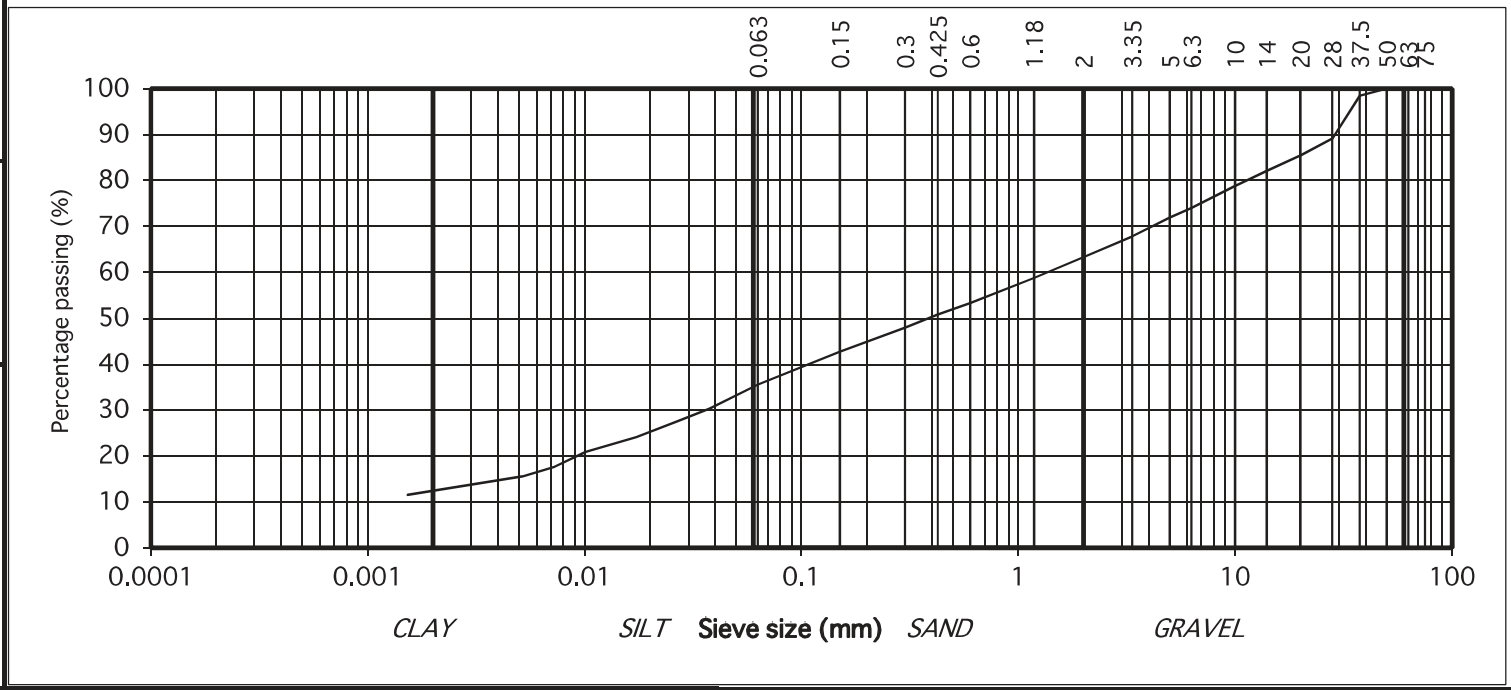
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	93	
14	92	
10	90	
6.3	87	
5	86	
3.35	83	
2	80	
1.18	77	SAND
0.6	74	
0.425	72	
0.3	70	
0.15	67	
0.063	63	SILT/CLAY
0.037	57	
0.027	51	
0.017	44	
0.010	37	
0.007	30	
0.005	24	
0.002	13	

Contract No.	23560	Report No.	R139529	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157202			
Sample No.*	AA170173	Lab. Sample No.		A22/3413
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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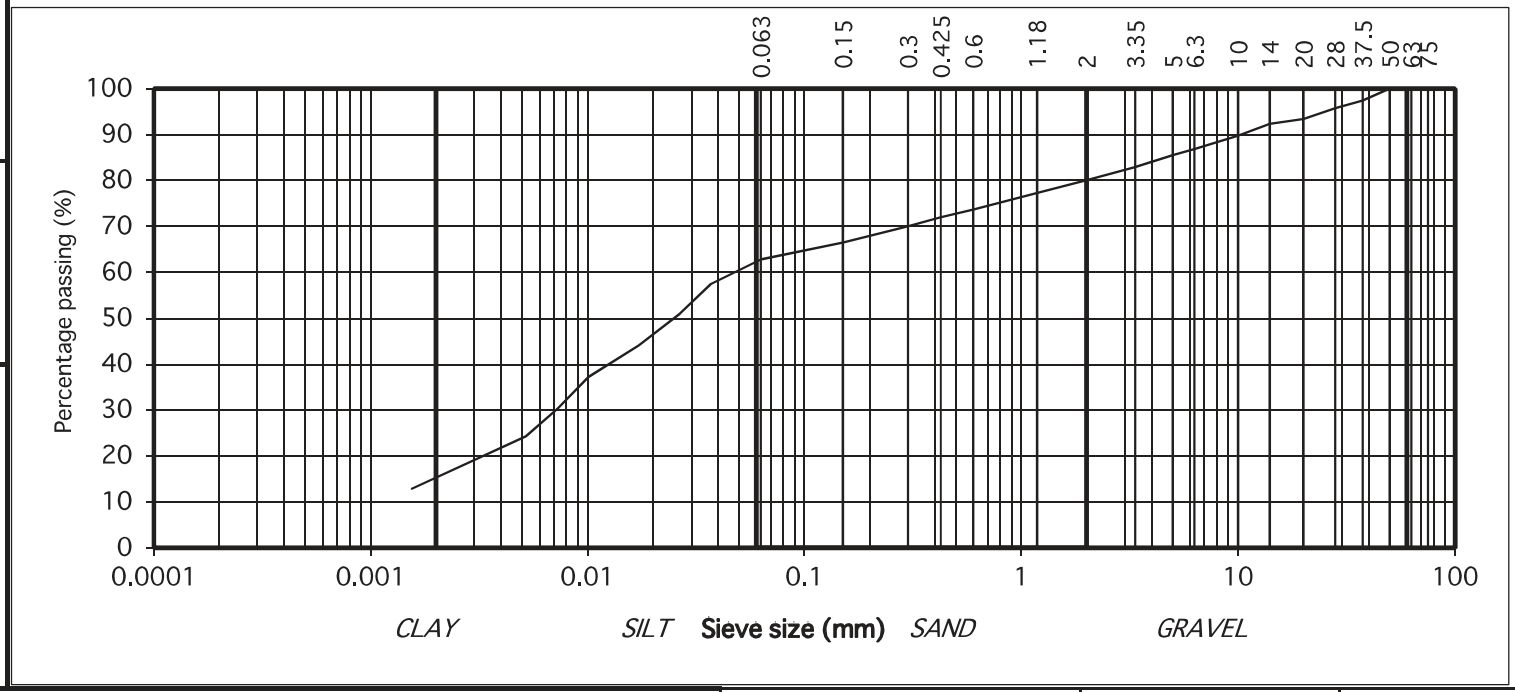
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	91	
50	87	GRAVEL
37.5	87	
28	85	
20	81	
14	77	
10	73	
6.3	69	
5	67	
3.35	62	
2	58	
1.18	55	SAND
0.6	50	
0.425	49	
0.3	47	
0.15	42	
0.063	36	SILT/CLAY
0.038	30	
0.027	26	
0.017	23	
0.010	20	
0.007	16	
0.005	14	
0.002	11	

Contract No.	23560	Report No.	R138756	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157202			
Sample No.*	AA170174	Lab. Sample No.		A22/3414
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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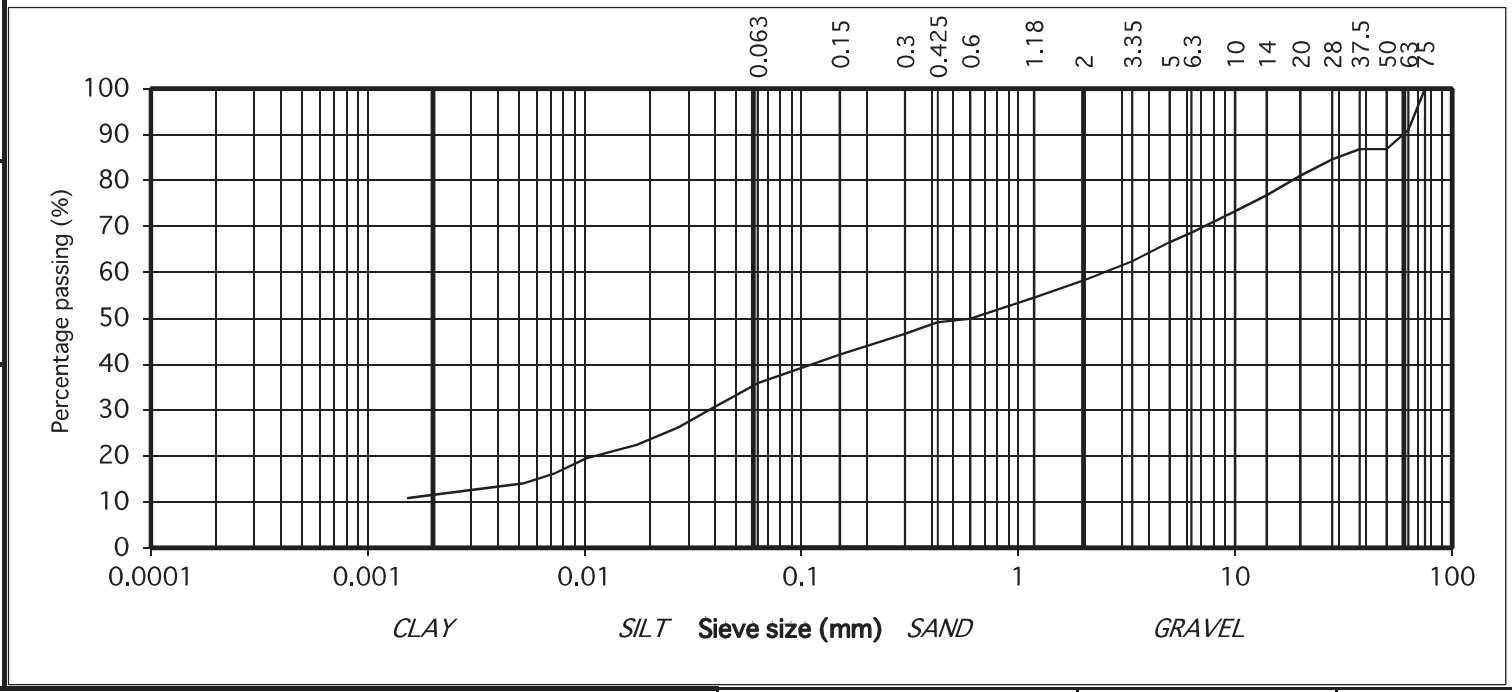

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	94	
14	91	
10	89	
6.3	86	
5	85	
3.35	82	
2	79	
1.18	77	SAND
0.6	74	
0.425	72	
0.3	71	
0.15	66	
0.063	58	SILT/CLAY
0.037	49	
0.027	44	
0.017	39	
0.010	32	
0.007	27	
0.005	23	
0.002	14	

Contract No.	23560	Report No.	R139308	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157300			
Sample No.*	AA170176	Lab. Sample No.		A22/4574
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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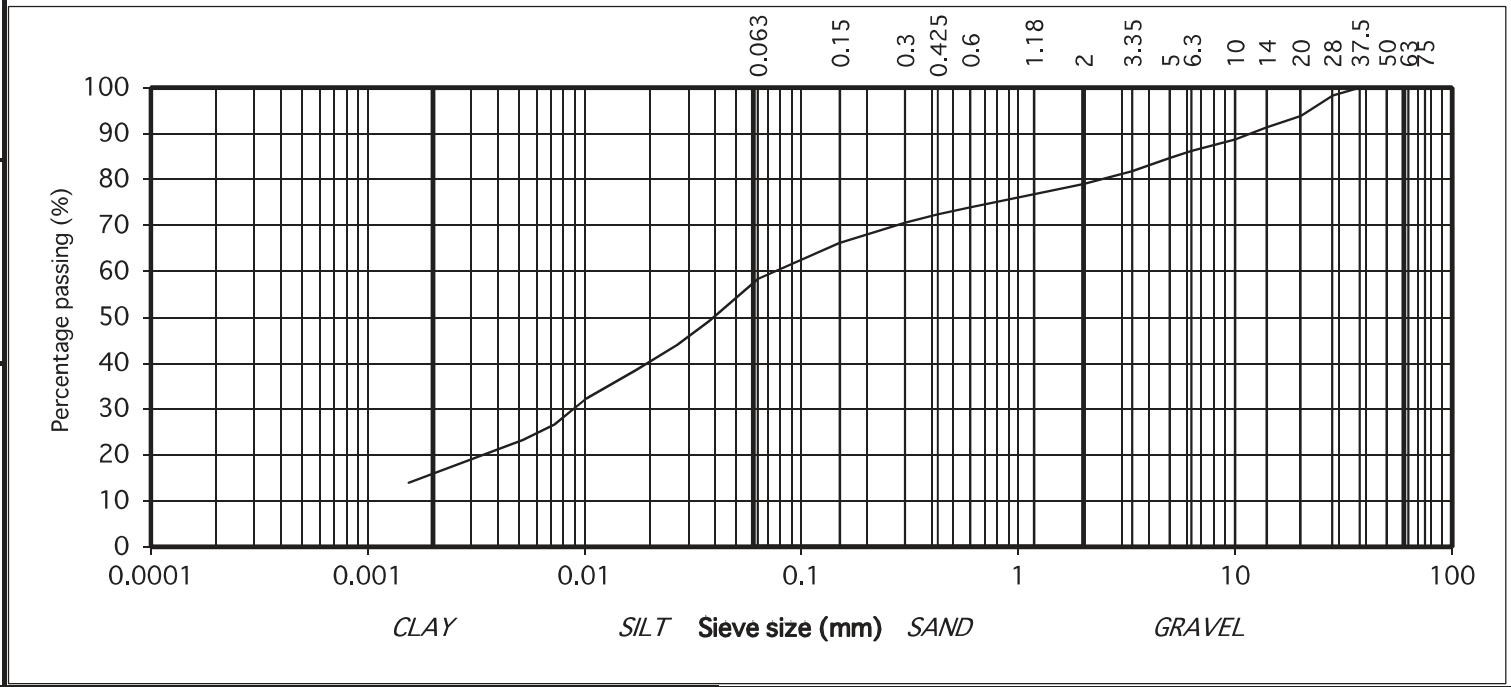
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	91	
28	86	
20	81	
14	77	
10	75	
6.3	72	
5	70	
3.35	68	
2	65	
1.18	62	SAND
0.6	59	
0.425	57	
0.3	55	
0.15	50	
0.063	43	SILT/CLAY
0.037	36	
0.027	32	
0.017	28	
0.010	24	
0.007	21	
0.005	18	
0.002	13	

Contract No.	23560	Report No.	R138757
Contract Name:	WSP - Lot 3		
BH/TP* :	TP157403		
Sample No.*	AA170179	Lab. Sample No.	A22/3415
Sample Type:	B		
Depth* (m)	1.50	Customer:	Ervia
Date Received	08/08/2022	Date Testing started	08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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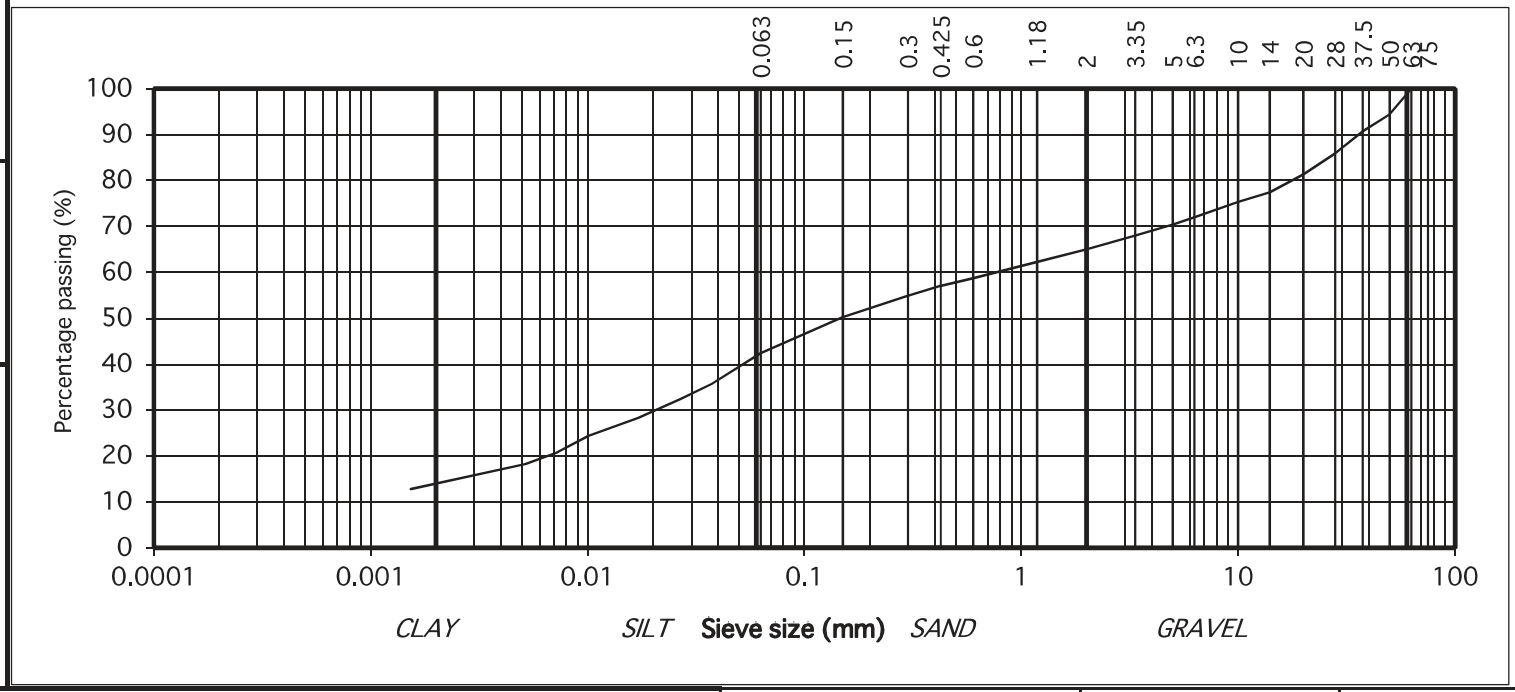
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	91	
28	91	
20	86	
14	83	
10	81	
6.3	77	
5	75	
3.35	71	
2	67	
1.18	63	SAND
0.6	58	
0.425	56	
0.3	54	
0.15	49	
0.063	42	SILT/CLAY
0.037	37	
0.027	33	
0.017	30	
0.010	25	
0.007	21	
0.005	19	
0.002	13	

Contract No.	23560	Report No.	R139517	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157300			
Sample No.*	AA170177	Lab. Sample No.		A22/4575
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	13/08/2022	Date Testing started		13/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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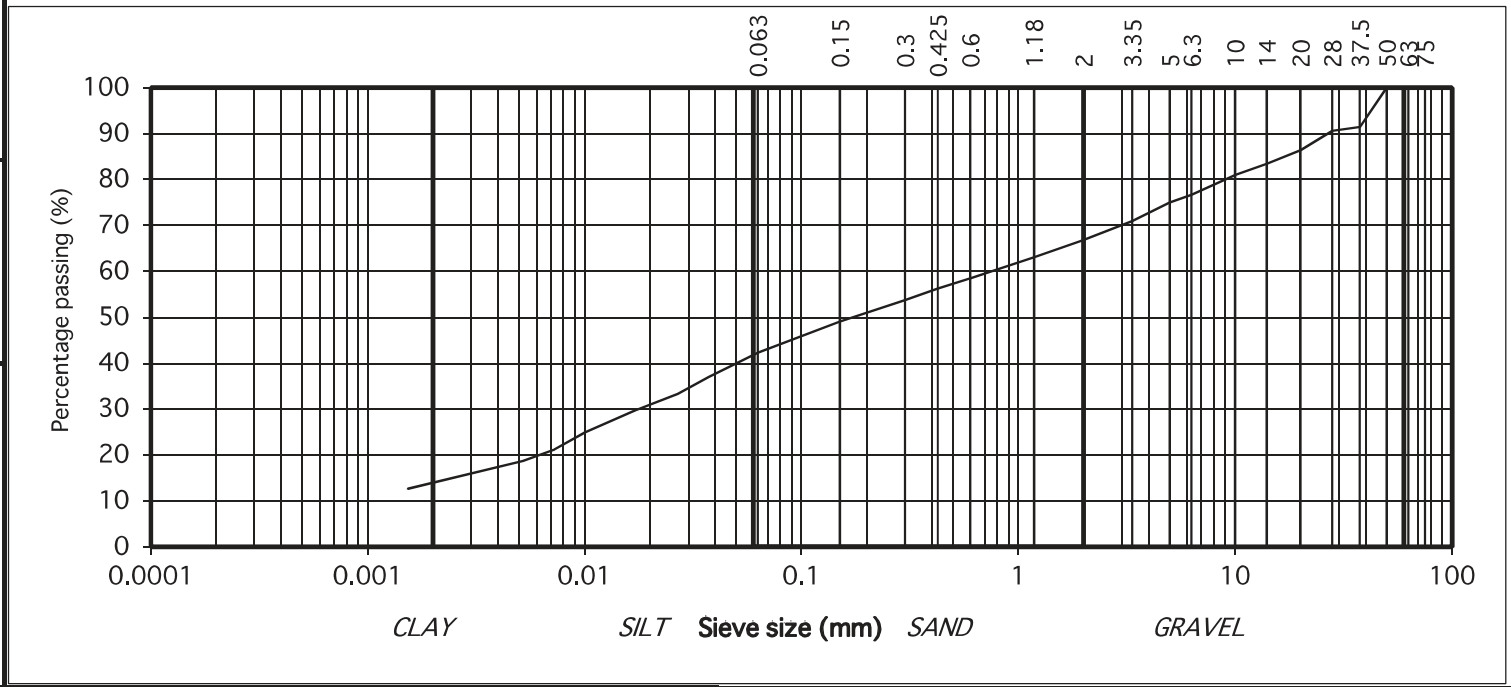
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	92	
20	89	
14	83	
10	78	
6.3	73	
5	70	
3.35	66	
2	61	
1.18	57	SAND
0.6	52	
0.425	49	
0.3	46	
0.15	41	
0.063	34	SILT/CLAY
0.037	28	
0.027	25	
0.017	22	
0.010	18	
0.007	15	
0.005	14	
0.002	10	

Contract No.	23560	Report No.	R138758	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157403			
Sample No.*	AA170180	Lab. Sample No.		A22/3416
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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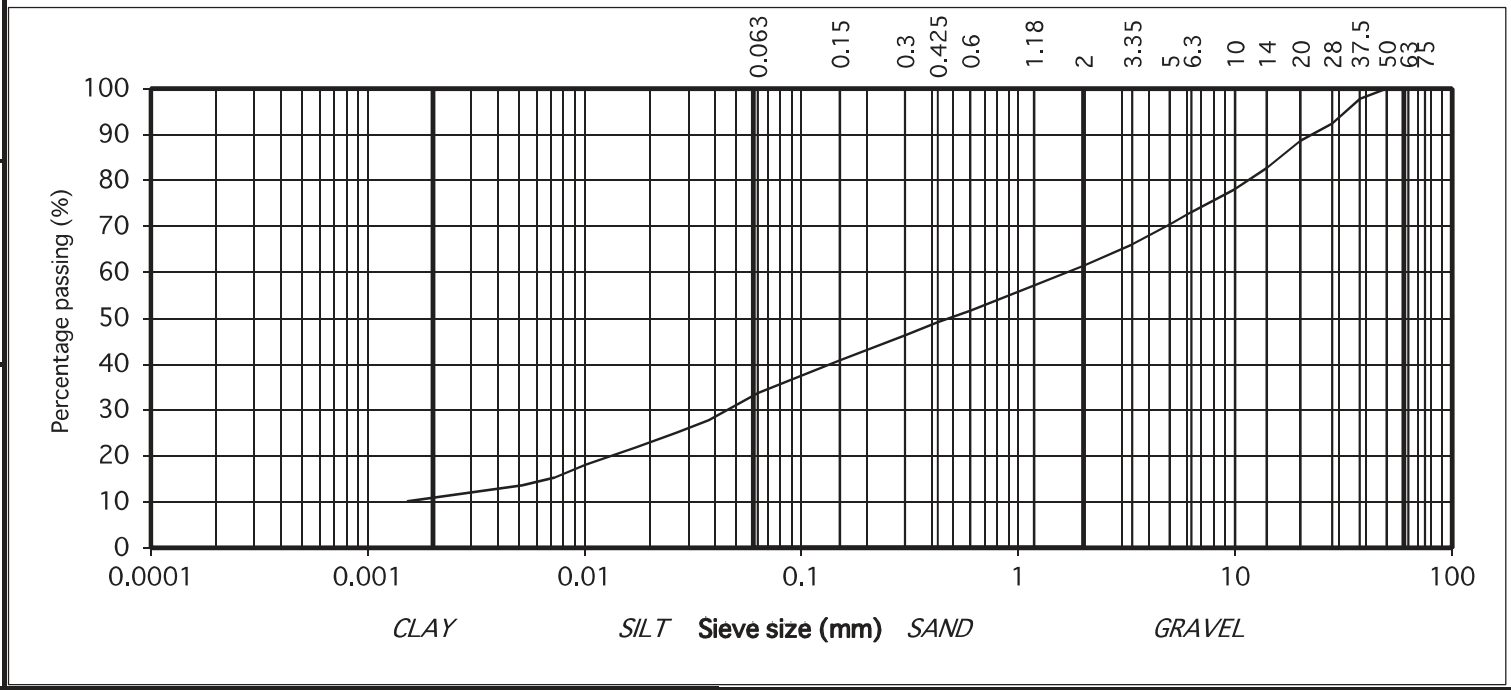
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

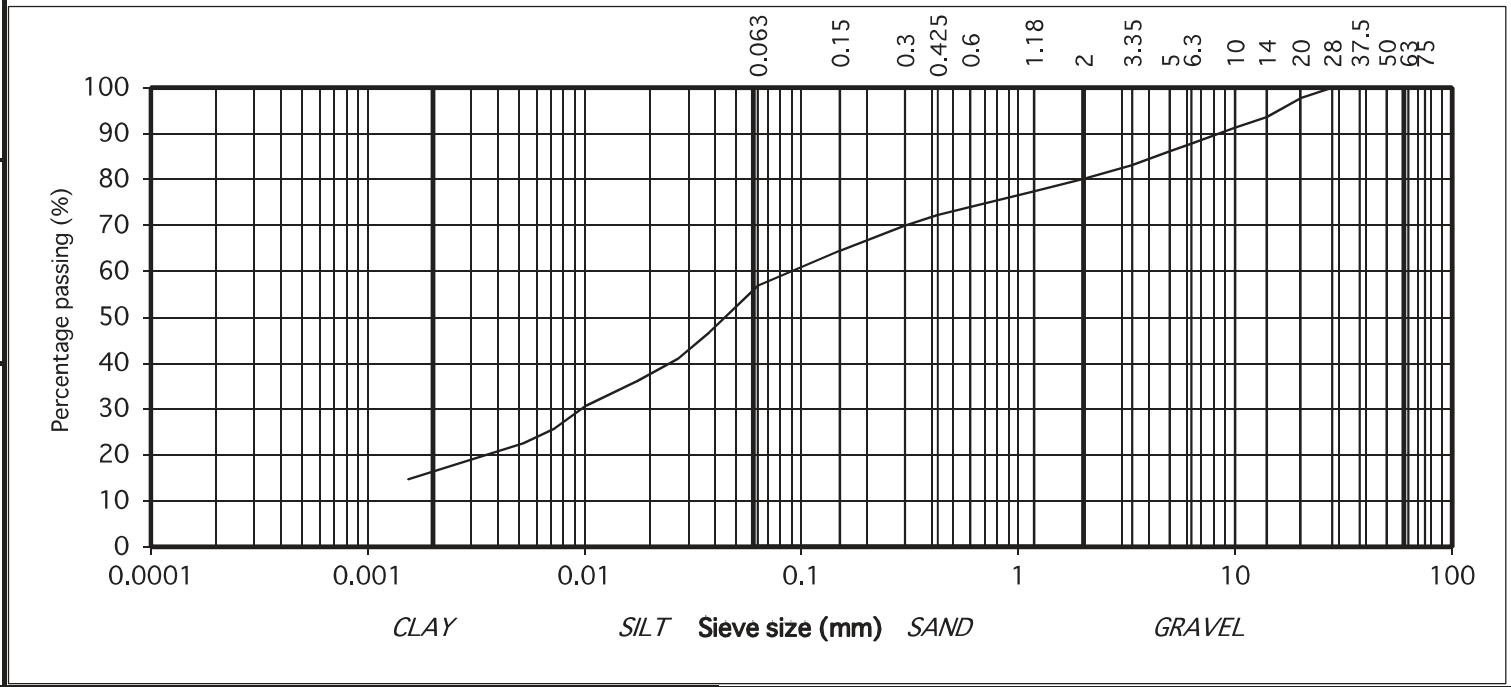
particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	94	
10	91	
6.3	88	
5	86	
3.35	83	
2	80	
1.18	77	SAND
0.6	74	
0.425	72	
0.3	70	
0.15	65	
0.063	57	SILT/CLAY
0.037	47	
0.027	41	
0.017	36	
0.010	31	
0.007	26	
0.005	23	
0.002	15	

Contract No.	23560	Report No.	R139536	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157502			
Sample No.*	AA170182	Lab. Sample No.		A22/3417
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	16/08/2022	Date Testing started		16/08/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	14/10/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	94	
20	88	
14	83	
10	78	
6.3	73	
5	70	
3.35	66	
2	62	
1.18	58	SAND
0.6	53	
0.425	51	
0.3	48	
0.15	42	
0.063	35	SILT/CLAY
0.037	29	
0.027	26	
0.017	23	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No.	23560	Report No.	R138760	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157585			
Sample No.*	AA170185	Lab. Sample No.		A22/3420
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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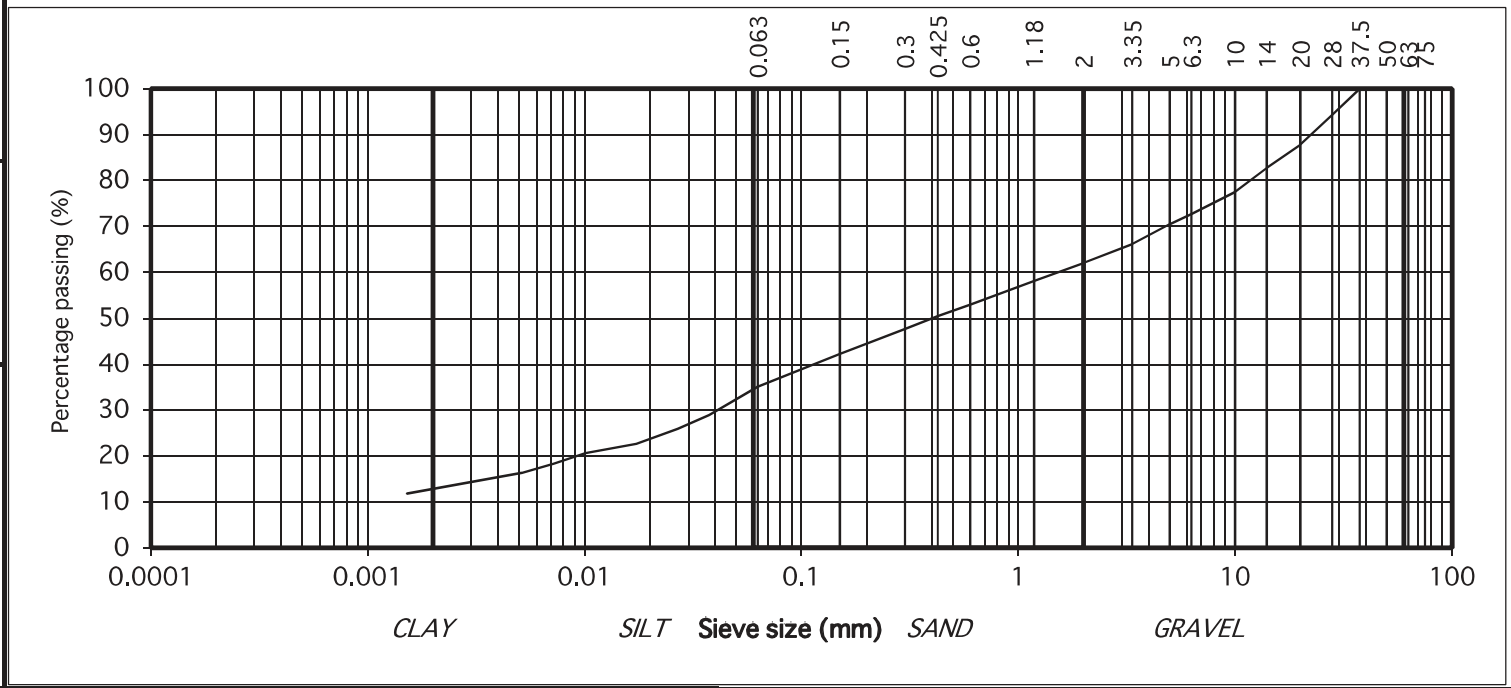
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

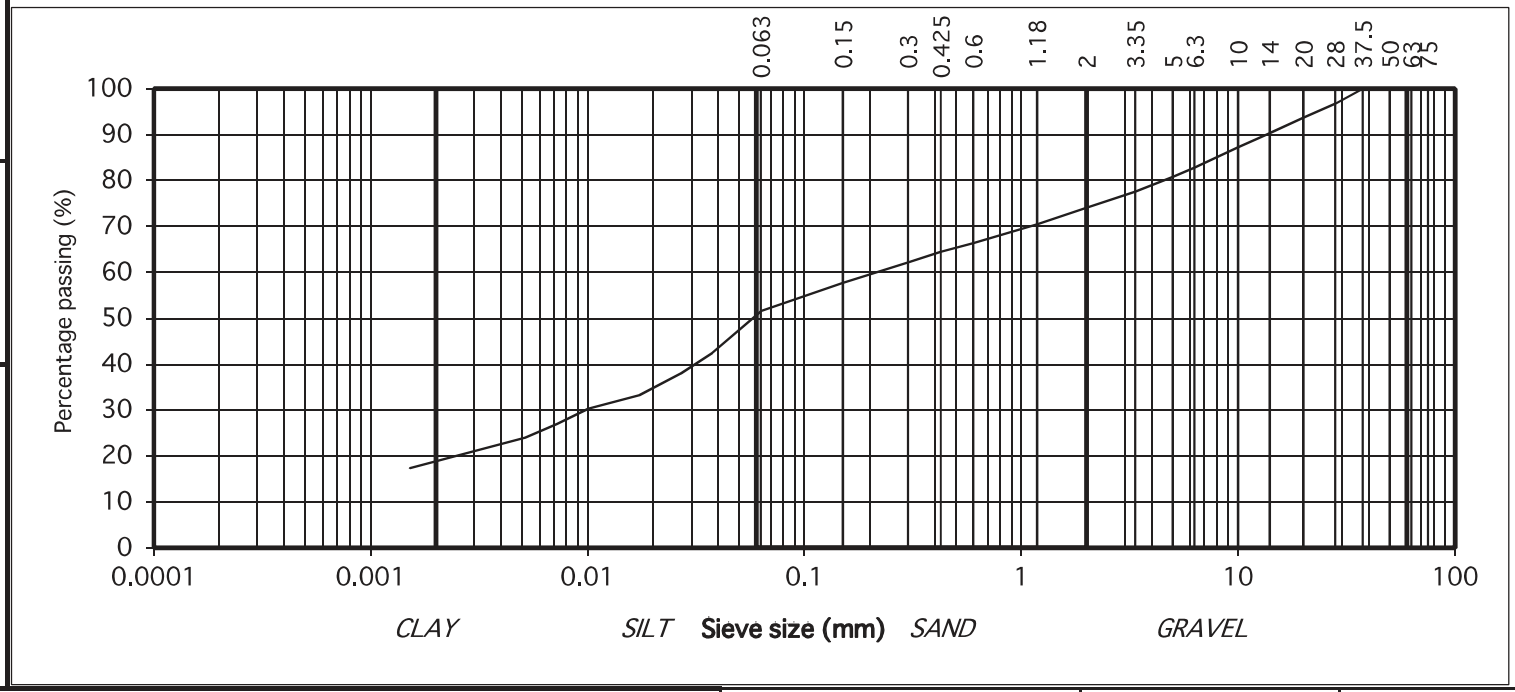
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	94	
14	90	
10	87	
6.3	83	
5	81	
3.35	78	
2	74	
1.18	70	SAND
0.6	66	
0.425	64	
0.3	62	
0.15	58	
0.063	52	SILT/CLAY
0.037	43	
0.027	38	
0.017	33	
0.010	30	
0.007	27	
0.005	24	
0.002	17	

Contract No.	23560	Report No.	R138759	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157502			
Sample No.*	AA170183	Lab. Sample No.		A22/3418
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

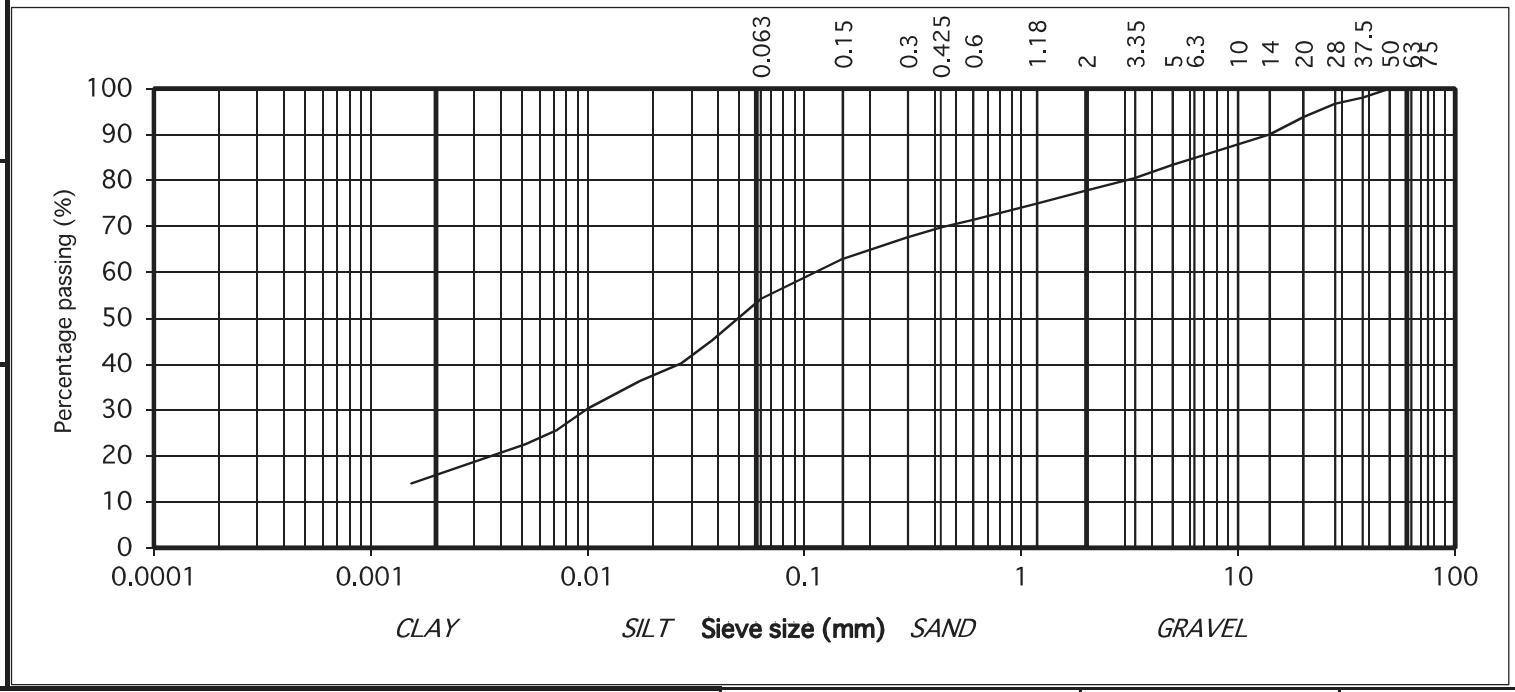
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	97	
20	94	
14	90	
10	88	
6.3	85	
5	83	
3.35	81	
2	78	
1.18	75	SAND
0.6	71	
0.425	70	
0.3	68	
0.15	63	
0.063	54	SILT/CLAY
0.037	45	
0.027	40	
0.017	36	
0.010	30	
0.007	26	
0.005	23	
0.002	14	

Contract No.	23560	Report No.	R138761	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157697			
Sample No.*	AA170193	Lab. Sample No.		A22/3421
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	94	
20	90	
14	89	
10	87	
6.3	84	
5	82	
3.35	80	
2	76	
1.18	73	SAND
0.6	70	
0.425	68	
0.3	66	
0.15	62	
0.063	53	SILT/CLAY
0.037	47	
0.027	42	
0.017	38	
0.010	32	
0.007	27	
0.005	24	
0.002	15	

Contract No.	23560	Report No.	R138763	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157813			
Sample No.*	AA170190	Lab. Sample No.		A22/3423
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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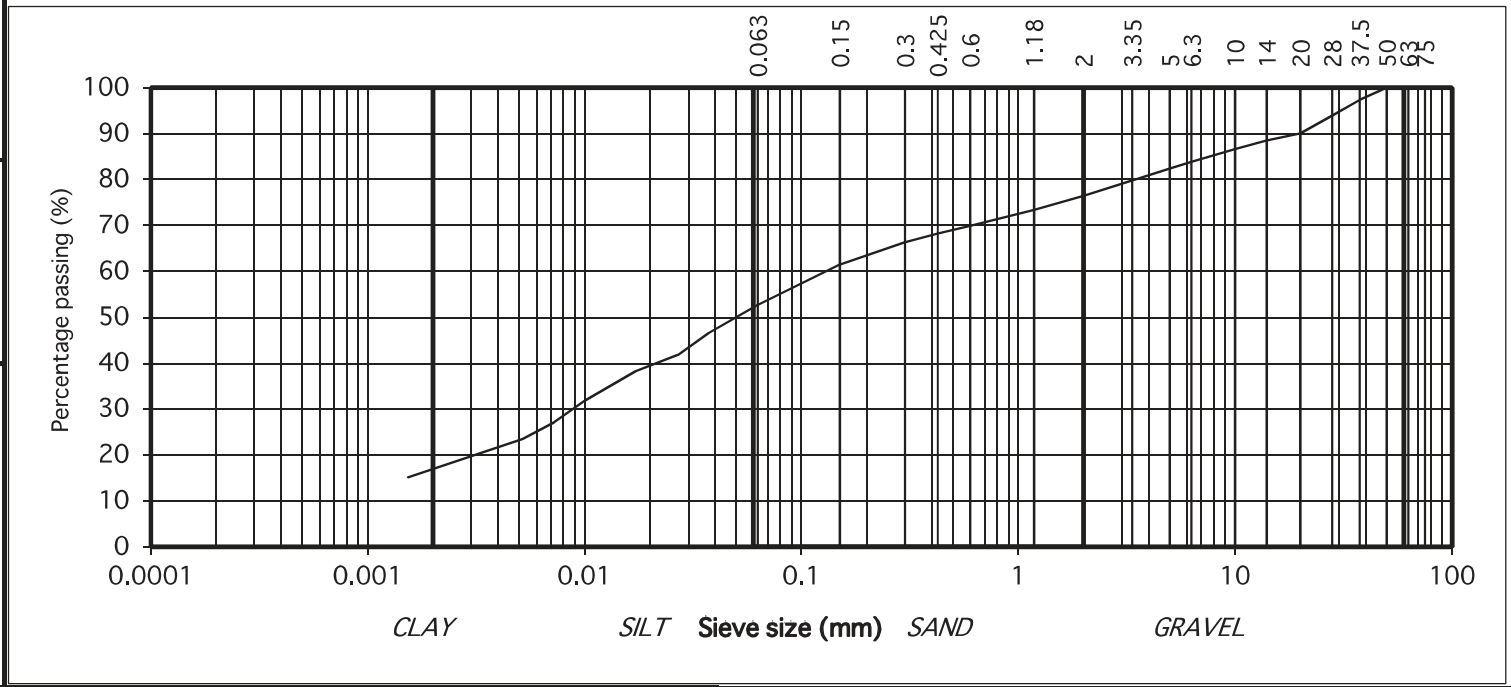
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	95	GRAVEL
37.5	95	
28	95	
20	93	
14	90	
10	87	
6.3	82	
5	80	
3.35	76	
2	71	
1.18	67	SAND
0.6	62	
0.425	60	
0.3	57	
0.15	52	
0.063	44	SILT/CLAY
0.037	41	
0.027	37	
0.017	33	
0.010	28	
0.007	24	
0.005	21	
0.002	13	

Contract No.	23560	Report No.	R138762	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157697			
Sample No.*	AA170194	Lab. Sample No.		A22/3422
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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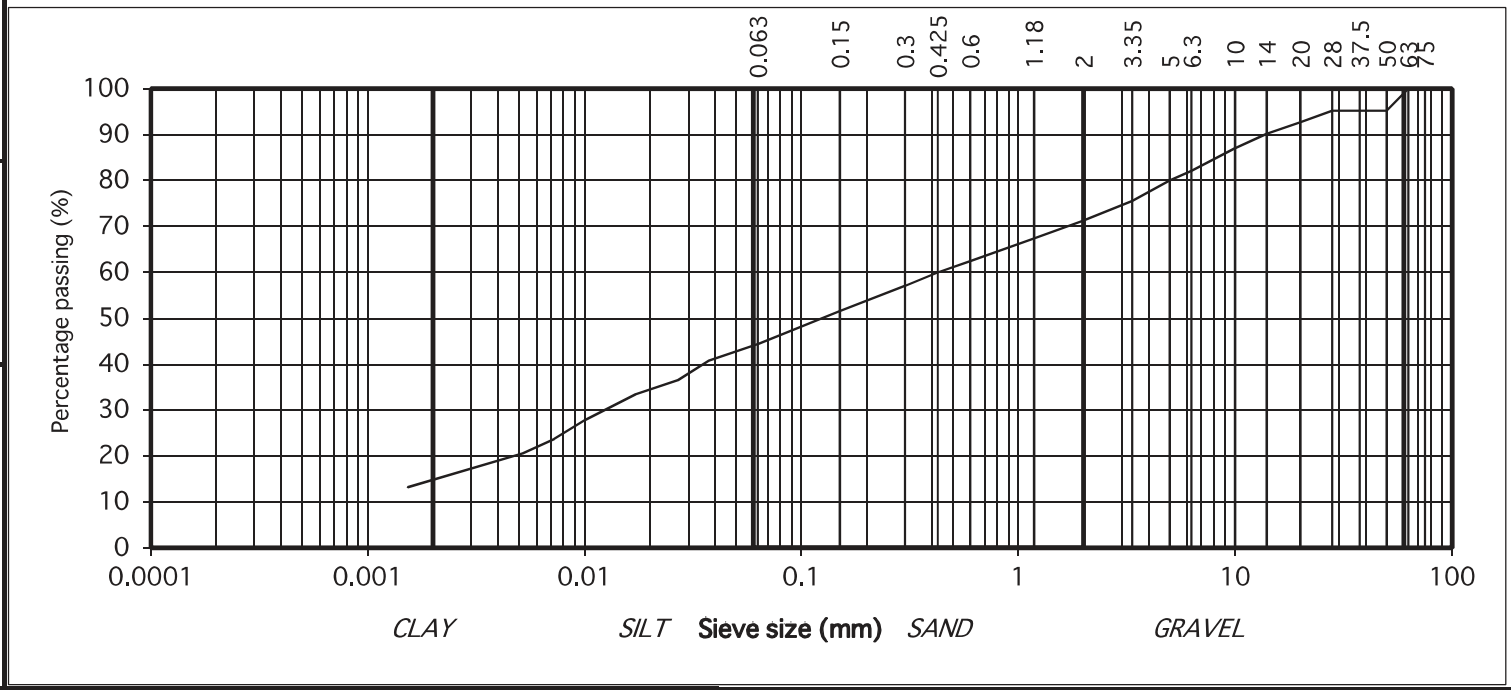
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

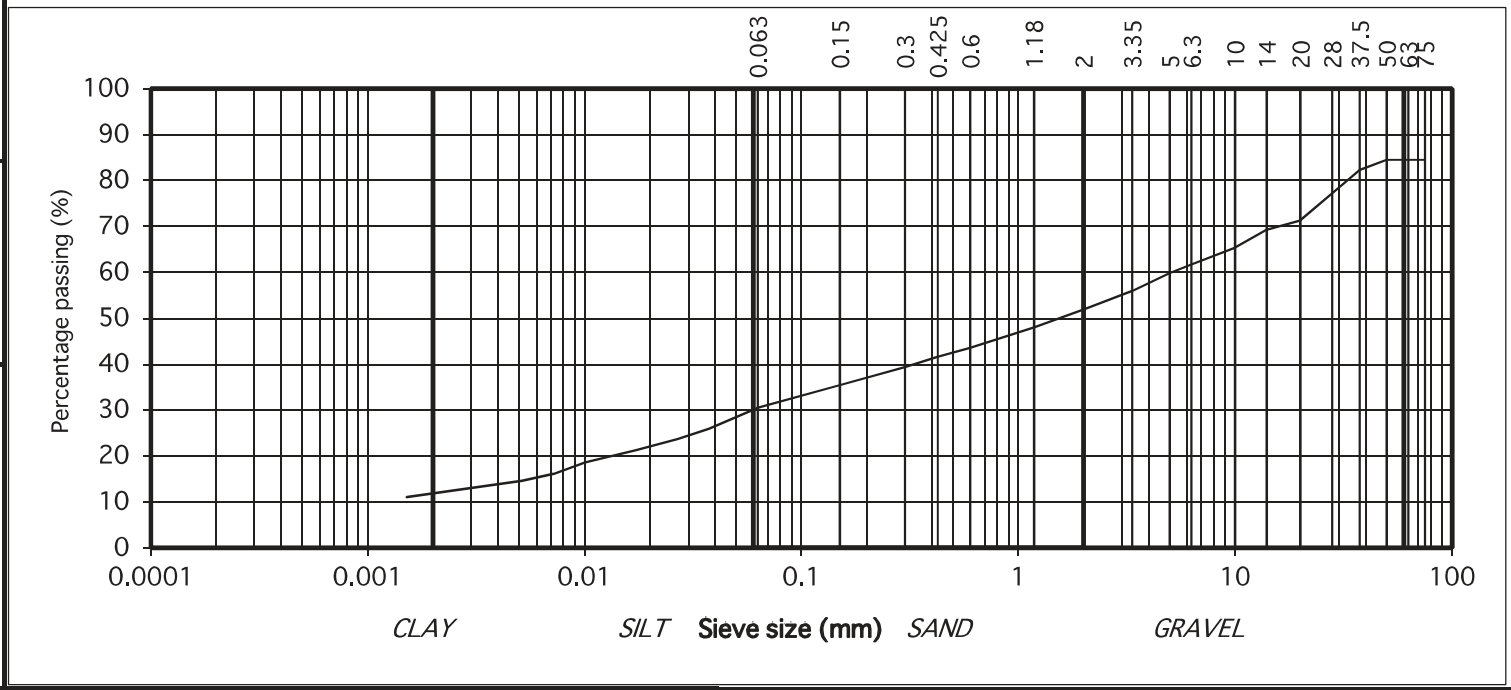
particle size	% passing	
75	85	COBBLES
63	85	
50	85	GRAVEL
37.5	82	
28	77	
20	71	
14	69	
10	65	
6.3	62	
5	60	
3.35	56	
2	52	
1.18	48	SAND
0.6	44	
0.425	42	
0.3	39	
0.15	35	
0.063	31	SILT/CLAY
0.037	26	
0.027	24	
0.017	21	
0.010	19	
0.007	16	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R138764	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157813			
Sample No.*	AA170191	Lab. Sample No.		A22/3424
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY with some cobbles			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	87	
28	82	
20	77	
14	72	
10	66	
6.3	60	
5	57	
3.35	53	
2	48	
1.18	44	SAND
0.6	39	
0.425	37	
0.3	34	
0.15	30	
0.063	24	SILT/CLAY
0.038	21	
0.027	18	
0.017	16	
0.010	14	
0.007	13	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R138765	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157895			
Sample No.*	AA170187	Lab. Sample No.		A22/3425
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	03/08/2022	Date Testing started		03/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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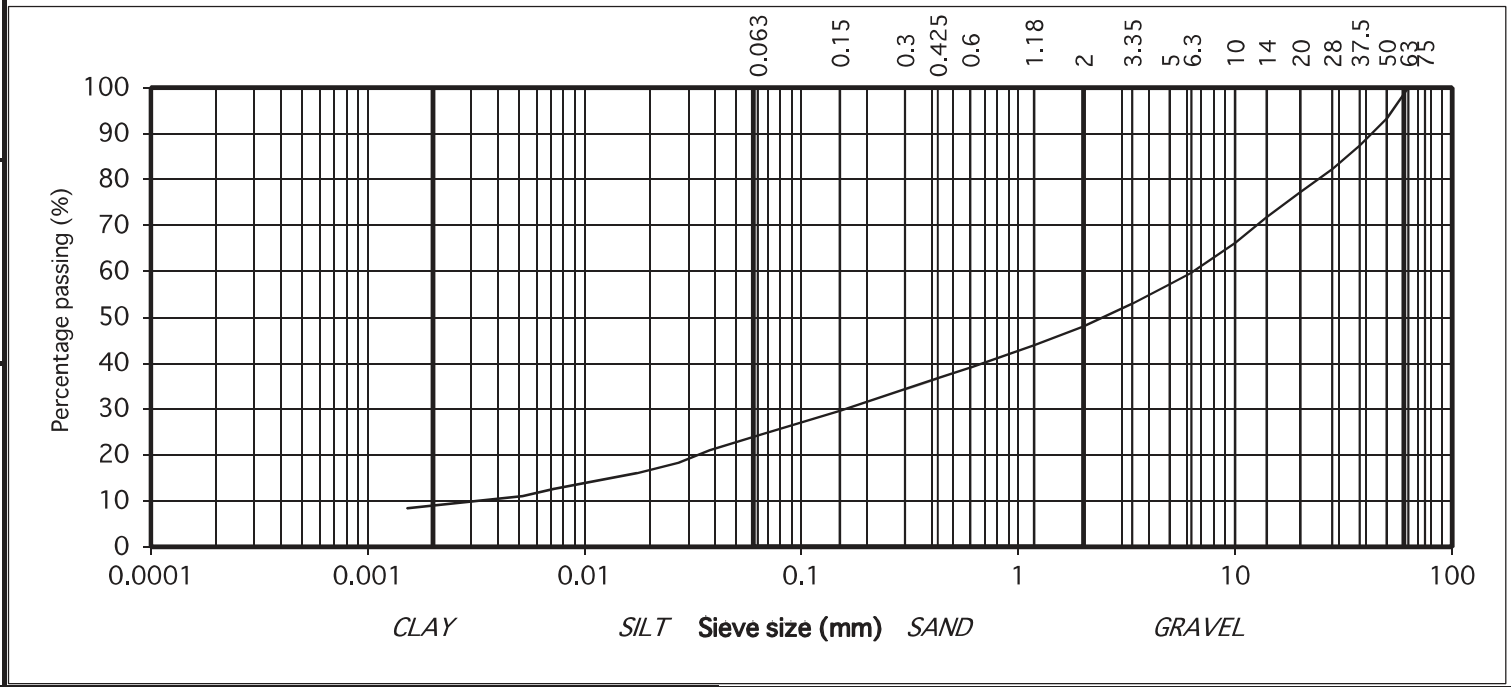
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	96	
14	95	
10	93	
6.3	91	
5	90	
3.35	88	
2	86	
1.18	84	SAND
0.6	81	
0.425	79	
0.3	77	
0.15	72	
0.063	65	SILT/CLAY
0.037	55	
0.026	51	
0.017	45	
0.010	38	
0.007	33	
0.005	27	
0.002	17	

Contract No.	23560	Report No.	R137395	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159013			
Sample No.*	AA179458	Lab. Sample No.		A22/3427
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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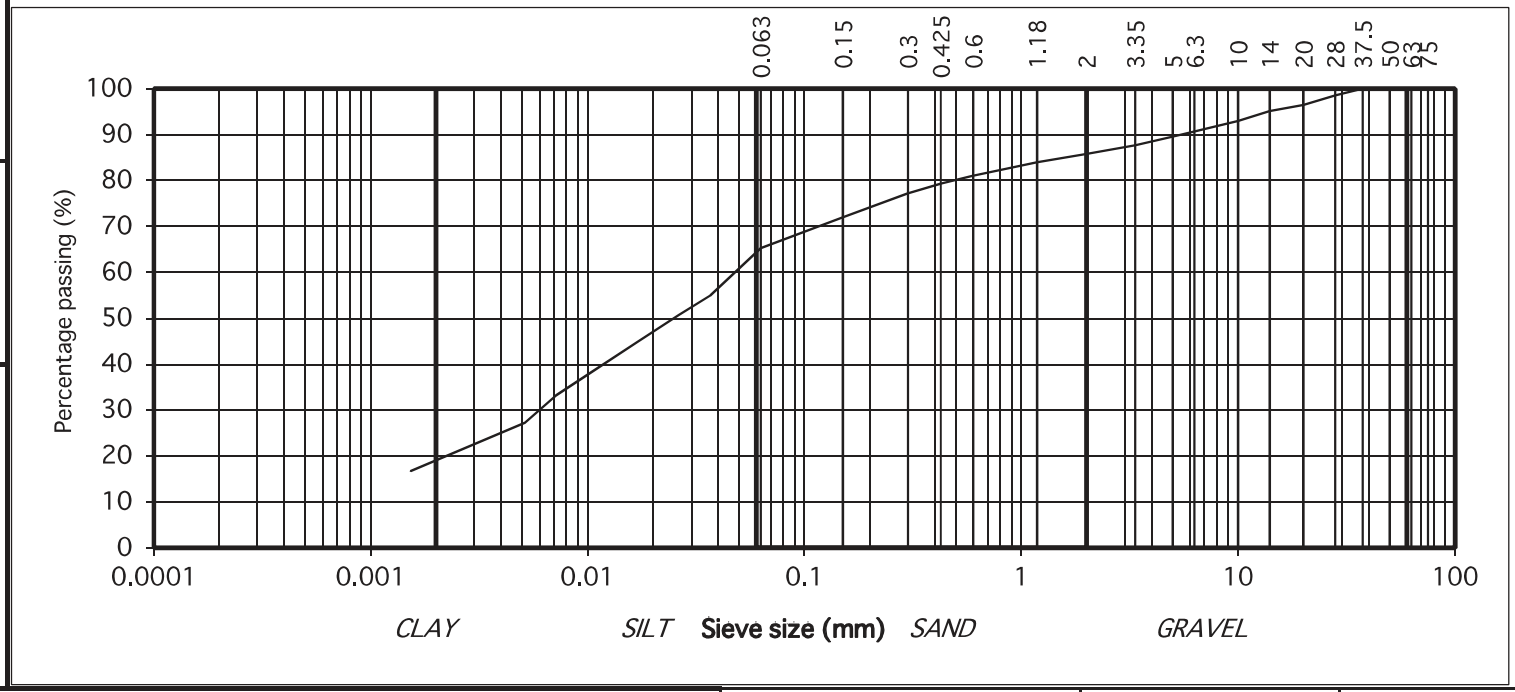
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	20/08/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	97	GRAVEL
37.5	94	
28	91	
20	85	
14	80	
10	74	
6.3	68	
5	65	
3.35	60	
2	54	
1.18	50	SAND
0.6	44	
0.425	42	
0.3	39	
0.15	33	
0.063	28	SILT/CLAY
0.038	22	
0.027	19	
0.017	16	
0.010	13	
0.007	12	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R138766	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP157895			
Sample No.*	AA170188	Lab. Sample No.		A22/3426
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	14/08/2022	Date Testing started		14/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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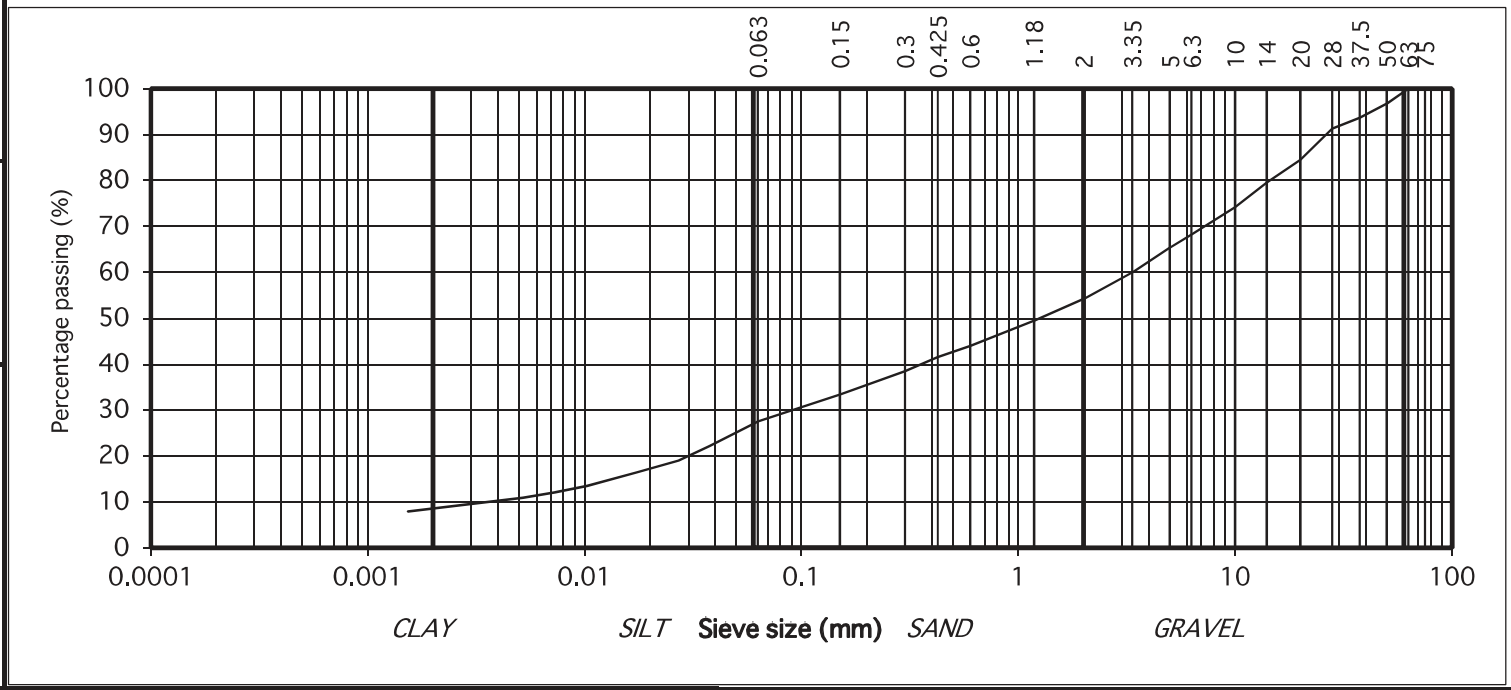
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

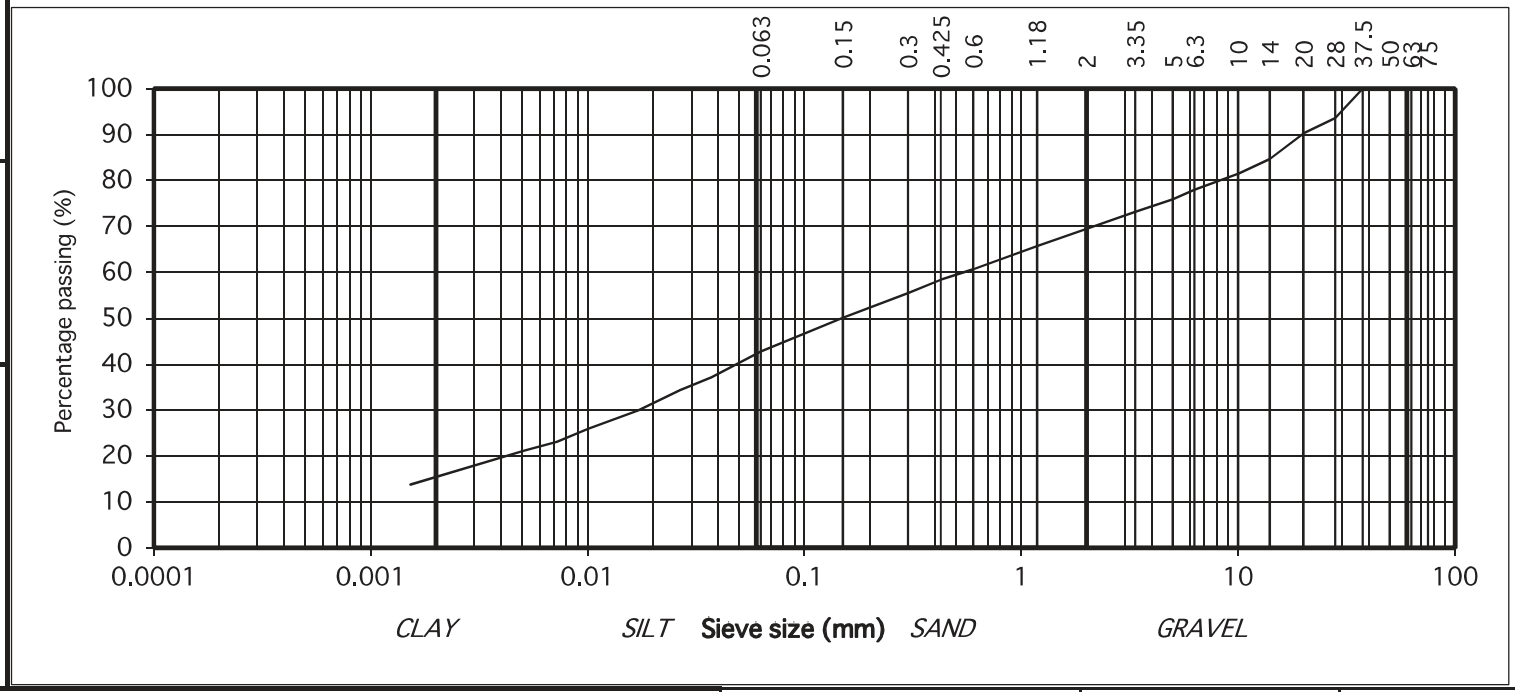
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	94	
20	90	
14	85	
10	81	
6.3	78	
5	76	
3.35	73	
2	70	
1.18	66	SAND
0.6	61	
0.425	58	
0.3	56	
0.15	50	
0.063	43	SILT/CLAY
0.037	37	
0.027	34	
0.017	30	
0.010	26	
0.007	23	
0.005	21	
0.002	14	

Contract No.	23560	Report No.	R137396	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159013			
Sample No.*	AA179460	Lab. Sample No.		A22/3428
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/07/2022	Date Testing started		14/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.

Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	96	
20	92	
14	89	
10	86	
6.3	82	
5	81	
3.35	78	
2	74	
1.18	71	SAND
0.6	68	
0.425	66	
0.3	64	
0.15	59	
0.063	51	SILT/CLAY
0.038	43	
0.027	39	
0.017	35	
0.010	29	
0.007	26	
0.005	21	
0.002	14	

Contract No.	23560	Report No.	R137397	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159100			
Sample No.*	AA179455	Lab. Sample No.		A22/3429
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Grey brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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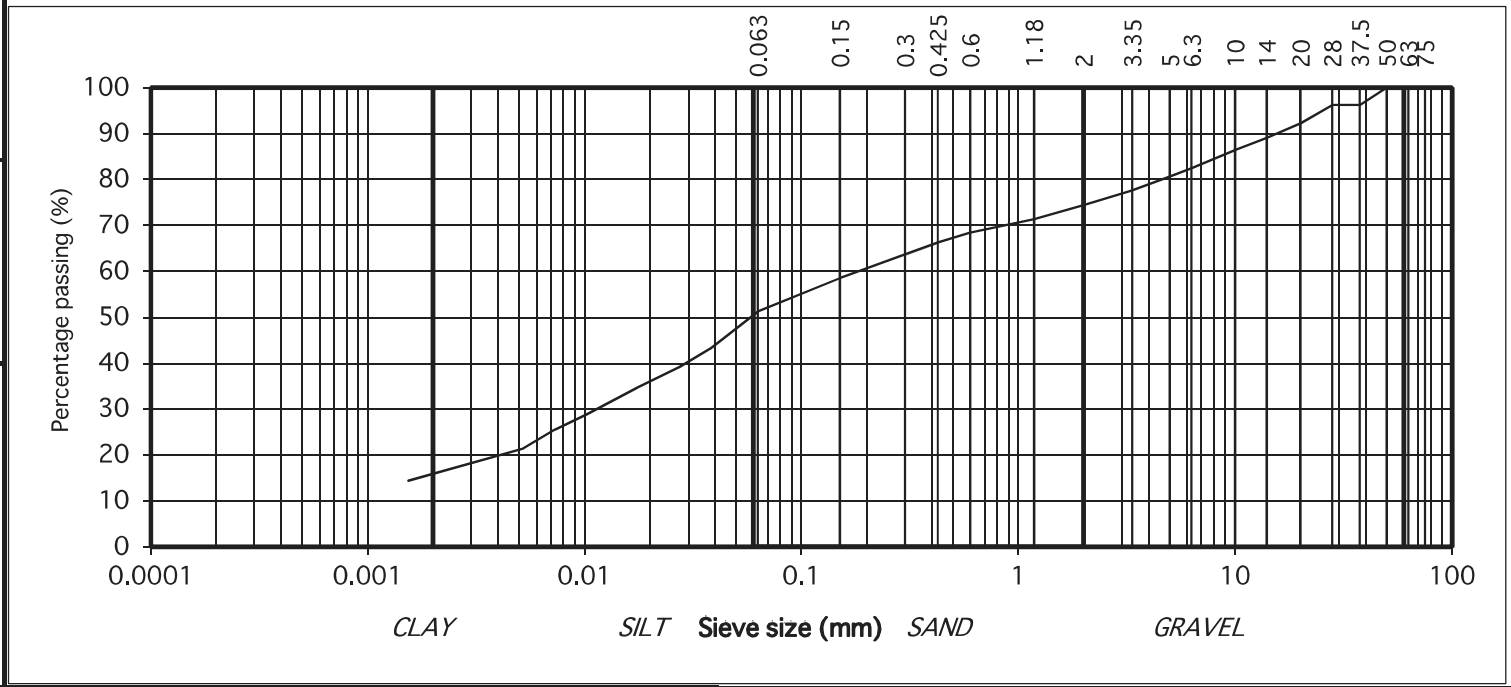
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	92	
50	92	GRAVEL
37.5	88	
28	84	
20	78	
14	76	
10	74	
6.3	70	
5	69	
3.35	65	
2	62	
1.18	58	SAND
0.6	54	
0.425	51	
0.3	49	
0.15	44	
0.063	38	SILT/CLAY
0.038	31	
0.027	28	
0.018	24	
0.010	21	
0.007	19	
0.005	16	
0.002	13	

Contract No.	23560	Report No.	R137431	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159100			
Sample No.*	AA179457	Lab. Sample No.		A22/3430
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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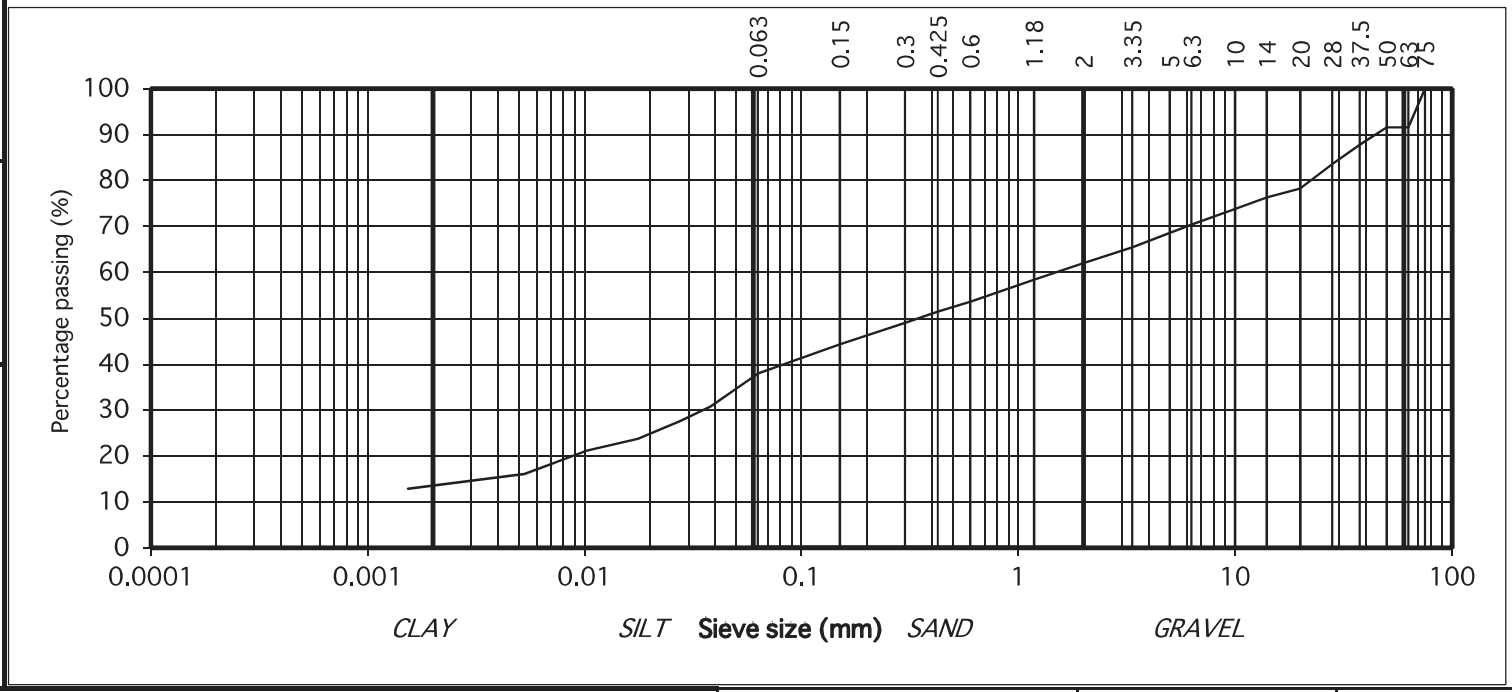

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	89	
20	82	
14	77	
10	73	
6.3	67	
5	65	
3.35	60	
2	56	
1.18	52	SAND
0.6	48	
0.425	47	
0.3	45	
0.15	41	
0.063	35	SILT/CLAY
0.037	31	
0.027	29	
0.017	26	
0.010	21	
0.007	18	
0.005	16	
0.002	11	

Contract No.	23560	Report No.	R137434	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159347			
Sample No.*	AA174496	Lab. Sample No.		A22/3433
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	28/06/2022	Date Testing started		28/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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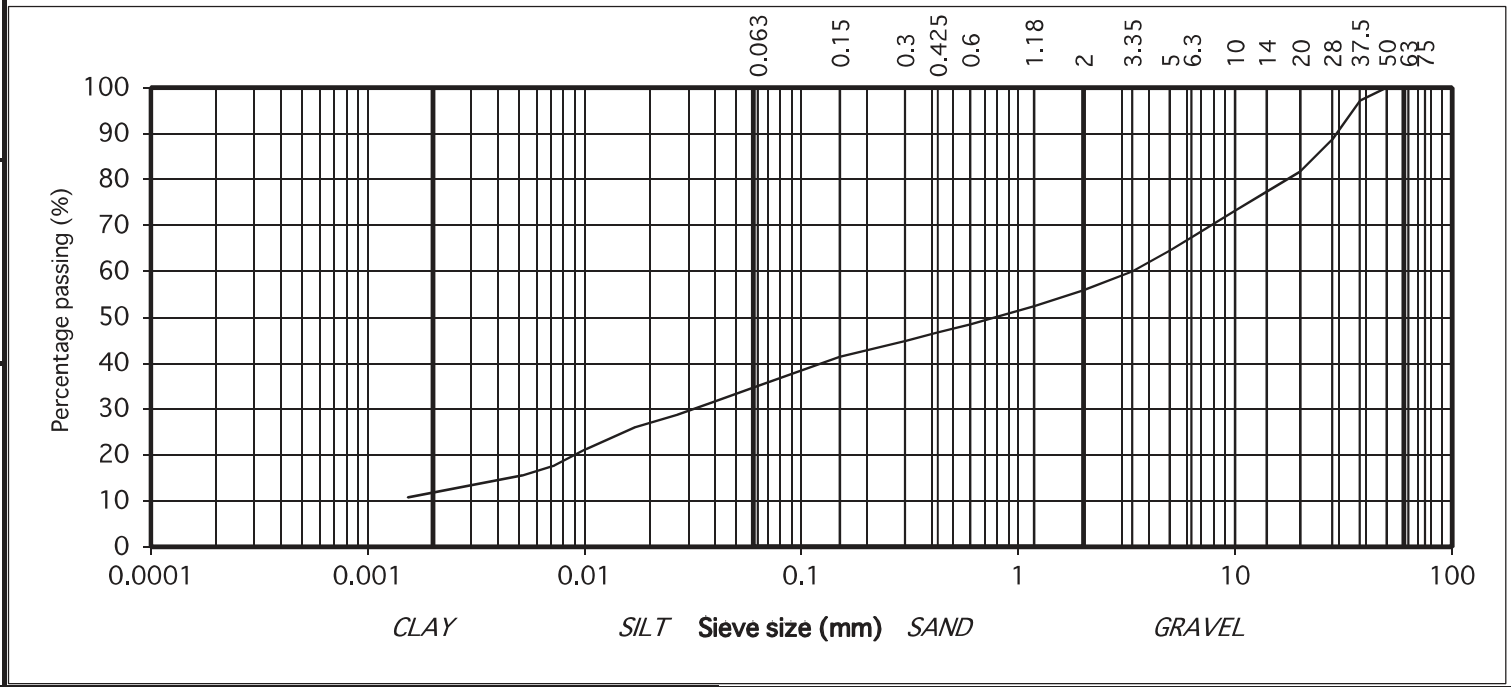
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	91	
20	88	
14	86	
10	83	
6.3	80	
5	79	
3.35	76	
2	73	
1.18	70	SAND
0.6	66	
0.425	64	
0.3	63	
0.15	59	
0.063	53	SILT/CLAY
0.038	47	
0.027	44	
0.017	41	
0.010	36	
0.007	32	
0.005	27	
0.002	18	

Contract No.	23560	Report No.	R137432	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159203			
Sample No.*	AA179453	Lab. Sample No.		A22/3431
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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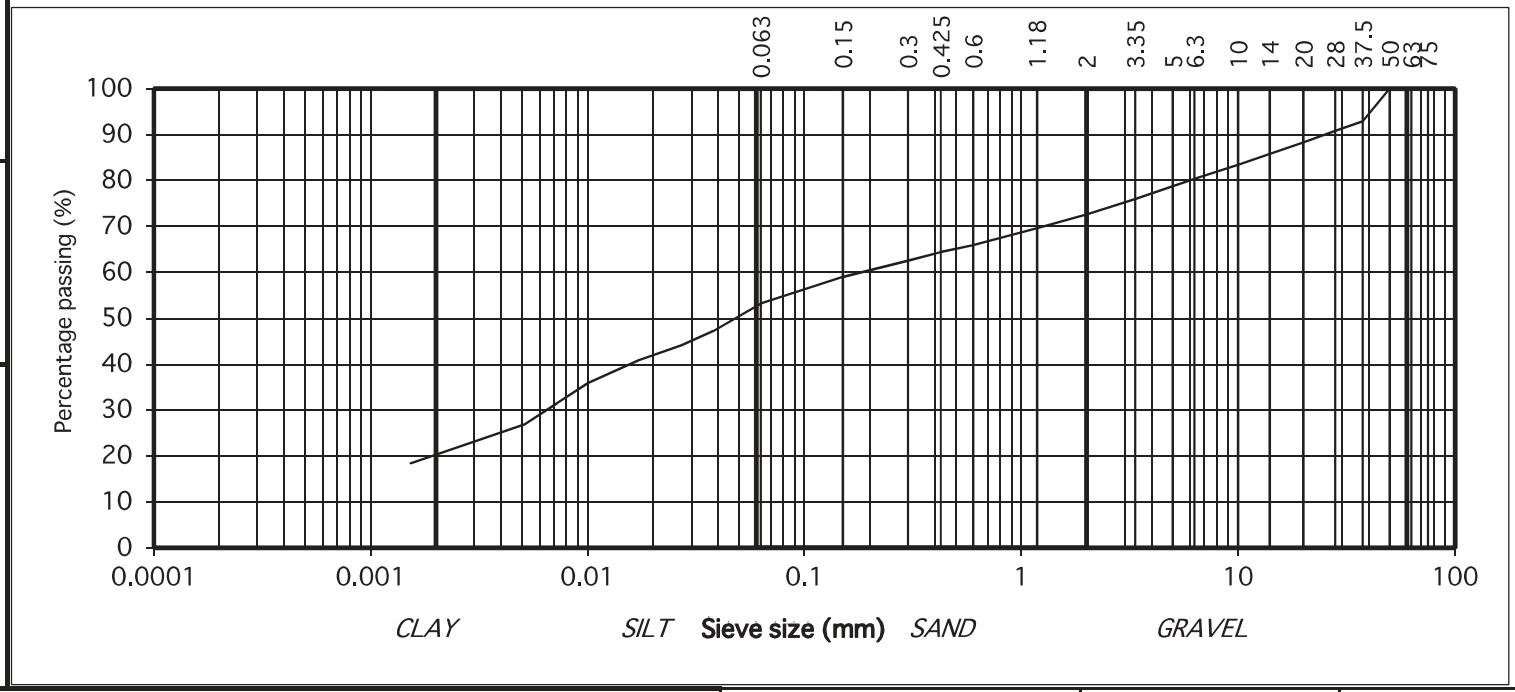
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	88	COBBLES
63	88	
50	88	GRAVEL
37.5	73	
28	65	
20	59	
14	51	
10	48	
6.3	44	
5	42	
3.35	39	
2	35	
1.18	31	SAND
0.6	26	
0.425	24	
0.3	22	
0.15	19	
0.063	17	SILT/CLAY
0.038	15	
0.027	14	
0.017	12	
0.010	11	
0.007	10	
0.005	9	
0.002	6	

Contract No.	23560	Report No.	R143997	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159303			
Sample No.*	AA174498	Lab. Sample No.		A22/3432
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Grey clayey/silty, sandy, GRAVEL with some cobbles			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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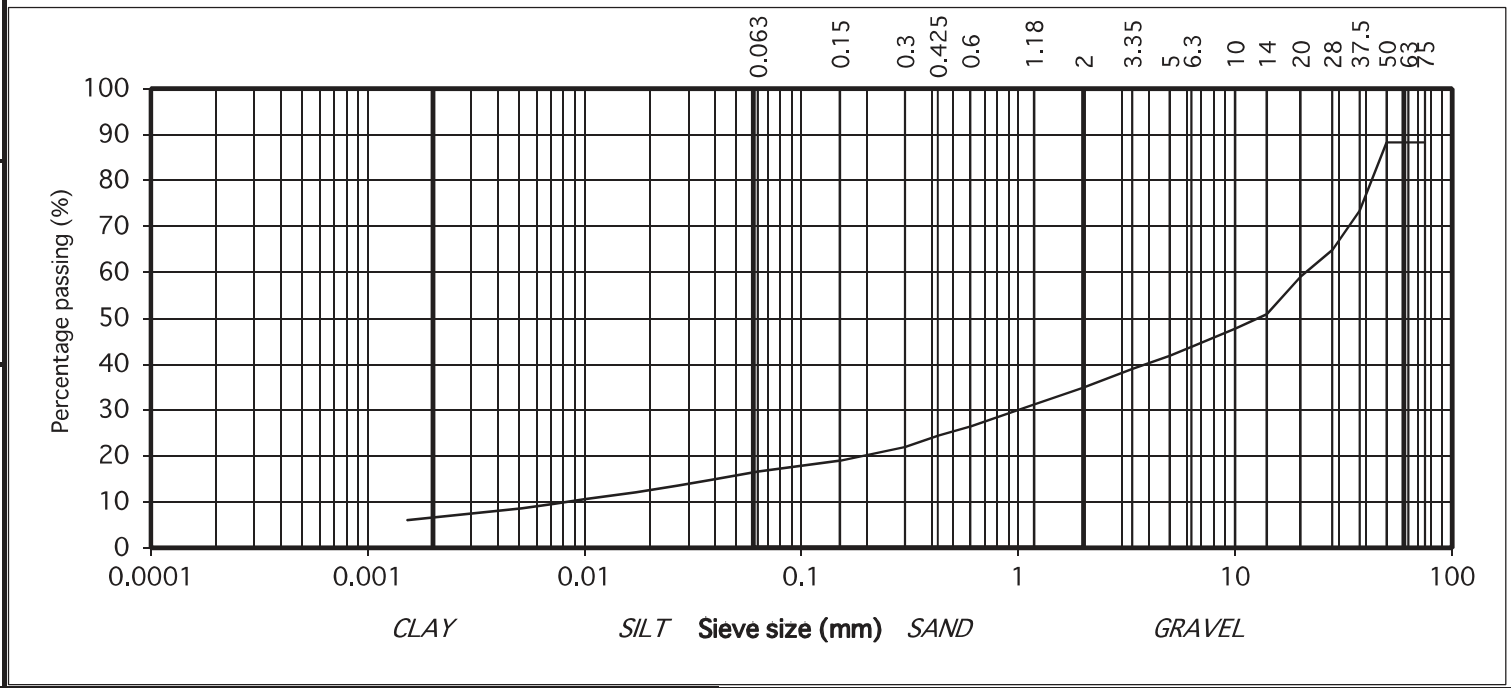

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	93	GRAVEL
37.5	88	
28	81	
20	71	
14	64	
10	58	
6.3	49	
5	46	
3.35	40	
2	34	
1.18	30	SAND
0.6	24	
0.425	21	
0.3	18	
0.15	14	
0.063	10	SILT/CLAY

Contract No.	23560	Report No.	R137435	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159404			
Sample No.*	AA174494	Lab. Sample No.		A22/3434
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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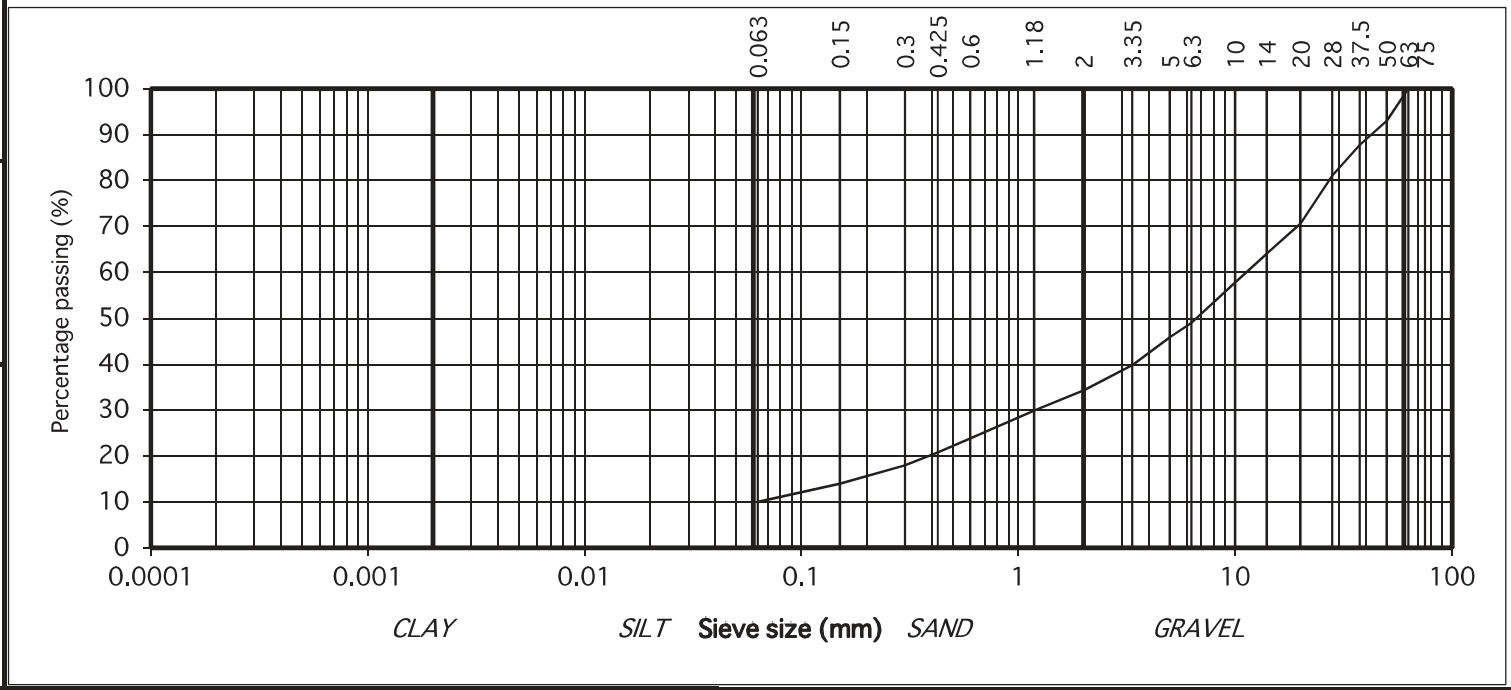

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	88	
20	87	
14	83	
10	80	
6.3	76	
5	74	
3.35	70	
2	67	
1.18	64	SAND
0.6	59	
0.425	57	
0.3	54	
0.15	48	
0.063	37	SILT/CLAY
0.037	32	
0.027	29	
0.017	25	
0.010	22	
0.007	19	
0.005	17	
0.002	13	

Contract No.	23560	Report No.	R138767	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160696			
Sample No.*	AA175151	Lab. Sample No.		A22/3436
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	14/08/2022	Date Testing started		14/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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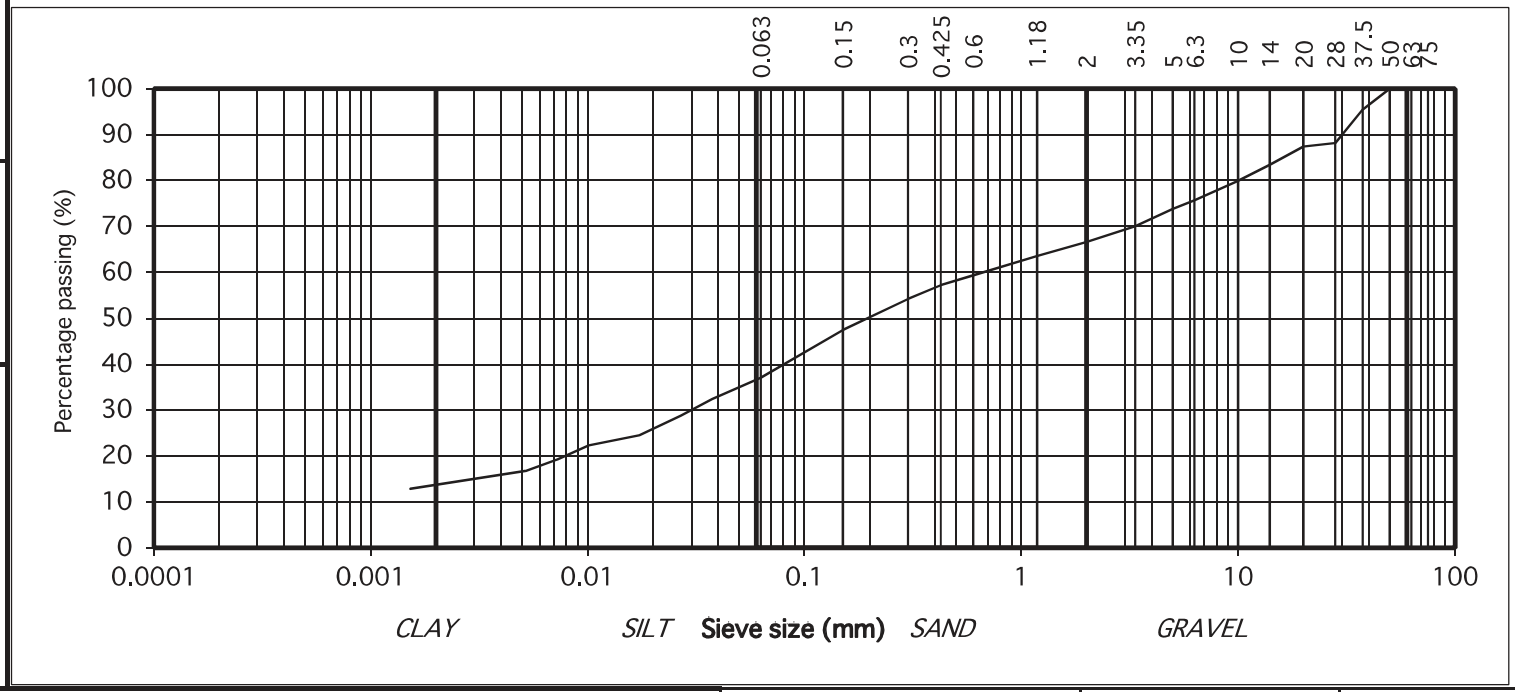
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	84	
20	72	
14	63	
10	54	
6.3	43	
5	39	
3.35	33	
2	26	
1.18	22	SAND
0.6	16	
0.425	12	
0.3	9	
0.15	6	
0.063	4	SILT/CLAY

Contract No.	23560	Report No.	R137436	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP159488			
Sample No.*	AA174492	Lab. Sample No.		A22/3435
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Brown slightly clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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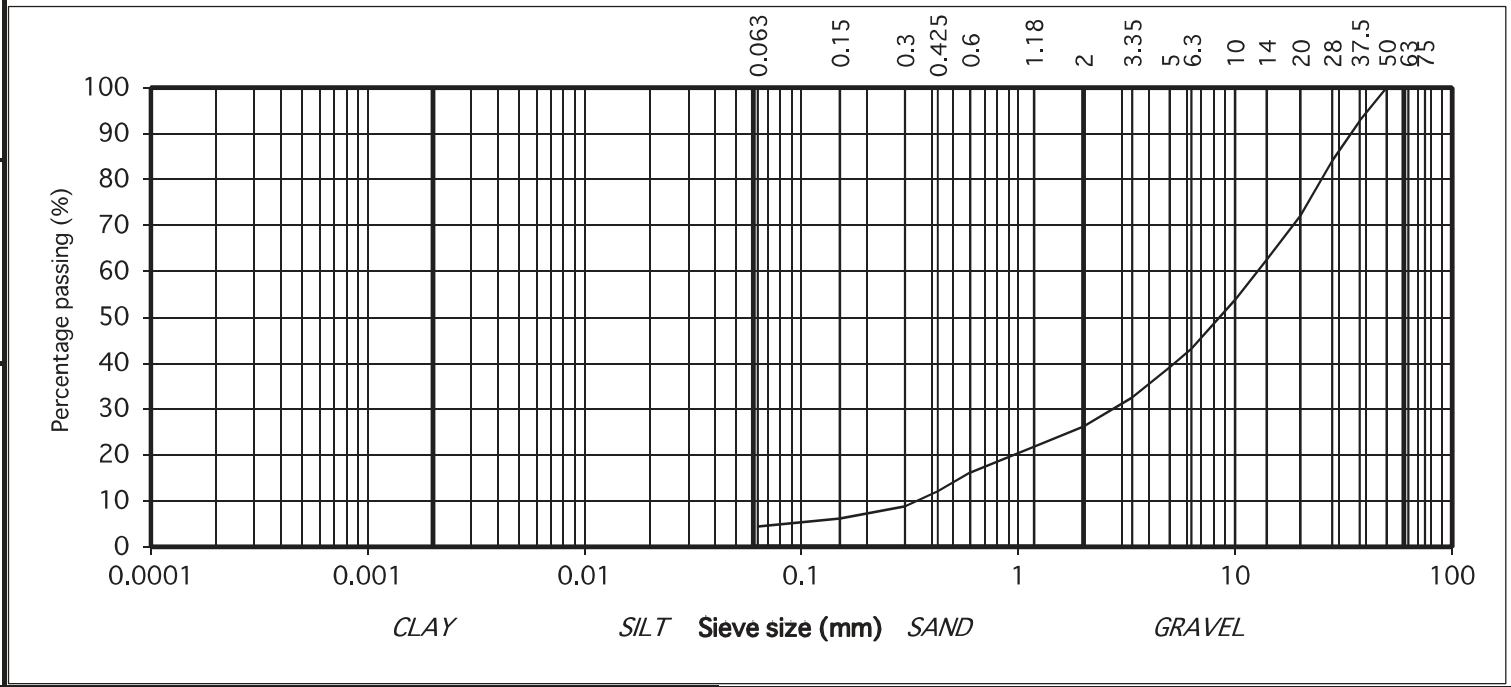

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	87	
20	83	
14	78	
10	72	
6.3	67	
5	64	
3.35	60	
2	56	
1.18	53	SAND
0.6	49	
0.425	47	
0.3	45	
0.15	42	
0.063	37	SILT/CLAY
0.038	30	
0.027	26	
0.017	23	
0.010	20	
0.007	18	
0.005	16	
0.002	11	

Contract No.	23560	Report No.	R138768	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160696			
Sample No.*	AA175153	Lab. Sample No.		A22/3437
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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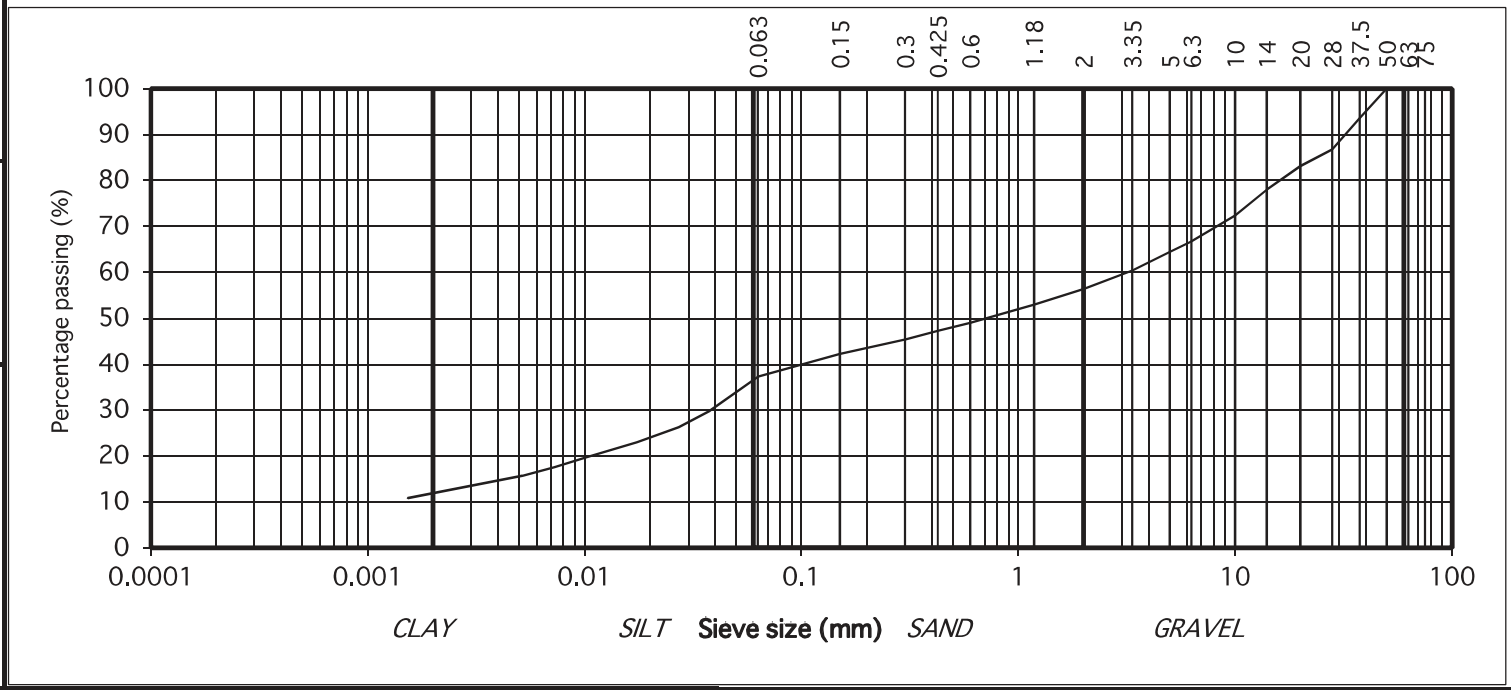

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	100	
2	100	
1.18	97	SAND
0.6	97	
0.425	97	
0.3	97	
0.15	96	
0.063	91	SILT/CLAY
0.037	78	
0.027	70	
0.018	49	
0.010	34	
0.007	28	
0.005	23	
0.002	13	

Contract No.	23560	Report No.	R138770	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160895			
Sample No.*	AA175158	Lab. Sample No.		A22/3439
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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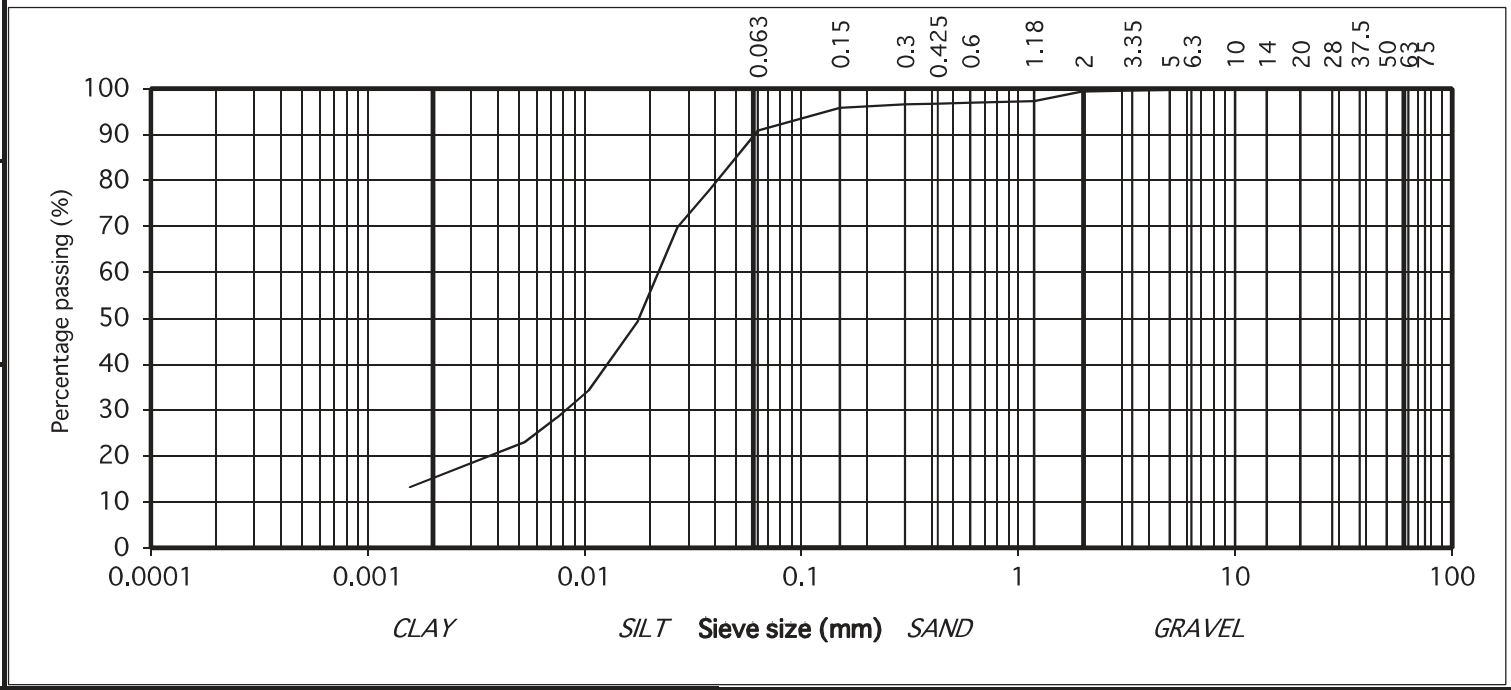
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
	29/09/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	91	
20	83	
14	77	
10	73	
6.3	67	
5	65	
3.35	60	
2	55	
1.18	51	SAND
0.6	45	
0.425	42	
0.3	39	
0.15	35	
0.063	28	SILT/CLAY
0.037	22	
0.027	20	
0.017	18	
0.010	15	
0.007	14	
0.005	12	
0.002	9	

Contract No.	23560	Report No.	R138769	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160795			
Sample No.*	AA175156	Lab. Sample No.		A22/3438
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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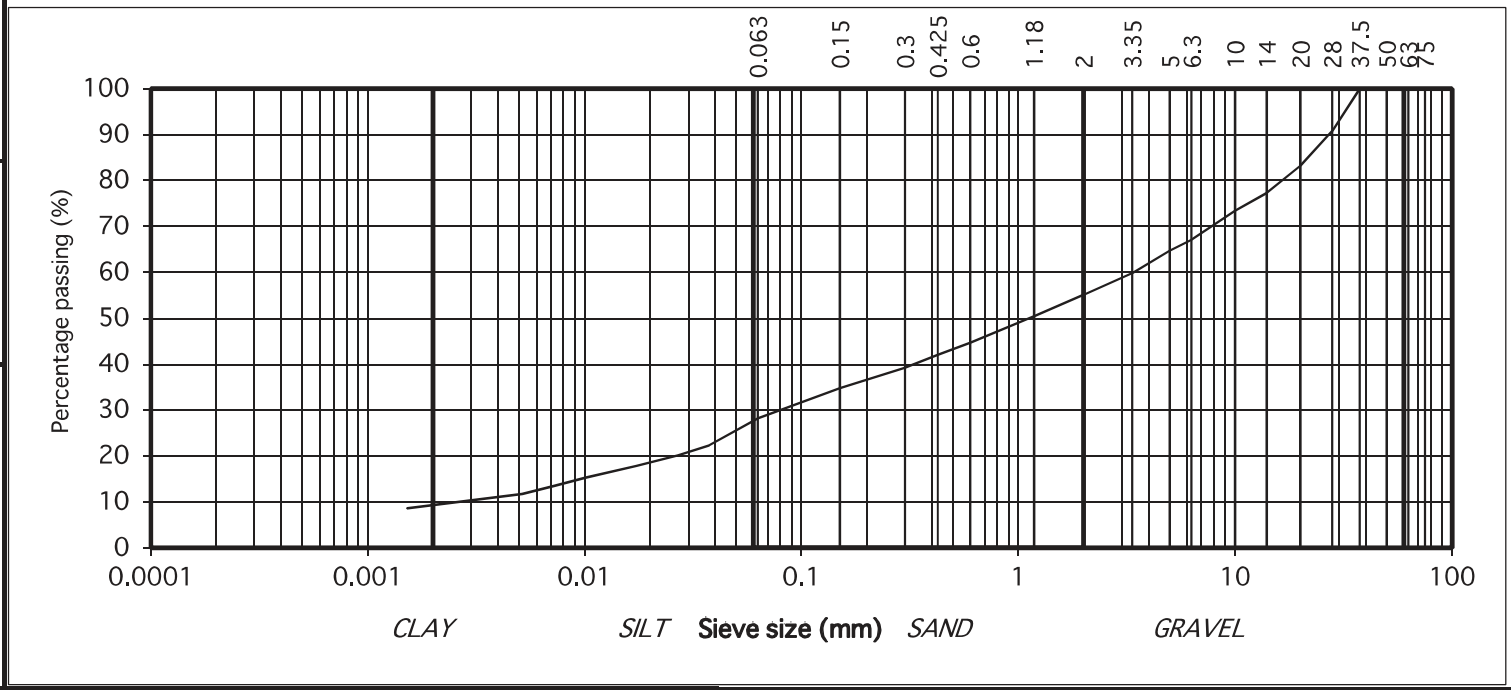
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	90	GRAVEL
37.5	87	
28	85	
20	82	
14	79	
10	75	
6.3	71	
5	69	
3.35	66	
2	61	
1.18	58	SAND
0.6	54	
0.425	52	
0.3	50	
0.15	46	
0.063	38	SILT/CLAY
0.037	31	
0.027	28	
0.017	24	
0.010	22	
0.007	18	
0.005	15	
0.002	10	

Contract No.	23560	Report No.	R138771	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160895			
Sample No.*	AA175159	Lab. Sample No.		A22/3440
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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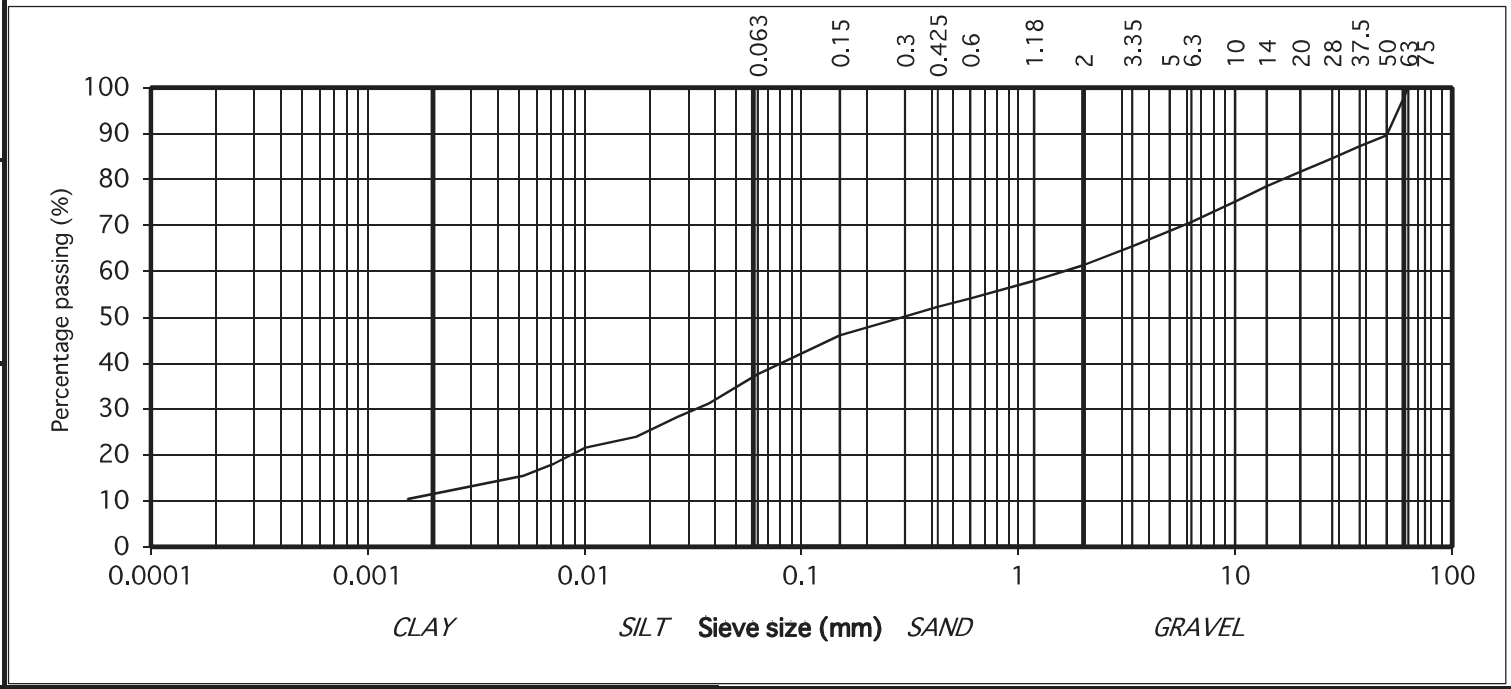
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	87	
20	87	
14	87	
10	86	
6.3	86	
5	85	
3.35	85	
2	83	
1.18	82	SAND
0.6	79	
0.425	75	
0.3	69	
0.15	50	
0.063	38	SILT/CLAY
0.037	33	
0.027	29	
0.017	24	
0.010	21	
0.007	19	
0.005	17	
0.002	12	

Contract No.	23560	Report No.	R138772	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP160993			
Sample No.*	AA175161	Lab. Sample No.		A22/3441
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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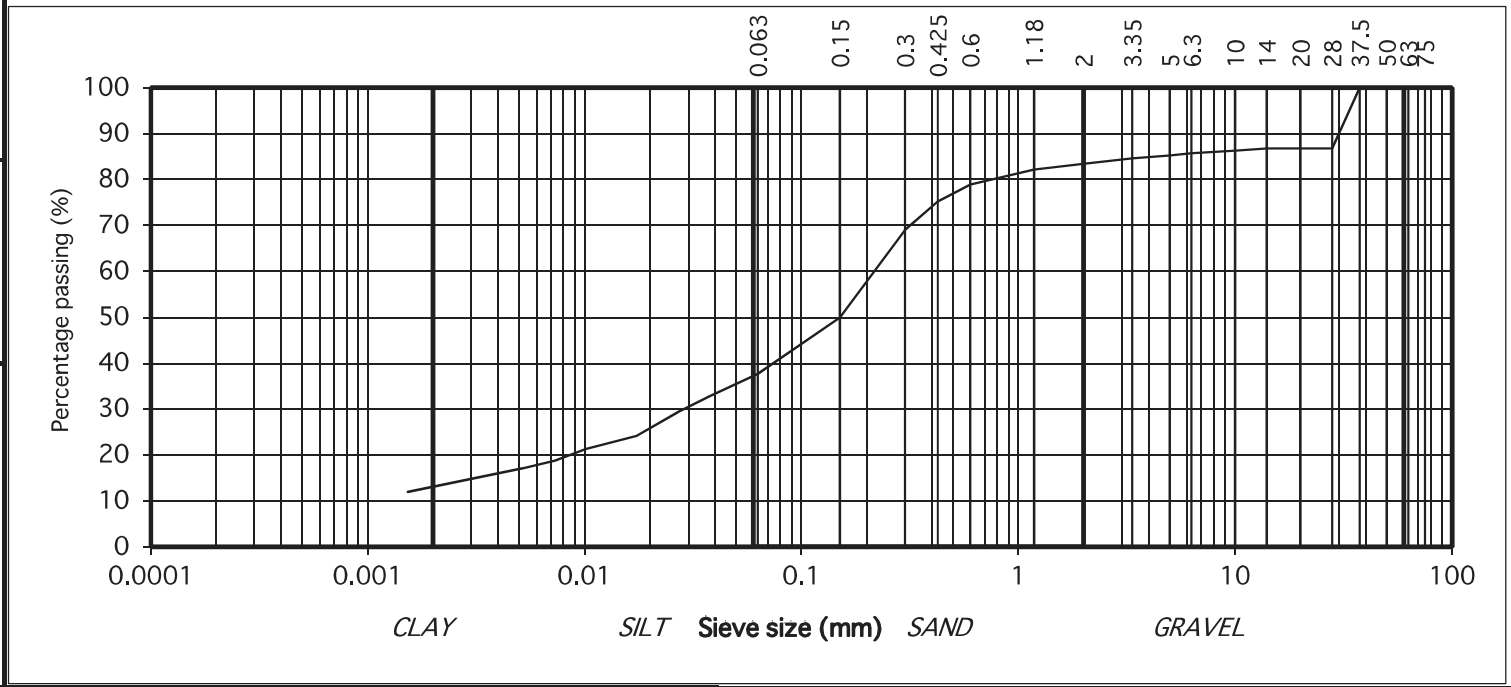
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	91	
14	86	
10	82	
6.3	77	
5	74	
3.35	70	
2	66	
1.18	62	SAND
0.6	56	
0.425	54	
0.3	51	
0.15	45	
0.063	36	SILT/CLAY
0.037	29	
0.027	25	
0.017	22	
0.010	18	
0.007	16	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R138774	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161109			
Sample No.*	AA175165	Lab. Sample No.		A22/3444
Sample Type:	B			
Depth* (m)	3.00	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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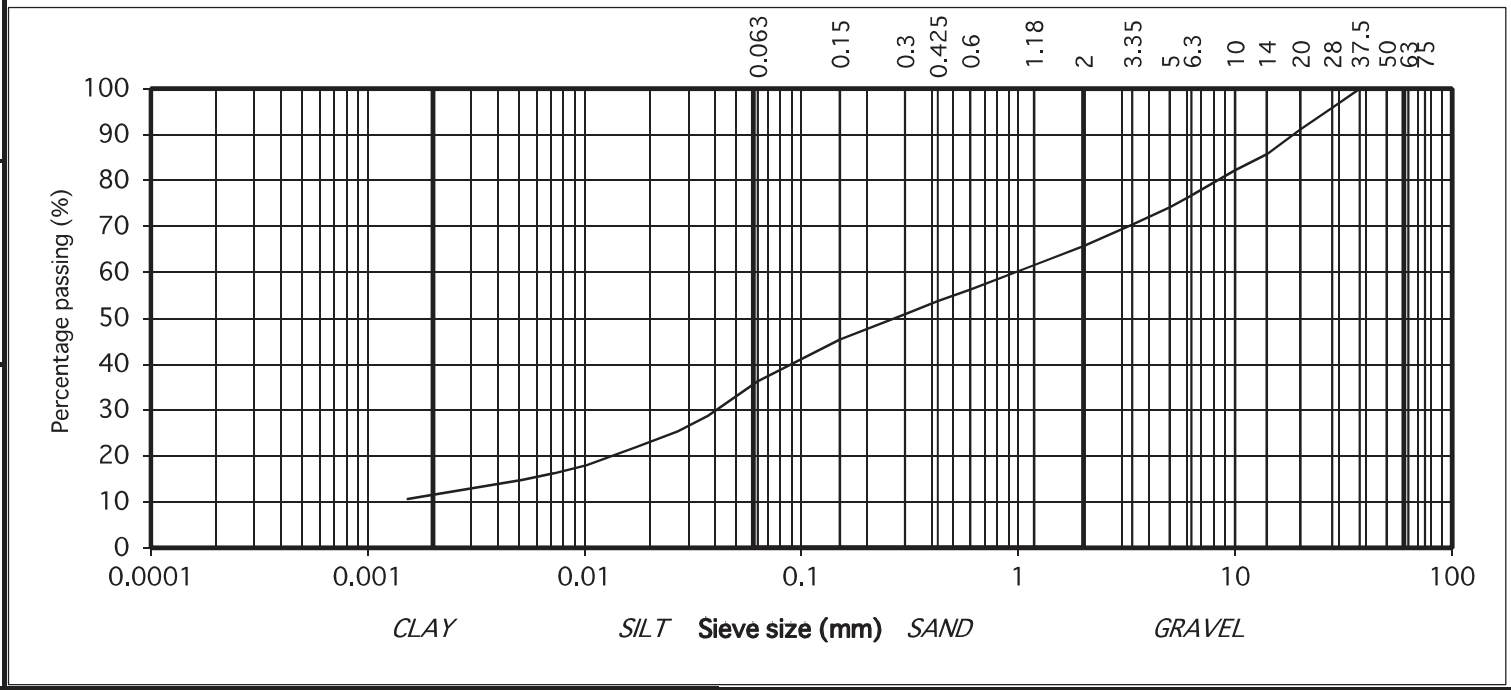
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	85	
28	79	
20	73	
14	65	
10	59	
6.3	52	
5	50	
3.35	45	
2	43	
1.18	40	SAND
0.6	37	
0.425	35	
0.3	34	
0.15	30	
0.063	25	SILT/CLAY
0.037	21	
0.027	19	
0.017	16	
0.010	14	
0.007	13	
0.005	11	
0.002	8	

Contract No.	23560	Report No.	R138773	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161109			
Sample No.*	AA175164	Lab. Sample No.		A22/3443
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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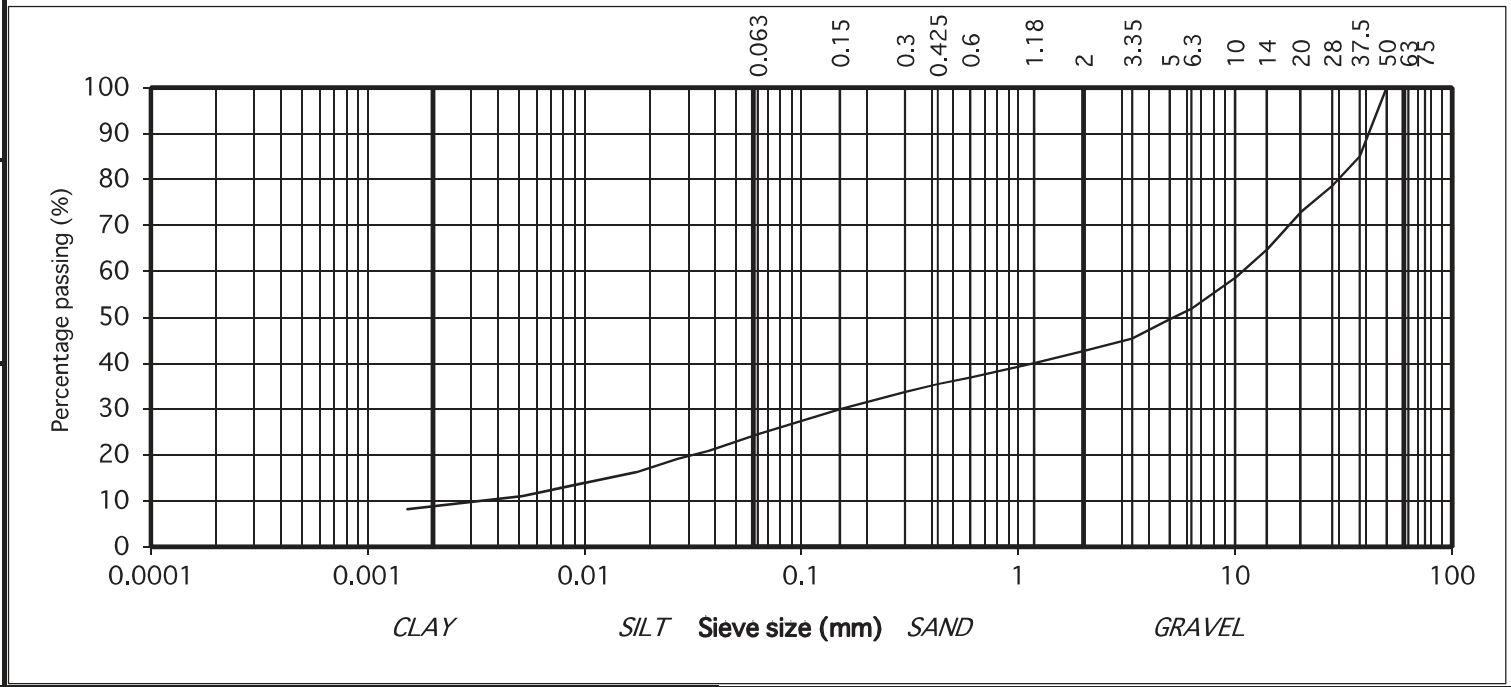
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	95	
14	90	
10	87	
6.3	84	
5	82	
3.35	80	
2	77	
1.18	74	SAND
0.6	69	
0.425	66	
0.3	62	
0.15	56	
0.063	45	SILT/CLAY
0.037	35	
0.027	31	
0.017	26	
0.010	23	
0.007	21	
0.005	18	
0.002	12	

Contract No.	23560	Report No.	R138775	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161199			
Sample No.*	AA175167	Lab. Sample No.		A22/3445
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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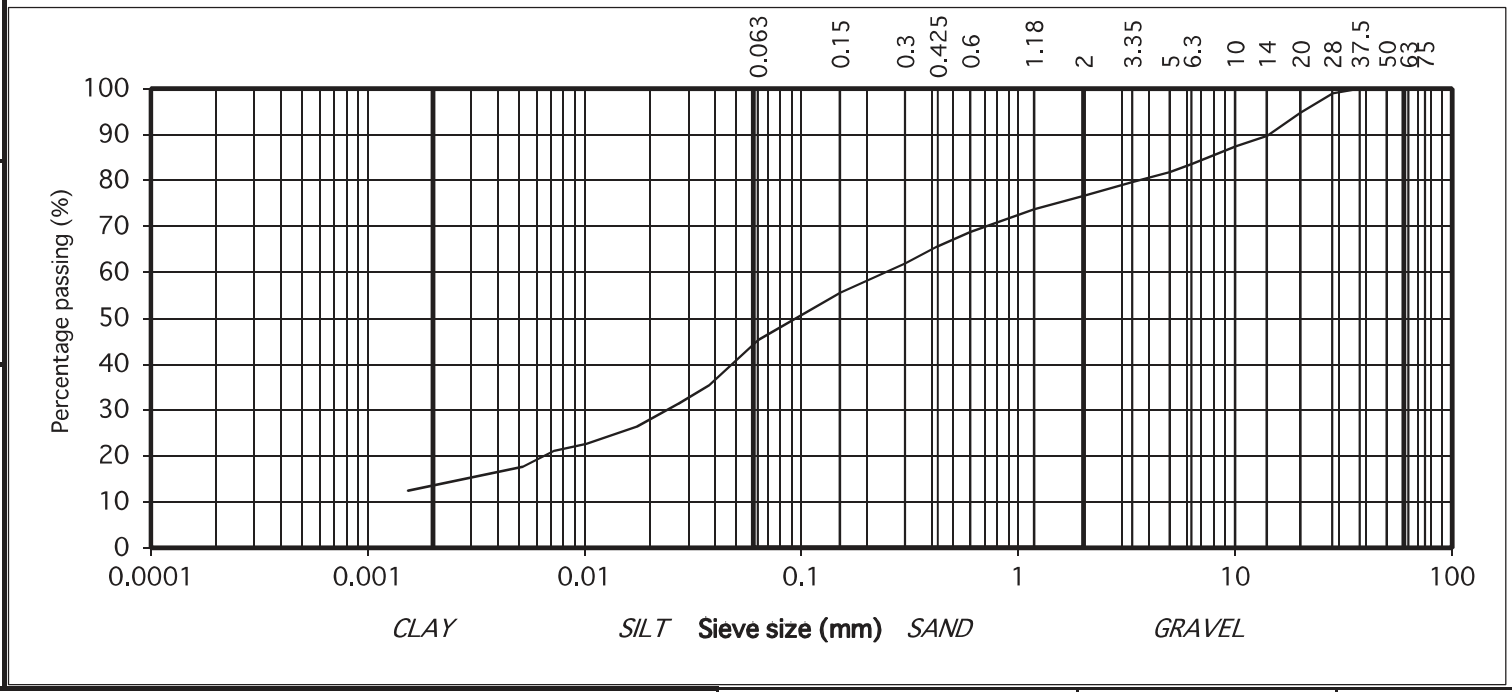
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	94	
14	90	
10	86	
6.3	82	
5	79	
3.35	75	
2	70	
1.18	65	SAND
0.6	60	
0.425	58	
0.3	55	
0.15	50	
0.063	44	SILT/CLAY
0.038	36	
0.027	32	
0.017	28	
0.010	24	
0.007	21	
0.005	19	
0.002	13	

Contract No.	23560	Report No.	R138776	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161199			
Sample No.*	AA175168	Lab. Sample No.		A22/3446
Sample Type:	B			
Depth* (m)	3.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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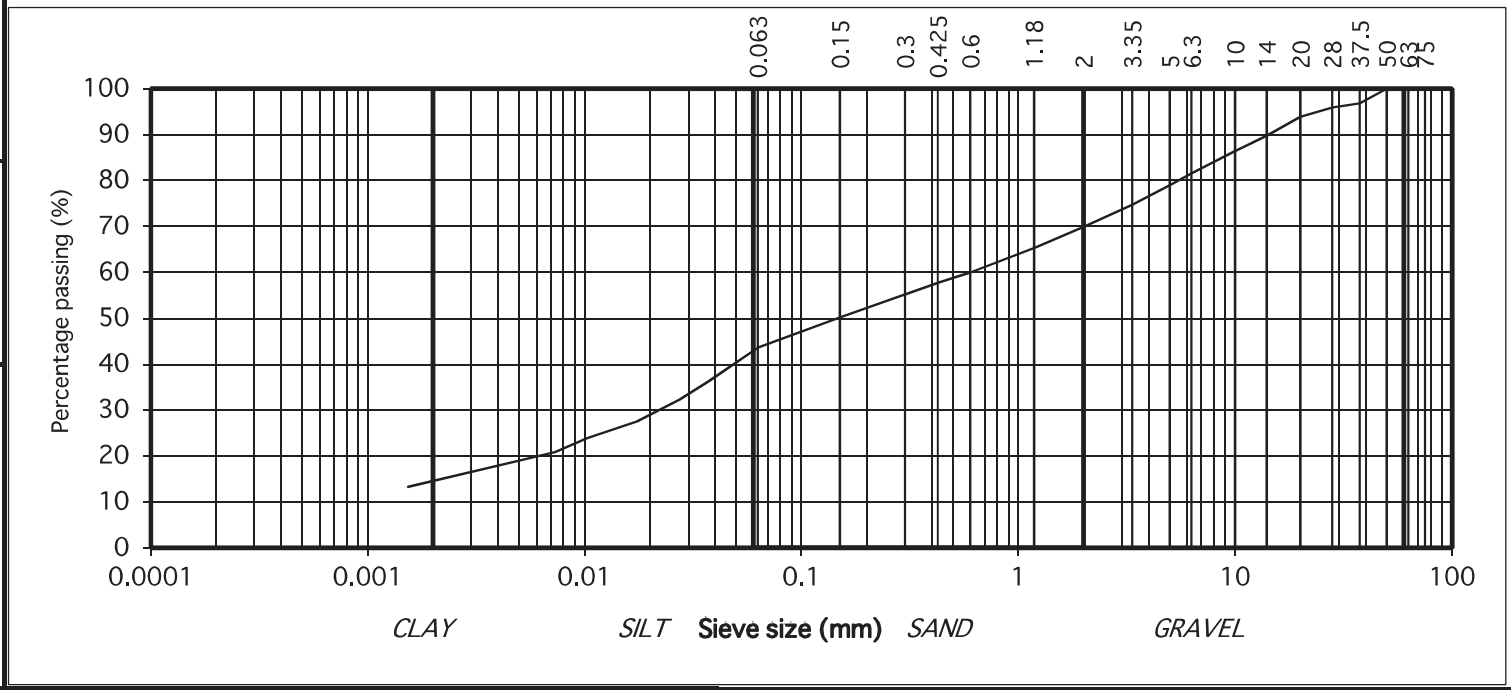
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	96	
50	96	GRAVEL
37.5	81	
28	71	
20	66	
14	63	
10	60	
6.3	57	
5	56	
3.35	54	
2	52	
1.18	49	SAND
0.6	46	
0.425	44	
0.3	41	
0.15	36	
0.063	29	SILT/CLAY
0.038	24	
0.027	21	
0.017	19	
0.010	17	
0.007	16	
0.005	14	
0.002	9	

Contract No. 23560 Report No. R141686
Contract Name: WSP - Lot 3
BH/TP* : TP161858
Sample No.* AA171474 Lab. Sample No. A22/6493
Sample Type: B
Depth* (m) 0.50 Customer: Ervia
Date Received 18/11/2022 Date Testing started 18/11/2022
Description: Brown slightly sandy, gravelly, SILT/CLAY with occasional cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377

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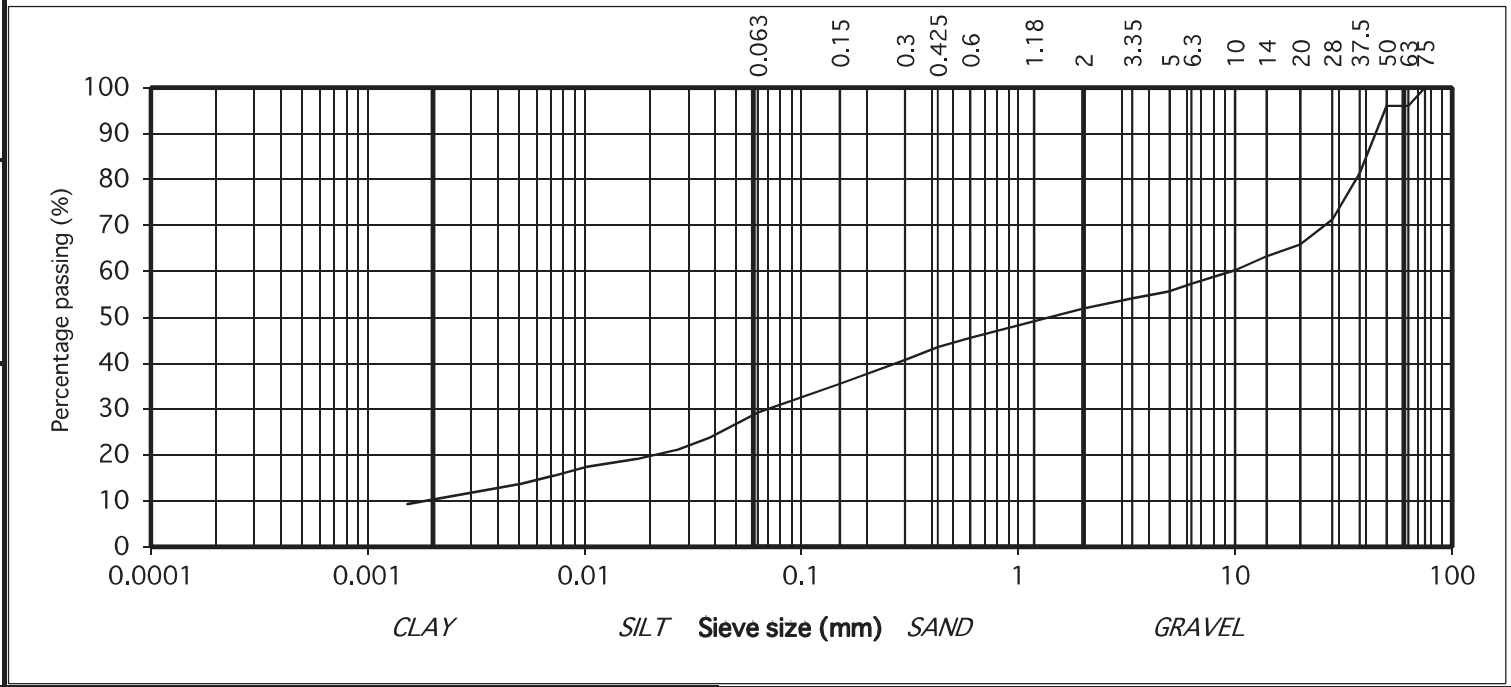

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	93	
20	91	
14	88	
10	84	
6.3	80	
5	78	
3.35	74	
2	70	
1.18	66	SAND
0.6	61	
0.425	58	
0.3	54	
0.15	48	
0.063	39	SILT/CLAY
0.038	33	
0.027	30	
0.017	26	
0.010	23	
0.007	21	
0.005	19	
0.002	13	

Contract No.	23560	Report No.	R138778	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161292			
Sample No.*	AA175171	Lab. Sample No.		A22/3448
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	04/08/2022	Date Testing started		04/08/2022
Description:	Brown/grey slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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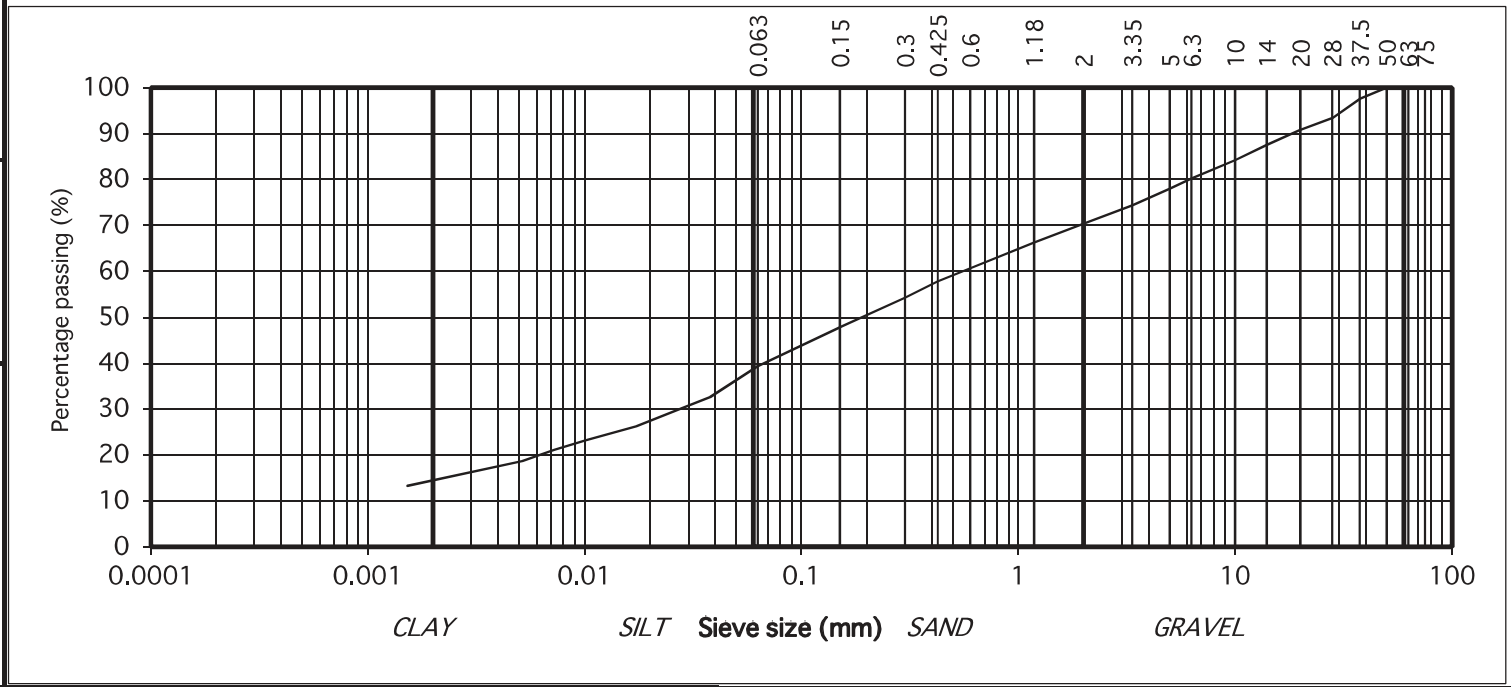
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	86	
28	80	
20	73	
14	70	
10	68	
6.3	65	
5	64	
3.35	62	
2	61	
1.18	59	SAND
0.6	56	
0.425	55	
0.3	51	
0.15	39	
0.063	25	SILT/CLAY
0.037	22	
0.027	19	
0.017	18	
0.010	14	
0.007	13	
0.005	11	
0.002	9	

Contract No.	23560	Report No.	R141431	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161469			
Sample No.*	AA171481	Lab. Sample No.		A22/6488
Sample Type:	B			
Depth* (m)	2.90	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Grey Brown sandy, gravelly, SILT/CLAY			

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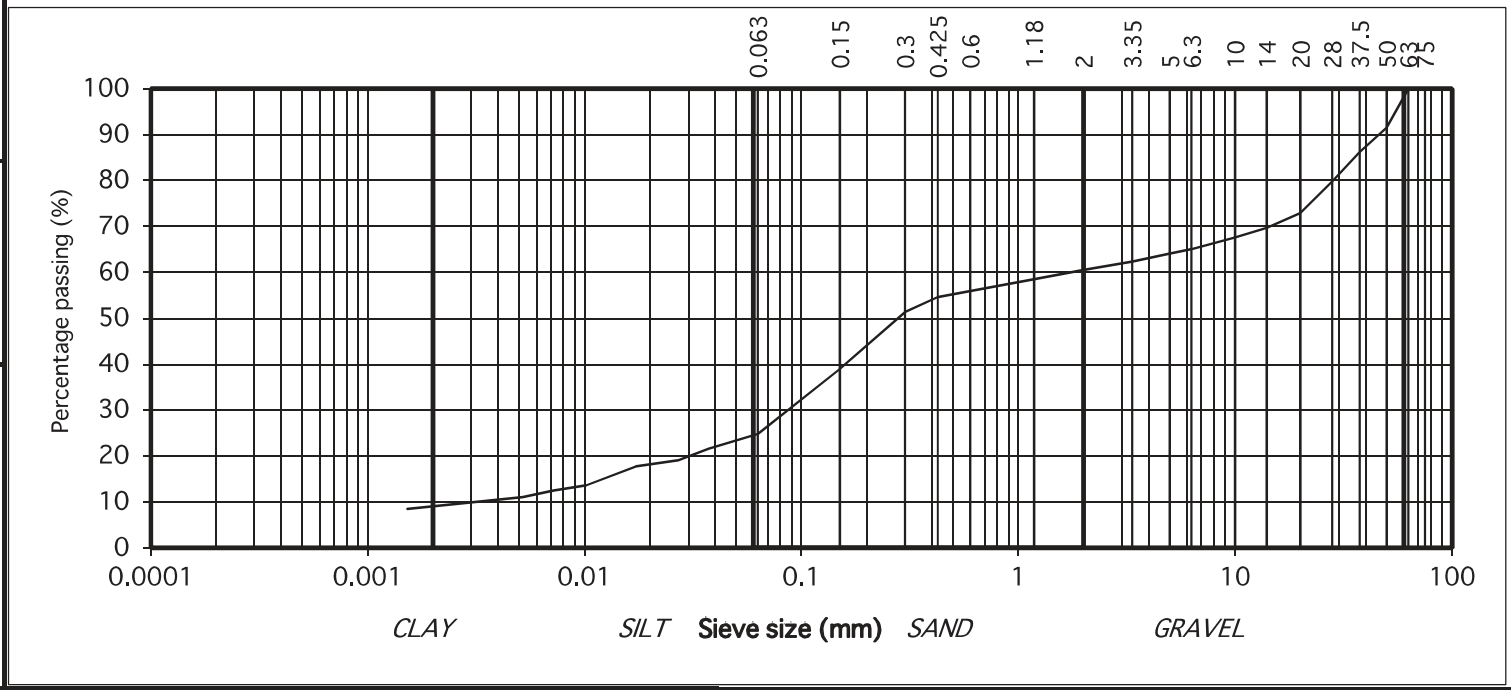
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4 Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
	09/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	99	
1.18	98	SAND
0.6	97	
0.425	96	
0.3	95	
0.15	92	
0.063	76	SILT/CLAY
0.037	64	
0.027	54	
0.018	42	
0.010	35	
0.007	27	
0.005	23	
0.002	13	

Contract No.	23560	Report No.	R141432	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP161858			
Sample No.*	AA171475	Lab. Sample No.		A22/6492
Sample Type:	B			
Depth* (m)	2.10	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Grey Brown slightly sandy, slightly gravelly, SILT/CLAY			

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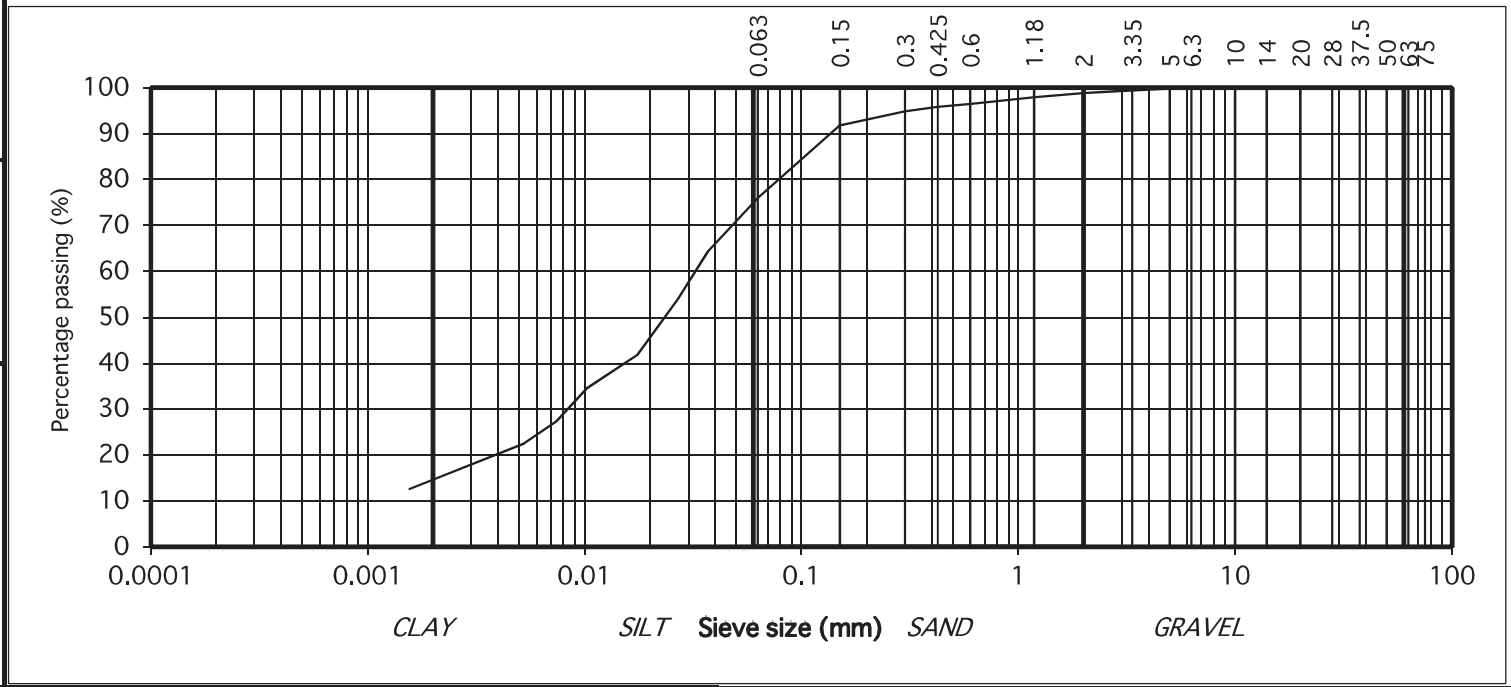

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	09/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	100	
2	100	
1.18	100	SAND
0.6	99	
0.425	99	
0.3	97	
0.15	97	
0.063	94	SILT/CLAY
0.037	87	
0.027	77	
0.017	68	
0.010	52	
0.007	43	
0.005	32	
0.002	10	

Contract No.	23560	Report No.	R141433	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162008			
Sample No.*	AA171472	Lab. Sample No.		A22/6497
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	23/11/2022	Date Testing started		23/11/2022
Description:	Grey Brown slightly sandy, SILT/CLAY			

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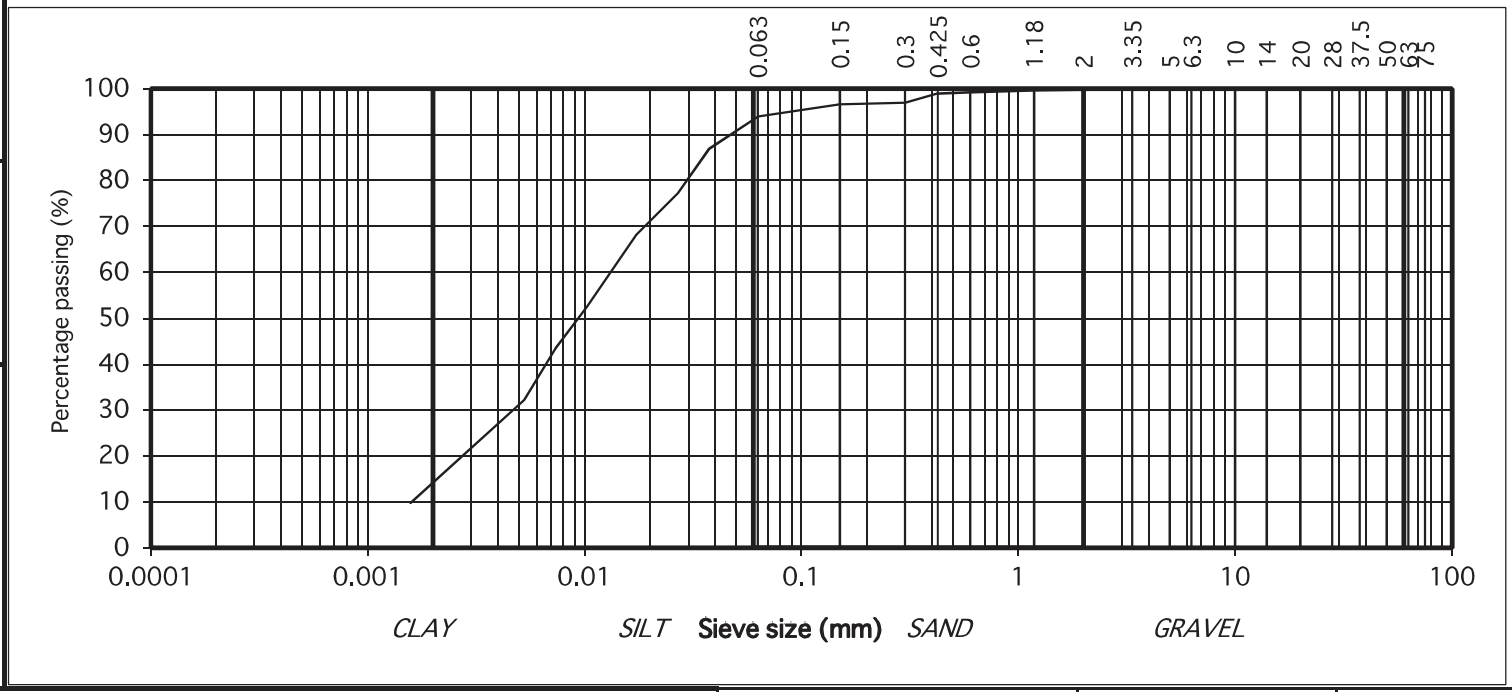

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	96	
14	92	
10	86	
6.3	75	
5	70	
3.35	64	
2	55	
1.18	47	SAND
0.6	35	
0.425	29	
0.3	23	
0.15	17	
0.063	14	SILT/CLAY
0.038	11	
0.027	10	
0.017	9	
0.010	8	
0.007	7	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R141434	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162045			
Sample No.*	AA171471	Lab. Sample No.		A22/6500
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	17/11/2022	Date Testing started		17/11/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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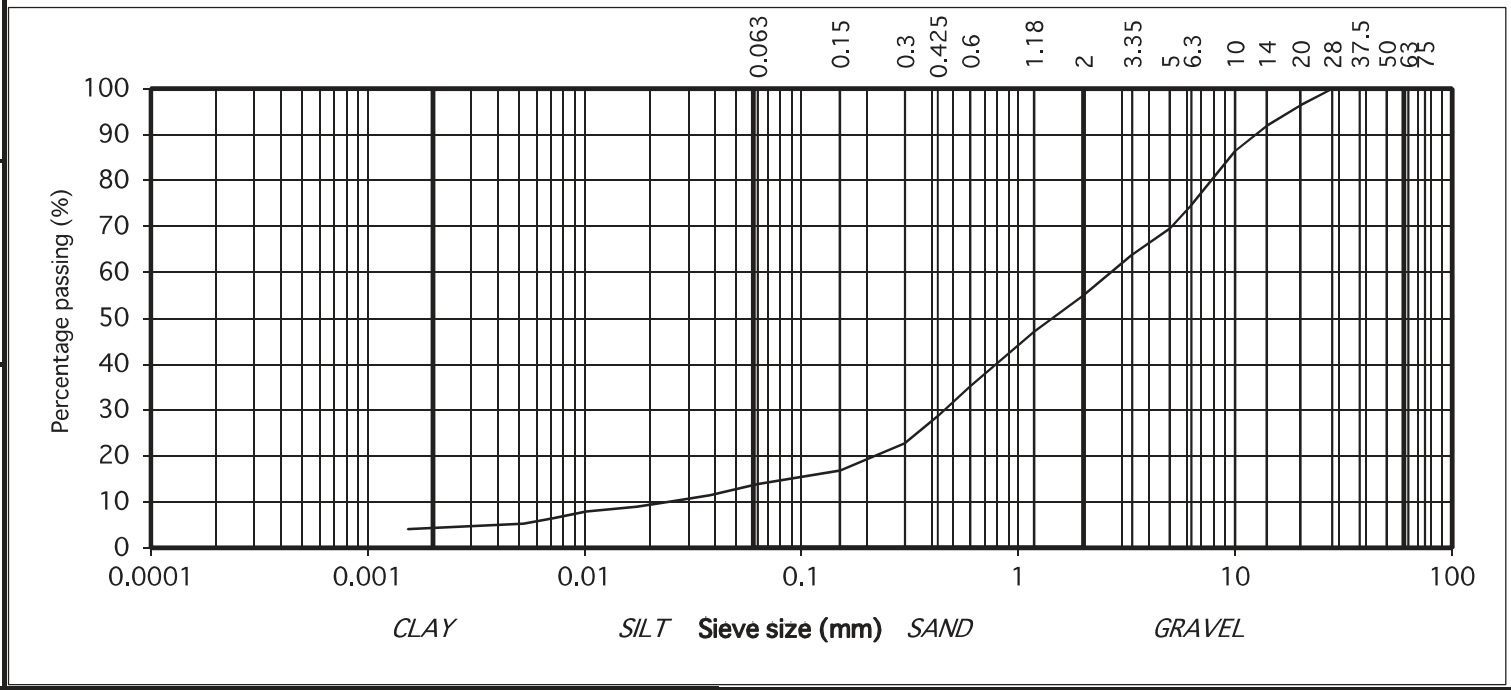

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	100	
2	99	
1.18	99	SAND
0.6	98	
0.425	97	
0.3	96	
0.15	86	
0.063	70	SILT/CLAY
0.037	59	
0.027	50	
0.018	38	
0.010	29	
0.007	22	
0.005	15	
0.002	7	

Contract No.	23560	Report No.	R141687	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162008			
Sample No.*	AA171473	Lab. Sample No.		A22/6496
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	21/11/2022	Date Testing started		21/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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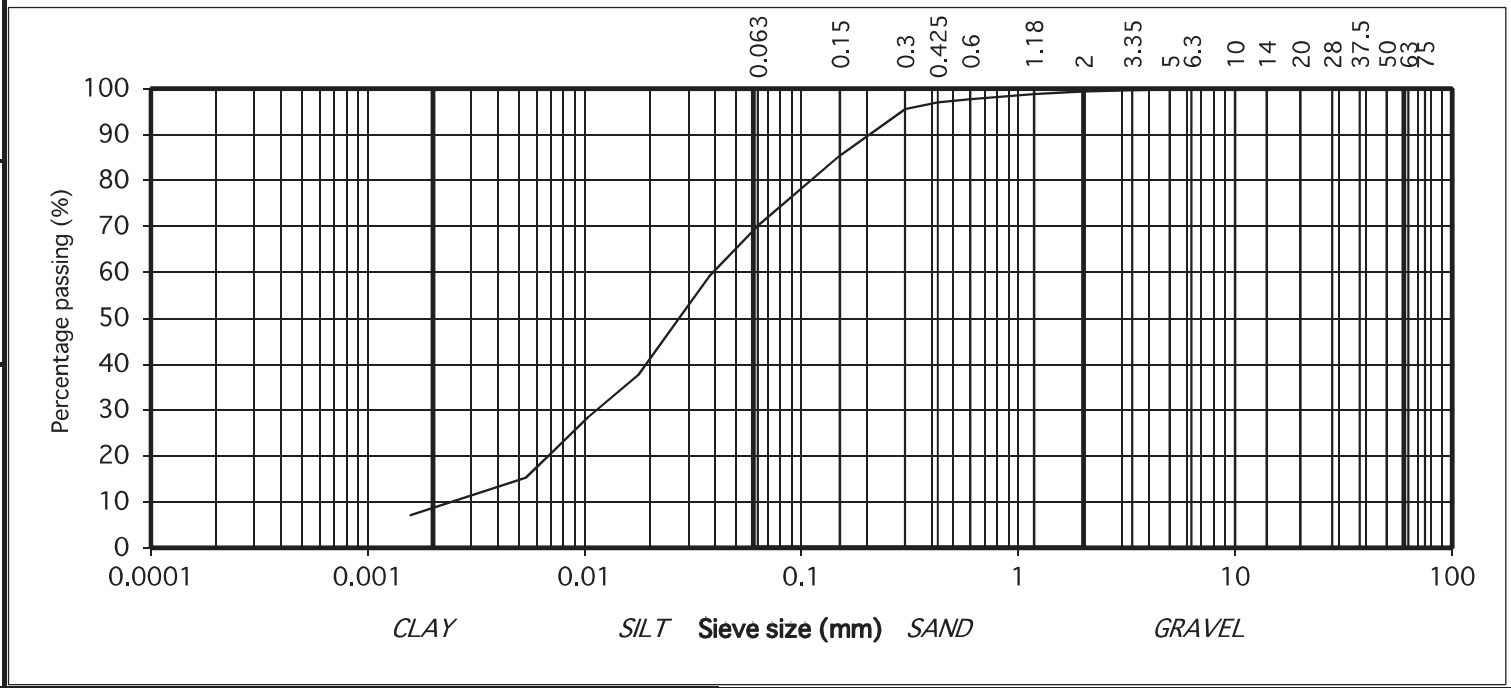
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	100	
2	100	
1.18	100	SAND
0.6	99	
0.425	99	
0.3	99	
0.15	95	
0.063	81	SILT/CLAY
0.038	70	
0.027	58	
0.018	45	
0.010	30	
0.008	22	
0.005	17	
0.002	8	

Contract No.	23560	Report No.	R141688	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162045			
Sample No.*	AA171470	Lab. Sample No.		A22/6499
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown slightly sandy, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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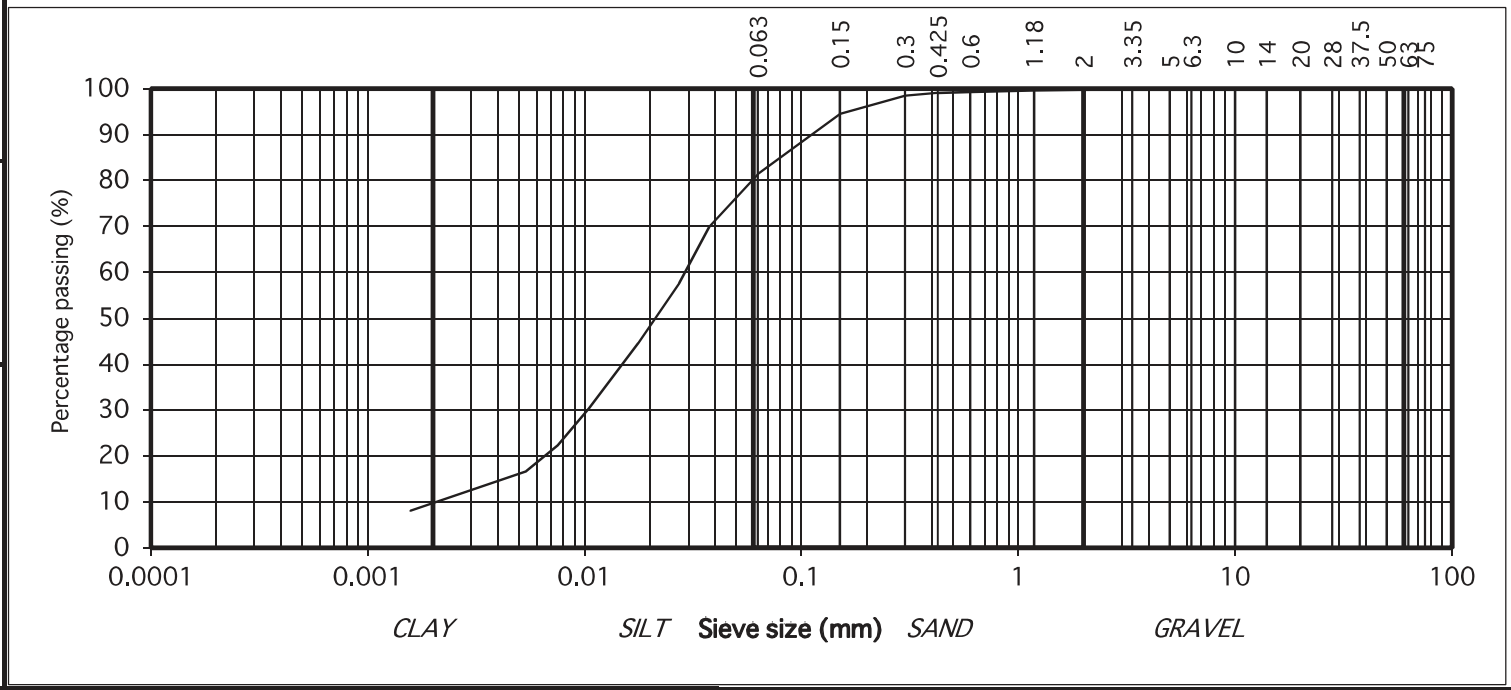

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	99	
2	99	
1.18	99	SAND
0.6	98	
0.425	98	
0.3	97	
0.15	95	
0.063	85	SILT/CLAY
0.037	76	
0.027	69	
0.017	58	
0.010	45	
0.007	40	
0.005	33	
0.002	19	

Contract No.	23560	Report No.	R141435	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162103			
Sample No.*	AA171468	Lab. Sample No.		A22/6504
Sample Type:	B			
Depth* (m)	0.50	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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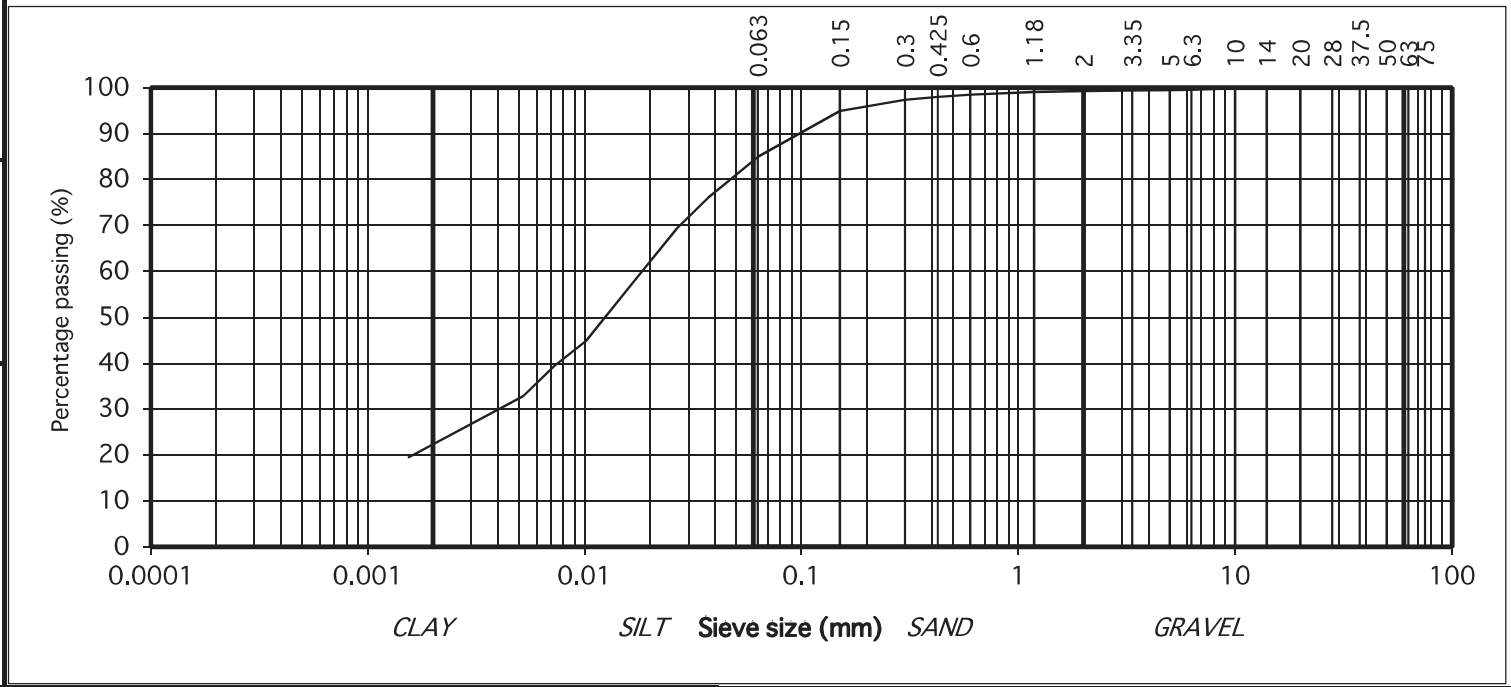

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	92	
14	85	
10	77	
6.3	65	
5	60	
3.35	54	
2	47	
1.18	39	SAND
0.6	25	
0.425	18	
0.3	14	
0.15	11	
0.063	9	SILT/CLAY

Contract No.	23560	Report No.	R141689	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162103			
Sample No.*	AA171469	Lab. Sample No.		A22/6503
Sample Type:	B			
Depth* (m)	1.60	Customer:	Ervia	
Date Received	21/11/2022	Date Testing started		21/11/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

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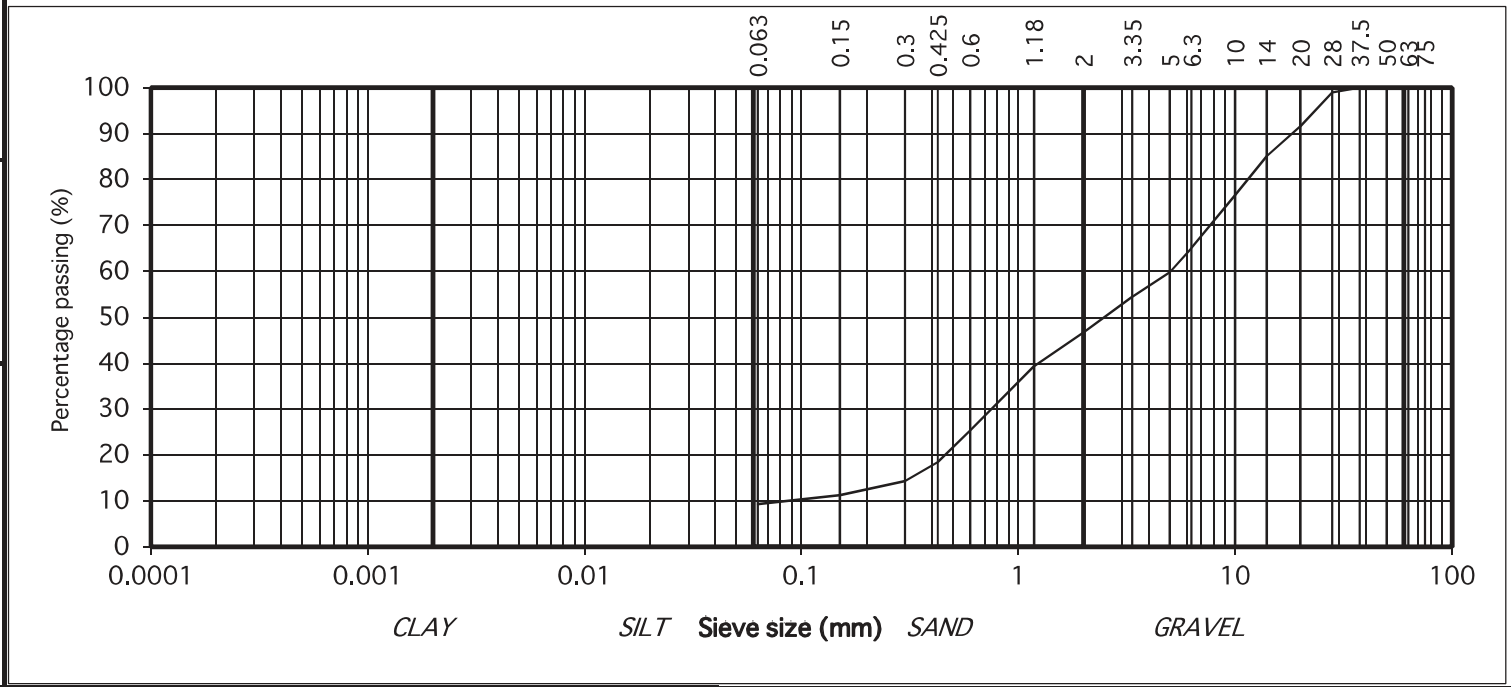
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	100	
3.35	100	
2	99	
1.18	97	SAND
0.6	94	
0.425	93	
0.3	92	
0.15	89	
0.063	85	SILT/CLAY
0.037	76	
0.027	69	
0.017	57	
0.010	47	
0.007	41	
0.005	35	
0.002	16	

Contract No.	23560	Report No.	R141436	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162214			
Sample No.*	AA171478	Lab. Sample No.		A22/6505
Sample Type:	B			
Depth* (m)	1.50	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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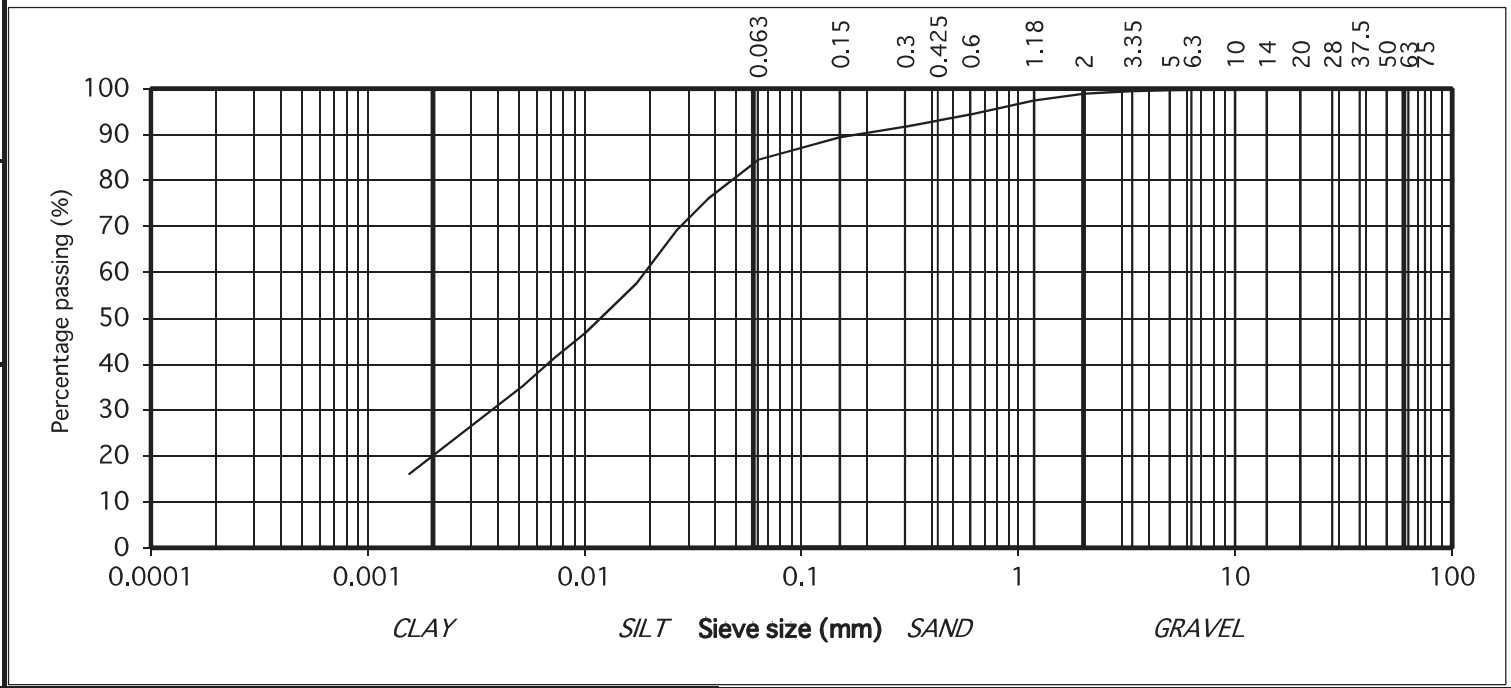

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	98	
20	97	
14	95	
10	93	
6.3	88	
5	85	
3.35	82	
2	76	
1.18	69	SAND
0.6	55	
0.425	48	
0.3	41	
0.15	32	
0.063	18	SILT/CLAY
0.037	13	
0.027	12	
0.017	10	
0.010	9	
0.007	7	
0.005	6	
0.002	4	

Contract No.	23560	Report No.	R141437	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162302			
Sample No.*	AA171466	Lab. Sample No.		A22/6507
Sample Type:	B			
Depth* (m)	1.70	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown clayey/silty, very gravelly, SAND			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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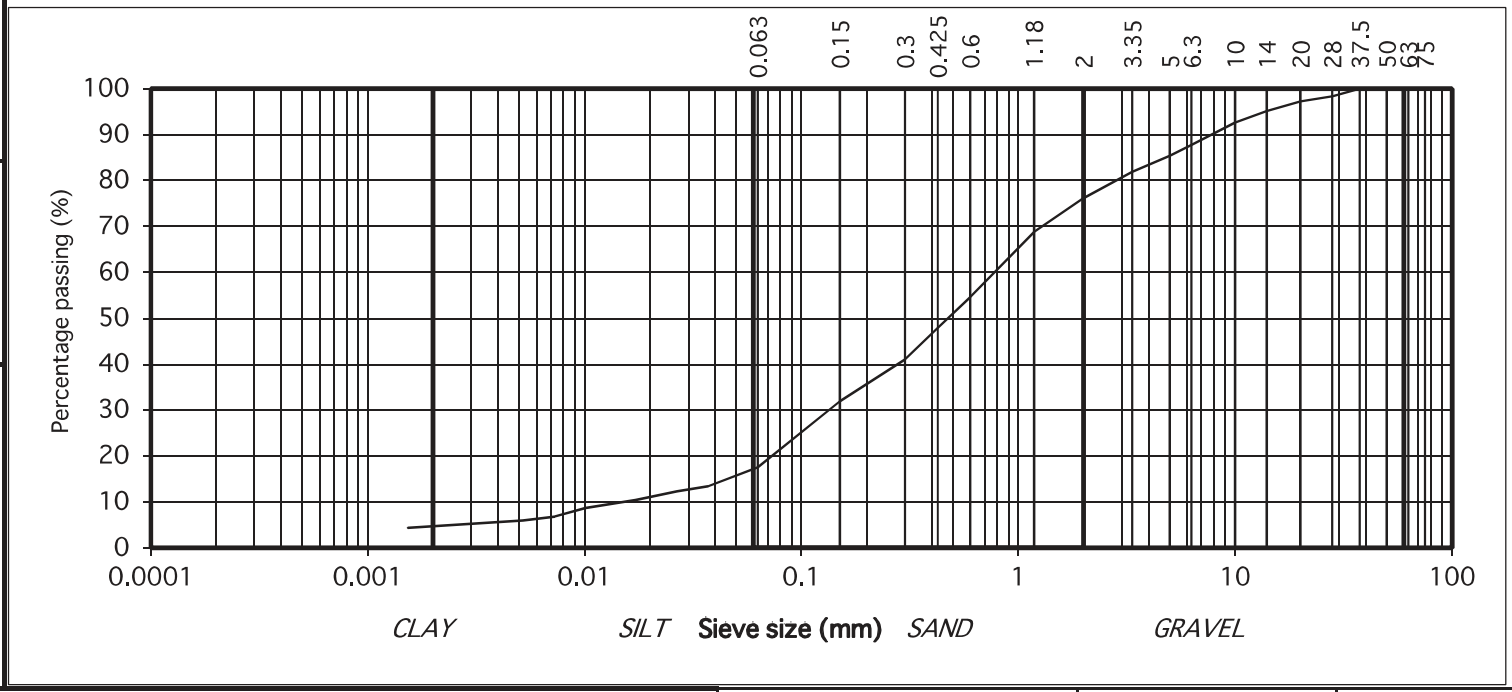
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	89	
14	81	
10	73	
6.3	63	
5	59	
3.35	48	
2	41	
1.18	35	SAND
0.6	24	
0.425	18	
0.3	12	
0.15	9	
0.063	9	SILT/CLAY

Contract No.	23560	Report No.	R141439	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162401			
Sample No.*	AA171464	Lab. Sample No.		A22/6509
Sample Type:	B			
Depth* (m)	1.40	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown clayey/silty, very sandy, GRAVEL			

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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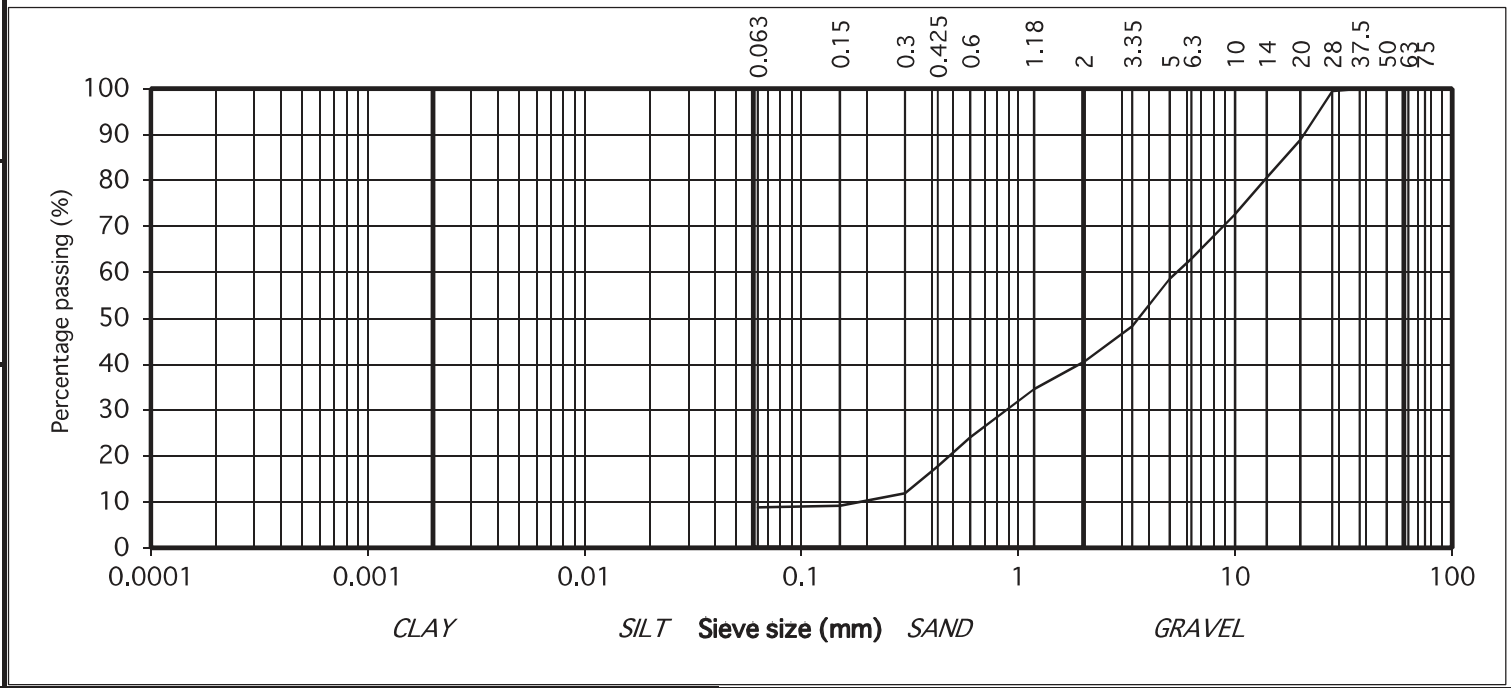

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	97	
20	94	
14	88	
10	82	
6.3	74	
5	69	
3.35	67	
2	60	
1.18	49	SAND
0.6	28	
0.425	21	
0.3	16	
0.15	14	
0.063	12	SILT/CLAY
0.037	10	
0.027	9	
0.017	8	
0.010	7	
0.007	6	
0.005	5	
0.002	4	

Contract No.	23560	Report No.	R141438	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162302			
Sample No.*	AA171467	Lab. Sample No.		A22/6508
Sample Type:	B			
Depth* (m)	1.90	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Brown clayey/silty, very gravelly, SAND			

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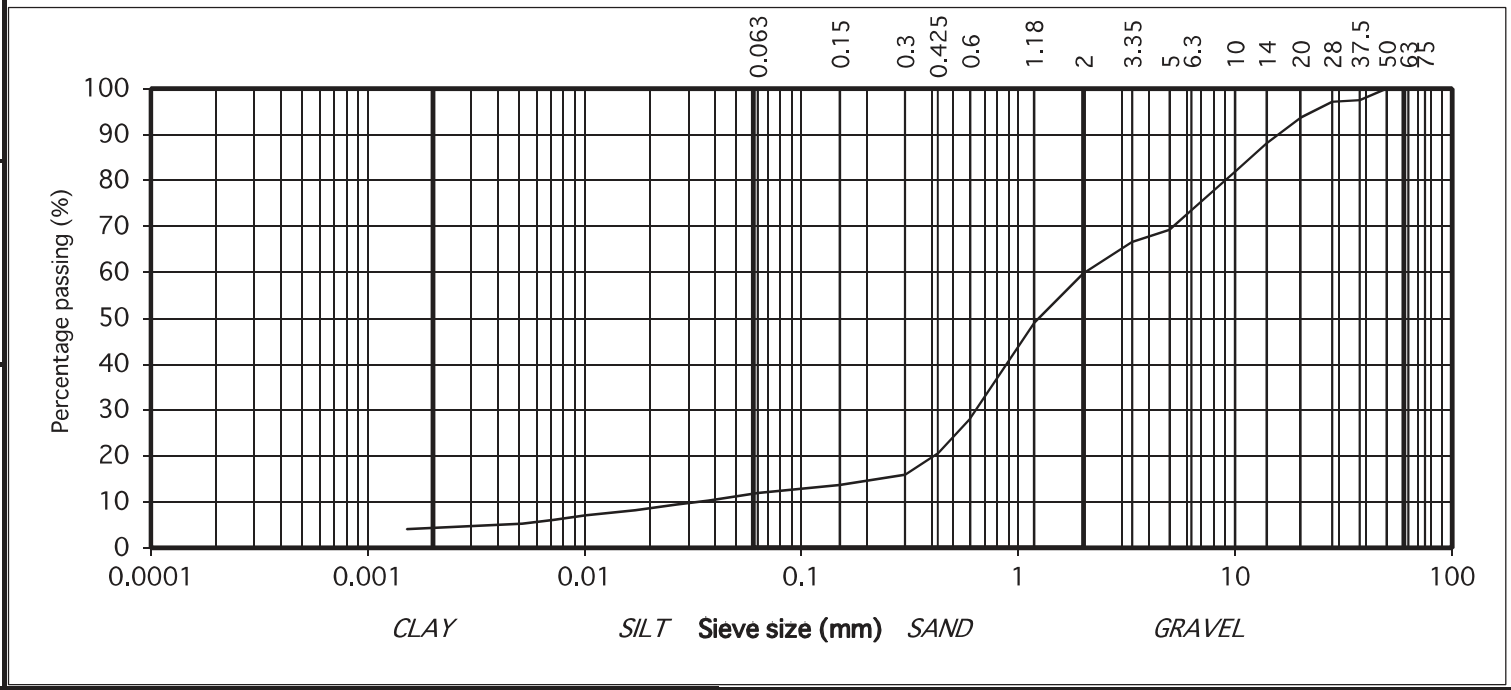

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	95	
20	86	
14	78	
10	70	
6.3	62	
5	59	
3.35	54	
2	48	
1.18	40	SAND
0.6	29	
0.425	22	
0.3	15	
0.15	8	
0.063	5	SILT/CLAY

Contract No.	23560	Report No.	R141690
Contract Name:	WSP - Lot 3		
BH/TP* :	TP162500		
Sample No.*	AA171462	Lab. Sample No.	A22/6510
Sample Type:	B		
Depth* (m)	1.80	Customer:	Ervia
Date Received	18/11/2022	Date Testing started	18/11/2022
Description:	Grey Brown slightly clayey/silty, very sandy, GRAVEL		

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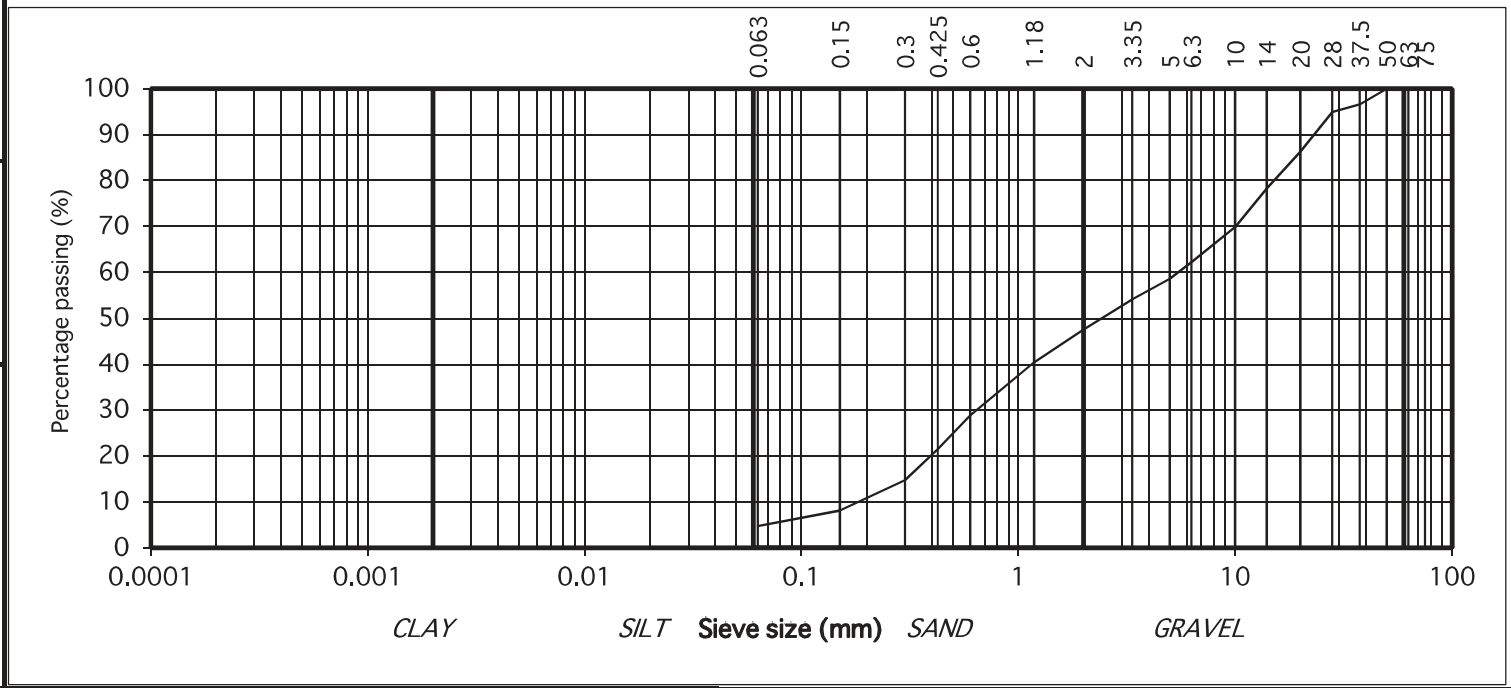

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	89	
14	84	
10	79	
6.3	70	
5	66	
3.35	61	
2	56	
1.18	51	SAND
0.6	43	
0.425	38	
0.3	32	
0.15	23	
0.063	16	SILT/CLAY
0.037	13	
0.027	12	
0.017	10	
0.010	10	
0.007	8	
0.005	7	
0.002	5	

Contract No.	23560	Report No.	R141440	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162602			
Sample No.*	AA171459	Lab. Sample No.		A22/6509
Sample Type:	B			
Depth* (m)	1.40	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Grey Brown clayey/silty, very sandy, GRAVEL			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

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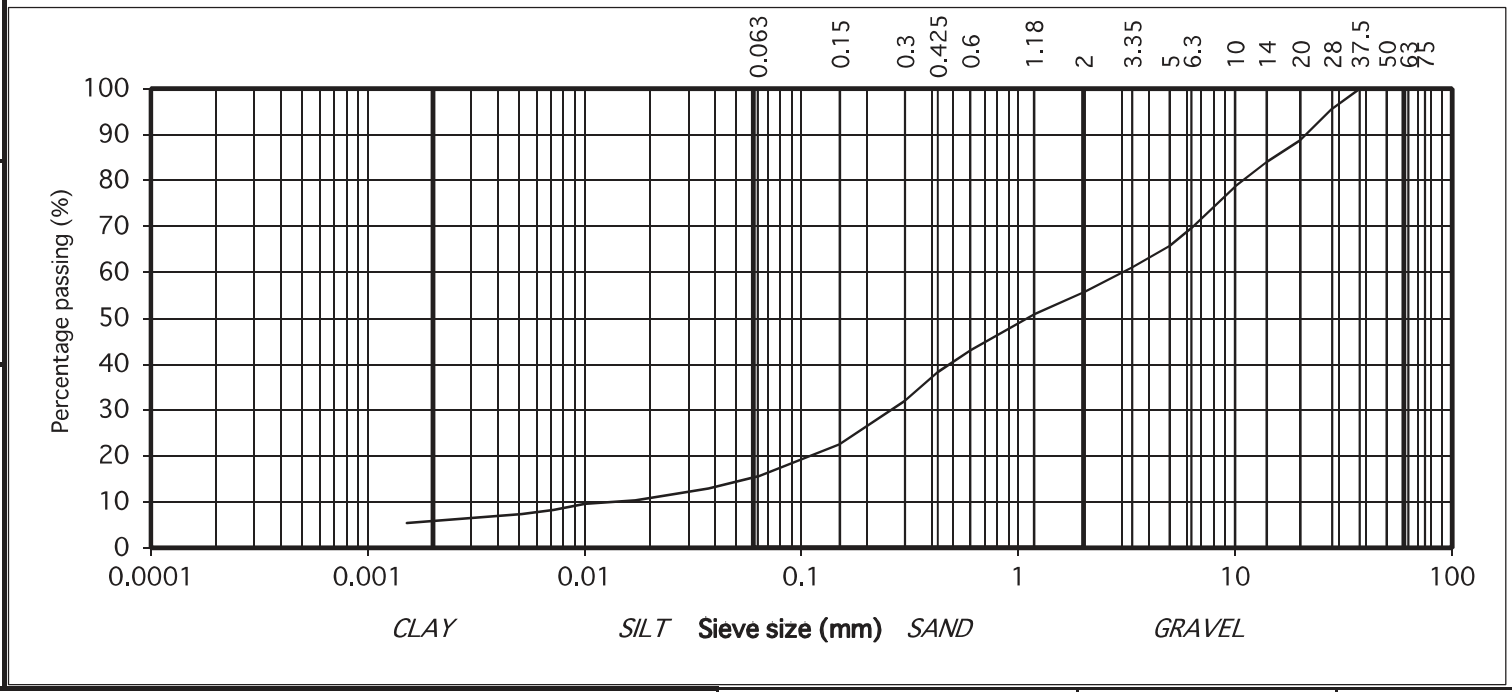

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Approved by:	Date:	Page no:
	09/12/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	99	
14	99	
10	98	
6.3	95	
5	94	
3.35	90	
2	87	
1.18	85	SAND
0.6	83	
0.425	82	
0.3	80	
0.15	76	
0.063	67	SILT/CLAY
0.035	57	
0.025	54	
0.016	49	
0.010	40	
0.007	35	
0.005	30	
0.002	17	

Contract No.	23560	Report No.	R137437	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163301			
Sample No.*	AA179462	Lab. Sample No.		A22/3449
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	06/07/2022	Date Testing started		06/07/2022
Description:	Grey/brown slightly sandy, slightly gravelly, SILT/CLAY			

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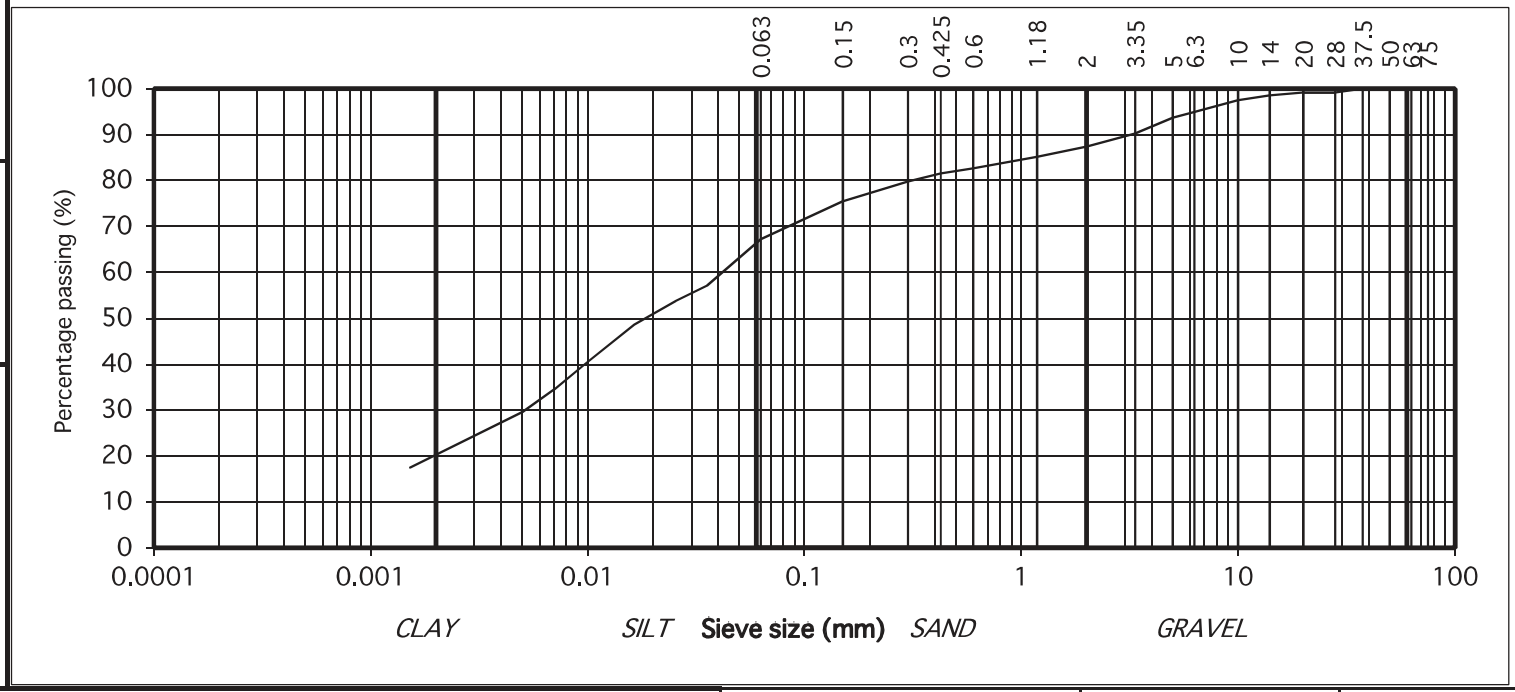

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	99	
3.35	99	
2	99	
1.18	99	SAND
0.6	98	
0.425	98	
0.3	97	
0.15	97	
0.063	95	SILT/CLAY
0.038	88	
0.027	77	
0.018	57	
0.010	45	
0.007	35	
0.005	27	
0.002	16	

Contract No.	23560	Report No.	R141441	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP162699			
Sample No.*	AA171456	Lab. Sample No.		A22/6514
Sample Type:	B			
Depth* (m)	2.70	Customer:	Ervia	
Date Received	18/11/2022	Date Testing started		18/11/2022
Description:	Grey Brown slightly sandy, slightly gravelly, SILT/CLAY			

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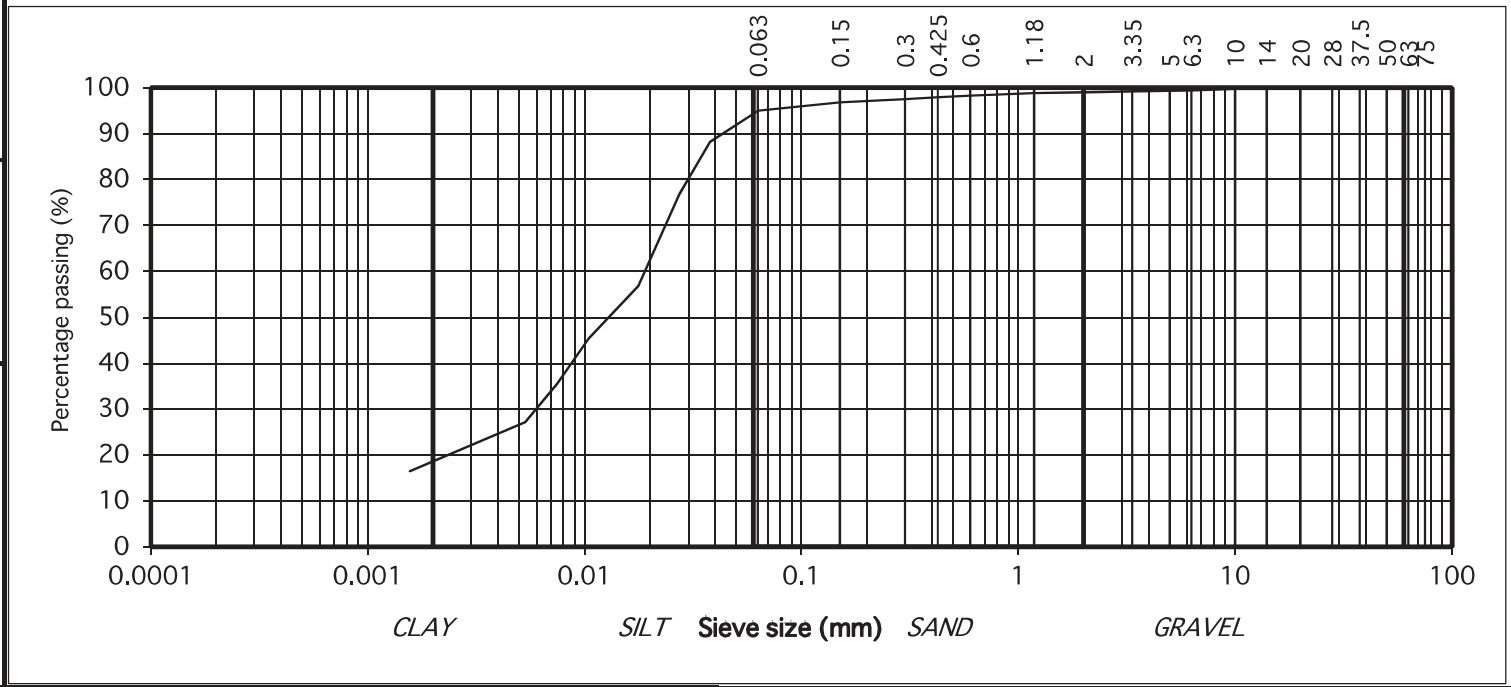

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	89	
14	81	
10	74	
6.3	64	
5	58	
3.35	44	
2	37	
1.18	31	SAND
0.6	18	
0.425	13	
0.3	9	
0.15	7	
0.063	6	SILT/CLAY

Contract No.	23560	Report No.	R141691
Contract Name:	WSP - Lot 3		
BH/TP* :	TP162797		
Sample No.*	AA171453	Lab. Sample No.	A22/6516
Sample Type:	B		
Depth* (m)	1.50	Customer:	Ervia
Date Received	21/11/2022	Date Testing started	21/11/2022
Description:	Grey Brown clayey/silty, very sandy, GRAVEL		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

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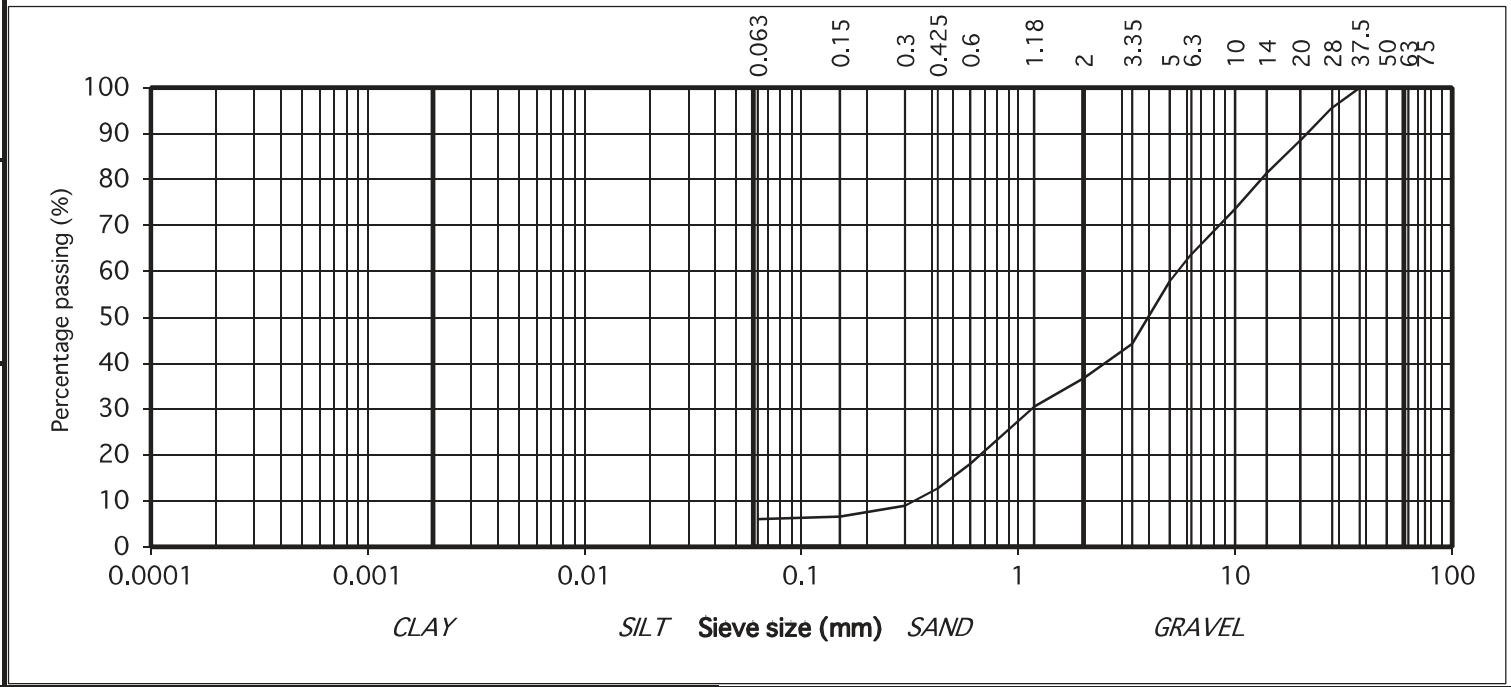
Remarks: Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	95	
50	87	GRAVEL
37.5	87	
28	83	
20	80	
14	77	
10	73	
6.3	68	
5	66	
3.35	63	
2	60	
1.18	57	SAND
0.6	53	
0.425	51	
0.3	49	
0.15	43	
0.063	35	SILT/CLAY
0.040	31	
0.028	29	
0.018	26	
0.010	23	
0.007	20	
0.005	18	
0.002	11	

Contract No.	23560	Report No.	R137444	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP134196			
Sample No.*	AA152162	Lab. Sample No.		A22/3628
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	28/06/2022	Date Testing started		28/06/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY with occasional cobbles			

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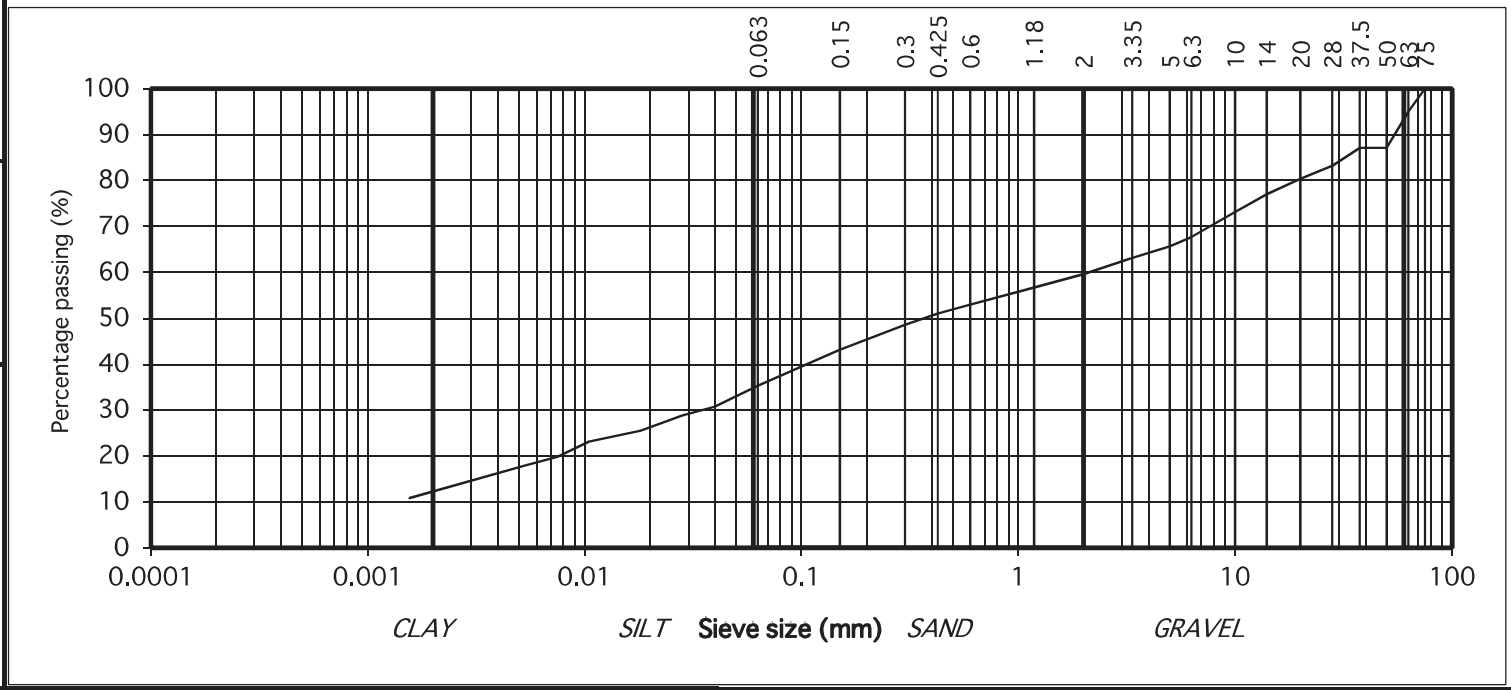

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	98	
20	96	
14	95	
10	94	
6.3	91	
5	89	
3.35	88	
2	86	
1.18	83	SAND
0.6	80	
0.425	78	
0.3	75	
0.15	69	
0.063	59	SILT/CLAY
0.036	51	
0.026	49	
0.017	45	
0.010	40	
0.007	34	
0.005	29	
0.002	20	

Contract No.	23560	Report No.	R137438	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163502			
Sample No.*	AA179468	Lab. Sample No.		A22/3451
Sample Type:	B			
Depth* (m)	1.00	Customer:	Ervia	
Date Received	25/06/2022	Date Testing started		25/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .			

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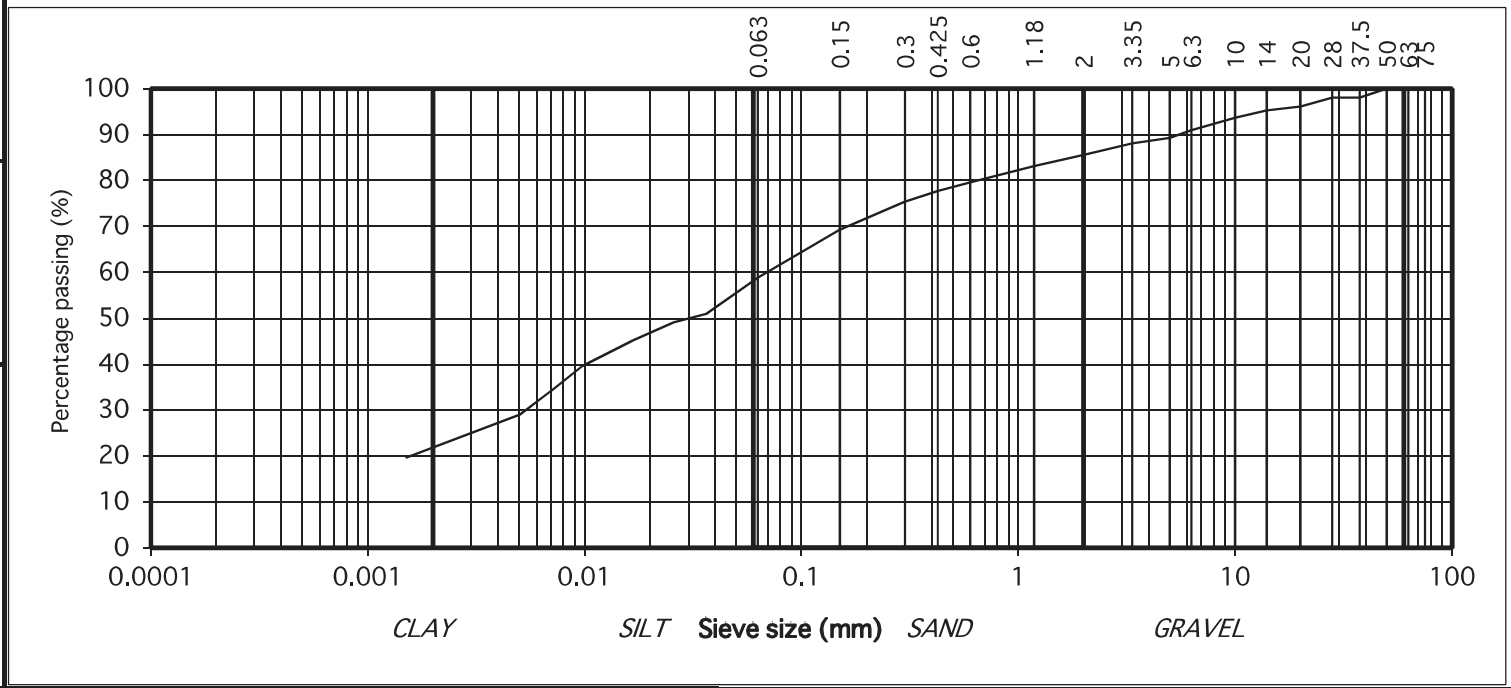

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	87	
20	83	
14	80	
10	78	
6.3	75	
5	73	
3.35	68	
2	64	
1.18	59	SAND
0.6	54	
0.425	51	
0.3	46	
0.15	36	
0.063	29	SILT/CLAY
0.038	27	
0.027	24	
0.017	22	
0.010	19	
0.007	17	
0.005	15	
0.002	11	

Contract No.	23560	Report No.	R144000	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163605			
Sample No.*	AA179470	Lab. Sample No.		A22/3452
Sample Type:	B			
Depth* (m)	2.50	Customer:	Ervia	
Date Received	08/08/2022	Date Testing started		08/08/2022
Description:	Brown slightly sandy, gravelly, SILT/CLAY			

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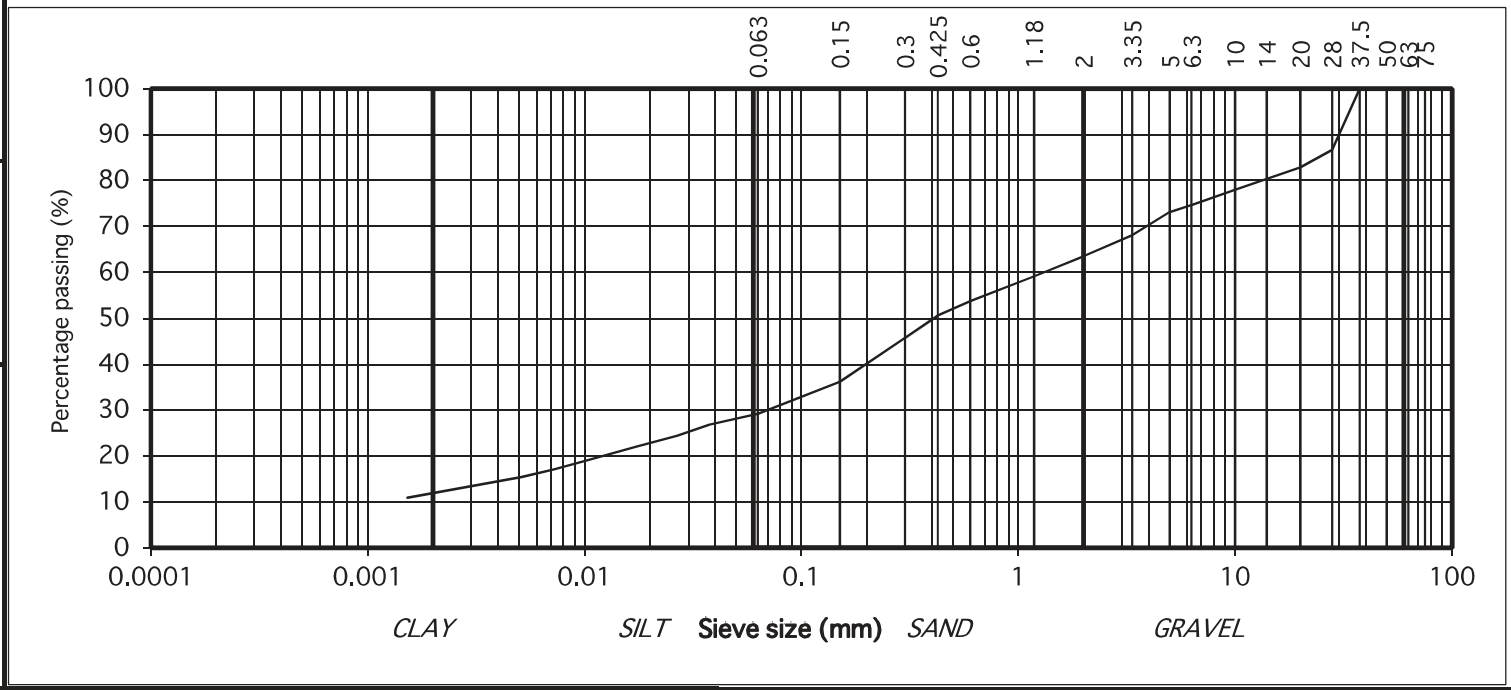

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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	90	
20	88	
14	86	
10	84	
6.3	79	
5	77	
3.35	74	
2	71	
1.18	68	SAND
0.6	65	
0.425	63	
0.3	61	
0.15	55	
0.063	48	SILT/CLAY
0.036	42	
0.026	40	
0.017	37	
0.010	33	
0.007	30	
0.005	27	
0.001	19	

Contract No.	23560	Report No.	R137440	
Contract Name:	WSP - Lot 3			
BH/TP* :	TP163696			
Sample No.*	AA179475	Lab. Sample No.		A22/3244
Sample Type:	B			
Depth* (m)	2.00	Customer:	Ervia	
Date Received	28/06/2022	Date Testing started		28/06/2022
Description:	Brown slightly sandy, slightly gravelly, SILT/CLAY			

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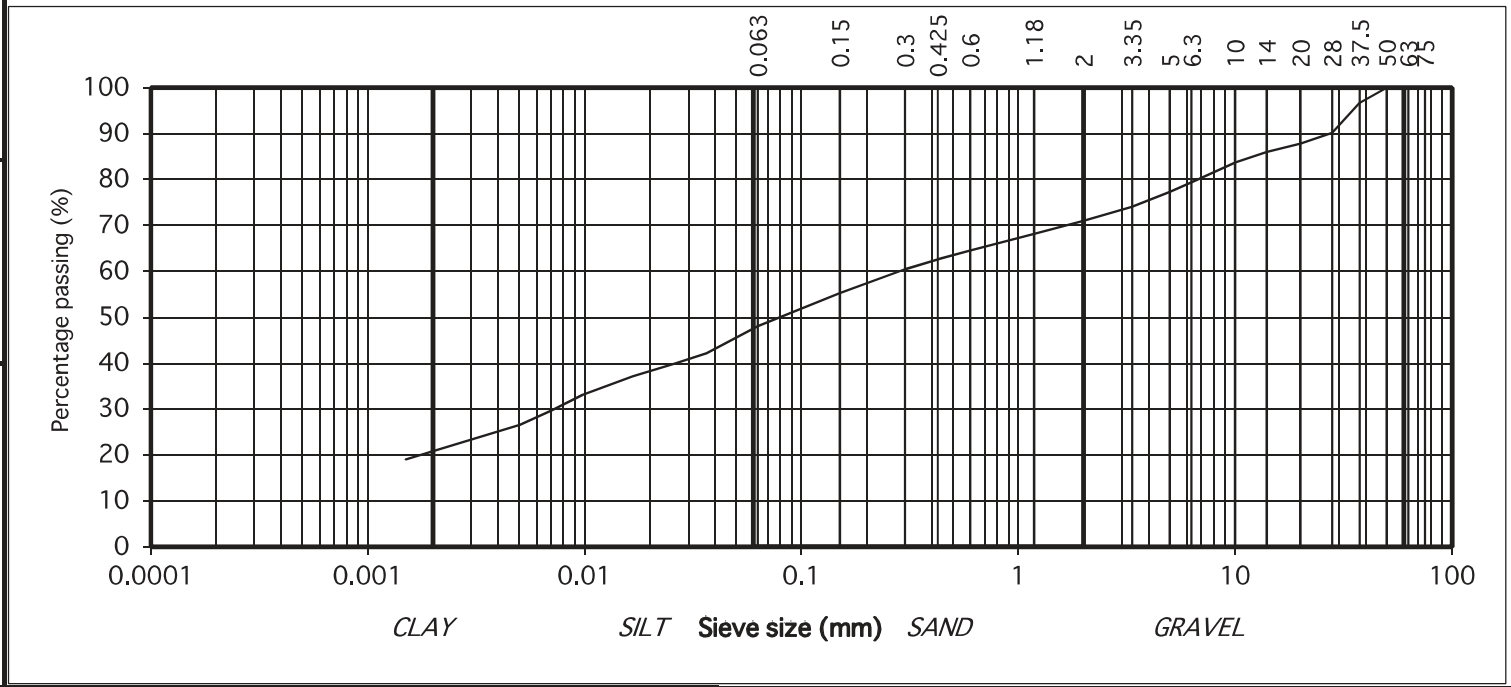

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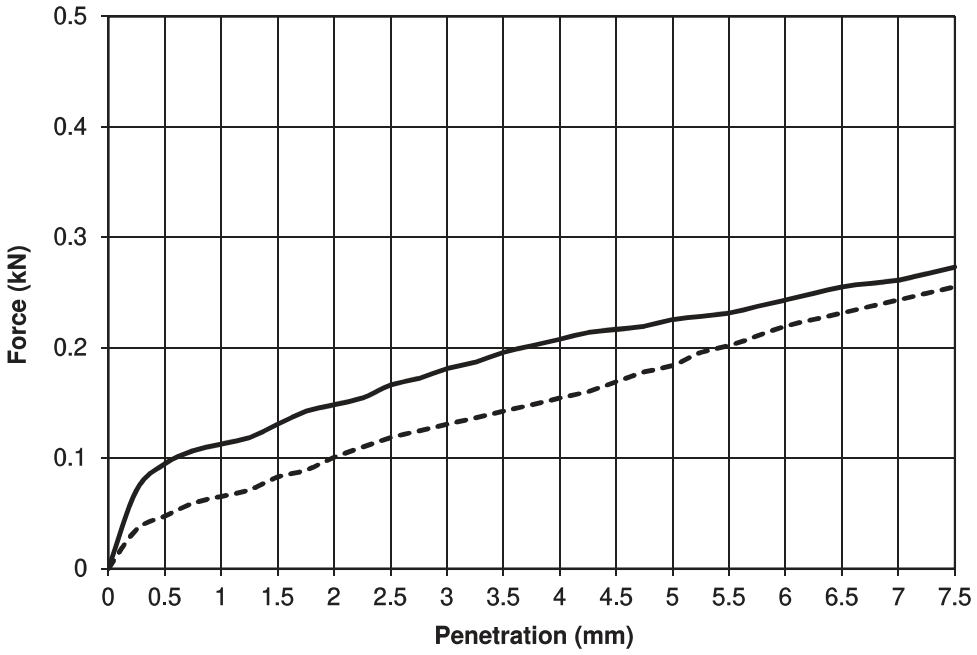
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R144024	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	25/11/22	Date Tested	25/11/22		
BH/TP No.*	BH149273	Sample No.*	179108	Type:	B
Depth* (m)	1.20	Lab sample No.		A22/6464	



Key: ———— Top ---------- Base

Description:	Grey brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	18	Bulk Density (Mg/m^3):	2.10
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.78
% Material >20mm:	10		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.3**	**0.9**
Moisture Content %	18	18

Results relate only to the specimen tested, in as received condition unless otherwise noted

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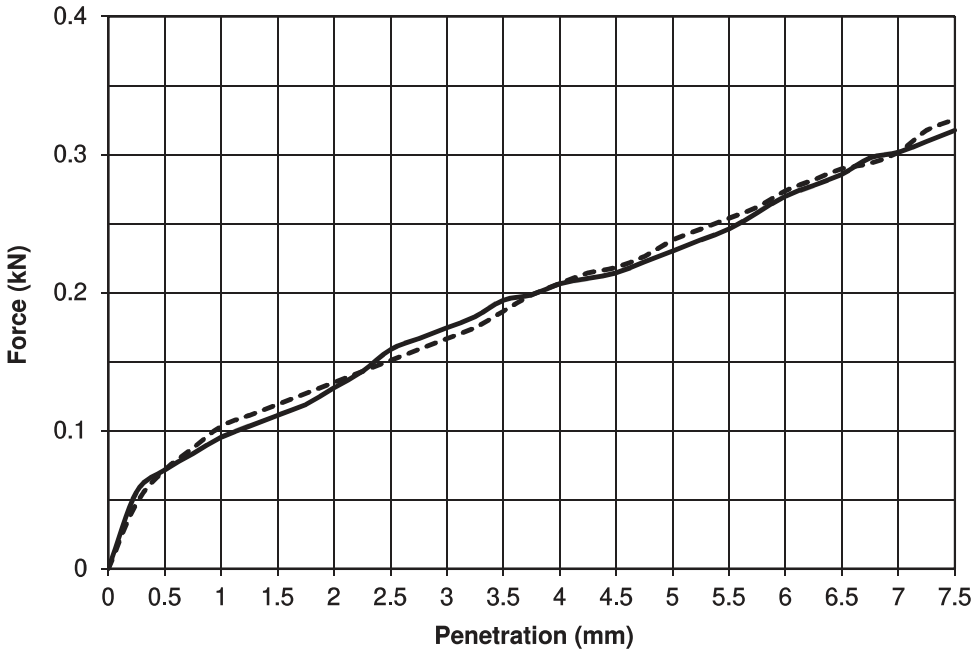
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R139495	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	27/05/22	Date Tested	27/05/22		
BH/TP No.*	BH150204	Sample No.*	179160	Type:	B
Depth* (m)	1.20	Lab sample No.	A22/2417		



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.19
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	19		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.2**	**1.2**
Moisture Content %	15	15

Results relate only to the specimen tested, in as received condition unless otherwise noted

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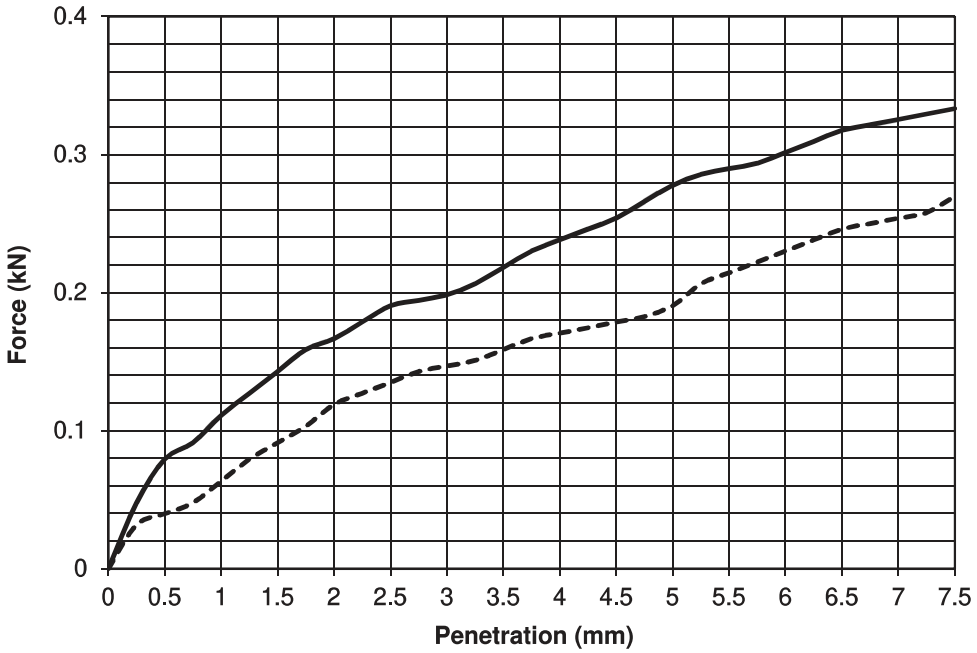
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R137064	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	13/07/22	Date Tested	13/07/22		
BH/TP No.*	BH151907	Sample No.*	178041	Type:	B
Depth* (m)	2.00	Lab sample No.	A22/3948		



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.20
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	6.8		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.4**	**1.0**
Moisture Content %	15	15

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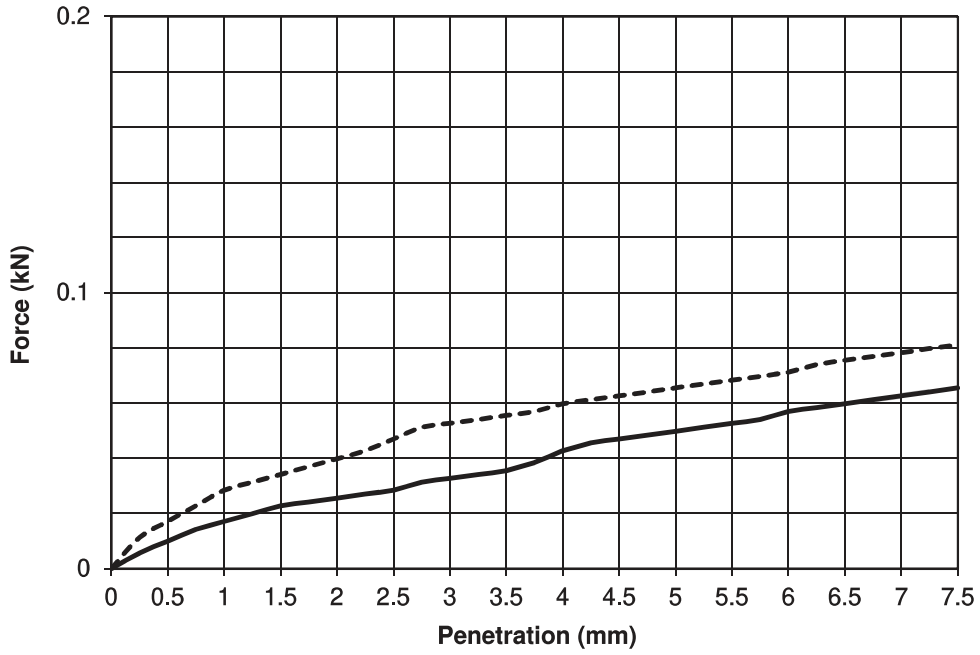
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R137063	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	15/07/22	Date Tested	15/07/22		
BH/TP No.*	BH161293	Sample No.*	173030	Type:	B
Depth* (m)	1.00	Lab sample No.	A22/3926		



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	26	Bulk Density (Mg/m^3):	1.98
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.57
% Material >20mm:	0		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.3**	**0.4**
Moisture Content %	26	26

Results relate only to the specimen tested, in as received condition unless otherwise noted

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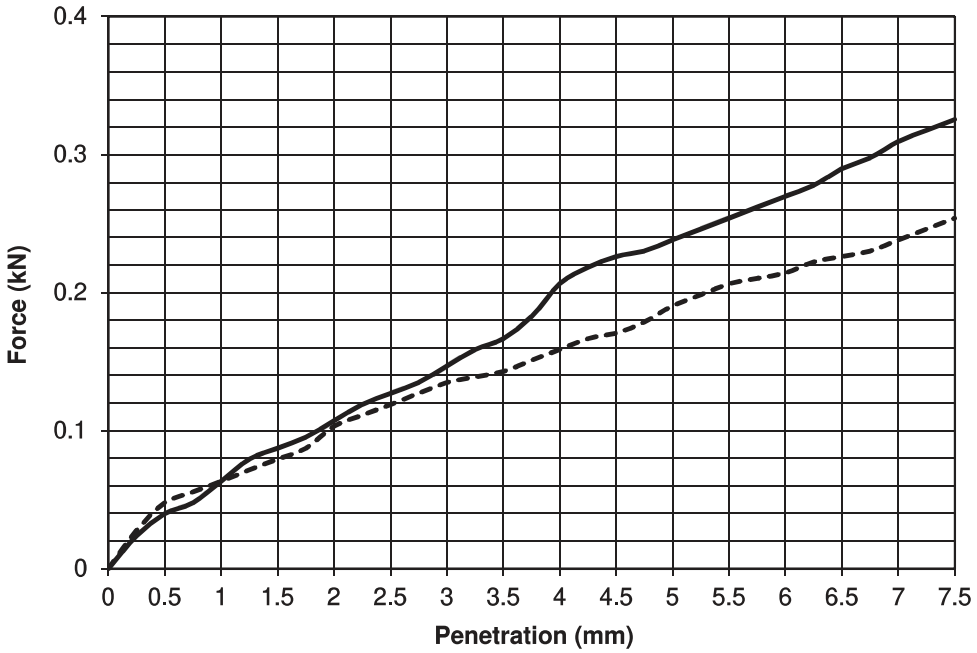
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R139489	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP148704	Sample No.*	AA175189	Type:	B
Depth* (m)	1.50	Lab sample No.	A22/3298		



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.19
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	0		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.2**	**1.0**
Moisture Content %	16	16

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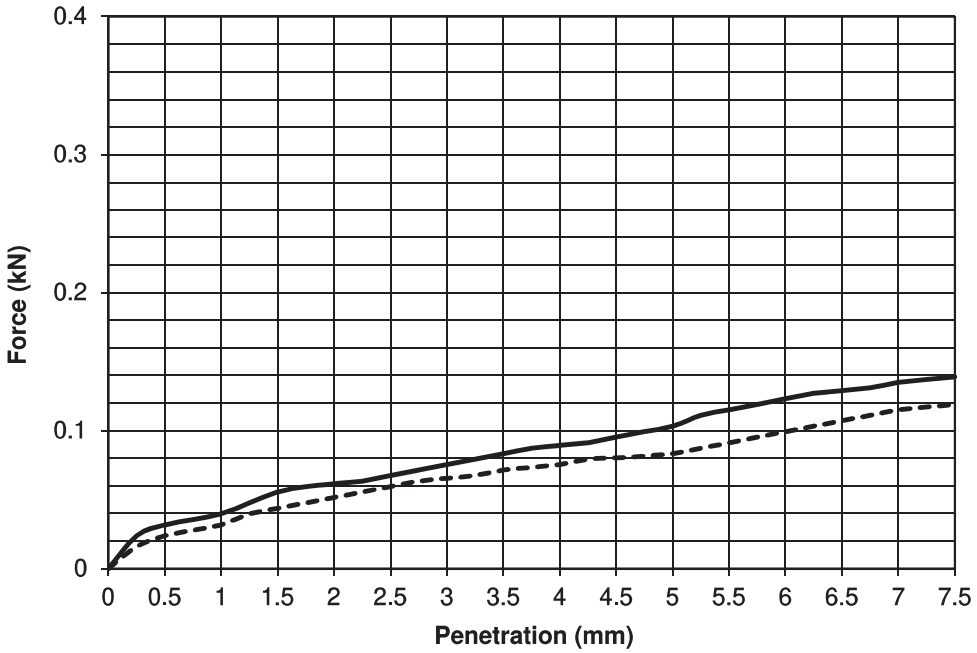
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R143985	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP151906	Sample No.*	AA175204	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3364		



Key: ———— Top ---------- Base

Description:	Grey sandy gravelly SILT		
Initial Condition:	Unsoaked		
Moisture Content (%):	25	Bulk Density (Mg/m^3):	1.98
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.59
% Material >20mm:	0		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.5**	**0.5**
Moisture Content %	25	25

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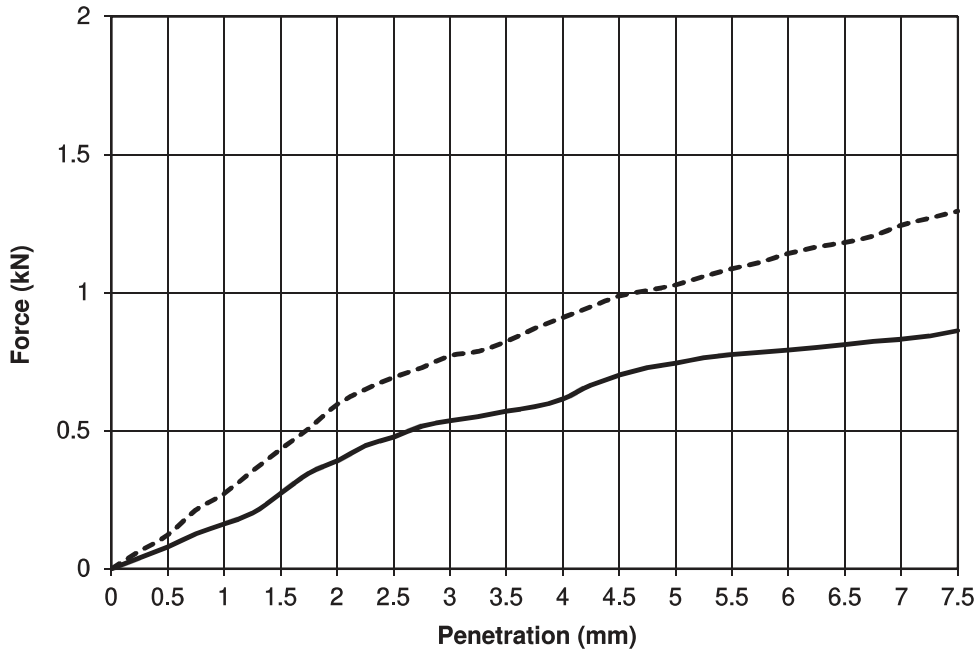
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R143985	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP151906	Sample No.*	AA175204	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3364		



Key: ———— Top ---------- Base

Description:	Grey sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.18
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.90
% Material >20mm:	4.8		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**3.7**	**5.2**
Moisture Content %	15	15

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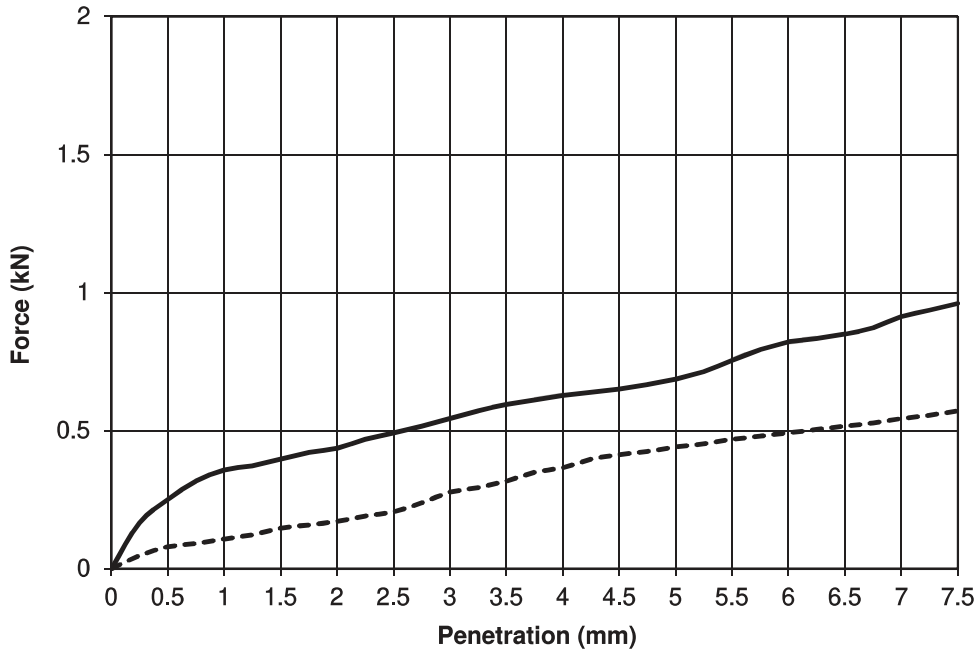
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R143992	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP156204	Sample No.*	AA175181	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3396		



Key: ———— Top ---------- Base

Description:	Grey brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.26
Surcharge (kg):	4	Dry Density (Mg/m^3):	2.01
% Material >20mm:	22.7		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**3.7**	**2.2**
Moisture Content %	12	13

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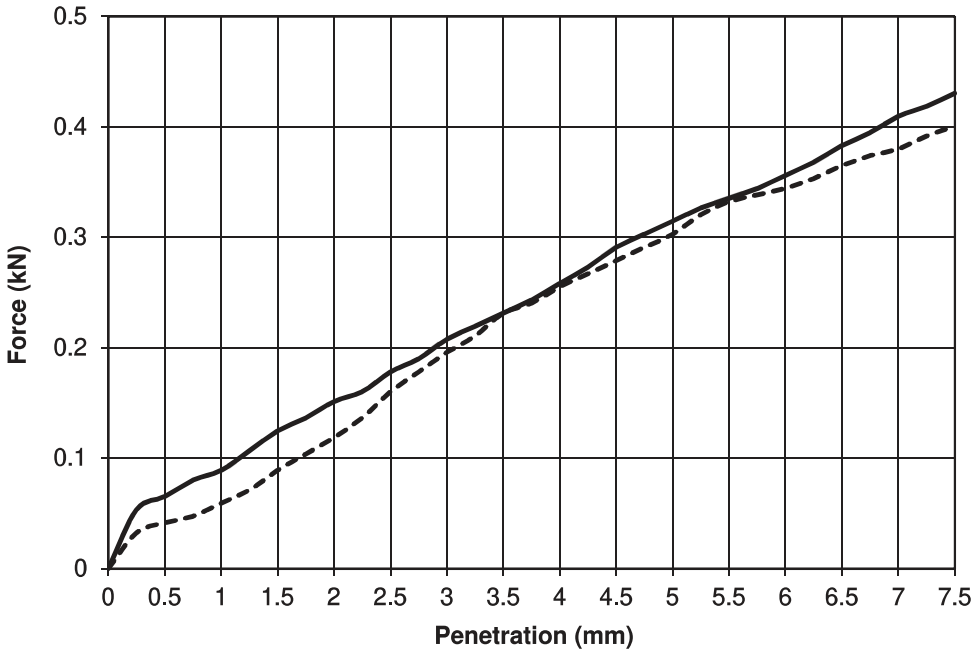
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R143995	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP156803	Sample No.*	AA170160	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3406		



Key: ———— Top ---------- Base

Description:	Grey brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	23	Bulk Density (Mg/m^3):	2.06
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.67
% Material >20mm:	10		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.6**	**1.5**
Moisture Content %	23	23

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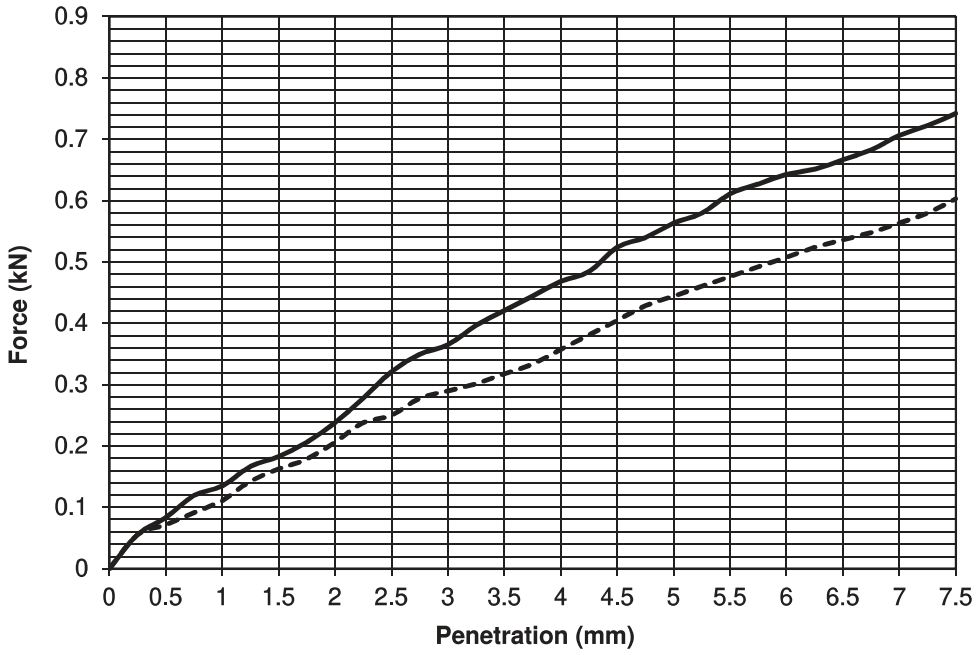
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R139488	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	08/08/22	Date Tested	08/08/22		
BH/TP No.*	TP157585	Sample No.*	AA170184	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3419		



Key: ———— Top ---------- Base

Description:	Brown slightly sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	17	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.84
% Material >20mm:	8.5		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.8**	**2.2**
Moisture Content %	17	17

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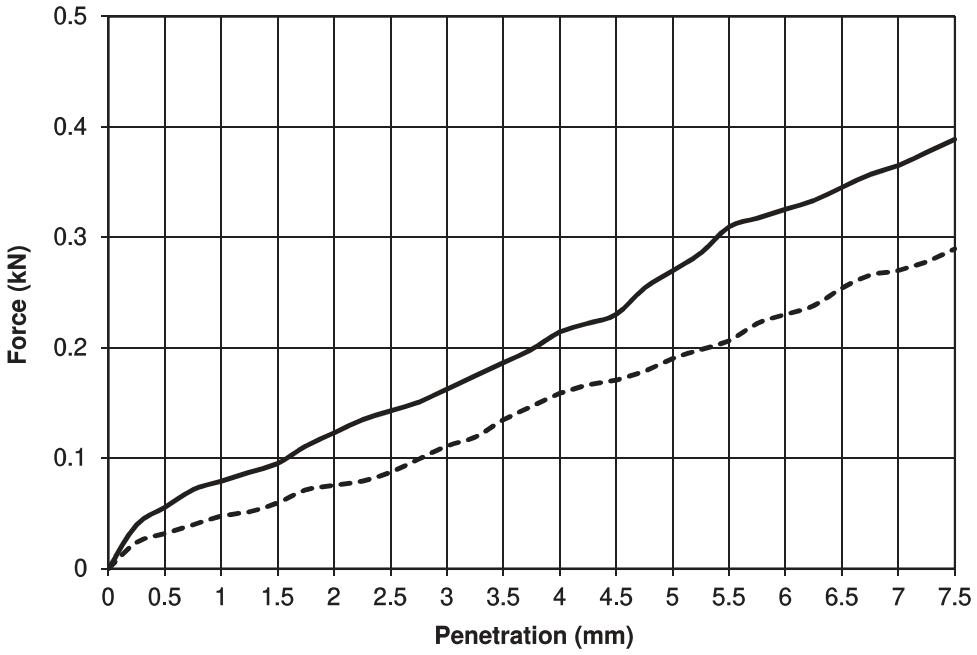
Report No.	R143992	Contract	WSP Lot3		
Contract No.	23560	Customer	Ervia		
Date received	23/08/22	Date Tested	23/08/22		
BH/TP No.*	TP156204	Sample No.*	AA175181	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/3448		



Key: ———— Top ---------- Base

Description:	Grey brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.19
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.92
% Material >20mm:	10		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.0**	**1.0**
Moisture Content %	14	14

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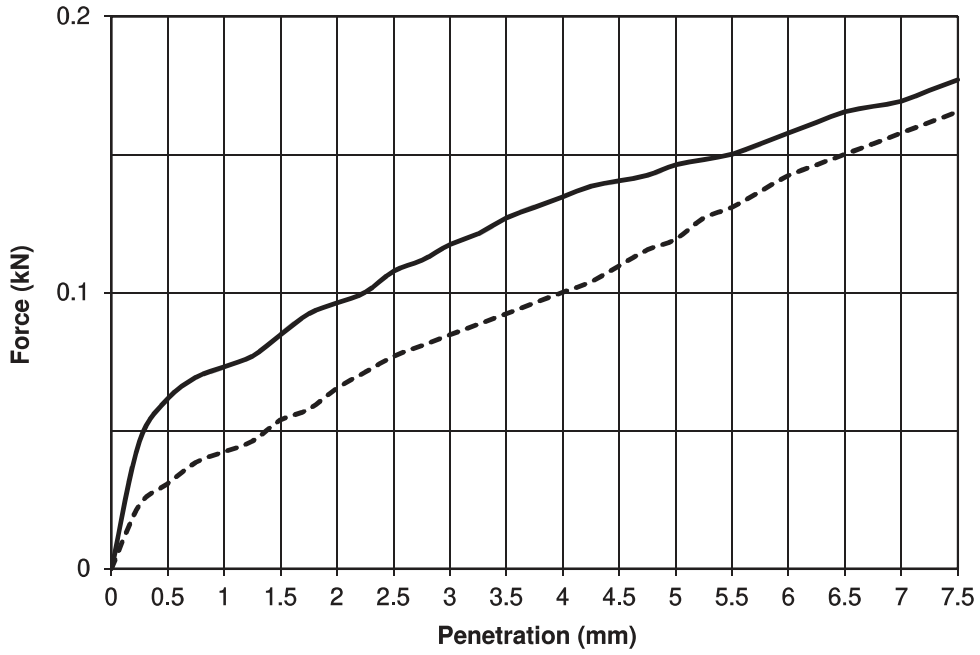
Report No.	R143941	Contract	WSP Lot 3		
Contract No.	23560	Customer	Ervia		
Date received	29/11/23	Date Tested	29/11/23		
BH/TP No.*	TP162302	Sample No.*	AA171465	Type:	B
Depth* (m)	0.50	Lab sample No.	A22/6506		



Key: ———— Top ---------- Base

Description:	Grey brown sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	18	Bulk Density (Mg/m^3):	2.10
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.78
% Material >20mm:	27		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.8**	**0.6**
Moisture Content %	18	18

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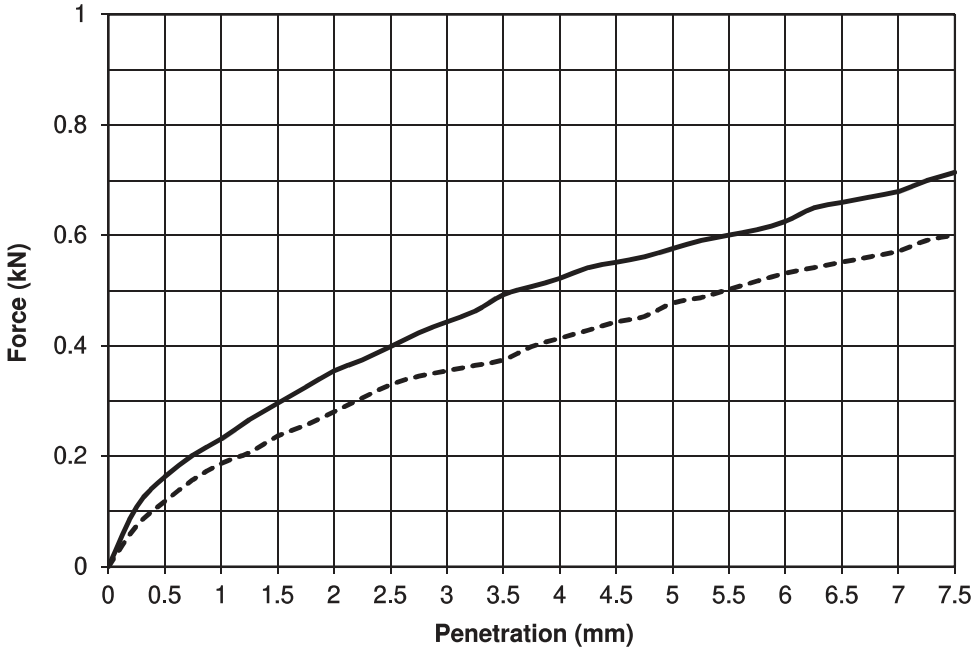
Report No.	R143942	Contract	WSP Lot 3		
Contract No.	23560	Customer	Ervia		
Date received	29/11/23	Date Tested	29/11/23		
BH/TP No.*	TP162602	Sample No.*	AA171459	Type:	B
Depth* (m)	1.40	Lab sample No.	A22/6509		



Key: ———— Top ---------- Base

Description:	Grey Brown clayey/silty, very sandy, GRAVEL		
Initial Condition:	Unsoaked		
Moisture Content (%):	11	Bulk Density (Mg/m^3):	2.15
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.94
% Material >20mm:	35		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**3.0**	**2.4**
Moisture Content %	11	11

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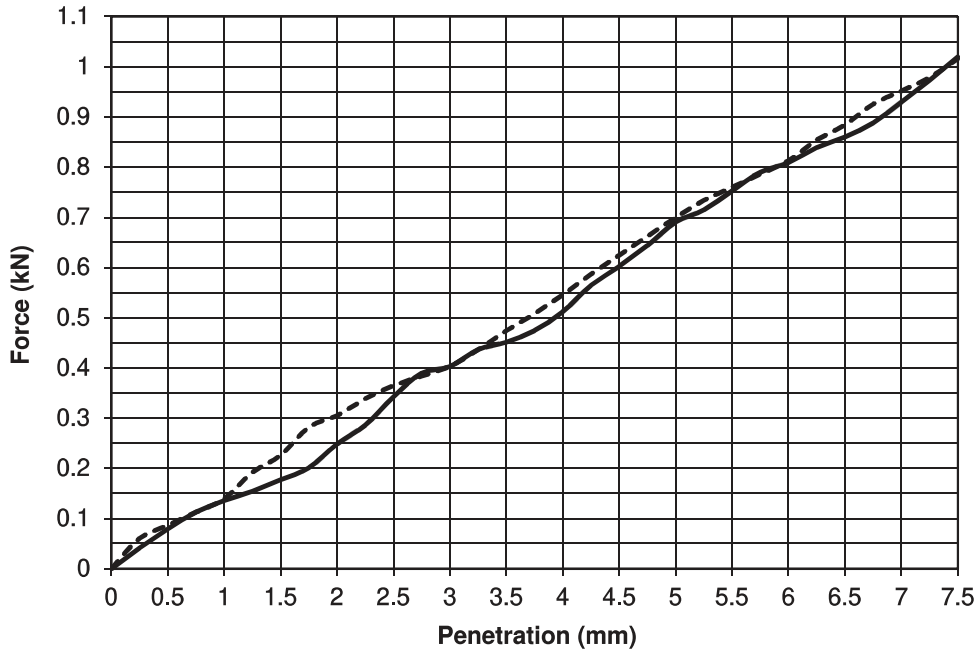
Report No.	R143940	Contract	WSP Lot 3		
Contract No.	23560	Customer	Ervia		
Date received	01/12/21	Date Tested	09/12/21		
BH/TP No.*	TP164905	Sample No.*	AA174057	Type:	B
Depth* (m)	1.00	Lab sample No.	A22/6440		



Key: ———— Top ---------- Base

Description:	Grey brown sandy, gravelly, SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	20	Bulk Density (Mg/m^3):	2.05
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.71
% Material >20mm:	2.6		
Method of compaction:	Dynamic Compaction Method 5		

Test Result	Top	Base
CBR %	**3.5**	**3.5**
Moisture Content %	20	20

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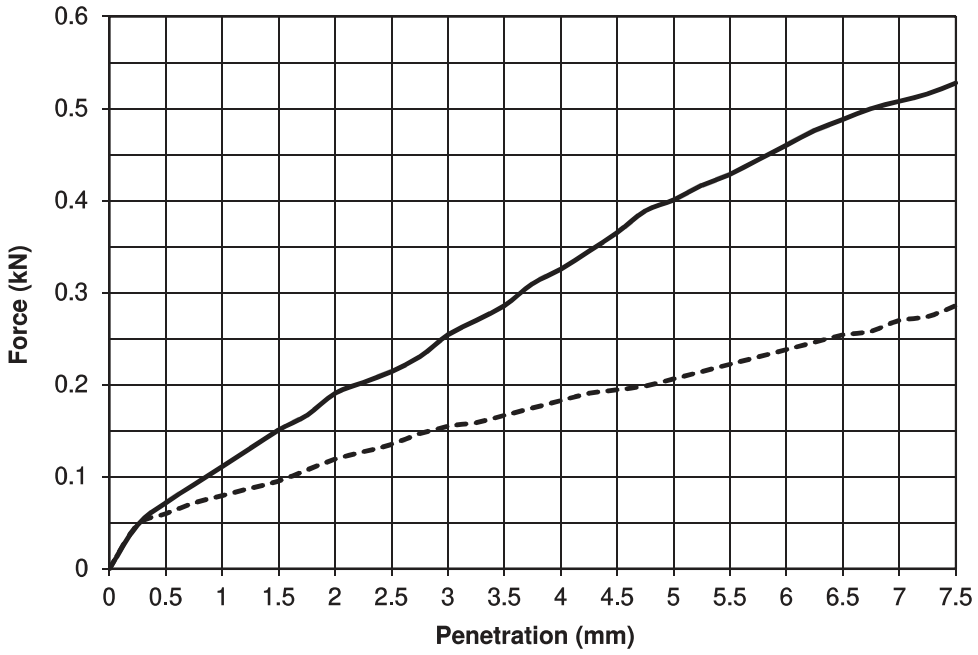
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	R139492	Contract	WSP Lot3		
Contract No.	23560	Customer		Ervia	
Date received	16/05/22	Date Tested	16/05/22		
BH/TP No.*	TP168041	Sample No.*	AA174866	Type:	B
Depth* (m)	1.50	Lab sample No.		A22/2613	



Key: ———— Top ---------- Base

Description:	Brown sandy gravelly SILT/CLAY		
Initial Condition:	Unsoaked		
Moisture Content (%):	13	Bulk Density (Mg/m^3):	2.24
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.99
% Material >20mm:	12		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.0**	**1.0**
Moisture Content %	13	12

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Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141738**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH149101
Sample No.*	179102
Depth* (m)	1.20
Sample Type:	B
Lab Sample No.	A22/6580
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	01/12/22
Date Tested:	01/12/22
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	50
MCV:	2.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R137050**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH151188
Sample No.*	173314
Depth* (m)	2.00
Sample Type:	B
Lab Sample No.	A22/3935
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/07/22
Date Tested:	15/07/22
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	10
MCV:	9.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R137057**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH151877
Sample No.*	173302
Depth* (m)	2.00
Sample Type:	B
Lab Sample No.	A22/3944
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	18/07/22
Date Tested:	18/07/22
Sample Cert:	Not Provided
Moisture Content (%):	13
% Particles > 20mm (By dry mass):	31
MCV:	3.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R137049**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH152315
Sample No.*	178032
Depth* (m)	2.00
Sample Type:	B
Lab Sample No.	A22/3962
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	13/07/22
Date Tested:	13/07/22
Sample Cert:	Not Provided
Moisture Content (%):	11
% Particles > 20mm (By dry mass):	9
MCV:	<1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Report No.	**R137053**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH156922
Sample No.*	173019
Depth* (m)	2.00
Sample Type:	B
Lab Sample No.	A22/3907
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	18/07/22
Date Tested:	18/07/22
Sample Cert:	Not Provided
Moisture Content (%):	11
% Particles > 20mm (By dry mass):	29
MCV:	3.3
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Report No.	**R141739**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	BH165006A
Sample No.*	179120
Depth* (m)	1.20
Sample Type:	B
Lab Sample No.	A22/6679
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	01/12/22
Date Tested:	01/12/22
Sample Cert:	Not Provided
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	22
MCV:	3.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly SILT/CLAY

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Report No.	**R137056**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP148304
Sample No.*	AA179481
Depth* (m)	1.50
Sample Type:	B
Lab Sample No.	A22/3290
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	29/06/22
Date Tested:	29/06/22
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	29
MCV:	3.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Report No.	**R139501**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP148802
Sample No.*	
Depth* (m)	0.70
Sample Type:	B
Lab Sample No.	A22/2460
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	15
% Particles > 20mm (By dry mass):	15
MCV:	5
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139499**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP149004
Sample No.*	AA158203
Depth* (m)	1.40
Sample Type:	B
Lab Sample No.	A22/2498
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	16
% Particles > 20mm (By dry mass):	11
MCV:	0.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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H Byrne (Laboratory Manager)

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Co. Kildare
045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139496**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP149505
Sample No.*	AA158224
Depth* (m)	1.00
Sample Type:	B
Lab Sample No.	A22/2569
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	15
% Particles > 20mm (By dry mass):	20
MCV:	5.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R143979**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP150104
Sample No.*	AA152190
Depth* (m)	1.50
Sample Type:	B
Lab Sample No.	A22/3327
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	18
% Particles > 20mm (By dry mass):	12
MCV:	5.9
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey brown sandy, gravelly, SILT/CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139497**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP150900
Sample No.*	AA158241
Depth* (m)	0.60
Sample Type:	B
Lab Sample No.	A22/3340
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	21/06/22
Date Tested:	21/06/22
Sample Cert:	Not Provided
Moisture Content (%):	17
% Particles > 20mm (By dry mass):	7
MCV:	7.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139505**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP152045
Sample No.*	AA175209
Depth* (m)	1.50
Sample Type:	B
Lab Sample No.	A22/3368
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	22/08/22
Date Tested:	22/08/22
Sample Cert:	Not Provided
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	34
MCV:	5.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139506**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP152295
Sample No.*	AA175213
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/3373
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	22/08/22
Date Tested:	22/08/22
Sample Cert:	Not Provided
Moisture Content (%):	16
% Particles > 20mm (By dry mass):	7
MCV:	6.1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Tested in accordance with BS1377:Part 4:1990, clause 5.4

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R143988**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP152699
Sample No.*	AA175234
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/3380
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	3
MCV:	2.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey brown sandy gravelly SILT

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R143990**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP153199
Sample No.*	AA175227
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/3390
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	19
% Particles > 20mm (By dry mass):	1
MCV:	<1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey brown sandy gravelly SILT

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R143994**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP156398
Sample No.*	AA175177
Depth* (m)	0.50
Sample Type:	B
Lab Sample No.	A22/3400
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	19
% Particles > 20mm (By dry mass):	3
MCV:	6.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey brown sandy gravelly SILT/CLAY

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Report No.	**R139504**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP156895
Sample No.*	AA170158
Depth* (m)	1.50
Sample Type:	B
Lab Sample No.	A22/3409
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	22/08/22
Date Tested:	22/08/22
Sample Cert:	Not Provided
Moisture Content (%):	17
% Particles > 20mm (By dry mass):	0
MCV:	<1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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Report No.	**R143998**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP160993
Sample No.*	AA175162
Depth* (m)	2.50
Sample Type:	B
Lab Sample No.	A22/3442
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	08/09/23
Date Tested:	08/09/23
Sample Cert:	Not Provided
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	0
MCV:	6.7
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey brown sandy gravelly SILT

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141736**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP161469
Sample No.*	AA171480
Depth* (m)	1.80
Sample Type:	B
Lab Sample No.	A22/6487
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	01/12/22
Date Tested:	01/12/22
Sample Cert:	Not Provided
Moisture Content (%):	50
% Particles > 20mm (By dry mass):	0
MCV:	<1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey sandy SILT/CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141737**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP162699
Sample No.*	AA171455
Depth* (m)	1.70
Sample Type:	B
Lab Sample No.	A22/6513
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	01/12/22
Date Tested:	01/12/22
Sample Cert:	Not Provided
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	0
MCV:	5.3
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Grey sandy SILT/CLAY

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141735**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP165204
Sample No.*	AA174061
Depth* (m)	0.80
Sample Type:	B
Lab Sample No.	A22/6448
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	01/12/22
Date Tested:	01/12/22
Sample Cert:	Not Provided
Moisture Content (%):	28
% Particles > 20mm (By dry mass):	20
MCV:	<1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R139496**
Contract No.	23560
Contract Name:	WSP Lot3
Customer:	Ervia
BH/TP*	TP149505
Sample No.*	AA158224
Depth* (m)	1.00
Sample Type:	B
Lab Sample No.	A22/2569
Source* (if applicable)	N/A
Material Type* (if applicable):	B
Sample Received:	15/06/22
Date Tested:	15/06/22
Sample Cert:	Not Provided
Moisture Content (%):	15
% Particles > 20mm (By dry mass):	20
MCV:	5.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy, gravelly, SILT/CLAY

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One dimensional Consolidation

BS1377:Part 5:1990

Report No. R132727

Contract: WSP Lot 3 Contract number: 23560

BH: BH150554 Sample number: - Depth (m): 2.0

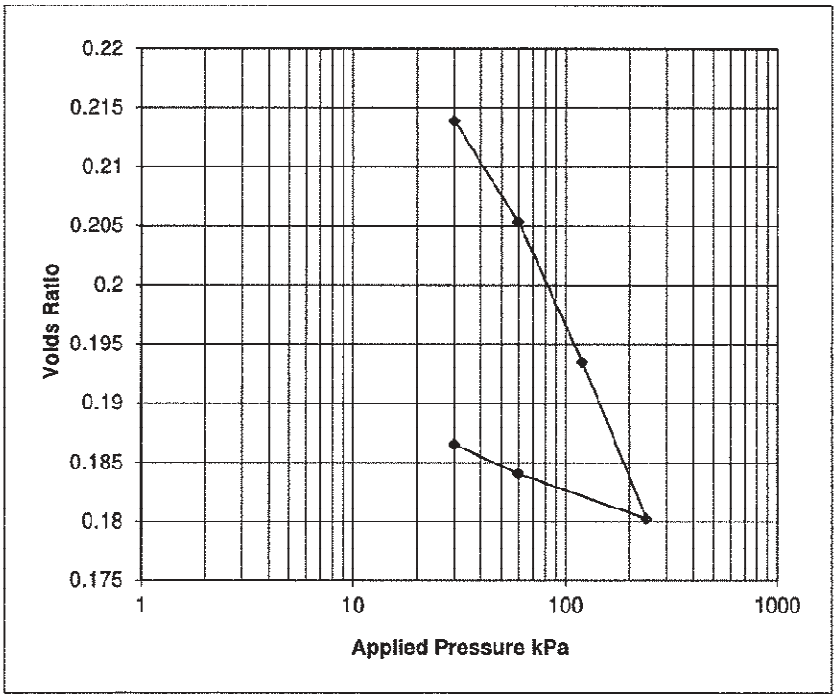
Description Greyish brown slightly sandy slightly gravelly SILT/CLAY

Specimen Height (mm) 20.0 Specimen diameter (mm) 75.1

	Initial	Final
Moisture content %	10	12
Bulk density Mg/m^3	2.35	2.44
Dry density Mg/m^3	2.14	2.17
Void ratio	0.238	0.187

Assumed Particle density Mg/m^3 2.65

Applied Pressure (kPa)	m_v (m^2/MN)	c_v (m^2/year)	Voids Ratio
0 - 30	0.640	15.085	0.21387
30 - 60	0.234	14.690	0.20534
60 - 120	0.164	8.624	0.19346
120 - 240	0.092	7.096	0.18023
240 - 60	0.018	0.782	0.18406
60 - 30	0.070	0.482	0.18653



Determination of Shear Strength by Direct Shear

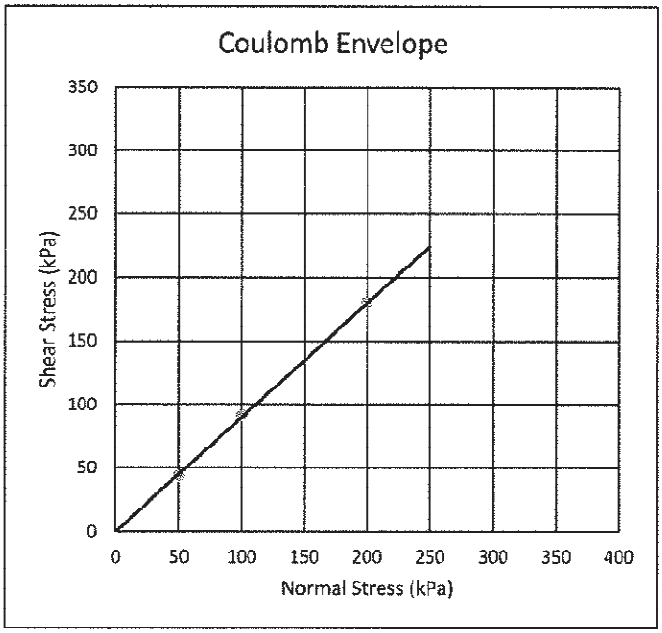
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4**

Contract:	WSP Lot 3			Contract No.	23560
Location*:	BH149406	Depth (m)	3.0	Sample No.*	176145
Report No.	R140196			Customer:	Irish Water
Sample Received:				Testing started:	23/11/22

Method of Preparation: <2mm material tamped into the box at as received moisture content

Description: Grey brown sandy GRAVEL (sand is sub-angular to angular)

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	33	32	33
Initial Moisture Content (%)	7.1	7.1	7.1
Initial Bulk Density (Mg/m^3)	1.51	1.52	1.51
Initial Dry Density (Mg/m^3)	1.41	1.42	1.41
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	43.1	91.0	179.6
Horizontal displacement at failure (mm)	3.24	4.43	3.91
Rate Horizontal displacement (mm/min)	1	1	1
Condition: Dry (D) / Submerged (S) / Unsubmerged (U)	U	U	U



c' (kPa)	0
ϕ' (degrees)	42

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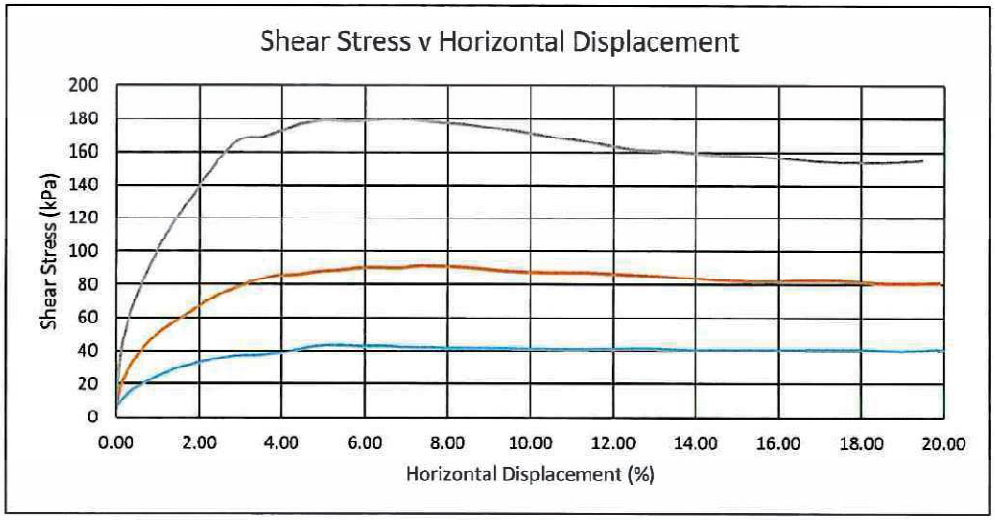
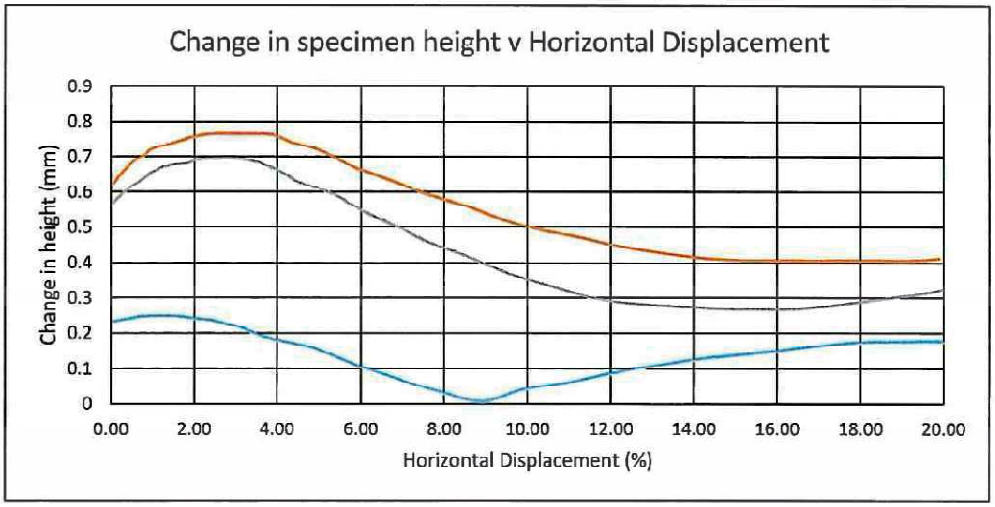
**Superceded by EN 17892-10:2018

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	WSP Lot 3			Contract No.	23560
Location:	BH149406	Depth (m)	3.0	Sample No.	176145
Report No.	R140196				





Results relate to the specimen tested.	Approved by	Date	
Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)		24/11/22	Page 2 of 2

Determination of Shear Strength by Direct Shear

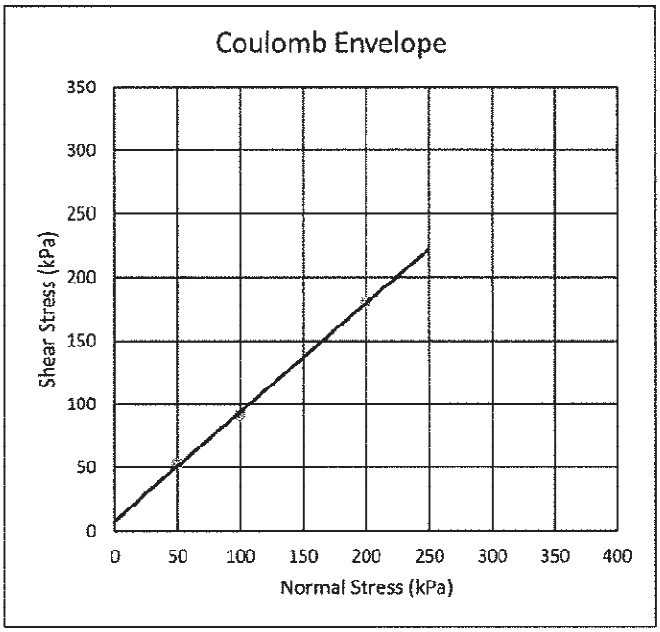
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4**

Contract:	WSP Lot 3			Contract No.	23560
Location*:	BH150204	Depth (m)	3.0	Sample No.*	179162
Report No.	R138826			Customer:	Irish Water
Sample Received:				Testing started:	11/10/22

Method of Preparation: <2mm material tamped into the box at as received moisture content

Description: Grey sandy GRAVEL (sand is sub-angular to angular)

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	26	26	26
Initial Moisture Content (%)	7.4	7.4	7.4
Initial Bulk Density (Mg/m^3)	1.78	1.78	1.78
Initial Dry Density (Mg/m^3)	1.65	1.65	1.65
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	52.7	90.9	180.3
Horizontal displacement at failure (mm)	3.43	6.62	4.81
Rate Horizontal displacement (mm/min)	1	1	1
Condition: Dry (D) / Submerged (S) / Unsubmerged (U)	U	U	U



c' (kPa)	8
ϕ' (degrees)	41

* denotes Cutomer supplied information.

Results relate only to the specimen tested, in as received condition unless otherwise noted.

Opinions and interpretations are outside the scope of accreditation.

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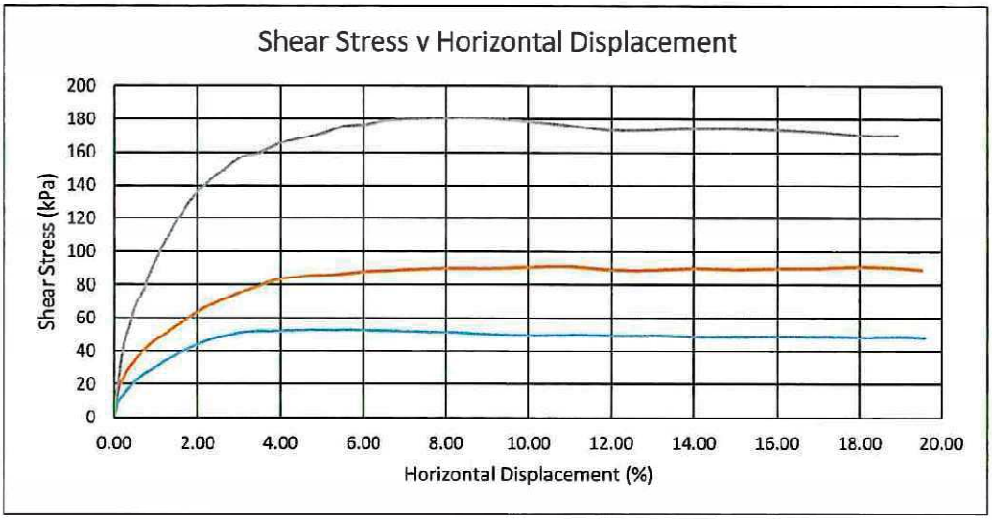
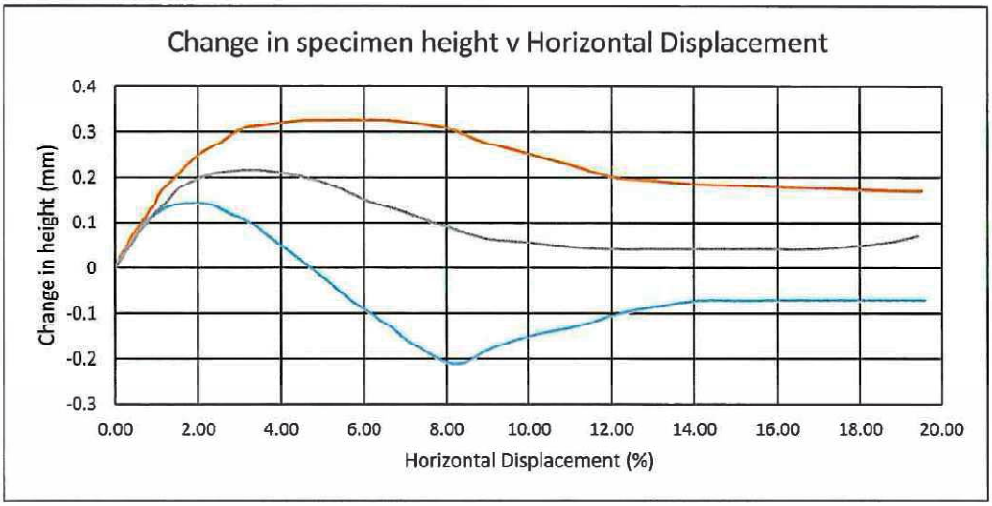
**Superceded by EN 17892-10:2018

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	WSP Lot 3			Contract No.	23560
Location:	BH150204	Depth (m)	3.0	Sample No.	179162
Report No.	R138826				





Results relate to the specimen tested.
Approved signatories
- ☐ J Barrett (Quality Manager)
- ☐ H Byrne (Laboratory Manager)

Approved by	Date	
	18/10/22	Page 2 of 2

Determination of Shear Strength by Direct Shear

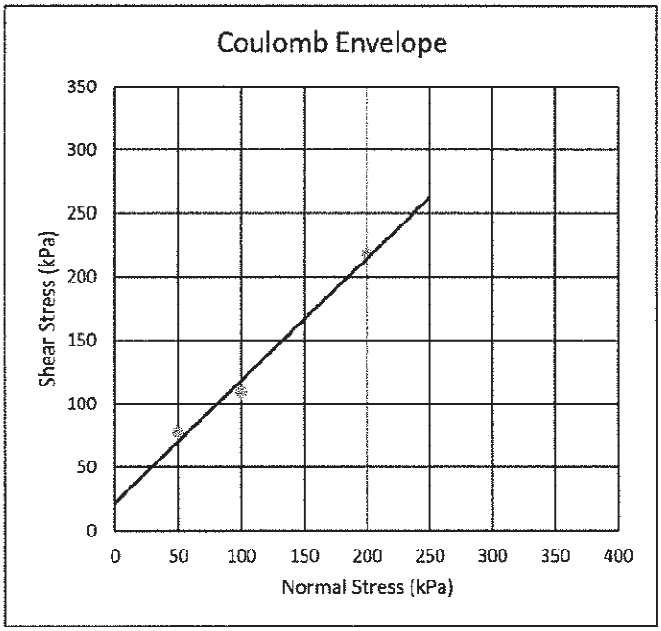
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4**

Contract:	WSP Lot 3			Contract No.	23560
Location*:	BH157977	Depth (m)	3.0	Sample No.*	178002
Report No.	R137311			Customer:	Irish Water
Sample Received:				Testing started:	13/09/22

Method of Preparation: <2mm material tamped into the box at as received moisture content

Description: Grey slightly silty sandy GRAVEL (sand is sub-angular to angular)

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	24	24	24
Initial Moisture Content (%)	5.3	5.3	5.3
Initial Bulk Density (Mg/m^3)	1.96	1.96	1.97
Initial Dry Density (Mg/m^3)	1.86	1.87	1.87
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	76.7	108.5	217.5
Horizontal displacement at failure (mm)	1.94	5.5	6.62
Rate Horizontal displacement (mm/min)	1	1	1
Condition: Dry (D) / Submerged (S) / Unsubmerged (U)	U	U	U



c' (kPa)	23
ϕ' (degrees)	45

* denotes Cutomer supplied information.

Results relate only to the specimen tested, in as received condition unless otherwise noted.

Opinions and interpretations are outside the scope of accreditation.

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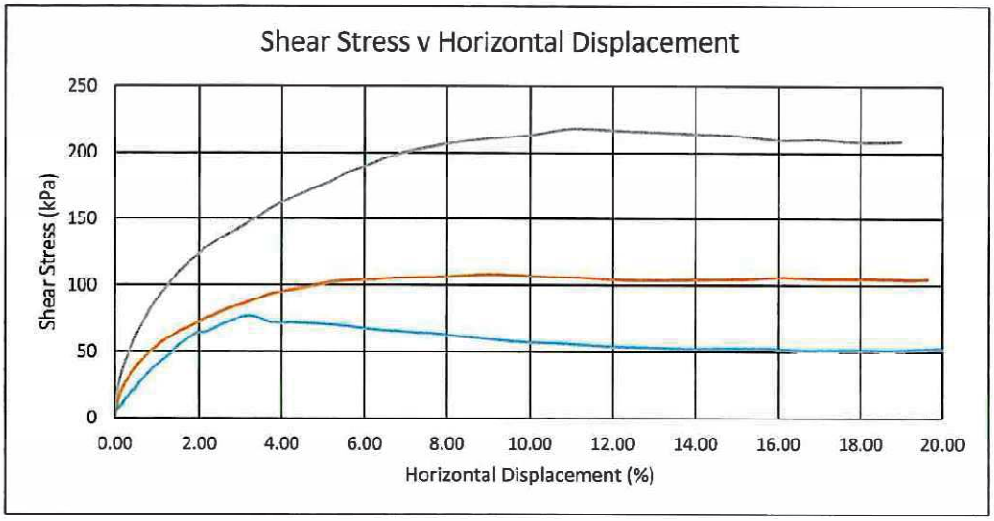
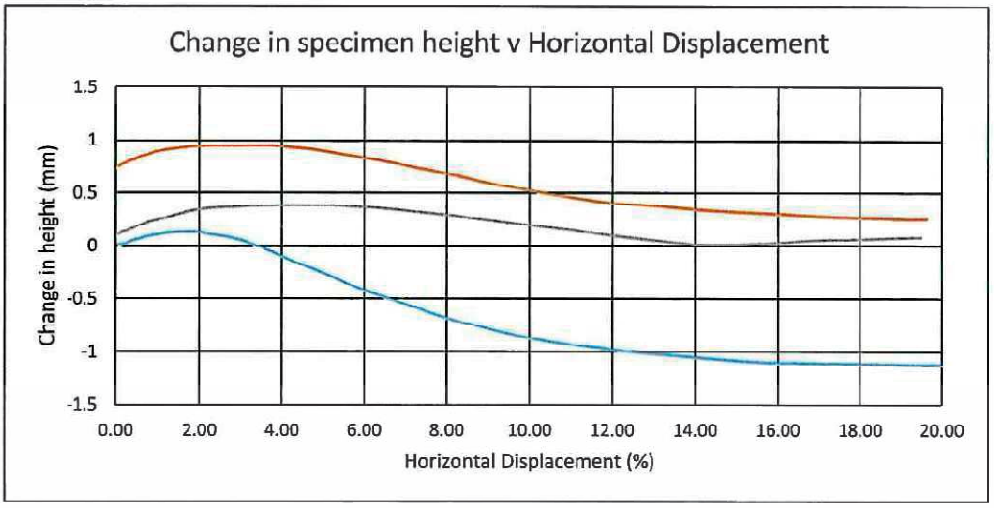
**Superceded by EN 17892-10:2018

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	WSP Lot 3			Contract No.	23560
Location:	BH157977	Depth (m)	3.0	Sample No.	178002
Report No.	R137311				





Results relate to the specimen tested.	Approved by	Date	
Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)		14/09/22	Page 2 of 2

CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT	
CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE	

IGSL Ltd
Uni F, M7 Business Park
Naas, Co. Kildare
Tel: 045-846176 Fax: 045-846187

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY		C.Killaly							**DATE**		31/01/2022								**COMPANY NAM**	IGSL Limited		
APPROVED BY									**DATE**										**COMPANY NAM**			
HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun	
BH148404	1.00		173327	B																		
BH148404	2.00		173328	B																		
BH148404	3.00		173329	B																		
BH148404	4.00		173330	B																		
BH148404	5.00		173331	B																		
BH148404	6.00		173332	B																		
BH148404	1.00		173327	D																		
BH148404	2.00		173328	D																		
BH148404	3.00		173329	D																		
BH148404	5.00		173331	D																		
BH148707	1.00	1.50	173323	B			1	1														
BH148707	2.00	2.50	173324	B																		
BH148707	3.00	3.50	173325	B																		
BH148707	4.00	4.40	173326	B			1	1														
BH148707	1.00	1.50		D	1	1																
BH148707	2.00	2.50		D																		
BH148707	3.00	3.50		D																		
BH148707	4.00	4.40		D	1	1																
BH149101	0.50	1.00	179101	B																		
BH149101	1.20	1.70	179102	B			1	1	1													
BH149101	2.00	2.50	179103	B			1	1														
BH149101	3.00	3.50	179104	B			1	1														
BH149101	4.00	4.50	179105	B			1	1														
BH149101	5.00	5.50	179106	B																		
BH149101	0.50	1.00		D																		
BH149101	1.20	1.70		D	1	1																
BH149101	2.00	2.50		D	1	1																
BH149101	3.00	3.50		D	1	1																
BH149101	4.00	4.50		D	1	1																
BH149101	5.00	5.50		D																		
BH149273	0.50	1.00	179107	B			1	1														
BH149273	1.20	1.70	179108	B						1												
BH149273	2.00	2.50	179109	B			1	1														

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	'OMPANY NAM	IGSL Limited
APPROVED BY		**DATE**		'OMPANY NAM	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS	Testing Non Compoaiun
BH149273	0.50	1.00	179107	D	1	1																
BH149273	1.20	1.70	179108	D																		
BH149273	2.00	2.50	179109	D	1	1																
BH149406	0.50	1.00	179110	B																		
BH149406	1.20	1.70	179111	B			1	1														
BH149406	2.00	2.50	179112	B			1	1														
BH149406	3.00	3.50	179113	B			1	1														
BH149406	4.00	4.50	179114	B																	**Shear Box**	INSUFFICIENT
BH149406	1.20	1.70		D	1	1																
BH149406	2.00	2.50		D	1	1																
BH149406	3.00	3.50		D																		
BH149406	4.00	4.50		D																		
BH149406	0.50	1.00		D																		
BH149804	0.50	1.00	179115	B																		
BH149804	1.20	1.70	179116	B			1	1														
BH149804	2.00	2.50	179117	B																		
BH149804	3.00	3.50	179118	B			1	1														
BH149804	0.50	1.00		D																		
BH149804	1.20	1.70		D	1	1																
BH149804	2.00	2.50		D																		
BH149804	3.00	3.50		D	1	1																
BH150204	0.50	1.00	179159	B			1	1														
BH150204	1.20	1.70	179160	B								1										
BH150204	2.00	2.50	179161	B			1	1														
BH150204	3.00	3.50	179162	B			1	1												0	Shear box test - recompact to medium dense	INSUFFICIENT
BH150204	4.00	4.50	179163	B			1	1												1		
BH150204	0.50	1.00		D	1	1																
BH150204	1.20	1.70		D																		
BH150204	2.00	2.50		D	1	1																
BH150204	3.00	3.50		D																		
BH150204	4.00	4.50		D																		
BH150291	0.50	1.00	174193	B																		
BH150291	1.20	1.70	174194	B			1	1														
BH150291	0.50	1.00		D																		

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH150291	1.20	1.70		D	1	1															
BH150554	0.50	1.00	174195	B																	
BH150554	1.20	1.70	174196	B			1	1													
BH150554	2.00	2.50		U													1				
BH150554	2.50	3.00	174197	B	1	1	1	1													
BH150554	3.00	3.50	174198	B			1	1													
BH150554	4.00	4.50	174199	B																	
BH150554	5.00	5.50	174200	B			1	1													
BH150554	0.50	1.00		D																	
BH150554	1.20	1.70		D	1	1															
BH150554	3.00	3.50		D	1	1															
BH150554	4.00	4.50		D																	
BH150554	5.00	5.50		D	1	1															
BH150888	1.00		173318	B			1	1													
BH150888	2.00		173319	B																	
BH150888	3.00		173320	B			1	1													
BH150888	4.00		173321	B																	
BH150888	4.80		173322	B																	
BH150888	1.00		173318	D	1	1															
BH150888	2.00		173319	D																	
BH150888	3.00		173320	D	1	1															
BH150888	4.00		173321	D																	
BH151188	1.00		173313	B			1	1													
BH151188	1.00		173313	D	1	1															
BH151188	2.00		173314	B					1												
BH151188	2.00		173314	D																	
BH151188	3.00		173315	B			1	1													
BH151188	3.00		173315	D	1	1															
BH151188	4.00		173316	B																	
BH151188	4.00		173316	D																	
BH151188	4.30		173317	B																	
BH151688	1.00		173311	B			1	1													
BH151688	2.00		173312	B			1	1													
BH151688	1.00		173311	D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH151688	2.00		173312	D	1	1															
BH151877	1.00		173301	B			1	1													
BH151877	1.00		173301	D	1	1															
BH151877	2.00		173302	B					1												
BH151877	2.00		173302	D																	
BH151877	3.00		173303	B																	
BH151877	3.00		173303	D																	
BH151877	4.00		173304	B			1	1													
BH151877	4.00		173304	D	1	1															
BH151877	5.00		173305	B																	
BH151877	5.00		173305	D																	
BH151877	6.00		173306	B																	
BH151877	6.00		173306																		
BH151907	1.00		178040	B			1	1													
BH151907	2.00		178041	B						1											
BH151907	3.00		178042	B			1	1													
BH151907	4.00		178043	B																	
BH151907	5.00		178044	B																	
BH151907	6.00		178045	B																	
BH151907	1.00		178040	D	1	1															
BH151907	2.00		178041	D																	
BH151907	3.00		178042	D	1	1															
BH152124	1.00		178035	B			1	1													
BH152124	1.00		178035	D	1	1															
BH152124	2.00		178036	B																	
BH152124	2.00		178036	D																	
BH152124	3.00		178037	B																	
BH152124	3.00		178037	D																	
BH152124	4.00		178038	B			1	1													
BH152124	4.00		178038	D	1	1															
BH152124	5.00		178039	B																	
BH152207	1.00		173307	B			1	1													
BH152207	2.00		173308	B			1	1													
BH152207	3.00		173309	B			1	1													

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH152207	3.70		173310	B																	
BH152207	1.00		173307	D	1	1															
BH152207	2.00		173308	D	1	1															
BH152315	1.00		178031	B			1	1													
BH152315	2.00		178032	B					1												
BH152315	3.00		178033	B			1	1													
BH152315	4.00		178034	B																	
BH152315	1.00		178031	D	1	1															
BH152315	2.00		178032	D																	
BH152315	3.00		178033	D	1	1															
BH152702	1.00		178022	B			1	1													
BH152702	2.00		178023	B			1	1													
BH152702	3.00		178024	B																	
BH152702	1.00		178022	D	1	1															
BH152702	2.00		178023	D	1	1															
BH152938	1.00		178025	B			1	1													
BH152938	2.00		178026	B																	
BH152938	3.00		178027	B			1	1													
BH152938	4.00		178028	B																	
BH152938	5.00		178029	B			1	1													
BH152938	6.00		178030	B																	
BH152938	1.00		178025	D	1	1															
BH152938	2.00		178026	D																	
BH152938	3.00		178027	D	1	1															
BH152938	4.00		178028	D																	
BH152938	5.00		178029	D	1	1															
BH153150	1.00		178017	B			1	1													
BH153150	2.00		178018	B			1	1													
BH153150	3.00		178019	B																	
BH153150	4.00		178020	B			1	1													
BH153150	5.00		178021	B																	
BH153150	1.00		178017	D	1	1															
BH153150	2.00		178018	D	1	1															
BH153150	3.00		178019	D																	

CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly							**DATE**	31/01/2022									**COMPANY NAM**	IGSL Limited		
APPROVED BY								**DATE**										**COMPANY NAM**			
HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH153150	4.00		178020	D	1	1															
BH153150	5.00		178021	D																	
BH156922	1.00	1.00	173018	B																	
BH156922	2.00	2.00	173019	B					1												
BH156922	3.00	3.00	173020	B			1	1													
BH156922	4.00	4.00	173021	B			1	1													
BH156922	5.00	5.00	173022	B																	
BH156922	6.00	6.00	173023	B																	
BH156922	7.00	7.00	173024	B																	
BH156922	1.00	1.00	173025	D																	
BH156922	2.00	2.00	173026	D																	
BH156922	3.00	3.00	173027	D	1	1															
BH156922	4.00	4.00	173028	D	1	1															
BH156988	1.00	1.50	173009	B			1	1													
BH156988	2.00	2.50	173010	B																	
BH156988	3.00	3.50	173011	B			1	1													
BH156988	4.00	4.50	173012	B																	
BH156988	5.00	5.50	173013	B																	
BH156988	6.00	6.50	173014	B																	
BH156988	7.00	7.10	173015	B																	
BH156988	1.00	1.50		D	1	1															
BH156988	2.00	2.50		D																	
BH156988	3.00	3.50		D	1	1															
BH156988	4.00	4.50		D																	
BH156988	5.00	5.50		D																	
BH156988	6.00	6.50		D																	
BH156988	7.00	7.10		D																	
BH157032	0.50	1.00		B																	
BH157032	1.20	1.70		B			1	1													
BH157032	0.50	1.00		D																	
BH157032	1.20	1.00		D	1	1															
BH157032	2.00	2.50	174903	B			1	1													
BH157032	3.00	3.50	174904	B			1	1													
BH157032	4.00	4.50	174905	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH157032	5.00	5.50	174906	B																	
BH157032	6.00	6.50	174907	B																	
BH157032	2.00	2.50		D	1	1															
BH157032	3.00	3.50		D	1	1															
BH157032	4.00	4.50		D	1	1															
BH157032	5.00	5.50		D																	
BH157032	6.00	6.50		D																	
BH157032	0.50	1.00	174901	B																	
BH157543	1.00		178013	B			1	1													
BH157543	2.00		178014	B																	
BH157543	3.00		178015	B			1	1													
BH157543	4.00		178016	B																	
BH157543	1.00		178013	D	1	1															
BH157543	2.00		178014	D																	
BH157543	3.00		178015	D	1	1															
BH157543	4.00		178016	D																	
BH157862	1.00	1.00	173041	B			1	1													
BH157862	2.00	2.00	173042	B																	
BH157862	3.40	3.40	173043	B			1	1													
BH157862	4.00	4.00	173045	B																	
BH157862	1.00	1.00		D	1	1															
BH157862	2.00	2.00		D																	
BH157953	1.00	1.50	173045	B			1	1													
BH157953	2.00	2.50	173046	B			1	1													
BH157953	3.00	3.50	173047	B																	
BH157953	4.00	4.50	173048	B			1	1													
BH157953	5.00	5.50	173049	B																	
BH157953	1.00	1.50		D	1	1															
BH157953	2.00	2.50		D																	
BH157953	3.00	3.50		D																	
BH157953	4.00	4.50		D	1	1															
BH157953	5.00	5.50		D																	
BH157977	1.00	1.50	173050	B																	
BH157977	2.00	2.50	178001	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH157977	3.00	3.50	178002	B																	
BH157977	4.00	4.50	178003	B			1	1													
BH157977	5.00	5.20	178004	B																	
BH157977	1.00	1.50		D																	
BH157977	2.00	2.50		D																	
BH157977	3.00	3.50		D																	
BH157977	4.00	4.50		D	1	1															
BH157977	5.00	5.20		D																	
BH160675	1.00	1.00	173025	B			1	1													
BH160675	2.00	2.00	173026	B																	
BH160675	3.00	3.00	173027	B			1	1													
BH160675	1.00	1.00		D	1	1															
BH160675	2.00	2.00		D																	
BH160675	3.00	3.00		D	1	1															
BH160756	1.00	1.00	173028	B																	
BH160756	2.00	2.00	173029	B			1	1													
BH160756	1.00	1.00		D																	
BH160756	2.00	2.00		D																	
BH161062	1.00	1.00	173035	B			1	1													
BH161062	2.00	2.00	173036	B			1	1													
BH161062	3.00	3.00	173037	B																	
BH161062	4.00	4.00	173038	B			1	1													
BH161062	5.00	5.00	173039	B																	
BH161062	6.00	6.00	173040	B																	
BH161062	1.00	1.00		D	1	1															
BH161062	2.00	2.00		D	1	1															
BH161062	3.00	3.00		D																	
BH161062	4.00	4.00		D	1	1															
BH161062	5.00	5.00		D																	
BH161293	1.00	1.00	173030	B						1											
BH161293	2.00	2.00	173031	B			1	1													
BH161293	3	3.00	173032	B			1	1													
BH161293	4	4.00	173033	B	1	1	1	1													
BH161293	5	5.00	173034	B																	

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH161293	1	1.00		D																	
BH161293	2	2.00		D	1	1															
BH161865	1.00		178321	B			1	1													
BH161865	2.00		178322	B			1	1													
BH161865	3.00		178323	B			1	1													
BH161865	4.00		178324	B			1	1													
BH161865	5.00		178325	B																	
BH161865	6.00		178326	B																	
BH161865	7.00		178327	B																	
BH161865	8.00		178328	B																	
BH161865	9.00		178329	B																	
BH161865	10.00		178330	B																	
BH161865	1.00		178321	D	1	1															
BH161865	2.00		178322	D	1	1															
BH161865	3.00		178323	D																	
BH163697	1.00	1.50	178007	B																	
BH163697	2.00	2.50	178008	B			1	1													
BH163697	3.00	3.50	178009	B																	
BH163697	4.00	4.50	178010	B																	
BH163697	5.00	5.50	178011	B																	
BH163697	6.00	6.30	178012	B																	
BH163697	1.00	1.50		D																	
BH163697	2.00	2.50		D	1	1															
BH163697	3.00	3.40		D																	
BH163697	4.00	4.50		D																	
BH163697	5.00	5.50		D																	
BH163697	6.00	6.30		D																	
BH163860	1.00	1.50	178005	B																	
BH163860	1.80	1.80	178006	B			1	1													
BH163860	1.00	1.50		D																	
BH163860	1.80	1.80		D	1	1															
BH165006A	0.50	1.00	179119	B			1	1													
BH165006A	1.20	1.70	179120	B					1												
BH165006A	0.50	1.00	179119	D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
BH165006A	1.20	1.70	179120	D																	
BH165317	0.50	1.00	179121	B																	
BH165317	1.20	1.70	179122	B			1	1													
BH165317	0.50	1.00	179121	D																	
BH165317	1.20	1.70	179122	D	1	1															
BH166526	0.5	0.75	151412	B																	
BH166526	0.5	0.75		D																	
BH166526	1	1.25	151413	B			1	1													
BH166526	1	1.25		D	1	1															
BH166526	1.4	1.50	151414	B																	
BH166526	1.6	1.80	151415	B																	
BH166722	0.4	0.40	151409	B																	
BH166722	0.4	0.40		D																	
BH166722	0.8	0.80	151410	B																	
BH166722	0.8	0.80		D																	
BH166722	1.1	1.10	151411	B			1	1													
BH166722	1.5	1.50	151411	B																	
BH167255	0.5	0.50	151401	B																	
BH167255	0.5	0.50		D																	
BH167255	1	1.00	151402	B			1	1													
BH167255	1	1.00		D	1	1															
BH167255	2	2.00	151403	B																	
BH167255	2	2.00		D																	
BH167255	3	3.00	151404	B			1	1													
BH167255	3	3.00		D	1	1															
BH168286	0.4	0.40	151405	B																	
BH168286	0.4	0.40		D																	
BH168286	0.8	0.80	151406	B																	
BH168286	1	1.00	151407	B			1	1													
BH168286	2	2.00	151408	B																	
DS161402	0.00	1.00																			
DS161402	1.00	2.00					1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
DS161402	2.00	3.00			1	1															
DS165890	0.00	1.00			1	1															
DS165890	1.00	1.70					1	1													
DS165906	0.00	1.00					1	1													
DS165906	1.00	1.70			1	1															
DS166006	0.00	1.00			1	1															
DS166006	1.00	1.80					1	1													
DS166025	0.00	1.00					1	1													
DS166025	1.00	1.90			1	1															
DS166078	0.00	1.00			1	1															
DS166078	1.00	1.80					1	1													
DS166356	0.00	1.00					1	1													
DS166356	1.00	1.10																			
TP147204	0.5	0.50	AA178601	B			1	1													
TP147204	1.5	1.50	AA178602	B			1	1													
TP147204	2.5	2.50	AA178603	B																	
TP147204	0.5	0.50		D	1	1															
TP147204	1.5	1.50		D																	
TP147204	2.5	2.50		D																	
TP148005	0.50	0.60	AA173618	B			1	1													
TP148005	2.00	2.10	AA173619	B			1	1													
TP148005	3.40	3.50	AA173620	B																	
TP148005	0.50	0.60		D	1	1															
TP148005	2.00	2.10		D	1	1															
TP148104	0.40	0.50	AA173615	B																	
TP148104	1.50	1.60	AA173616	B			1	1													
TP148104	2.60	2.70	AA173617	B			1	1													
TP148104	0.40	0.50		D	1	1															
TP148104	1.50	1.60		D																	
TP148205	0.40	0.50	AA173612	B																	
TP148205	1.50	1.60	AA173613	B			1	1													
TP148205	2.20	2.30	AA173614	B																	

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP148205	0.40	0.50		D																	
TP148205	1.50	1.60		D	1	1															
TP148205	2.20	2.30		D																	
TP148304	0.50	0.50	AA179480	B																	
TP148304	1.50	1.50	AA179481	B					1												
TP148304	2.50	2.50	AA179482	B			1	1													
TP148304	3.50	3.50	AA179483	B			1	1													
TP148304	0.50	0.50		D																	
TP148304	1.50	1.50		D																	
TP148304	2.50	2.50		D	1	1															
TP148304	3.50	3.50		D	1	1															
TP148403	0.50	0.50	AA179484	B																	
TP148403	1.50	0.50	AA179485	B			1	1													
TP148403	2.50	2.50	AA179486	B			1	1													
TP148403	0.50	0.50		D																	
TP148403	1.50	0.50		D	1	1															
TP148403	2.50	2.50		D	1	1															
TP148504	0.5	0.50	AA175191	B																	
TP148504	1.5	2.50	AA175192	B			1	1													
TP148504	3	3.00	AA175193	B																	
TP148504	0.5	0.50		D																	
TP148504	1.5	2.50		D	1	1															
TP148504	3	3.00		D																	
TP148600	0.5	0.50	AA175194	B			1	1													
TP148600	1.5	1.50	AA175195	B			1	1													
TP148600	0.5	0.50		D	1	1															
TP148600	1.5	1.50		D																	
TP148704	0.5	0.50	AA175188	B			1	1													
TP148704	1.5	1.50	AA175189	B						1											
TP148704	2.5	3.50	AA175190	B			1	1													
TP148704	0.5	0.50		D	1	1															
TP148704	1.5	1.50		D	1	1															
TP148704	2.5	3.50		D																	
TP148802	0.3	0.30	AA158208	B																	

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP148802	0.7	0.70	AA158209	B					1												
TP148802	2.2	2.20	AA158210	B			1	1													
TP148802	0.3	0.30		D																	
TP148802	0.7	0.70		D																	
TP148802	2.2	2.20		D	1	1															
TP148903	0.5	0.50	AA158205	B																	
TP148903	0.8	0.80	AA158206	B			1	1													
TP148903	1.7	1.70	AA158207	B			1	1													
TP148903	0.5	0.50		D	1	1															
TP148903	0.8	0.80		D	1	1															
TP148903	1.7	1.70		D																	
TP149004	0.5	0.50	AA158201	B																	
TP149004	0.9	0.90	AA158202	B			1	1													
TP149004	1.4	1.40	AA158203	B					1												
TP149004	2.6	2.60	AA158204	B			1	1													
TP149004	0.5	0.50		D																	
TP149004	0.9	0.90		D	1	1															
TP149004	1.4	1.40		D																	
TP149004	2.6	2.60		D	1	1															
TP149130	0.4	0.40	AA158211	B																	
TP149130	0.6	0.60	AA158212	B																	
TP149130	1.2	1.20	AA158213	B			1	1													
TP149130	0.4	0.40		D																	
TP149130	0.6	0.60		D																	
TP149130	1.2	1.20		D	1	1															
TP149200	0.5	0.50	AA158214	B																	
TP149200	0.7	0.70	AA158215	B																	
TP149200	1.3	1.30	AA158216	B			1	1													
TP149200	2.5	2.50	AA158217	B			1	1													
TP149200	0.5	0.50		D																	
TP149200	0.7	0.70		D																	
TP149200	1.3	1.30		D																	
TP149200	2.5	2.50		D	1	1															
TP149304	0.5	0.50	AA158218	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP149304	1.6	1.60	AA158219	B			1	1													
TP149304	0.5	0.50		D	1	1															
TP149304	1.6	1.60		D																	
TP149373	0.5	0.50	AA158220	B			1	1													
TP149373	1.1	1.10	AA158221	B																	
TP149373	1.8	1.80	AA158222	B			1	1													
TP149373	0.5	0.50		D																	
TP149373	1.1	1.10		D																	
TP149373	1.8	1.80		D	1	1															
TP149505	0.5	0.50	AA158223	B																	
TP149505	1	1.00	AA158224	B					1												
TP149505	1.9	1.90	AA158225	B			1	1													
TP149505	0.5	0.50		D																	
TP149505	1	1.00		D																	
TP149505	1.9	1.90		D	1	1															
TP149604	0.5	0.50	AA158226	B																	
TP149604	1.5	1.50	AA158227	B			1	1													
TP149604	1.9	1.90	AA158228	B			1	1													
TP149604	0.5	0.50		D																	
TP149604	1.5	1.50		D	1	1															
TP149604	1.9	1.90		D																	
TP149705	0.5	0.50	AA158229	B																	
TP149705	1	1.00	AA158230	B			1	1													
TP149705	2	2.00	AA158231	B			1	1													
TP149705	0.5	0.50		D																	
TP149705	1	1.00		D	1	1															
TP149705	2	2.00		D	1	1															
TP149803	0.5	0.50	AA158232	B																	
TP149803	0.8	0.80	AA158233	B			1	1													
TP149803	2	2.00	AA158234	B			1	1													
TP149803	2.8	2.80	AA158235	B																	
TP149803	0.5	0.50		D																	
TP149803	0.8	0.80		D	1	1															
TP149803	2	2.00		D	1	1															

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP149803	2.8	2.80		D																	
TP149904	0.5	0.50	AA158236	B			1	1													
TP149904	2	2.00	AA158237	B			1	1													
TP149904	0.5	0.50		D	1	1															
TP149904	2	2.00		D	1	1															
TP149986	0.6	0.60	AA158238	B																	
TP149986	1.8	1.80	AA158239	B			1	1													
TP149986	2.9	2.90	AA158240	B																	
TP149986	0.6	0.60		D																	
TP149986	1.8	1.80		D	1	1															
TP149986	2.9	2.90		D			1	1													
TP150104	0.5	0.50	AA152189	B																	
TP150104	1.5	1.50	AA152190	B					1												
TP150104	2.5	2.50	AA152191	B			1	1													
TP150104	0.5	0.50		D																	
TP150104	1.5	1.50		D																	
TP150104	2.5	2.50		D	1	1															
TP150190	0.5	1.00	AA178606	B																	
TP150190	1.5	2.00	AA178607	B			1	1													
TP150190	3	3.50	AA178608	B			1	1													
TP150190	0.5	1.00		D																	
TP150190	1.5	2.00		D	1	1															
TP150190	3	3.50		D	1	1															
TP150295	0.5	1.00	AA178604	B			1	1													
TP150295	1.5	2.00	AA178605	B			1	1													
TP150295	0.5	1.00		D	1	1															
TP150295	1.5	2.00		D																	
TP150400	0.50	0.50	AA179489	B																	
TP150400	1.50	1.50	AA179490	B			1	1													
TP150400	0.50	0.50		D																	
TP150400	1.50	1.50		D																	
TP150490	0.50	0.50	AA179487	B																	
TP150490	1.50	1.50	AA179488	B			1	1													
TP150490	0.50	0.50		D																	

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CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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ISSUED BY	C.Killaly							**DATE**		31/01/2022								**COMPANY NAM**	IGSL Limited		
APPROVED BY								**DATE**										**COMPANY NAM**			
HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP150490	1.50	1.50		D	1	1															
TP150590	0.5	0.50	AA156001	B																	
TP150590	1.6	1.60	AA156002	B			1	1													
TP150590	2.2	2.20	AA156003	B			1	1													
TP150590	0.5	0.50		D																	
TP150590	1.6	1.60		D	1	1															
TP150590	2.2	2.20		D	1	1															
TP150702	0.6	0.60	AA158247	B																	
TP150702	1.6	1.60	AA158248	B			1	1													
TP150702	2	2.00	AA158249	B			1	1													
TP150702	0.6	0.60		D																	
TP150702	1.6	1.60		D	1	1															
TP150702	2	2.00		D	1	1															
TP150800	0.5	0.50	AA158244	B																	
TP150800	1.7	1.70	AA158245	B			1	1													
TP150800	2.9	2.90	AA158246	B																	
TP150800	0.5	0.50		D																	
TP150800	1.7	1.70		D	1	1															
TP150800	2.9	2.90		D																	
TP150900	0.6	0.60	AA158241	B					1												
TP150900	1.6	1.60	AA158242	B			1	1													
TP150900	2.5	2.50	AA158243	B																	
TP150900	0.6	0.60		D																	
TP150900	1.6	1.60		D	1	1															
TP150900	2.5	2.50		D																	
TP151000	0.5	0.50	AA152192	B																	
TP151000	1.5	1.50	AA152193	B			1	1													
TP151000	2.5	2.50	AA152194	B			1	1													
TP151000	0.5	0.50		D																	
TP151000	1.5	1.50		D	1	1															
TP151000	2.5	2.50		D	1	1															
TP151095	0.5	0.50	AA152195	B																	
TP151095	1.5	1.50	AA152196	B			1	1													
TP151095	2.5	2.50	AA152197	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP151095	0.5	0.50		D																	
TP151095	1.5	1.50		D	1	1															
TP151095	2.5	2.50		D	1	1															
TP151178	0.6	0.60	AA170147	B																	
TP151178	1.5	1.50	AA170148	B			1	1													
TP151178	2.5	2.50	AA170149	B																	
TP151178	3.5	3.50	AA170150	B			1	1													
TP151178	0.6	0.60		D																	
TP151178	1.5	1.50		D	1	1															
TP151178	2.5	2.50		D																	
TP151178	3.5	3.50		D	1	1															
TP151301	0.5	0.50	AA170151	B																	
TP151301	1.5	1.50	AA170152	B			1	1													
TP151301	2.5	2.50	AA170153	B			1	1													
TP151301	0.5	0.50		D																	
TP151301	1.5	1.50		D	1	1															
TP151301	2.5	2.50		D	1	1															
TP151412	0.5	0.50	AA170154	B																	
TP151412	1.5	1.50	AA170155	B			1	1													
TP151412	2.5	3.50	AA170156	B			1	1													
TP151412	0.5	0.50		D																	
TP151412	1.5	1.50		D	1	1															
TP151412	2.5	3.50		D	1	1															
TP151503	0.5	0.50	AA170198	B																	
TP151503	1.5	1.50	AA170199	B			1	1													
TP151503	2.5	3.50	AA170200	B			1	1													
TP151503	0.5	0.50		D																	
TP151503	1.5	1.50		D	1	1															
TP151503	2.5	3.50		D	1	1															
TP151602	0.5	0.50	AA170195	B																	
TP151602	1.5	1.50	AA170196	B			1	1													
TP151602	2.5	3.50	AA170197	B			1	1													
TP151602	0.5	0.50		D																	
TP151602	1.5	1.50		D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP151602	2.5	3.50		D	1	1															
TP151737	0.5	1.50	AA175216	B			1	1													
TP151737	2.5	3.50	AA175217	B			1	1													
TP151737	0.5	1.50		D	1	1															
TP151737	2.5	3.50		D	1	1															
TP151799	0.5	1.50	AA175218	B			1	1													
TP151799	2.5	3.50	AA175219	B			1	1													
TP151799	0.5	1.50		D	1	1															
TP151799	2.5	3.50		D	1	1															
TP151882	0.5	1.50	AA175202	B			1	1													
TP151882	2.5	3.50	AA175203	B			1	1													
TP151882	0.5	1.50		D	1	1															
TP151882	2.5	3.50		D	1	1															
TP151901	0.5	1.50	AA175200	B			1	1													
TP151901	2.5	3.50	AA175201	B			1	1													
TP151901	0.5	1.50		D	1	1															
TP151901	2.5	3.50		D	1	1															
TP151906	0.5	0.50	AA175204	B						1											
TP151906	1.5	3.50	AA175205	B			1	1													
TP151906	0.5	0.50		D																	
TP151906	1.5	3.50		D	1	1															
TP151961	0.5	0.50	AA175206	B																	
TP151961	1.5	2.50	AA175207	B			1	1													
TP151961	0.5	0.50		D																	
TP151961	1.5	2.50		D	1	1															
TP152002	0.5	0.50	AA175198	B																	
TP152002	1.5	3.50	AA175199	B			1	1													
TP152002	0.5	0.50		D																	
TP152002	1.5	3.50		D	1	1															
TP152045	0.5	0.50	AA175208	B																	
TP152045	1.5	1.50	AA175209	B					1												
TP152045	2.5	3.50	AA175210	B			1	1													
TP152045	0.5	0.50		D																	
TP152045	1.5	1.50		D																	

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP152045	2.5	3.50		D	1	1															
TP152102	0.5	1.50	AA175196	B						1											
TP152102	2.5	3.50	AA175197	B			1	1													
TP152102	0.5	1.50		D																	
TP152102	2.5	3.50		D	1	1															
TP152190	0.5	0.50	AA175211	B																	
TP152190	1.5	3.50	AA175212	B			1	1													
TP152190	0.5	0.50		D																	
TP152190	1.5	3.50		D																	
TP152295	0.5	1.50	AA175213	B					1												
TP152295	2.5	2.50	AA175214	B			1	1													
TP152295	3.5	3.50	AA175215	B			1	1													
TP152295	0.5	1.50		D																	
TP152295	2.5	2.50		D	1	1															
TP152295	3.5	3.50		D																	
TP152405	0.5	1.50	AA175220	B						1											
TP152405	2.5	2.50	AA175221	B			1	1													
TP152405	3.5	3.50	AA175222	B			1	1													
TP152405	0.5	1.50		D																	
TP152405	2.5	2.50		D	1	1															
TP152405	3.5	3.50		D	1	1															
TP152500	0.5	0.50	AA175223	B																	
TP152500	1.5	1.50	AA175224	B			1	1													
TP152500	0.5	0.50		D																	
TP152500	1.5	1.50		D																	
TP152699	0.5	1.50	AA175234	B					1												
TP152699	2.5	3.50	AA175235	B			1	1													
TP152699	0.5	1.50		D																	
TP152699	2.5	3.50		D	1	1															
TP152806	0.5	0.50	AA175236	B																	
TP152806	1.5	2.50	AA175237	B			1	1													
TP152806	3.5	3.50	AA175238	B			1	1													
TP152806	0.5	0.50		D																	
TP152806	1.5	2.50		D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP152806	3.5	3.50		D	1	1															
TP152901	0.5	0.50	AA175239	B																	
TP152901	1.5	1.50	AA175240	B			1	1													
TP152901	2.5	3.50	AA175241	B			1	1													
TP152901	0.5	0.50		D																	
TP152901	1.5	1.50		D	1	1															
TP152901	2.5	3.50		D	1	1															
TP152989	0.5	1.50	AA175231	B			1	1													
TP152989	2.5	2.50	AA175232	B			1	1													
TP152989	3.5	3.50	AA175233	B																	
TP152989	0.5	1.50		D	1	1															
TP152989	2.5	2.50		D	1	1															
TP152989	3.5	3.50		D																	
TP153098	0.5	1.50	AA175229	B			1	1													
TP153098	2.5	3.50	AA175230	B			1	1													
TP153098	0.5	1.50		D	1	1															
TP153098	2.5	3.50		D	1	1															
TP153199	0.5	1.50	AA175227	B					1												
TP153199	2.5	2.50	AA175228	B			1	1													
TP153199	0.5	1.50		D																	
TP153199	2.5	2.50		D	1	1															
TP153301	0.5	1.50	AA175225	B																	
TP153301	2.5	3.50	AA175226	B			1	1													
TP153301	0.5	1.50		D																	
TP153301	2.5	3.50		D	1	1															
TP156000	0.5	0.50	AA175185	B																	
TP156000	1.5	1.50	AA175186	B			1	1													
TP156000	2.5	3.50	AA175187	B			1	1													
TP156000	0.5	0.50		D																	
TP156000	1.5	1.50		D	1	1															
TP156000	2.5	3.50		D	1	1															
TP156099	0.5	1.50	AA175183	B																	
TP156099	2.5	2.50	AA175184	B			1	1													
TP156099	0.5	1.50		D																	

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP156099	2.5	2.50		D	1	1															
TP156204	0.5	1.50	AA175181	B						1											
TP156204	2.5	2.50	AA175182	B			1	1													
TP156204	0.5	1.50		D																	
TP156204	2.5	2.50		D	1	1															
TP156299	0.5	1.50	AA175179	B			1	1													
TP156299	3.5	3.50	AA175180	B			1	1													
TP156299	0.5	1.50		D	1	1															
TP156299	3.5	3.50		D																	
TP156398	0.5	1.50	AA175177	B					1												
TP156398	2.5	3.50	AA175178	B			1	1													
TP156398	0.5	1.50		D																	
TP156398	2.5	3.50		D	1	1															
TP156499	0.5	1.50	AA175175	B																	
TP156499	2.5	2.50	AA175176	B			1	1													
TP156499	0.5	1.50		D																	
TP156499	2.5	2.50		D	1	1															
TP156601	0.5	0.50	AA175172	B																	
TP156601	1.5	1.50	AA175173	B			1	1													
TP156601	2.5	3.50	AA175174	B			1	1													
TP156601	0.5	0.50		D																	
TP156601	1.5	1.50		D	1	1															
TP156601	2.5	3.50		D	1	1															
TP156701	0.5	0.50	AA170163	B																	
TP156701	1.5	1.50	AA170164	B																	
TP156701	2.5	3.50	AA170165	B			1	1													
TP156701	0.5	0.50		D																	
TP156701	1.5	1.50		D																	
TP156701	2.5	3.50		D	1	1															
TP156803	0.5	0.50	AA170160	B						1											
TP156803	1.5	1.50	AA170161	B			1	1													
TP156803	2.5	2.50	AA170162	B			1	1													
TP156803	0.5	0.50		D																	
TP156803	1.5	1.50		D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP156803	2.5	2.50		D	1	1															
TP156895	0.5	0.50	AA170157	B																	
TP156895	1.5	1.50	AA170158	B					1												
TP156895	2.5	3.50	AA170159	B			1	1													
TP156895	0.5	0.50		D																	
TP156895	1.5	1.50		D																	
TP156895	2.5	3.50		D	1	1															
TP156965	0.5	0.50	AA170166	B																	
TP156965	1.5	1.50	AA170167	B																	
TP156965	2.5	3.50	AA170168	B			1	1													
TP156965	0.5	0.50		D																	
TP156965	1.5	1.50		D																	
TP156965	2.5	3.50		D	1	1															
TP157100	0.5	0.50	AA170169	B																	
TP157100	1.5	1.50	AA170170	B																	
TP157100	2.5	2.50	AA170171	B			1	1													
TP157100	0.5	0.50		D																	
TP157100	1.5	1.50		D																	
TP157100	2.5	2.50		D	1	1															
TP157202	0.5	0.50	AA170172	B																	
TP157202	1	1.00	AA170173	B			1	1													
TP157202	2.5	3.50	AA170174	B			1	1													
TP157202	0.5	0.50		D																	
TP157202	1	1.00		D	1	1															
TP157202	2.5	3.50		D	1	1															
TP157300	0.5	0.50	AA170175	B																	
TP157300	1.5	1.50	AA170176	B			1	1													
TP157300	2.5	3.50	AA170177	B			1	1													
TP157300	0.5	0.50		D																	
TP157300	1.5	1.50		D	1	1															
TP157300	2.5	3.50		D	1	1															
TP157403	0.5	0.50	AA170178	B																	
TP157403	1.5	1.50	AA170179	B			1	1													
TP157403	2.5	3.50	AA170180	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP157403	0.5	0.50		D																	
TP157403	1.5	1.50		D	1	1															
TP157403	2.5	3.50		D	1	1															
TP157502	0.5	0.50	AA170181	B																	
TP157502	1.5	1.50	AA170182	B			1	1													
TP157502	2.5	3.50	AA170183	B			1	1													
TP157502	0.5	0.50		D																	
TP157502	1.5	1.50		D	1	1															
TP157502	2.5	3.50		D	1	1															
TP157585	0.5	1.50	AA170184	B						1											
TP157585	2.5	3.50	AA170185	B			1	1													
TP157585	0.5	1.50		D																	
TP157585	2.5	3.50		D	1	1															
TP157697	0.5	0.50	AA170192	B																	
TP157697	1.5	1.50	AA170193	B			1	1													
TP157697	2.5	3.50	AA170194	B			1	1													
TP157697	0.5	0.50		D																	
TP157697	1.5	1.50		D	1	1															
TP157697	2.5	3.50		D	1	1															
TP157813	0.5	0.50	AA170189	B																	
TP157813	1.5	1.50	AA170190	B			1	1													
TP157813	2.5	3.50	AA170191	B			1	1													
TP157813	0.5	0.50		D																	
TP157813	1.5	1.50		D	1	1															
TP157813	2.5	3.50		D	1	1															
TP157895	0.5	0.50	AA170186	B																	
TP157895	1.5	1.50	AA170187	B			1	1													
TP157895	2.5	3.50	AA170188	B			1	1													
TP157895	0.5	0.50		D																	
TP157895	1.5	1.50		D	1	1															
TP157895	2.5	3.50		D	1	1															
TP159013	0.50	0.50	AA179458	B			1	1													
TP159013	1.50	1.50	AA179459	B																	
TP159013	2.00	2.00	AA179460	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP159013	0.50	0.50		D	1	1															
TP159013	1.50	1.50		D																	
TP159013	2.00	2.00		D	1	1															
TP159100	0.50	0.50	AA179454	B																	
TP159100	1.00	1.00	AA179455	B			1	1													
TP159100	2.00	2.00	AA179456	B																	
TP159100	3.00	3.00	AA179457	B			1	1													
TP159100	0.50	0.50		D																	
TP159100	1.00	1.00		D	1	1															
TP159100	2.00	2.00		D																	
TP159100	3.00	3.00		D	1	1															
TP159203	0.50	0.50	AA174499	B																	
TP159203	1.00	1.00	AA174500	B																	
TP159203	2.00	2.00	AA179453	B			1	1													
TP159203	0.50	0.50		D																	
TP159203	1.00	1.00		D																	
TP159203	2.00	2.00		D	1	1															
TP159303	0.50	0.50	AA174497	B																	
TP159303	1.50	1.50	AA174498	B			1	1													
TP159303	0.50	0.50		D																	
TP159303	1.50	1.50		D																	
TP159347	0.50	0.50	AA174495	B																	
TP159347	1.00	1.00	AA174496	B			1	1													
TP159347	0.50	0.50		D																	
TP159347	1.00	1.00		D																	
TP159404	1.00	1.00	AA174493	B																	
TP159404	2.00	2.00	AA174494	B			1	1													
TP159404	1.00	1.00		D																	
TP159404	2.00	2.00		D																	
TP159488	0.50	0.50	AA174491	B																	
TP159488	1.50	1.50	AA174492	B			1	1													
TP159488	0.50	0.50		D																	
TP159488	1.50	1.50		D																	
TP160696	0.5	0.50	AA175151	B			1	1													

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP160696	1.5	1.50	AA175152	B																	
TP160696	2.5	3.50	AA175153	B			1	1													
TP160696	0.5	0.50		D																	
TP160696	1.5	1.50		D																	
TP160696	2.5	3.50		D	1	1															
TP160795	0.5	0.50	AA175154	B																	
TP160795	1.5	1.50	AA175155	B																	
TP160795	2.5	3.50	AA175156	B			1	1													
TP160795	0.5	0.50		D																	
TP160795	1.5	1.50		D																	
TP160795	2.5	3.50		D	1	1															
TP160895	0.5	0.50	AA175157	B																	
TP160895	1.5	1.50	AA175158	B			1	1													
TP160895	2.5	3.50	AA175159	B			1	1													
TP160895	0.5	0.50		D																	
TP160895	1.5	1.50		D	1	1															
TP160895	2.5	3.50		D	1	1															
TP160993	0.5	0.50	AA175160	B																	
TP160993	1.5	1.50	AA175161	B			1	1													
TP160993	2.5	3.50	AA175162	B					1												
TP160993	0.5	0.50		D																	
TP160993	1.5	1.50		D	1	1															
TP160993	2.5	3.50		D	1	1															
TP161109	0.5	0.50	AA175163	B																	
TP161109	1.5	2.50	AA175164	B			1	1													
TP161109	3	3.00	AA175165	B			1	1													
TP161109	0.5	0.50		D																	
TP161109	1.5	2.50		D																	
TP161109	3	3.00		D	1	1															
TP161199	0.5	0.50	AA175166	B																	
TP161199	1.5	2.50	AA175167	B			1	1													
TP161199	3.5	3.50	AA175168	B			1	1													
TP161199	0.5	0.50		D																	
TP161199	1.5	2.50		D	1	1															

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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APPROVED BY		**DATE**		**COMPANY NAME**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP161199	3.5	3.50		D	1	1															
TP161292	0.5	0.50	AA175169	B																	
TP161292	1.5	1.50	AA175170	B						1											
TP161292	2.5	2.50	AA175171	B			1	1													
TP161292	0.5	0.50		D																	
TP161292	1.5	1.50		D																	
TP161292	2.5	2.50		D	1	1															
TP161469	0.80	0.80	AA171479	B																	
TP161469	1.80	1.80	AA171480	B					1												
TP161469	2.90	2.90	AA171481	B			1	1													
TP161469	0.80	0.80		D	1	1															
TP161469	1.80	1.80		D	1	1															
TP161469	2.90	2.90		D																	
TP161858	0.50	0.50	AA171474	B			1	1													
TP161858	2.10	2.10	AA171475	B			1	1													
TP161858	2.80	2.80	AA171476	B																	
TP161858	0.50	0.50		D	1	1															
TP161858	2.10	2.10		D	1	1															
TP161858	2.80	2.80		D																	
TP162008	0.50	0.50	AA171472	B			1	1													
TP162008	1.00	1.00	AA171473	B			1	1													
TP162008	0.50	0.50		D	1	1															
TP162008	1.00	1.00		D	1	1															
TP162045	0.50	0.50	AA171470	B			1	1													
TP162045	1.60	1.60	AA171471	B			1	1													
TP162045	0.50	0.50		D	1	1															
TP162045	1.60	1.60		D																	
TP162103	0.50	0.50	AA171468	B			1	1													
TP162103	1.60	1.60	AA171469	B			1	1													
TP162103	0.50	0.50		D	1	1															
TP162103	1.60	1.60		D																	
TP162214	0.50	0.50	AA171477	B																	
TP162214	1.50	1.50	AA171478	B			1	1													
TP162214	0.50	0.50		D																	

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IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

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APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP162214	1.50	1.50		D																	
TP162302	0.50	0.50	AA171465	B						1											
TP162302	1.70	1.70	AA171466	B			1	1													
TP162302	1.90	1.90	AA171467	B			1	1													
TP162302	0.50	0.50		D																	
TP162302	1.70	1.70		D																	
TP162302	1.90	1.90		D																	
TP162401	0.50	0.50	AA171463	B																	
TP162401	1.40	1.40	AA171464	B			1	1													
TP162401	0.50	0.50		D																	
TP162401	1.40	1.40		D																	
TP162500	0.50	0.50	AA171460	B																	
TP162500	1.40	1.40	AA171461	B																	
TP162500	1.80	1.80	AA171462	B			1	1													
TP162500	0.50	0.50		D																	
TP162500	1.40	1.40		D																	
TP162500	1.80	1.80		D																	
TP162602	0.40	0.40	AA171457	B																	
TP162602	0.90	0.90	AA171458	B																	
TP162602	1.40	1.40	AA171459	B			1	1		1											
TP162602	0.40	0.40		D																	
TP162602	0.90	0.90		D																	
TP162602	1.40	1.40		D	1	1															
TP162699	0.70	0.70	AA171454	B																	
TP162699	1.70	1.70	AA171455	B					1												
TP162699	2.70	2.70	AA171456	B			1	1													
TP162699	0.70	0.70		D																	
TP162699	1.70	1.70		D																	
TP162699	2.70	2.70		D	1	1															
TP162797	0.40	0.40	AA171451	B																	
TP162797	0.80	0.80	AA171452	B																	
TP162797	1.50	1.50	AA171453	B			1	1													
TP162797	0.40	0.40		D																	
TP162797	0.80	0.80		D																	

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CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE	

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Naas, Co. Kildare
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APPROVED BY								**DATE**									**COMPANY NAM**				
HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP162797	1.50	1.50		D																	
TP163301	0.50	0.50	AA179461	B																	
TP163301	1.00	1.00	AA179462	B			1	1													
TP163301	2.00	2.00	AA179463	B																	
TP163301	0.50	0.50		D																	
TP163301	1.00	1.00		D	1	1															
TP163301	2.00	2.00		D																	
TP163403	0.50	0.50	AA179464	B																	
TP163403	1.00	1.00	AA179465	B			1	1													
TP163403	1.50	1.50	AA179466	B																	
TP163403	0.50	0.50		D																	
TP163403	1.00	1.00		D	1	1															
TP163403	1.50	1.50		D																	
TP163502	0.50	0.50	AA179467	B																	
TP163502	1.00	1.00	AA179468	B			1	1													
TP163502	0.50	0.50		D																	
TP163502	1.00	1.00		D	1	1															
TP1635605	0.50	0.50	AA179469	B																	
TP1635605	1.00	1.00	AA179470	B			1	1													
TP1635605	0.50	0.50		D																	
TP1635605	1.00	1.00		D	1	1															
TP163696	0.50	0.50	AA179471	B																	
TP163696	0.50	0.50	AA179472	B																	
TP163696	0.50	0.50		D																	
TP163696	0.50	0.50		D																	
TP163696	0.50	0.50	AA179473	B																	
TP163696	1.00	1.00	AA179474	B																	
TP163696	2.00	2.00	AA179475	B			1	1													
TP163696	0.50	0.50		D																	
TP163696	1.00	1.00		D																	
TP163696	2.00	2.00		D	1	1															
TP163799	0.50	0.50	AA179476	B			1	1													
TP163799	1.00	1.00	AA179477	B																	
TP163799	2.00	2.00	AA179478	B			1	1													

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP163799	0.50	0.50		D	1	1															
TP163799	1.00	1.00		D																	
TP163799	2.00	2.00		D	1	1															
TP164905	0.50	0.50	AA174056	B			1	1													
TP164905	1.00	1.00	AA174057	B						1											
TP164905	0.50	0.50		D	1	1															
TP164905	1.00	1.00		D	1	1															
TP165010	0.70	0.70	AA174058	B			1	1													
TP165010	0.70	0.70		D	1	1															
TP165105	0.40	0.40	AA174059	B			1	1													
TP165105	0.40	0.40		D	1	1															
TP165204	0.50	0.50	AA174060	B			1	1													
TP165204	0.80	0.80	AA174061	B					1												
TP165204	0.50	0.50		D	1	1															
TP165204	0.80	0.80		D																	
TP165314	0.40	0.40	AA174062	B			1	1													
TP165314	0.40	0.40		D	1	1															
TP166562	0.50	0.60	AA174863	B																	
TP166562	1.40	1.50	AA174864	B			1	1													
TP166562	2.10	2.20	AA174865	B			1	1													
TP166562	0.50	0.60		D																	
TP166562	1.40	1.50		D	1	1															
TP166562	2.10	2.20		D																	
TP166697	0.50	0.60	AA174866	B																	
TP166697	1.40	1.50	AA174867	B			1	1													
TP166697	1.70	1.80	AA174868	B			1	1													
TP166697	0.50	0.60		D																	
TP166697	1.40	1.50		D	1	1															
TP166697	1.70	1.80		D																	
TP166772	0.50	0.60	AA173606	B			1	1													
TP166772	1.50	1.60	AA173607	B																	
TP166772	2.00	2.10	AA173608	B																	
TP166772	0.50	0.60		D	1	1															
TP166772	1.50	1.60		D																	

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP166867	0.50	0.60	AA173609	B																	
TP166867	1.50	1.60	AA173610	B			1	1													
TP166867	2.20	2.30	AA173611	B			1	1													
TP166867	0.50	0.60		D																	
TP166867	1.50	1.60		D	1	1															
TP166867	2.20	2.30		D																	
TP167031	0.50	0.60	AA174857	B			1	1													
TP167031	1.90	2.00	AA174858	B			1	1													
TP167031	2.60	2.70	AA174859	B																	
TP167031	0.50	0.60		D	1	1															
TP167031	1.90	2.00		D	1	1															
TP167031	2.60	2.70		D																	
TP167205	0.50	0.60	AA174860	B			1	1													
TP167205	1.20	1.30	AA174861	B																	
TP167205	2.10	2.20	AA174862	B			1	1													
TP167205	0.50	0.60		D	1	1															
TP167205	1.20	1.30		D																	
TP167205	2.10	2.20		D	1	1															
TP167384	0.50	0.60	AA174855	B			1	1													
TP167384	2.10	2.20	AA174856	B			1	1													
TP167384	0.50	0.60		D	1	1															
TP168033	0.50	0.60	AA174863	B			1	1													
TP168033	1.70	1.80	AA174864	B			1	1													
TP168033	0.50	0.60		D	1	1															
TP168033	1.70	1.80		D	1	1															
TP168041	0.50	0.60	AA174865	B			1	1													
TP168041	1.50	1.60	AA174866	B						1											
TP168041	2.20	2.30	AA174867	B																	
TP168041	1.50	1.60		D																	
TP168041	2.20	2.30		D	1	1															
TP168241	0.60	0.70	AA174853	B			1	1													
TP168241	1.80	1.90	AA174854	B			1	1													
TP168241	0.60	0.70		D																	
TP168241	1.80	1.90		D	1	1															

	CONTRACT NO:	23560	SCHEDULE NO:	1	COPIED TO (tick):	CLIENT		IGSL Ltd Uni F, M7 Business Park Naas, Co. Kildare Tel: 045-846176 Fax: 045-846187
IGSL Ltd.	CONTRACT NAME:	WSP Lot 3 - GI - Pipeline				NGINEE		

NB. For Sieve analysis testing please specify if hydrometer testing is reuired on 10%, 15% or 20% fines passing or not required at all in the remarks column. For compaction testing please specify if 2.5kg or 4.5kg vibrating hammer is required in the remarks column.

ISSUED BY	C.Killaly	**DATE**	31/01/2022	**COMPANY NAM**	IGSL Limited
APPROVED BY		**DATE**		**COMPANY NAM**	

HOLE NO	SAMPLE DEPTH (TOP)	SAMPLE DEPTH (BTM)	Sample Reference	SAMPLE TYPE	MOISTURE CONTENT	ATTERBERG LIMITS	SIEVE	HYDROMETER	MCV	CBR	COMP	CBR	MCV	CBR 5 POINT	MCV 5 POINT	CONSOL	TRIAXIAL (U)	TRIAXIAL (C U)	LAB VANE	Shearbox	REMARKS Testing Non Compoaiun
TP168340	0.50	0.60	AA174851	B			1	1													
TP168340	1.70	1.80	AA174852	B			1	1													
TP168340	0.50	0.60		D	1	1															

Appendix 9H.2

Geo-environmental & Chemical Testing – Soil

Chemtest Report Numbers

22-30198
22-35401
22-37985
22-39337
22-40422
22-43721
22-44551
22-48584

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-30198-4		
Initial Date of Issue:	18-Aug-2022	**Date of Re-Issue:**	20-Oct-2022
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	WSP (IGSL)		
Quotation No.:	Q21-25399	**Date Received:**	09-Aug-2022
Order No.:		**Date Instructed:**	09-Aug-2022
No. of Samples:	88		
Turnaround (Wkdays):	7	**Results Due:**	17-Aug-2022
Date Approved:	18-Aug-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: WSP (IGSL)

Client: IGSL					**Chemtest Job No.:**	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198
Quotation No.: Q21-25399					**Chemtest Sample ID.:**	1484019	1484020	1484021	1484022	1484033	1484053	1484059	1484060	1484061	1484062
					Sample Location:	TP157300	TP157895	TP159100	TP163696	BH131203	BH150204	TP148304	TP149705	TP149904	TP150190
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.5	2.5	2.0	2.0	1.2	3.0	3.5	2.0	2.0	3.0
					Bottom Depth (m):	3.5	3.0			1.7	3.5				3.5
					Asbestos Lab:	IN-TRAN-D									
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020		8.4	8.0	0.14	17	53	1.5	12	9.7	6.5	19
pH (2.5:1)	N	2010		4.0		[A] 8.8	[A] 8.7	[A] 8.6	[A] 8.3		[A] 8.8	[A] 8.8	[A] 8.4	[A] 8.3	[A] 8.1
Magnesium (Water Soluble)	N	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] 0.027	[A] 0.027	[A] 0.025	[A] 0.45		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.19	[A] < 0.010
Total Sulphur	U	2175	%	0.010		[A] 0.079	[A] 0.083	[A] 0.066	[A] 0.13		[A] 0.071	[A] 0.034	[A] 0.039	[A] 0.10	[A] 0.077
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010	0.011
Ammonium (Water Soluble)	U	2220	g/l	0.01		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.029	[A] 0.025	[A] 0.022	[A] 0.10		[A] 0.017	[A] 0.023	[A] 0.038	[A] 0.047	[A] 0.039
LOI	U	2610	%	0.10						52					
Organic Matter	U	2625	%	0.40						[A] 21					

Results - Soil

Project: WSP (IGSL)

Client: IGSL					**Chemtest Job No.:**	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198	22-30198
Quotation No.: Q21-25399					**Chemtest Sample ID.:**	1484063	1484064	1484065	1484066	1484067	1484068	1484069	1484109
					Sample Location:	TP151000	TP151301	TP151503	TP151882	TP152405	TP152901	TP156000	BH153150
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.5	2.5	2.5	2.5	3.5	2.5	2.5	3.0
					Bottom Depth (m):				3.5		3.5		
					Asbestos Lab:								
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020		3.5	6.7	7.3	5.1	8.3	8.1	5.9	9.3
pH (2.5:1)	N	2010		4.0		[A] 8.2	[A] 8.1	[A] 8.1	[A] 8.0	[A] 8.3	[A] 8.6	[A] 8.4	[A] 8.6
Magnesium (Water Soluble)	N	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.017	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] 0.32	[A] 0.39	[A] 0.38	[A] 0.61	[A] 0.14	[A] 0.056	[A] 0.065	[A] < 0.010
Total Sulphur	U	2175	%	0.010		[A] 0.25	[A] 0.37	[A] 0.38	[A] 0.65	[A] 0.51	[A] 0.10	[A] 0.19	[A] 0.018
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.026	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.078	[A] 0.11	[A] 0.076	[A] 0.13	[A] 0.070	[A] 0.034	[A] 0.034	[A] 0.012
LOI	U	2610	%	0.10									
Organic Matter	U	2625	%	0.40									

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1484019			TP157300		A	Amber Glass 250ml
1484019			TP157300		A	Plastic Tub 500g
1484020			TP157895		A	Amber Glass 250ml
1484020			TP157895		A	Plastic Tub 500g
1484021			TP159100		A	Amber Glass 250ml
1484022			TP163696		A	Amber Glass 250ml
1484033			BH131203		A	Amber Glass 250ml
1484033			BH131203		A	Plastic Tub 500g
1484053			BH150204		A	Amber Glass 250ml
1484053			BH150204		A	Plastic Tub 500g
1484059			TP148304		A	Plastic Tub 500g
1484060			TP149705		A	Amber Glass 250ml
1484060			TP149705		A	Plastic Tub 500g
1484061			TP149904		A	Amber Glass 250ml
1484061			TP149904		A	Plastic Tub 500g
1484062			TP150190		A	Amber Glass 250ml
1484062			TP150190		A	Plastic Tub 500g
1484063			TP151000		A	Amber Glass 250ml
1484063			TP151000		A	Plastic Tub 500g
1484064			TP151301		A	Amber Glass 250ml
1484064			TP151301		A	Plastic Tub 500g
1484065			TP151503		A	Amber Glass 250ml

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1484065			TP151503		A	Plastic Tub 500g
1484066			TP151882		A	Amber Glass 250ml
1484066			TP151882		A	Plastic Tub 500g
1484067			TP152405		A	Amber Glass 250ml
1484067			TP152405		A	Plastic Tub 500g
1484068			TP152901		A	Amber Glass 250ml
1484068			TP152901		A	Plastic Tub 500g
1484069			TP156000		A	Amber Glass 250ml
1484069			TP156000		A	Plastic Tub 500g
1484109			BH153150		A	Amber Glass 250ml
1484109			BH153150		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-35401-3		
Initial Date of Issue:	22-Sep-2022	**Date of Re-Issue:**	20-Oct-2022
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	WSP		
Quotation No.:	Q20-21693	**Date Received:**	15-Sep-2022
Order No.:		**Date Instructed:**	15-Sep-2022
No. of Samples:	18		
Turnaround (Wkdays):	7	**Results Due:**	26-Sep-2022
Date Approved:	22-Sep-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: WSP

Client: IGSL				**Chemtest Job No.:**	22-35401	22-35401	22-35401	22-35401	22-35401
Quotation No.: Q20-21693				**Chemtest Sample ID.:**	1507327	1507328	1507333	1507338	1507342
Order No.:				Client Sample Ref.:	TP150500	TP156965	TP160696	TP167031	TP168291
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.9	2.5	1.5	0.5	1.8
				Bottom Depth (m):				0.6	1.9
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Moisture	N	2030	%	0.020	47	7.8	8.4	11	7.9
pH (2.5:1)	N	2010		4.0	[A] 8.7	[A] 9.0	[A] 9.1	[A] 9.0	[A] 9.1
Magnesium (Water Soluble)	N	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010	[A] 0.037	[A] 0.068	[A] 0.042	[A] 0.027	[A] 0.044
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.018	[A] 0.010	[A] 0.014	[A] 0.011	[A] 0.010

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1507327	TP150500				A	Amber Glass 250ml
1507327	TP150500				A	Plastic Tub 500g
1507328	TP156965				A	Amber Glass 250ml
1507328	TP156965				A	Plastic Tub 500g
1507333	TP160696				A	Amber Glass 250ml
1507333	TP160696				A	Plastic Tub 500g
1507338	TP167031				A	Amber Glass 250ml
1507338	TP167031				A	Plastic Tub 500g
1507342	TP168291				A	Amber Glass 250ml
1507342	TP168291				A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

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Uncertainty of measurement for the determinands tested are available upon request
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B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-37985-2		
Initial Date of Issue:	10-Oct-2022	**Date of Re-Issue:**	20-Oct-2022
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	WSP		
Quotation No.:	Q20-21693	**Date Received:**	05-Oct-2022
Order No.:		**Date Instructed:**	05-Oct-2022
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	13-Oct-2022
Date Approved:	10-Oct-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: WSP

Client: IGSL				**Chemtest Job No.:**	22-37985	22-37985
Quotation No.: Q20-21693				**Chemtest Sample ID.:**	1518833	1518834
Order No.:				Client Sample Ref.:	TP166772	TP149200
				Sample Type:	SOIL	SOIL
				Top Depth (m):	0.5	2.5
				Bottom Depth (m):	0.6	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	4.9	9.6
pH (2.5:1)	N	2010		4.0	[A] 8.9	[A] 8.2
Magnesium (Water Soluble)	N	2120	g/l	0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.047	[A] 0.070
Total Sulphur	U	2175	%	0.010	[A] 0.080	[A] 0.11
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	0.012	< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.061	[A] 0.058

Deviations

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Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1518833	TP166772				A	Amber Glass 250ml
1518833	TP166772				A	Plastic Tub 500g
1518834	TP149200				A	Amber Glass 250ml
1518834	TP149200				A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

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Sample Retention and Disposal

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eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-39337-2		
Initial Date of Issue:	25-Oct-2022	**Date of Re-Issue:**	30-Mar-2023
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	WSP		
Quotation No.:	Q20-21693	**Date Received:**	14-Oct-2022
Order No.:		**Date Instructed:**	14-Oct-2022
No. of Samples:	39		
Turnaround (Wkdays):	5	**Results Due:**	20-Oct-2022
Date Approved:	25-Oct-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: WSP

Client: IGSL					**Chemtest Job No.:**	22-39337	22-39337	22-39337	22-39337	22-39337	22-39337	22-39337	22-39337	22-39337	22-39337
Quotation No.: Q20-21693					**Chemtest Sample ID.:**	1525074	1525075	1525076	1525083	1525085	1525089	1525091	1525096	1525098	1525099
Order No.:					Client Sample Ref.:						Gravel				
					Sample Location:	TP 153048	TP 156803	BH 156988	TP 148005	BH 167855	TP 156299	BH 161062	TP 166772	TP 150590	BH 163697
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.5	2.5	2.0	2.0	2.0		2.0	0.5	2.0	3.0
					Bottom Depth (m):								0.6		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020		8.3	7.6	8.2	11	7.2	8.0	15	13	9.1	9.5
pH (2.5:1)	N	2010		4.0		[A] 9.4	[A] 9.3	[A] 8.9	[A] 9.4	[A] 8.4	[A] 9.6	[A] 8.3	[A] 10.0	[A] 8.4	[A] 8.9
Magnesium (Water Soluble)	N	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.014	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.45	[A] < 0.010	[A] 0.071	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010		[A] 0.014	[A] < 0.010	[A] < 0.010	[A] 0.012	[A] 0.37	[A] 0.043	[A] 0.075	[A] 0.028	[A] 0.075	[A] 0.016
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	0.017	< 0.010	0.049	< 0.010	< 0.010	< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.015	[A] 0.013	[A] 0.010	[A] 0.017	[A] 0.10	[A] 0.017	[A] 0.017	[A] 0.017	[A] 0.022	[A] < 0.010

Deviations

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1525074			TP 153048		A	Plastic Tub 500g
1525075			TP 156803		A	Amber Glass 250ml
1525075			TP 156803		A	Plastic Tub 500g
1525076			BH 156988		A	Amber Glass 250ml
1525076			BH 156988		A	Plastic Tub 500g
1525083			TP 148005		A	Amber Glass 250ml
1525083			TP 148005		A	Plastic Tub 500g
1525085			BH 167855		A	Amber Glass 250ml
1525085			BH 167855		A	Plastic Tub 500g
1525089	Gravel		TP 156299		A	Amber Glass 250ml
1525089	Gravel		TP 156299		A	Plastic Tub 500g
1525091			BH 161062		A	Amber Glass 250ml
1525091			BH 161062		A	Plastic Tub 500g
1525096			TP 166772		A	Amber Glass 250ml
1525096			TP 166772		A	Plastic Tub 500g
1525098			TP 150590		A	Amber Glass 250ml
1525098			TP 150590		A	Plastic Tub 500g
1525099			BH 163697		A	Amber Glass 250ml
1525099			BH 163697		A	Plastic Tub 500g

Test Methods

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2010	pH Value of Soils	pH	pH Meter
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Email: info@chemtest.com

Amended Report

Report No.:	22-40422-2		
Initial Date of Issue:	04-Jan-2023	**Date of Re-Issue:**	30-Mar-2023
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23560 WSP Lot 3 - GI		
Quotation No.:	Q22-27648	**Date Received:**	21-Oct-2022
Order No.:		**Date Instructed:**	21-Oct-2022
No. of Samples:	39		
Turnaround (Wkdays):	27	**Results Due:**	28-Nov-2022
Date Approved:	04-Jan-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: 23560 WSP Lot 3 - GI

Client: IGSL				**Chemtest Job No.:**		22-40422
Quotation No.: Q22-27648				**Chemtest Sample ID.:**		1530160
				Sample Location:		BH163697
				Sample Type:		SOIL
				Top Depth (m):		1.00
				Bottom Depth (m):		1.50
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	2:1		N/A	9.2
Chloride	U	1220	2:1	mg/l	1.0	< 1.0
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	< 0.050
Nitrate	U	1220	2:1	mg/l	0.50	1.4
Sulphate	U	1220	2:1	mg/l	1.0	< 1.0
Cyanide (Total) Low-Level	N	1300	2:1	mg/l	0.0050	< 0.0050
Cyanide (Free) Low-Level	N	1300	2:1	mg/l	0.0050	< 0.0050
Sulphide	U	1325	2:1	mg/l	0.050	< 0.050
Magnesium	U	1455	2:1	mg/l	0.20	< 0.20
Hardness	U	1415	2:1	mg/l	15	< 15
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.50
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	< 10
Barium (Dissolved)	U	1455	2:1	µg/l	5.00	< 5.0
Beryllium (Dissolved)	U	1455	2:1	µg/l	1.00	< 1.0
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	1.0
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	1.7
Manganese (Dissolved)	U	1455	2:1	µg/l	0.50	11
Molybdenum (Dissolved)	U	1455	2:1	µg/l	0.20	0.61
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	2.1
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	0.63
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	2:1	µg/l	0.50	1.7
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	25
Mercury Low Level	U	1460	2:1	µg/l	0.010	< 0.010
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	860
Low-Level Chromium (Hexavalent)	N	1495	2:1	µg/l	0.10	[A] 0.30
Chromium (Trivalent) LL	N	1450	2:1	µg/l	1	< 1
C2 Aliphatic TPH >C5-C6	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C6-C8	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aliphatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	[A] < 0.10
Total Aliphatic Hydrocarbons	N	1675	2:1	µg/l	5.0	[A] < 5.0
C2 Aromatic TPH >C5-C7	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C7-C8	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	[A] < 0.10

Results - Leachate

Project: 23560 WSP Lot 3 - GI

Client: IGSL				**Chemtest Job No.:**		22-40422
Quotation No.: Q22-27648				**Chemtest Sample ID.:**		1530160
				Sample Location:		BH163697
				Sample Type:		SOIL
				Top Depth (m):		1.00
				Bottom Depth (m):		1.50
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
C2 Aromatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Aromatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	[A] < 0.10
C2 Total Aromatic Hydrocarbons	N	1675	2:1	µg/l	5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	1675	2:1	µg/l	10	[A] < 10
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20
Resorcinol	U	1920	2:1	mg/l	0.0050	I/S
Phenol	U	1920	2:1	mg/l	0.0050	I/S
Cresols	U	1920	2:1	mg/l	0.0050	I/S
Xylenols	U	1920	2:1	mg/l	0.0050	I/S
1-Naphthol	N	1920	2:1	mg/l	0.0050	I/S
Trimethylphenols	U	1920	2:1	mg/l	0.0050	I/S
Total Phenols	U	1920	2:1	mg/l	0.030	I/S

Results - Soil

Project: 23560 WSP Lot 3 - GI

Client: IGSL				**Chemtest Job No.:**	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422
Quotation No.: Q22-27648				**Chemtest Sample ID.:**	1530153	1530154	1530155	1530156	1530157	1530158	1530159	1530160
Order No.:				Client Sample Ref.:				173303	178037	178024	178019	
				Sample Location:	BH151180	BH151180	BH151180	BH151877	BH152124	BH152702	BH153150	BH163697
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	3.50	5.00	3.00	3.00	3.00	3.00	1.00
				Bottom Depth (m):	1.00	4.00	5.50					1.50
				Asbestos Lab:								COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A								-
Asbestos Identification	U	2192		N/A								No Asbestos Detected
Moisture	N	2030	%	0.020	10	12	20	9.8	7.8	10	7.4	12
Soil Colour	N	2040		N/A								Brown
Other Material	N	2040		N/A								Stones
Soil Texture	N	2040		N/A								Sand
pH	M	2010		4.0								[A] 8.6
pH (2.5:1)	N	2010		4.0			[A] 7.5	[A] 7.5	[A] 7.6	[A] 8.1	[A] 8.0	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40								[A] < 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010			[A] 0.010	[A] 1.2	[A] 1.0	[A] 0.20	[A] 0.20	
Total Sulphur	M	2175	%	0.010			[A] 0.043	[A] 1.1	[A] 1.0	[A] 0.26	[A] 0.25	[A] 0.055
Cyanide (Free)	M	2300	mg/kg	0.50								[A] < 0.50
Cyanide (Total)	M	2300	mg/kg	0.50								[A] < 0.50
Thiocyanate	M	2300	mg/kg	5.0								[A] < 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50								[A] 16
Iron (Total)	N	2430	mg/kg	100								[A] 8000
Magnesium (Total)	N	2430	mg/kg	10								4300
Sulphate (Total)	U	2430	mg/kg	100								[A] 560
Sulphate (Acid Soluble)	U	2430	%	0.010			[A] 0.015	[A] 0.21	[A] 0.19	[A] 0.059	[A] 0.069	
Arsenic	M	2455	mg/kg	0.5								3.5
Barium	M	2455	mg/kg	0								26
Beryllium	U	2455	mg/kg	0.5								< 0.5
Cadmium	M	2455	mg/kg	0.10								0.76
Chromium	M	2455	mg/kg	0.5								7.2
Manganese	M	2455	mg/kg	1.0								470
Molybdenum	M	2455	mg/kg	0.5								0.6
Copper	M	2455	mg/kg	0.50								13
Mercury	M	2455	mg/kg	0.05								< 0.05
Nickel	M	2455	mg/kg	0.50								17
Lead	M	2455	mg/kg	0.50								11
Selenium	M	2455	mg/kg	0.25								0.54
Vanadium	U	2455	mg/kg	0.5								9.6
Zinc	M	2455	mg/kg	0.50								43
Chromium (Trivalent)	N	2490	mg/kg	1.0								7.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50								< 0.50
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00								[A] < 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00								[A] 1.5

Results - Soil

Project: 23560 WSP Lot 3 - GI

Client: IGSL			**Chemtest Job No.:**		22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422
Quotation No.: Q22-27648			**Chemtest Sample ID.:**		1530153	1530154	1530155	1530156	1530157	1530158	1530159	1530160
Order No.:			Client Sample Ref.:					173303	178037	178024	178019	
			Sample Location:		BH151180	BH151180	BH151180	BH151877	BH152124	BH152702	BH153150	BH163697
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.50	5.00	3.00	3.00	3.00	3.00	1.00
			Bottom Depth (m):		1.00	4.00	5.50					1.50
			Asbestos Lab:									COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00								[A] < 2.0
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00								[A] 3.1
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00								[A] < 1.0
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00								[A] 5.5
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00								[A] < 1.0
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00								[A] < 1.0
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00								[A] 4.7
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00								[A] < 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00								[A] < 1.0
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00								[A] 5.4
Total EPH >C10-C35	M	2690	mg/kg	10.00								[A] 11
LOI	M	2610	%	0.10	U/S	U/S						
Organic Matter	M	2625	%	0.40	[A] 85	[A] 26						[A] 1.4
Total Organic Carbon	M	2625	%	0.20								[A] 0.79
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05								[A] < 0.1
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05								[A] < 0.1
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05								[A] < 0.1
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05								[A] < 0.1
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25								[A] < 0.3
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05								[A] < 0.1
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05								[A] < 0.1
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05								[A] < 0.1
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25								[A] < 0.3
Total VPH >C5-C10	M	2780	mg/kg	0.50								[A] < 0.5
Naphthalene	N	2800	mg/kg	0.010								[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010								[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010								[A] < 0.010
Fluorene	N	2800	mg/kg	0.010								[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010								[A] < 0.010
Anthracene	N	2800	mg/kg	0.010								[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010								[A] 0.53
Pyrene	N	2800	mg/kg	0.010								[A] 0.67
Benzo[a]anthracene	N	2800	mg/kg	0.010								[A] < 0.010
Chrysene	N	2800	mg/kg	0.010								[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010								[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010								[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010								[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010								[A] < 0.010

Results - Soil

Project: 23560 WSP Lot 3 - GI

Client: IGSL					**Chemtest Job No.:**	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422	22-40422
Quotation No.: Q22-27648					**Chemtest Sample ID.:**	1530153	1530154	1530155	1530156	1530157	1530158	1530159	1530160
Order No.:					Client Sample Ref.:				173303	178037	178024	178019	
					Sample Location:	BH151180	BH151180	BH151180	BH151877	BH152124	BH152702	BH153150	BH163697
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	3.50	5.00	3.00	3.00	3.00	3.00	1.00
					Bottom Depth (m):	1.00	4.00	5.50					1.50
					Asbestos Lab:								COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010									[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010									[A] < 0.010
Total Of 16 PAH's	N	2800	mg/kg	0.20									[A] 1.2
Resorcinol	M	2920	mg/kg	0.020									< 0.020
Phenol	M	2920	mg/kg	0.020									< 0.020
Cresols	M	2920	mg/kg	0.020									< 0.020
Xylenols	M	2920	mg/kg	0.020									< 0.020
1-Naphthol	N	2920	mg/kg	0.020									< 0.020
Trimethylphenols	M	2920	mg/kg	0.020									< 0.020
Total Phenols	M	2920	mg/kg	0.10									< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1530153			BH151180		A	Amber Glass 250ml
1530153			BH151180		A	Plastic Tub 500g
1530154			BH151180		A	Amber Glass 250ml
1530154			BH151180		A	Plastic Tub 500g
1530155			BH151180		A	Amber Glass 250ml
1530155			BH151180		A	Plastic Tub 500g
1530156	173303		BH151877		A	Amber Glass 250ml
1530156	173303		BH151877		A	Plastic Tub 500g
1530157	178037		BH152124		A	Amber Glass 250ml
1530157	178037		BH152124		A	Plastic Tub 500g
1530158	178024		BH152702		A	Amber Glass 250ml
1530158	178024		BH152702		A	Plastic Tub 500g
1530159	178019		BH153150		A	Amber Glass 250ml
1530159	178019		BH153150		A	Plastic Tub 500g
1530160			BH163697		A	Amber Glass 250ml
1530160			BH163697		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

Amended Report

Report No.:	22-43721-3		
Initial Date of Issue:	22-Nov-2022	**Date of Re-Issue:**	30-Mar-2023
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23560 - WSP Lot 3		
Quotation No.:	Q20-21693	**Date Received:**	14-Nov-2022
Order No.:		**Date Instructed:**	14-Nov-2022
No. of Samples:	17		
Turnaround (Wkdays):	5	**Results Due:**	18-Nov-2022
Date Approved:	22-Nov-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 23560 - WSP Lot 3

Client: IGSL			**Chemtest Job No.:**		22-43721	22-43721	22-43721	22-43721	22-43721	22-43721	22-43721	22-43721
Quotation No.: Q20-21693			**Chemtest Sample ID.:**		1545092	1545093	1545094	1545095	1545096	1545097	1545098	1545099
			Sample Location:		BH/RC148707	BH/RC149101	BH/RC149273	BH/RC149804	BH/RC149963	BH/RC151188	BH/RC165317	BH/RC165906
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.80	6.20	3.40	5.00	3.00	5.20	3.00	3.50
			Bottom Depth (m):									
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	0.37	4.9	1.3	2.6	0.72	2.2	1.4	5.0
pH	U	2010		4.0	[A] 8.5	[A] 8.2	[A] 8.4	[A] 8.2	[A] 8.4	[A] 8.2	[A] 8.5	[A] 8.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.041	[A] 0.53	[A] 0.064	[A] 0.53	[A] 0.24	[A] 0.41	[A] 0.010	[A] 0.36
Chloride (Water Soluble)	U	2220	g/l	0.010					[A] < 0.010		[A] < 0.010	
Sulphate (Total)	U	2430	%	0.010	[A] 0.24	[A] 2.1	[A] 1.9	[A] 1.8		[A] 2.1		[A] 1.4
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.025	[A] 0.14	[A] 0.066	[A] 0.12		[A] 0.098		[A] 0.063

Results - Soil

Project: 23560 - WSP Lot 3

Client: IGSL			**Chemtest Job No.:**		22-43721
Quotation No.: Q20-21693			**Chemtest Sample ID.:**		1545100
			Sample Location:		BH/RC166006
			Sample Type:		SOIL
			Top Depth (m):		1.35
			Bottom Depth (m):		1.75
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	1.6
pH	U	2010		4.0	[A] 8.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] < 0.010
Sulphate (Total)	U	2430	%	0.010	
Sulphate (Acid Soluble)	U	2430	%	0.010	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1545092			BH/RC148707		A	Plastic Tub 500g
1545093			BH/RC149101		A	Plastic Tub 500g
1545094			BH/RC149273		A	Plastic Tub 500g
1545095			BH/RC149804		A	Plastic Tub 500g
1545096			BH/RC149963		A	Plastic Tub 500g
1545097			BH/RC151188		A	Plastic Tub 500g
1545098			BH/RC165317		A	Plastic Tub 500g
1545099			BH/RC165906		A	Plastic Tub 500g
1545100			BH/RC166006		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-44551-2		
Initial Date of Issue:	24-Nov-2022	**Date of Re-Issue:**	30-Mar-2023
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23560 WSP Lot 3-GI		
Quotation No.:		**Date Received:**	20-Nov-2022
Order No.:		**Date Instructed:**	20-Nov-2022
No. of Samples:	4		
Turnaround (Wkdays):	7	**Results Due:**	28-Nov-2022
Date Approved:	24-Nov-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: 23560 WSP Lot 3-GI

Client: IGSL					**Chemtest Job No.:**	22-44551	22-44551	22-44551
Quotation No.:					**Chemtest Sample ID.:**	1549173	1549174	1549175
					Client Sample ID.:	DS161402	DS165890	DS166025
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	2.00	1.00	1.00
					Bottom Depth (m):	3.00	1.70	1.90
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020		13	24	14
pH	U	2010		4.0		[A] 7.9	[A] 8.2	[A] 8.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] 0.15	[A] < 0.010	[A] < 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1549173		DS161402			A	Plastic Tub 500g
1549174		DS165890			A	Plastic Tub 500g
1549175		DS166025			A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.

Report Information

Key

U	UKAS accredited
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LOD	Limit of detection

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All results are expressed on a dry weight basis

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All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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All water samples will be retained for 14 days from the date of receipt
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If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Amended Report

Report No.:	22-48584-2		
Initial Date of Issue:	03-Jan-2023	**Date of Re-Issue:**	30-Mar-2023
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23560 - WSP Lot 3		
Quotation No.:	Q22-27193	**Date Received:**	20-Dec-2022
Order No.:		**Date Instructed:**	20-Dec-2022
No. of Samples:	10		
Turnaround (Wkdays):	7	**Results Due:**	04-Jan-2023
Date Approved:	03-Jan-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: 23560 - WSP Lot 3

Client: IGSL			**Chemtest Job No.:**		22-48584	22-48584	22-48584	22-48584	22-48584	22-48584	22-48584	22-48584
Quotation No.: Q22-27193			**Chemtest Sample ID.:**		1567114	1567115	1567116	1567117	1567118	1567119	1567120	1567121
			Sample Location:		BH/RC151907	BH/RC152207	BH/RC157543	BH/RC157953	BH/RC163860	BH/RC166078	BH/RC166562	BH/RC166722
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		8.50	3.50	8.50	6.50	3.50	1.40	2.50	4.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	1.1	1.1	0.24	1.9	1.5	1.4	0.054	1.0
pH	U	2010		4.0						[A] 8.4		
pH (2.5:1)	N	2010		4.0	[A] 8.4	[A] 8.4	[A] 8.6	[A] 8.4	[A] 8.4		[A] 8.7	[A] 8.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010						[A] 0.037		
Sulphate (2:1 Extract)	U	2120	mg/kg	20	[A] 86	[A] 70	[A] 50	[A] 400	[A] 1100		[A] 110	[A] 740
Total Sulphur	U	2175	%	0.010	[A] 0.15	[A] 0.51	[A] 1.8	[A] 2.2	[A] 2.3		[A] 0.90	[A] 1.8
Chloride (Water Soluble)	U	2220	g/l	0.010						[A] < 0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.019	[A] 0.040	[A] 0.031	[A] 0.043	[A] 0.063		[A] 0.039	[A] 0.070

Deviations

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Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1567114			BH/RC151907		A	Plastic Tub 500g
1567115			BH/RC152207		A	Plastic Tub 500g
1567116			BH/RC157543		A	Plastic Tub 500g
1567117			BH/RC157953		A	Plastic Tub 500g
1567118			BH/RC163860		A	Plastic Tub 500g
1567119			BH/RC166078		A	Plastic Tub 500g
1567120			BH/RC166562		A	Plastic Tub 500g
1567121			BH/RC166722		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

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customerservices@chemtest.com

Appendix 9H.3

Rock Strength Testing

Point Load Axial - Test Results

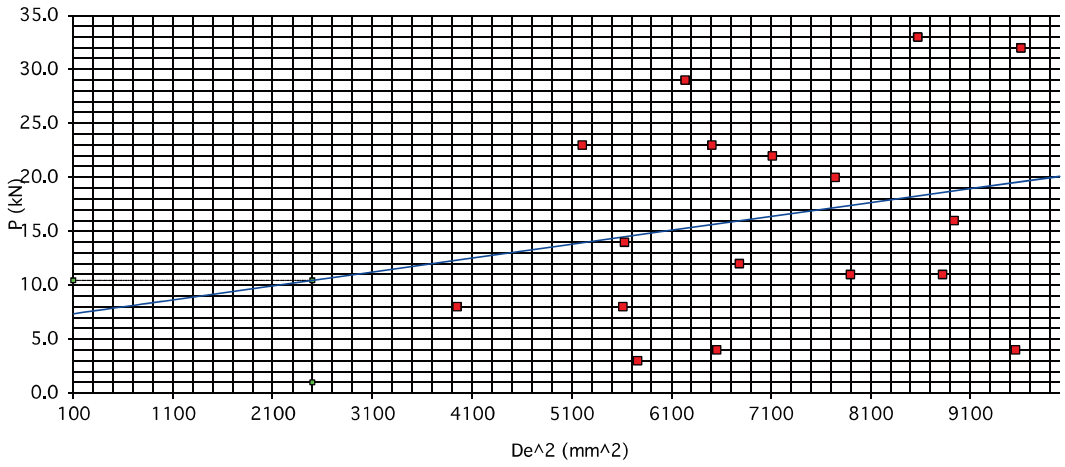
Contract: WSP Ground Investigation Contract Lot 3

Sample Type: Core

Contract No.: 23560

Date of Test: Nov 2022 Tested by: D.O'S

RC Hole No.	Depth	W1 mm	W2 mm	D mm	P kN	De^2 mm^2	De mm	Is MN/m^2
BH/RC148707	4.8	78.0	64.0	72.0	23.0	6509	81	3.53
	7.7	78.0	56.0	112.0	4.0	9555	98	0.42
	9.0	62.0	71.0	84.0	22.0	7113	84	3.09
BH/RC149101	6.1	55.0	58.0	78.0	8.0	5611	75	1.43
	7.5	56.0	88.0	74.0	12.0	6784	82	1.77
	8.0	72.0	94.0	114.0	26.0	12048	110	2.16
BH/RC149273	4.6	130.0	150.0	62.0	21.0	11052	105	1.90
	6.8	79.0	80.0	78.0	11.0	7896	89	1.39
	7.5	62.0	70.0	78.0	4.0	6555	81	0.61
	8.6	101.0	115.0	98.0	15.0	13476	116	1.11
BH/RC149406	4.6	78.0	68.0	56.0	23.0	5205	72	4.42
	5.9	76.0	78.0	98.0	32.0	9608	98	3.33
	7.1	80.0	62.0	69.0	29.0	6238	79	4.65
	8.4	76.0	70.0	110.0	25.0	10224	101	2.45
BH/RC149804	6.6	56.0	60.0	78.0	3.0	5760	76	0.52
	7.2	70.0	60.0	68.0	14.0	5628	75	2.49
	8.2	78.0	74.0	80.0	20.0	7742	88	2.58
BH/RC149963	3.1	102.0	102.0	66.0	33.0	8572	93	3.85
	6.5	78.0	86.0	102.0	28.0	10650	103	2.63
BH/RC150204	6.7	92.0	88.0	78.0	16.0	8938	95	1.79
	7.9	84.0	70.0	90.0	11.0	8824	94	1.25
	9.5	64.0	60.0	50.0	8.0	3947	63	2.03



Calculation of Is(50)

Equation of Best Fit P = 0.00129 De^2 + 7.232527091

P(50) at D(50) from graph = 10.45 kN

Is(50) = (P(50)/2500) x 1000 = 4.2 MN/m^2

IS(50) X 20 = UCS approximately = 83.58709 MPa

Point Load Axial - Test Results

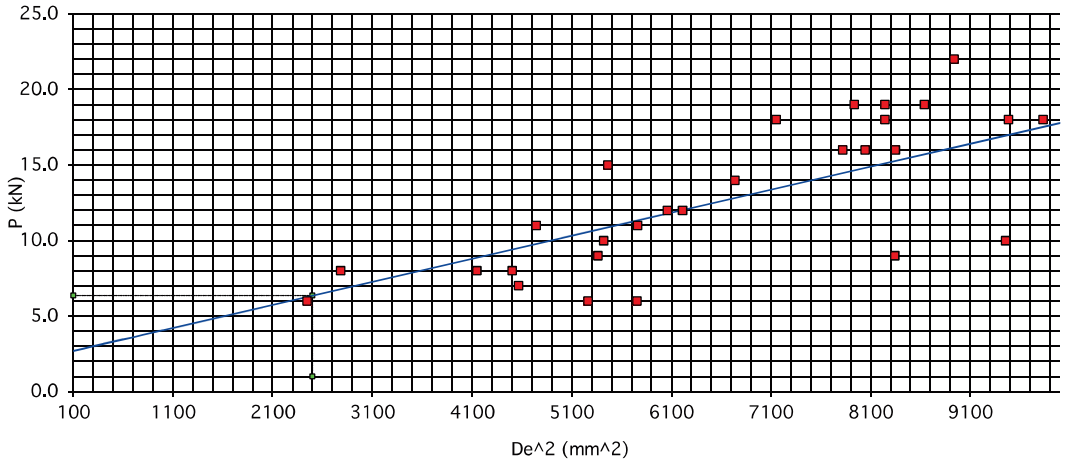
Contract: WSP Ground Investigation Contract Lot 3

Sample Type: Core

Contract No.: 23560

Date of Test: Nov 2022 Tested by: D.O'S

RC Hole No.	Depth	W1 mm	W2 mm	D mm	P kN	De^2 mm^2	De mm	Is MN/m^2
BH/RC150291	4.7	98.0	110.0	78	21.0	10329	102	2.03
	5.6	94.0	80.0	78	19.0	8640	93	2.20
	5.9	56.0	60.0	78	11.0	5760	76	1.91
	6.9	28.0	32.0	64	6.0	2445	49	2.45
BH/RC151688	7.0	78.0	80.0	94	10.0	9455	97	1.06
	7.8	50.0	60.0	78	15.0	5462	74	2.75
	9.1	120.0	132.0	78	18.0	12514	112	1.44
BH/RC151907	9.4	58.0	78.0	52	8.0	4502	67	1.78
BH/RC152124	5.8	78.0	60.0	54	11.0	4744	69	2.32
	7.0	60.0	73.0	64	10.0	5419	74	1.85
	8.9	110.0	116.0	40	6.0	5755	76	1.04
BH/RC152207	6.0	80.0	82.0	98	12.0	10107	101	1.19
	6.4	80.0	88.0	78	9.0	8343	91	1.08
	7.4	80.0	82.0	78	16.0	8045	90	1.99
	7.9	82.0	98.0	78	22.0	8938	95	2.46
BH/RC152702	6.7	60.0	62.0	78	12.0	6058	78	1.98
	9.4	70.0	74.0	78	18.0	7151	85	2.52
BH/RC153150	9.7	82.0	84.0	79	16.0	8349	91	1.92
BH/RC157032	14.6	84.0	82.0	78	18.0	8243	91	2.18
BH/RC157543	6.8	52.0	40.0	78	7.0	4569	68	1.53
	8.4	98.0	95.0	80	18.0	9830	99	1.83
	9.6	26.0	30.0	78	8.0	2781	53	2.88
BH/RC157862	8.3	90.0	57.0	72	14.0	6738	82	2.08
	9.8	111.0	80.0	78	18.0	9485	97	1.90
BH/RC157953	6.6	84.0	80.0	76	19.0	7935	89	2.39
	7.4	52.0	56.0	78	9.0	5363	73	1.68
	8.0	60.0	62.0	80	12.0	6214	79	1.93
	9.4	66.0	82.0	44	8.0	4146	64	1.93
BH/RC157977	6.8	68.0	98.0	74	16.0	7820	88	2.05
	8.0	84.0	82.0	78	19.0	8243	91	2.30
	9.0	56.0	50.0	78	6.0	5264	73	1.14



Calculation of Is(50)

Equation of Best Fit P = 0.00152 De^2 + 2.543769479

P(50) at D(50) from graph = 6.35 kN

Is(50) = (P(50)/2500) x 1000 = 2.5 MN/m^2

IS(50) X 20 = UCS approximately = 50.82329 MPa

Point Load Axial - Test Results

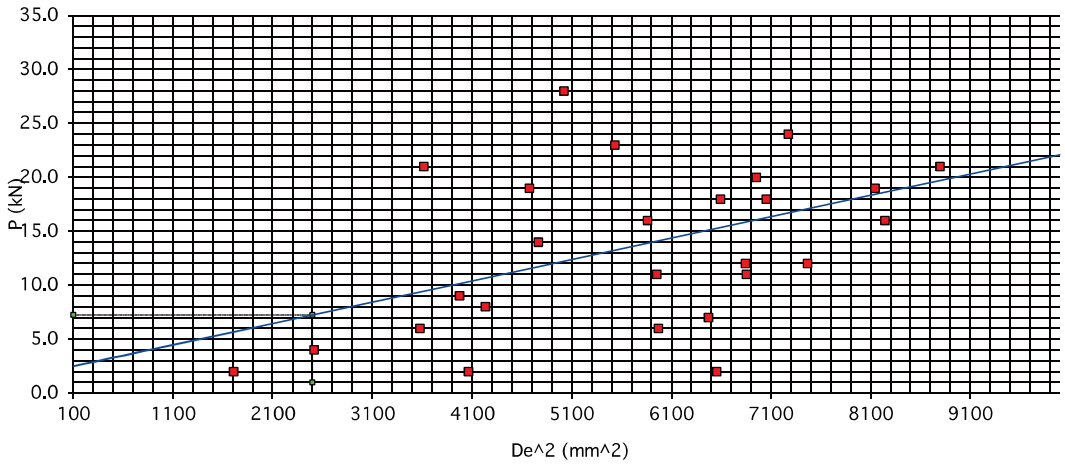
Contract: WSP Ground Investigation Contract Lot 3

Sample Type: Core

Contract No.: 23560

Date of Test: Nov 2022 Tested by: D.O'S

RC Hole No.	Depth	W1 mm	W2 mm	D mm	P kN	De^2 mm^2	De mm	Is MN/m^2
BH/RC163860	4.2	50.0	46.0	78.0	14.0	4767	69	2.94
	5.8	68.0	70.0	78.0	11.0	6853	83	1.61
	8.9	82.0	84.0	78.0	16.0	8243	91	1.94
BH/RC165006	2.0	65.0	78.0	82.0	12.0	7465	86	1.61
	4.0	78.0	65.0	72.0	2.0	6555	81	0.31
	4.7	68.0	62.0	84.0	20.0	6952	83	2.88
	6.0	72.0	44.0	68.0	28.0	5022	71	5.58
BH/RC165317	2.3	68.0	72.0	113.0	29.0	10072	100	2.88
	5.3	82.0	75.0	88.0	21.0	8796	94	2.39
BH/RC165890	1.9	76.0	82.0	55.0	23.0	5532	74	4.16
	3.1	84.0	80.0	78.0	19.0	8144	90	2.33
	4.0	76.0	60.0	84.0	24.0	7273	85	3.30
	7.0	92.0	91.0	120.0	28.0	13981	118	2.00
BH/RC165906	1.5	34.0	38.0	78.0	6.0	3575	60	1.68
	3.5	72.0	68.0	74.0	18.0	6596	81	2.73
	6.5	80.0	62.0	78.0	18.0	7051	84	2.55
BH/RC165960	5.9	65.0	68.0	50.0	8.0	4234	65	1.89
	6.0	38.0	42.0	78.0	9.0	3973	63	2.27
	6.1	58.0	60.0	78.0	16.0	5860	77	2.73
	6.1	78.0	89.0	56.0	11.0	5954	77	1.85
	6.6	22.0	28.0	79.0	4.0	2515	50	1.59
BH/RC166006	1.8	82.0	71.0	48.0	19.0	4675	68	4.06
	3.3	72.0	70.0	40.0	21.0	3616	60	5.81
	4.5	78.0	76.0	66.0	7.0	6471	80	1.08
	5.4	94.0	98.0	56.0	12.0	6845	83	1.75
BH/RC166025	2.0	152.0	141.0	32.0	6.0	5969	77	1.01
	3.7	62.0	71.0	48.0	2.0	4064	64	0.49
	6.0	71.0	78.0	18.0	2.0	1707	41	1.17



Calculation of Is(50)

Equation of Best Fit P = 0.00198 De^2 + 2.29186466

P(50) at D(50) from graph = 7.24 kN

Is(50) = (P(50)/2500) x 1000 = 2.9 MN/m^2

IS(50) X 20 = UCS approximately = 57.90759 MPa

Point Load Axial - Test Results

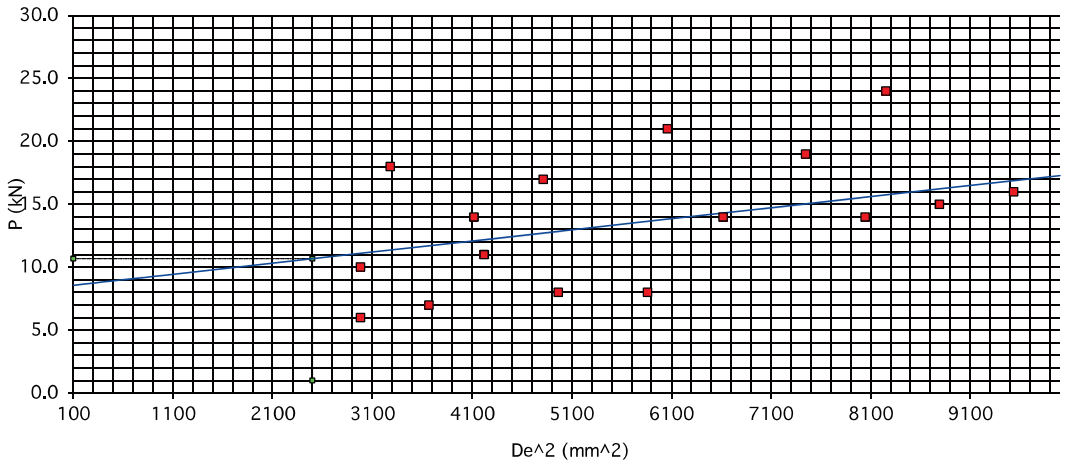
Contract: WSP Ground Investigation Contract Lot 3

Sample Type: Core

Contract No.: 23560

Date of Test: Nov 2022 Tested by: D.O'S

RC Hole No.	Depth	W1 mm	W2 mm	D mm	P kN	De^2 mm^2	De mm	Is MN/m^2
BH/RC166078	4.85-6.55m	28.0	32.0	78.0	10.0	2979	55	3.36
		60.0	62.0	78.0	21.0	6058	78	3.47
		40.0	45.0	78.0	11.0	4221	65	2.61
		74.0	76.0	78.0	19.0	7449	86	2.55
		32.0	34.0	78.0	18.0	3277	57	5.49
BH/RC166356	7.0	78.0	82.0	36.0	7.0	3667	61	1.91
	8.7	89.0	88.0	78.0	15.0	8789	94	1.71
	9.0	48.0	52.0	78.0	8.0	4966	70	1.61
BH/RC166562	3.2	56.0	62.0	78.0	8.0	5860	77	1.37
	5.0	94.0	98.0	78.0	16.0	9534	98	1.68
	6.0	46.0	52.0	66.0	14.0	4118	64	3.40
	7.5	32.0	28.0	78.0	6.0	2979	55	2.01
BH/RC166722	5.0	80.0	82.0	78.0	14.0	8045	90	1.74
	6.9	92.0	100.0	86.0	12.0	10512	103	1.14
	7.4	66.0	64.0	80.0	14.0	6621	81	2.11
	8.6	82.0	80.0	80.0	24.0	8251	91	2.91
BH/RC169001	3.0	65	70	56	17	4813	69	3.53



Calculation of Is(50)

Equation of Best Fit P = 0.00088 De^2 + 8.478521411

P(50) at D(50) from graph = 10.68 kN

Is(50) = (P(50)/2500) x 1000 = 4.3 MN/m^2

IS(50) X 20 = UCS approximately = 85.42468 MPa

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: WSP Ground Investigation
Lot 3
Date of test: 03/11/2022

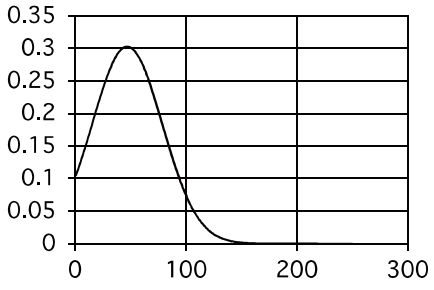
Sample Type: Core
Contract no. 23560

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
BH/RC109085	3.7	78	19.0	1.222	3.12	3.81	76	d	//
BH/RC149273	4.6	78	15.0	1.222	2.47	3.01	60	d	//
BH/RC149406	4.6	78	6.0	1.222	0.99	1.20	24	d	//
BH/RC149963	3.1	102	33.0	1.378	3.17	4.37	87	d	//
BH/RC150291	4.3	78	16.0	1.222	2.63	3.21	64	d	//
BH/RC163860	4.4	78	28.0	1.222	4.60	5.62	112	d	//
BH/RC165006	2.0	78	4.0	1.222	0.66	0.80	16	d	//
BH/RC165317	5.3	78	19.0	1.222	3.12	3.81	76	d	//
BH/RC165890	1.9	78	6.0	1.222	0.99	1.20	24	d	//
BH/RC165906	1.8	78	12.0	1.222	1.97	2.41	48	d	//
BH/RC165960	5.9	78	6.0	1.222	0.99	1.20	24	d	//
	6.0	78	15.0	1.222	2.47	3.01	60	d	//
	6.1	78	11.0	1.222	1.81	2.21	44	d	//
	6.1	78	4.0	1.222	0.66	0.80	16	d	//
	6.6	78	14.0	1.222	2.30	2.81	56	d	//
BH/RC166025	3.7	78	3.0	1.222	0.49	0.60	12	d	//
BH/RC166078	5.2	78	2.0	1.222	0.33	0.40	8	d	//
	5.3	78	4.0	1.222	0.66	0.80	16	d	//
	5.5	78	1.0	1.222	0.16	0.20	4	d	//
	6.2	78	8.0	1.222	1.31	1.61	32	d	//
	6.5	78	4.0	1.222	0.66	0.80	16	d	//
BH/RC166562	3.4	78	18.0	1.222	2.96	3.61	72	d	//
BH/RC166722	6.1	78	24.0	1.222	3.94	4.82	96	d	//
BH/RC169001	5.0	78	21.0	1.222	3.45	4.22	84	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	24	24
Minimum	0.20	4
Average	2.36	47
Maximum	5.62	112
Standard Dev.	1.58	32
Upper 95% Confidence Limit	5.46	109.20
Lower 95% Confidence Limit	-0.75	-14.91

Comments:
*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations	
i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of weakness/bedding

U	unknown
P	perpendicular

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: WSP Ground Investigation
Lot 3
Date of test: 03/11/2022

Sample Type: Core
Contract no. 23560

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
								//	parallel

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC149101
Depth (m):	9.20m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE with calcite bands

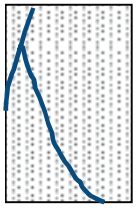
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Sketch of Failure Surfaces

Length	205	
Diameter (Ø)	78	mm



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	342	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{342000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 71.57 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC149273
Depth (m):	8.80m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

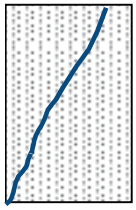
Sample Measurements

Length	197	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	98	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{98000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 20.51 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC149406
Depth (m):	8.00m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

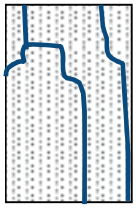
Sample Measurements

Length	191	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	108	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{108000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 22.60 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC149963
Depth (m):	4.40m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

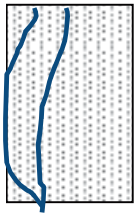
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	256	
Diameter (Ø)	102.2	mm

Sketch of Failure Surfaces



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	509	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{509000}{8199.1994}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 62.05 (Mpa)

Bulk Density = 2.67 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC150204
Depth (m):	8.20m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

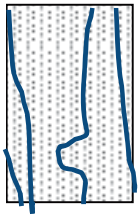
Sample Measurements

Length	201	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	295	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{295000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 61.74 (Mpa)

Bulk Density = 2.67 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC150291
Depth (m):	5.10m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

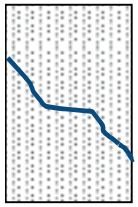
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	202	
Diameter (Ø)	78	mm

Sketch of Failure Surfaces



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	301	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{301000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 62.99 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC151907
Depth (m):	11.80m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

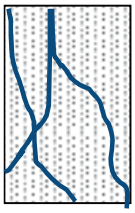
Sample Measurements

Length	202	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	368	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{368000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 77.01 (Mpa)

Bulk Density = 2.67 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC152124
Depth (m):	7.10m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

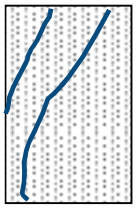
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	201	
Diameter (Ø)	78	mm

Sketch of Failure Surfaces



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	289	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{289000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 60.48 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC152207
Depth (m):	8.20m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

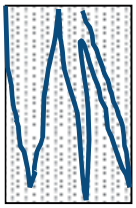
Sample Measurements

Length	204	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	188	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{188000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 39.34 (Mpa)

Bulk Density = 2.65 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC153150
Depth (m):	9.30m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

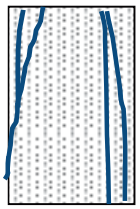
Sample Measurements

Length	199	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	408	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{408000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 85.38 (Mpa)

Bulk Density = 2.65 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC157032
Depth (m):	15.40m

Sample Description

Colour:	Pale and dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

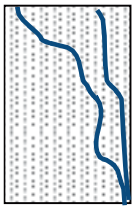
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	203	
Diameter (Ø)	78	mm

Sketch of Failure Surfaces



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	104	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{104000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 21.76 (Mpa)

Bulk Density = 2.63 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC157543
Depth (m):	6.60m

Sample Description

Colour:	Pale and dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

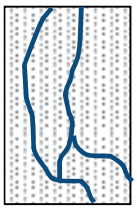
Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	197	
Diameter (Ø)	78	mm

Sketch of Failure Surfaces



Testing

Load Rate	4.3	kN/min
Load at Failure (P)	239	kN

Strength Calculations

Uniaxial Compressive Strength = $\frac{239000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 50.02 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC157862
Depth (m):	10.00m

Sample Description

Colour:	Pale grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

Sample Measurements

Length	205	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	141	kN

Sketch of Failure Surfaces

Strength Calculations

Uniaxial Compressive Strength = $\frac{141000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 29.51 (Mpa)

Bulk Density = 2.65 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC157953
Depth (m):	7.30m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

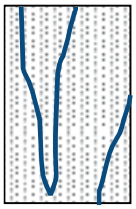
Sample Measurements

Length	202	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	388	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{388000}{4775.94}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 81.20 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC157977
Depth (m):	9.00m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

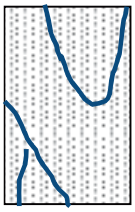
Sample Measurements

Length	206	
Diameter (Ø)	78.1	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	404	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{404000}{4788.19385}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 84.33 (Mpa)

Bulk Density = 2.67 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC163860
Depth (m):	3.10m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

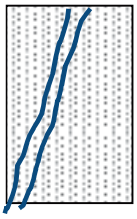
Sample Measurements

Length	194	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	451	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{451000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 94.38 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet

I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC165006
Depth (m):	4.70m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

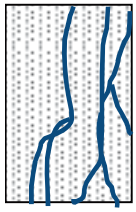
Sample Measurements

Length	194	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	198	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{198000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 41.44 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC165317
Depth (m):	6.30m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

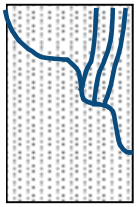
Sample Measurements

Length	181	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	144	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{144000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 30.14 (Mpa)

Bulk Density = 2.65 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC165890
Depth (m):	1.90m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

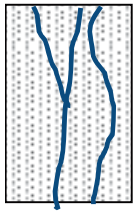
Sample Measurements

Length	201	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	198	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{198000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 41.44 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC165906
Depth (m):	6.50m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

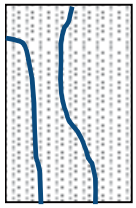
Sample Measurements

Length	202	
Diameter (Ø)	78.1	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	177	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{177000}{4788.19385}$

$= \frac{1000 \times P}{\Pi \times (Ø/2)^2}$

= 36.95 (Mpa)

Bulk Density = 2.64 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC166006
Depth (m):	4.50m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

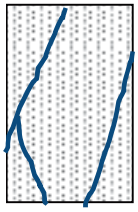
Sample Measurements

Length	178	
Diameter (Ø)	78.1	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	94	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{94000}{4788.19385}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 19.62 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC166562
Depth (m):	4.80m

Sample Description

Colour:	Dark grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

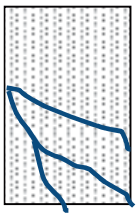
Sample Measurements

Length	198	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	451	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{451000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 94.38 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC166722
Depth (m):	6.90m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

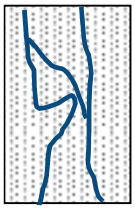
Sample Measurements

Length	198	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	504	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{504000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 105.48 (Mpa)

Bulk Density = 2.67 (Mg/m^3)

Notes:

Uniaxial Compression Test Report Sheet | I.G.S.L.

Sample Identification

Contract Name:	WSP Ground Investigation Contract Lot 3
Job Number:	23560
Hole No:	BH/RC169001
Depth (m):	4.50m

Sample Description

Colour:	Grey
Grain size:	Fine-grained
Weathering Grade:	Fresh
Rock Type:	LIMESTONE

Weathering Grade Criteria

I. Fresh:	Unchanged from original state
II. Slightly weathered:	Slight discolouration, slight weakening
III. Moderately weathered:	Considerable weakening, penetrative discolouration
IV. Highly weathered:	Considerable weakening, penetrative discolouration, breaks in hand

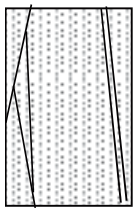
Sample Measurements

Length	201	
Diameter (Ø)	78	mm

Testing

Load Rate	4.3	kN/min
Load at Failure (P)	342	kN

Sketch of Failure Surfaces



Strength Calculations

Uniaxial Compressive Strength = $\frac{342000}{4775.94}$

$= \frac{1000 \times P}{\prod \times (Ø/2)^2}$

= 71.57 (Mpa)

Bulk Density = 2.66 (Mg/m^3)

Notes:

SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC149273** Sample Type: **C** Depth (m): **4.60**

Bulk Density (Mg/m^3): **2.67** Dry Density (Mg/m^3): **2.67** Moisture Content (%): **0.37**

Sample Diameter (mm): **54.26** Sample Thickness (mm): **26.42** Thickness/Diameter Ratio: **0.49**

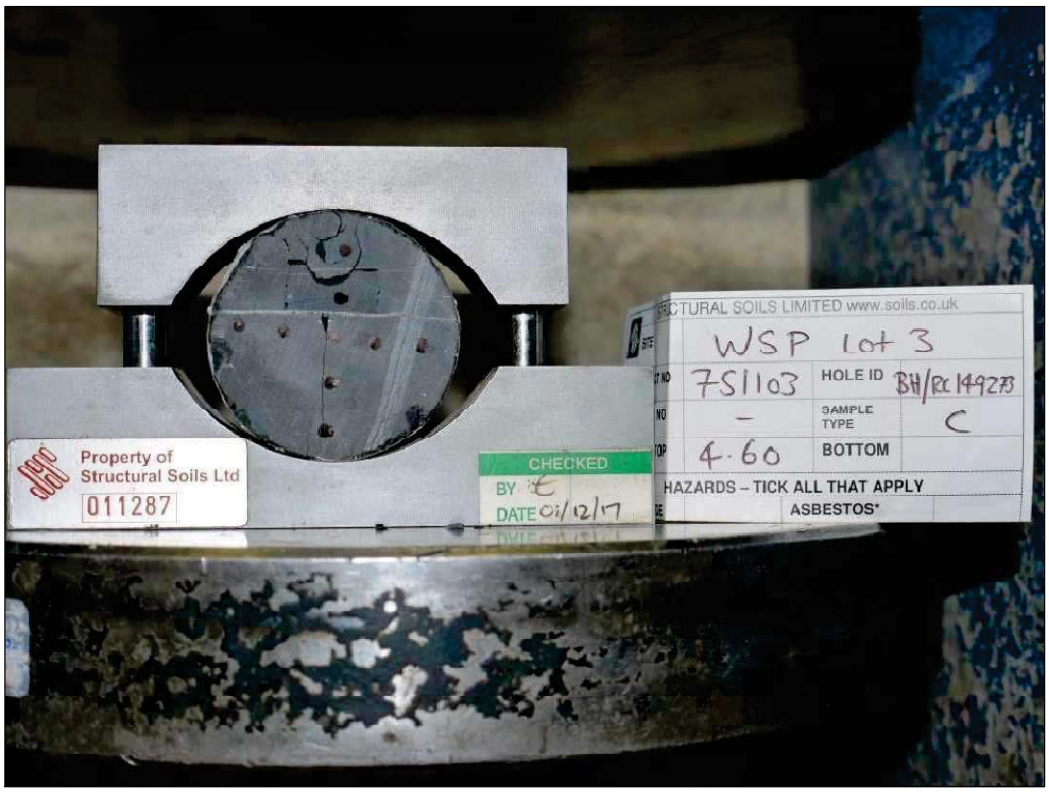
Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **119**

Load at Failure (kN): **21.8** Tensile Strength (MPa): **9.67**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	02/12/22
Contract: **WSP Lot 3**	Job No: **751103**	

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SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC150291** Sample Type: **C** Depth (m): **5.90**

Bulk Density (Mg/m^3): **2.66** Dry Density (Mg/m^3): **2.66** Moisture Content (%): **0.06**

Sample Diameter (mm): **54.18** Sample Thickness (mm): **25.91** Thickness/Diameter Ratio: **0.48**

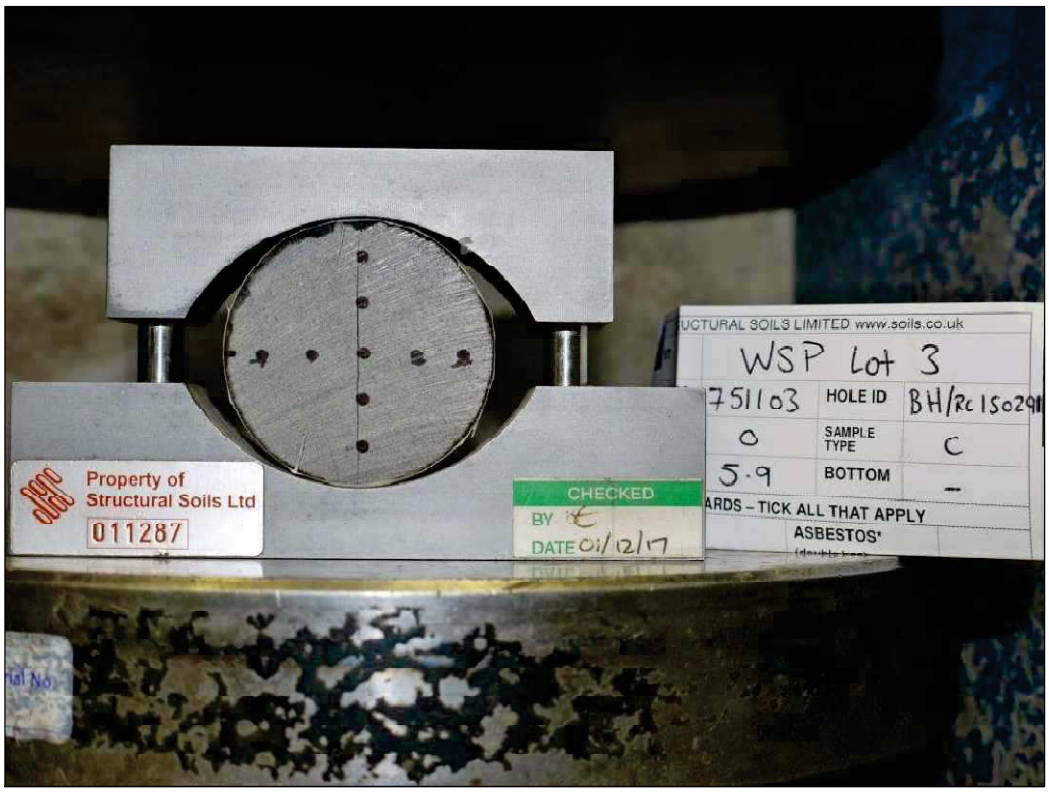
Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **128**

Load at Failure (kN): **28.8** Tensile Strength (MPa): **13.0**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	02/12/22
Contract: **WSP Lot 3**		Job No: **751103**

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SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC163860** Sample Type: **C** Depth (m): **4.50**

Bulk Density (Mg/m^3): **2.69** Dry Density (Mg/m^3): **2.69** Moisture Content (%): **0.12**

Sample Diameter (mm): **54.24** Sample Thickness (mm): **27.98** Thickness/Diameter Ratio: **0.52**

Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **92**

Load at Failure (kN): **22.7** Tensile Strength (MPa): **9.51**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**

Post-test photo

STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	D. Richards	**DAISY RICHARDS**	**04/01/23**
	Contract **WSP Lot 3**	Job No **751138**	

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SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC166562** Sample Type: **C** Depth (m): **4.50**

Bulk Density (Mg/m^3): **2.70** Dry Density (Mg/m^3): **2.69** Moisture Content (%): **0.18**

Sample Diameter (mm): **54.18** Sample Thickness (mm): **28.84** Thickness/Diameter Ratio: **0.53**

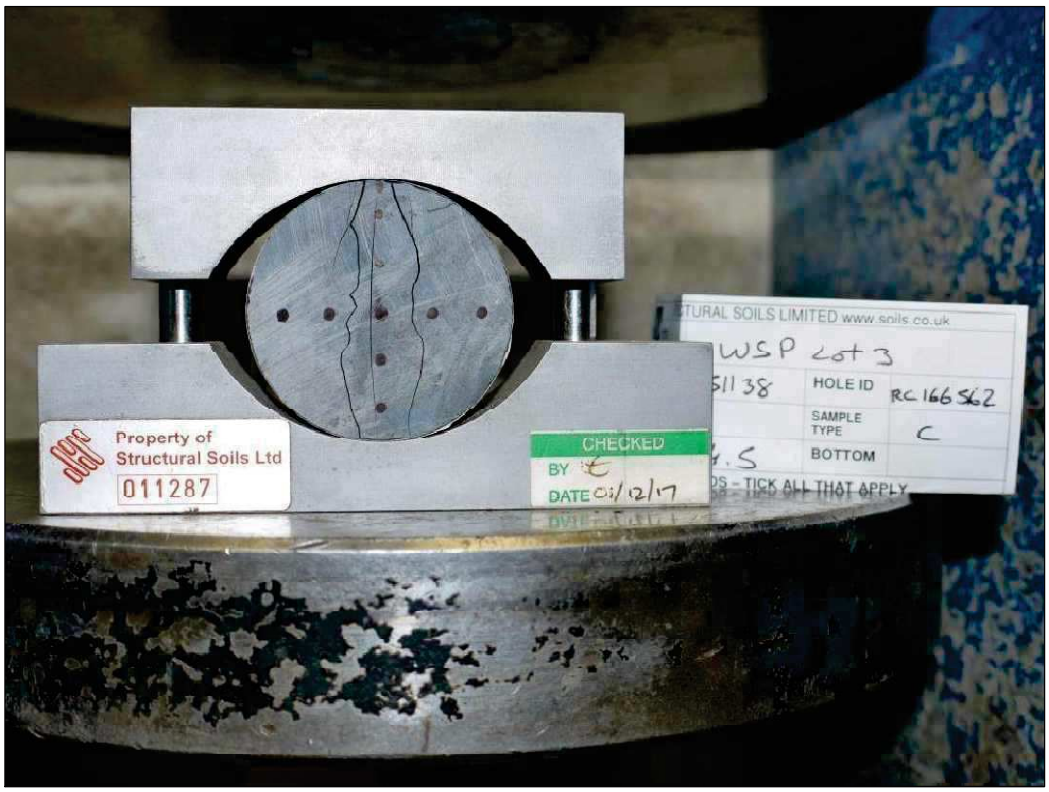
Orientation of loading: **Diametral** Load Rate (kN/s): **0.40** Test duration (secs): **107**

Load at Failure (kN): **42.8** Tensile Strength (MPa): **17.4**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	04/01/23
Contract: WSP Lot 3		Job No: 751138

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SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC149273** Sample Type: **C** Depth (m): **4.60**

Bulk Density (Mg/m^3): **2.67** Dry Density (Mg/m^3): **2.67** Moisture Content (%): **0.37**

Sample Diameter (mm): **54.26** Sample Thickness (mm): **26.42** Thickness/Diameter Ratio: **0.49**

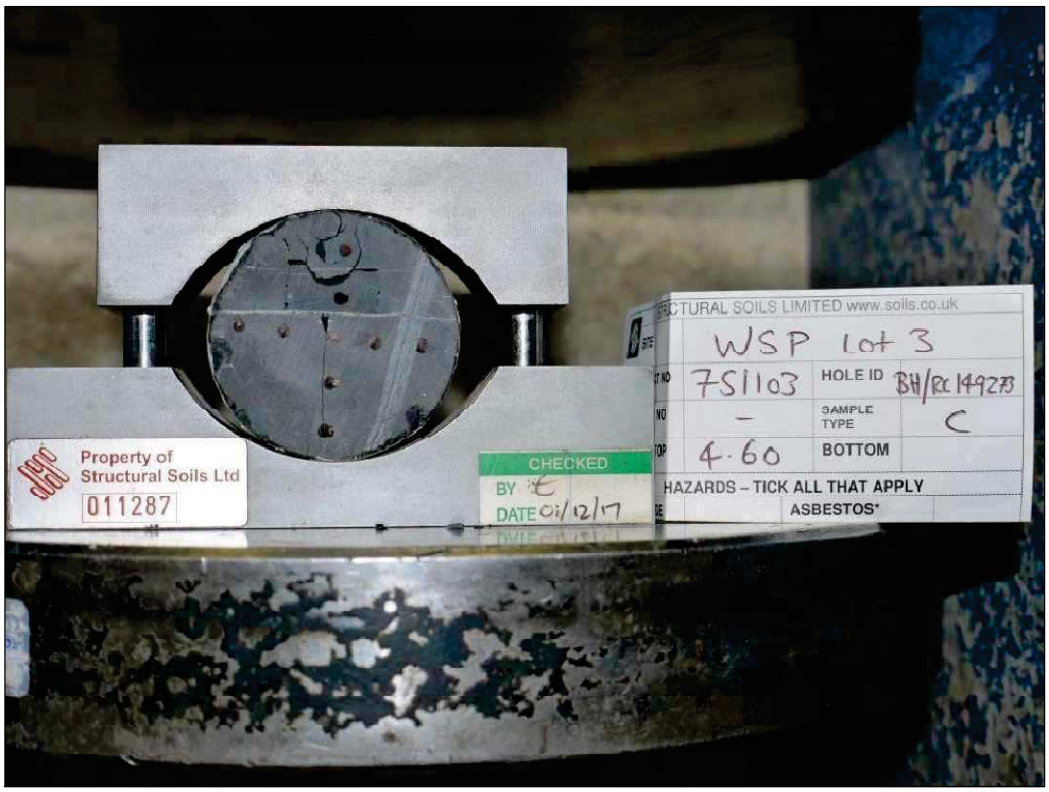
Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **119**

Load at Failure (kN): **21.8** Tensile Strength (MPa): **9.67**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	02/12/22
Contract: **WSP Lot 3**	Job No: **751103**	

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SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC150291** Sample Type: **C** Depth (m): **5.90**

Bulk Density (Mg/m^3): **2.66** Dry Density (Mg/m^3): **2.66** Moisture Content (%): **0.06**

Sample Diameter (mm): **54.18** Sample Thickness (mm): **25.91** Thickness/Diameter Ratio: **0.48**

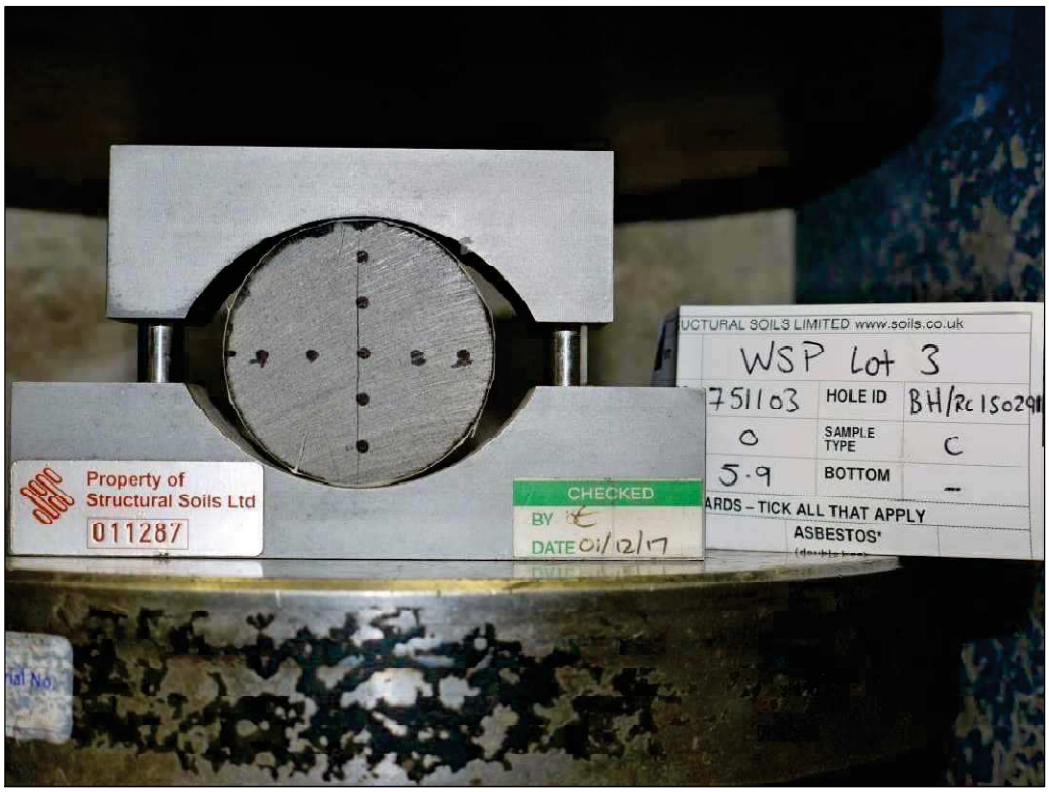
Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **128**

Load at Failure (kN): **28.8** Tensile Strength (MPa): **13.0**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	02/12/22
Contract: **WSP Lot 3**		Job No: **751103**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - BRAZILIAN ROCK TEST - A4P | 751103-WSP-LOT3-23560.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 02/12/22 - 12:16 | AF3 |

SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC163860** Sample Type: **C** Depth (m): **4.50**

Bulk Density (Mg/m^3): **2.69** Dry Density (Mg/m^3): **2.69** Moisture Content (%): **0.12**

Sample Diameter (mm): **54.24** Sample Thickness (mm): **27.98** Thickness/Diameter Ratio: **0.52**

Orientation of loading: **Diametral** Load Rate (kN/s): **0.20** Test duration (secs): **92**

Load at Failure (kN): **22.7** Tensile Strength (MPa): **9.51**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**

Post-test photo

STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	D. Richards	**DAISY RICHARDS**	**04/01/23**
	Contract **WSP Lot 3**	Job No **751138**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - BRAZILIAN ROCK TEST - A4P | 751138-WSP-LOT-3.GPJ - v10_01
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 04/01/23 - 10:25 | AF3 |

SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **BH/RC166562** Sample Type: **C** Depth (m): **4.50**

Bulk Density (Mg/m^3): **2.70** Dry Density (Mg/m^3): **2.69** Moisture Content (%): **0.18**

Sample Diameter (mm): **54.18** Sample Thickness (mm): **28.84** Thickness/Diameter Ratio: **0.53**

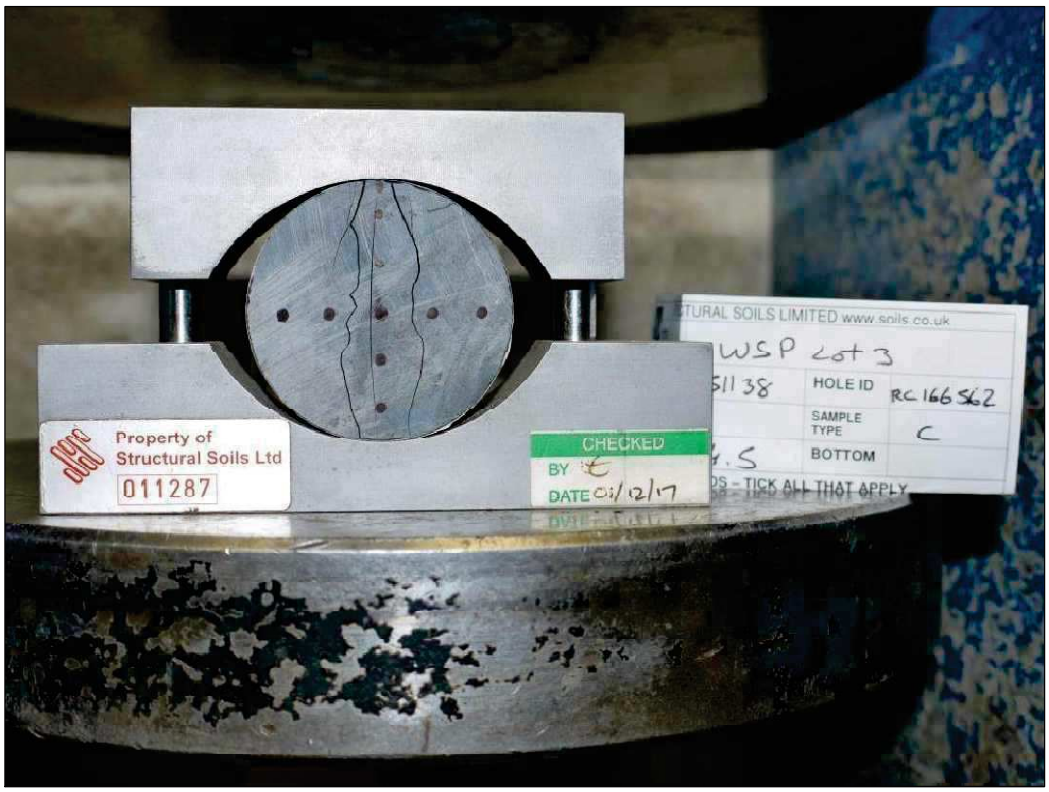
Orientation of loading: **Diametral** Load Rate (kN/s): **0.40** Test duration (secs): **107**

Load at Failure (kN): **42.8** Tensile Strength (MPa): **17.4**

Description: **Grey LIMESTONE**

Loading / Foliation relationship: **NA**

Remarks: **Sample was re-cored**



Post-test photo

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	04/01/23
Contract: WSP Lot 3		Job No: 751138

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - BRAZILIAN ROCK TEST - A4P | 751138-WSP-LOT-3.GPJ - v10_01
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 04/01/23 - 10:25 | AF3 |

Appendix 9H.4

Rock Reusability Testing

IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141769**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6208
Client Ref.*	BH/RC166562 @ 2.3-3
Material Type*:	Rock Core
Date Received:	13/12/2022
Date testing started	13/12/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.59
Saturated surface dried particle density (Mg/m^3)	2.64
Apparent particle density (Mg/m^3)	2.74
Water Absorption (%)	2.2

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Approved signatories
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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	H Byrne	23/12/22	1 of 1

IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas
Co. Kildare
045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

Report No. **R141748**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6208

Customer Ref*: BH/RC166562 @ 2.3-3m

Location*: BH/RC166562 @ 2.3-3m

Material Type*: Rock Core

Sample Received: 08/12/2022

Date tested: 08/12/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3315

Flakiness Index: 53

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141762**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6208
Client Ref	BH166562 @2.3-3m
Location	BH166562 @2.3-3m
Sample Certificate	~~Approved~~ /Not Provided
Date Received	17/11/22
Date Tested	17/11/22
Slake Durability	
Cycle 1	99.4
Cycle 2	99.0

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141755A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6208
Client Ref.	BH/RC166562 @ 2.3m
Material Type:	Rock Core
Date Received:	21/11/2022
Date testing started	01/12/2022
Location:	BH/RC166562 @ 2.3m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	9.7
Magnesium Sulfate Value (MS_2) Portion 2	8.9
Mean Magnesium Sulfate Value	9.3

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

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IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
Co. Kildare
045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.		**R141755**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6208
Client Ref*:		BH/RC166562 2.3-3m
Location*:		BH/RC166562 2.3-3m
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		26/11/2022
Date tested:		26/11/2022
Sample Cert:		~~Attached~~ / Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		22

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141767**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6171
Client Ref.*	BH/RC165890 @ 0.9-1.65
Material Type*:	Rock Core
Date Received:	18/11/2022
Date testing started	18/11/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.64
Saturated surface dried particle density (Mg/m^3)	2.69
Apparent particle density (Mg/m^3)	2.79
Water Absorption (%)	2.2

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
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Co. Kildare
045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

Report No. **R141745**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6171

Customer Ref*: BH/RC165890 @ 0.9-1.65m

Location*: BH/RC165890 @ 0.9-1.65m

Material Type*: Rock Core

Sample Received: 23/11/2022

Date tested: 21/11/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3274

Flakiness Index: 41

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141760**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6171
Client Ref	BH165890 @0.9-1.65m
Location	BH165890 @0.9-1.65m
Sample Certificate	~~Approved~~ /Not Provided
Date Received	17/11/22
Date Tested	17/11/22
Slake Durability	
Cycle 1	98.1
Cycle 2	97.2

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141750A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6171
Client Ref.	BH/RC165890 @ 0.9m
Material Type:	Rock Core
Date Received:	21/11/2022
Date testing started	08/12/2022
Location:	BH/RC165890 @ 0.9m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	25.1
Magnesium Sulfate Value (MS_2) Portion 2	28.6
Mean Magnesium Sulfate Value	26.9

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

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IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
Co. Kildare
045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.		**R141750**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6171
Client Ref*:		BH/RC165890 0.9-1.65
Location*:		BH/RC165890 0.9-1.65
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		21/11/2022
Date tested:		21/11/2022
Sample Cert:		~~Attached~~ /Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		23

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
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M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141766**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6170
Client Ref.*	BH/RC165006 @ 1.5-4.2
Material Type*:	Rock Core
Date Received:	11/11/2022
Date testing started	11/11/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.63
Saturated surface dried particle density (Mg/m^3)	2.66
Apparent particle density (Mg/m^3)	2.72
Water Absorption (%)	1.2

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas
Co. Kildare
045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No. **R141743**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6170

Customer Ref*: BH/RC165006 @ 1.5-2.95m

Location*: BH/RC165006 @ 1.5-2.95m

Material Type*: Rock Core

Sample Received: 21/11/2022

Date tested: 21/11/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3162

Flakiness Index: 11

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141757**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6170
Client Ref	BH/RC165006 @ 1.5-4.2m
Location	BH/RC165006 @ 1.5-4.2m
Sample Certificate	~~Approved~~ /Not Provided
Date Received	10/11/22
Date Tested	10/11/22
Slake Durability	
Cycle 1	99.2
Cycle 2	98.9

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Materials Laboratory	Approved by	Date	Page
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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141753A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6170
Client Ref.	BH/RC165006 @ 1.5-2.95m
Material Type:	Rock Core
Date Received:	15/11/2022
Date testing started	01/12/2022
Location:	BH/RC165006 @ 1.5-2.95m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	9.9
Magnesium Sulfate Value (MS_2) Portion 2	11.7
Mean Magnesium Sulfate Value	10.8

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

Approved signatories
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL	Approved by	Date	Page
	H Byrne	23/12/22	1 of 1

IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
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045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.		**R141753**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6170
Client Ref*:		BH/RC165006 1.5-2.95m
Location*:		BH/RC165006 1.5-2.95m
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		15/11/2022
Date tested:		15/11/2022
Sample Cert:		~~Attached~~ /Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		23

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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IGSL Ltd
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M7 Business Park.
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Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141762**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6207
Client Ref.*	BH/RC163860 @ 2.5-4
Material Type*:	Rock Core
Date Received:	06/12/2022
Date testing started	06/12/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.59
Saturated surface dried particle density (Mg/m^3)	2.64
Apparent particle density (Mg/m^3)	2.74
Water Absorption (%)	2.2

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas
Co. Kildare
045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

Report No. **R141749**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6207

Customer Ref*: BH/RC163860 @ 2.5-4m

Location*: BH/RC163860 @ 2.5-4m

Material Type*: Rock Core

Sample Received: 08/12/2022

Date tested: 08/12/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3361

Flakiness Index: 22

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
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045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141761**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6207
Client Ref	BH163860 @2.5-4m
Location	BH163860 @2.5-4m
Sample Certificate	~~Approved~~ /Not Provided
Date Received	17/11/22
Date Tested	17/11/22
Slake Durability	
Cycle 1	98.7
Cycle 2	97.1

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141756A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6207
Client Ref.	BH/RC163860 @ 2.5m
Material Type:	Rock Core
Date Received:	21/11/2022
Date testing started	01/12/2022
Location:	BH/RC163860 @ 2.5m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	13.7
Magnesium Sulfate Value (MS_2) Portion 2	15.1
Mean Magnesium Sulfate Value	14.4

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

Approved signatories
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
Co. Kildare
045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.		**R141756**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6207
Client Ref*:		BH/RC163860 2.5-4m
Location*:		BH/RC163860 2.5-4m
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		26/11/2022
Date tested:		26/11/2022
Sample Cert:		~~Attached~~ / Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		22

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141764**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6200
Client Ref.*	BH/RC150291 @ 2.7-3.4
Material Type*:	Rock Core
Date Received:	21/11/2022
Date testing started	21/11/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.69
Saturated surface dried particle density (Mg/m^3)	2.73
Apparent particle density (Mg/m^3)	2.80
Water Absorption (%)	1.4

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
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045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

Report No. **R141746**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6200

Customer Ref*: BH/RC150291 @ 2.7-3.4m

Location*: BH/RC150291 @ 2.7-3.4m

Material Type*: Rock Core

Sample Received: 23/11/2022

Date tested: 21/11/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3394

Flakiness Index: 47

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
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045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141759**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6200
Client Ref	BH/RC150291 @ 2.7-3.4m
Location	BH/RC150291 @ 2.7-3.4m
Sample Certificate	~~Approved~~ /Not Provided
Date Received	21/11/22
Date Tested	21/11/22
Slake Durability	
Cycle 1	99.2
Cycle 2	98.8

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141754A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6200
Client Ref.	BH/RC1502 @ 2.7m
Material Type:	Rock Core
Date Received:	15/11/2022
Date testing started	08/12/2022
Location:	BH/RC1502 @ 2.7m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	11.9
Magnesium Sulfate Value (MS_2) Portion 2	13.4
Mean Magnesium Sulfate Value	12.7

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

Approved signatories
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL	Approved by	Date	Page
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IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
Co. Kildare
045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.		**R141754**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6200
Client Ref*:		BH/RC150291 2.7-3.4m
Location*:		BH/RC150291 2.7-3.4m
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		26/11/2022
Date tested:		26/11/2022
Sample Cert:		~~Attached~~ / Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		19

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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H Byrne (Laboratory Manager)

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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Particle Density/Water Absorption

Tested in accordance with EN1097-6:2013

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No.	**R141768**
Client:	Evria
Contract No.	23560
Contract Name:	WSP - Lot 3
Sample No.	A22/6198
Client Ref.*	BH/RC149273 @ 2.5-3.2
Material Type*:	Rock Core
Date Received:	13/12/2022
Date testing started	13/12/2022
Location*:	N/A
Sample Certificate:	Not Provided
Test Method:	Pyknometer method,
Condition of material:	As received
Oven dried particle density (Mg/m^3)	2.64
Saturated surface dried particle density (Mg/m^3)	2.68
Apparent particle density (Mg/m^3)	2.75
Water Absorption (%)	1.6

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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H Byrne (Laboratory Manager)

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Materials Laboratory
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Co. Kildare
045 899324

Test Report

Particle Shape - Flakiness

Tested in accordance with BS EN933-3:2012

Report No. **R141747**

Contract No. 23560

Contract Name: WSP - Lot 3

Customer: Ervia

Sample No. A22/6198

Customer Ref*: BH/RC149273 @ 2.5-3.2m

Location*: BH/RC149273 @ 2.5-3.2m

Material Type*: Rock Core

Sample Received: 23/11/2022

Date tested: 21/11/2022

Sample Cert: ~~Attached~~ /Not Provided

Mass of Test Portion (g): 3572

Flakiness Index: 38

Results relate only to the specimen tested, in as received condition unless otherwise noted.
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Persons authorised to approve reports
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Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Slake Durability

Tested in accordance with ISRM Part 2 (1981)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.	**R141763**
Contract No.	23560
Contract Name:	WSP - Lot 3
Client:	Ervia
Sample No.	A22/6198
Client Ref	BHRC149273 @ 2.5-3.2
Location	BHRC149273 @ 2.5-3.2
Sample Certificate	~~Approved~~ /Not Provided
Date Received	12/12/22
Date Tested	12/12/22
Slake Durability	
Cycle 1	99.4
Cycle 2	98.9

Description of the rock

Pre Test: Grey Limestone

Post Test: Grey Limestone

The slaking fluid is tap water at 20°C unless otherwise stated in this report.

The results relate to the specimens tested.
Any remaining material will be retained for one month.
Opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Materials Laboratory	Approved by	Date	Page
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IGSL Ltd
Materials Laboratory
M7 Business Park.
Newhall, Naas.
Co. Kildare

Test Report

Magnesium Sulfate Test

Tested in accordance with EN1367-2:2009

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Report No.	**R141751A**
Client:	Ervia
Contract No.	23560
Contract Name:	WSP Lot 3
Sample No.	A22/6198
Client Ref.	BH/RC149273 @ 2.5-3.2m
Material Type:	Rock Core
Date Received:	21/11/2022
Date testing started	01/12/2022
Location:	BH/RC149273 @ 2.5-3.2m
Sample Certificate:	Not Provided
Size Range	10-14mm
Magnesium Sulfate Value (MS_1) Portion 1	12.8
Magnesium Sulfate Value (MS_2) Portion 2	13.7
Mean Magnesium Sulfate Value	13.3

The result relates to the specimens tested.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

Approved signatories
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL	Approved by	Date	Page
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IGSL Ltd
Unit J5, Materials Laboratory
M7 Business Park
Naas
Co. Kildare
045-899324

Test Report

Resistance to Fragmentation - Los Angeles Test

Tested in accordance with BS EN1097-2:2020

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1331

Report No.		**R141751**
Client:		Ervia
Contract:		WSP - Lot 3
Contract No:		23560
Sample No.		A22/6198
Client Ref*:		BH/RC149273 2.5-3.2m
Location*:		BH/RC149273 2.5-3.2m
Source*:		N/A
Material Type*:		Roce Core
Sample Received:		06/12/2022
Date tested:		06/12/2022
Sample Cert:		~~Attached~~ Not Provided
Size of Material:	1	<14mm >12.5mm
	2	<12.5mm >10mm
Los Angeles Coefficient:		22

Results relate only to the specimen tested, in as received condition unless otherwise noted.
Opinions and interpretations are outside the scope of accreditation.
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Persons authorised to approve report

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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INDEPENDENT MATERIALS TESTING | DIAMOND DRILLING & SAWING

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 11 January 2023
Test Report Ref: TR 927825

Order No: 20963

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107413**
Client Ref. No:	**A22/6170**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**15/12/2022**
Date of Start of Test:	**11/01/2023**
Sampling Location:	**BH/RC165006 @ 1.5-2.95m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**MP**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) =	**9.00**
Aggregate Abrasion Value (Test 2) =	**9.00**

Mean Aggregate Abrasion Value = **9.0**

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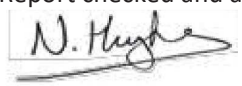
These results relate only to the items tested.

Comments:	Report checked and approved by:
None	 Neil Hughes Assistant Aggregate Team Manager

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 11 January 2023
Test Report Ref: TR 927826

Order No: 20963

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107413**
Client Ref. No:	**A22/6171**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**15/12/2022**
Date of Start of Test:	**11/01/2023**
Sampling Location:	**BH/RC165890 @ 0.9-1.65m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**MP**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) = 26.10
Aggregate Abrasion Value (Test 2) = 26.20

Mean Aggregate Abrasion Value = 26.0

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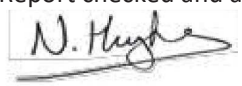
These results relate only to the items tested.

Comments:
None

Report checked and approved by:



Neil Hughes
Assistant Aggregate Team Manager

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 11 January 2023
Test Report Ref: TR 927828

Order No: 20963

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107413**
Client Ref. No:	**A22/6198**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**15/12/2022**
Date of Start of Test:	**11/01/2023**
Sampling Location:	**BH/RC149273 @ 2.5-3.2m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**MP**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) = 10.40
Aggregate Abrasion Value (Test 2) = 10.30

Mean Aggregate Abrasion Value = 10.0

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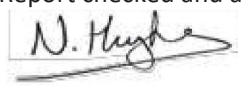
These results relate only to the items tested.

Comments:
None

Report checked and approved by:



Neil Hughes
Assistant Aggregate Team Manager

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 11 January 2023
Test Report Ref: TR 927829

Order No: 20963

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107413**
Client Ref. No:	**A22/6200**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**15/12/2022**
Date of Start of Test:	**11/01/2023**
Sampling Location:	**BH/RC150291 @ 2.7-3.4m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**MP**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) =	**4.73**
Aggregate Abrasion Value (Test 2) =	**4.73**

Mean Aggregate Abrasion Value = **4.7**

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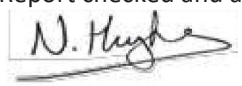
These results relate only to the items tested.

Comments:
None

Report checked and approved by:



Neil Hughes
Assistant Aggregate Team Manager

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Unit J5, M7 Business Park
Newhall, NAAS
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Rep of Ireland
Vat No. IE9795751O

Date: 12 January 2023
Test Report Ref: TR 929040

Order No: 20969

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107466**
Client Ref. :	**A22/6170**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**19/12/2022**
Date of Start of Test:	**12/01/2023**
Sampling Location:	**BH/RC165006 @ 1.5-2.95m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

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I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 12 January 2023
Test Report Ref: TR 929041

Order No: 20969

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107466**
Client Ref. :	**A22/6171**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**19/12/2022**
Date of Start of Test:	**12/01/2023**
Sampling Location:	**BH/RC165890 @ 0.9-165m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

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INDEPENDENT MATERIALS TESTING | DIAMOND DRILLING & SAWING

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 12 January 2023
Test Report Ref: TR 929043

Order No: 20969

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107466**
Client Ref. :	**A22/6198**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**19/12/2022**
Date of Start of Test:	**12/01/2023**
Sampling Location:	**BH/RC 149273 @ 2.5-3.2m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

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INDEPENDENT MATERIALS TESTING | DIAMOND DRILLING & SAWING

I.G.S.L. Ltd
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Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 12 January 2023
Test Report Ref: TR 929044

Order No: 20969

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107466**
Client Ref. :	**A22/6200**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**19/12/2022**
Date of Start of Test:	**12/01/2023**
Sampling Location:	**BH/RC 150291 @ 2.7-3.4m**
Name of Source:	**WSP Lot 3**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

celtest
INDEPENDENT MATERIALS TESTING | DIAMOND DRILLING & SAWING

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 27 January 2023
Test Report Ref: TR 930541

Order No: 20982

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107607**
Client Ref. :	**A22/6207**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**03/01/2023**
Date of Start of Test:	**27/01/2023**
Sampling Location:	**BH/RC 163860 @ 2.5-4m**
Name of Source:	**Site**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 25 January 2023
Test Report Ref: TR 930542

Order No: 20982

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107607**
Client Ref. No:	**A22/6207**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**03/01/2023**
Date of Start of Test:	**24/01/2023**
Sampling Location:	**BH/RC 163860 @ 2.5-4m**
Name of Source:	**Site**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**JR**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) = 15.40
Aggregate Abrasion Value (Test 2) = 15.60

Mean Aggregate Abrasion Value = 16.0

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Neil Hughes
Assistant Aggregate Team Manager

celtest
INDEPENDENT MATERIALS TESTING | DIAMOND DRILLING & SAWING

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 27 January 2023
Test Report Ref: TR 930543

Order No: 20982

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Mohs Hardness of aggregate sample in accordance with **In House Methods**.

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107607**
Client Ref. :	**A22/6208**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**03/01/2023**
Date of Start of Test:	**27/01/2023**
Sampling Location:	**BH/RC 166562 @ 2.30-3m**
Name of Source:	**Site**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**KG**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Mohs Hardness = **8**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Aggregate Team Manager

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 25 January 2023
Test Report Ref: TR 930544

Order No: 20982

Contract: WSP Lot 3 - 23560

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Aggregate Abrasion Value (AAV) of aggregate sample, in accordance with **BS EN 1097-8 : 2020 Annex A**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S107607**
Client Ref. No:	**A22/6208**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**03/01/2023**
Date of Start of Test:	**24/01/2023**
Sampling Location:	**BH/RC 166562 @ 2.30-3m**
Name of Source:	**Site**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**JR**
Material Description:	**Crushed Rock Core**
Target Specification:	**N/A**

RESULTS:

Aggregate Abrasion Value (Test 1) = 6.00
Aggregate Abrasion Value (Test 2) = 5.89

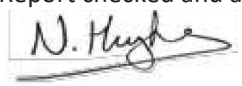
Mean Aggregate Abrasion Value = 5.9

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:



Neil Hughes
Assistant Aggregate Team Manager

Appendix 9H.7

Geological Classification

GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©

Project No.	23560	**Sample Ref No.**	BH/RC149273 - 2.50-3.20m
Project Location:	WSP - Lot 3	**Sample Location:**	BH/RC149273
Client:	Irish Water	**Date Logged:**	20/10/2022

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol. Sample examined with hand lens and bionocular microscope.

Bulk Sample

Sample Description

Aggregate consists of calci-siltite limestone and argillaceous (muddy) limestone with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) in the sample provided. Sample in a dry state.

Riffled & Quartered Sub-Sample

Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

Max	Mean	Min.
90	20	10

Particle Shape:
Angular to subrounded

Nature of Fines:
Grey, silt or clay size

Nature of Coatings:
Grey, fine sand & silt / clay size

Image of Washed Fragments

Assessed Rock Types (lithologies) in Bulk Sample

Rock Types	% Present
Type 1: Calci-Siltite Limestone	30%
Type 2: Argillaceous (Muddy) Limestone	55%
Type 3: Calcareous Mudstone	15%

Note: *Rock types and proportions assesed by examining bulk sample and washing the fragments and examining by naked eye, hand lens and binocular microscope.*

Project No. 23560	GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©	Sheet 2 of 2

ROCK Type 1		Calci-Siltite Limestone			
Dominant Particle size:		10-90mm			
Colour:		Grey to pale grey			
Strength:		Strong			
Apparent Porosity / Water Absorption:		Low			
Reaction to dilute HCL (Dry Sample):		Strong			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 2		Argillaceous (Muddy) Limestone			
Dominant Particle size:		10-90mm			
Colour:		Dark grey/black			
Strength:		Medium strong			
Apparent Porosity / Water Absorption:		Moderate			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 3		Calcareous Mudstone			
Dominant Particle size:		10-60mm			
Colour:		Dark grey/black			
Strength:		Weak			
Apparent Porosity / Water Absorption:		Medium strong			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☑	NO	☐	If YES, Laminar Spacing >1mm thick
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☐	NO	☑	
Sulphate Mineralisation	YES	☐	NO	☑	

Selected Microscopy Images

GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©

Project No.	23560	**Sample Ref No.**	BH/RC150291 - 2.70-3.40m
Project Location:	WSP - Lot 3	**Sample Location:**	BH/RC150291
Client:	Irish Water	**Date Logged:**	20/10/2022

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol. Sample examined with hand lens and bionocular microscope.

Bulk Sample

Sample Description

Aggregate consists of calci-siltite limestone and argillaceous (muddy) limestone with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) in the sample provided. Sample in a dry state.

Riffled & Quartered Sub-Sample

Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

Max	Mean	Min.
80	20	10

Particle Shape:

Angular to subrounded

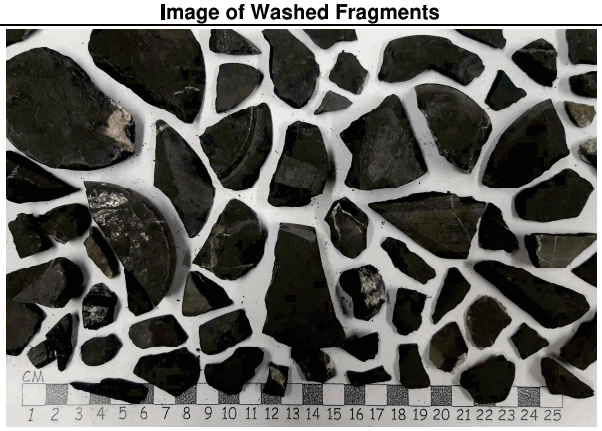
Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments



Assessed Rock Types (lithologies) in Bulk Sample

Rock Types	% Present
Type 1: Calci-Siltite Limestone	60%
Type 2: Argillaceous (Muddy) Limestone	30%
Type 3: Calcareous Mudstone	10%

Note: *Rock types and proportions assesed by examining bulk sample and washing the fragments and examining by naked eye, hand lens and binocular microscope.*

Project No. 23560	GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©	Sheet 2 of 2

ROCK Type 1		Calci-Siltite Limestone			
Dominant Particle size:		10-60mm			
Colour:		Grey to pale grey			
Strength:		Strong			
Apparent Porosity / Water Absorption:		Low			
Reaction to dilute HCL (Dry Sample):		Strong			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 2		Argillaceous (Muddy) Limestone			
Dominant Particle size:		10-80mm			
Colour:		Dark grey/black			
Strength:		Medium strong			
Apparent Porosity / Water Absorption:		Moderate			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 3		Calcareous Mudstone			
Dominant Particle size:		10-70mm			
Colour:		Dark grey/black			
Strength:		Weak			
Apparent Porosity / Water Absorption:		Medium strong			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☑	NO	☐	If YES, Laminar Spacing >1mm thick
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☐	NO	☑	
Sulphate Mineralisation	YES	☐	NO	☑	

Selected Microscopy Images

GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©

Project No.	23560	**Sample Ref No.**	BH/RC163860 - 2.50-4.00m
Project Location:	WSP - Lot 3	**Sample Location:**	BH/RC163860
Client:	Irish Water	**Date Logged:**	20/10/2022

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol. Sample examined with hand lens and bionocular microscope.

Bulk Sample

Sample Description

Aggregate consists of calci-siltite limestone and argillaceous (muddy) limestone with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) or deleterious constituents (e.g. calcareous mudstone or shale) in the sample provided. Sample in a dry state.

Riffled & Quartered Sub-Sample

Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

Max	Mean	Min.
90	20	10

Particle Shape:
Angular to subrounded

Nature of Fines:
Grey, silt or clay size

Nature of Coatings:
Grey, fine sand & silt / clay size

Image of Washed Fragments

Assessed Rock Types (lithologies) in Bulk Sample

Rock Types	% Present
Type 1: Calci-Siltite Limestone	45%
Type 2: Argillaceous (Muddy) Limestone	40%
Type 3: Calcareous Mudstone	15%

Note: *Rock types and proportions assesed by examining bulk sample and washing the fragments and examining by naked eye, hand lens and binocular microscope.*

Project No. 23560	GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©	Sheet 2 of 2

ROCK Type 1		Calci-Siltite Limestone			
Dominant Particle size:		10-90mm			
Colour:		Grey to pale grey			
Strength:		Strong			
Apparent Porosity / Water Absorption:		Low			
Reaction to dilute HCL (Dry Sample):		Strong			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 2		Argillaceous (Muddy) Limestone			
Dominant Particle size:		10-90mm			
Colour:		Dark grey/black			
Strength:		Medium strong			
Apparent Porosity / Water Absorption:		Moderate			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 3		Calcareous Mudstone			
Dominant Particle size:		10-60mm			
Colour:		Dark grey/black			
Strength:		Weak			
Apparent Porosity / Water Absorption:		Medium strong			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☑	NO	☐	If YES, Laminar Spacing >1mm thick
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☐	NO	☑	
Sulphate Mineralisation	YES	☐	NO	☑	

Selected Microscopy Images

GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©

Project No.	23560	**Sample Ref No.**	BH/RC166562 - 2.30-3.00m
Project Location:	WSP - Lot 3	**Sample Location:**	BH/RC166562
Client:	Irish Water	**Date Logged:**	20/10/2022

Notes on sample preparation & examination: Sample reduced (riffled & quartered) in accordance with IS EN 932-2:1999. Sample examined and classified by IGSL Professional Geologist in accordance with IS EN 14689-1:2004, IS EN 932-3:1997 and IS 398;2013 Part 1, Testing & Categorization Protocol. Sample examined with hand lens and bionocular microscope.

Bulk Sample

Sample Description

Aggregate consists of calci-siltite limestone and argillaceous (muddy) limestone with fine grained grey coatings. No evidence of mineralogical changes, encrustations (e.g. gypsum) in the sample provided. Sample in a dry state.

Riffled & Quartered Sub-Sample

Washed Fragments Sub-Sample Characteristics

Particle Sizes Estimation (mm):

Max	Mean	Min.
90	20	10

Particle Shape:

Angular to subrounded

Nature of Fines:

Grey, silt or clay size

Nature of Coatings:

Grey, fine sand & silt / clay size

Image of Washed Fragments

Assessed Rock Types (lithologies) in Bulk Sample

Rock Types	% Present
Type 1: Calci-Siltite Limestone	25%
Type 2: Argillaceous (Muddy) Limestone	60%
Type 3: Calcareous Mudstone	15%

Note: *Rock types and proportions assesed by examining bulk sample and washing the fragments and examining by naked eye, hand lens and binocular microscope.*

Project No. 23560	GEOLOGICAL CLASSIFICATION / SIMPLIFIED PETROLOGY ©	Sheet 2 of 2

ROCK Type 1		Calci-Siltite Limestone			
Dominant Particle size:		10-50mm			
Colour:		Grey to pale grey			
Strength:		Strong			
Apparent Porosity / Water Absorption:		Low			
Reaction to dilute HCL (Dry Sample):		Strong			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 2		Argillaceous (Muddy) Limestone			
Dominant Particle size:		10-90mm			
Colour:		Dark grey/black			
Strength:		Medium strong			
Apparent Porosity / Water Absorption:		Moderate			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☐	NO	☑	If YES, Laminar Spacing
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☑	NO	☐	Sparite
Sulphate Mineralisation	YES	☐	NO	☑	

ROCK Type 3		Calcareous Mudstone			
Dominant Particle size:		10-70mm			
Colour:		Dark grey/black			
Strength:		Weak			
Apparent Porosity / Water Absorption:		Medium strong			
Reaction to dilute HCL (Dry Sample):		Low			
Presence of Laminations in hand specimen	YES	☑	NO	☐	If YES, Laminar Spacing >1mm thick
Surface Coatings	YES	☑	NO	☐	Clay/silt
Staining	YES	☐	NO	☑	
Secondary Mineral Present	YES	☐	NO	☑	
Carbonate Mineralisation	YES	☐	NO	☑	
Sulphate Mineralisation	YES	☐	NO	☑	

Selected Microscopy Images

Appendix 9I

Photographs

Appendix 9I.1

Trial Pit Photographs

TP147204 – TP163799

Excavation (Pit photos included are shaded grey)

TP147204	TP152002	TP160993
TP148005	TP152045	TP161109
TP148104	TP152102	TP161199
TP148205	TP152190	TP161292
TP148304	TP152295	TP161469
TP148403	TP152405	TP161858
TP148504	TP152500	TP162008
TP148600	TP152699	TP162045
TP148704	TP152806	TP162103
TP148802	TP152901	TP162214
TP148903	TP152989	TP162302
TP149004	TP153098	TP162401
TP149130	TP153199	TP162500
TP149200	TP153301	TP162602
TP149304	TP156000	TP162699
TP149373	TP156099	TP162797
TP149505	TP156204	TP163301
TP149604	TP156299	TP163403
TP149705	TP156398	TP163502
TP149803	TP156499	TP163605
TP149904	TP156601	TP163696
TP149986	TP156701	TP163799
TP150104	TP156803	TP164905
TP150190	TP156895	TP165010
TP150295	TP156965	TP165105
TP150400	TP157100	TP165204
TP150490	TP157202	TP165314
TP150590	TP157300	TP166562
TP150702	TP157403	TP166697
TP150800	TP157502	TP166772
TP150900	TP157585	TP166867
TP151000	TP157697	TP167031
TP151095	TP157813	TP167205
TP151178	TP157895	TP167384
TP151301	TP159013	TP168033
TP151412	TP159100	TP168041
TP151503	TP159203	TP168241
TP151602	TP159303	TP168340
TP151737	TP159347	TP168871
TP151799	TP159404	
TP151882	TP159488	
TP151901	TP160696	
TP151906	TP160795	
TP151961	TP160895	

Appendix 9I.3

Core Photographs

Borehole Core Photographs

BH/RC148404
BH/RC148707
BH/RC149101
BH/RC149273
BH/RC149406
BH/RC149804
BH/RC150204
BH/RC150291
BH/RC150888
BH/RC151188
BH/RC151688
BH/RC151877
BH/RC151907
BH/RC152124
BH/RC152207
BH152702
BH/RC153150
BH/RC156922
BH/RC157032
BH/RC157543
BH/RC157862
BH/RC157953
BH/RC157977
BH/RC163860
BH/RC165006
BH/RC165317
BH/RC165890
BH/RC165906
BH/RC165960
BH/RC166006
BH/RC166025
BH/RC166078
BH/RC166356
BH/RC166562
BH/RC166722
BH/RC169001

BH/RC148404 – Box 1 of 2 – 6.50-9.20m

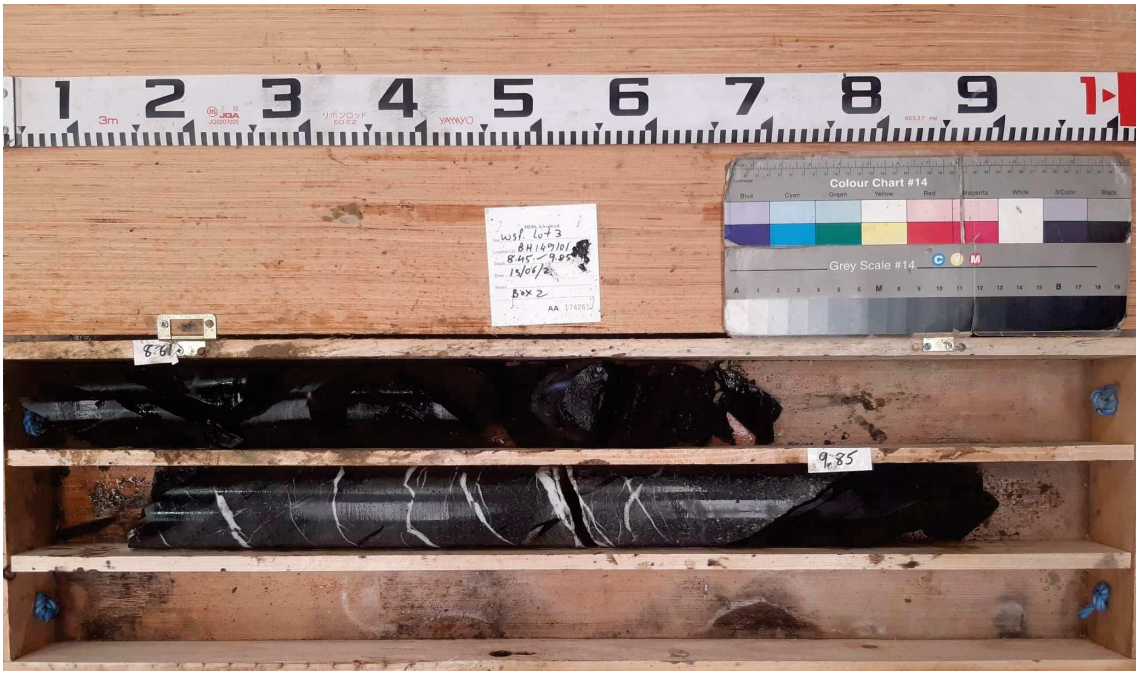
BH/RC148404 – Box 2 of 2 – 9.20-10.20m

BH/RC148707 – Box 1 of 2 – 4.40-9.20m

BH/RC148707 – Box 2 of 2 – 9.20-9.80m

BH/RC149101 – Box 1 of 2 – 5.70-8.45m

BH/RC149101 – Box 2 of 2 – 8.45-9.85m



BH/RC149273 – Box 1 of 3 – 2.50-5.35m

BH/RC149273 – Box 2 of 3 – 5.35-8.15m

BH/RC149273 – Box 3 of 3 – 8.15-10.05m

BH/RC149406 – Box 1 of 2 – 4.50-7.30m

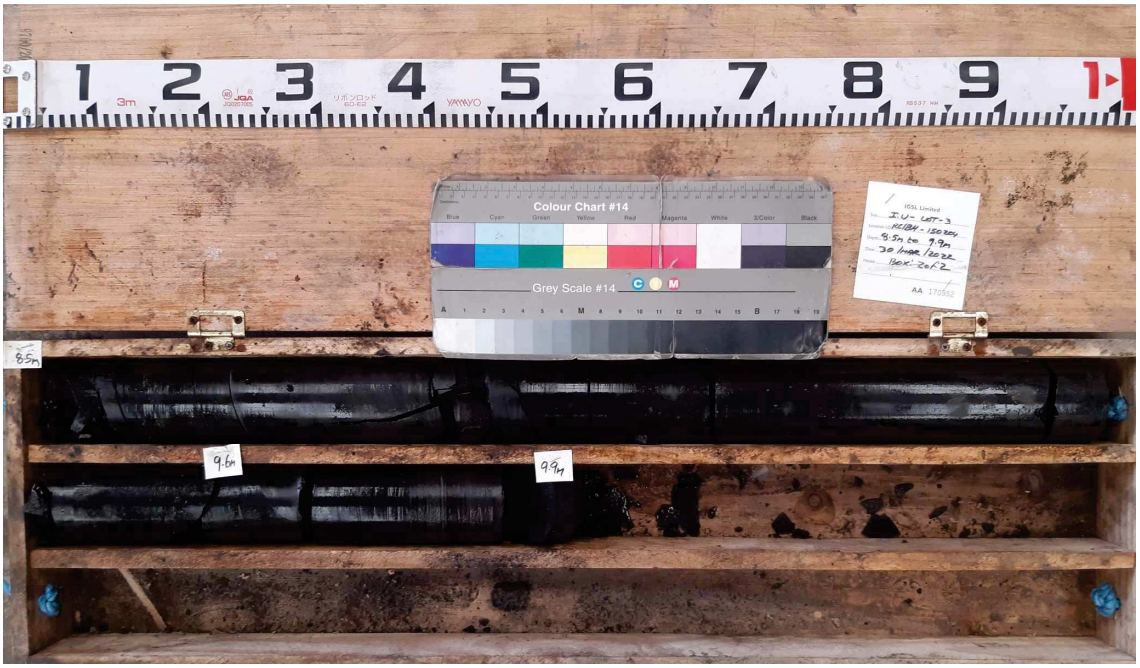
BH/RC149406 – Box 2 of 2 – 7.30-9.80m

BH/RC149804 – Box 1 of 2 – 4.00-7.10m

BH/RC149804 – Box 2 of 2 – 7.10-9.85m

BH/RC150204 – Box 1 of 2 – 5.80-8.50m

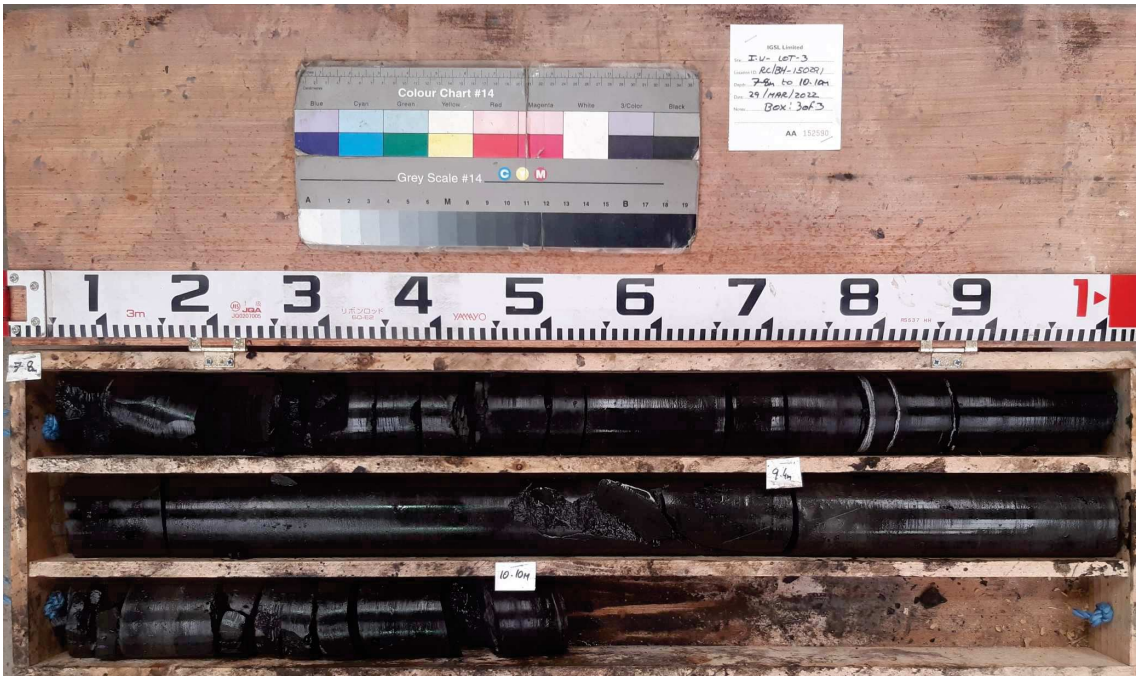
BH/RC150204 – Box 2 of 2 – 8.50-9.90m



BH/RC150291 – Box 1 of 3 – 2.70-5.70m

BH/RC150291 – Box 2 of 3 – 5.70-7.80m

BH/RC150291 – Box 3 of 3 – 7.80-10.10m



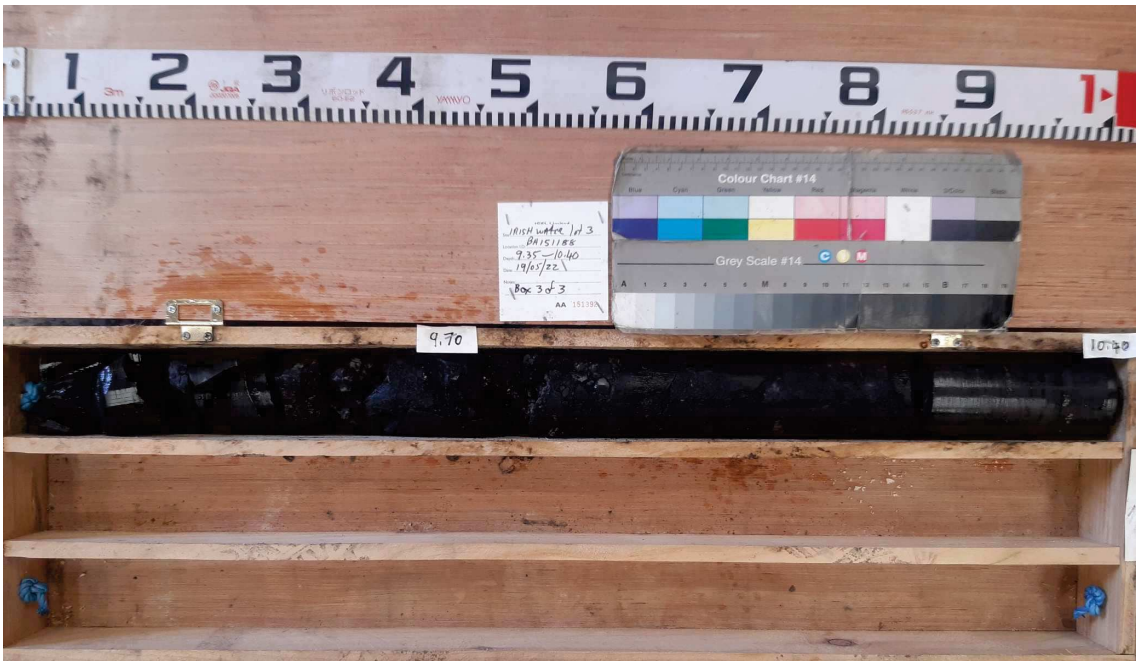
BH/RC150888 – Box 1 of 2 – 4.50-7.40m

BH/RC150888 – Box 2 of 2 – 7.40-10.00m

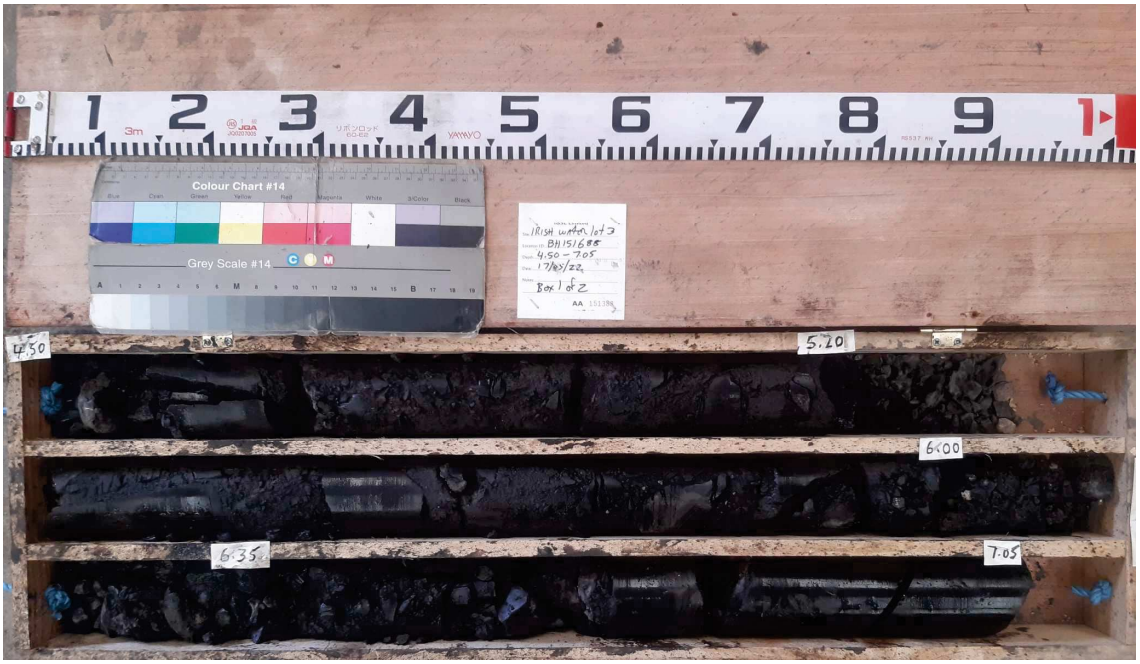
BH/RC151188 – Box 1 of 3 – 4.20-6.50m

BH/RC151188 – Box 2 of 3 – 6.50-9.35m

BH/RC151188 – Box 3 of 3 – 9.35-10.40m



BH/RC151688 – Box 1 of 2 – 4.50-7.05m



BH/RC151688 – Box 2 of 2 – 7.05-10.00m

BH/RC151877 – Box 1 of 1 – 6.00-10.00m

BH/RC151907 – Box 1 of 3 – 7.50-11.65m

BH/RC151907 – Box 2 of 3 – 11.65-13.95m

BH/RC151907 – Box 3 of 3 – 13.95-15.10m

BH/RC152124 – Box 1 of 2 – 5.70-8.40m

BH/RC152124 – Box 2 of 2 – 8.40-9.95m

BH/RC152207 – Box 1 of 2 – 2.70-7.95m

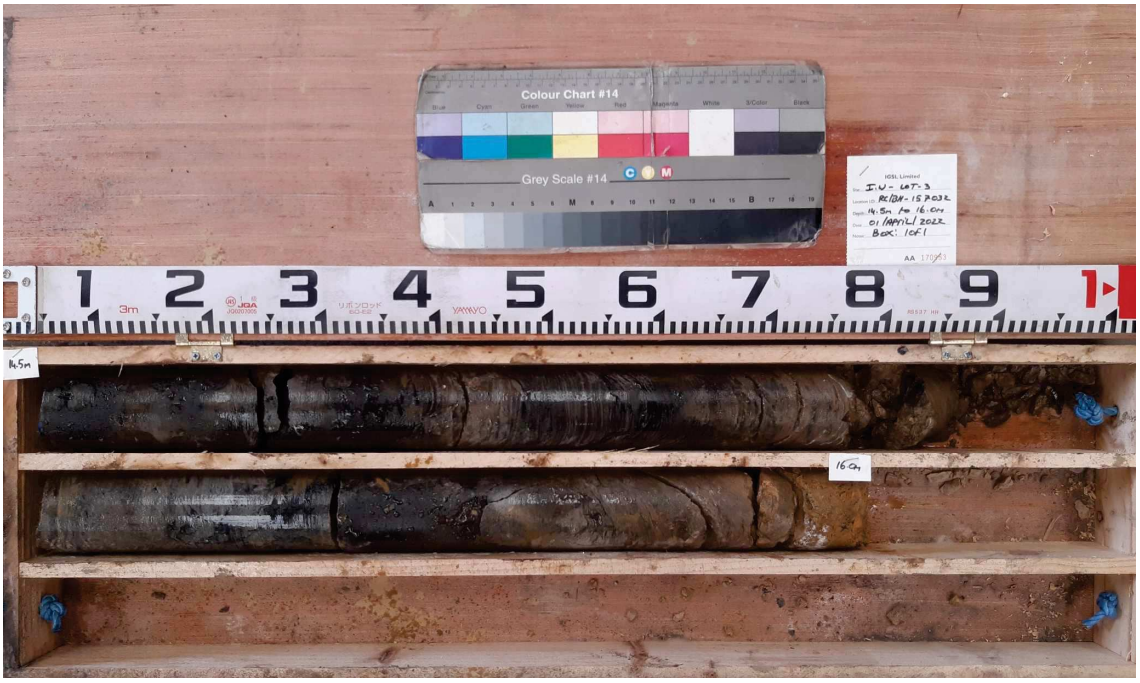
BH/RC152207 – Box 2 of 2 – 7.95-10.10m

BH/RC152702 – 6.50-9.50m

BH/RC153150 – Box 1 of 1 – 7.50-10.00m

BH/RC156922 – Box 1 of 1 – 14.20-15.00m

BH/RC157032 – Box 1 of 1 – 14.50-16.00m



BH/RC157543 – Box 1 of 2 – 6.50-9.50m

BH/RC157543 – Box 2 of 2 – 9.50-10.00m

BH/RC157862 – Box 1 of 1 – 8.00-10.40m

BH/RC157953 – Box 1 of 3 – 6.20-9.20m

BH/RC157953 – Box 2 of 3 – 9.20-12.20m

BH/RC157953 – Box 3 of 3 – 12.20-15.00m

BH/RC157977 – Box 1 of 4 – 6.00-8.80m

BH/RC157977 – Box 2 of 4 – 8.80-11.40m

BH/RC157977 – Box 3 of 4 – 11.40-13.50m

BH/RC157977 – Box 4 of 4 – 13.50-15.10m

BH/RC163860 – Box 1 of 3 – 2.50-5.50m

BH/RC163860 – Box 2 of 3 – 5.50-8.50m

BH/RC163860 – Box 3 of 3 – 8.50-10.00m

BH/RC165006 – Box 1 of 3 – 1.50-4.20m

BH/RC165006 – Box 2 of 3 – 4.20-6.80m

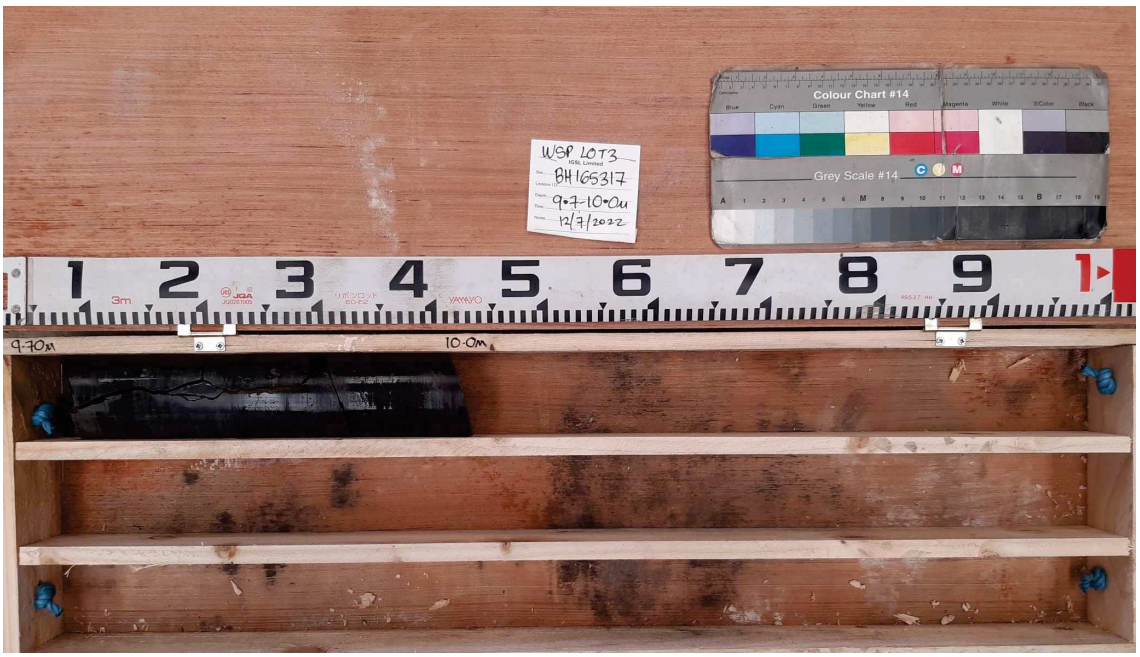
BH/RC165006 – Box 3 of 3 – 6.80-9.80m

BH/RC165317 – Box 1 of 4 – 1.50-4.25m

BH/RC165317 – Box 2 of 4 – 4.25-7.00m

BH/RC165317 – Box 3 of 4 – 7.00-9.70m

BH/RC165317 – Box 4 of 4 – 9.70-10.00m



BH/RC165890 – Box 1 of 4 – 0.90-3.65m

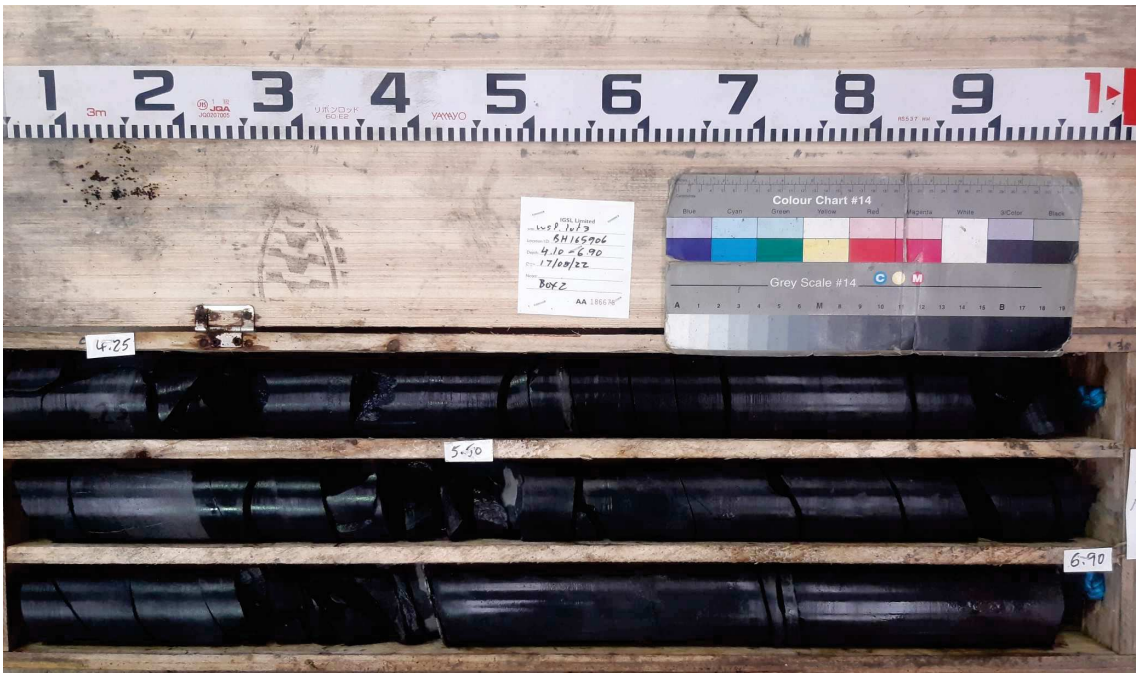
BH/RC165890 – Box 2 of 4 – 3.65-6.25m

BH/RC165890 – Box 3 of 4 – 6.25-8.55m

BH/RC165890 – Box 4 of 4 – 8.55-10.20m

BH/RC165906 – Box 1 of 4 – 1.00-4.10m

BH/RC165906 – Box 2 of 4 – 4.10-6.90m



BH/RC165906 – Box 3 of 4 – 6.90-9.65m

BH/RC165906 – Box 4 of 4 – 9.65-9.95m

BH/RC165960 – Box 1 of 3 – 5.80-8.60m

BH/RC165960 – Box 2 of 3 – 8.60-11.30m

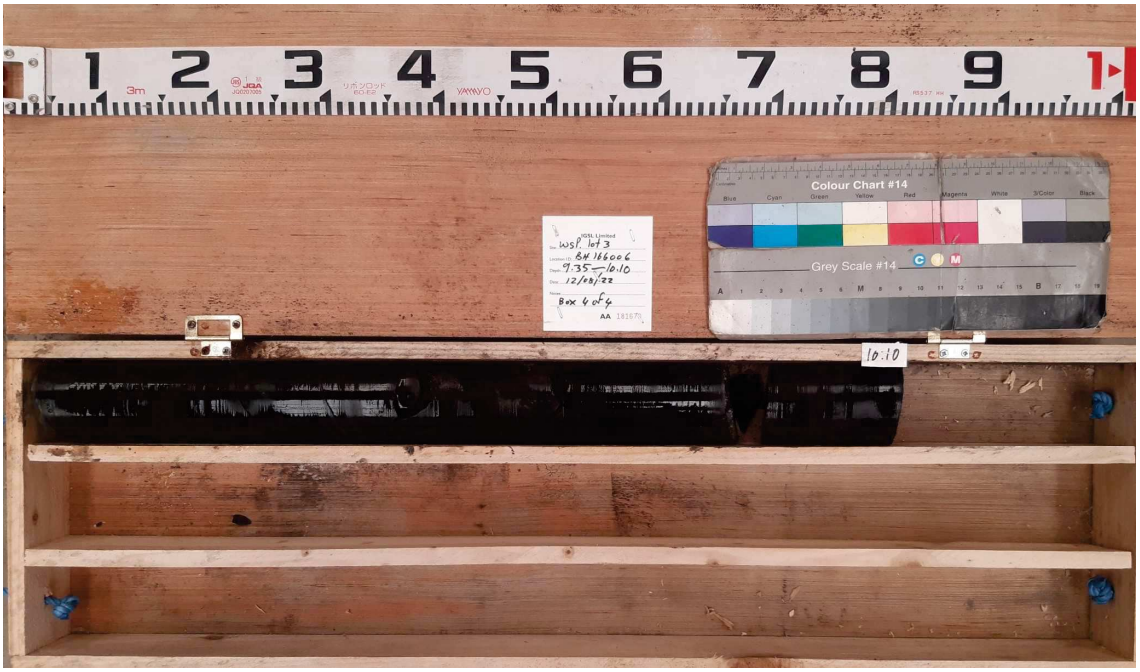
BH/RC165960 – Box 3 of 3 – 11.30-12.80m

BH/RC166006 – Box 1 of 4 – 1.35-4.00m

BH/RC166006 – Box 2 of 4 – 4.00-6.75m

BH/RC166006 – Box 3 of 4 – 6.75-9.35m

BH/RC166006 – Box 4 of 4 – 9.35-10.10m



BH/RC166025 – Box 1 of 3 – 1.50-4.20m

BH/RC166025 – Box 2 of 3 – 4.20-6.95m

BH/RC166025 – Box 3 of 3 – 6.95-9.80m

BH/RC166078 – Box 1 of 3 – 1.35-5.15m

BH/RC166078 – Box 2 of 3 – 5.15-7.90m

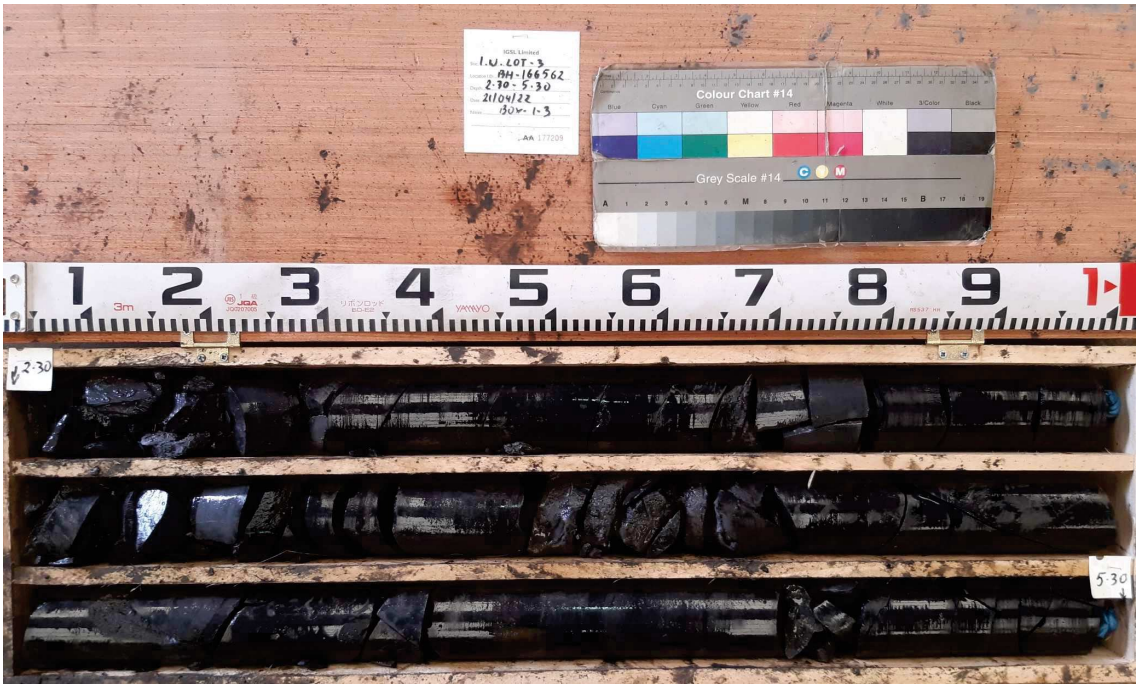
BH/RC166078 – Box 3 of 3 – 7.90-10.60m

BH/RC166356 – Box 1 of 3 – 1.00-4.75m

BH/RC166356 – Box 2 of 3 – 4.75-7.70m

BH/RC166356 – Box 3 of 3 – 7.70-9.80m

BH/RC166562 – Box 1 of 3 – 2.30-5.30m



BH/RC166562 – Box 2 of 3 – 5.30-8.30m

BH/RC166562 – Box 3 of 3 – 8.30-10.00m

BH/RC166722 – Box 1 of 4 – 4.00-7.00m

BH/RC166722 – Box 2 of 4 – 7.00-10.00m

BH/RC166722 – Box 3 of 4 – 10.00-13.00m

BH/RC166722 – Box 4 of 4 – 13.00-15.00m

BH/RC169001 – Box 1 of 3 – 1.20-4.70m

BH/RC169001 – Box 2 of 3 – 4.70-7.25m

BH/RC169001 – Box 3 of 3 – 7.25-10.00m

Appendix 9I.3

Core Photographs

Geobore S Core Photographs

BH/RC149963

BH149963 – Box 1 of 7 – 0.00-1.50m

BH149963 – Box 2 of 7 – 1.50-3.10m

BH149963 – Box 3 of 7 – 3.10-4.70m

BH149963 – Box 4 of 7 – 4.70-6.00m

BH149963 – Box 5 of 7 – 6.00-7.70m

BH149963 – Box 6 of 7 – 7.70-9.50m

BH149963 – Box 7 of 7 – 9.50-9.90m

Appendix 9J

Groundwater Level Data

Appendix 9J.1

Field Measurements

08-Feb-23 & 09-Feb-23

Groundwater Monitoring

Site Location	WSP Lot 3 Pipeline
Project No.	23560
Engineer	Mott MacDonald

Exploratory Hole No.	08/02/2023 (m bgl)	09/02/2023 (m bgl)	10/02/2023 (m bgl)	13/02/2023 (m bgl)	14/02/2023 (m bgl)	15/02/2023 (m bgl)
BH149101		2.34m				
BH149400		0.90m				
BH149963		1.69m				
BH150554		1.06m				
BH151688		0.90m				
BH151907		0.55m				
BH152124		0.78m				
BH153150		0.98m				
BH156922		1.65m				
BH157032		1.34m				
BH157543		0.3 AGL				
BH157977		1.70m				
BH161471	1.15					
BH161516	1.55					
BH163697	0.81					
BH165006	2.04					
BH165906	0.64					
BH166356	1.27					
BH166562	0.90					
BH166722	0.81					

Appendix 9J.2

Data Logger Records

Field Measurements

Location	Date of Data Logger commencement
BH-149101	21-12-22
BH-149406	21-12-22
BH-149963 (GB)	21-12-22
BH-150554	21-12-22
BH-151688	21-12-22
BH-151907	21-12-22
BH-152124	21-12-22
BH-153150	21-12-22
BH-156922	21-12-22
BH-157032	23-12-22
BH-157543	23-12-22
BH-157977	21-12-22
BH-161471	21-12-22
BH-161516	21-12-22
BH-163697	20-12-22
BH-165006	20-12-22
BH-165906	20-12-22
~~BH-166078~~	-
BH-166356	20-12-22
BH-166562	20-12-22
~~BH-166722~~	-

GB = Geobore S Drillhole

IGSL Groundwater Monitoring Schedule

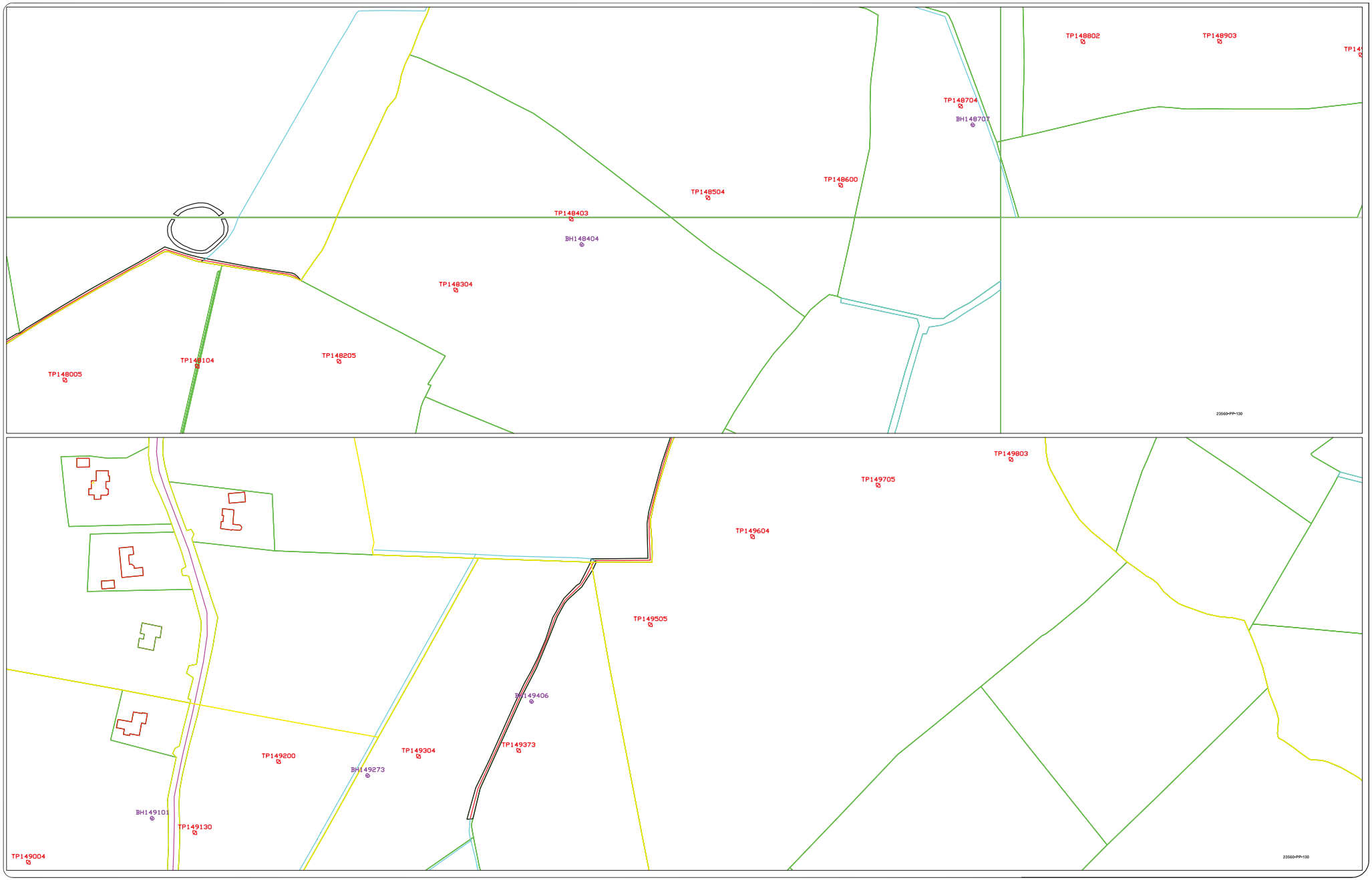
CONTRACT NO:	23560
CONTRACT NAME:	WSP Lot 3 - GI Pipeline Section

Monitoring Schedule

Location	Folio Number	December/January 2023	Feb-23	Mar-23	Jun-23	Sep-23	January 2024 Completion
BH-149101	WL380	✓	✓	✓			
BH-149406	WL380	✓	✓	✓			
BH-149963	WL381	✓	✓	✓			
BH-150554	WL383	✓	✓	✓			
BH-151688	WL388	✓	✓	✓			
BH-151907	WL388	✓	✓	✓			
BH-152124	WL388	✓	✓	✓			
BH-153150	WL391	✓	✓	✓			
BH-156922	WL399	✓	✓	✓			
BH-157032	WL399	✓	✓	✓			
BH-157543	WL400	✓	✓	✓			
BH-157977	WL402	✓	✓	✓			
BH-161471	WL408	✓	✓	✓			
BH-161516	WL408	✓	✓	✓			
BH-163697	WL411	✓	✓	✓			
BH-165006	WL414	✓	✓	✓			
BH-165906	WL415	✓	✓	✓			
BH-166078	WL417	✓	✓	✓			
BH-166562	WL418	✓	✓	✓			
BH-166722	WL419	✓	✓	✓			

Appendix 9K

Drawings



North

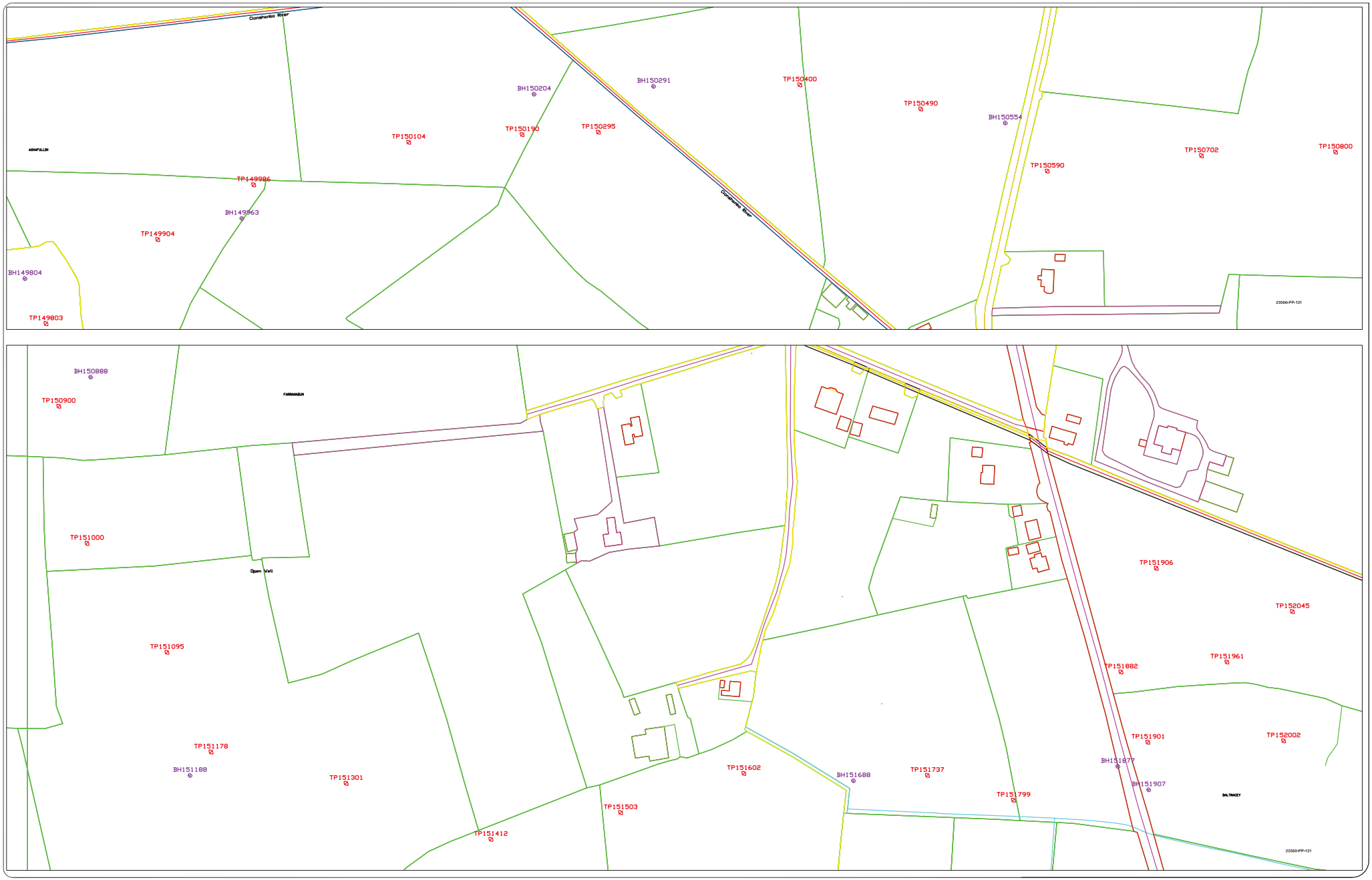
Borehole Location
Dynamic Sample Borehole Location
Trial Pit Location
Peat Probe Location
Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
E-mail: info@igsl.ie
SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date:	19/10	File Name:	23560
Drawn:	CK	Date:	19/10	Original Scale:	1:2500 @A3
Checked:	JL	Date:	19/10	Date:	19/10/2022

Drawing No: 23560-PP-130



North

Borehole Location
Dynamic Sample Borehole Location
Trial Pit Location
Peat Probe Location
Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
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SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline
Component:	Preliminary Ground Investigation
Title:	Location Plan

Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	23560-PP-131
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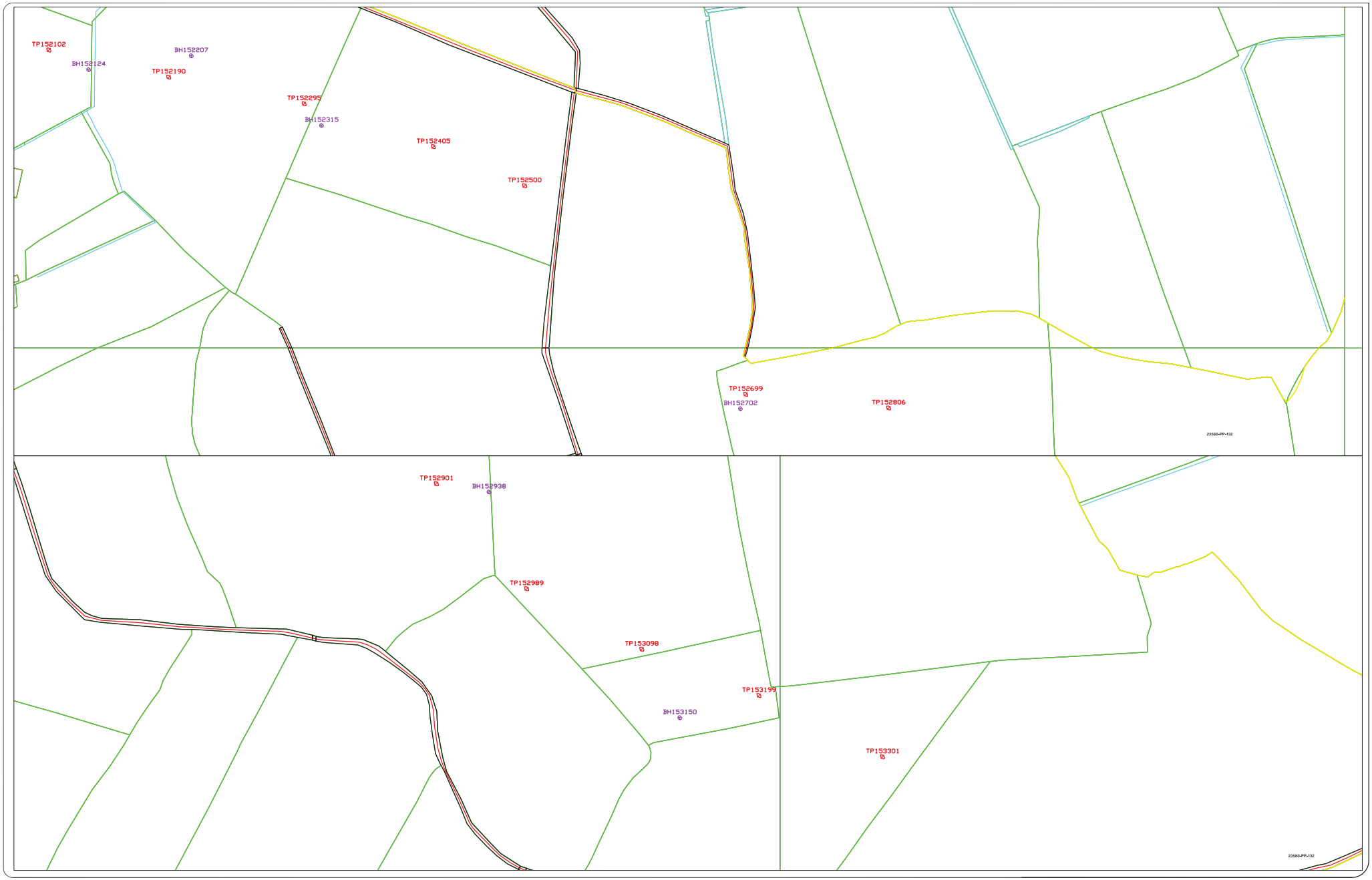
Checked:	JL	Date: 19/10	Date: 19/10/2022		



North

Site Location

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 846 176 Fax: 045 846 187
E-mail: info@igsl.ie
SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date:	19/10	File Name:	23560
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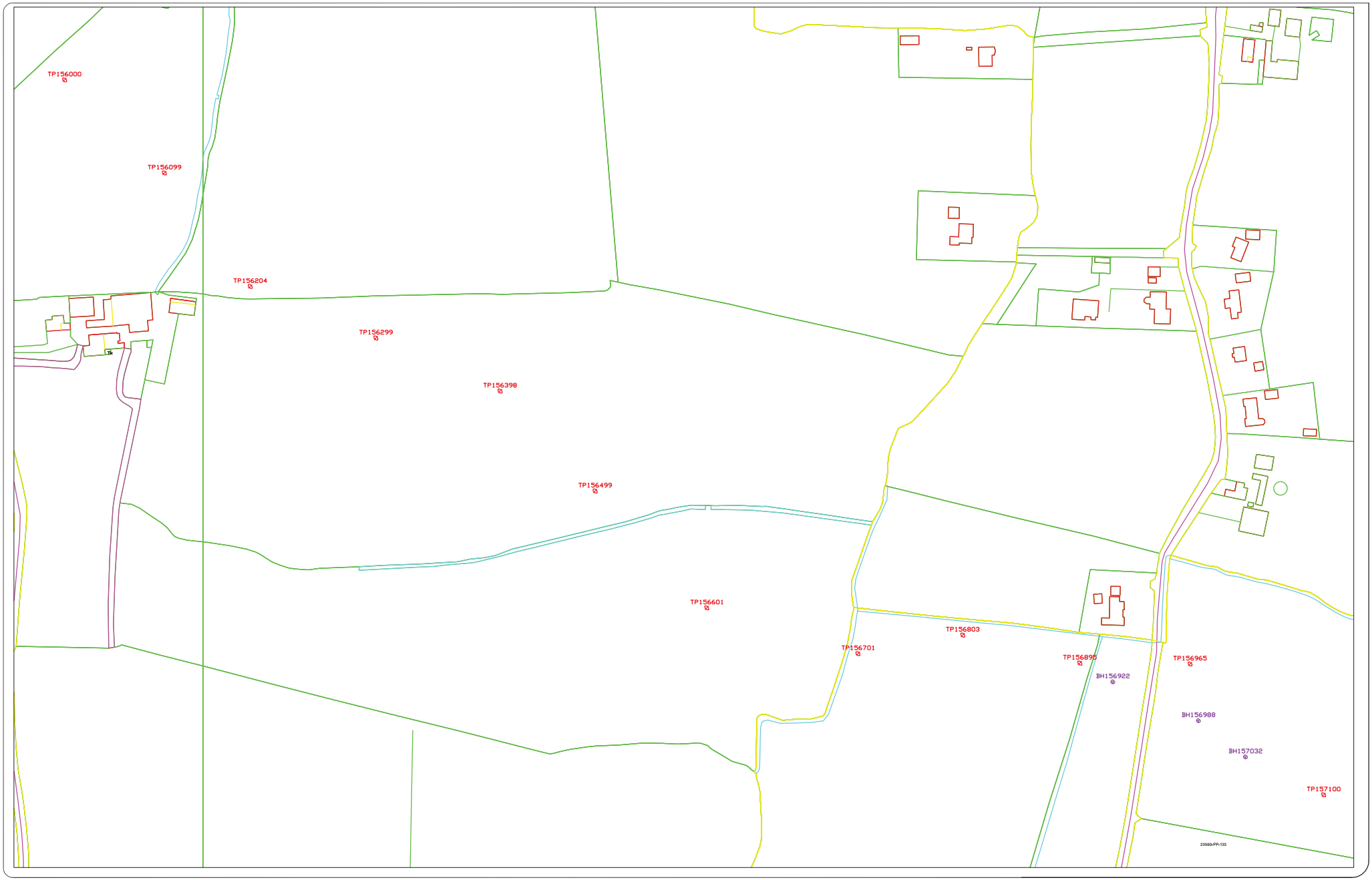
Checked:	JL	Date:	19/10	Date:	19/10/2022

Drawing No: 23560-PP-132



North

Site Location

Irish Grid
Datum
ITM

- Borehole Location
- Dynamic Sample Borehole Location
- Trial Pit Location
- Peat Probe Location
- Russian Sample Location

IGSL

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
E-mail: info@igsl.ie

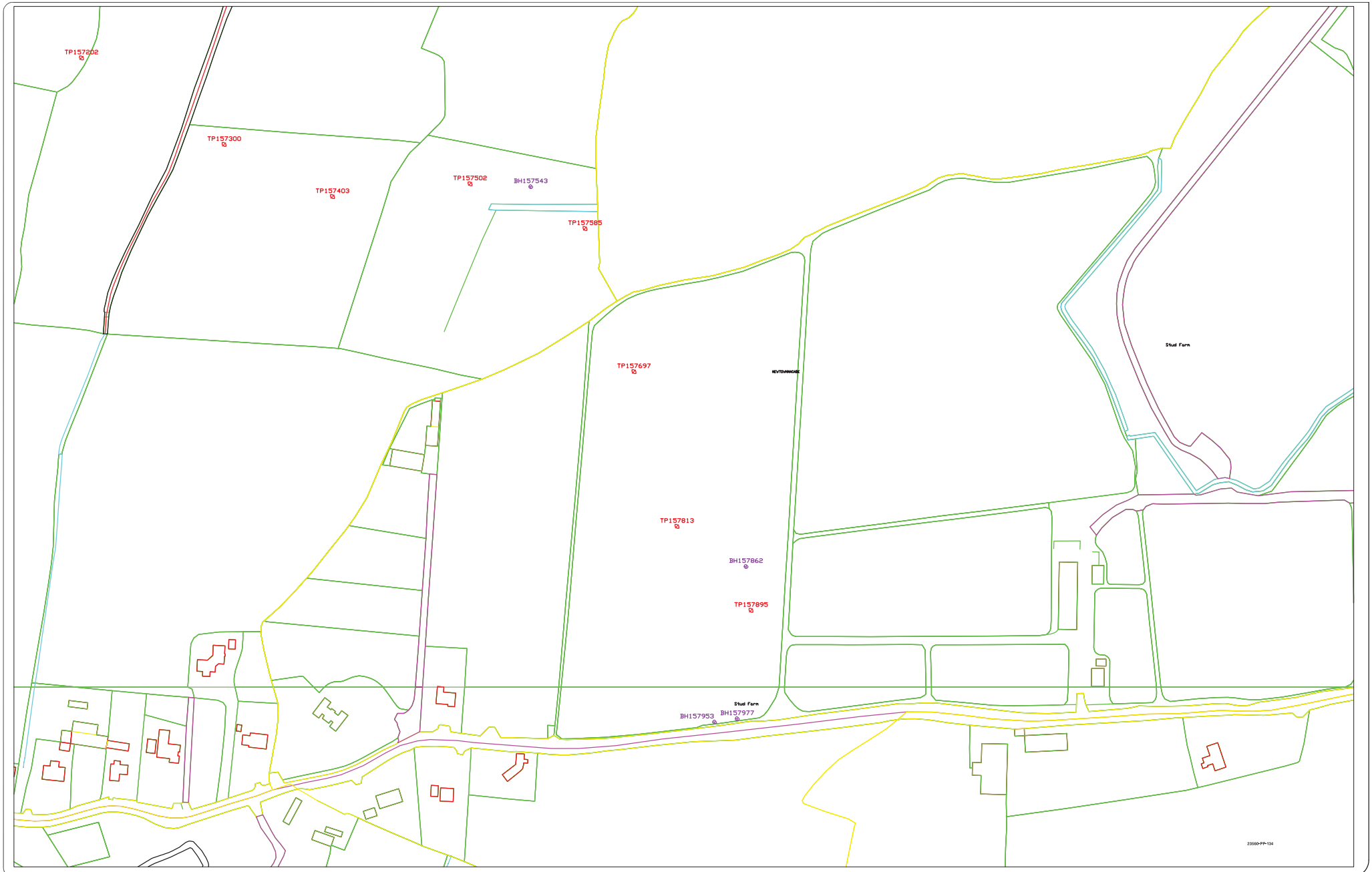
SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline
Component:	Preliminary Ground Investigation
Title:	Location Plan

Designed:	CK	Date:	19/10	File Name:	23560
Drawn:	CK	Date:	19/10	Original Scale:	1:2500 @A3
Checked:	JL	Date:	19/10	Date:	19/10/2022

Drawing No:
23560-PP-133



North

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 846 176 Fax: 045 846 187
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SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date:	19/10	File Name:	23560
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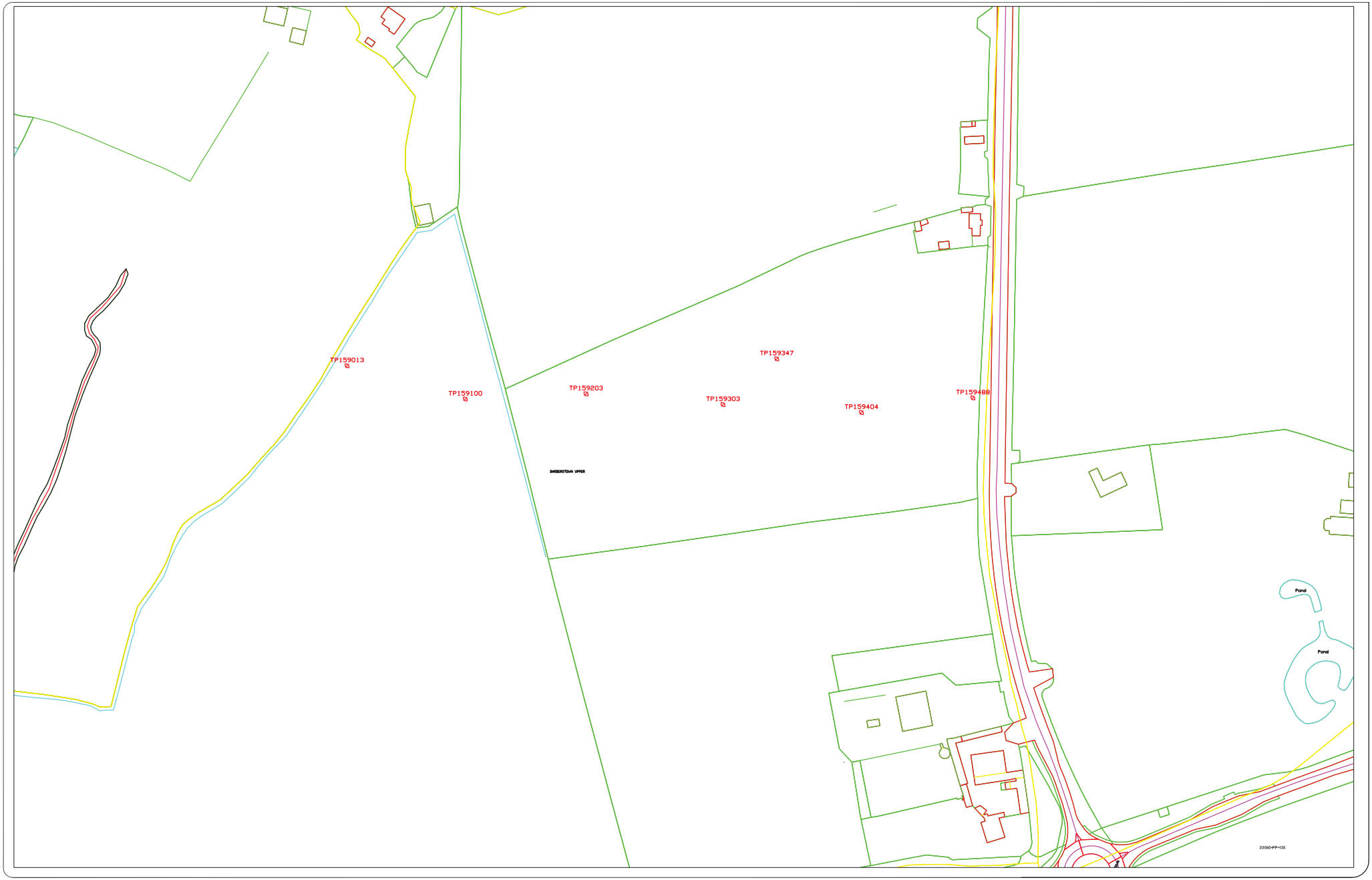
Drawing No: 23560-PP-134



North

Site Location

Datum: Irish Grid
Projection: ITM

- Borehole Location
- Dynamic Sample Borehole Location
- Trial Pit Location
- Peat Probe Location
- Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 846 176 Fax: 045 846 187
E-mail: info@igsl.ie
SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline
Component:	Preliminary Ground Investigation
Title:	Location Plan

Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	
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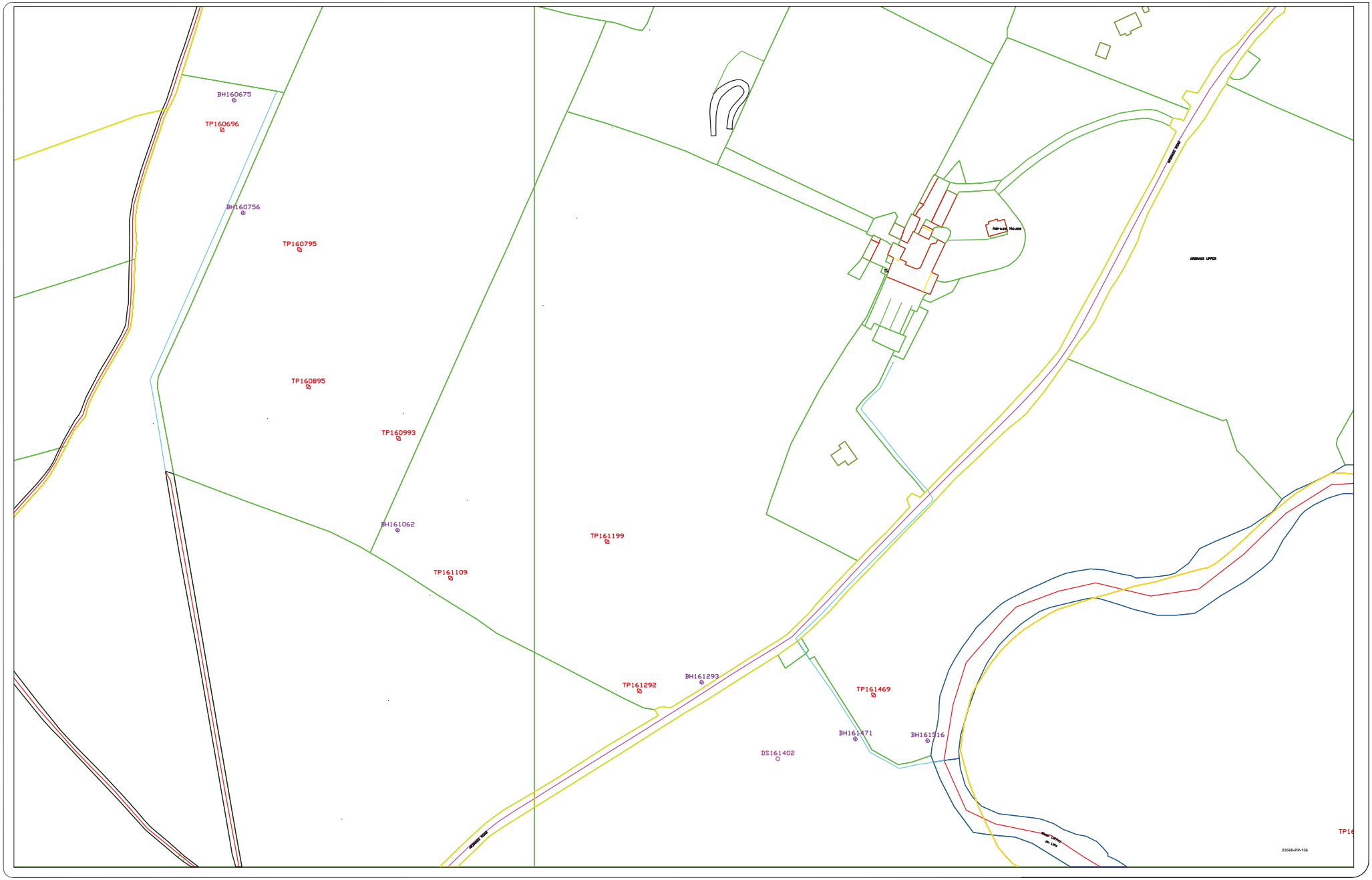

North

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 846 176 Fax: 045 846 187
E-mail: info@igsl.ie

SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	
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Checked:	JL	Date: 19/10	Date: 19/10/2022		

North

Site Location

Irish Grid
Datum
ITM

- Borehole Location
- Dynamic Sample Borehole Location
- Trial Pit Location
- Peat Probe Location
- Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
E-mail: info@igsl.ie
SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date:	19/10	File Name:	23560
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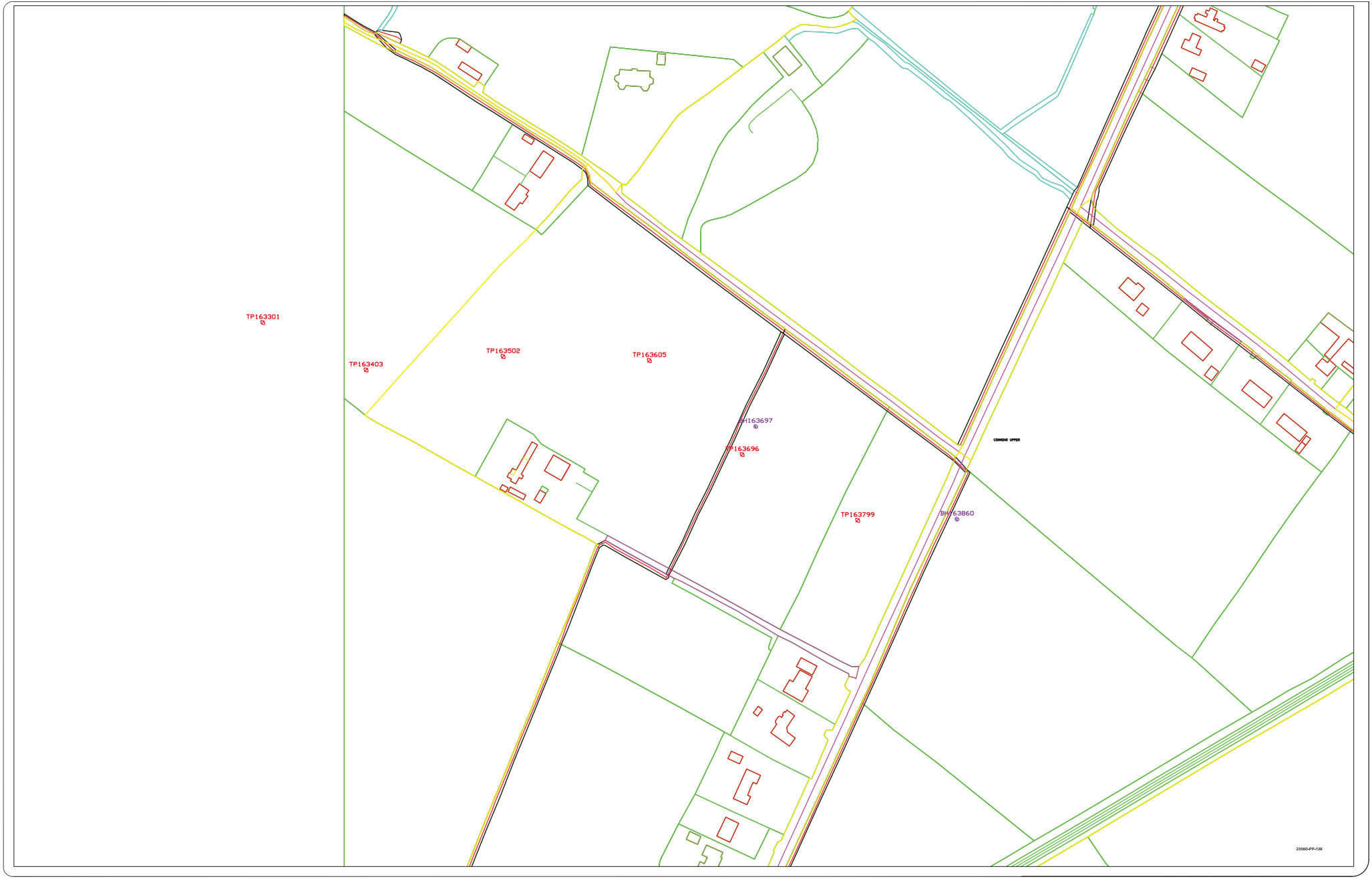

North

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
E-mail: info@igsl.ie

SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	
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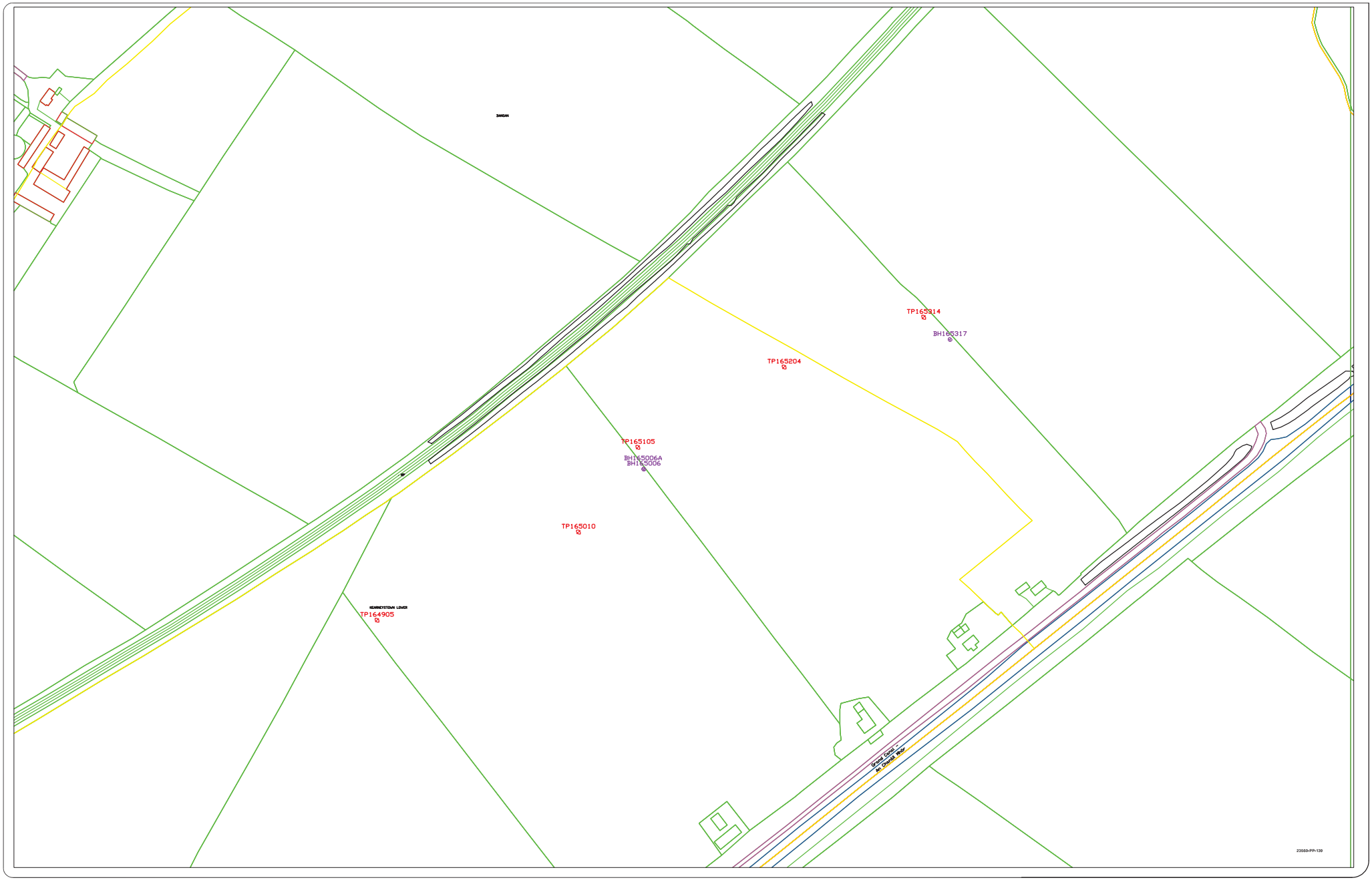

North

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
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SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	
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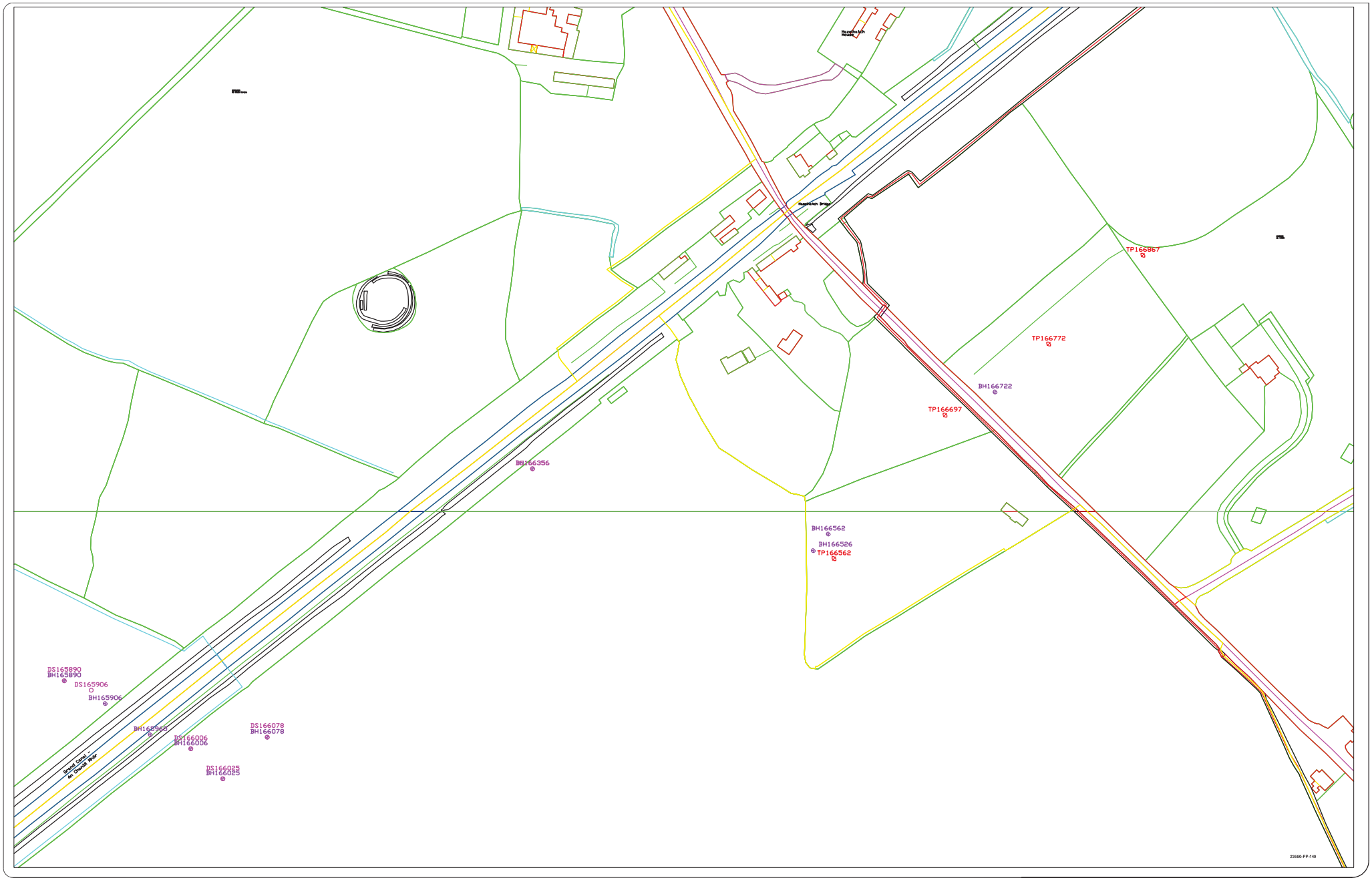
Checked:	JL	Date: 19/10	Date: 19/10/2022		



North

Borehole Location

Dynamic Sample Borehole Location

Trial Pit Location

Peat Probe Location

Russian Sample Location

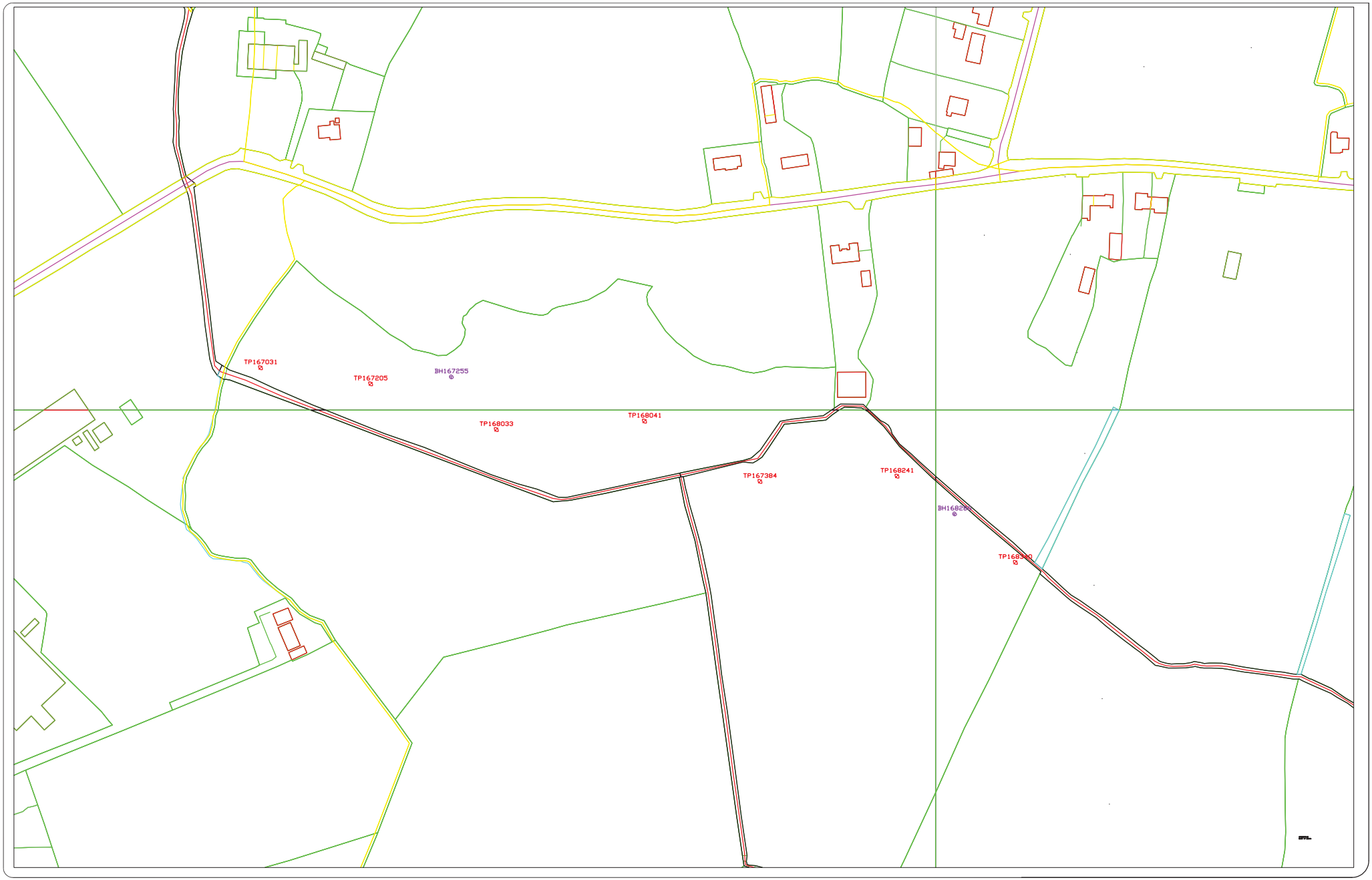
IGSL Limited
Unit 7 M7 Business Park, Naas, Co.Kildare
Tel: 045 844 176 Fax: 045 844 187
E-mail: info@igsl.ie
SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline
Component:	Preliminary Ground Investigation
Title:	Location Plan

Designed:	CK	Date:	19/10	File Name:	23560
Drawn:	CK	Date:	19/10	Original Scale:	1:2500 @A3
Checked:	JL	Date:	19/10	Date:	19/10/2022

Drawing No: 23560-PP-140



North

Site Location

Irish Grid
ITM

Borehole Location
Dynamic Sample Borehole Location
Trial Pit Location
Peat Probe Location
Russian Sample Location

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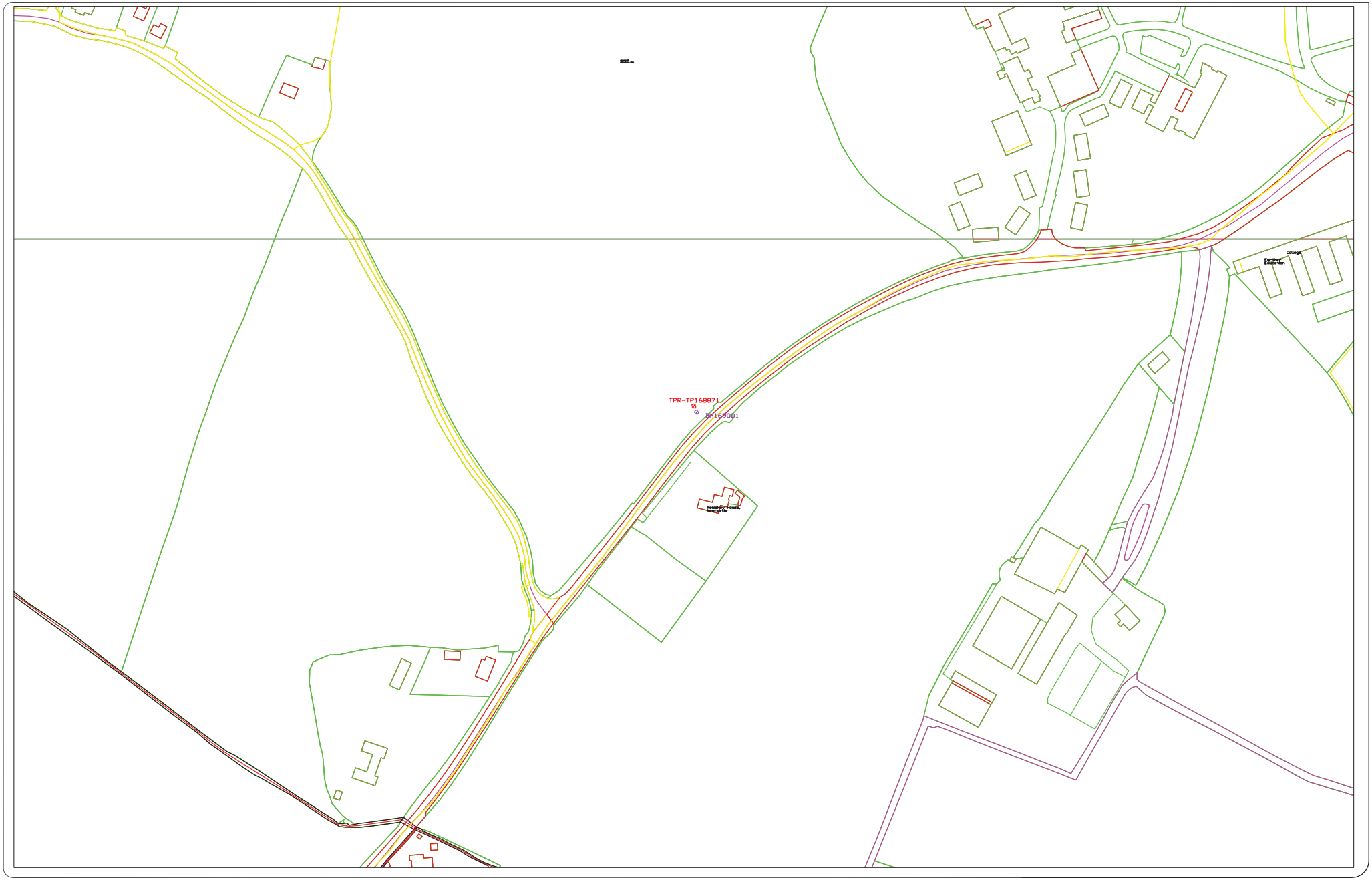
SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date:	19/10	File Name:	23560
Drawn:	CK	Date:	19/10	Original Scale:	1:2500 @A3
Checked:	JL	Date:	19/10/2022	Date:	19/10/2022

Drawing No:
23560-PP-141



North

Site Location

- Irish Grid
- ITM

Borehole Location	Peat Probe Location
Dynamic Sample Borehole Location	Russian Sample Location
Trial Pit Location	

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SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	19/10	Layout Plan

Project:	WSP Lot 3 - Pipeline				
Component:	Preliminary Ground Investigation				
Title:	Location Plan				
Designed:	CK	Date: 19/10	File Name: 23560	Drawing No:	
Drawn:	CK	Date: 19/10	Original Scale: 1:2500 @A3	23560-PP-142	
Checked:	JL	Date: 19/10	Date: 19/10/2022		

~~Appendix 9L~~

~~Digital Data (AGS)~~