

APPENDIX F

Cognition Factual Completion and Validation Report



COGNITION
LAND+WATER

FACTUAL COMPLETION AND VALIDATION
REPORT

PROJECT:
SOUTHALL WESTERN ACCESS
HILLINGDON
UB3 3NF

FOR
FM CONWAY LTD.

Issue No	02
Project No.	CLW002487
Date of Issue:	26 September 2018
Author:	Tom Kiddier
Checked by:	Rick Willemse

1.	Client:	FM Conway Ltd
2.	Regulators:	

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AMENDMENT RECORD SHEET

The revision history of this document is summarised below:

Document Revision Number	Date of Revision	Author	Section/Subject	Page
001	06 August 2018	RW	Minor corrections to appendices and detail of testing frequency	14
002	26 Sept. 2018	RW	Amended following CGL comments (CG/28308/Cognition verification)	5-14 and Appendices

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I. INTRODUCTION

Cognition Land & Water Limited (COGNITION) was contracted by FM Conway (the Client) to undertake remediation in conjunction with a proportion of the earthworks at the Western Access site on Pump Lane in Southall (the site) within designated works areas and not within the site as a whole.

Generally, remedial activity consisted of reprocessing from across the site, bioremediation of hydrocarbon impacted material (principally from Area 3, "Minet Tip") and redeposition to form the proposed levels including cement stabilisation of bioremediated material.

The works undertaken, in general, consisted of material cut and fill to facilitate the construction of a new vehicular bridge in the wider improvement of the existing road network. COGNITION's remit within this wider scope included:

- Classification of the material on site in view of the environmental (remedial) and geotechnical (earthworks) suitability for use on site.
- Options appraisal for the treatment (and subsequent on-site treatment) of unsuitable material to facilitate a sustainable waste to resource materials management plan (MMP, by CGL).
- Disposal of surplus unsuitable material under the appropriate waste duty of care if generated.
- Installation of imported of suitable material in accordance with the Specification for Earthworks (CGL) where insufficient suitable site won material was generated.
- Verification testing of the material chemical, MCHW Classification and relative compaction achieved.

This document serves to collate and summarise the factual data gathered throughout these works which COGNITION undertook between January and June 2018 and as such shall include:

- Works Specification Method Statements/Risk Assessments;
- Chronological description of remediation and earthworks carried out, and any deviation from the original method statement;
- Summary of volumes of materials re-used with and without processing/treatment and summary of volumes/tonnages of materials disposed off-site;
- Drawings (as-built levels, stockpile location, excavation extents, location & depths of tests);
- General site photographs of works being undertaken;
- Records of Environmental Monitoring undertaken; and
- Health and Safety data including any residual risks relevant to subsequent contractors.

2. PROJECT DETAILS

2.1 SITE LOCATION

The site is located on Pump lane, Hayes, UB3 3NF, and is constrained by the A312 to the west and Grand Union Canal to the east. The site is directly south of Minet Park.

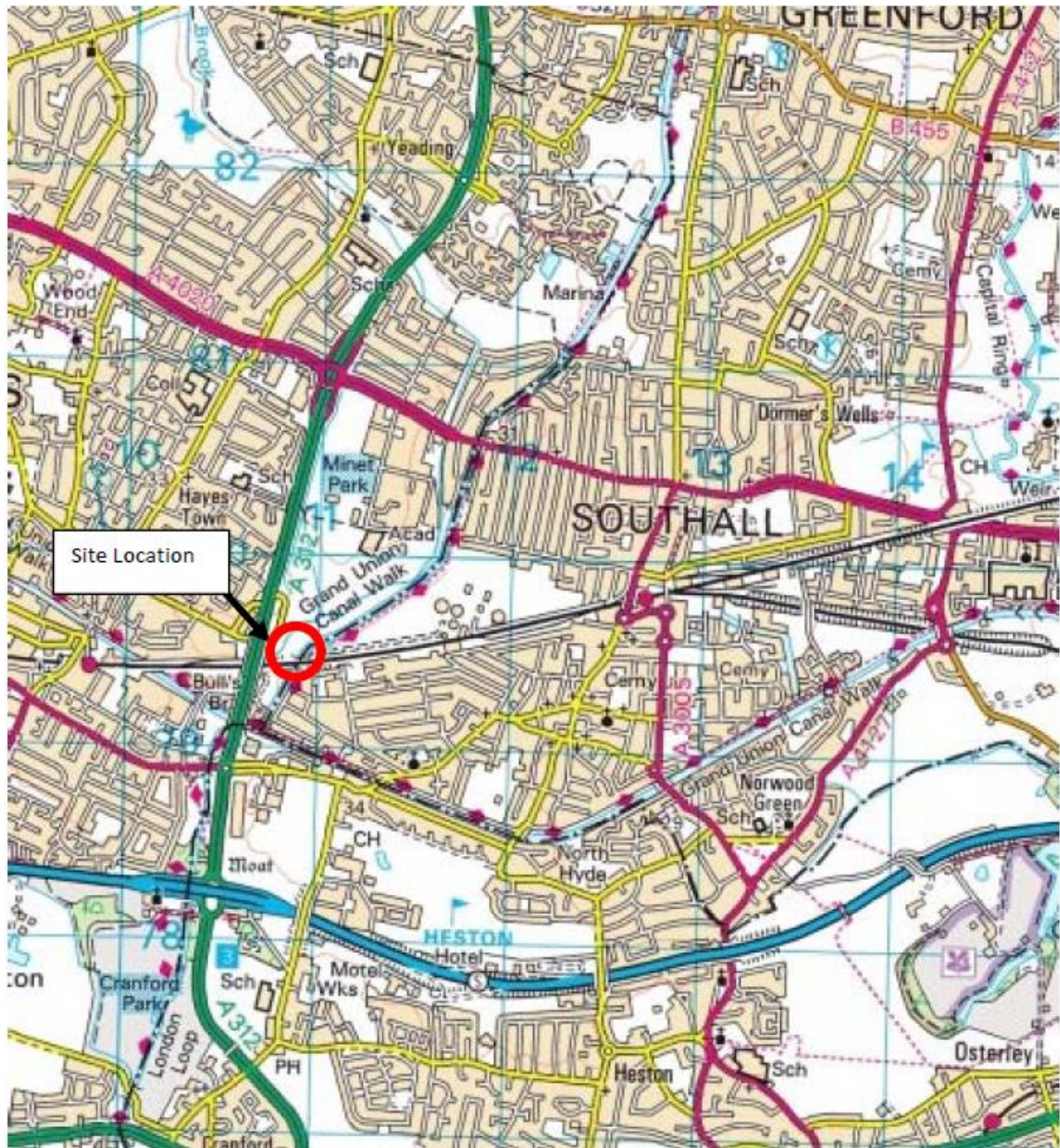


Figure 1: Site Location

3. WORK SPECIFICATION

Please refer to Appendix 2 for detailed copies of the Risk Assessments/Method Statements associated with the complete elements of these works.

3.1 SCOPE OF WORKS

The following elements were undertaken within COGNITION's scope of works:

- Site set up;
- Identification, investigation, mark up of existing stockpiled material within the Lagoon area (see Appendix 2 – Southall Lagoon Drawing 1);
- Install asbestos/dust control measures and carry out background air monitoring;
- Baseline environmental monitoring;
- Construction of treatment areas within lagoon area;
- Hand picking and disposal of surface deposits of ACM;
- Mechanical screening of contaminated stockpiles to remove extraneous waste (timber, plastics, metal, etc);
- Bioremediation of hydrocarbon impacted stockpiled soils;
- Reassurance asbestos air monitoring;
- Stabilisation and compaction trials to assess product application;
- Stabilisation of bioremediated soils for engineered fill;
- Placing soils originally impacted with elevated heavy metals beneath the capping layer but above water table;
- Chemical and geotechnical testing of stockpiled and processed materials prior to re-use;
- Material placement to Series 600 SHW; CGL Appendix 1/5 to series 600 geotechnical specification;
- Geotechnical/geoenvironmental validation sampling and analysis;
- Disposal of deleterious/extraneous materials.

3.2 AREA/ZONE REFERENCE

Please see the drawing appended to this document (Appendix 2) for reference to the zone terms used below.

3.2.1 EARTH BUND (AREA 1 – ZONE 1)

- Removal of made ground where present;
- Processing of made ground to remove extraneous materials;
- Mass earthworks cut to form new slope.

3.2.2 WESTERN ACCESS SITE (AREA 2 – ZONES 2,4,5 & 7)

- Placement of engineered fill from all areas of site under Highways Series 600 and CGL Specifications;
- Cement stabilisation of site won materials;
- Stabilisation of contaminated soils;
- Placement of contaminated soils within central embankment area above water table yet below capping/drainage layer.

3.2.3 LAGOON STOCKPILES (AREA 3 – MINET TIP)

- Screening of existing stockpiles (typically made ground) to remove extraneous materials;
- Processing of stockpiled material for ACM removal;
- Monitoring for ACM fibre release;
- Ex situ bioremediation of hydrocarbon impacted soils to achieve a 'betterment';
- Validation testing of treated/processed stockpiles against site reuse criteria;
- Ex situ lime stabilisation (where required) of bioremediated soils to reduce moisture content;
- Disposal of extraneous wastes (timber, plastics, asbestos etc).

3.3 PERMITTING

The earthworks, treatment, and remedial works on site were carried out under a Mobile Plant Permit (MPP) deployed under SP3399EC/W0025. All materials were managed in accordance with the Materials Management Plan (MMP) compiled by CGL. The deployment was focussed around the remedial activity carried out in the material treatment area (Zone 3) detailed on the Environmental Monitoring Plan and as such was not required for the wider earthworks remit.

4. CHRONOLOGICAL DESCRIPTION OF WORKS

4.1 REMEDIATION AND EARTHWORKS

4.1.1 FLOOD COMPENSATION AREA (FCA) – ZONE 1

COGNITION mobilised to site on Tuesday 2nd January 2018. COGNITION began by stripping off and excavating the topsoil (~2,694m³), made ground (~4,500m³), and natural ground (~10,000m³) in the Flood Compensation Area (FCA) – referred to as Zone 1 - with a GPS-fitted dozer, and excavators. This stripped material was segregated and stockpiled after visual inspection by the site supervisor/chemist. A batter was cut in to the side of the bank to form the new Zone 1 design – as provided to COGNITION by Conway. The material in Zone 1 was geotechnically and chemically tested to ensure it was suitable for re-use. The material was then re-used in various areas across site, as summarised in the tables below.

4.1.2 RIVER DIVERSION BY BAILEY BRIDGE – ZONE 3A

COGNITION continued and completed the initial river diversion works – known as Zone 3A. Much of the river diversion had already been carried out by Conway. COGNITION broke out the concrete channel units (~300m²) with a 360-excavator fitted with a breaker attachment. This concrete was stockpiled in the FCA. Topsoil in the area was stripped off (~150m³), also stockpiled in the FCA. Approximately 1,200m³ of the orange ballast material (Class 2C) that was stockpiled in the FCA was used to step, bench and fill the existing River Crane area, as per the design, provided by Conway.

4.1.3 YEADING BROOK STRUCTURE – WEST SIDE – ZONE 7

COGNITION excavated the material placed (~1,950m³) in the west side of the Yeading Brook structure – referred to as Zone 7. COGNITION placed proof rolled the formation layer to identify any soft spots. None were found. Hand shear vane testing was completed to show that the formation layer reached over 50kpa. COGNITION then filled imported 6N material (6N TW and 6N IBAA, ~580m³) and stockpiled natural material from the FCA (~4,500m³), which was filled in 250mm layers and then stepped into one another. Each layer was tested to ensure required compaction of =>95% of maximum dry density by NDM.

4.1.4 YEADING BROOK STRUCTURE – EAST SIDE – ZONE 4

COGNITION filled in the east side of the Yeading Brook structure with imported 6N (6N IBAA) material (~400m³) and natural material from the FCA (~1,500m³). The material was stepped and benched as

received at Zone 4 roadway. The material was tested (NDM) to ensure required compaction of $\Rightarrow 95\%$ of maximum dry density.

4.1.5 LAGOON TREATMENT, STABILISATION, AND STABILISATION – LAGOON AND ZONE 4

The material stockpiled in the lagoon area, which was previously identified as being suitable for fill, was placed in zone 4 after treatment. The material required remedial and geotechnical treatment which comprised screening, riddling, and bioremediation. Stockpile 4 and stockpiles 5 & 6 were treated ex-situ on-site using bioremediation methods comprising the application (spraying) and mixing of bacteria into the soils, $\sim 3,900\text{m}^3$, to reduce levels of Petroleum Hydrocarbons, Metals and Ammoniacal Nitrogen. Stockpile 8 ($\sim 250\text{m}^3$) was handpicked to remove Asbestos Containing Materials (ACM). Once screened and treated stockpiles 4, 8, 5 & 6 were combined as they were all similar materials; brown sandy gravel clay. Stockpile 4 and stockpile 16 were then screened and riddled to remove non-compliant material including, oversize, plastic and metals, which left $\sim 5,900\text{m}^3$ of material in the lagoon which was suitable for stabilisation with OPC. The segregated non-compliant materials were stockpiled in the lagoon and the metal subsequently disposed of leaving suitable hardcore for future use.

All treated soils were stabilised and placed beneath the capping layer, but above the water table in Zone 4.

COGNITION used a tractor mounted dust-free soil grinder, to stabilise the stockpiled materials in the lagoon area with 2% OPC, by weight, to enhance the geotechnical parameters and to help bind the material to minimise the leachate potential. The stabilisation unit was a combined spreader and grinder, so that the level of OPC can be applied uniformly. Once stabilised, the material was compacted in accordance with the Specification for *Highways Works: Series 600 Earthworks*. Compaction was carried out using a vibratory smooth/sheep foot wheeled roller.

The stockpiled, made ground material in the FCA was identified as being suitable for stabilised fill material in the Zone 4 road way. COGNITION riddled $\sim 2,000\text{m}^3$ of the made ground material and used it as stabilised fill for the road way.

COGNITION filled 6N (6N IBAA) material to the west of the Grand Union Canal in Zone 4 ($\sim 600\text{m}^3$). The material was tested to ensure required compaction of $\Rightarrow 95\%$ of maximum dry density.

4.1.6 GRAND UNION CANAL – EAST SIDE – ZONE 5

COGNITION then filled the road way to the east of the Grand Union Canal – known as Zone 5. The design was supplied to COGNITION by Conway. The fill material comprised 6N IBAA, $\sim 9,000\text{m}^3$, and a sandy gravel / hoggin material, known as SPIII, which was provided to COGNITION from Conway.

The design included a layer of geotextile placed in the road way. Material known as SPI I, which comprised a gravelly clay material, provided by Conway, was placed in the centre of the road make up.

4.1.7 EXCAVATION AND FILLING OF PUMP LANE AREA – ZONE 3

COGNITION filled the road way between Pump Lane and Zone 7 – known as Zone 3. The existing type I in the area was stripped to formation with a dozer and 360-excavator. The formation layer was then proof rolled to identify any soft spots. None were identified. Hand shear vane tests at formation level indicated a sheer strength in excess of 50kPa.

4.1.8 EXCAVATION AND CUTTING OF RIVER AREA – ZONE 6

COGNITION completed the stripping of type I material in Zone 6, using a dozer and a 360-excavator. This facilitated the completion of the river diversion works in this zone.

5. MATERIAL TREATMENT, REUSE AND DISPOSAL

The table below summarises the material source and end use destination on site. A more detailed log of material activity and testing is available in Appendix 3.

Table 1: Material Classification and Compaction Methodology

Source	End Location	Material Type	Methodology	Passes	Layer Thickness (mm)
6N TW	Zone 7	6N TW	End Product	8	250mm
6N IBAA	Zone 7, 4, 5	6N IBAA	End Product	8	250mm
FCA-2C	Zone 7	2C	Method 2	4	250mm
FCA-1A	Zone 3	1A	Method 2	4	250mm
FCA-MG	Zone 4, 3	9B (7F, 2C)	Method 7	12	250mm
Lagoon SP4	Zone 4	9B (7F, 2C)	Method 7	12	250mm
Lagoon SPI6	Zone 4	9B (7F, 2C)	Method 7	12	250mm
SP111	Zone 5	1A	Method 2	4	250mm
SP11	Zone 5	1A	Method 2	4	250mm
SP7	Zone 3	9B (7F, 2C)	Method 7	12	250mm
Type I	Zone 3	Type I	Method 6	12	250mm

The table below details the volume of material treated and reused as per the reuse location. This is described in more detail in Appendix 3.

Table 2: Material Treatment and Reuse Volumes

Source	End Location	Material Type	Treatment/Modification	Volume (m3)
6N TW	Zone 7	6N TW	None	~450
6N IBAA	Zone 7, 4, 5	6N IBAA	None	~6,500
FCA-2C	Zone 7, 4	2C	None	~6,000
FCA-1A	Zone 3	1A	None	~1,200
FCA-MG	Zone 4, 3	9B (7F, 2C)	Screened/riddled, then stabilised with OPC	~2,000
Lagoon SP4	Zone 4	9B (7F, 2C)	Screened/riddled, then treated with bioremediation and stabilised with OPC	~3,900
Lagoon SP8	Zone 4	9B (7F, 2C)	Hand-picked for ACMs, then mixed with SP4 as similar material	~250

Source	End Location	Material Type	Treatment/Modification	Volume (m3)
Lagoon SPI6	Zone 4	9B (7F, 2C)	Screened/riddled, then stabilised with OPC	~2,000
SP111	Zone 5	1A	None	~5,000
SP11	Zone 5	1A	None	~900
SP7	Zone 3	9B (7F, 2C)	Screened/riddled, then stabilised with OPC	~900
Type I (6F5)	Zone 4, 3, 7	Class 1A (6F5)	None	~4,000

5.1 DELETERIOUS, UNACCEPTABLE AND SURPLUS WASTE DISPOSAL

Where non-conforming, surplus, or deleterious material was encountered (or segregated from otherwise conforming material) these were removed as waste. All waste disposal was conducted under the appropriate duty of care including:

- Accurate classification and designation of the correct EWC code;
- Appropriate waste storage and packaging for transport;
- Use of a licensed waste carrier;
- Consigned to a waste facility with the appropriate permit to accept the waste;
- Transported under the appropriate waste transfer/waste consignment note.

6. SAMPLING, ANALYSIS AND MONITORING

6.1 CONTAMINATION SCREENING AND CHEMICAL ANALYTICAL RESULTS

Soil sampling has been conducted by appropriately trained and competent Geo-Environmental Engineers throughout the project. These have been for the purposes of screening import material, validating remedial targets and classifying material suitability under the Specification for Earthworks. The chemical analytical data provided is summarised in Appendix 3 whilst the analytical reports are attached in Appendix 4.

In total, 30,282m³ of material was placed. 68 chemical analytical samples were taken (see App 3) illustrating a testing frequency of 1 sample per 445m³.

Source Location	Materials	Volume of Excavated Materials (m3)	Volume of Materials Disposed (m3)	Volume of Materials Re-used (m3)	Stockpile Location	Re-Use Location	Disposal Location
FCA	Made Ground	4000	cca 60m3 2x40yd skips	2000 (the other 2000m3 staying on site - FCA)	FCA	Zones 3 and 4	General waste, Metal, Tires (please see disposal tickets)
	River Terrace Gravels	7000	0	7000	FCA	Zones 4 and 7	n/a
Lagoon	Made Ground	14000	cca 30m3 2x40yd skips	13850	Lagoon	Zone 4	General waste, Metal, Tires (please see disposal tickets)
Soil Hospital	River Terrace Gravels	3500	0	3500	SP11, SP111	Zone 5	n/a
Stockpile adjacent to Zone 3/7	Made Ground	2000	0	2000	SP7 and site won 2C	Zone 3	n/a

Table 3: Material testing

6.2 GEOTECHNICAL CLASSIFICATION

Material testing was conducted as per the requirements of the Specification for Earthworks. The results of these are summarised in Appendix 3, and the associated reports attached in Appendix 4.

In total, 30,282m³ of material was placed. 60 grading (1/505m³) and 63 OMC/MDD (1/481m³) laboratory tests were undertaken. A further 15 Atterberg Limit and Sulphate (W/S, Ox, and TPS) were undertaken.

6.3 IN-SITU TESTING

In-situ compaction testing was undertaken as per the Specification for Earthworks. The results of these are summarised in Appendix 3, and the associated reports attached in Appendix 5. Where material class required end specification testing these have been shown, by means of NDM and Plate Test (CBR Calibration), to achieve the desired 95% of MDD and desired sub-grade bearing ratio in all cases.

A total of 70 in-situ density tests were undertaken (1/432m³) all of which achieved >95% compaction. A further 34 plate load tests were conducted at final level and reflected the CBR requirements and testing frequency.

7. ENVIRONMENTAL MONITORING

As per the agreed deployment notice and remediation strategy, COGNITION undertook environmental throughout the progression of the project. The details of the monitoring locations and results are attached in Appendix 7.

7.1 NOISE

Noise monitoring was undertaken at each location 3 times per day. The ambient background noise was recorded at an average of 67.2dB prior to the start of works. No exceedances of the 10dB above background were encountered throughout the works.

7.2 DUST

Visual dust inspections were recorded at each monitoring location 3 times per day. High visual dust was noticed on one occasion on a Friday afternoon (04/02/2018) due to high wind. The works had already ceased and so the material was thoroughly dampened down before leaving site. Depositional dust was measured at each location every two weeks. On two occasions the settled dust marginally exceeded the 200mg/m²/day limit. One corresponds to the high dust event described above and was immediately mitigated. Low visual dust was recorded on 02/03/2018 and was immediately dampened down. This corresponds to a very slight exceedance in the depositional dust.

7.3 FIBRES

Fibre monitoring was conducted near the work zone to reflect worst case conditions. None recorded fibres above the 0.01 fibres/cm³ threshold.

7.4 ODOUR

Only very slight hydrocarbon odours were encountered on one occasion. The stockpiles were immediately dampened down and the odour ceased.

8. RESIDUAL RISKS RELEVANT TO SUBSEQUENT CONTRACTORS

COGNITION has undertaken remedial and earthworks activity as per the agreed scope with the client and as such have undertaken soil remediation and material redeposition as dictated. Subsequent contractors should make themselves aware of the material reuse criteria and evaluate the risks associated with excavating or operating within or in proximity of the material utilised.

9. SUMMARY AND CONCLUSION

COGNITION have been contracted to enable site won material reuse in the delivery of the Western Access Project at Southall for FM Conways. The works broadly included the classification, treatment and redeposition of site won material under the Materials Management Plan derived by CGL.

Where deleterious material was encountered this was segregated and disposed of. Where hydrocarbon impacted material was encountered this was biotreated to within the agreed acceptable level and subsequently cement stabilised in situ within the proposed level make up.

Where insufficient material or material required of a class not available from a site won source, this was imported and placed.

All works were undertaken as per the Specification for Earthworks and the agreed Remediation Strategy.

APPENDICES

- Appendix 1: Works Specification Risk Assessments/Method Statements
- Appendix 2: Zone Reference Drawings
- Appendix 3: Material Tracking Log Sheet
- Appendix 4: Laboratory Analytical Data
- Appendix 5: Site Test Data
- Appendix 6: Site Photographs
- Appendix 7: Environmental Monitoring

APPENDIX 1

Works Specification Risk Assessments/Method Statements



COGNITION
LAND+WATER

EARTHWORKS METHOD STATEMENT

PROJECT:

SOUTHALL WESTERN ACCESS

HILLINGDON

UB3 3NF

FOR

FM CONWAY LTD.

Issue No	02
Project No.	CLW002487
Date of Issue:	November 2017
Author:	Hennie van der Spuy
Checked by:	Richard Hosking

1.	Client:	FM Conway Ltd
2.	Regulators:	

Disclaimer

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AMENDMENT RECORD SHEET

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1. INTRODUCTION

COGNITION Land & Water Limited (COGNITION) has been contracted by **FM Conway** to carry out remediation and cut & fill works to the Western Access site on Pump Lane UB3.

This document sets out the general methodology for the proposed earthworks and summarises how the works are to be implemented. This document is to be read in conjunction with the FMC main RAMS058.

2. SITE DETAILS

2.1 SITE LOCATION

The site is located on Pump lane, Hayes, UB3 3NF

Aerial view of the Site (image from Google Map; accessed November 2017)



3. SCOPE OF WORKS

- Bioremediation of hydrocarbon impacted stockpiled soils;
- Screening of above incl. removal of ACM's;
- Stockpiling;
- Chemical and geotechnical testing of stockpiled and processed materials prior to re-use;
- Asbestos control measures and air monitoring;
- Dust air monitoring;
- Placing soils originally impacted with elevated heavy metals and Ammoniacal Nitrogen beneath the capping layer but above the water table;
- Cut and fill of site;
- Backfilling to Series 600 SHW; CGL Appendix 1/5 to series 600 geotechnical specification;
- Stabilisation of treated material;
- Geotechnical testing;
- Validation testing of treated soils;
- Disposal of deleterious materials to the correct waste streams i.e. wood/timber, plastic, glass, and metal.

The strategy is intended to be sustainable, whereby material is retained on site wherever possible, considering proposed final construction levels.

4. ARRANGEMENTS

4.1 RESPONSIBILITIES

FM Conway Ltd. (the client) will be the Principal Contractor during the works.

FM Conway Ltd. will develop a detailed Health and Safety Plan pursuant to the CDM Regulations 2015.

The following people will be included in the project team:

Responsibility	Person
Project Director	Richard Hosking 01932246600
Contracts Manager	Hendrik van der Spuy 07940703192
Site Manager	Terry Johnston 07730377943 TBC

Health and Safety	David Page 07961454512
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4.2 SUPERVISION

The **COGNITION** Site Manager will be in control of site activities and will have as a minimum: Site Management Safety Training Scheme (SMSTS) accreditation, first aid at work and fire marshal training. There will be also be one supervisor with a Site Supervisory Safety Training Scheme (SSSTS) accreditation for every eight operatives.

4.3 WORKER REQUIREMENTS

COGNITION will ensure that all operatives have suitable and sufficient training to carry out duties on site.

All personnel are to be in possession of a valid CSCS card with plant operators to have the appropriate CPCS qualification. Any operatives involved in asbestos related work, are to have a valid non-licenced qualification. Traffic marshals are also to be trained and in possession of the relevant qualification.

4.4 PROGRAMME

COGNITION understands that the site works will commence on the 4th December 2017, with a programme duration of 12 weeks.

4.5 OTHER REQUIREMENTS

The client will be responsible for disconnecting or diverting all services that may still currently run across the site/within the works area.

5. SITE SET UP

The site will be set up by **FM Conway Ltd.** who will be acting as Principal Contractor for the duration of the works.

5.1 SITE COMPOUND

The site compound accommodation comprising a canteen, toilets and drying room etc. will be provided by the client (**FMC**). **COGNITION** will supply and install a storage container for tools.

A water connection will be provided by **FMC**.

A spill response kit will include absorbent pads, booms and granules. Located within the main working area will be a storage container for materials and a dedicated bunded diesel bowser with associated fire extinguishers and an emergency spill response kit.

A first aid kit will be located within the FMC Welfare facility, with adequate signage in place.

Smoking will only be allowed within designated areas of the site.

5.2 WORKING HOURS

The following working hours in which COGNITION will adhere to during the works:

- Monday-Friday – Site briefing 7:30am.
Work Commence 0800-1800
- Saturdays 08:00-16:00 West of GUC
08:00 - 13:00 East of GUC with prior approval from Berkeley

5.3 PLANT, EQUIPMENT AND PERSONNEL

The following plant and equipment will be employed to site under this method statement;

- CAT and Genny;
- Fencing and signage;
- 360° Excavators;
- Dozer;
- Dumpers/Bulk earth moving equipment;
- Screener;
- Fuel bowser;
- Fire extinguishers;
- Wetting/dampening equipment;
- 13 t Roller;
- Stabilisation tractor and associated attachments;
- Jet wash and bowser (for mixing and applying bacteria);
- Low permeability liner (such as 2,000-gauge polythene or similar) and bunding for stockpiles;
- Monitoring equipment (dust, wind, Db meter, PID).

5.4 PERSONAL PROTECTIVE EQUIPMENT

The following Personal Protective Equipment (PPE) is required during the works, and is required to be worn by all, including visitors, at all times. PPE should always be checked regularly to ensure that there is no damage, it is not too worn and is still in date (hard hats).

- Hard hat (BS EN 397); (At all times)
- High visibility vest or jacket (BS EN 471); (At all times)
- Steel toe cap boots (BS EN 345); (At all times)
- Gloves (BS EN 388); (At all times)
- Glasses to be worn to suit the task (EN166F); (At all times)
- Face mask to be worn to suit the task (EN149:2001/FFP3) (Asbestos works); and
- Disposable overalls as required (Type 5, BS EN ISO 13982-1). (Asbestos works)

5.5 SITE HAZARDS

Potential hazards which may be associated with the works are as below. These hazards will be described in further detail within the site risk assessment.

- Vehicle movements (vehicles are to be escorted onto site and a banksman is to assist with reversing operations);
- Plant and pedestrians;
- Slip and trip hazards;
- Exposure to materials including contaminated soils, liquids, vapours and dust;
- Existing/unidentified utilities which have not been disconnected or diverted;
- Excavations;
- Fires and flammable materials;
- Deep water;
- Risk of spreading invasive species;
- Asbestos Containing Materials;
- Working in direct proximity to water streams.

All areas must be scanned with a cable avoidance tool (CAT) prior to excavation works. Keep areas clean and tidy. Always cover or block off any fall or trip hazards with fencing and cover any open holes/entrances.

6. TRAFFIC MANAGEMENT

6.1 MANAGEMENT PLAN

All traffic and pedestrian movements will be segregated for the purposes of health and safety of both employees, site visitors and the general public. A designated pedestrian pathway will be in place with the appropriate signage to segregate foot traffic from vehicle movements as set out in the FMC main RAMS.

6.2 DELIVERIES

All delivery vehicles must be FORS silver or higher.

All deliveries will be planned outside of peak transit times to and from the site where possible. All on-site construction plant will be fitted with flashing beacons and auditable reversing signals. A trained banksman will be on site to aid delivery vehicle movements onto site and will be in attendance during all reversing operations. All site traffic will be limited to 5 mph speed limit.

The main entrance gates, to both the site compound and the working area will be via the existing access point from Pump Lane. All site deliveries must be appropriately staggered and co-ordinated to avoid any unnecessary queuing of site vehicles.

7. ENVIRONMENTAL MANAGEMENT PLAN

Environmental controls will be designed in accordance with relevant industry guidance contained within the *CIRIA762* document entitled “*Environmental Good Practice on Site*” (4th edition) and the “Construction Environmental Management Plan (CEMP)” which will be provided by the client. Emphasis on environmental protection will be placed on prevention and control at source rather than mitigation following release.

All environmental incidents must be reported to Ramboll Environ and St James West London in its capacity as the Project Manager for the construction phase.

7.1 CONTROL OF NOISE AND VIBRATION

All the machinery and equipment employed will have the appropriate silencers fitted and will be maintained and operated in accordance with the manufacturers’ specification. COGNITION will comply with the recommendations set out in *BS 5228: 1997, Code of Practice for Noise and Vibration Control on Construction and Open Sites*.

7.2 FUEL STORAGE AND ACCIDENTAL SPILLAGES

COGNITION fuel bowzers will have an integral bund. All associated ancillary equipment shall be stored within a bunded area.

The fuel bowser shall be securely locked when not in use. A competent person shall inspect the bowser and bunding regularly to detect potential leaks or damage that may lead to a spill. Drip trays or plant “nappies” will be placed under all static equipment storing fuel (compressors/generators).

Spill kits comprising hydrophobic and oil absorbent booms, pads and granules will be kept permanently on site in close proximity to areas of fuel storage. Bowzers must be a minimum of 10 m away from any water course.

Drainage will be protected where necessary and biodegradable lubricants used wherever reasonable.

7.3 ASBESTOS CONTROL MEASURES

7.3.1 AIR MONITORING

COGNITION will arrange for an independent analytical specialist to carry out intermittent and targeted background monitoring for the presence of airborne asbestos fibres during times of earthworks/when it is dry and dust is being produced. The independent analyst will assess the filters on site, to identify any fibres picked up by the pumps, and then they will calculate an airborne concentration. If airborne fibres are detected above or at the control limit of 0.1 f/cm^3 then all works will cease until improvements are assessed and made. Air monitoring will be undertaken in accordance with SoBRA guidance L143. Monitoring will be undertaken around working areas and around the perimeter of the site. If the action level is exceeded, work must stop immediately, with an investigation undertaken to identify the source of the asbestos fibres (as the monitoring will also pick up other fibres including vegetation fibres). Work will not commence until the problem has been identified and mitigation measures put in place. Prior to recommencement of works, an additional set of monitoring data will be collected to demonstrate that the mitigation measures have been effective.

The records of the air monitoring will be provided in the works completion report.

7.3.2 ASBESTOS WITHIN SOILS

During the works, the risks of potential ACM's will be mitigated by on-site controls such as dust suppression, dust and airborne fibre monitoring and PPE/RPE as described in section 5.4.

The area around the stockpiles are to be fenced off with authorised personnel working only. An area within the enclosure will be designated as a screening and picking station with screener hopper which will be operated by competent and trained personnel. Exclusion zones will be designated accordingly.

ACM contaminated soil will be loaded into the screener hopper where it will pass through a 150 mm and a 75 mm mesh. Materials such as roots, oversized concrete and other deleterious waste items will also be removed from the oversize stockpile to ensure the processed soil is uniform in size and geotechnically suitable for backfill and stabilisation. Fine (<75 mm), mid-range (75 mm-150 mm) and oversize material (>150 mm) streams will be inspected for asbestos fragments as the screening proceeds. Each size stream, if it contains visible ACM, will be passed through a picking station. Non-licensed trained operatives will hand pick visible ACM fragments from the soil as it passes along the conveyor belt of the picking station and place it in bags or deposit it down a chute beneath the picking station, emptying into an ACM skip. Larger concentrations of asbestos will be passed through the picking process a second time to ensure the material is free from asbestos.

All operatives will be provided with additional PPE (Overalls, masks (face fitted), gloves and glasses. A HSE compliant decontamination unit will also be provided if applicable.

A QC check will be carried out on the final processed material. All picked asbestos will be double bagged and placed in a clearly labelled covered skip, prior to off-site disposal by a competent and licensed contractor.

7.4 STORAGE OF SOIL

- Work areas are to be lined with barriers or sectioned off to prevent climbing on the stockpile.
- Pedestrian access onto a stockpile will not be made without suitable access e.g. proprietary steps, or without suitable edge protection.
- Plant operators are to relocate ride-on plant and machinery to the base of the stockpile before disembarking.
- All stockpile sides are to be battered 45 degrees or shallower.
- Stockpiles should be constructed in 1 m layers, with suitable compaction taking place at each layer.
- No stockpile will be left without a finishing compaction layer.
- Stockpiles should not exceed 4 m in height.

- Inspections of stockpile excavations should be carried out prior to each shift, after any event likely to affect strength or stability, and after any accidental fall of material.
- If ground contamination is present in either the underlying or stockpile material, a suitable barrier or protection layer is to be used to prevent mixing of materials. Any contamination material found must not be stored outside of the drainage blankets within the lagoons.
- Plant is to be hosed down prior to leaving the work area and prior to leaving site.

8. PLANT

All on-site construction plant will be fitted with flashing beacons and audible reversing signals. COGNITION staff will be in attendance during all reversing operations. All site traffic will be limited to 5 mph speed limit. Ride on/in equipment will also be fitted with a green beacon seat belt system.

All machine buckets should be situated and kept in one suitable designated area. Plant nappies should be placed under any plant stationary for >30 min.

8.1 MAINTENANCE CHECKS

Only trained and competent personnel will operate plant, with copies of each person's card/cert to be checked, scanned or photographed on site as a record. A copy of any plant manuals must be kept on site. Regular maintenance checks should be carried out on all plant used on the site and operators should notify the site manager of any oil/fuel spillages immediately.

Operator maintenance includes the hourly, daily, and weekly maintenance requirements recommended in the manufacturers literature. All operator maintenance should be logged, and kept up to date in the operations logbook when it is completed.

9. RECORD OF WORKS

9.1 SITE DIARY

The COGNITION site manager will maintain a daily site diary during the works, including but not exclusive to inductions, weather conditions, details of works carried out, any constraints encountered, soil audit, monitoring, any health and safety related incidents, any environmental incidents and details and locations of any contaminated material, perched water, structures or redundant services identified etc. COGNITION will produce a daily exposure record for asbestos air monitoring as detailed in Section 7.

In addition to the site diary, a comprehensive photographic record of the works will be made, which summarises the completed work and details all necessary supporting information relating to the excavation, movement, stockpiling, testing and destination of materials on-site.

9.2 SOIL AUDIT

Each stockpile will be assigned a unique identification sign placed in the stockpile, with this recorded on a soil audit system. The soil audit will record the origin, volume, material description, results of any chemical analysis, and the ultimate destination of the soil, be it on-site or off-site, including the date and time of movement.

9.3 VERIFICATION/ FACTUAL COMPLETION REPORT

All completed remediation works will be documented within a Factual Completion and Verification Report. The verification/works completion report will include:

- Works Specification Method Statements/Risk Assessments;
- Chronological description of remediation and earthworks carried out, and any deviation from the original method statement;
- Summary of volumes of materials re-used with and without processing/treatment and summary of volumes/tonnages of materials disposed off-site;
- Drawings (as-built levels, stockpile location, excavation extents, location & depths of tests);
- General site photographs of works being undertaken;
- Records of Environmental Monitoring, results of any additional testing including final, verification testing undertaken; and
- Health and Safety data including any residual risks relevant to subsequent contractors.

10. QUALITY ASSURANCE AND CONTROL

10.1 SAMPLING AND ANALYSIS PROTOCOL

Soil samples will be required to validate excavations and soil treatment and to investigate potential contamination uncovered during the works.

All sample collection, handling, storage and transport will be carried out in accordance with *BS EN ISO 22475-1:2006 'Geotechnical Investigation and testing – sampling methods – Part 1: Technical Principles for execution1*.

All geotechnical analysis will be carried out at an independent MCERTS and UKAS accredited laboratory.

10.2 COMPLIANCE MONITORING

Compliance monitoring will be undertaken to assess if the work being carried out is in accordance with the methodology. Daily site briefings will occur to communicate the tasks to be undertaken that day and to ensure all operatives are aware and up to date with the current working procedures. Should work be carried out that does not follow the methodology, works shall cease until the methodology is changed to reflect the work required and/or all operatives are re-briefed. Compliance monitoring will be recorded and undertaken weekly (minimum) by a COGNITION supervisor.

11. MAIN WORKS

11.1 STOCKPILE TREATMENT/PROCESSING

CLW works includes the treating and processing of 3 stockpiles currently on site. These are outlined on drawing FMC-SS-WE-035-A (excerpt below). Stockpiles are to be treated and screened as necessary to achieve the re use parameters identified within Annex 1 of CGL Earthworks Specification.

Screening operations are to take place in a fenced off area with only authorised personnel allowed within the area. Operator needs to be competent and receive familiarisation training from supplier prior to operating.

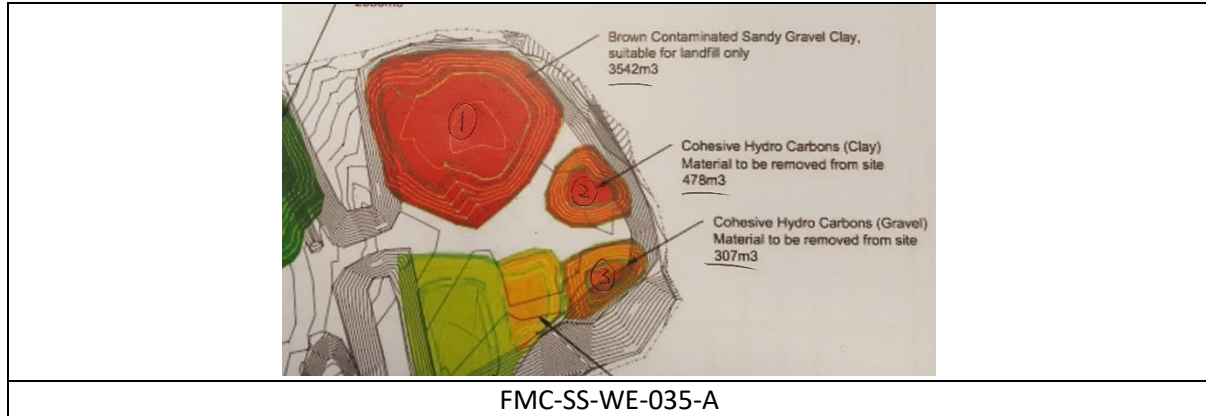
Extraneous material will be disposed of off-site (e.g. plastic, wood, concrete etc.).

11.1.1 REMEDIATION WORKS

The remediation works are principally required to treat contaminated stockpiles impacted with Petroleum Hydrocarbons, Metals and Ammoniacal Nitrogen. This document adheres the CLW strategy document.

The impacted soils will be treated ex-situ on-site using bioremediation methods comprising the application (spraying) and mixing of bacteria into the soils. After application the treated soil will be covered and left for a period of a few weeks before shifted to its final destination. All tools and machinery used during the application will be clearly labelled and properly cleaned to avoid any cross contamination.

All treated soils are to be placed and stabilised beneath the capping layer, but above the water table in Zone 4. Additional guidance regarding the depth of drainage will be additionally provided by the client.

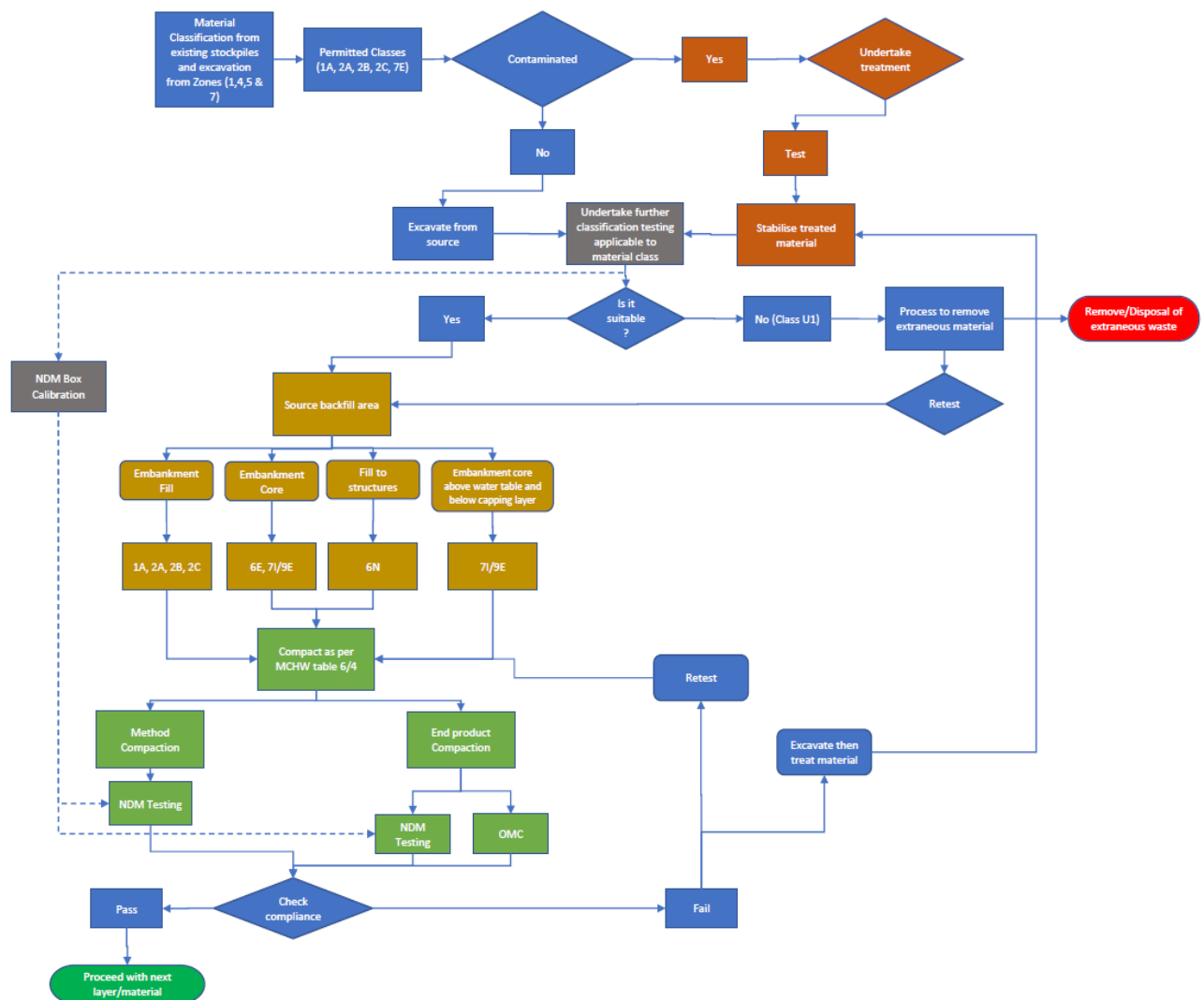


11.2 EARTHWORKS

11.2.1 MATERIAL REUSE CRITERIA

All materials will be managed in accordance with the Materials Management Plan (MMP) undertaken by CGL. This section details how waste materials will be managed and processed for re use on site.

All stockpiled and excavated material arising from the cut exercise will be re used on site dependant on material class and end use. The following flow chart sequences the approach (attached within Appendix A):



11.2.2 MATERIALS CLASSIFICATION AND TESTING

The following classes of material are permitted for fill under **COGNITIONS** scope of works:

Use/End destination	Material Class (as per series 600 of the MCHW)
Embankment Fill	1A, 2A, 2B or 2C
Embankment core (stabilised arisings)	6E, 7I/9E
Fill to structures (Import by others)	6I, 6N, 6J, 6P

All classification testing in accordance with Appendix 1/5 of the Earthworks Specification by CGL.

Class	General Description	Test	Frequency of Testing	Comments
1	General granular Fill	Grading/Uniformity Coefficient	2 per week per class or sub-class material from each source	
		Mc	2 per 1000 m ³ up to max of 5 per day	

		Los Angeles Coefficient	1 per class or per sub-class of material	
		MCV	2 per 1000 m ³ up to max of 5 per day	
2	General Cohesive Fill	Grading	2 per week per class of sub-class material from each source	Class 2A and 2B only
		Mc	2 per 1000 m ³ up to max of 5 per day	
		OMC/ MDD	5 per class or sub-class of material and as requested by the project manager	
		MCV	2 per 1000 m ³ up to max of 5 per day	
		MCV/ mc relationship	3 per class or sub-class or material	
		Plastic Limit and Liquid Limit		
7E	Selected cohesive material	Grading/uniformity coefficient	1 per 400 tonnes	
		Mc	Weekly	
		MCV	1 per 400 tonnes	
		Plastic limit and liquid limits	3 per class of sub-class of material	
		Organic content	1 per 1000 m ³	
		Water soluble sulfate content	3 per source	
		Oxidisable sulphides content	3 per source	
		Oxidisable sulphides (OS) and total potential sulfate (TPS) content	One per week	
9E	Lime and cement stabilised cohesive material	Pulverisation	1 per 500 m ³ (minimum 3)	
		MCV immediately before compaction	1 per 500 m ³ (minimum 3)	
		Bearing ratio	1 per 500 m ³ (minimum 3)	
		Mc	1 per 500 m ³ (minimum 3)	

11.3 CUT AND FILL WORKS

This exercise will be done in two areas; treatable stockpiles and flood compensating area. A combination of 360 excavators, dump trucks, levelling equipment, and a GPS dozer will be used for carrying out the cut and fill operation. Material from the post processed stockpiles as well as the flood compensation area will be transported to the fill areas using Moxy dump trucks.

The processed/treated material is to be stabilised and placed in accordance with the material management plan. This material is also to be placed above the water table level but below the clean cover level.

The material arising from flood compensating area cut and fill will be initially geotechnically tested and classified accordingly. Material will be used for filling as appropriate and in accordance with FMC road design.

A COGNITION banksman will be in control of any reversing plant associated with our works. A banksman will also check that the installation layers do not exceed their thickness. Once the material has been classified, the correct number of passes will be determined for a 13 t vibratory roller. (Defined within series 600 Highways Works).

Any imported and cut material will be placed in accordance with the MMP, compacted and tested also in accordance to Annex 1 of the earthworks specification.

11.4 STABILISATION

Using a tractor mounted dust free soil grinder, the existing soils will be blended with OPC to enhance the geotechnical parameters. An ex situ trial will be undertaken by COGNITION to provide guidance as to the percentage mix, however the exact percentage mix will be determined with on-site trials under working environments. The stabilisation unit is a combined spreader and grinder, so that the level of product can be applied uniformly. Routine checks will be undertaken on the spread rate by depositing cement on a 1 m² mat and weighing. Once stabilised, the material will be compacted in accordance with the Specification for *Highways Works: Series 600 Earthworks*. Compaction will be carried out using a vibratory smooth wheeled roller.

Fill exercise will be done in layers of 150mm, each being compacted separately and tested where/when applicable. Testing for the imported 6N material will be done one sample per every 200t and for the material arising from the flood compensation area one sample every 400t.

FMC will additionally provide a road design in the adequate format, which will be then put into the GPS levelling software to improve precision of finished layers as well as final levels.

Once stabilised the material will take approximately seven days to reach loading strength, but will continue to cure for approximately 28 days.

COGNITION will schedule testing to be undertaken as set out in section Appendix 1/5 of the earthworks specification to ensure that the compaction process was effective.

11.5 TESTING

COGNITION will schedule testing of all screened and processed material on-site, prior to use on-site or for distribution for re-use off-site, to demonstrate that the material is geotechnically suitable under *Standard for Highways Series 600 Specification* and chemically suitable under CGL reuse criteria.

For the Geotechnical design see A720-E05-IW-BR-EW-TS-0001 and Backfill specification see Annex A CGL Appendix 1/5 to Series 600.

Sampling stockpiled soils for laboratory chemical analysis will comprise a sampling frequency of 1 for every 500 m³.

End-product of method related compaction testing will be in accordance with Appendix 1/5 of the earthworks specification and is summarised below:

Compaction of fills	Test	Frequency
Method Compaction	Field dry density (NDM)	Each class or sub class of material
End product compaction	Optimum mc (2.5 kg rammer / vibrating hammer method)	3 per class or sub class of material
	Field dry density (NDM)	1 per 200 tonnes and as required

11.6 UXO DISCOVERY PROCEDURE

1. Identifying UXO
 - All operatives and personnel on site are to be briefed upon site induction of potential UXO. If new UXO's are discovered images and details are to be shared to personnel in the form of Daily Briefings.
2. Upon Identifying a UXO inform all works to in the vicinity to stop.
 - a. All Plant to have engines switched and all operatives to make their way to the welfare area along the safe route.
3. The site management team are to be informed of the discovery.
 - a. All Supervisors are informed on the situation and are instructed to inform all operatives to make their way to the welfare area until further notice.
 - b. Site Engineer informed to record location of UXO on site and establish 100 m Exclusion Zone surrounding.
 - c. Emergency Services are to be contacted and informed of the situation.
4. Control Measures are enforced, in forms of physical barriers or verbal instruction to supervisors, of exclusion zones and all work areas in exclusion zone to be halted. Other Works Outside of the exclusion zone may continue with due care.
 - a. Public Areas, outside site boundaries, within 100 m exclusion zones are to be identified and measures taken, where possible. To prohibit access until responsible agencies are on site and can take over.
 - b. In the event of Welfare Area being within exclusion zone, all personnel are to be evacuated off-site.
5. Await Emergency Services and provide briefing on Findings.
 - a. Follow Emergency Service protocol
6. Upon removal of UXO, responsible manager signs of exclusion zone and issue permit to enter and continue works.
7. Discovery and actions recorded in all related documentation.
8. Toolbox talks and briefing to operatives on procedures or identification of potential UXO's.

12. EMERGENCY PROCEDURES

In the event of a fire emergency, sound alarm and make your way to the assembly point.

Any other emergency notify FMC site management.

The nearest Hospital and A&E is:

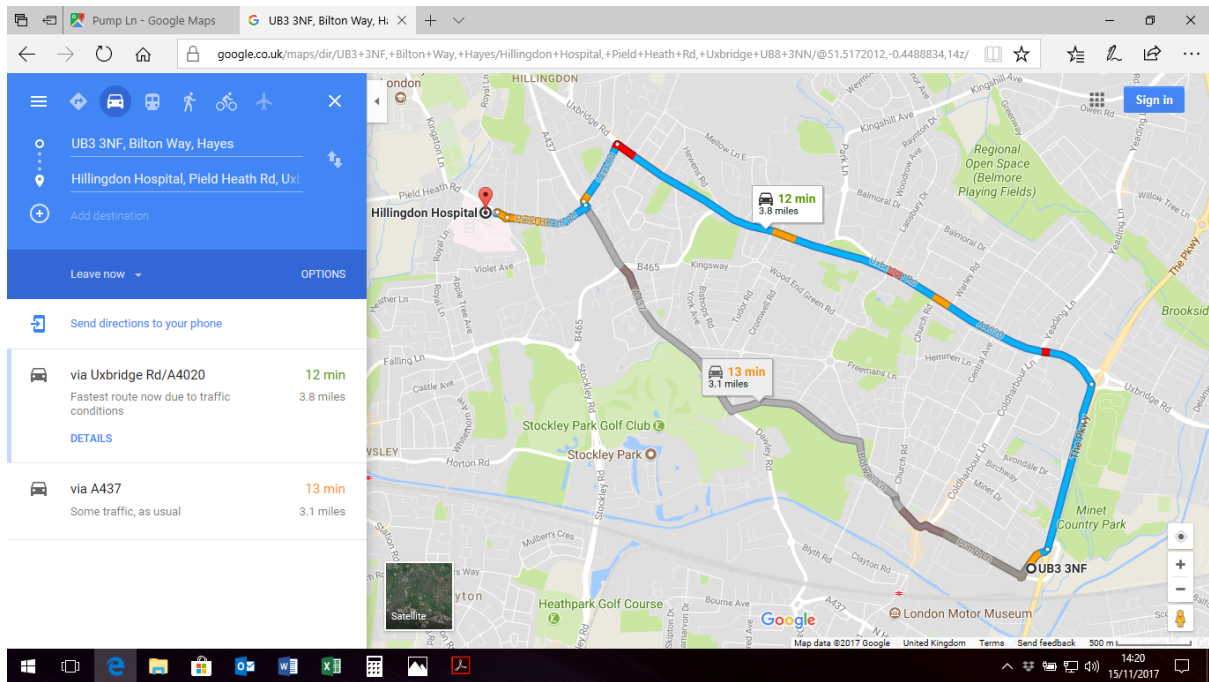
Hillingdon Hospital

Pied Heath Rd.

Uxbridge

UB8 3NN

Tel: 01895 238282



13. RISK ASSESSMENT

SITE ESTABLISHMENT								
1.	Control of personnel on site.	Difficulty in enforcing exclusion zones. Inability to evacuate site in case of emergency.	Med (2)	People in the locality walked onto site. Operatives in the vicinity of work activities.	Med (2)	Med (4)	Gates to site entrance will be kept closed. A pedestrian access gateway should be used as set out and explained in the FMC Site induction. Site visitors and personnel will be signed in and inducted by FMC so that they are aware of risks, encouraged to report hazards/incidents/health and safety issues and be provided with appropriate PPE and RPE as necessary. Toolbox talks shall be held each day and all personnel will be encouraged to contribute. Personnel will be made aware of the location of the First Aid station and identity of the first aiders. Site and hazardous work activities to be enclosed with suitable fencing.	Low (2)
2.	General site activity.	Slips, trips and falls, falling objects, moving vehicles.	Med (2)	Movement of operative across site.	Med (2)	Med (4)	FMC Site induction for all staff working on site. Good housekeeping to be practiced at all times. Ongoing vigilance to be used to identify hazards.	Low (2)
SITE GENERAL								
3.	Traffic/access	Contribution to existing congestion and traffic issues in the surrounding area.	Med (2)	Impact to local businesses	Low (1)	Low (2)	A FMC traffic management plan will be provided detailing how road movements and impacts to local infrastructure will be minimised. Haul routes will be set up and pedestrians and vehicle movements kept separate.	Low (1)
4.	Work adjacent to haul/access roads	Debris striking people or passing vehicles.	Med (2)	Operatives and members of the public in the vicinity.	Med (2)	Med (4)	Working method to be controlled to prevent stray debris during excavation works. Temporary barriers to be erected where necessary. Trained banksman to be used where instructed by the site manager. Dumpers to be loaded after driver has dismounted and is at a	Low (2)

PROJECT SPECIFIC RISK ASSESSMENT					PROJECT NO: 2487			
Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk

							safe distance away All work to be carried out to the approved method statement.	
5.	Vehicle movements	Damage to vehicles and structures. Injury to site personnel. Crushing and physical injury to all parts of body, possible death.	High (3)	Plant movements across site	Med (2)	High (6)	Vehicles to wait until the site manager can arrange for them to be supervised to enter the work area. For CLW plant/lorries, a Banksman to be used when reversing. Vehicles to only be driven by licensed and authorised personnel. Personnel to always be aware of moving plant and vehicles and know their route. All vehicles leaving site to be inspected for load security and any possible contamination. Wheel washing may be necessary.	Med (3)
6.	Vehicle movements	Vehicles and plant travelling over unmade surfaces resulting in truck tipping over and crushing driver.	High (3)	Plant movements across site.	Med (1)	Med (3)	All deliveries to keep to designated haul roads and hardstanding areas. Only 'rough terrain' vehicles to be used by specifically trained operatives to drive on uneven surfaced area. All personnel to adhere to vehicle specifications regarding plant ability and topography.	Low (2)
7.	Vehicle movements	Injury to the public using paths and roads near the entrance of the site	Med (2)	Plant movements in and out of the site	Med (2)	Med (2)	All plant movements coming in and out of the site to be escorted by a banksman.	Med (2)

Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard		High = 9, 6	Medium = 4, 3	Low = 2, 1
Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.		Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.		

PROJECT SPECIFIC RISK ASSESSMENT								PROJECT NO: 2487	
Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk	

8.	Manual handling	Muscular and skeletal injury to body.	Med (2)	Operatives handling debris and small items of equipment.	Med (2)	Med (4)	Prioritise mechanical lifting i.e. always employ mechanical lifting equipment where possible; if not possible seek assistance or work in teams as required. Always use the correct lifting technique as trained.	Low (2)
9.	Noise	Damage to hearing - possible long-term effects and hearing loss. Nuisance.	Med (2)	Small teams of operatives carrying out work activities in areas of high noise levels. Residents and adjacent school	Med (2)	Med (4)	Wear ear plugs or defenders when near plant with loud noise level. Observe signs posted for safety. Low level noise equipment to be used. Screen off with acoustic barriers if required. Establish clearly demarcated hearing protection zones when carrying out noisy operations.	Low (2)
10.	Housekeeping	Leads to various accidents arising from slip/trip hazards. Environmental pollution.	Med (2)	Operatives moving around site	Med (2)	Med (4)	Ensure site is kept clean at all times. Tidy hoses and cables. Place bags/rubbish into skips. Clear up spilled liquids immediately. Observe site instructions for disposal of rubbish.	Low (2)
11.	Work in low light levels	Various injuries from unseen hazards.	Med (3)	Small teams of operatives carrying out work activities in dark areas.	Med (2)	Med (4)	Either suspend work when daylight fails or install adequate temporary lighting. As works will be carried out during the winter months, this would need to be risk assessed on a case by case basis in liaison with FMC	Low (2)

Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard		High = 9, 6	Medium = 4, 3	Low = 2, 1
Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.		Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.		

PROJECT SPECIFIC RISK ASSESSMENT					PROJECT NO: 2487			
Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk

12.	Working near deep water	Injury or death	High (6)	Site staff/Public	Low (1)	High (6)	Site staff to be made aware of any deep water on site by main contractor with protection measures set up by FMC. Any Cognition holes/excavations will be kept dry by pumping. Signage to be erected if applicable.	Low (1)
13.	Stockpile management	Odour and dust generation. Unknown contaminant types/concentrations. Risks to on-site streams.	Med (2)	Site staff./Ecology	Med (2)	Med (4)	Stockpiles will be clearly numbered and labelled with records kept of their location, volumes and contaminants. They will also be covered if required to minimise odour/dust generation. Odorous material will be checked with a PID meter. Long term stockpiles need to be inspected as a temporary works item and have weekly inspections to checks for any signs of failure (i.e. fissures, cracking etc.)	Low (2)
14.	Hazardous Substances	Incident/injury to personnel caused by working on plant/equipment which has not been made safe or been decontaminated from hazardous products.	Med (2)	Small teams of operatives involved in remediation.	Med (2)	Med (4)	Cognition to clearly define and instruct operatives on the control methods and advise on any additional PPE. Operatives will be able to use FMC site welfare facilities. COSHH assessments required for any COSHH items. All COSHH items to be stored in COSHH stores.	Low (2)

Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard		High = 9, 6	Medium = 4, 3	Low = 2, 1
Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.		Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.		

PROJECT SPECIFIC RISK ASSESSMENT								PROJECT NO: 2487	
Task No	Task	Effects of Hazard	Rating	Likelihood Occurrence	of	Rating	Initial Risk	Control Measures	Residual Risk

ENVIRONMENTAL								
15.	Physical contamination and absorption	Skin ulcerations, dermatitis and possible poisoning. Vapour inhalation.	Med (2)	Operatives handling contaminated equipment.	Med (2)	Med (4)	All operatives will wear correct PPE as appropriate for the work conditions. As a minimum PPE will include hard hat, hi-vis vest, steel toe cap boots and gloves. Face masks to be available if required. Always wash before eating and drinking, shower before leaving site. Refer to MSDS sheets and COSHH Assessment.	Low (2)
16.	Contaminated equipment	Transfer of contaminants.	Med (2)	Operatives handling contaminated equipment.	Med (2)	Med (4)	Contaminated equipment must be cleaned as soon as possible to avoid cross contamination. Operatives to wear correct PPE during cleaning operations. Refer to MSDS sheets and COSHH Assessment.	Low (2)
17.	Environmental damage	Contamination of land, air or water with chemicals or waste arisings.	Med (2)	Operatives handling contaminated equipment.	Med (2)	Med (4)	Ensure all pump and tanker hoses and fittings are in good condition, clean up any spillages that may occur immediately. Report any major spillage and prevent entry into drains. Appropriate capacity spill kits to be held at fuel storage.	Low(2)

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Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.					Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.				

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Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk

18.	Adverse weather conditions	Lightning strikes, Storms pit/trench flooding,	Med (2)	All operatives on site.	High (3)	High (6)	Suspend working during electric storms or high winds, remove operatives from pits/trenches during heavy rain, rotate operatives. Follow any site-specific instructions.	Low (2)
19.	Invasive species	Accidental spreading of invasive species	Med (2)	Environmental damage	High (3)	High (6)	Consult with main contractor to establish if there are any known invasive species on site. Area to be cordoned off with signage to prevent entry. TBT site staff to get them familiarised with particular species present.	Low (2)
20.	Working close to the adjacent water courses	Discharge of contaminants into a water streams, damage to the embankment.	Med (2)	Environmental damage	High (3)	High (6)	All embankments should be fenced off or otherwise clearly sign posted. Work should be designed to keep all plant away from the immediate proximity of the watercourse and only be used by experienced and competent staff.	

PLANT AND EQUIPMENT

21.	Fuel storage and re-fuelling of plant	Spillage of fuel causing slippery surfaces and contamination. Risk of fire due to high flammability.	Low (1)	Operative filling plant or in vicinity of fuel storage/re-fuelling area.	Low (1)	Low (1)	Tanks to be placed in bunded hardstanding areas that can hold at least 110% of the tank capacity. Absorbent materials shall be stored in the fuel storage area. Care to be taken to avoid over filling fuel tanks. Do not re-fuel plant near open drains or <10m away from any	Low (1)
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Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard

High = 9, 6 Medium = 4, 3 Low = 2, 1

Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.	Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.
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Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk	

							watercourse. Ensure materials required are available to deal with any spillages. Spill kits to be deployed if necessary. All plant and equipment shall be checked, serviced and maintained to reduce the potential for spills/leaks. Fire extinguisher to be kept at re fuelling station. Smoking only allowed in designated areas.	
22.	Vehicle movements	Damage to vehicles and structures. Injury to site personnel and truck operator. Crush and physical injury to all parts of body, possible death.	Med (2)	Operative driving vehicle and site operatives.	Med (2)	Med (4)	Vehicles to only be driven by competent and authorised personnel. Banksman to be used when reversing. Good housekeeping to be practiced at all times. Plant engines to be switched off when not in use. KEEP TO SPEED LIMIT 5MPH Consider pedestrians in area. A Green Light Belt Engine Isolator Kit to be installed on all dumpers and excavators on site. Plant personnel to avoid driving on uneven terrain and slopes in order to prevent vehicle overturning or destabilising. Keep to haul roads.	Low (2)
23.	Use of Dozer with a GPS lead precision level control system	Damage to plant and injury to personnel due to lack of	Med (2)	Operative driving vehicle and site operatives.	Med (2)	Med (4)	Only skilled and competent person to operate the plant, Maintenance and regular vehicle checks to be carried out daily by plant operatives and reviewed by site management.	Low (2)

Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard

High = 9, 6 Medium = 4, 3 Low = 2, 1

Likelihood of Occurrence Low (1) May occur in time. However, hazard exists infrequently or hazardous event occurs very infrequently. Low expectation of occurrence. Medium (2) Likely to occur in time. Hazard exists intermittently or hazardous event occurs occasionally. It may be useful to define by exclusion, {i.e. clearly not 'High' or 'Low' may be the most practical approach}. High (3) Likely to occur imminently or in the very short term. Hazard exists permanently or hazardous event occurs frequently, or much evidence of previous harm.	Severity of Hazard Low (1) Hazard resulting in minor injury requiring first aid treatment only. Minor consequential loss potential to both individual and organisation. Medium (2) Hazard capable of resulting in personal injury/illness requiring brief absence from work. Medical attention required. But ... Again, defining by exclusion, i.e. it simply isn't obviously 'High' or 'Low'. High (3) Hazard capable of resulting in death, severe injury or illness. Major consequential loss potential to the individual and organisation.
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Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk

		competence or service and maintenance.					Any failures will be addressed before plant use can continue. All plant will carry valid service records.	
24.	Screening and segregation of waste materials by mechanical or manual means	Objects falling from screener belts striking operatives.	Med (2)	Operatives working in vicinity of screener.	Med (2)	Med (4)	No go zones enforced around belts. Use of long handles rakes to remove/segregate waste on mid-range sized and fines belts. Operatives to segregate waste once oversize stockpiled material scraped away from oversize belt.	Low (2)
25.	Ensuring plant security	Plant being used by untrained or uncertified staff.	Med (2)	Plant left unattended.	Med (2)	Med (4)	Keys are to be removed from plant and stored in safe place when not in use. Site to be secured by PC out of hours.	Low (1)
26.	Use of plant to carry out site activities	Damage to plant and injury to personnel due to lack of service and maintenance.	Med (2)	Operative using plant.	Med (2)	Med (4)	Maintenance and vehicle checks will be carried out daily by plant operatives and reviewed by site management. Any failures will be addressed before plant use can continue. All plant will carry valid service records.	Low (2)
27.	Mixing/spreading of a cement based binder for stabilisation	Production of dust.	Med (2)	Operatives working in the vicinity of the stabilisation plant. Off-site receptors effected depending on wind speed/direction and if	Med (2)	Med (4)	Plant and equipment has been designed to limit dust emissions. If dust should become a nuisance, handling methods will be reviewed to minimise it e.g. dampening down. WEAR	Low (2)

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PROJECT SPECIFIC RISK ASSESSMENT					PROJECT NO: 2487				
Task No	Task	Effects of Hazard	Rating	Likelihood Occurrence	of	Rating	Initial Risk	Control Measures	Residual Risk

				dust generation is substantial.				CORRECT PPE AT ALL TIMES WHEN LOADING ie full face masks and disposable coveralls.	
CHEMICALS / ACM									
28.	Exposure to hazardous substances to health	Inhalation, absorption and ingestion resulting in ill health.	Med (2)	Operative excavating ground with chemical residue based product.	Med (2)	Med (4)		Adoption of COSHH control measures i.e. refer to specific assessments and hazard data sheets. All operatives will wear appropriate PPE that is necessary task. Always wash before eating and drinking, shower before leaving site. Site Manager to ensure all precautionary measures are adhered to.	Low (2)
29.	Exposure to asbestos	Inhalation of fibres resulting in irreversible respirator problems	Med (2)	Operative working in area where dry material containing asbestos may be present	Med (2)	Med (4)		Asbestos fibres have been detected in stockpiles. Work areas to be dampened down and fenced off. Intensive air pump monitoring to take place at different work areas/for different activities. Masks and overalls to be worn for asbestos picking activities. Only non-licensed trained operatives to carry out operation. Information to be briefed to staff in toolbox talk . General operatives to attend asbestos awareness course.	

Residual Risk Rating = Likelihood of Occurrence x Severity of Hazard					High = 9, 6 Medium = 4, 3 Low =2, 1				
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Task No	Task	Effects of Hazard	Rating	Likelihood of Occurrence	Rating	Initial Risk	Control Measures	Residual Risk
30.	Storage of hazardous substances required for works	Exposure to hazardous substances due to improper storage.	Med (2)	Operatives working near hazardous substances.	Med (2)	Med (4)	All materials required will be stored in a lockable steel storage unit and clearly marked by relevant hazard warnings. There will be a separate designated area for the storage of fuel.	Low (2)
ELECTRICAL								
31.	Electrics within work area – Underground or overhead	Electrocution, serious burns.	High (3)	All operatives in the work area.	Med (2)	High (6)	Ensure all services will be located and marked. Display existing site services on site. CAT scans to be carried out, with permits to dig obtained from FMC prior to any excavation. Overhead cables to be protected by appropriate goal post system	Med (3)
32.	Work near live cables	Electrocution and burns.	High (3)	All operatives working in proximity to electrical installation.	Med (2)	High (6)	All cables will be assumed to be live. Consider whether protection to live services is necessary. No mechanical work <500mm to any known service. Goal posts with warning bunting to be erected if applicable All operatives to be briefed.	Med (3)
FIRE								

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Task No	Task	Effects of Hazard	Rating	Likelihood Occurrence	of	Rating	Initial Risk	Control Measures	Residual Risk

33.	Fuel and flammable goods near possible sources of ignition	Severe burns and suffocation from smoke inhalation, possible death.	High (3)	All operatives working in close proximity to fuels and flammable goods.		Low (1)	Med (3)	Site kept clean and flammable materials properly stored, correct fire extinguishers in the appropriate area, properly labelled. Smoking only permitted within designated areas. Fire assembly point to be clearly displayed and communicated at site induction. Fire warden to be present on site	Low (2)
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COGNITION
LAND+WATER

MINET TIP LAGOON WORKING PLAN

PROJECT:

SOUTHALL WESTERN ACCESS

HILLINGDON

UB3 3NF

FOR

FM CONWAY LTD.

Issue No	01
Project No.	CLW002487
Date of Issue:	February 2018
Author:	Thomas Kiddier
Checked by:	Charlie Jarvis

1.	Client:	FM Conway Ltd
2.	Regulators:	

Disclaimer

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AMENDMENT RECORD SHEET

The revision history of this document is summarised below:

Document Revision Number	Date of Revision	Author	Section/Subject	Page

CONTENTS

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1. INTRODUCTION

Cognition Land & Water Limited (COGNITION) has been contracted by FM Conway to carry out remediation and cut & fill works to the Western Access site on Pump Lane, UB3 3NF.

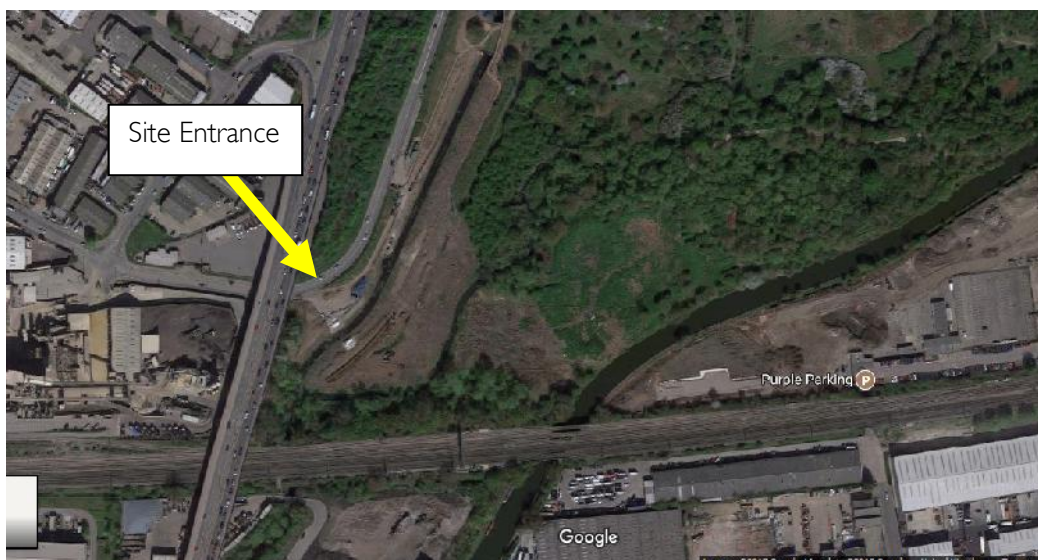
This document sets out a Working Plan for the continued management of the Minet Tip Lagoon area and summarises how the plan will be implemented. This document is to be read in conjunction with the FMC main RAMS058, and COGNITION's RAMS for this site.

2. SITE DETAILS

2.1 SITE LOCATION

The site is located on Pump lane, Hayes, UB3 3NF

Aerial View of the Site (image from Google Maps; accessed November 2017)



3. SCOPE OF WORKING PLAN

- J Ensure protection of the Lagoon liner layer;
- J Sampling of stockpiled materials, for both chemical and geotechnical testing;
- J Excavation and movement of stockpiled materials from the Lagoon area, to be backfilled in Zone 4 road way;
- J Excavation and movement of areas of road way, down to formation level, and stockpiling of this material in the Lagoon area.

This Working Plan will be briefed to all relevant personnel on site, and continued management of the area will be carried out by the site management/supervision team.

4. MATERIALS MANAGEMENT

4.1 STOCKPILE SEGREGATION AND PROTECTION

While there is limited space in the Lagoon area, all stockpiles will be kept separate from one another, as far as is reasonably practicable. Signage will be installed and maintained to show the delineation between stockpile, and a stockpile plan will be given to all the plant operators and the site manager to ensure no material will be placed in the incorrect area and/or that any material will be removed from an incorrect stockpile and placed in the wrong location on site.

The stockpile liner will be protected by a banksman who's role will oversee the placement and excavation of material, managing the segregation of the stockpiles, and ensuring that the liner is not damaged by any plant.

4.2 BACKFILLING PROTOCOL

Instructions to the excavators and the dump truck drivers about where the stockpiled material will be placed will come from the site manager/supervisor. Who will follow the location plan, summarised below:

- J Stockpile 4 – will be placed in the road way/hard pavement footprint ONLY;
- J Stockpile 16 – will be placed in the batters, hard pavement footprint, and/or the north-eastern mat;
- J Stockpiles 5, 6, & 8 – will be placed in the batters, hard pavement footprint, and/or the north-eastern mat.

All operatives involved in the excavating and placing of material will be given a stockpile plan, showing the names of each of them.

4.3 MATERIAL TRACKING PROTOCOL

Material management will be recorded daily by the site manager/supervisor, and the site engineer. A grid will be designed over a site plan, to show the relevant areas in which the material is being placed. Sampling will be assigned references according to the grid and the layer. The road footprint will be set out using GPS, and backfilled using a GPS-fitted dozer.

4.4 RE-USE CRITERIA FOR STOCKPILE MATERIAL

The stockpiles will be sampled to determine whether they are suitable for re-use. As per the following schedule:

Chemical Testing

Table 1 – Soil Reuse Criteria		
Contaminant	Environmental Quality Standard Value (mg/l)	Level 3 Soil Re-use criteria (mg/kg) [mg/l]
Total Ammonia	0.6	161 [120]
Benzene	0.01	2.22 [2.01]
Benzo(a)pyrene	0.00002	12.96 [0.004]
Cadmium	0.00025	12.05 [0.050]
Chromium VI	0.0034	23.99 [0.683]
Free Cyanide	0.001	0.085 [0.212]
Lead	0.0012	1050.5 [0.241]
Mercury	0.00007	7.03 [0.0141]
Naphthalene	0.002	13.03 [0.403]
Phenol	0.0077	1.32 [1.59]

Regarding the above sampling, the chemical testing will be carried out at 1 test per 500m³.

Geotechnical Testing

The geotechnical sampling will be carried out at a frequency dependant on the material type and end use.

The frequency and the sampling types will be as follows:

Use/End destination	Material Class (as per series 600 of the MCHW)
Embankment Fill	1A, 2A, 2B or 2C
Embankment core (stabilised arisings)	6E, 7I/9E, 7F/9B
Fill to structures (Import by others)	6I, 6N, 6J, 6P

All classification testing in accordance with Appendix I/5 of the Earthworks Specification by CGL.

Class	General Description	Test	Frequency of Testing	Comments
1	General Granular Fill	Grading/Uniformity Coefficient	2 per week per class or sub-class material from each source	
		Mc	2 per 1000 m ³ up to max of 5 per day	
		Los Angeles Coefficient	1 per class or per sub-class of material	
		MCV	2 per 1000 m ³ up to max of 5 per day	
2	General Cohesive Fill	Grading	2 per week per class of sub-class material from each source	Class 2A and 2B only
		Mc	2 per 1000 m ³ up to max of 5 per day	
		OMC/ MDD	5 per class or sub-class of material and as requested by the project manager	
		MCV	2 per 1000 m ³ up to max of 5 per day	
		MCV/ mc relationship	3 per class or sub-class or material	
		Plastic Limit and Liquid Limit		
7E/7F	Selected cohesive material	Grading/uniformity coefficient	1 per 400 tonnes	
		MC	Weekly	
		MCV	1 per 400 tonnes	
		Plastic limit and liquid limits	3 per class of sub-class of material	
		Organic content	1 per 1000 m ³	
		Water soluble sulfate content	3 per source	

		Oxidisable sulphides content	3 per source	
		Oxidisable sulphides (OS) and total potential sulfate (TPS) content	One per week	
9E/9B	Cement stabilised cohesive material	Pulverisation	1 per 500 m ³ (minimum 3)	
		MCV immediately before compaction	1 per 500 m ³ (minimum 3)	
		Bearing ratio	1 per 500 m ³ (minimum 3)	
		MC	1 per 500 m ³ (minimum 3)	

4.5 STORAGE OF SOIL

- J Work areas are to be lined with barriers or sectioned off to prevent climbing on the stockpile;
- J Pedestrian access onto a stockpile will not be made without suitable access e.g. proprietary steps, or without suitable edge protection;
- J Plant operators are to relocate ride-on plant and machinery to the base of the stockpile before disembarking;
- J All stockpile sides are to be battered 45 degrees or shallower;
- J Stockpiles should be constructed in 1 m layers, with suitable compaction taking place at each layer;
- J No stockpile will be left without a finishing compaction layer;
- J Stockpiles should not exceed 4 m in height;
- J Inspections of stockpile excavations should be carried out prior to each shift, after any event likely to affect strength or stability, and after any accidental fall of material;
- J If ground contamination is present in either the underlying or stockpile material, a suitable barrier or protection layer is to be used to prevent mixing of materials. Any contamination material found must not be stored outside of the drainage blankets within the lagoons;
- J Plant is to be hosed down prior to leaving the work area and prior to leaving site.

5. QUALITY ASSURANCE AND CONTROL

5.1 SAMPLING AND ANALYSIS PROTOCOL

Soil samples will be required to validate excavations and soil treatment and to investigate potential contamination uncovered during the works.

All sample collection, handling, storage and transport will be carried out in accordance with *BS EN ISO 22475-1:2006 'Geotechnical Investigation and testing – sampling methods – Part 1: Technical Principles for execution I*.

All geotechnical analysis will be carried out at an independent MCERTS and UKAS accredited laboratory.

COGNITION will schedule testing of all screened and processed material on-site, prior to use on-site or for distribution for re-use off-site, to demonstrate that the material is geotechnically suitable under *Standard for Highways Series 600 Specification*, and chemically suitable under the CGL reuse criteria

For the Geotechnical design see A720-E05-IW-BR-EW-TS-0001 and Backfill specification see Annex A CGL Appendix 1/5 to Series 600.

APPENDIX 2

Zone Reference Drawings

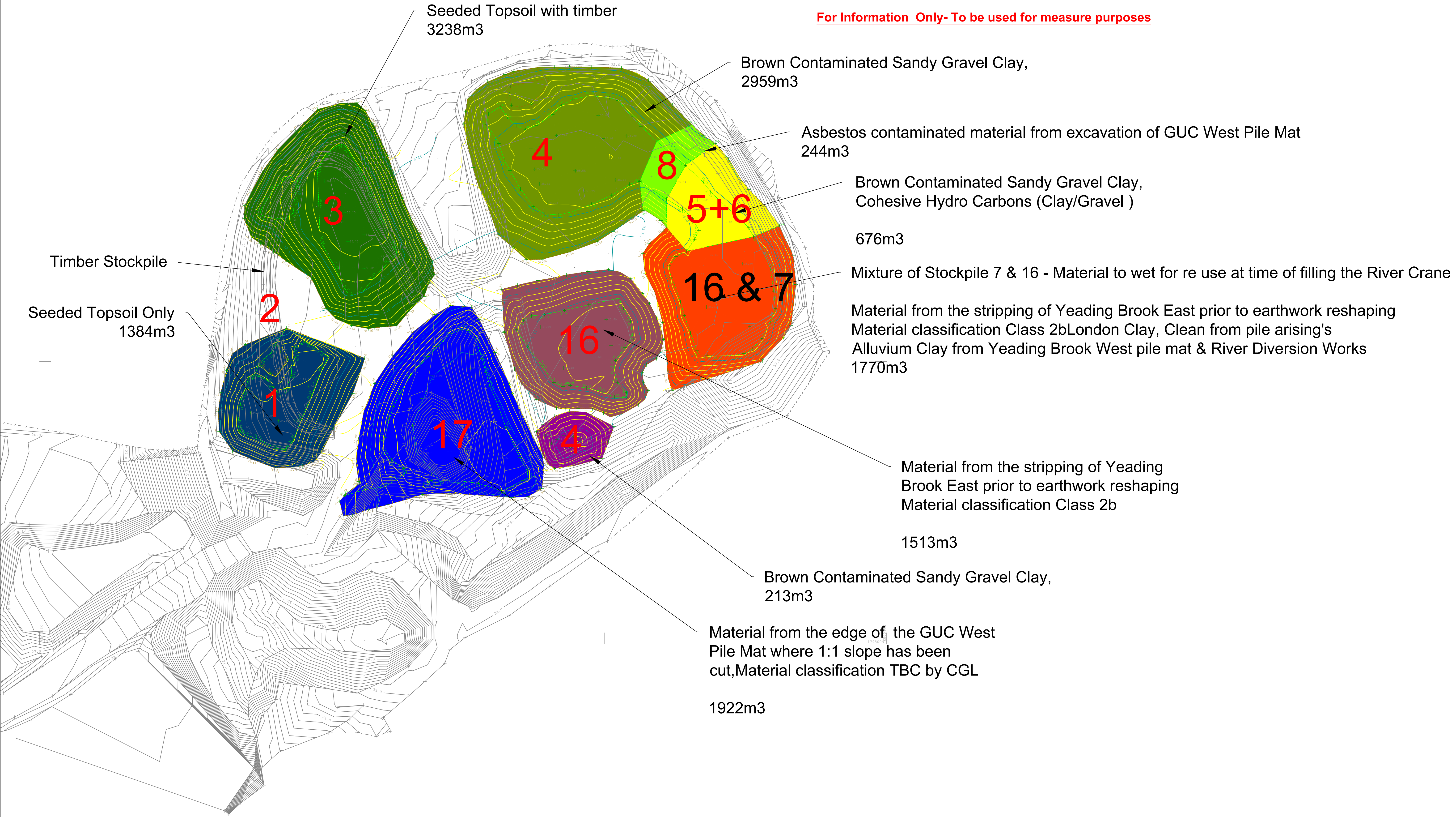
FMC-SS-WE-100-A
06.12.2017
Dwg:NTS

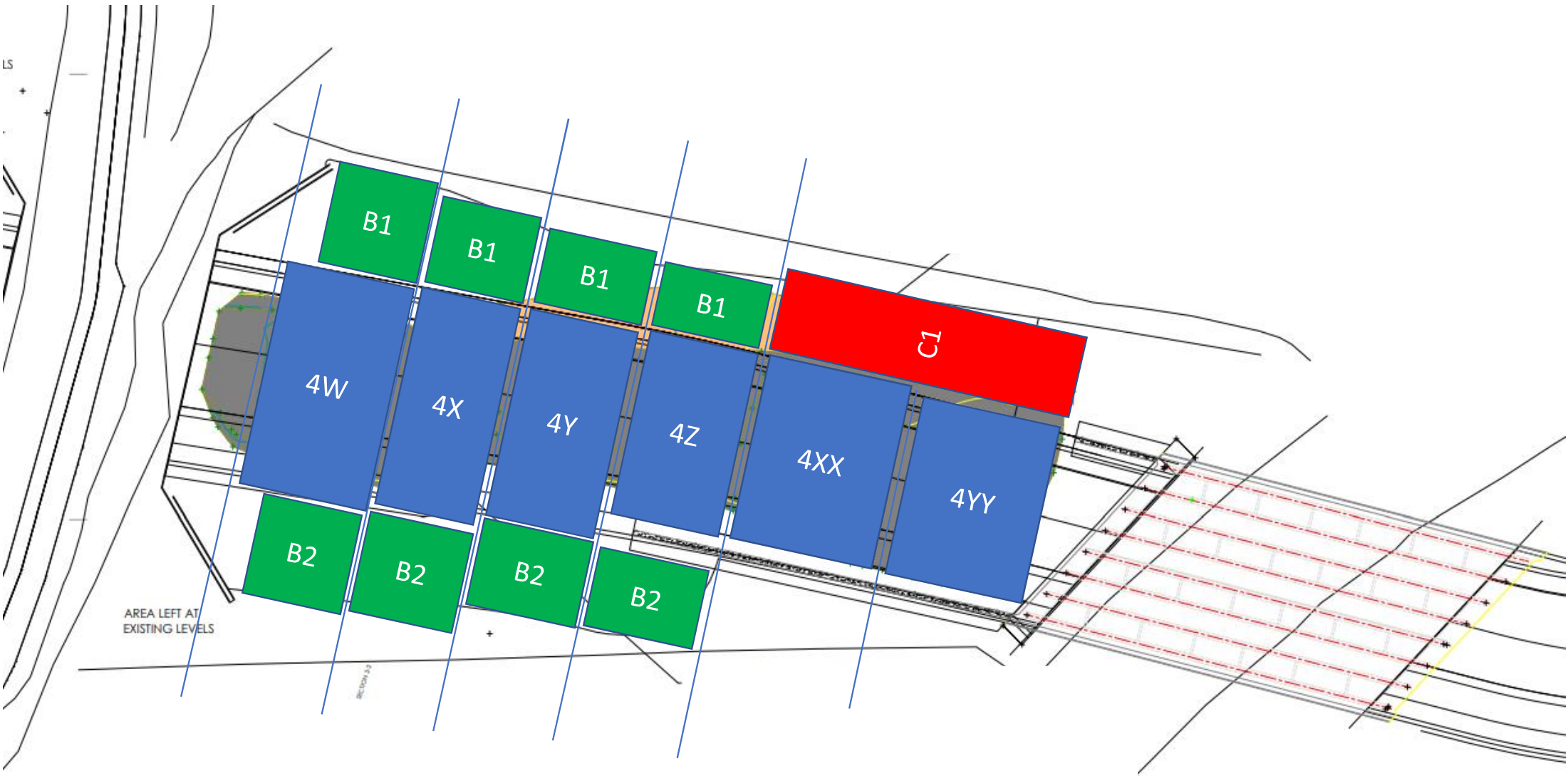
This drawing shows the location and volumes of spoil on the Lagoon area as of 05.12.2017 and is to be used as the basis for volumes with regards to sub contractor works.

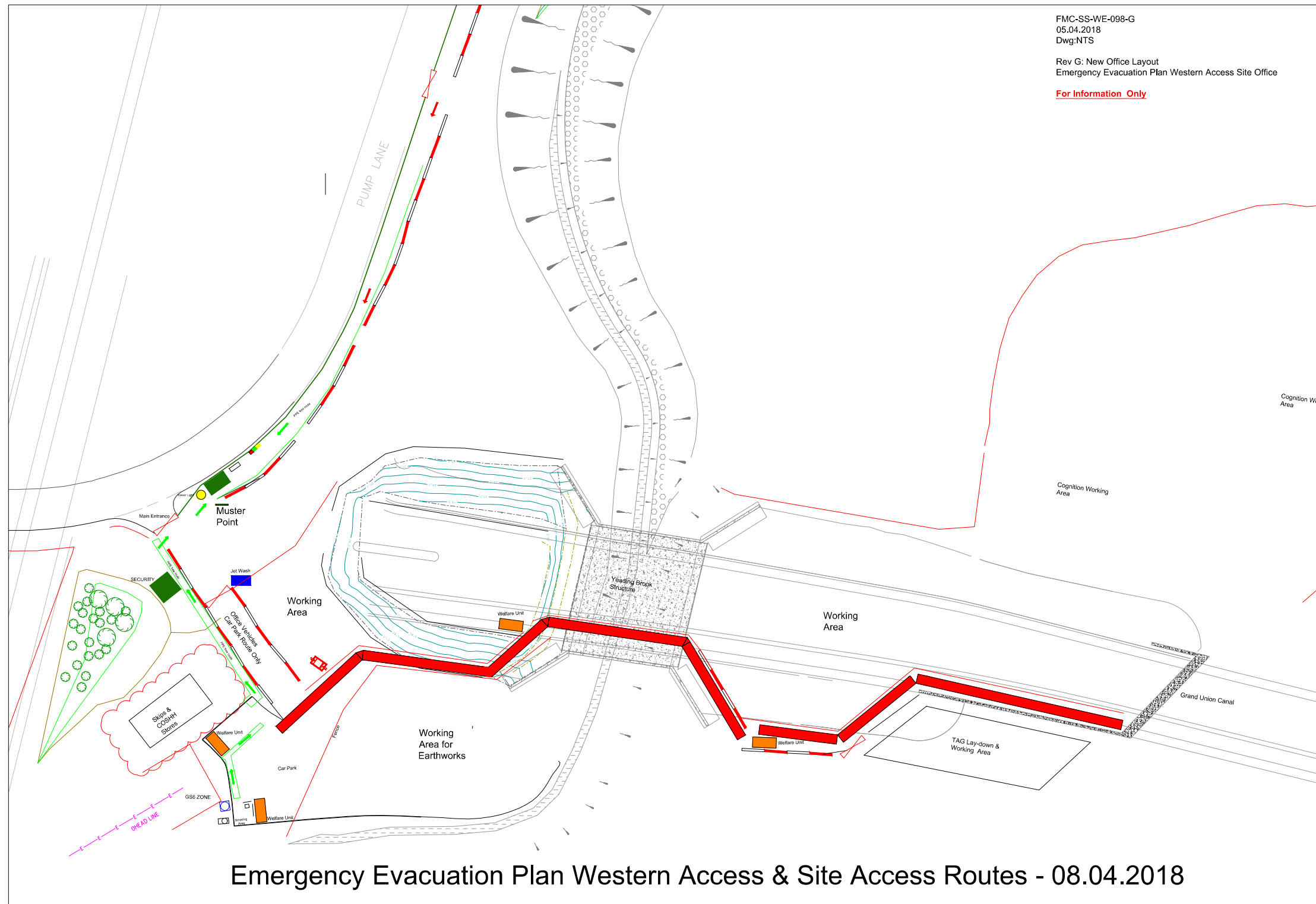
The classification of material has been determined by CGL but reports on material types will take preference over notes in drawing

Stockpile number 17 is still to be moved at the east side due to it currently being situated on the main spine separating the two number Lagoons

For Information Only- To be used for measure purposes



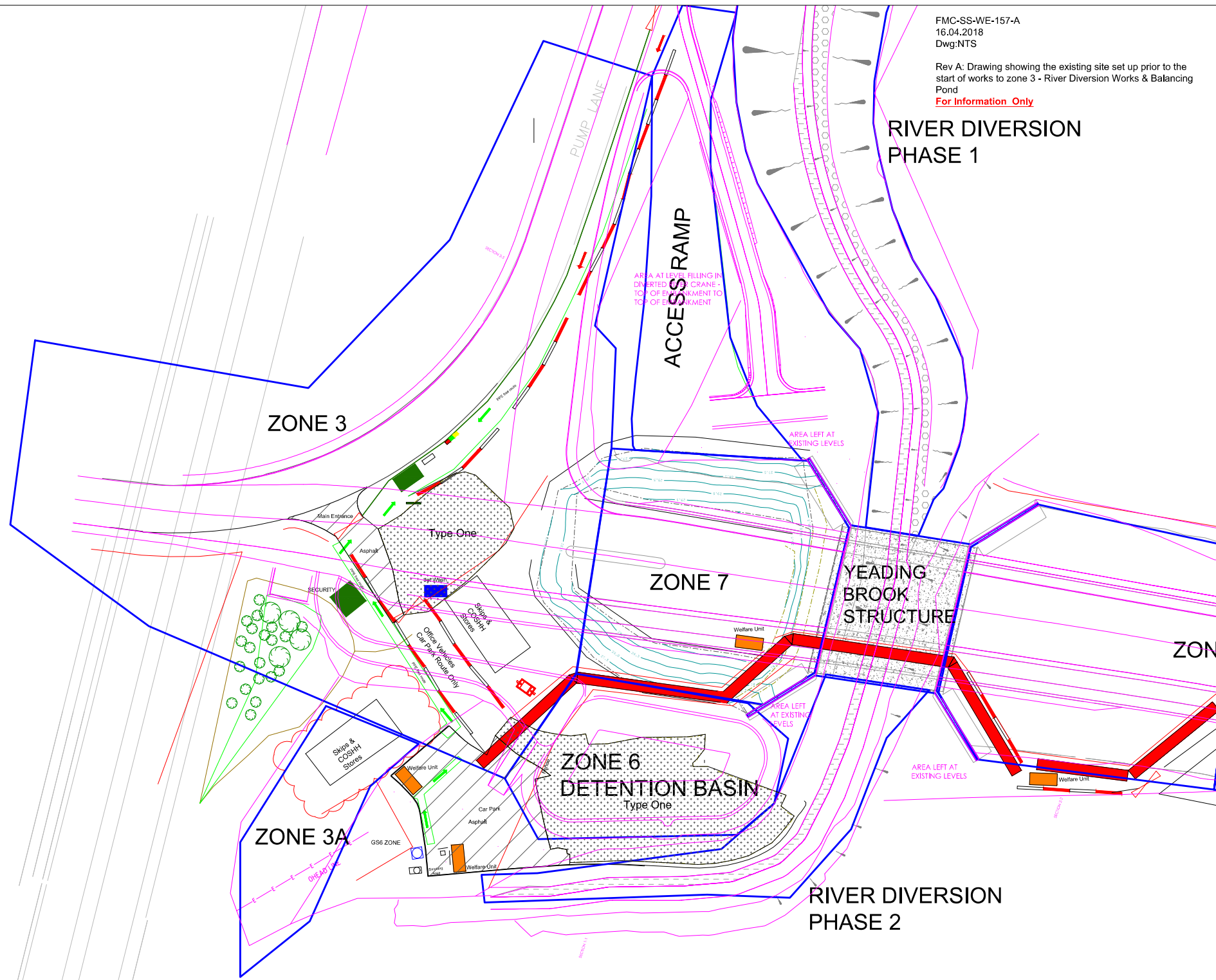


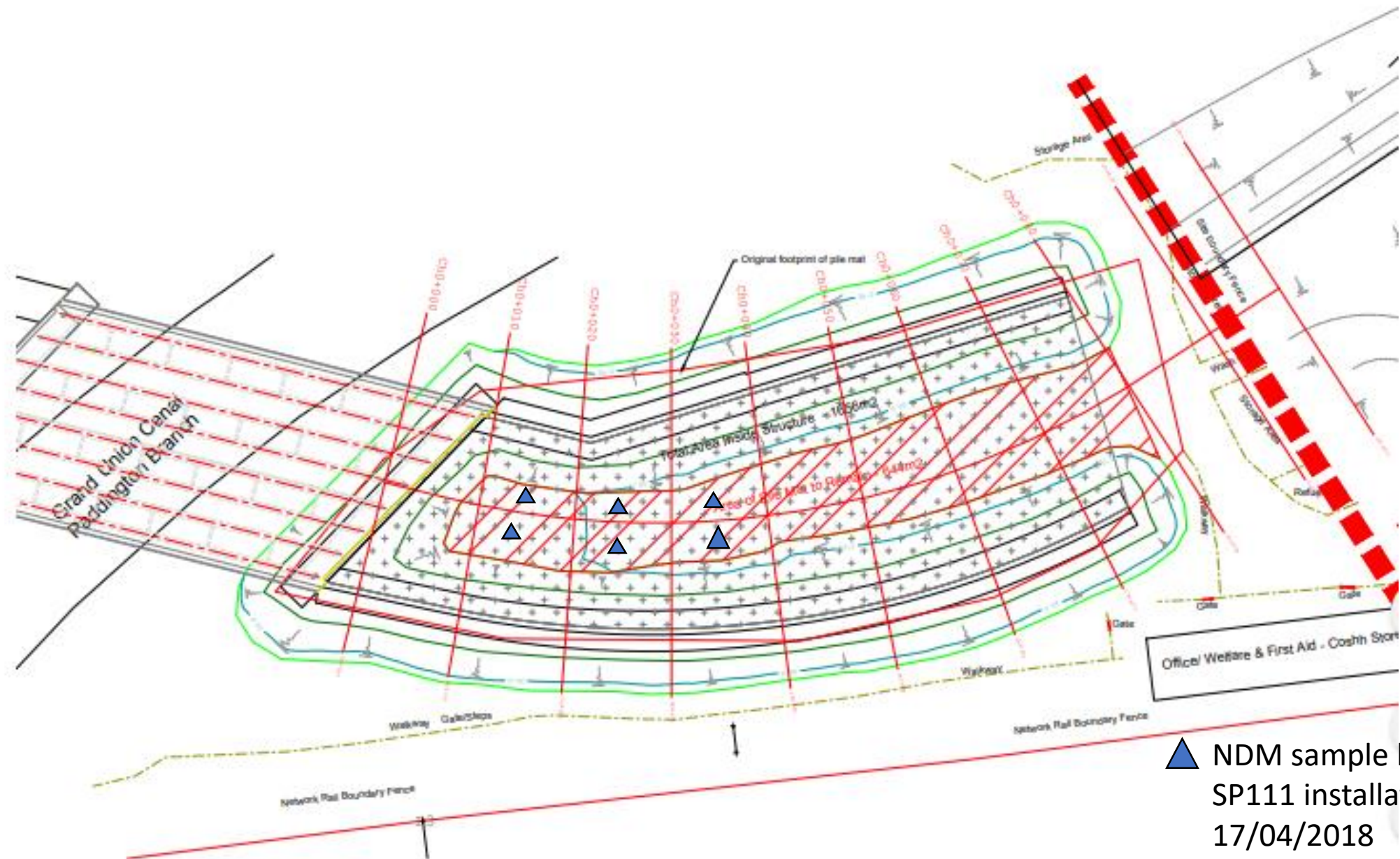


Emergency Evacuation Plan Western Access & Site Access Routes - 08.04.2018

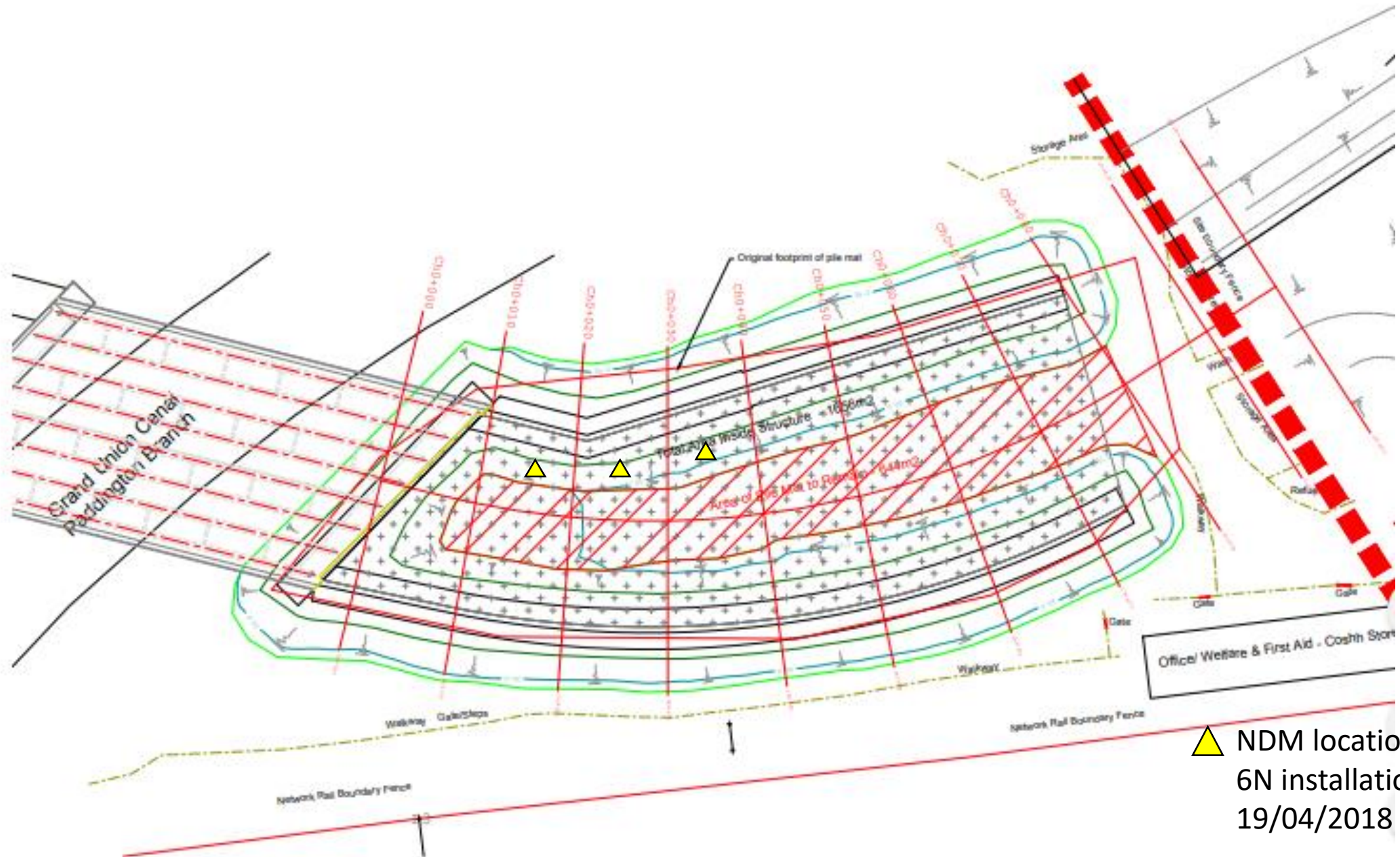
Rev A: Drawing showing the existing site set up prior to the start of works to zone 3 - River Diversion Works & Balancing Pond
Pond
For Information Only

RIVER DIVERSION PHASE 1

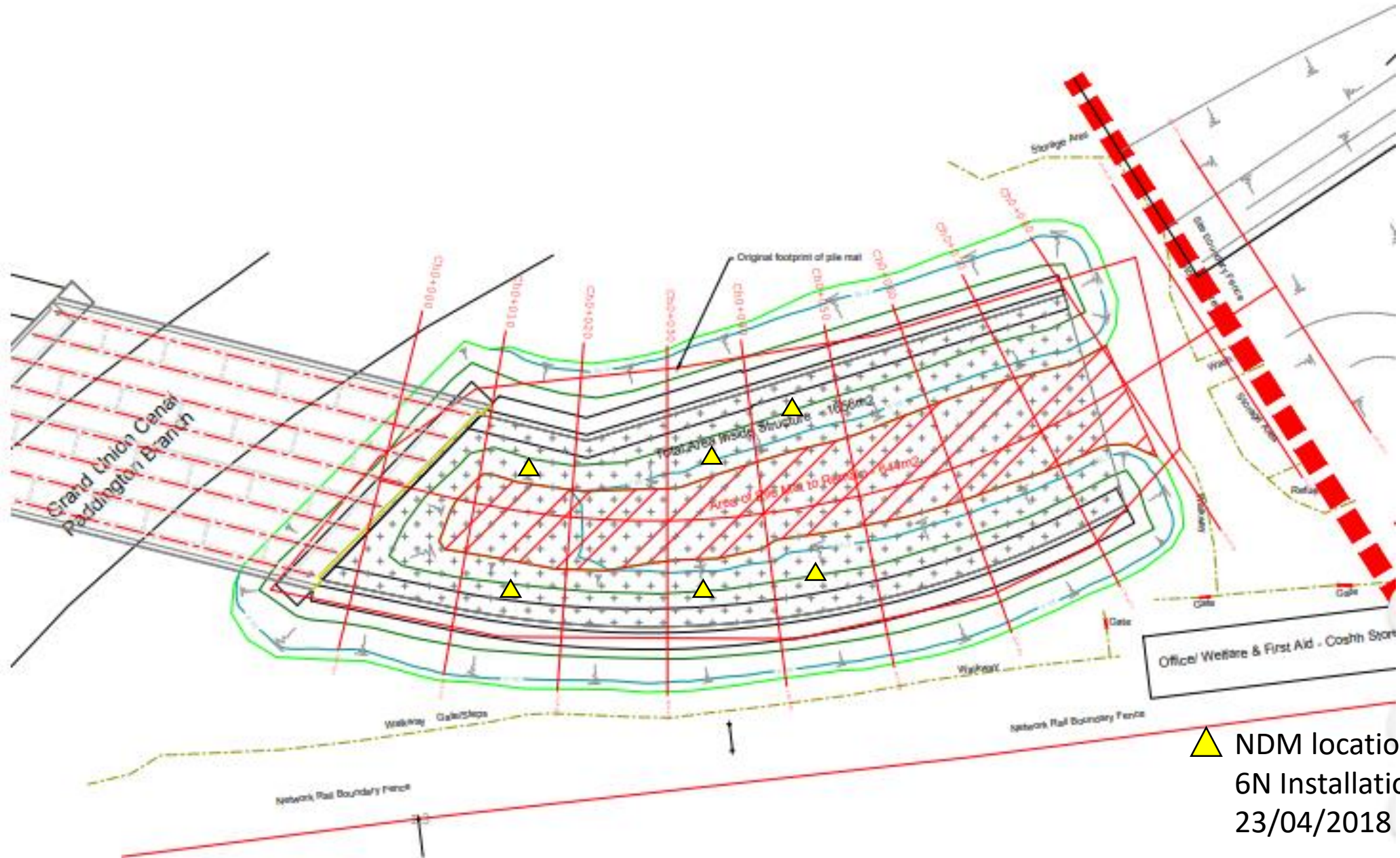




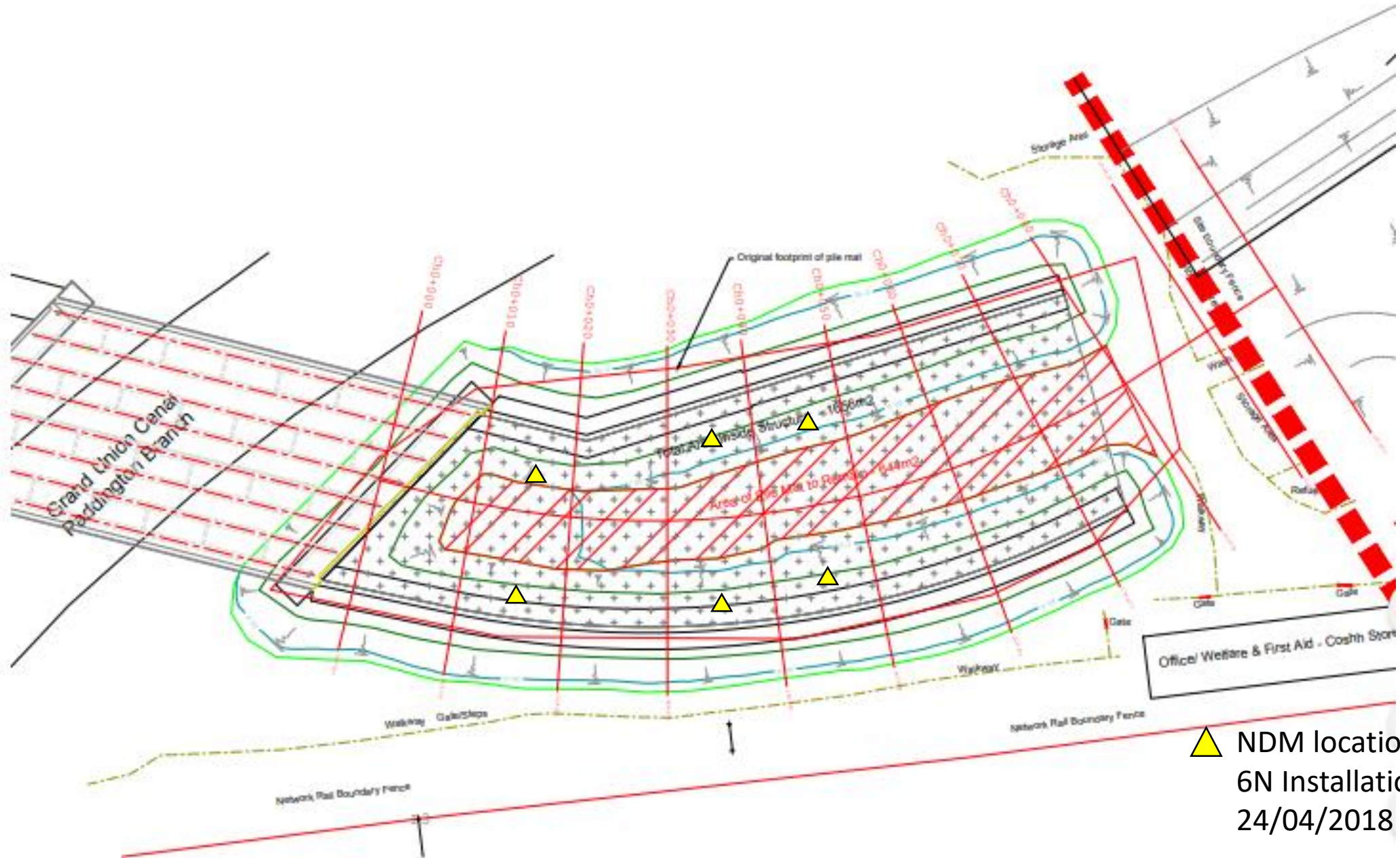
▲ NDM sample locations
SP111 installation –
17/04/2018



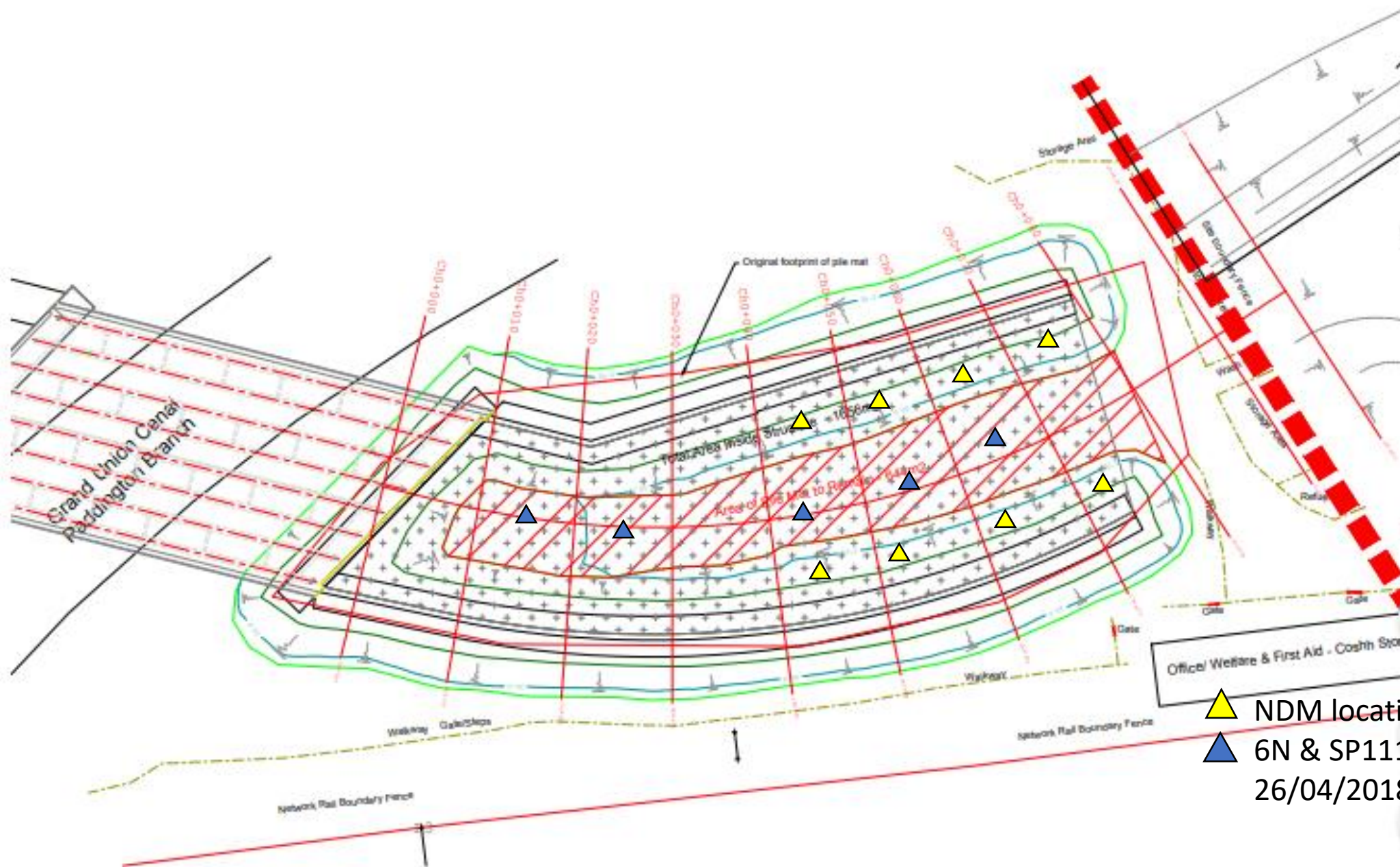
▲ NDM locations
6N installation
19/04/2018



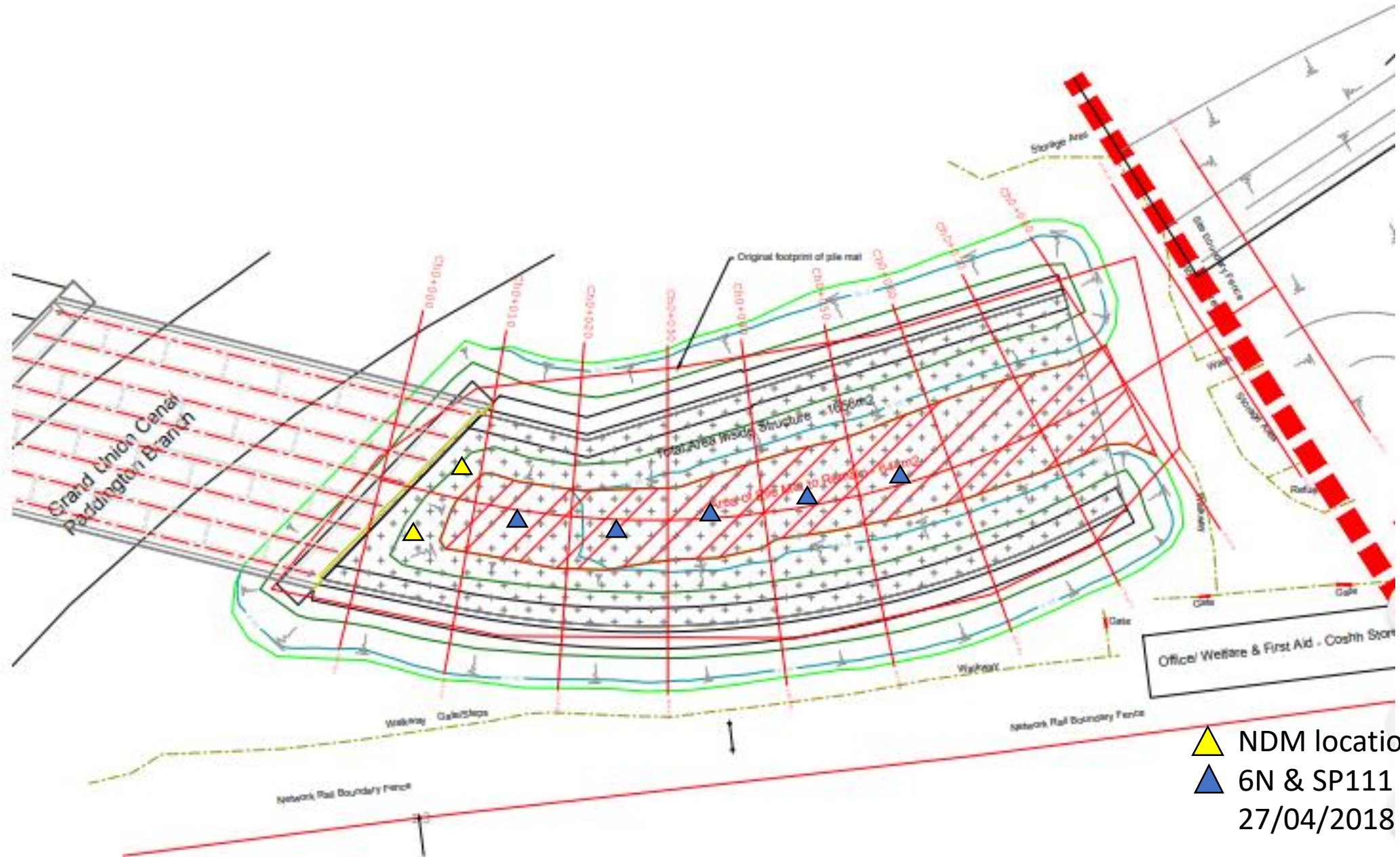
▲ NDM locations
6N Installation
23/04/2018



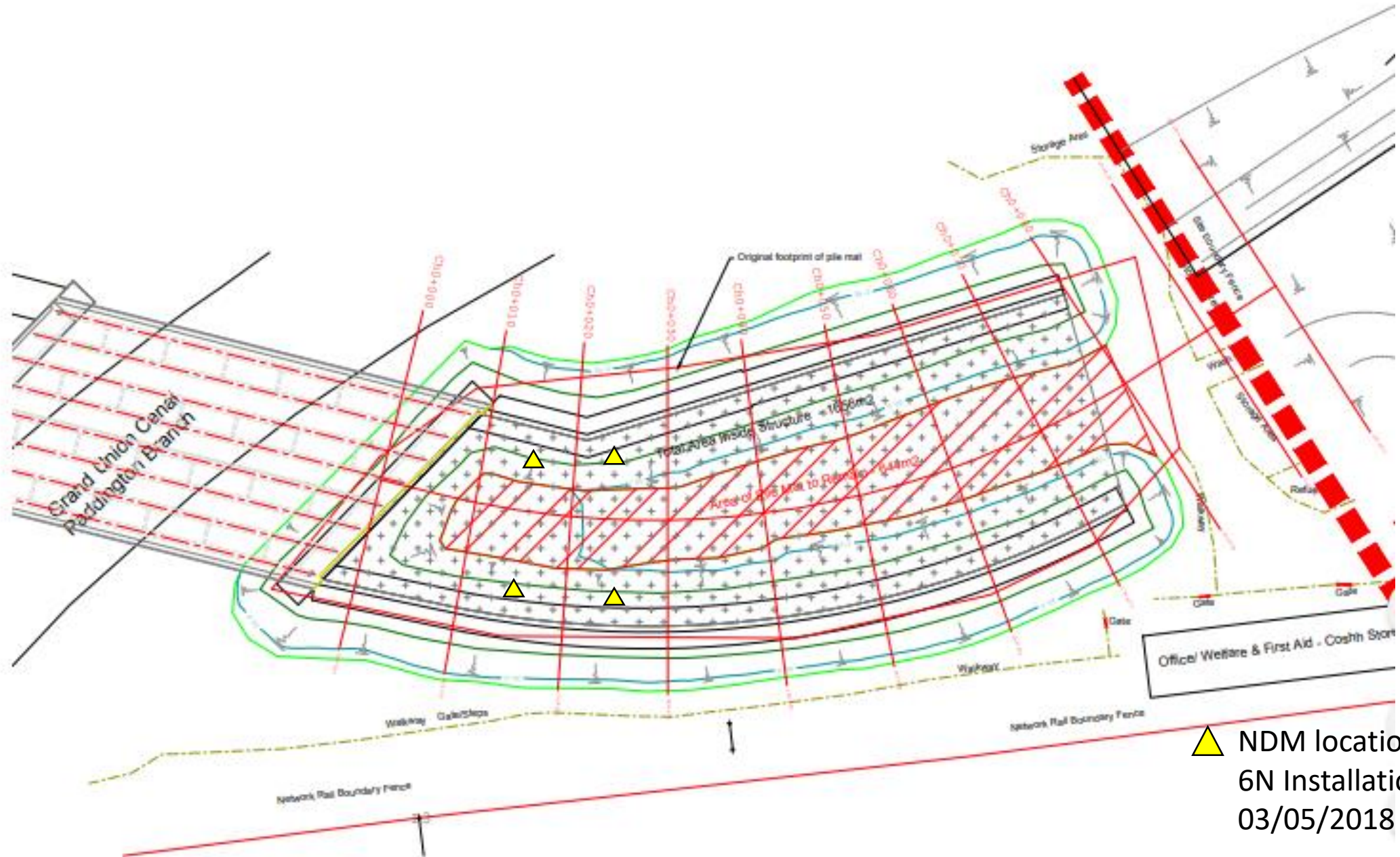
▲ NDM locations
6N Installation
24/04/2018

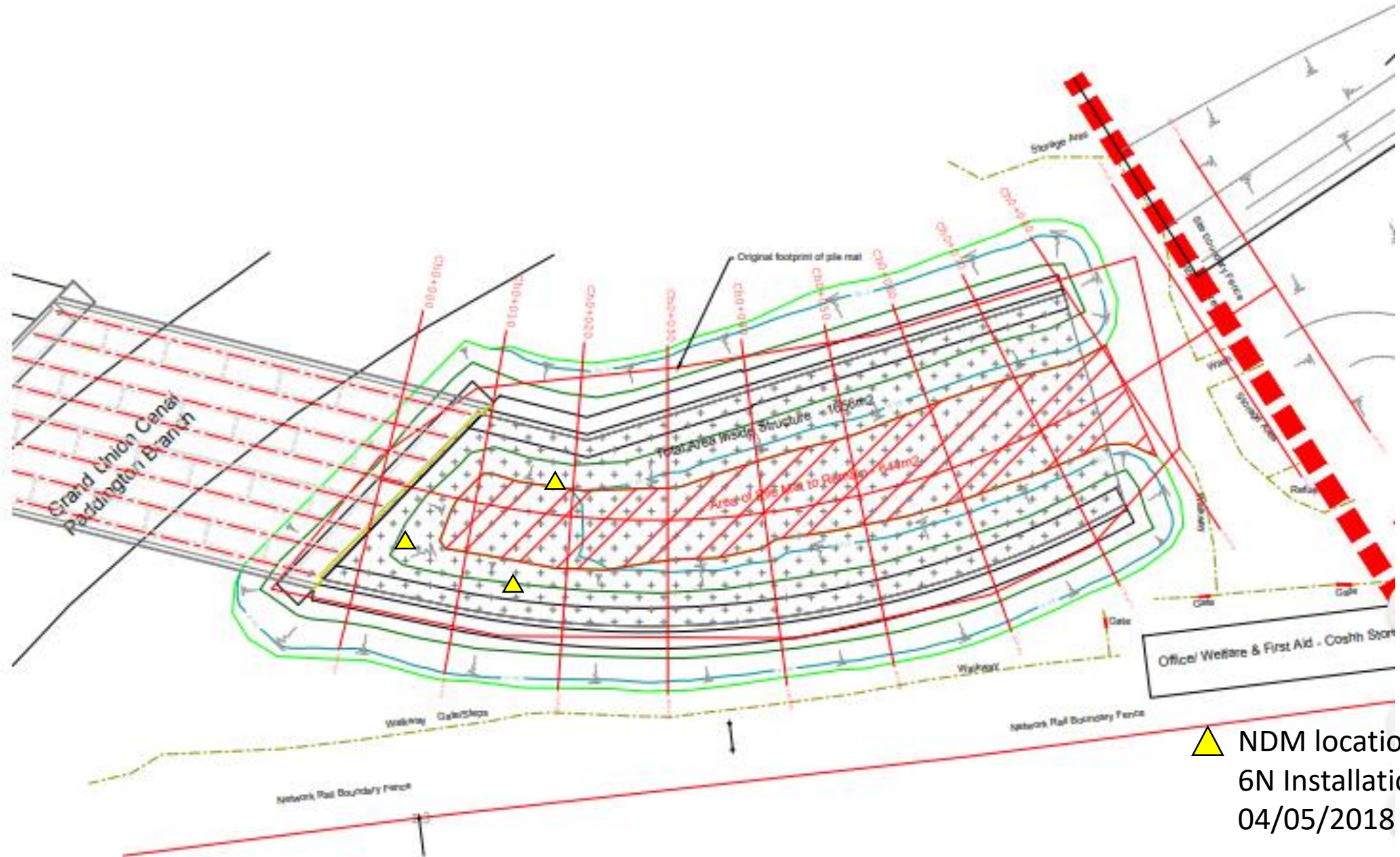


- ▲ NDM locations
 - ▲ 6N & SP111 Installation
- 26/04/2018

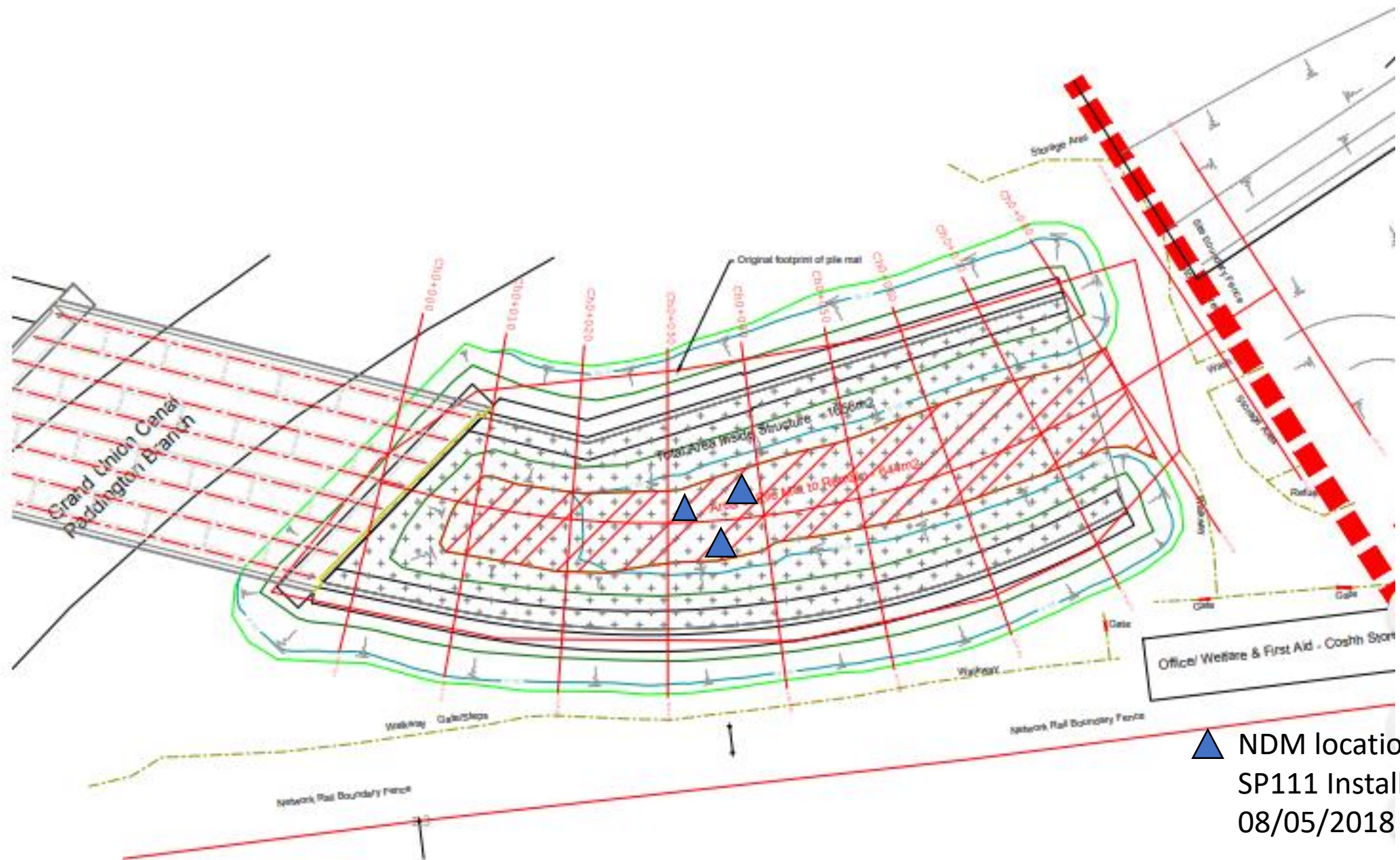


▲ NDM locations
▲ 6N & SP111 Installation
27/04/2018

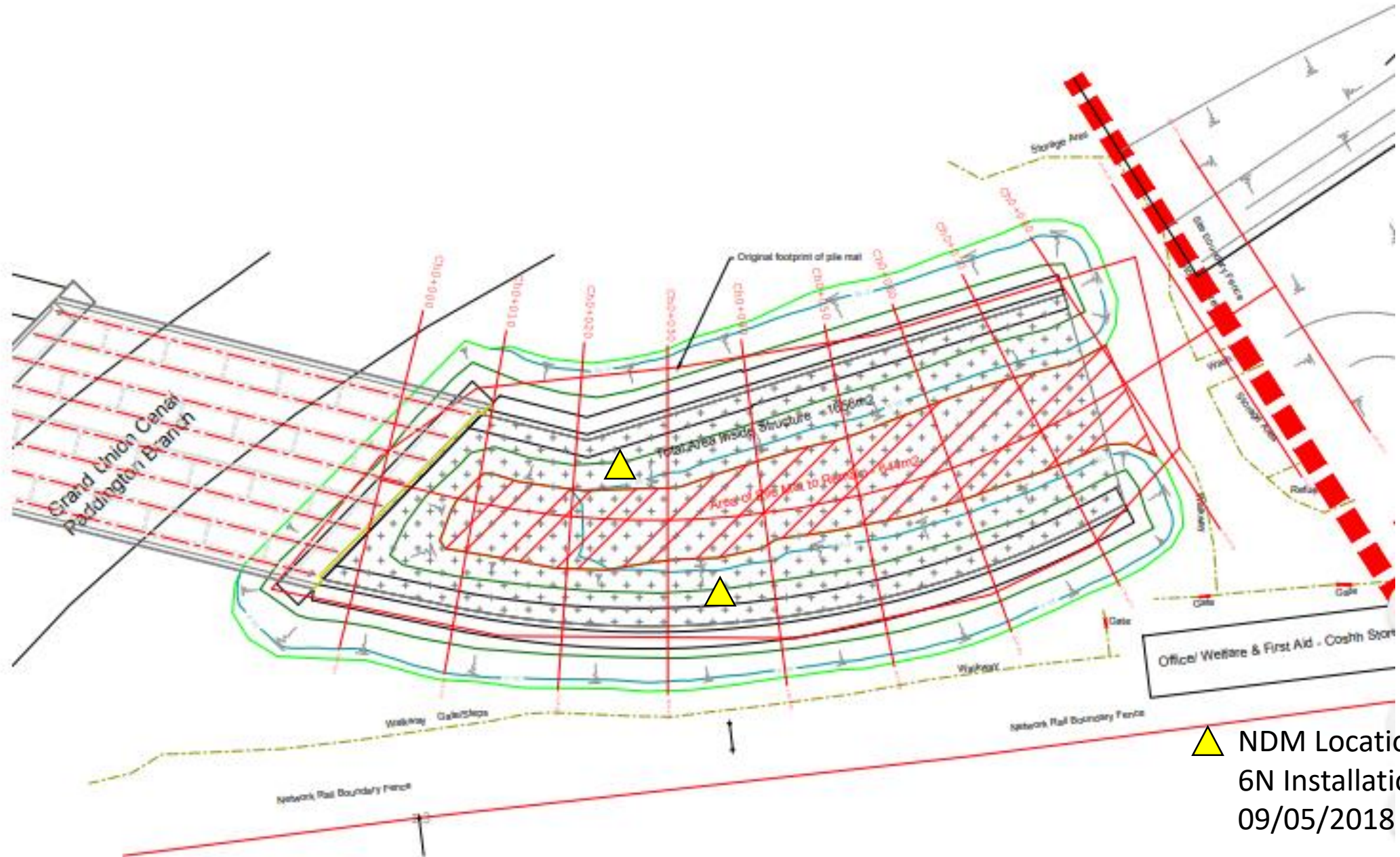




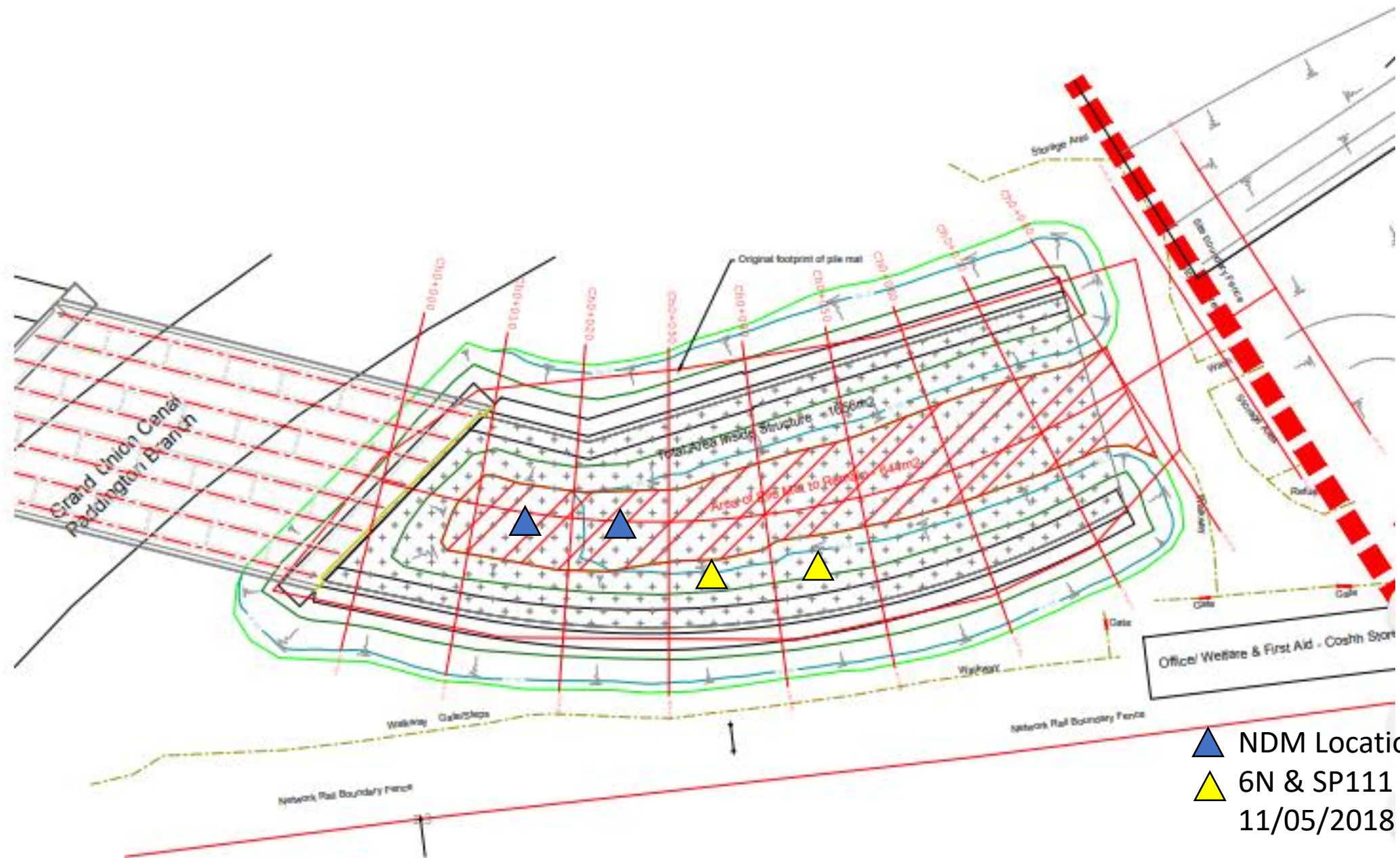
▲ NDM locations
6N Installations
04/05/2018



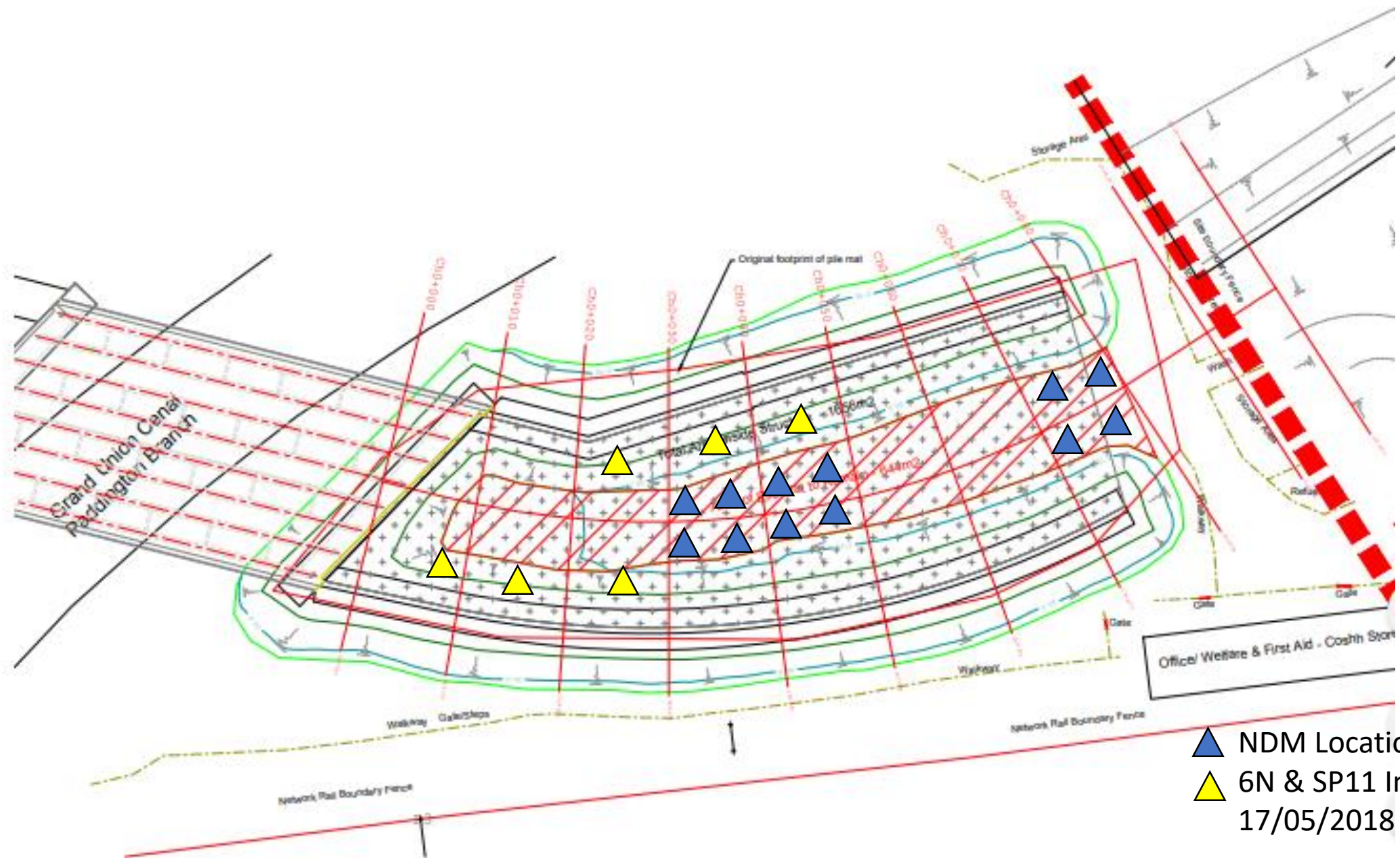
▲ NDM locations
SP111 Installations
08/05/2018



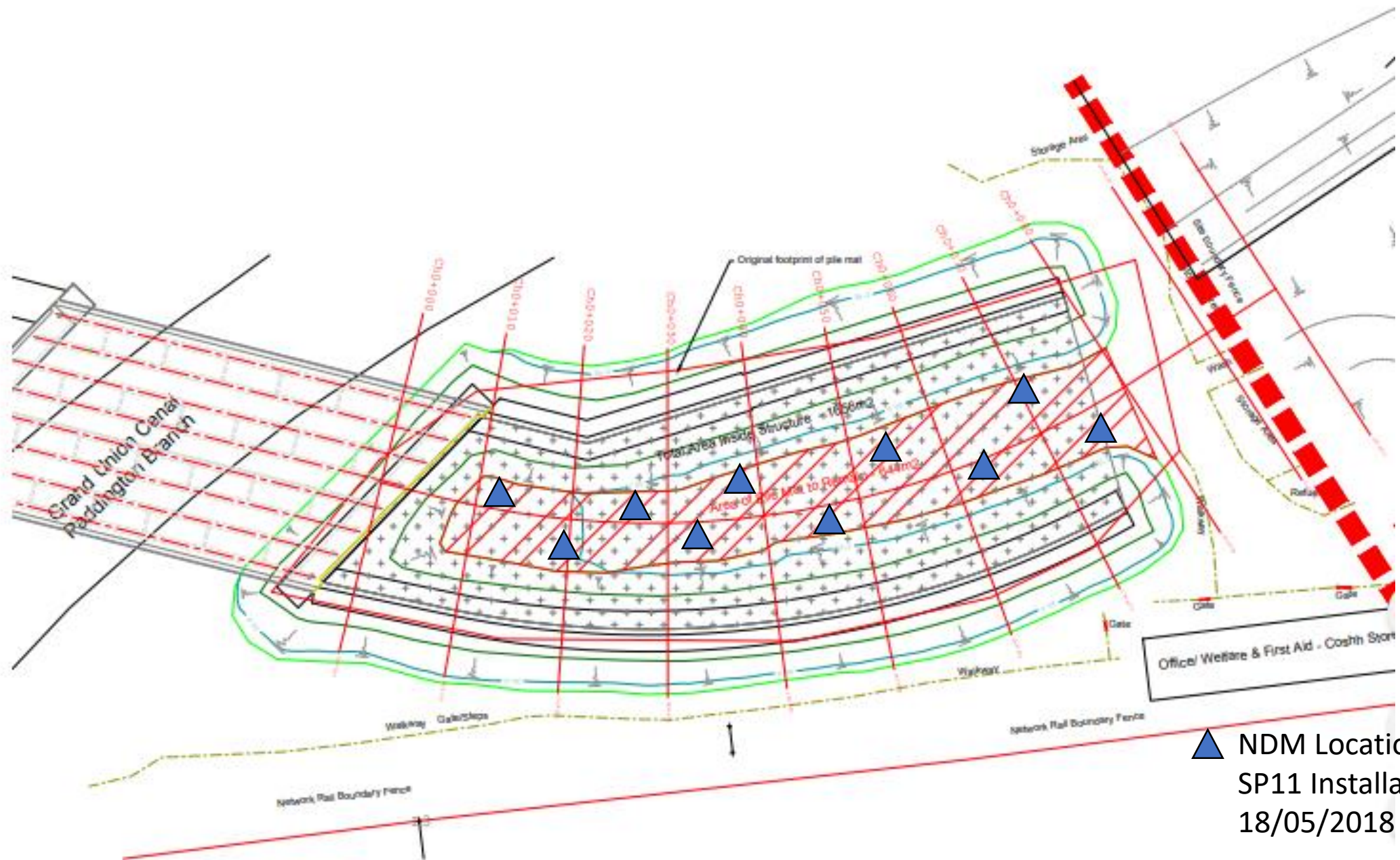
▲ NDM Locations
6N Installations
09/05/2018



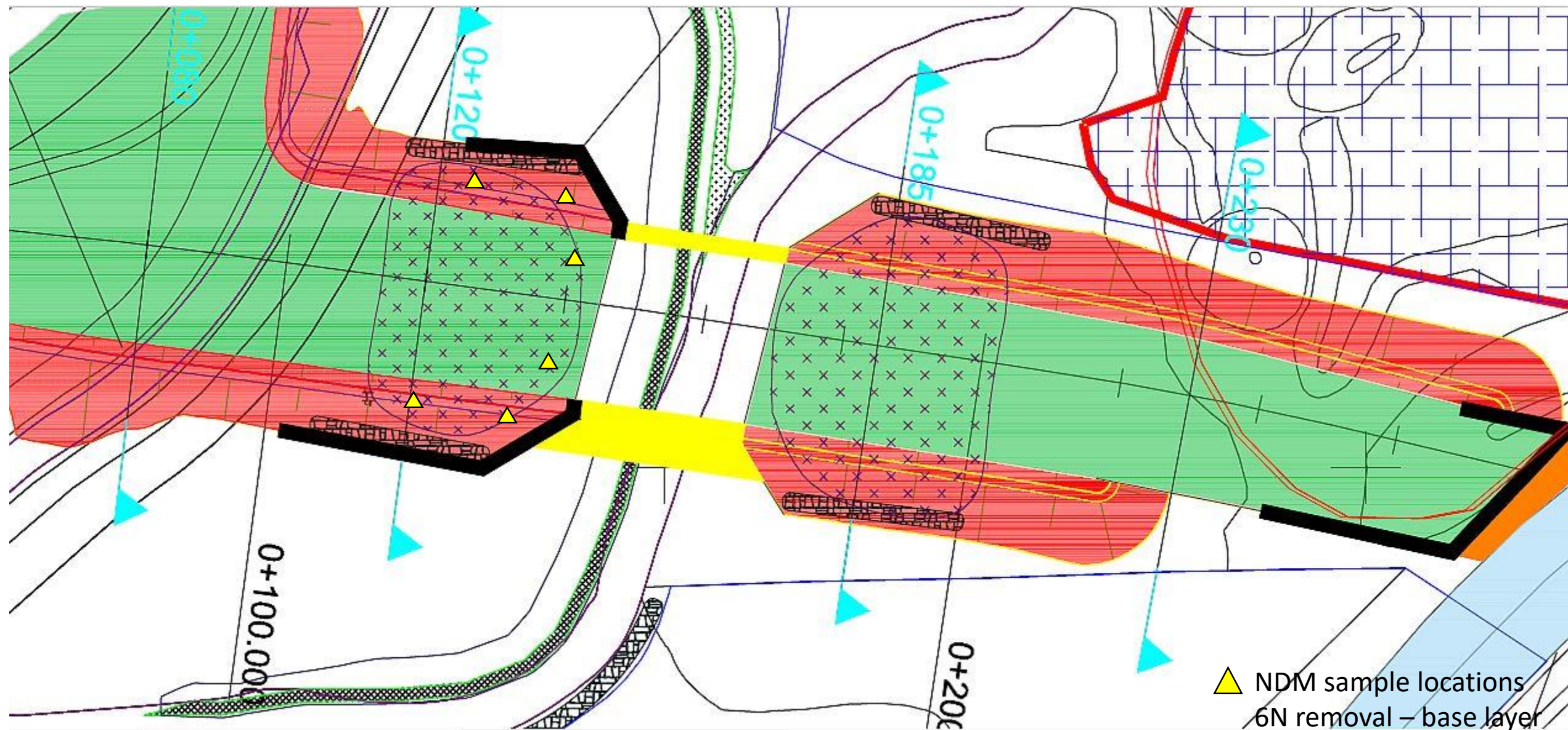
▲ NDM Locations
▲ 6N & SP111 Installations
11/05/2018



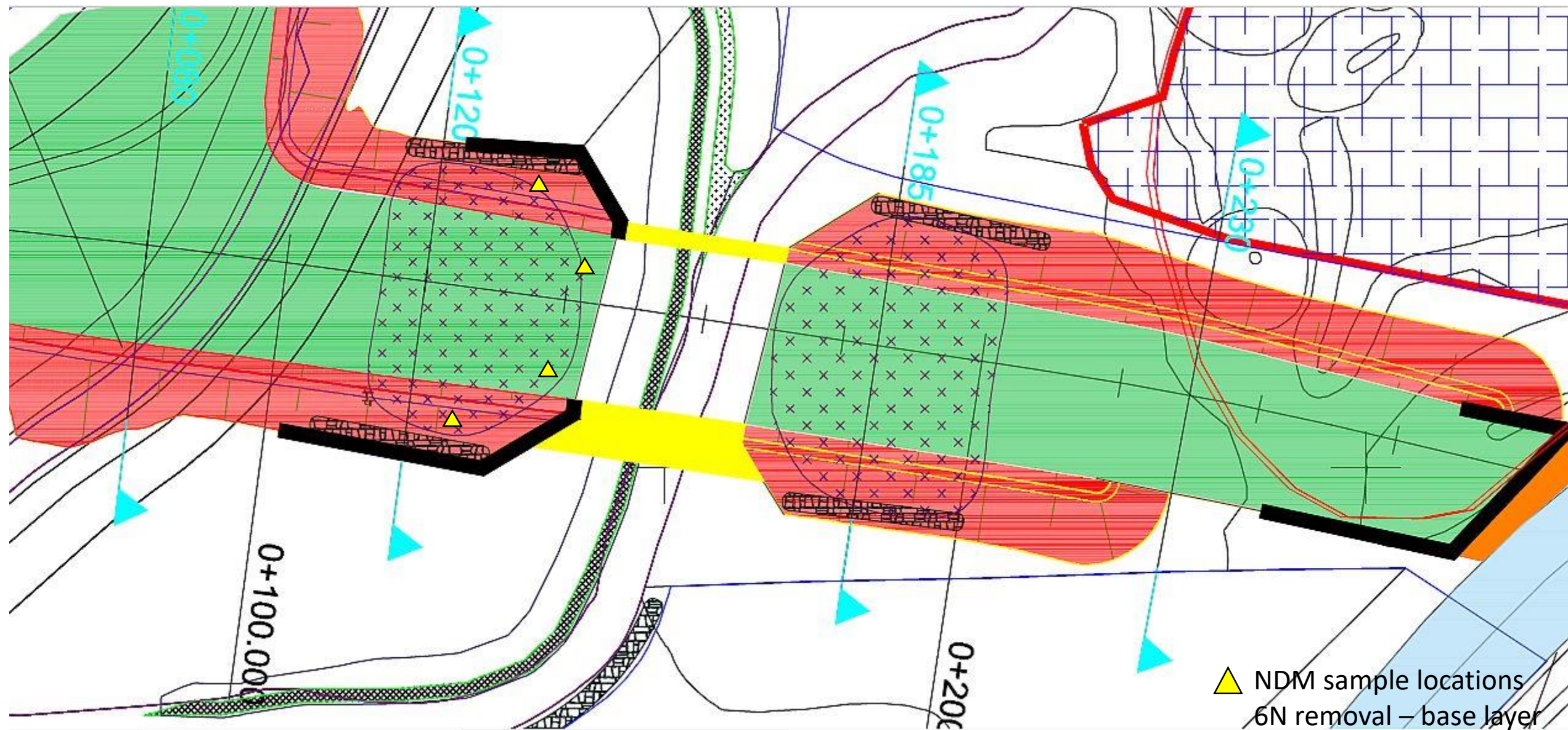
- ▲ NDM Locations
 - ▲ 6N & SP11 Installations
- 17/05/2018



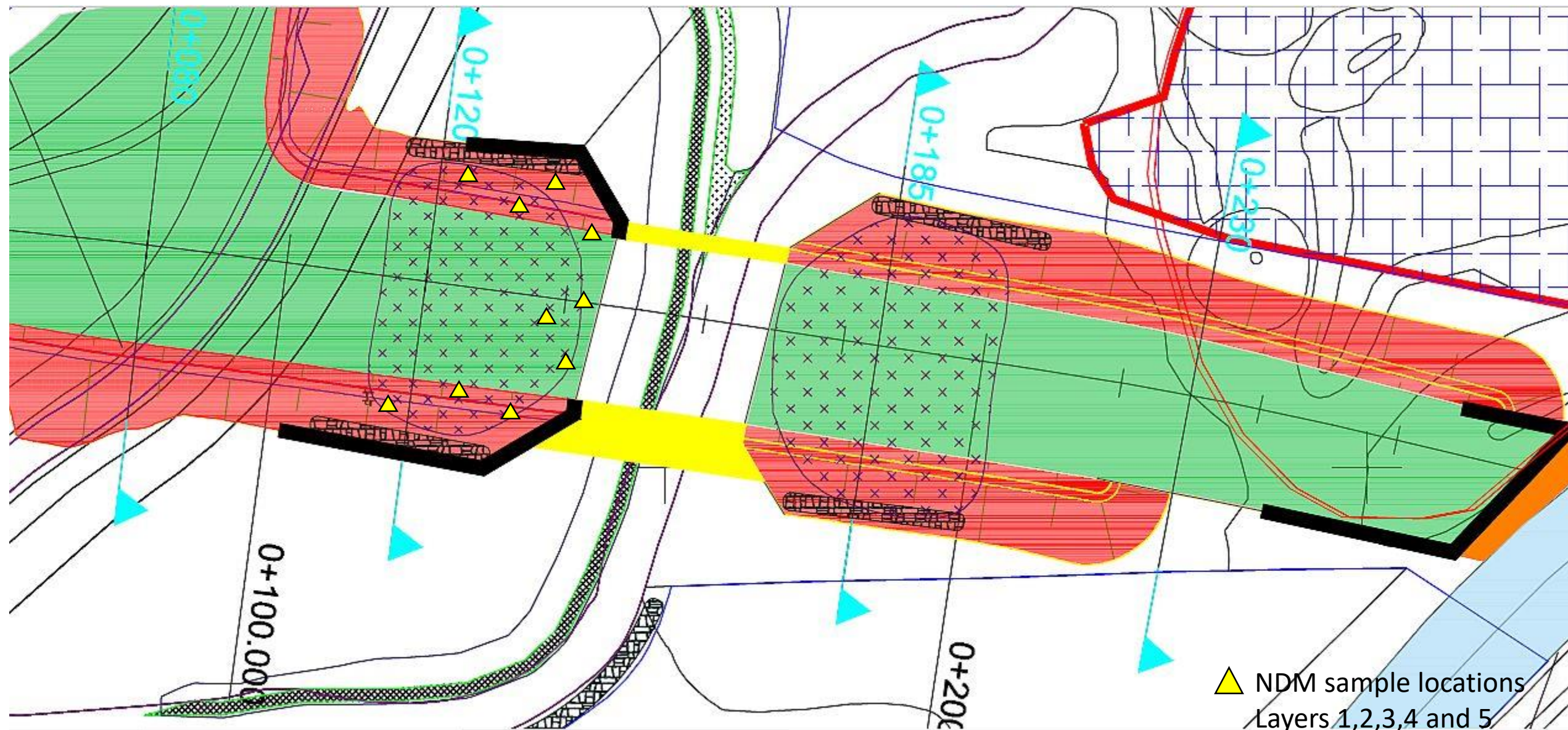
▲ NDM Locations
SP11 Installations
18/05/2018



6N removal – base layer
09.01.2018

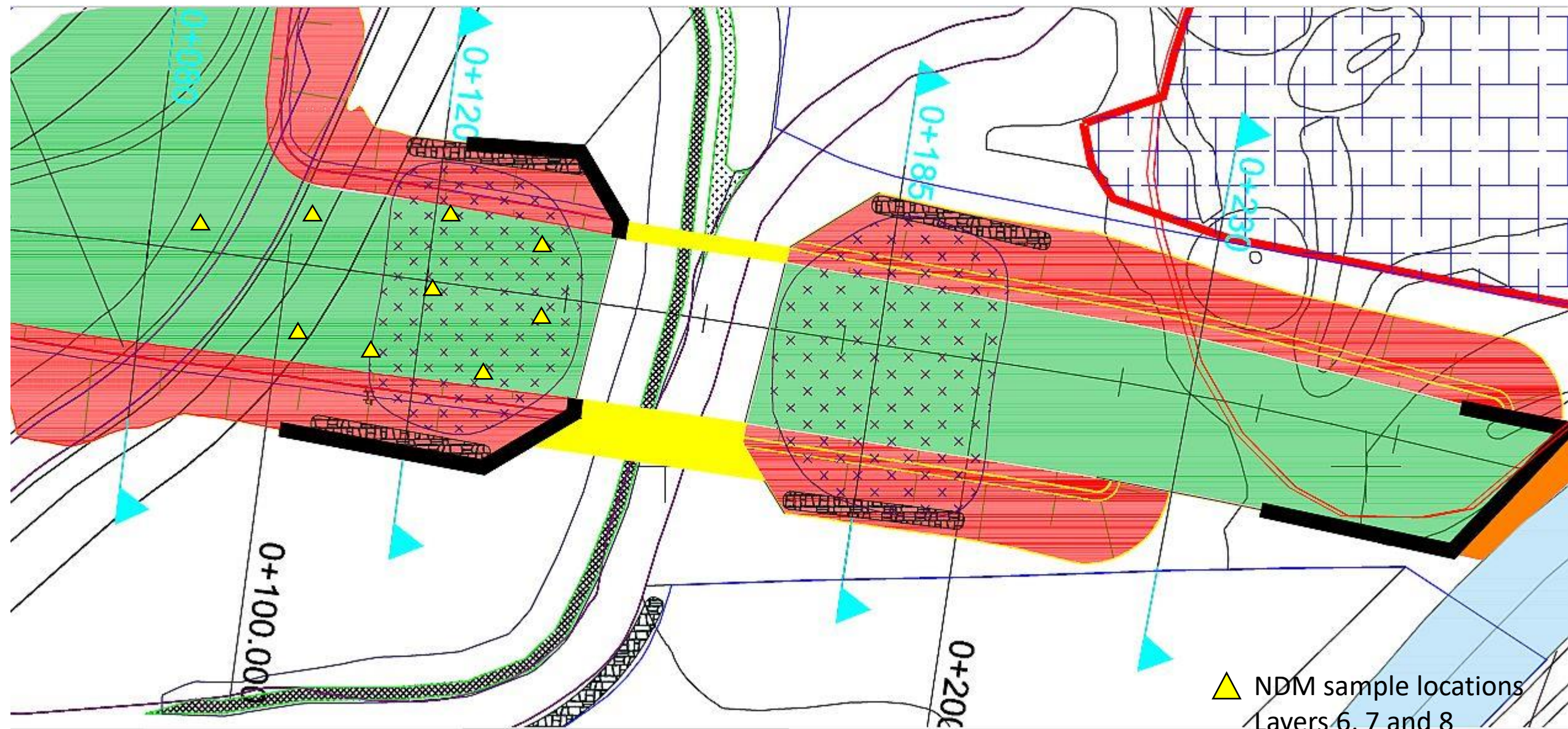


▲ NDM sample locations
6N removal – base layer
10.01.2018

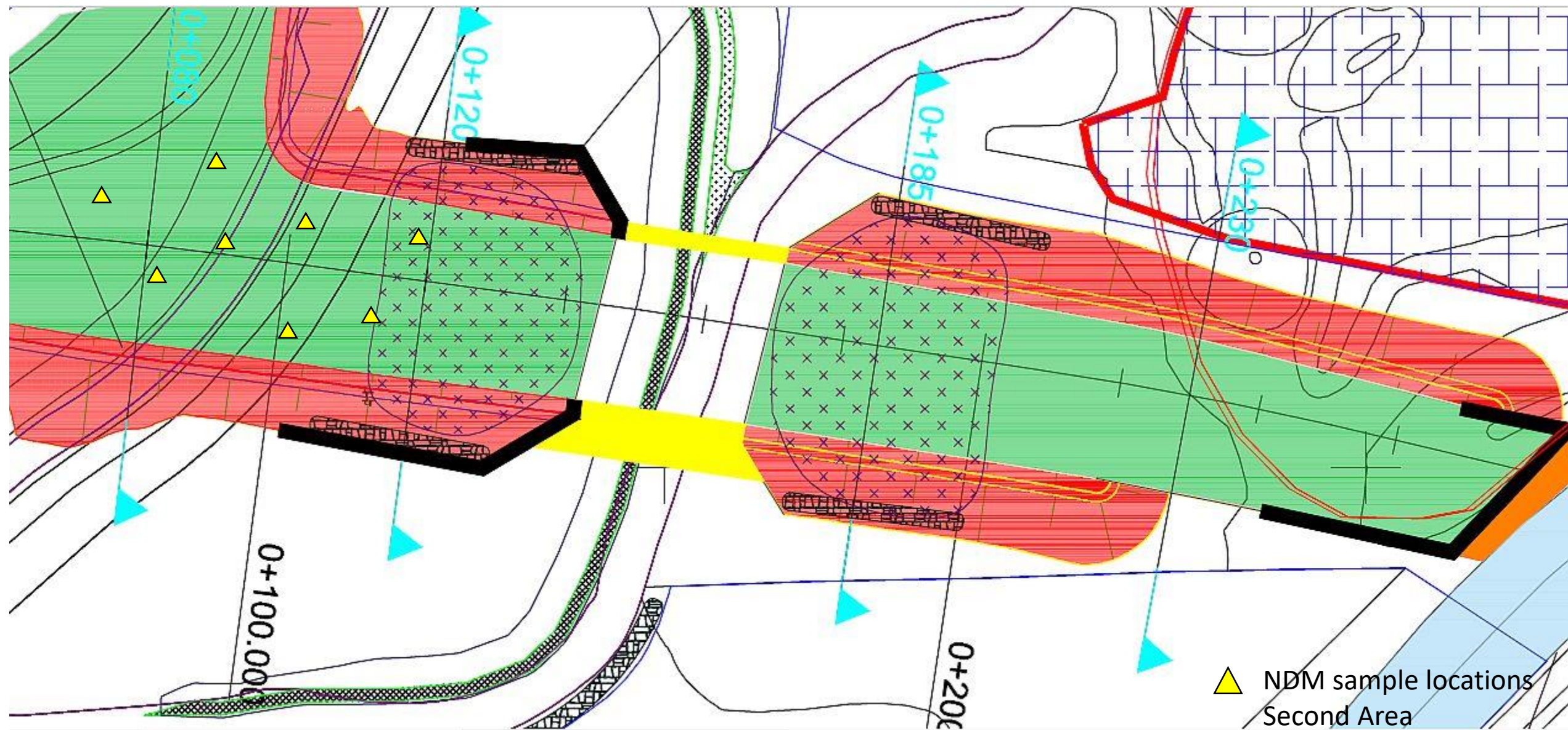


▲ NDM sample locations
Layers 1,2,3,4 and 5

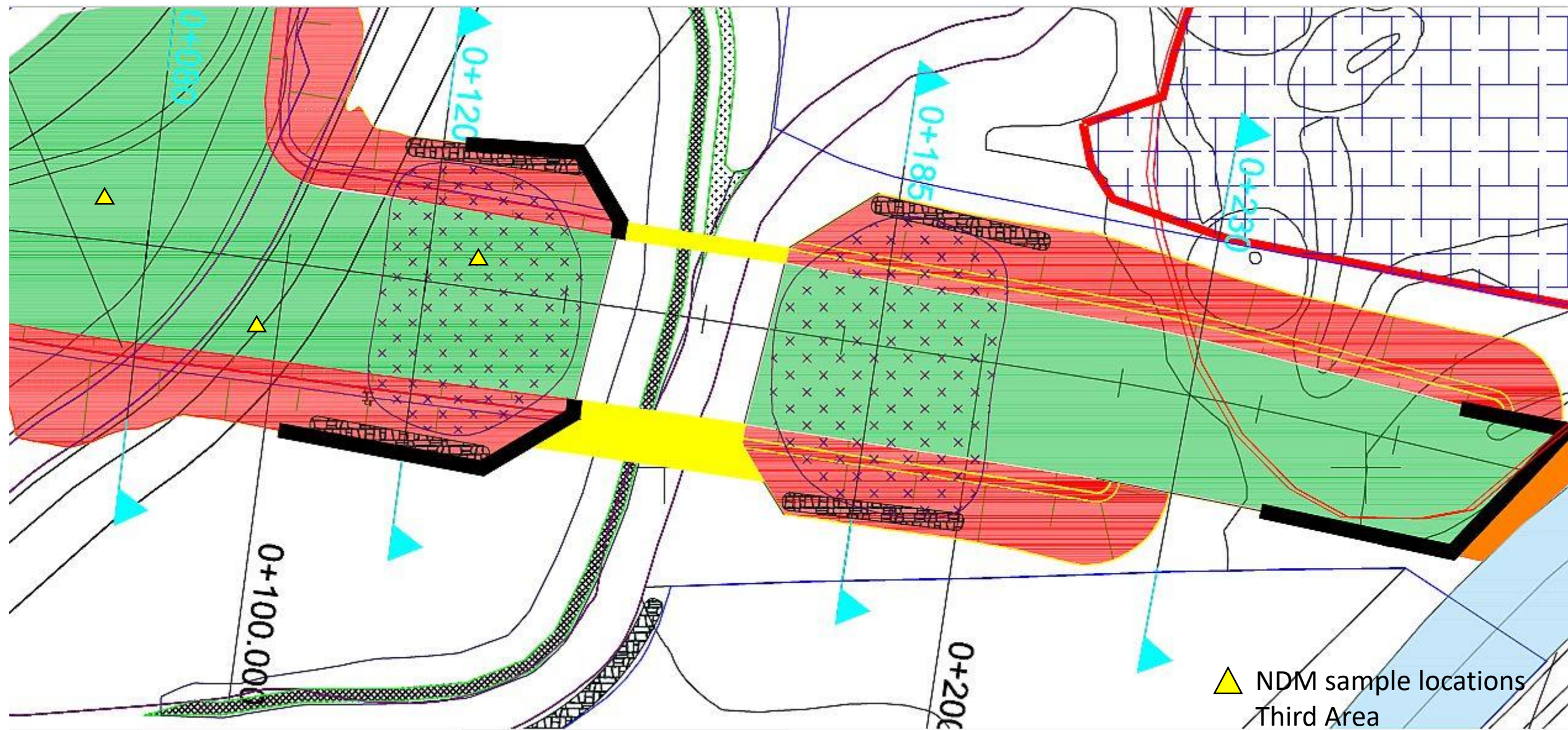
11.01.2018



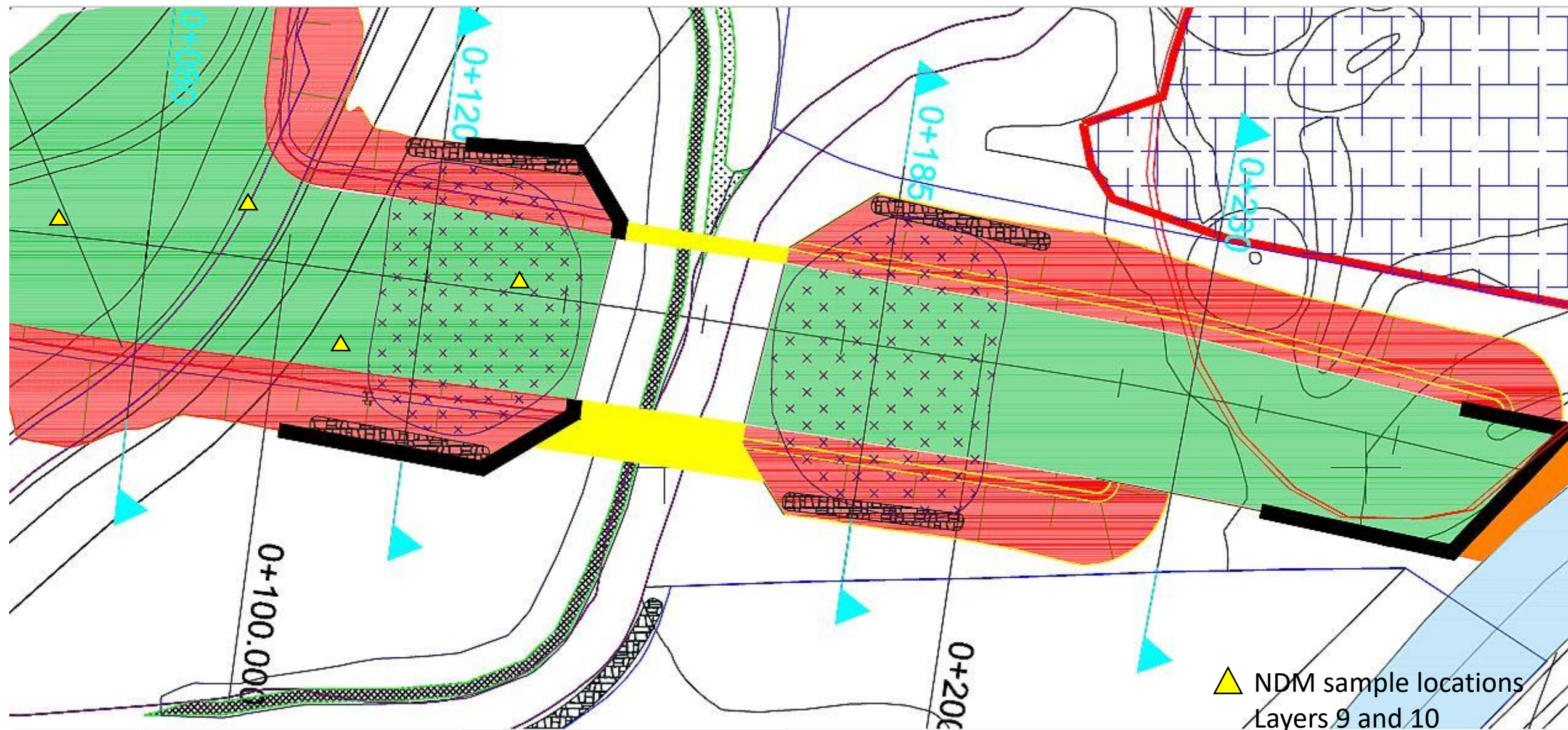
▲ NDM sample locations
Layers 6, 7 and 8
12.01.2018



▲ NDM sample locations
Second Area
15.01.2018

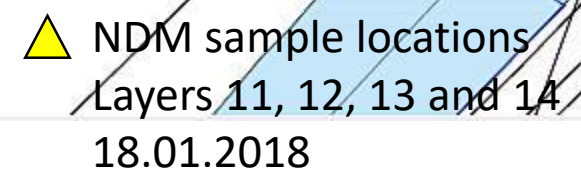


▲ NDM sample locations
Third Area
16.01.2018

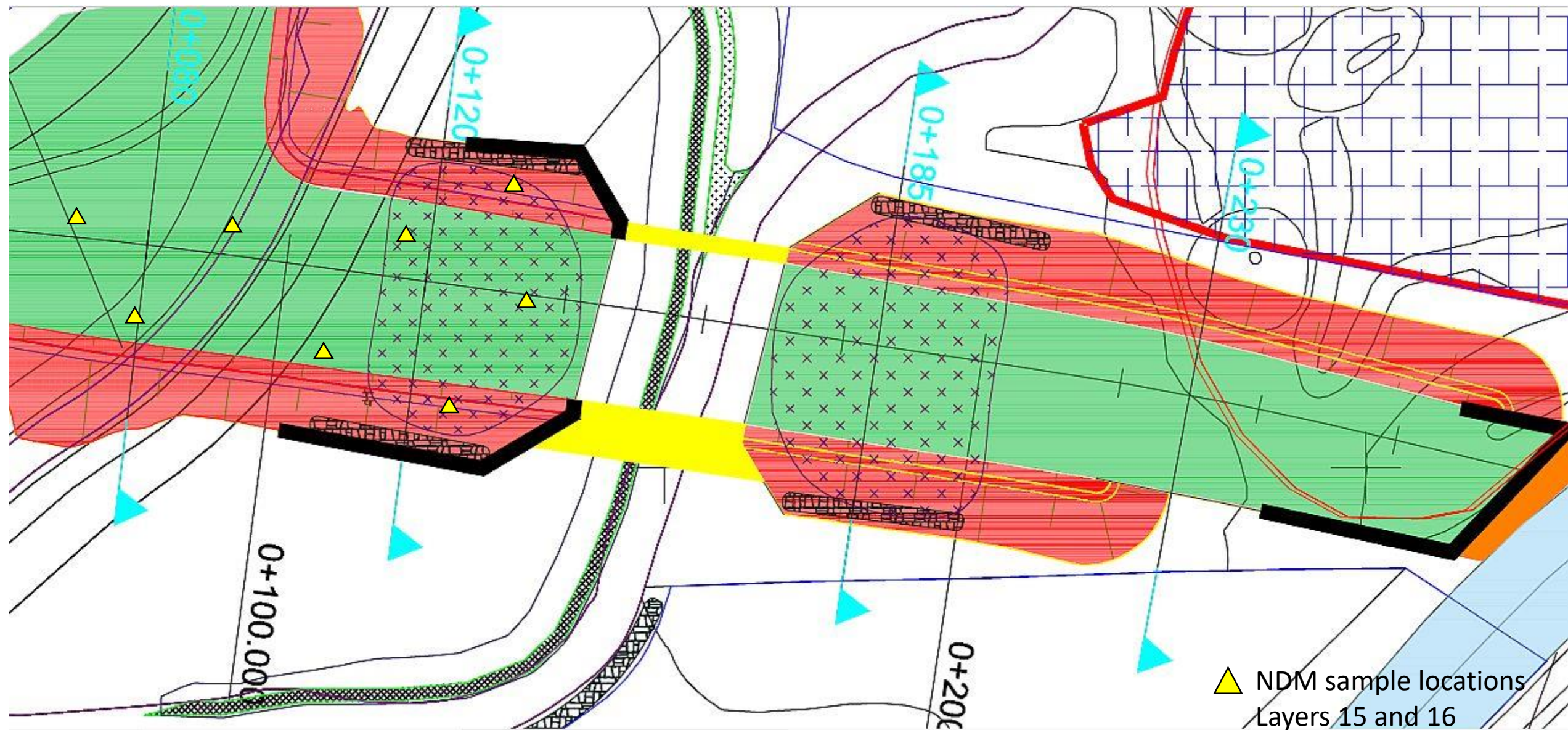


▲ NDM sample locations
Layers 9 and 10

17.01.2018



18.01.2018



▲ NDM sample locations
Layers 15 and 16
22.01.2018

APPENDIX 3

Material Tracking Log Sheet

Material Reference								Contamination Screening/Reporting			Specification
Test Type:	Reuse Zone:	Reference (Grid or Report)	Class	Material Type	Area From	Area To	Quantity	Report Date	Report ID:	Chemical	
Chemical Analysis	Zone 5	Z5SP111XX	RTG	SP111	Blackwell Soil Hospital	Zone 5	~500m3	19/04/2018	18-82248	18-82248	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP111XY	RTG	SP111	Blackwell Soil Hospital	Zone 5	~500m3	19/04/2018	18-82248	18-82248	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP111XZ	RTG	SP111	Blackwell Soil Hospital	Zone 5	~500m3	19/04/2018	18-82248	18-82248	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP111YY	RTG	SP111	Blackwell Soil Hospital	Zone 5	~500m3	19/04/2018	18-82248	18-82248	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP111YZ	RTG	SP111	Blackwell Soil Hospital	Zone 5	~500m3	19/04/2018	18-82248	18-82248	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP11AA	RTG	SP11	Blackwell Soil Hospital	Zone 5	~500m3	30/04/2018	18-83413	18-83413	Within reuse/remedial target criteria
Chemical Analysis	Zone 5	Z5SP11AB	RTG	SP11	Blackwell Soil Hospital	Zone 5	~500m3	30/04/2018	18-83413	18-83413	Within reuse/remedial target criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NXX	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	19/04/2018	18-82248	18-82248	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NXY	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	25/04/2018	18-82864	18-82864	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NXZ	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	25/04/2018	18-82864	18-82864	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NYX	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	25/04/2018	18-82864	18-82864	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NYY	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	25/04/2018	18-82864	18-82864	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NYZ	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	25/04/2018	18-82864	18-82864	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NAA	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	30/04/2018	18-83413	18-83413	Within import criteria
Chemical Analysis	Zone 5, 4, & 7	Z56NAB	Import	6N IBAA	Import	Zone 5, 4, & 7	~500m3	30/04/2018	18-83413	18-83413	Within import criteria
Chemical Analysis	Zone 4	SP7XY	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP16XY	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP16XZ	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP16XY	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP16XZ	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP7XY	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP16YCX	Made Ground	Lagoon 2C	Lagoon SP16	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria

Material Reference								Contamination Screening/Reporting			Specification
Test Type:	Reuse Zone:	Reference (Grid or Report)	Class	Material Type	Area From	Area To	Quantity	Report Date	Report ID:	Chemical	
Chemical Analysis	Zone 4	SP4XW	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XX	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XZ	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YW	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YX	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YY	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YZ	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XX	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XZ	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XW	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YX	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YY	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YZ	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4YW	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XCB	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XCD	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XCX	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP4XCY	Made Ground	Lagoon 2C	Lagoon SP4	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP8XX	Made Ground	Lagoon 2C	Lagoon SP8	Zone 4	~500m3	15/02/2018	18-75590	18-75590	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP8XX	Made Ground	Lagoon 2C	Lagoon SP8	Zone 4	~500m3	19/02/2018	18-76082	18-76082	Within reuse/remedial target criteria
Chemical Analysis	Zone 4	SP8YCY	Made Ground	Lagoon 2C	Lagoon SP8	Zone 4	~500m3	22/02/2018	18-76507	18-76507	Within reuse/remedial target criteria

Material Reference								Contamination Screening/Reporting			Specification
Test Type:	Reuse Zone:	Reference (Grid or Report)	Class	Material Type	Area From	Area To	Quantity	Report Date	Report ID:	Chemical	
Chemical Analysis	Zone 4 & 3	MGFCXXC	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	MGFCYXC	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	MGFCXZC	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	FCAMGR1	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	08/03/2018	18-78096	18-78096	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	FCAMGR2	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	08/03/2018	18-78096	18-78096	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	FCAMGXX	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	20/03/2018	18-78846	18-78846	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	FCAMGY Y	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	20/03/2018	18-78846	18-78846	Within reuse/remedial target criteria
Chemical Analysis	Zone 4 & 3	FCAMG71	Made Ground	FCA MG 2C	Site Won - FCA	Zone 4 & 3	~500m3	23/03/2018	18-79663-B	18-79663-B	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7XX	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7XY	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7XZ	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7YX	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7YY	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7YZ	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7ZX	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7ZY	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7ZZ	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCAZ7WX	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	02/05/2018	18-83240	18-83240	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCA1	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	25/05/2018	18-85602	18-85602	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCA2	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	25/05/2018	18-85602	18-85602	Within reuse/remedial target criteria
Chemical Analysis	Zone 7 & 4	FCA3	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	25/05/2018	18-85602	18-85602	Within reuse/remedial target criteria

Material Reference								Contamination Screening/Reporting			Specification
Test Type:	Reuse Zone:	Reference (Grid or Report)	Class	Material Type	Area From	Area To	Quantity	Report Date	Report ID:	Chemical	
Chemical Analysis	Zone 7 & 4	FCA4	RTG	FCA 2C	Site Won - FCA	Zone 7 & 4	~500m3	25/05/2018	18-85602	18-85602	Within reuse/remedial target criteria
Chemical Analysis	Zone 3	Z7SPXY	Made Ground	Class 2C MG	Site Won - Pump Lane Z3	Zone 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 3	Z7SPYZ	Made Ground	Class 2C MG	Site Won - Pump Lane Z3	Zone 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 3	Z7SPXYC	Made Ground	Class 2C MG	Site Won - Pump Lane Z3	Zone 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria
Chemical Analysis	Zone 3	Z7SPYZC	Made Ground	Class 2C MG	Site Won - Pump Lane Z3	Zone 3	~500m3	02/03/2018	18-77417	18-77417	Within reuse/remedial target criteria

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 5	168290_1			6N	Zone 5 - 6N	Zone 5 Roadway																		45	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 5	39924_8_1_1			6N	Zone 5 - 6N	Zone 5 Roadway			6N	16.50%															Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 5	39924_14_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.77 / 16%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_13_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.78 / 16%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_12_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.77 / 16%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39969_7_1_1			6N	6N IBAA	Zone 5 Roadway													1.58 / 24%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39969_4_1_1			6N	6N IBAA	Zone 5 Roadway													1.57 / 24%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39969_1_1_1			6N	6N IBAA	Zone 5 Roadway													1.58 / 24%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_11_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.66 / 22%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_9_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.72 / 19%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_7_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.88 / 14%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_5_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.79 / 17%						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																	Compliance
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/s Sulphate	Eff. Angle of Int. Friction	
Geotechnical Laboratory	Zone 5	39924_4_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.75 / 14%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_3_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.61 / 21%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_2_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.58 / 24%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39924_1_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.63 / 20%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37799_2_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.61 / 23.5%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37272_7_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.77 / 17%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37272_3_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.78 / 17.5%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37390_2_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.85 / 15%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37272_1_1_1			6N	Zone 5 - 6N	Zone 5 Roadway													1.89 / 14.5%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37027_2_1_1			6N	Zone 5 - 6N	Zone 5 Roadway		2.67																	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71559			6N IBAA	Import	Zone 7 - Roadway																1.91	0.07		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-71559			6N IBAA	Import	Zone 4, 5 & 7 Roadway																2.14	0.07		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-71559			6N IBAA	Import	Zone 4, 5 & 7 Roadway																1.91	0.07		Complies with MCHW S.600 Class 6N

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4, 5 & 7	18-71559			6N IBAA	Import	Zone 4, 5 & 7 Roadway																1.68	0.06		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-71559			6N IBAA	Import	Zone 4, 5 & 7 Roadway																1.82	0.09		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	33497_4_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway														26					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	33497_5_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway														29					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	33497_6_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway														23					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	167797_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway																		47	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	167797_3			6N IBAA	Import	Zone 4, 5 & 7 Roadway																		47	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	553024			6N IBAA	Import	Zone 4, 5 & 7 Roadway																		41	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	D3420			6N IBAA	Import	Zone 4, 5 & 7 Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	D3720			6N IBAA	Import	Zone 4, 5 & 7 Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	CG-28308			6N IBAA	Import	Zone 4, 5 & 7 Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	37027_4_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	37027_8_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway			6N+																Minor exceedance of 0.063mm at 16%. Within tolerance
Geotechnical Laboratory	Zone 4, 5 & 7	33942_27_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway															6.9x10-5				Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	33942_18_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway															1.5x10-5				Complies with MCHW S.600 Class 6N

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4, 5 & 7	33942_23_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway															1.0x10-4				Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	33942_22_1_1			6N IBAA	Import	Zone 4, 5 & 7 Roadway													19%/1.69						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 7	18-71977			6N TW	Import	Zone 7 - Roadway													8.6%/2.17						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 7	18-71977			6N TW	Import	Zone 7 - Roadway														36					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33497_1_1_1			6N TW	Import	Zone 7 - Roadway														28					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33497_2_1_1			6N TW	Import	Zone 7 - Roadway														28					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33497_3_1_1			6N TW	Import	Zone 7 - Roadway														26					Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71558			6N TW	Import	Zone 7 - Roadway																2.28	0.08		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71558			6N TW	Import	Zone 7 - Roadway																1.72	0.07		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71558			6N TW	Import	Zone 7 - Roadway																1.75	0.07		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71558			6N TW	Import	Zone 7 - Roadway																2.14	0.09		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	18-71558			6N TW	Import	Zone 7 - Roadway																1.9	0.09		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	167798_1			6N TW	Import	Zone 7 - Roadway																		47	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	167798_2			6N TW	Import	Zone 7 - Roadway																		48	Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	22610			6N TW	Import	Zone 7 - Roadway																		43	Complies with MCHW S.600 Class 6N

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 7	872510			6N TW	Import	Zone 7 - Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	872511			6N TW	Import	Zone 7 - Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	872512			6N TW	Import	Zone 7 - Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	872513			6N TW	Import	Zone 7 - Roadway			6N																Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	32684_10_1_1			6N TW	Import	Zone 7 - Roadway													14.5%/1.79						Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	32684_11_1_1			6N TW	Import	Zone 7 - Roadway													12.5%/1.80						Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33942_42_1_1			6N TW	Import	Zone 7 - Roadway													19.5%/1.67						Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33942_43_1_1			6N TW	Import	Zone 7 - Roadway															8.6x10-4				Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33942_48_1_1			6N TW	Import	Zone 7 - Roadway															8.3x10-4				Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 7	33942_36_1_1			6N TW	Import	Zone 7 - Roadway															7.6x10-4				Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4	30433_4_1_1			Class 2C	FCA	Zone 7 - Roadway			Class 2C	11.50%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	30433_9_1_1			Class 2C	FCA	Zone 7 - Roadway			Class 2C	9.40%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	39513_11_1_1			Class 2C	FCA	Zone 7 - Roadway			Class 2C	11.10%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	39513_14_1_1			Class 2C	FCA	Zone 7 - Roadway			Class 2C	10.60%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	30433_8_1_1			Class 2C	FCA	Zone 7 - Roadway													7.9%/2.01						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	30433_3_1_1			Class 2C	FCA	Zone 7 - Roadway													8.8%/1.93						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	32684_8_1_1			Class 2C	FCA	Zone 7 - Roadway													6.5%/2.19						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	32684_14_1_1			Class 2C	FCA	Zone 7 - Roadway													6.5%/2.19						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	33207_2_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	28.10%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_4_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	30.20%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_6_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	28.00%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_12_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	27.20%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_14_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	29.40%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_16_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	27.70%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_18_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	28.10%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_20_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	27.00%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_22_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	26.60%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_3_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	22.10%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_5_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	22.50%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_6_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	22.20%															Complies with MCHW S.600 Class 2C

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	33942_8_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	20.60%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	31124_2_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	23.40%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_1_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_3_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.7														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_5_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.6														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_7_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.3														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_11_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					9														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_13_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.7														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_15_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					7.5														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_17_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					8.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33207_19_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					9.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_2_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					11.4														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_6_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					12.6														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_10_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					11.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_13_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					12.2														Complies with MCHW S.600 Class 2C

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	33402_14_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					11.2														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_15_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					11.7														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_2_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					9.6														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_4_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					9.5														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	31124_1_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway					6.4														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_4_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway						28%	48%	20											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	179045_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway						37%	53%	16											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	179046_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway						33%	55%	22											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	178657_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway						21%	46%	25											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	178657_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									1.9	0.64	0.07	0.24							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-69242			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									2.9	0.01	0.04	0.18							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									5.3	1.37	0.31	0.72							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									4.3										Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									5.2										Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway									4.6										Complies with MCHW S.600 Class 2C

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	178661_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													14%/1.76						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	178660_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													13%/1.76						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	178663_1			Class 2C (7F)	Stockpile 8 - Lagoon	Zone 4 - Roadway													14%/1.74						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	178662_1			Class 2C (7F)	Stockpile 8 - Lagoon	Zone 4 - Roadway													14%/1.73						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179027_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													24%/1.48						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179027_1A			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													24%/1.48						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179026_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													26%/1.41						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179026_1A			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													26%/1.41						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	33123_1_1_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													27%/1.41						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179030_1A			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													20%/1.62						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179030_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													20%/1.62						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179031_1A			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													18%/1.65						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	179031_1			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway													18%/1.65						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	31124_12_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	23.30%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_2_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	21.70%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_6_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	22.90%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_10_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	22.60%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_12_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	19.60%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_26_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	21.30%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_11_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	23.70%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_12_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	20.90%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_13_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	23.90%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33942_14_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway			Class 2C (7F)	20.50%															Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	31124_11_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					8.1														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_1_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					9.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_5_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					9.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33220_9_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					8.7														Complies with MCHW S.600 Class 2C

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	33220_11_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					10.1														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_30_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					5.9														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_33_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					7.8														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_35_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway					6.1														Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	33402_28_1_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway						27%	51%	24%											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	179047_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway						20%	56%	36%											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	179048_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway						20%	57%	37%											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	178659_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway						20%	50%	30%											Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway									2.6										Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway									2.9										Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-69242			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway									1.2										Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-69242			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway										0.94	0.1	0.32							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway										0.74	0.22	0.85							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	18-71114			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway										0.31	0.27	0.77							Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	179029_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway													20%/1.65						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4	179029_1A			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway													20%/1.65						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179028_1			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway													22%/1.60						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	179028_1A			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway													22%/1.60						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	33123_2_1_!			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway													21%/1.59						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4	35436_7_1_2			Class 2C (7F)	Stockpile 4 - Lagoon	Zone 4 - Roadway		2.48																	Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 4	35436_7_1_3			Class 2C (7F)	Stockpile 16 - Lagoon	Zone 4 - Roadway		2.47																	Complies with MCHW S.600 Class 2C
Geotechnical Laboratory	Zone 3	34119_21_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	11.10%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_17_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	13.70%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_15_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	13.10%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_11_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	13.50%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_3_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	13.50%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_7_1_1			Class 7F (2C)	FCA	Zone 3			Class 7F (2C)	14.90%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 4, 5 & 7	37272_1_1_1			IBAA	Import	Zone 4, 5 & 7 Roadway													14.5%/1.89						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4, 5 & 7	37272_3_1_1			IBAA	Import	Zone 4, 5 & 7 Roadway													17.5%/1.78						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 4, 5 & 7	37272_7_1_1			IBAA	Import	Zone 4, 5 & 7 Roadway													17%/1.77						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4, 5 & 7	37390_2_1_1			IBAA	Import	Zone 4, 5 & 7 Roadway													15%/1.85						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4, 5 & 7	360731			IBAA	Import	Zone 4, 5 & 7 Roadway													22%/1.60						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 4, 5 & 7	18-73863			IBAA	Import	Zone 4, 5 & 7 Roadway																0.99	0.23		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-73863			IBAA	Import	Zone 4, 5 & 7 Roadway																0.97	0.54		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-73863			IBAA	Import	Zone 4, 5 & 7 Roadway																0.92	0.22		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 4, 5 & 7	18-73863			IBAA	Import	Zone 4, 5 & 7 Roadway																0.86	0.13		Complies with MCHW S.600 Class 6N
Geotechnical Laboratory	Zone 5	39903_2_1_1			Orange Clayey Ballast	SP11	Zone 5 Roadway													2.15 / 7.3%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39903_4_1_1			Orange Clayey Ballast	SP11	Zone 5 Roadway		2.62																	Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39903_3_1_1			Orange Clayey Ballast	SP11	Zone 5 Roadway		2.62																	Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_8_1_1			Orange Clayey Ballast	SP11	Zone 5 Roadway													2.05 / 9%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37282_12_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway													2.17 / 7%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37282_8_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway		2.73																	Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_9_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway													2.15 / 6.5%						Benchmark for performance

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/s Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
																										specification. See field test.
Geotechnical Laboratory	Zone 5	37282_3_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway		2.78																	Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_4_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway													2.20 / 6.5%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	37282_15_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	4.60%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_13_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	5.50%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_5_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	5.80%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_19_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	6.10%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_17_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	5.70%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	37282_10_1_1			Orange Clayey Ballast	SP111	Zone 5 Roadway			Class 1A	4.60%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_2_1_1			Sandy Ballast	SP11	Zone 5 Roadway													2.11 / 8.5%						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 5	39109_3_1_1			Sandy Ballast	SP11	Zone 5 Roadway		2.53																	Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_15_1_1			Sandy Ballast	SP11	Zone 5 Roadway			Class 1A	8.20%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_12_1_1			Sandy Ballast	SP11	Zone 5 Roadway			Class 1A	7.30%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_9_1_1			Sandy Ballast	SP11	Zone 5 Roadway			Class 1A	7.30%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 5	39109_4_1_1			Sandy Ballast	SP11	Zone 5 Roadway			Class 1A	7.70%															Complies with MCHW S.600 Class 1A

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 5	39109_14_1_1			Sandy Ballast	SP11	Zone 5 Roadway			Class 1A	8.00%															Complies with MCHW S.600 Class 1A
Geotechnical Laboratory	Zone 3	34119_2_1_1				FCA	Zone 3					9.4														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_6_1_1				FCA	Zone 3					12.4														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_18_1_1				FCA	Zone 3					11.7														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_16_1_1				FCA	Zone 3					11.5														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_14_1_1				FCA	Zone 3					11.6														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_10_1_1				FCA	Zone 3					10														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_12_1_1				FCA	Zone 3						19%	34%	15%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_8_1_1				FCA	Zone 3						19%	35%	16%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_4_1_1				FCA	Zone 3						20%	34%	14%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-71555_34119_5_1_1				FCA	Zone 3									2.4	0.51	0.09	0.26							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-71555_34119_9_1_1				FCA	Zone 3									1.6	0.22	0.05	0.13							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-71555_34119_13_1_1				FCA	Zone 3									2.2	0.24	0.07	0.17							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	39513_6_1_1				FCA	Zone 3													13% / 1.83						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 3	39513_7_1_1				FCA	Zone 3													14% / 1.80						Benchmark for performance specification. See field test.

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 3	39513_8_1_1				FCA	Zone 3														11% / 1.88					Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 3	39513_5_1_1				FCA	Zone 3		2.48																	Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_59_1_1				FCA	Zone 3			Class 2C (7F)	11.70%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_57_1_1				FCA	Zone 3			Class 2C (7F)	11.80%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_53_1_1				FCA	Zone 3			Class 2C (7F)	14.40%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_49_1_1				FCA	Zone 3			Class 2C (7F)	15.40%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_45_1_1				FCA	Zone 3			Class 2C (7F)	19.40%															Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_44_1_1				FCA	Zone 3					5.4														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_48_1_1				FCA	Zone 3					4.4														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_52_1_1				FCA	Zone 3					10.3														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_56_1_1				FCA	Zone 3					9.4														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_58_1_1				FCA	Zone 3					9.7														Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_50_1_1				FCA	Zone 3						26%	43%	17%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_46_1_1				FCA	Zone 3						26%	44%	19%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	34119_46_1_1				FCA	Zone 3						26%	44%	18%											Complies with MCHW S.600 Class 7F

Material Reference			Material Movement						Geotechnical Classification Testing																Compliance	
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	SG	Grading	MC	MCV	PL	LL	PI	Organic Content %	W/S Sulphate	Ox Sulphate	TPS	OMC/MDD	LAC	Permeability (m/sec)	Total Sulphur	W/S Sulphate		Eff. Angle of Int. Friction
Geotechnical Laboratory	Zone 3	18-71555_34119_47_1_1				FCA	Zone 3									0.3	0.43	0.11	0.36							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-71555_34119_51_1_1				FCA	Zone 3									0.8	0.77	0.14	0.44							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-71555_34119_55_1_1				FCA	Zone 3									0.5	0.37	0.29	0.67							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	38160_8_1_1				FCA	Zone 3													12% / 1.91						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 3	38160_19_1_1				FCA	Zone 3													12% / 1.86						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 3	39513_10_1_1				FCA	Zone 3													12% / 1.88						Benchmark for performance specification. See field test.
Geotechnical Laboratory	Zone 3	38160_12_1_1				FCA	Zone 3						26%	40%	14%											Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-74750_331841				FCA	Zone 3									2	0.026	0.11	0.12							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-74750_331842				FCA	Zone 3									2.2	0.02	0.09	0.13							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	18-74750_331843				FCA	Zone 3									1.6	0.18	0.1	0.12							Complies with MCHW S.600 Class 7F
Geotechnical Laboratory	Zone 3	39513_9_1_1				FCA	Zone 3		2.51																	Complies with MCHW S.600 Class 7F

Material Reference			Material Movement						Geotechnical Field Testing							Comments
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	Compaction Testing	Compaction Achieved	Air Voids	DOP	Rapid MCV	In-Situ CBR	Plate CBR (at 1.25mm)	
Geotechnical Field	Zone 4	Z56NXY - 18-82864	30/01/2018	19/02/2018	6N IBAA	Import	Z4 North % South Wing Walls	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NXZ - 18-82864	30/01/2018	19/02/2018	6N IBAA	Import	Z4 North % South Wing Walls	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NXZ - 18-82864	30/01/2018	19/02/2018	6N IBAA	Import	Z4 North % South Wing Walls	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NYX - 18-82864	30/01/2018	19/02/2018	6N IBAA	Import	Z4 North % South Wing Walls	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NXY - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NYY - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NYY - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NYZ - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NYZ - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	Z56NZX - 18-82864	30/01/2018	19/02/2018	Orange gravel, sand, and stone	FCA	Z4 North % South Wing Wall Steps	~250m3	Zone 4 - Compaction	Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 4	SP4-XW(C), SP4-XX/C/, SP4XCB	09/02/2018	09/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	A-L1-4X	~250m3	A-L1-4X			95%	7.6, 10.4		9.70%	Within performance specification
Geotechnical Field	Zone 4	SP4-XW(C), SP4-XX/C/, SP4XCB	12/02/2018	12/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	A-L2-4X	~250m3	A-L2-4X	98%	6.2%+	80%	9.4, 12.0	4.20%	16%	Within performance specification
Geotechnical Field	Zone 4	SP4-XW(C), SP4-XX/C/, SP4XCD	13/02/2018	13/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	A-L4-4Z	~250m3	A-L4-4Z	99%	4.90%	75%	12.8+, 12.6+	5.20%	10%	Within performance specification
Geotechnical Field	Zone 4	SP4-XW(C), SP4-XX/C/, SP4XCD	14/02/2018	14/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	A-L3-4W	~250m3	A-L3-4W	99%	5.8%+	85%	8.8, 8.6	5.30%	8.70%	Within performance specification
Geotechnical Field	Zone 4	SP4-XZ(C), SP4-YW(C), SP4XCX	15/02/2018	15/02/2018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	A-L5-4Y	~250m3	A-L5-4Y	99%	5.8%+	70%	8.4, 7.4	6.20%	7.90%	Within performance specification
Geotechnical Field	Zone 4	SP4-XZ(C), SP4-YW(C), SP4XCX	15/02/2018	15/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	B-L1-4XX	~250m3	B-L1-4XX	100%	5.4%+	80%	9.2, 8.1	5.60%	12%	Within performance specification
Geotechnical Field	Zone 4	SP4-XZ(C), SP4-YW(C), SP4XCY	15/02/2018	15/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	B-L2-4YY	~250m3	B-L2-4YY	100%	4.90%	75%	7.2, 9.8	10.30%	19%	Within performance specification
Geotechnical Field	Zone 4	SP4-XZ(C), SP4-YW(C), SP4XCY	15/02/2018	15/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	B-L3-4XX	~250m3	B-L3-4XX	100%	4.60%	70%	9.0, 9.3	7.10%	14%	Within performance specification

Material Reference			Material Movement						Geotechnical Field Testing							Comments
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	Compaction Testing	Compaction Achieved	Air Voids	DOP	Rapid MCV	In-Situ CBR	Plate CBR (at 1.25mm)	
Geotechnical Field	Zone 4	SP4-YX(C),	16/02/2018	16/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	B-L4-4YY	~250m3	B-L4-4YY	102%	3.10%	85%	9.3, 11.2		13%	Within performance specification
Geotechnical Field	Zone 4	SP4-YX(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	B-L5-4XX	~250m3	B-L5-4XX	99%	4.70%	100%	9.2, 11.1	7.40%	12%	Within performance specification
Geotechnical Field	Zone 4	SP8-XX(C),	16/02/2018	16/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	C1-L1-4XX	~250m3	C1-L1-4XX	102%	3.70%	85%		14.70%	14%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B1-L1-4W	~250m3	B1-L1-4W	101%	3.20%	80%		5.60%	15%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B1-L3-4Y	~250m3	B1-L3-4Y	101%	3.90%	80%		7.10%	12%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B1-L5-4Z	~250m3	B1-L5-4Z	101%	4.30%	90%		7.40%	17%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B2-L1-4Z	~250m3	B2-L1-4Z	101%	3.10%	80%		7.20%	17%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	16/02/2018	16/02/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B2-L3-4W	~250m3	B2-L3-4W	103%	2.10%	65%		7.00%	17%	Within performance specification
Geotechnical Field	Zone 4	SP4-YY(C),	17/02/2018	17/02/2018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	A-L7-4Y	~250m3	A-L7-4Y	102%	3.30%	95%	11.2, 6.0	17.90%	12%	Within performance specification
Geotechnical Field	Zone 4	SP4-YY(C),	18/02/2018	18/02/2018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	A-L8-4XX	~250m3	A-L8-4XX	100%	8.1%+	90%	8.0, 5.8	9.40%	15%	Within performance specification
Geotechnical Field	Zone 4	SP16-XY(C), SP16-XZ(C),	18/02/2018	18/02/2018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	B1-L6-4YY	~250m3	B1-L6-4YY	100%	6%+**	90%		12.10%	17%	Within performance specification
Geotechnical Field	Zone 4	SP4-YZ(C),	18/02/2018	18/02/2018	Class 7F - 9B (4% OPC)	Stockpile 4 - Lagoon	C1-L2-4XX	~250m3	C1-L2-4XX	100%	6.7%+	90%	6.2, 6.5	14.60%	12%	Within performance specification
Geotechnical Field	Zone 4	SP4-YY(C),	15/03/3018	15/03/3018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	A-L10-4XX	~250m3	A-L10-4XX	99%	2.60%		9	8.20%	17%	Within performance specification
Geotechnical Field	Zone 4	SP4-YZ(C),	15/03/3018	15/03/3018	Class 7F - 9B (2% OPC)	Stockpile 4 - Lagoon	A-L11-4Z	~250m3	A-L11-4Z	100%	3.10%		9		10%	Within performance specification
Geotechnical Field	Zone 4	SP16XX	15/03/3018	15/03/3018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B2-L11-4Y	~250m3	B2-L11-4Y	99%	3.00%		9.5	6.50%	14%	Within performance specification
Geotechnical Field	Zone 4	SP16XX	15/03/3018	15/03/3018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B1-L11-4X	~250m3	B1-L11-4X	98%	4.20%		9	6.20%	13%	Within performance specification
Geotechnical Field	Zone 4	SP16XY	06/03/2018	06/03/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B-L10-4XX	~250m3	B-L10-4XX				8.5		13%	Within performance specification
Geotechnical Field	Zone 4	SP16XY	07/03/2018	07/03/2018	Class 7F - 9B (2% OPC)	Stockpile 16 - Lagoon	B-11-4YY	~250m3	B-11-4YY	100%	3.5%**		8		13%	Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	6N TW	Import	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	6N TW	Import	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	6N IBAA	Import	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification

Material Reference			Material Movement						Geotechnical Field Testing							Comments
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	Compaction Testing	Compaction Achieved	Air Voids	DOP	Rapid MCV	In-Situ CBR	Plate CBR (at 1.25mm)	
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	09/01/2018	18/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	23/01/2018	23/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%					9.00%	Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	23/01/2018	23/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%					29%	Within performance specification

Material Reference			Material Movement						Geotechnical Field Testing							Comments
Test Type:	Reuse Zone:	Reference (Grid or Report)	Start Date	Finish Date	Material Type	Area From	Area To	Quantity	Compaction Testing	Compaction Achieved	Air Voids	DOP	Rapid MCV	In-Situ CBR	Plate CBR (at 1.25mm)	
Geotechnical Field	Zone 7	Z7 - Compaction	23/01/2018	23/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%					18%	Within performance specification
Geotechnical Field	Zone 7	Z7 - Compaction	23/01/2018	23/01/2018	Orange gravel, sand, and stone	FCA	Yeading Brook West	~250m3		Equal to or > 95%					20%	Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 1	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 2	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 3	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 4	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 5	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 6	02/05/2018	02/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 1	04/05/2018	04/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Layer 7	04/05/2018	04/05/2018	FCA MG	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Finish Layer 1	16/05/2018	16/05/2018	SP7	Site Won	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Finish Layer 2	16/05/2018	16/05/2018	SP7	Site Won	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Finish Layer 3	16/05/2018	16/05/2018	SP7	Site Won	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Access Road 1	10/05/2018	10/05/2018	FCA 1A	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Access Road 2	10/05/2018	10/05/2018	FCA 1A	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Access Road 3	10/05/2018	10/05/2018	FCA 1A	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Access Road 4	10/05/2018	10/05/2018	FCA 1A	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Z3 - Access Road 5	10/05/2018	10/05/2018	FCA 1A	FCA	Zone 3	~250m3		Equal to or > 95%						Within performance specification
Geotechnical Field	Zone 3	Zone 3 Layer 1	04/05/2018	04/05/2018	FCA MG	FCA	Zone 3	~250m3							11.00%	Within performance specification
Geotechnical Field	Zone 3	Zone 3 Layer 7	04/05/2018	04/05/2018	FCA MG	FCA	Zone 3	~250m3							14%	Within performance specification
Geotechnical Field	Zone 3	Zone 3 Finish	10/05/2018	10/05/2018	SP7	Site Won	Zone 3	~250m3							64%	Within performance specification
Geotechnical Field	Zone 3	Zone 3 by Gate A	16/05/2018	16/05/2018	SP7	Site Won	Zone 3	~250m3							29%	Within performance specification

APPENDIX 4

Laboratory Analytical Data

Laboratory Testing

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.11.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 7F

TESTED BY: CD, RH, DI, MW

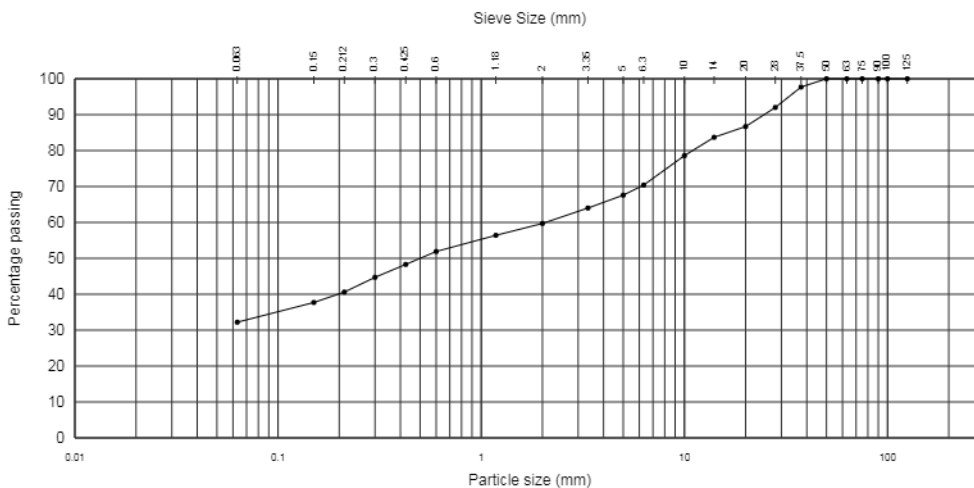
LOCATION: FCA

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	92	
20	87	
14	84	
10	79	
6.3	70	
5	68	
3.35	64	
2	60	
1.18	56	
0.6	52	
0.425	48	
0.3	45	
0.212	41	
0.15	38	
0.063	32	15 - 100

Class 7F - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 7F

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 13.5%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

08-Mar-18



0927

Report Format: L/Rep S6a/9

 Northdown House, Ashford Road
 Harrietsham, Nr Maidstone
 Kent ME17 1QW

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 www.cet-uk.com

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 Registered in England No. 02527130

Report version 1

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TEST REPORT:

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.7.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 7F

TESTED BY: CD, DG, RH, DI, AP, MW

LOCATION: FCA

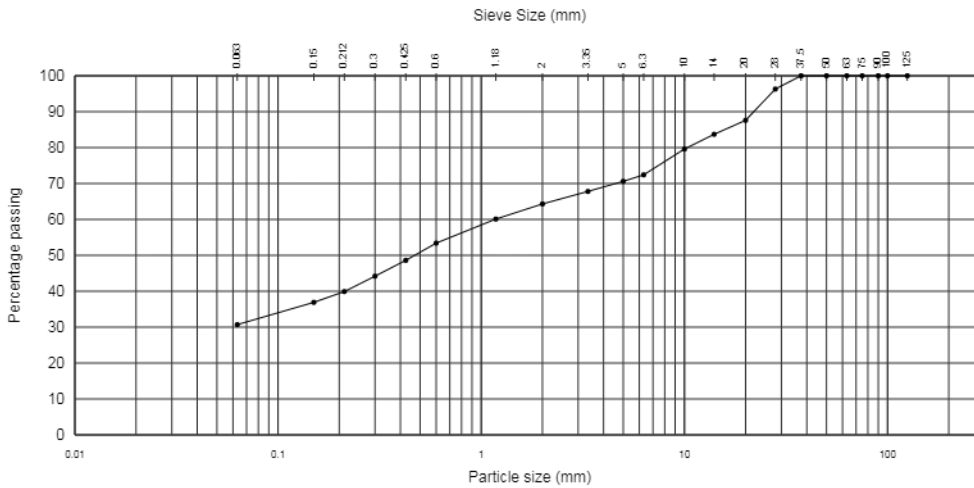
WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT



Class 7F - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 7F

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 14.9%

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	100	
28	96	
20	88	
14	84	
10	80	
6.3	72	
5	71	
3.35	68	
2	64	
1.18	60	
0.6	53	
0.425	49	
0.3	44	
0.212	40	
0.15	37	
0.063	31	15 - 100

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

08-Mar-18



0927

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.15.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, MW

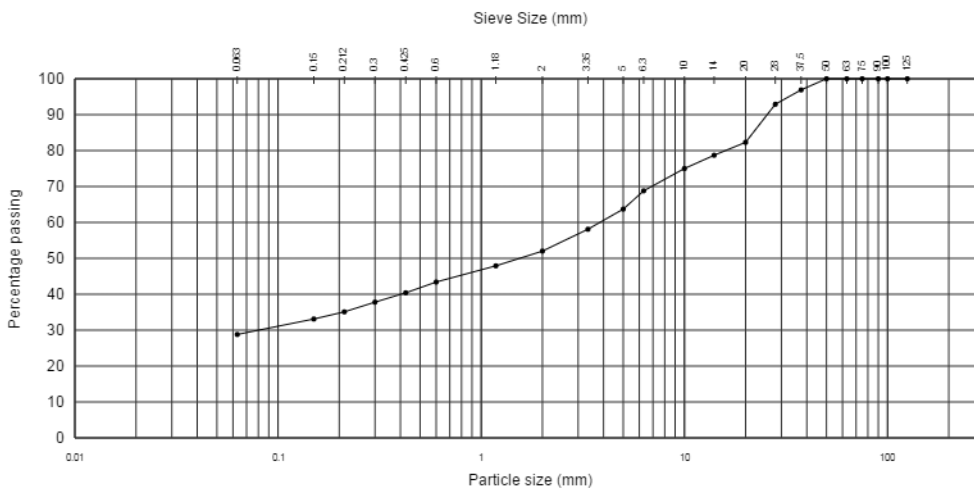
LOCATION: FCA

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	97	
28	93	
20	82	
14	79	
10	75	
6.3	69	
5	64	
3.35	58	
2	52	15 - 80
1.18	48	
0.6	43	
0.425	40	
0.3	38	
0.212	35	
0.15	33	
0.063	29	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 13.1%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18



0927

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.17.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 7F

TESTED BY: CD, DG, DI, AV, MW

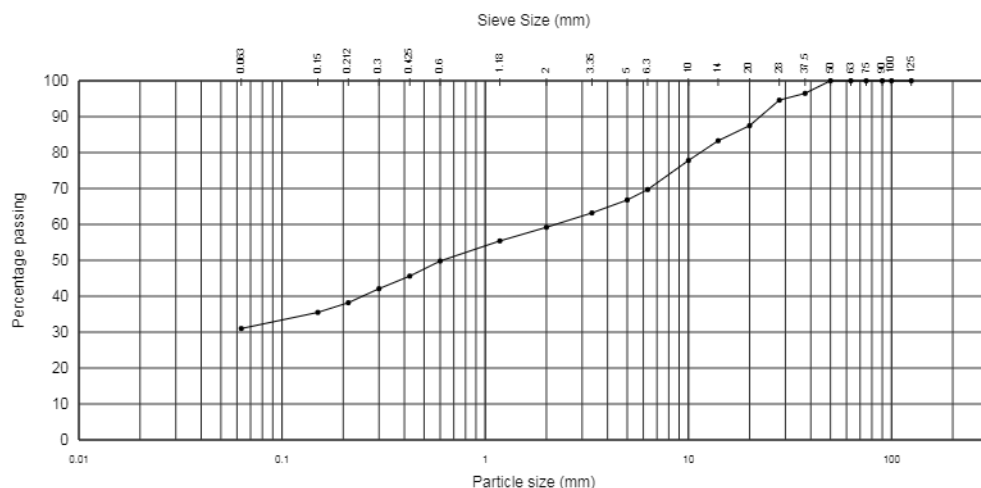
LOCATION: FCA

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	97	
28	95	
20	88	
14	83	
10	78	
6.3	70	
5	67	
3.35	63	
2	59	
1.18	55	
0.6	50	
0.425	46	
0.3	42	
0.212	38	
0.15	36	
0.063	31	15 - 100

Class 7F - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 7F

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 13.7%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

08-Mar-18

Report Format: L/Rep S6a/9

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Report version 1



0927

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.21.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 7F

TESTED BY: CD, DG, DI, AV, MW

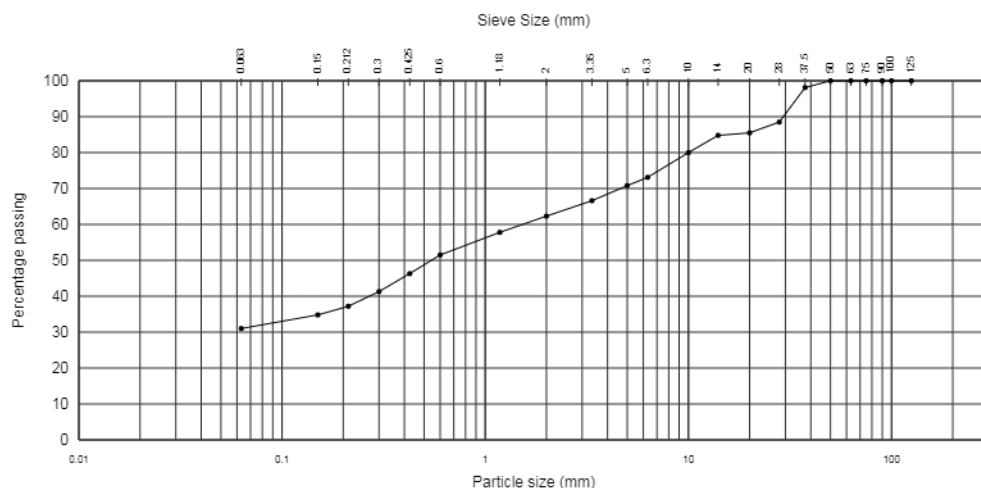
LOCATION: FCA

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	89	
20	86	
14	85	
10	80	
6.3	73	
5	71	
3.35	67	
2	62	
1.18	58	
0.6	52	
0.425	46	
0.3	41	
0.212	37	
0.15	35	
0.063	31	15 - 100

Class 7F - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 7F

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.1%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

08-Mar-18

Report Format: L/Rep S6a/9

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Page 1 of 1

TEST REPORT:

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER:

392872 / 34119.3.1.1

SAMPLE NUMBER:

48208

CLIENT:

Cognition Land & Water Ltd

CLIENT REF:

FCA-MG

ADDRESS:

Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED:

24/02/2018

SITE:

Pump Lane, Southall

SAMPLED BY:

Client

SUPPLIER:

Unknown

DATE RECEIVED:

01/03/2018

MATERIAL:

Soil

DATE COMPLETED:

05/03/2018

CLASSIFICATION:

Class 7F

TESTED BY:

CD, DG, RH, DI, AV

LOCATION:

FCA

WITHIN ORIGINAL SPECIMEN:

N/A

PREPARATION METHOD:

BS 1377:Part 1:1990 clause 7.3 & 7.4.5

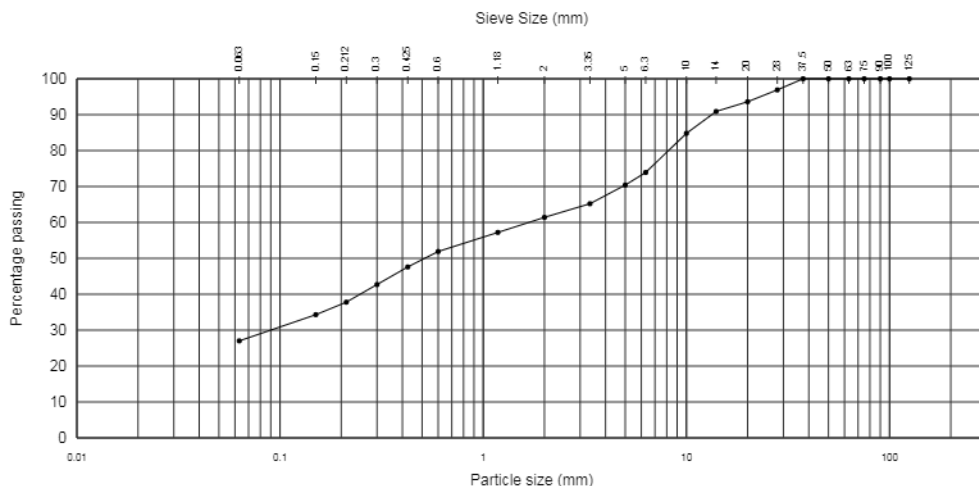
TYPE OF SAMPLE:

Disturbed

VARIATIONS:

No variations

RESULT



SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	100	
28	97	
20	94	
14	91	
10	85	
6.3	74	
5	70	
3.35	65	
2	61	
1.18	57	
0.6	52	
0.425	48	
0.3	43	
0.212	38	
0.15	34	
0.063	27	15 - 100

Class 7F - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 7F

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 13.5%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

08-Mar-18



0927

Report Format: L/Rep S6a/9

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TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.4.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48208	ADDRESS:	Springfield House
CLIENT REF:	FCA-MG	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	FCA
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	BM	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	34%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	20%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	14%			
The Percentage Passing 425µm Test Sieve :	48%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

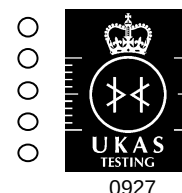
Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



 Approved Signatory
 07-Mar-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.8.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48208	ADDRESS:	Springfield House
CLIENT REF:	FCA-MG	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	FCA
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	BM	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	35%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	19%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	16%			
The Percentage Passing 425µm Test Sieve :	49%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

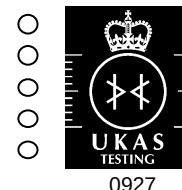
Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



 Approved Signatory
 07-Mar-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.12.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48208	ADDRESS:	Springfield House
CLIENT REF:	FCA-MG	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	FCA
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	BM	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	34%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	19%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	15%			
The Percentage Passing 425µm Test Sieve :	48%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

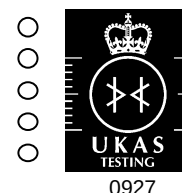
Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



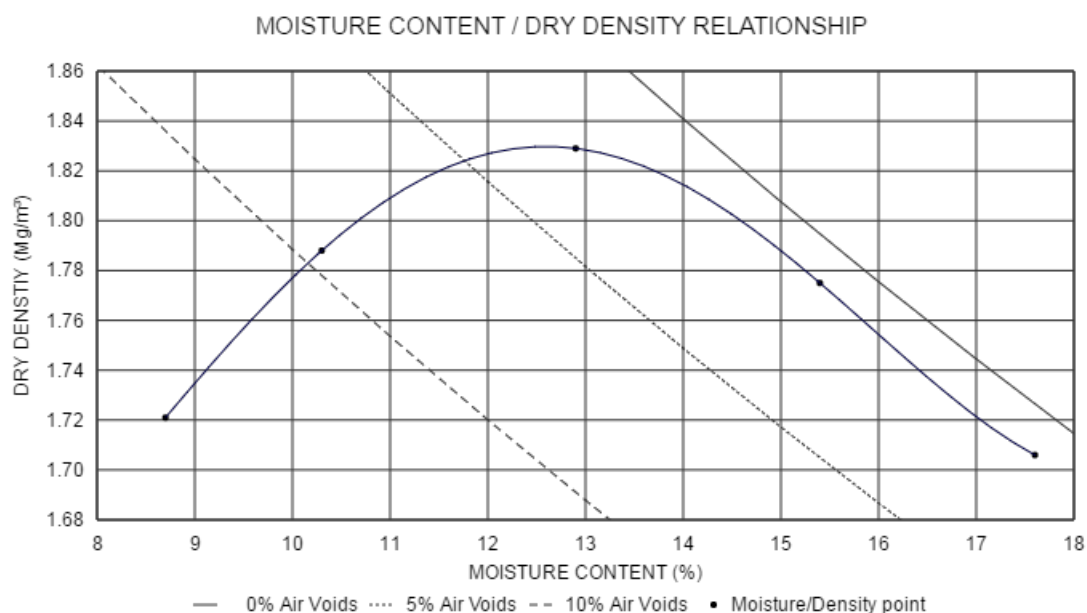
 Approved Signatory
 07-Mar-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 39513.6.1.1		
SAMPLE NUMBER:	58718	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	FCA-MG	ADDRESS:	Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	14/05/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	22/05/2018	MATERIAL:	Clayey Made Ground
DATE TESTED:	04/06/2018	LOCATION:	FCA- MG
TESTED BY:	DG, BM, AV, EU	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.83 Mg/m³
OPTIMUM MOISTURE CONTENT: 13 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 8 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 0 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.48 Mg/m³



Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
 Dan Gay - Laboratory Supervisor

D S

Approved Signatory
 04-Jun-18



0927

Report Format: L/Rep S11-S14a/8

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 Registered in England No. 02527130

Report version 1

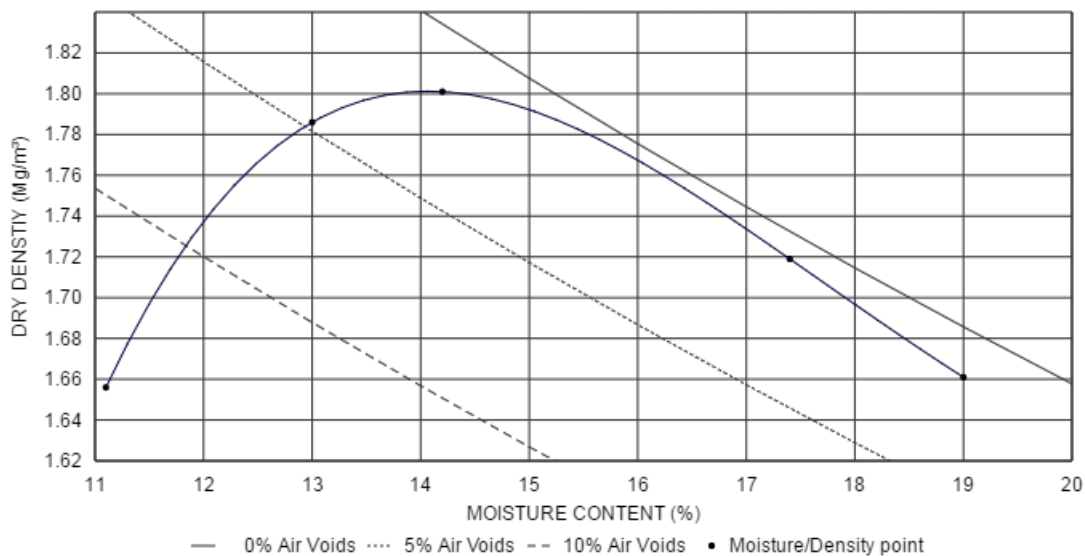
Page 1 of 1

TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 39513.7.1.1		
SAMPLE NUMBER:	58718	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	FCA-MG	ADDRESS:	Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	14/05/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	22/05/2018	MATERIAL:	Clayey Made Ground
DATE TESTED:	04/06/2018	LOCATION:	FCA- MG
TESTED BY:	DG, BM, AV, EU	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.80 Mg/m³
OPTIMUM MOISTURE CONTENT: 14 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 11 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 2 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.48 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
Dan Gay - Laboratory Supervisor

D S

Approved Signatory
05-Jun-18



0927

Report Format: L/Rep S11-S14a/8

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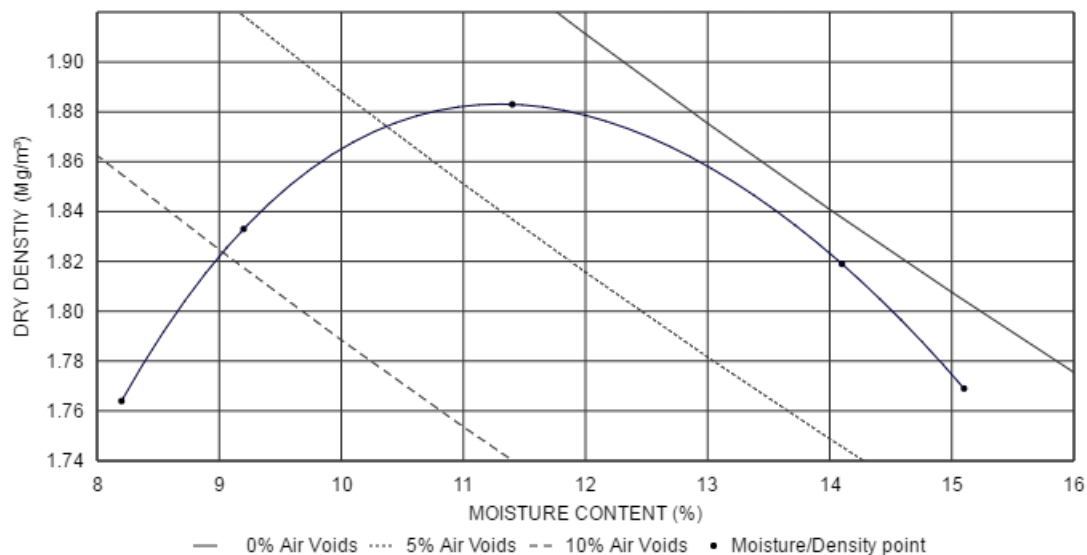
Page 1 of 1

TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 39513.8.1.1		
SAMPLE NUMBER:	58718	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	FCA-MG	ADDRESS:	Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	14/05/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	22/05/2018	MATERIAL:	Clayey Made Ground
DATE TESTED:	04/06/2018	LOCATION:	FCA- MG
TESTED BY:	DG, BM, AV, EU	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTION SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.88 Mg/m³
OPTIMUM MOISTURE CONTENT: 11 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 9 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 1 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.48 Mg/m³
 (measured in accordance with BS 1377: 1990:part 2)

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
Dan Gay - Laboratory Supervisor

D S

Approved Signatory
04-Jun-18



0927

Report Format: L/Rep S11-S14a/8

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Page 1 of 1

TEST REPORT:
DETERMINATION OF THE MOISTURE CONTENT OF SOILS

BS 1377:Part 2:1990 clause 3.2 - oven drying method

REPORT NUMBER: 392872 / 34119.1.1.1

SAMPLE NUMBER: See Below

CLIENT: Cognition Land & Water Ltd

CLIENT REF: See Below

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: See Below

DATE COMPLETED: 02/03/2018

LOCATION: See Below

TESTED BY: CD, DI, AP

PREPARATION METHOD: BS 1377: Part 1

TYPE OF SAMPLE: Disturbed

TEST RESULT:

SAMPLE NO.	CLIENT REF.	LOCATION OF TEST	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	LOWER LIMIT	UPPER LIMIT
48208	FCA-MG	FCA	Soil	12	NA	NA

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager



Approved Signatory

02-Mar-18



0927

Report Format: L/Rep S2(Multi)/7

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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.2.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, AP

FILL LOCATION: FCA

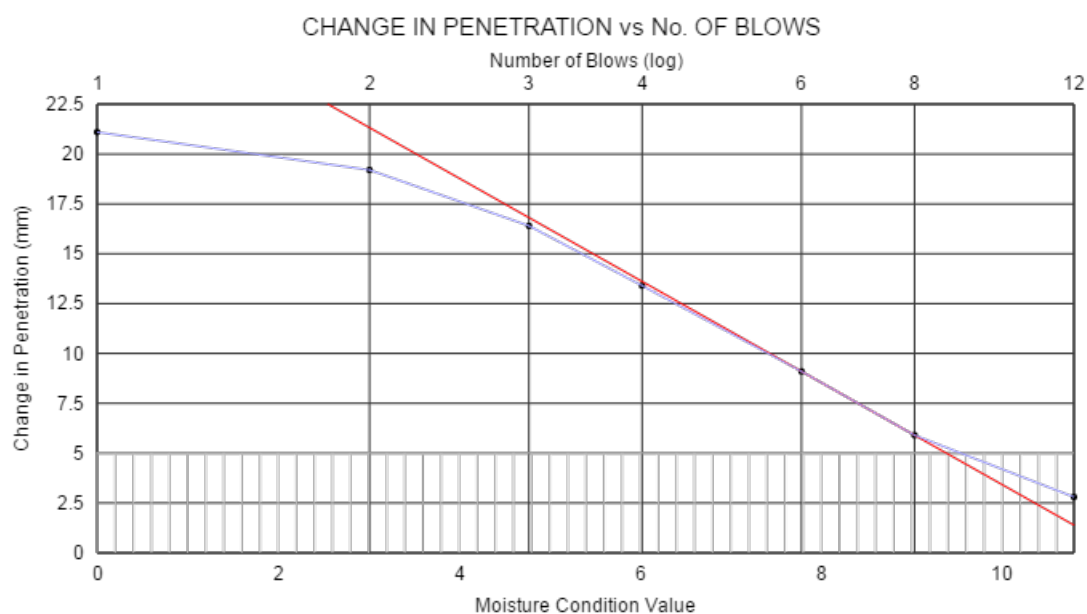
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	9.4
NATURAL MOISTURE CONTENT (%)	15.9
PERCENTAGE RETAINED 20mm (%)	10.9
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 Hsv 120

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 05-Mar-18


0927

Report Format: L/Rep S10a rev.3

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.6.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, AP

FILL LOCATION: FCA

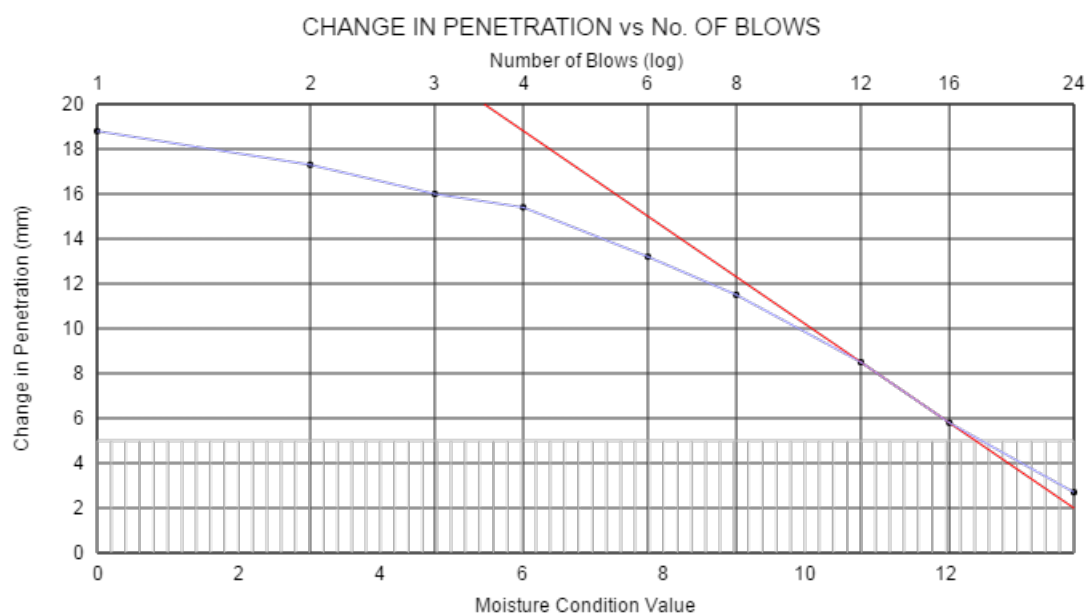
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	12.4
NATURAL MOISTURE CONTENT (%)	14.6
PERCENTAGE RETAINED 20mm (%)	15.0
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 Hsv ts

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 05-Mar-18


0927

Report Format: L/Rep S10a rev.3

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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.10.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: CD, DI, RB

FILL LOCATION: FCA

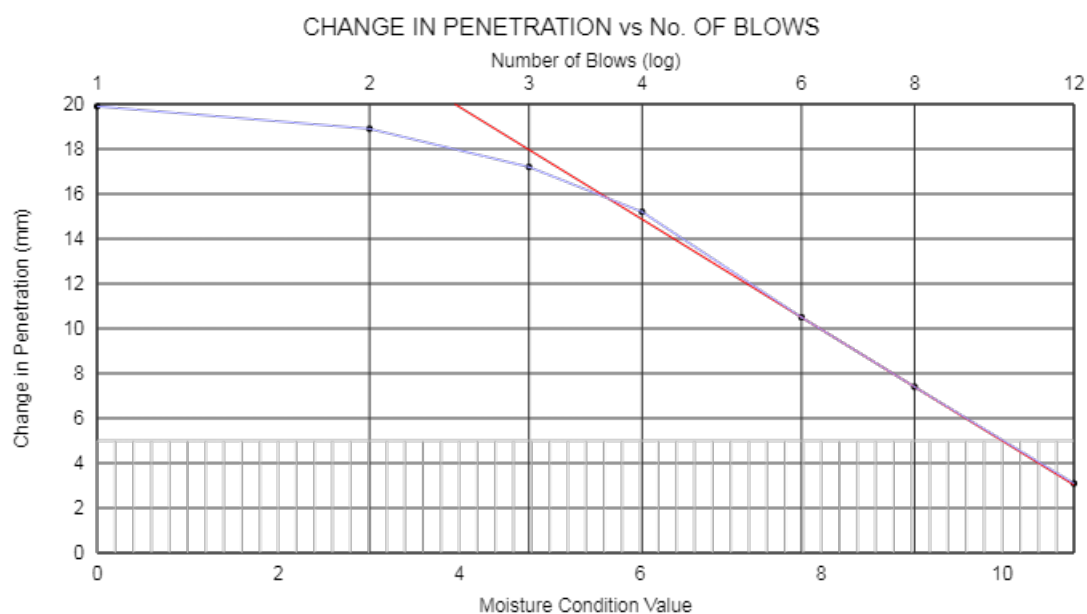
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	10.0
NATURAL MOISTURE CONTENT (%)	16.3
PERCENTAGE RETAINED 20mm (%)	7.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-40+

 For and on behalf of CETi
 Chris Davidson - Laboratory Section Manager



 Approved Signatory
 06-Mar-18


0927

Report Format: L/Rep S10a rev.3

 Northdown House, Ashford Road
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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.14.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, RB

FILL LOCATION: FCA

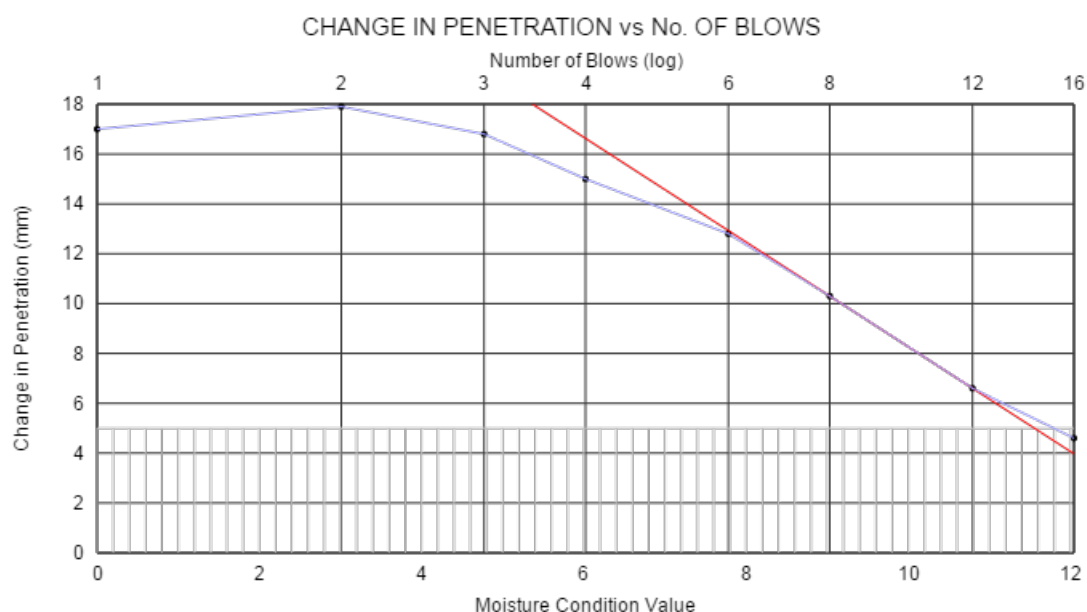
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	11.6
NATURAL MOISTURE CONTENT (%)	14.6
PERCENTAGE RETAINED 20mm (%)	13.2
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
HSV-max

 For and on behalf of CETi
Dan Gay - Supervisor



 Approved Signatory
06-Mar-18


0927

Report Format: L/Rep S10a rev.3

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Registered in England No. 02527130

Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.16.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, RB

FILL LOCATION: FCA

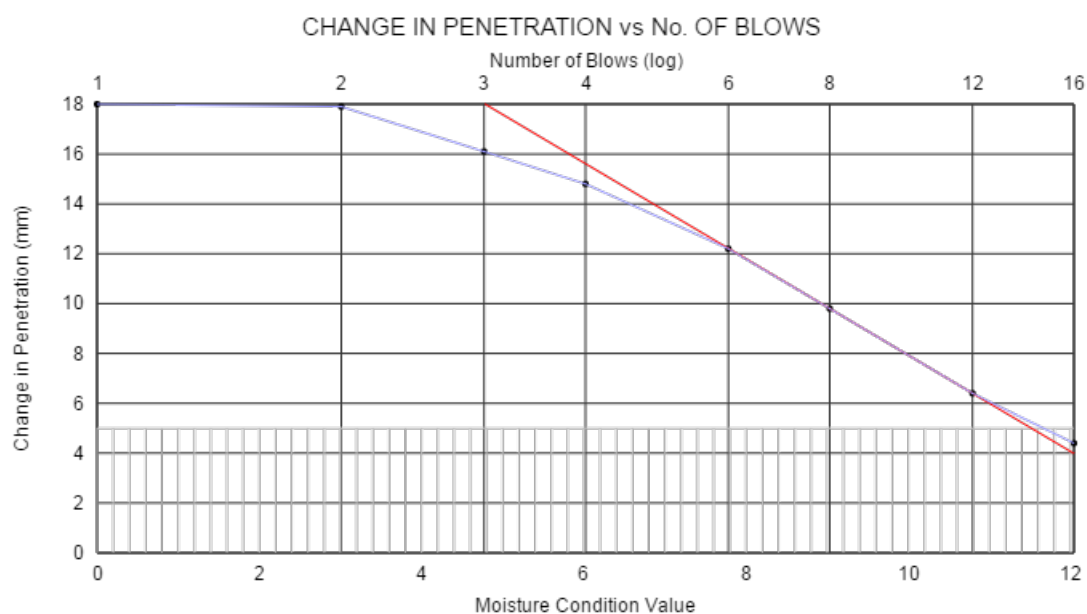
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	11.5
NATURAL MOISTURE CONTENT (%)	14.8
PERCENTAGE RETAINED 20mm (%)	14.1
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-max

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 06-Mar-18


0927

Report Format: L/Rep S10a rev.3

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.18.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: CD, DI, RB

FILL LOCATION: FCA

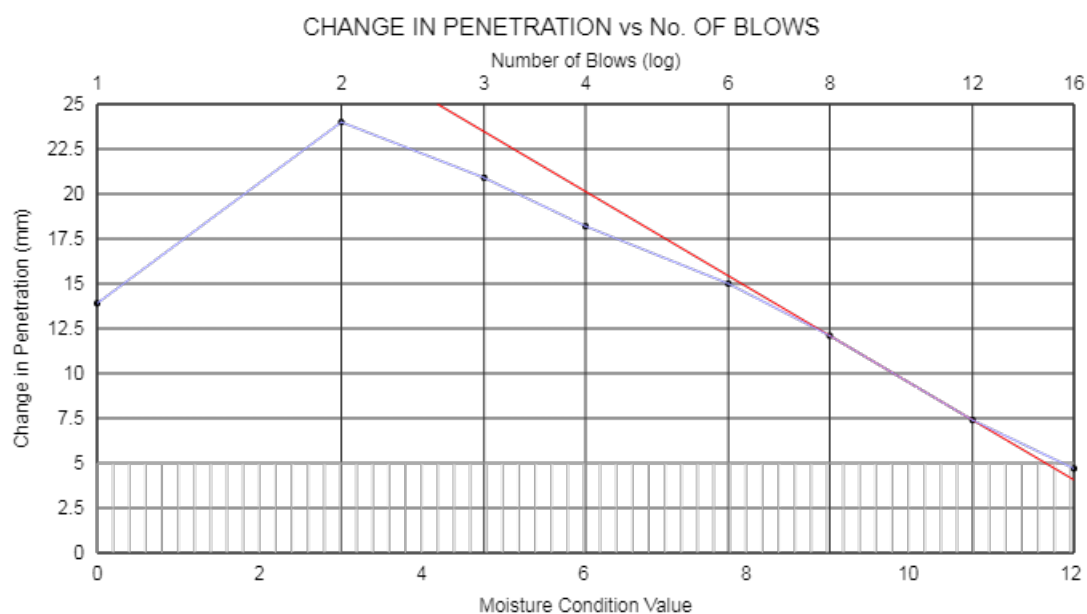
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	11.7
NATURAL MOISTURE CONTENT (%)	13.9
PERCENTAGE RETAINED 20mm (%)	11.2
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-TS

 For and on behalf of CETi
 Chris Davidson - Laboratory Section Manager



 Approved Signatory
 06-Mar-18


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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.20.1.1

SAMPLE NUMBER: 48208

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-MG

ADDRESS: Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, RB

FILL LOCATION: FCA

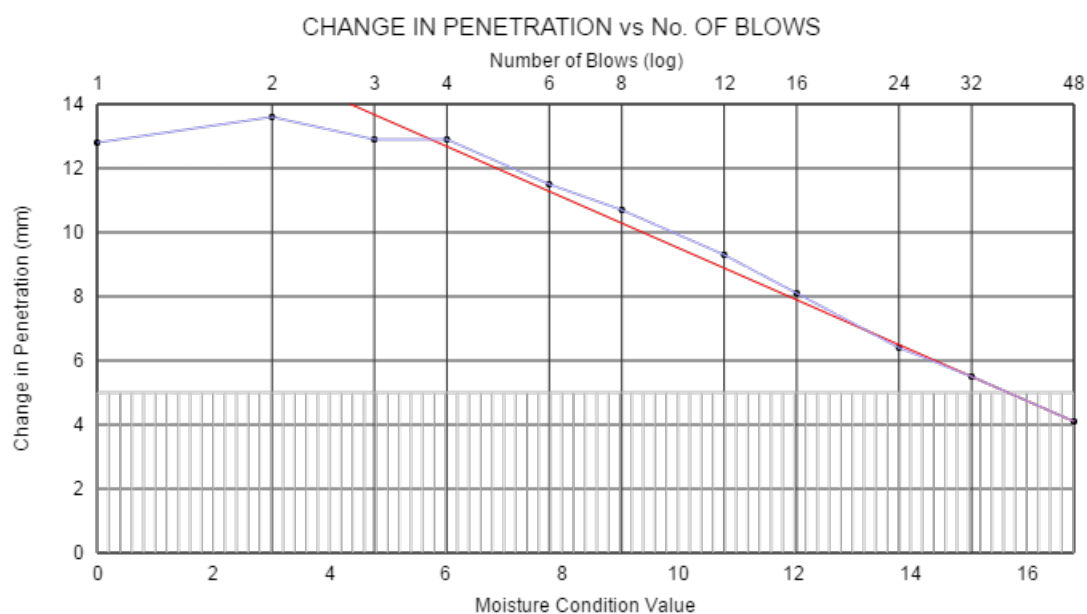
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	15.7
NATURAL MOISTURE CONTENT (%)	11.0
PERCENTAGE RETAINED 20mm (%)	13.1
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-max

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 06-Mar-18


0927

Report Format: L/Rep S10a rev.3

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Report version 1

Page 1 of 1

TEST REPORT:

DETERMINATION OF PARTICLE DENSITY

BS 1377:Part 2:1990 Gas Jar Method

REPORT NUMBER:

392872 / 39513.5.1.1

SAMPLE NUMBER:

See Below

CLIENT:

Cognition Land & Water Ltd

CLIENT REF:

See Below

ADDRESS:

Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED:

14/05/2018

SITE:

Pump Lane, Southall

SAMPLED BY:

Client

SUPPLIER:

Unknown

DATE RECEIVED:

22/05/2018

MATERIAL:

Clayey Made Ground

DATE TESTED:

04/06/2018

LOCATION:

FCA- MG

TESTED BY:

MG, DG, BM

ACCEPT. STD:

Contract Specification

TYPE OF SAMPLE:

Disturbed

PREPARATION METHOD: :

BS1377:Part1:1990 clauses 7.3 and 7.4.2

ORIENTATION OF TEST SPECIMEN
WITHIN ORIGINAL SAMPLE:

N/A

VARIATIONS:

None

RESULT

SAMPLE NO	CLIENT SAMPLE REF	MATERIAL	PARTICLE DENSITY Mg.m ³
58718	FCA-MG	Clayey Made Ground	2.48

Remarks:

For and on behalf of CET
Dan Gay - Laboratory Supervisor



Approved Signatory
05-Jun-18



0927

Report Format: L/Rep S7A / rev.2

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 30433.4.1.1

SAMPLE NUMBER: 41860

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-G01

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: Unknown

SITE: Pump Lane, Southall

SAMPLED BY: Unknown

SUPPLIER: Unknown

DATE RECEIVED: 21/12/2017

MATERIAL: Orange gravelly sand

DATE COMPLETED: 02/01/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, JW, AV

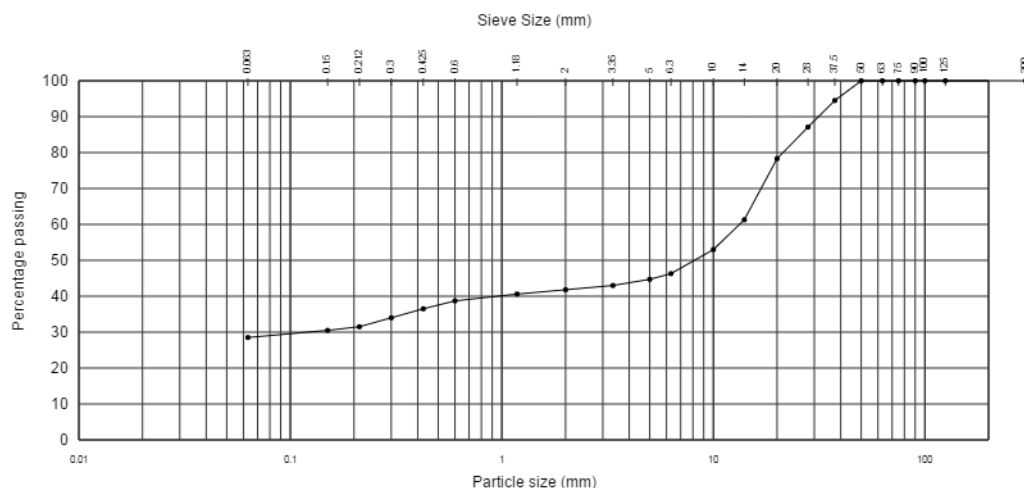
LOCATION: Unknown

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
300	100	
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	95	
28	87	
20	78	
14	61	
10	53	
6.3	46	
5	45	
3.35	43	
2	42	15 - 80
1.18	41	
0.6	39	
0.425	37	
0.3	34	
0.212	32	
0.15	31	
0.063	29	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.5%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

 For and on behalf of CET
 Dan Gay - Supervisor



 Approved Signatory
 02-Jan-18


0927

Report Format: L/Rep S6a/9

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 30433.4.1.1

SAMPLE NUMBER: 41860

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-G01

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: Unknown

SITE: Pump Lane, Southall

SAMPLED BY: Unknown

SUPPLIER: Unknown

DATE RECEIVED: 21/12/2017

MATERIAL: Orange gravelly sand

DATE COMPLETED: 02/01/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, JW, AV

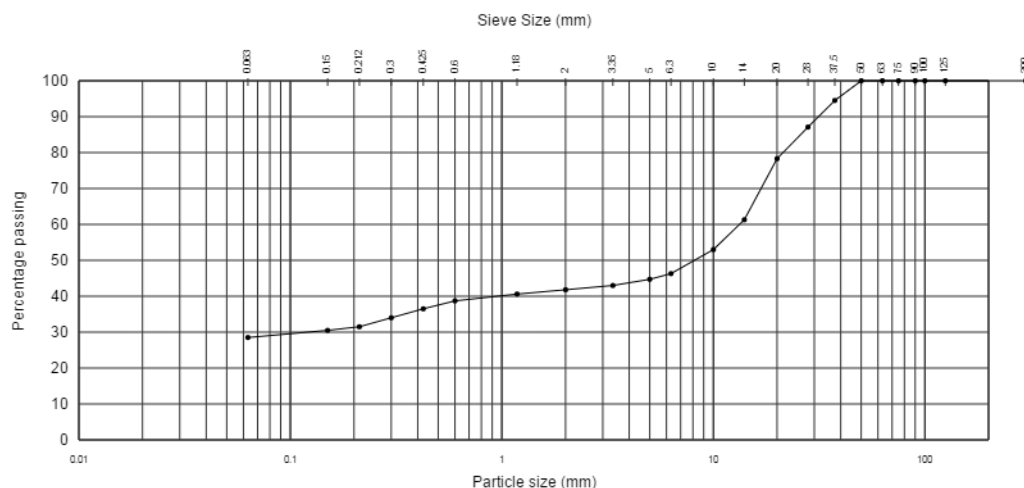
LOCATION: Unknown

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
300	100	
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	95	
28	87	
20	78	
14	61	
10	53	
6.3	46	
5	45	
3.35	43	
2	42	15 - 80
1.18	41	
0.6	39	
0.425	37	
0.3	34	
0.212	32	
0.15	31	
0.063	29	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.5%

 Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

 For and on behalf of CET
 Dan Gay - Supervisor



 Approved Signatory
 02-Jan-18


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Report Format: L/Rep S6a/9

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Report version 1

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 30433.9.1.1

SAMPLE NUMBER: 41861

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-G01

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: Unknown

SITE: Pump Lane, Southall

SAMPLED BY: Unknown

SUPPLIER: Unknown

DATE RECEIVED: 21/12/2017

MATERIAL: Orange gravelly sand

DATE COMPLETED: 02/01/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, JW, AV

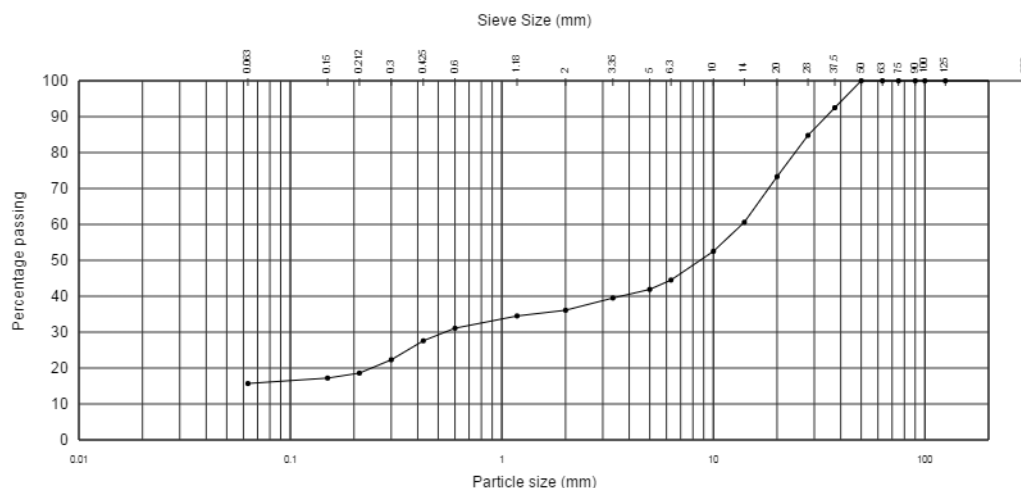
LOCATION: Unknown

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT
SIEVE ANALYSIS


Particle Diameter mm	Passing %	Specification Limits
300	100	
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	93	
28	85	
20	73	
14	61	
10	53	
6.3	45	
5	42	
3.35	40	
2	36	15 - 80
1.18	35	
0.6	31	
0.425	28	
0.3	22	
0.212	19	
0.15	17	
0.063	16	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 9.4%

Remarks:

 Remaining sample will be retained for a minimum of 28 days from date of report.
 Amended report. This test report supersedes test report version 1

 For and on behalf of CET
 Dan Gay - Supervisor



 Approved Signatory
 02-Jan-18


0927

Report Format: L/Rep S6a/9

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Report version 2

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 30433.9.1.1

SAMPLE NUMBER: 41861

CLIENT: Cognition Land & Water Ltd

CLIENT REF: FCA-G01

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: Unknown

SITE: Pump Lane, Southall

SAMPLED BY: Unknown

SUPPLIER: Unknown

DATE RECEIVED: 21/12/2017

MATERIAL: Orange gravelly sand

DATE COMPLETED: 02/01/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, JW, AV

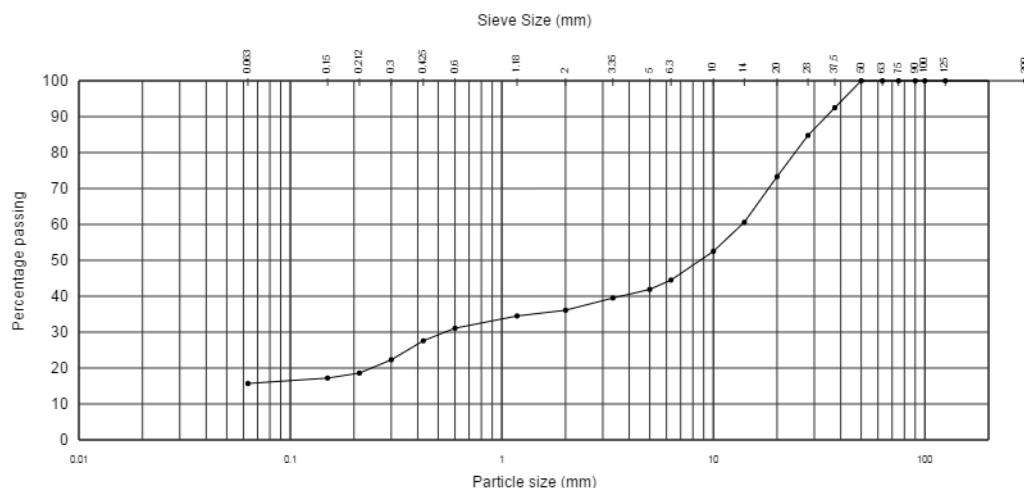
LOCATION: Unknown

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
300	100	
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	93	
28	85	
20	73	
14	61	
10	53	
6.3	45	
5	42	
3.35	40	
2	36	15 - 80
1.18	35	
0.6	31	
0.425	28	
0.3	22	
0.212	19	
0.15	17	
0.063	16	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 9.4%

Remarks:

 Remaining sample will be retained for a minimum of 28 days from date of report.
 Amended report. This test report supersedes test report version 1

 For and on behalf of CET
 Dan Gay - Supervisor



 Approved Signatory
 02-Jan-18


0927

Report Format: L/Rep S6a/9

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Report version 2

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.45.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW

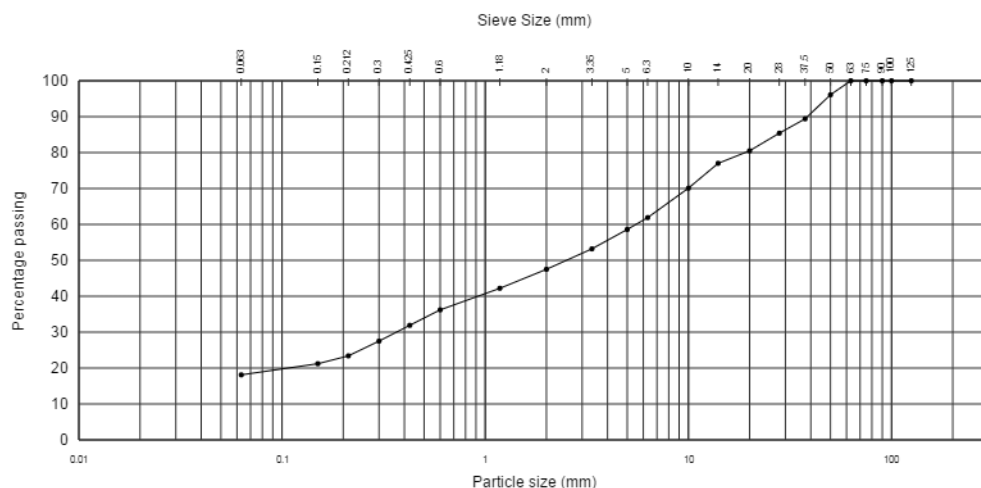
LOCATION: Zone 7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	96	
37.5	89	
28	85	
20	81	
14	77	
10	70	
6.3	62	
5	59	
3.35	53	
2	48	15 - 80
1.18	42	
0.6	36	
0.425	32	
0.3	28	
0.212	23	
0.15	21	
0.063	18	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 19.4%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

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Report version 1



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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.49.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW

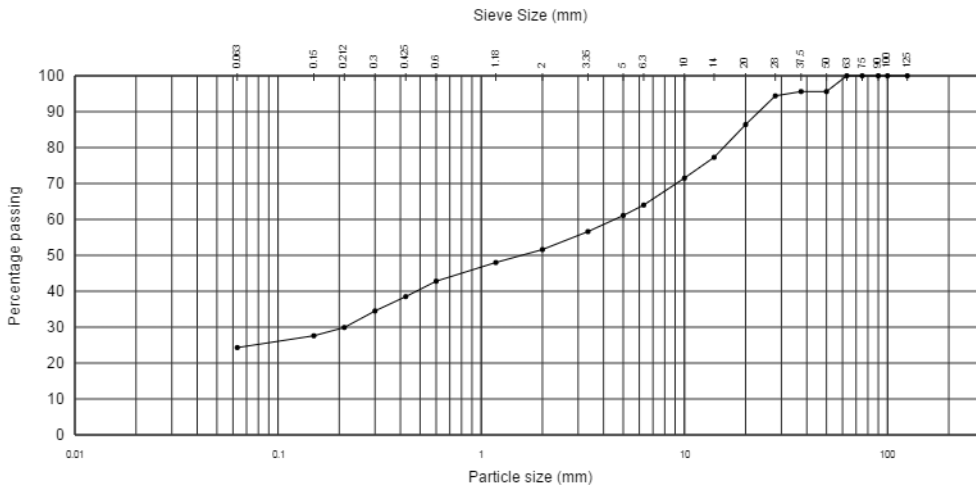
LOCATION: Zone 7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT


Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 15.4%

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	96	
37.5	96	
28	94	
20	86	
14	77	
10	72	
6.3	64	
5	61	
3.35	57	
2	52	15 - 80
1.18	48	
0.6	43	
0.425	39	
0.3	35	
0.212	30	
0.15	28	
0.063	24	15 - 80

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

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Report version 1



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Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.53.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW

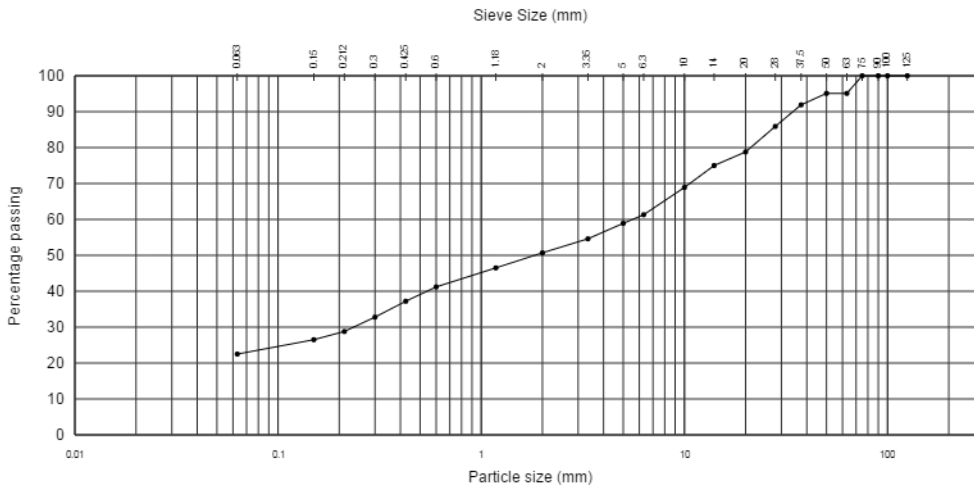
LOCATION: Zone 7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	95	
50	95	
37.5	92	
28	86	
20	79	
14	75	
10	69	
6.3	61	
5	59	
3.35	55	
2	51	15 - 80
1.18	47	
0.6	41	
0.425	37	
0.3	33	
0.212	29	
0.15	27	
0.063	23	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 14.4%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

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 Registered in England No. 02527130

Report version 1



0927

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.57.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW

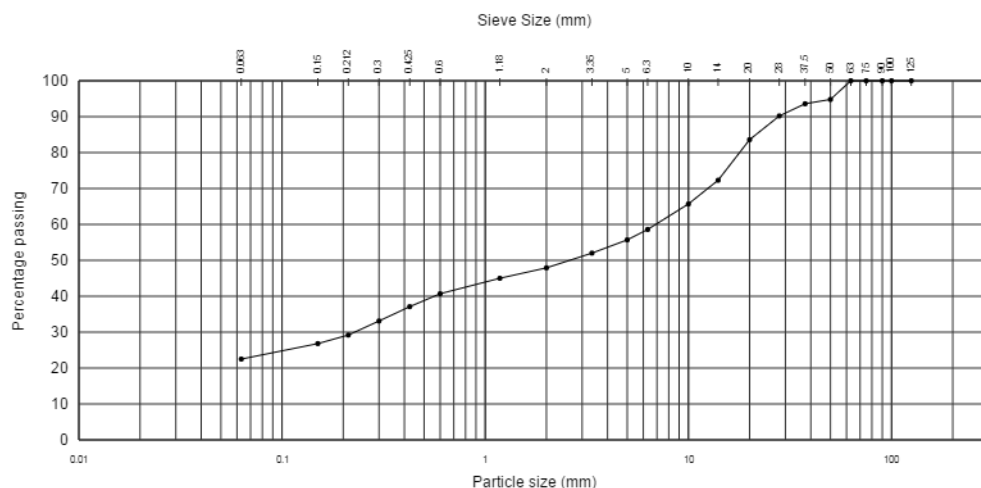
LOCATION: Zone 7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	95	
37.5	94	
28	90	
20	84	
14	72	
10	66	
6.3	59	
5	56	
3.35	52	
2	48	15 - 80
1.18	45	
0.6	41	
0.425	37	
0.3	33	
0.212	29	
0.15	27	
0.063	23	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.8%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 34119.59.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 05/03/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW

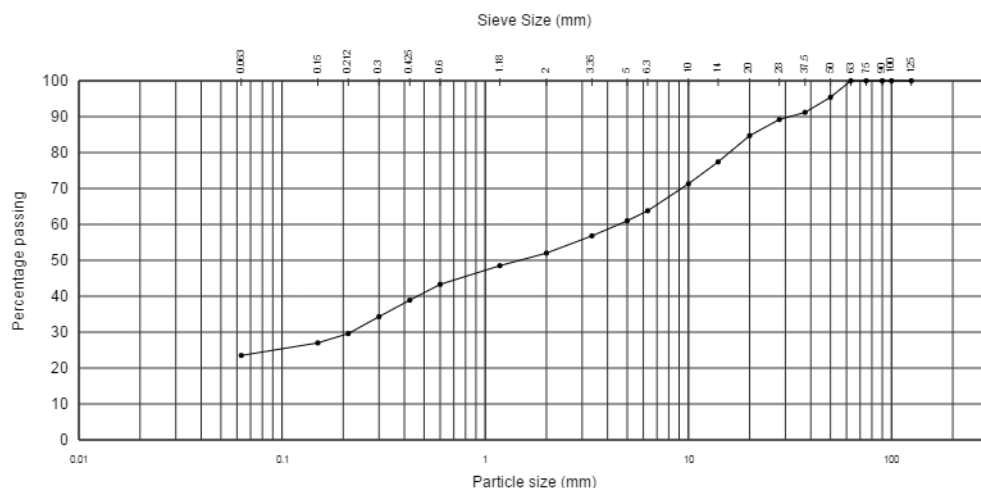
LOCATION: Zone 7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT


Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.7%

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	95	
37.5	91	
28	89	
20	85	
14	77	
10	71	
6.3	64	
5	61	
3.35	57	
2	52	15 - 80
1.18	49	
0.6	43	
0.425	39	
0.3	34	
0.212	30	
0.15	27	
0.063	24	15 - 80

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

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TEST REPORT : **DETERMINATION OF THE PLASTICITY INDEX OF SOIL**
BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.50.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48210	ADDRESS:	Springfield House
CLIENT REF:	Zone 7-7	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	Zone 7
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	43%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	26%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	17%			
The Percentage Passing 425µm Test Sieve :	39%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

Remaining sample will be retained for a minimum of 28 days from date of report.

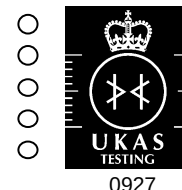
Page 1 of 1
REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



Approved Signatory
07-Mar-18

John Newbery - Laboratory Manager
Matt Oliver- Site Manager
Adrian McGilvery - Senior Technician
Chris Davidson - Laboratory Supervisor
Phil Mayhew - Operations Supervisor



TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.46.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48210	ADDRESS:	Springfield House
CLIENT REF:	Zone 7-7	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	Zone 7
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	44%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	26%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	19%			
The Percentage Passing 425µm Test Sieve :	32%			
Sample History :	The material was tested after washing through a 425µm test sieve			

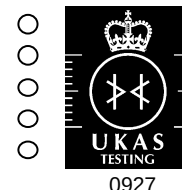
REMARKS:

Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET

 Approved Signatory
 08-Mar-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : **DETERMINATION OF THE PLASTICITY INDEX OF SOIL**
BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 34119.46.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	48210	ADDRESS:	Springfield House
CLIENT REF:	Zone 7-7	SITE:	Pump Lane, Southall
DATE SAMPLED:	24/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Soil
DATE RECEIVED:	01/03/2018	LOCATION:	Zone 7
DATE TEST COMPLETED:	07/03/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

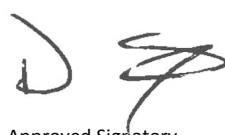
TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	44%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	26%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	18%			
The Percentage Passing 425µm Test Sieve :	32%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

Remaining sample will be retained for a minimum of 28 days from date of report.

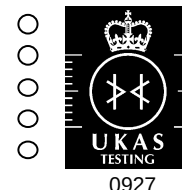
Page 1 of 1
REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



Approved Signatory
07-Mar-18

John Newbery - Laboratory Manager
Matt Oliver- Site Manager
Adrian McGilvery - Senior Technician
Chris Davidson - Laboratory Supervisor
Phil Mayhew - Operations Supervisor

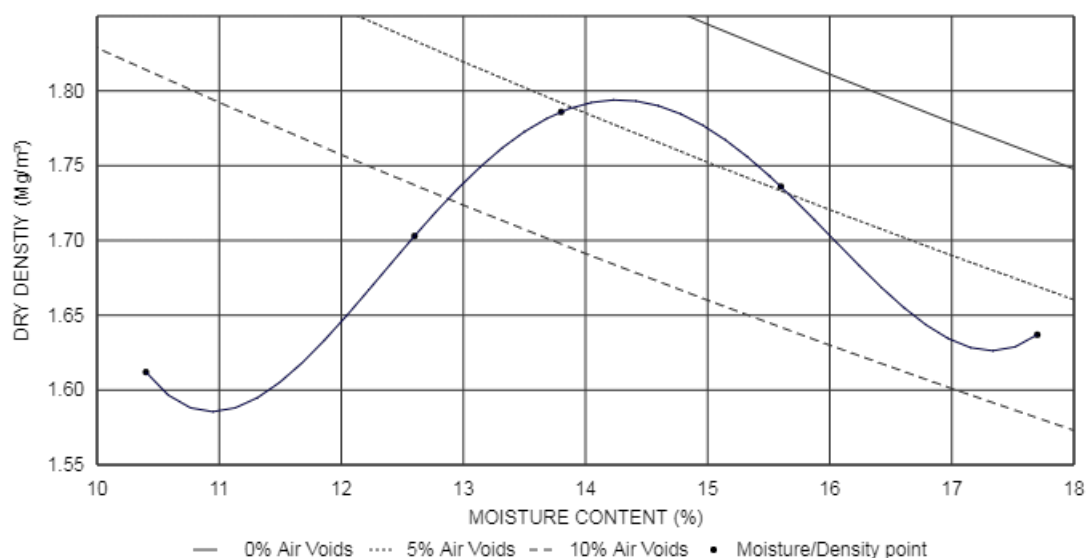


TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.7 Vibrating Hammer Method		
REPORT NUMBER:	392872 / 32684.10.1.1		
SAMPLE NUMBER:	45775	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	Zone 7 6N TW	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	31/01/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	07/02/2018	MATERIAL:	Sand and Stones
DATE TESTED:	13/02/2018	LOCATION:	Zone 7 backfill from FCA
TESTED BY:	CD, MG, DI, RB, MW	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	COMPACTON SAMPLE:	Separate samples
		VARIATIONS:	None

RESULT:

MAXIMUM DRY DENSITY: 1.79 Mg/m³
OPTIMUM WATER CONTENT: 14.5 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 0 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 0 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.55 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi
Chris Davidson - Laboratory Section Manager

Chris Davidson

Approved Signatory
13-Feb-18



0927

Report Format: L/Rep S11-S14a/8

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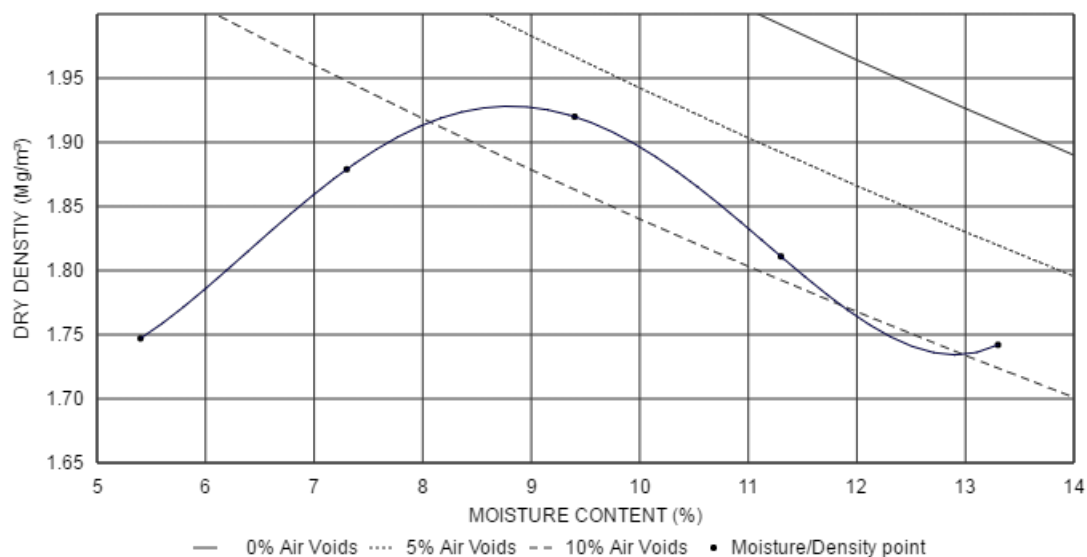
Page 1 of 1

TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 30433.3.1.1		
SAMPLE NUMBER:	41860	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	FCA-G01	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	Unknown	SITE:	Pump Lane, Southall
SAMPLED BY:	Unknown	SUPPLIER:	Unknown
DATE RECEIVED:	21/12/2017	MATERIAL:	Orange gravelly sand
DATE TESTED:	08/01/2018	LOCATION:	Unknown
TESTED BY:	PM, JN, MG, DG, JW, RB, MW	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.93 Mg/m³
OPTIMUM MOISTURE CONTENT: 8.8 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 22 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 6 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.57 Mg/m³
 (measured in accordance with BS 1377: 1990:part 2)

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
Dan Gay - Supervisor

D S

Approved Signatory
08-Jan-18



0927

Report Format: L/Rep S11-S14a/8

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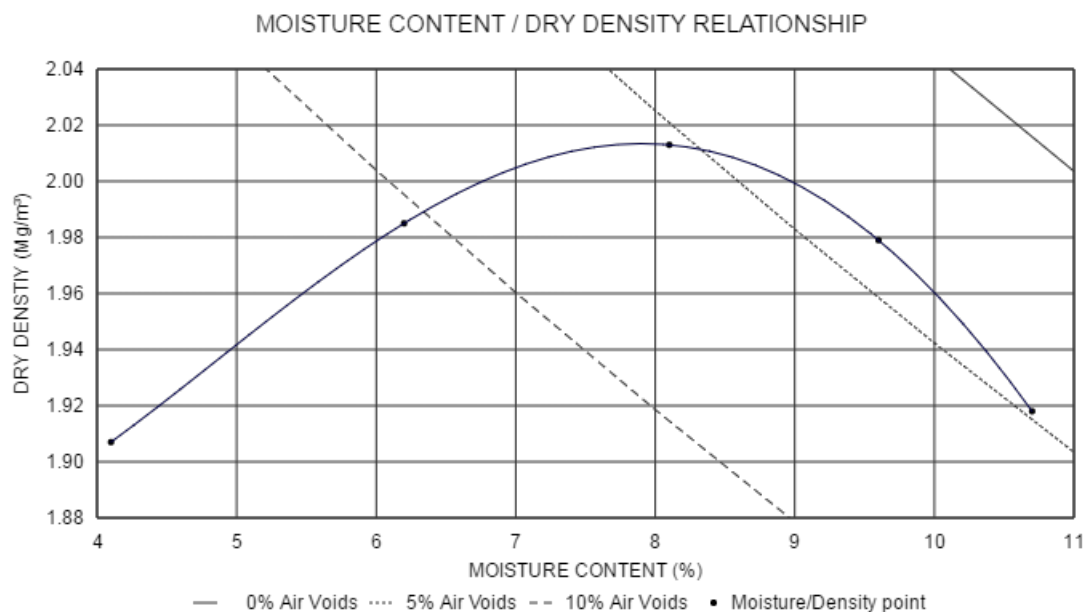
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TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 30433.8.1.1		
SAMPLE NUMBER:	41861	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	FCA-G01	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	Unknown	SITE:	Pump Lane, Southall
SAMPLED BY:	Unknown	SUPPLIER:	Unknown
DATE RECEIVED:	21/12/2017	MATERIAL:	Orange gravelly sand
DATE TESTED:	03/01/2018	LOCATION:	Unknown
TESTED BY:	MG, DG, RB, MW	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 2.01 Mg/m³
OPTIMUM MOISTURE CONTENT: 7.9 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 27 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 8 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.57 Mg/m³
 (measured in accordance with BS 1377: 1990:part 2)



Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
 Dan Gay - Supervisor

D S

Approved Signatory
 03-Jan-18



0927

Report Format: L/Rep S11-S14a/8

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TEST REPORT:

DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS 1377:Part 4:1990 clause 3.7 Vibrating Hammer Method

REPORT NUMBER: 392872 / 32684.8.1.1

SAMPLE NUMBER: 45777

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 4- 1A

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 31/01/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 07/02/2018

MATERIAL: Sand + Stones

DATE TESTED: 12/02/2018

LOCATION: Zone 4 backfill from FCA

TESTED BY: CD, DI, RB, EU

ACCEPTED STD: Contract specification

TYPE OF SAMPLE: Disturbed

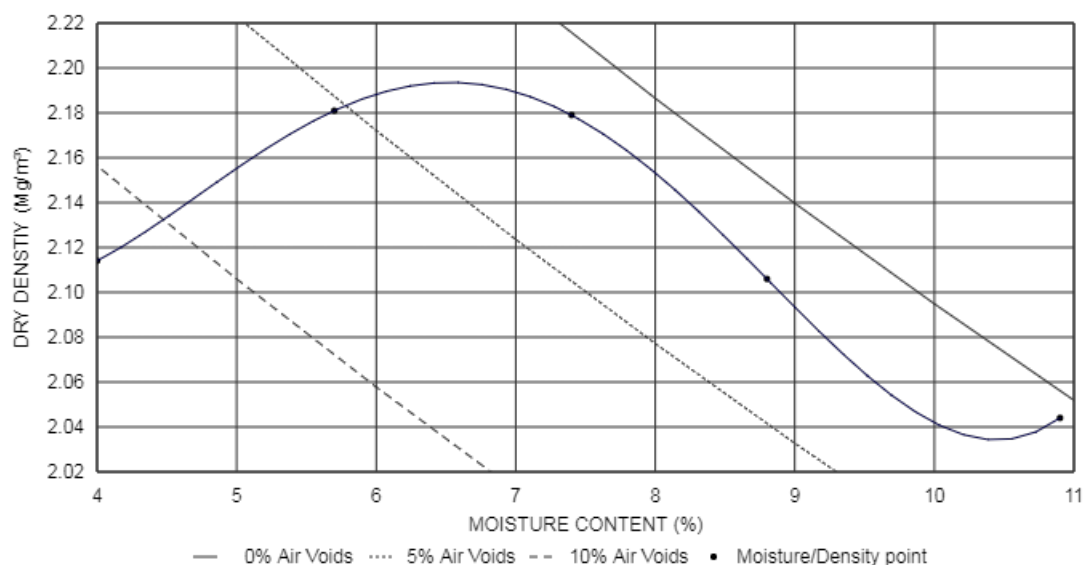
COMPACTON SAMPLE: Separate samples

VARIATIONS: None

RESULT:

MAXIMUM DRY DENSITY: 2.19 Mg/m³
OPTIMUM WATER CONTENT: 6.5 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 29 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 5 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.65 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager

Chris Davidson

Approved Signatory

12-Feb-18



0927

Report Format: L/Rep S11-S14a/8

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TEST REPORT:

DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS 1377:Part 4:1990 clause 3.7 Vibrating Hammer Method

REPORT NUMBER: 392872 / 32684.14.1.1

SAMPLE NUMBER: 45777

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 4- 1A

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 31/01/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 07/02/2018

MATERIAL: Sand + Stones

DATE TESTED: 12/02/2018

LOCATION: Zone 4 backfill from FCA

TESTED BY: CD, DI, RB, EU

ACCEPTED STD: Contract specification

TYPE OF SAMPLE: Disturbed

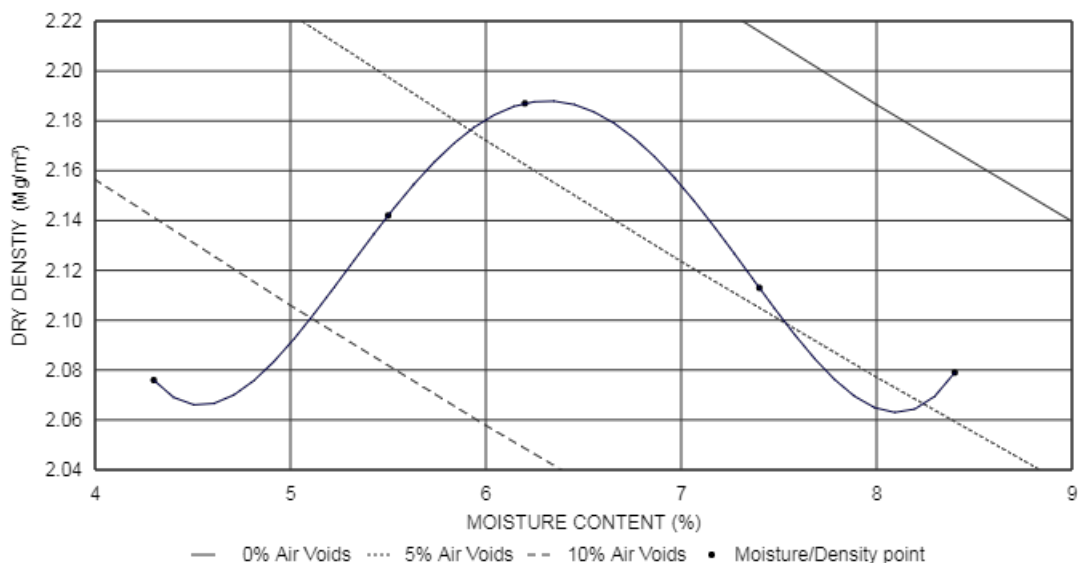
COMPACTON SAMPLE: Separate samples

VARIATIONS: None

RESULT:

MAXIMUM DRY DENSITY: 2.19 Mg/m³
OPTIMUM WATER CONTENT: 6.5 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 30 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 10 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.65 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager

Chris Davidson

Approved Signatory

12-Feb-18



0927

Report Format: L/Rep S11-S14a/8

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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.44.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: CD, MG, DI, RB

FILL LOCATION: Zone 7

TYPE OF SAMPLE: Disturbed

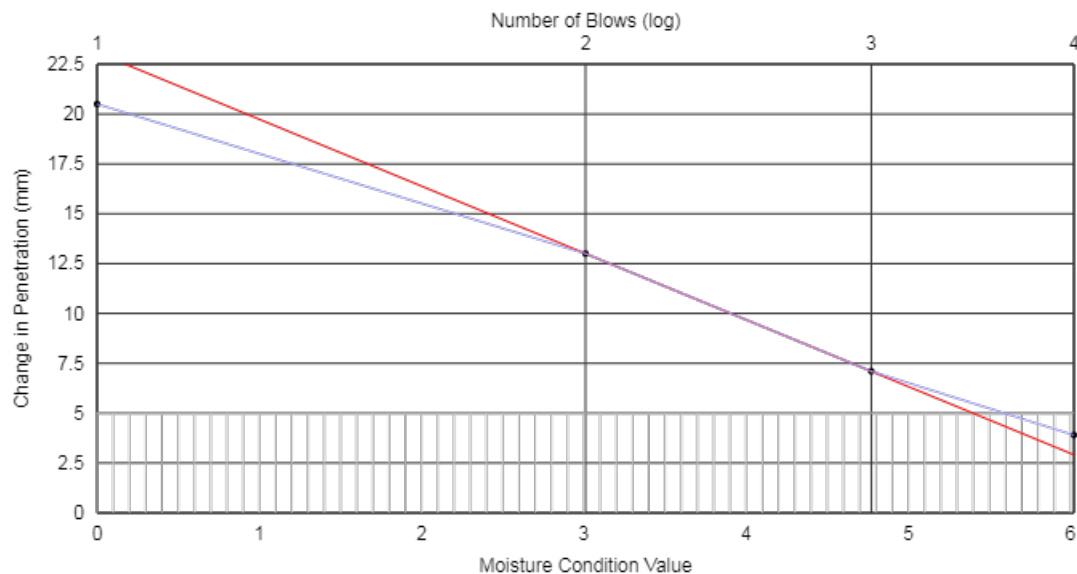
CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	5.4
NATURAL MOISTURE CONTENT (%)	20.5
PERCENTAGE RETAINED 20mm (%)	19.0
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)

CHANGE IN PENETRATION vs No. OF BLOWS


 Remarks:
 HSV-36

 For and on behalf of CETi
 Chris Davidson - Laboratory Section Manager



 Approved Signatory
 06-Mar-18


0927

Report Format: L/Rep S10a rev.3

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Page 1 of 1

TEST REPORT:

DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.48.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: CD, MG, BM, RB

FILL LOCATION: Zone 7

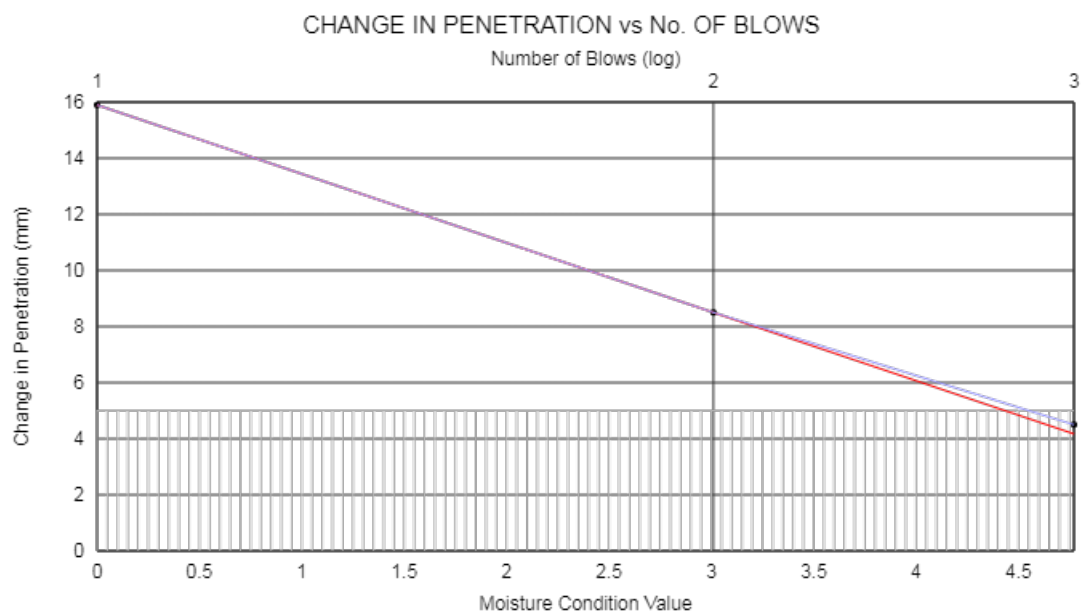
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	4.4
NATURAL MOISTURE CONTENT (%)	24.5
PERCENTAGE RETAINED 20mm (%)	22.4
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:
HSV-30

For and on behalf of CETi
Chris Davidson - Laboratory Section Manager



Approved Signatory
06-Mar-18



0927

Report Format: L/Rep S10a rev.3

Northdown House, Ashford Road
Harrietsham, Nr Maidstone
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Report version 1

Page 1 of 1

TEST REPORT:

DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.52.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: MG, DG, DI, RB

FILL LOCATION: Zone 7

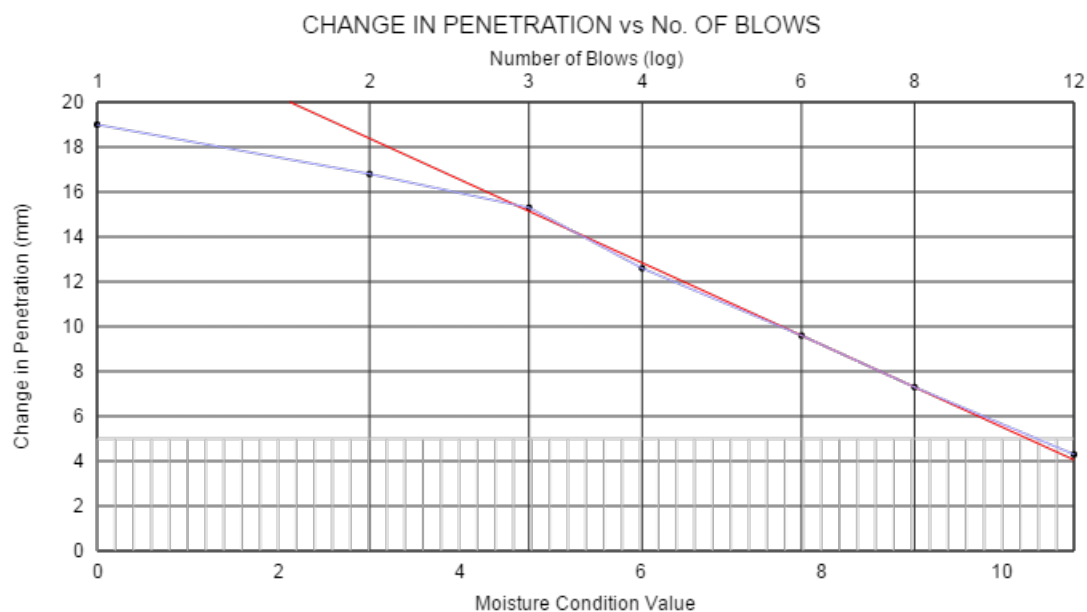
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	10.3
NATURAL MOISTURE CONTENT (%)	15.5
PERCENTAGE RETAINED 20mm (%)	32.7
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:
HSV-TS

For and on behalf of CETi
Dan Gay - Supervisor

D S

Approved Signatory
06-Mar-18



0927

Report Format: L/Rep S10a rev.3

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.56.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: MG, DG, BM, RB

FILL LOCATION: Zone 7

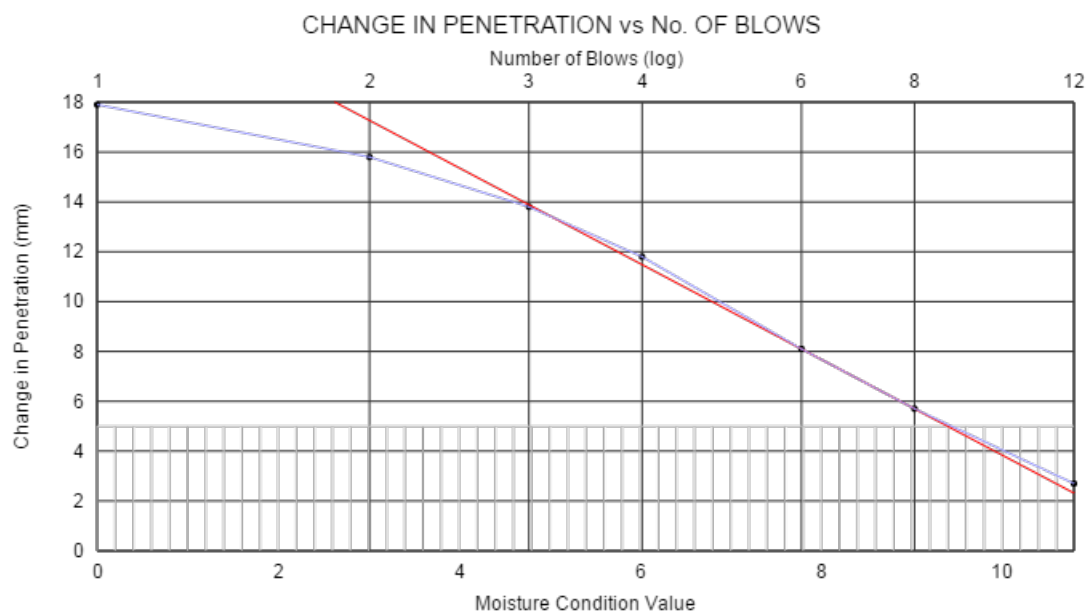
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	9.4
NATURAL MOISTURE CONTENT (%)	16.1
PERCENTAGE RETAINED 20mm (%)	21.7
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV- 60

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 06-Mar-18


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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 34119.58.1.1

SAMPLE NUMBER: 48210

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 7-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 24/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 01/03/2018

MATERIAL: Soil

DATE COMPLETED: 06/03/2018

CUT LOCATION: Unknown

TESTED BY: MG, DG, BM, RB

FILL LOCATION: Zone 7

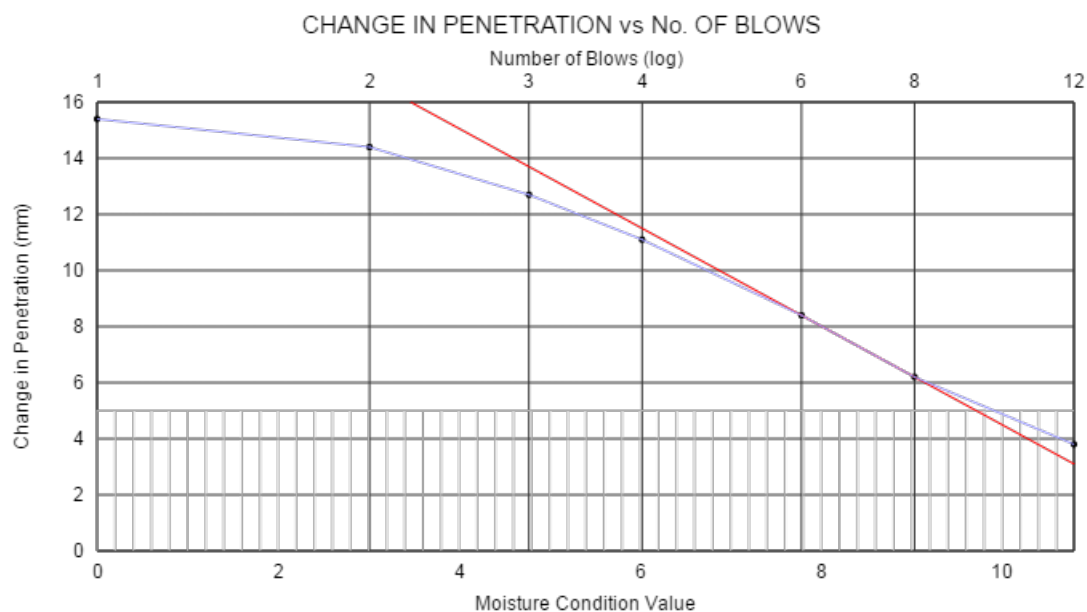
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	9.7
NATURAL MOISTURE CONTENT (%)	14.7
PERCENTAGE RETAINED 20mm (%)	21.6
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
HSV-84

 For and on behalf of CETi
Dan Gay - Supervisor



 Approved Signatory
06-Mar-18


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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 39513.14.1.1

SAMPLE NUMBER: 58733

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Z3SP7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 14/05/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 22/05/2018

MATERIAL: 2C

DATE COMPLETED: 04/06/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, BM, AV, RH

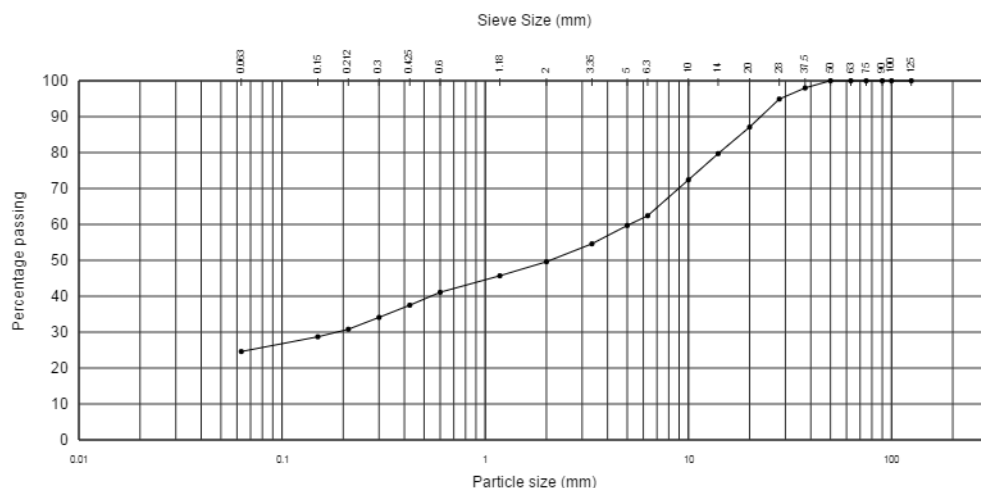
LOCATION: Z3SP7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	95	
20	87	
14	80	
10	72	
6.3	62	
5	60	
3.35	55	
2	50	15 - 80
1.18	46	
0.6	41	
0.425	38	
0.3	34	
0.212	31	
0.15	29	
0.063	25	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 10.6%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET

Dan Gay - Laboratory Supervisor



Approved Signatory

04-Jun-18



0927

Report Format: L/Rep S6a/9

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 39513.11.1.1

SAMPLE NUMBER: 58733

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Z3SP7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 14/05/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 22/05/2018

MATERIAL: 2C

DATE COMPLETED: 30/05/2018

CLASSIFICATION: Class 2C

TESTED BY: CD, BM, AV, MW

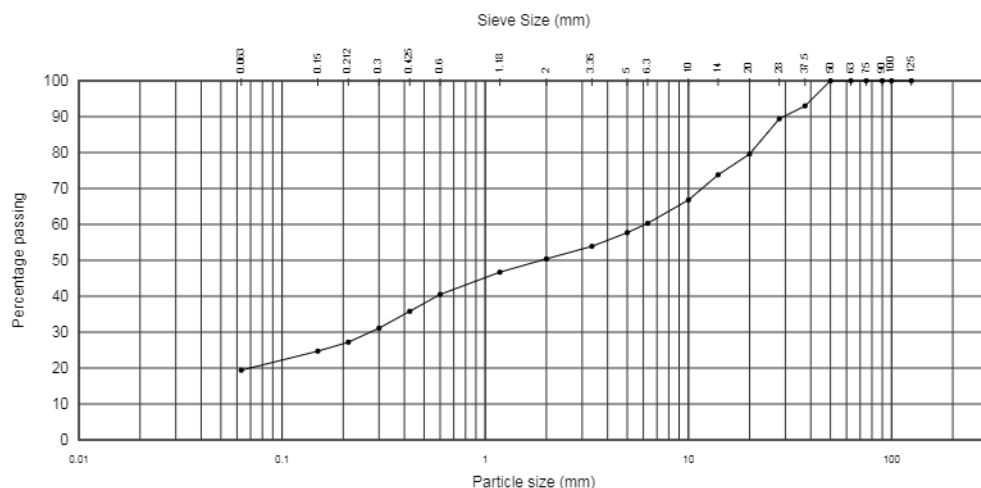
LOCATION: Z3SP7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT


Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 11.1%

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	93	
28	89	
20	80	
14	74	
10	67	
6.3	60	
5	58	
3.35	54	
2	50	15 - 80
1.18	47	
0.6	41	
0.425	36	
0.3	31	
0.212	27	
0.15	25	
0.063	19	15 - 80

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET

Chris Davidson - Laboratory Section Manager



Approved Signatory

30-May-18



0927

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Report version 1

Page 1 of 1

TEST REPORT:	DETERMINATION OF THE PLASTICITY INDEX OF SOIL		
	BS 1377:Part 2:1990 clause 5.4		
REPORT NUMBER:	392872 / 38160.12.1.1		
SAMPLE NUMBER:	56076	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	SP123 (2)	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	27/04/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	02/05/2018	MATERIAL:	Dark Brown Stoney Clay
DATE COMPLETED:	09/05/2018	LOCATION:	SP123 (2),
TESTED BY:	MG, DG, BM	ACCEPT. STD:	Contract Specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	BS 1377:Part 1:1990 cl 7.3 & 7.4.3
WITHIN ORIGINAL SAMPLE:	N/A	VARIATIONS:	None

RESULTS:

TEST DETAILS	TEST RESULT	SPECIFICATION LIMITS	
		Lower Limit	Upper Limit
THE LIQUID LIMIT OF THE SAMPLE:	40%	N/A	N/A
THE PLASTIC LIMIT OF THE SAMPLE:	26%	N/A	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	14%		
THE PERCENTAGE PASSING 425µm TEST SIEVE:	32%		
Sample History:	The material was tested after washing through a 425µm test sieve		

Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

Report Format: L/Rep S4/rev.6

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For and on behalf of CET
 Dan Gay - Laboratory Supervisor



Approved Signatory
 09-May-18



0927

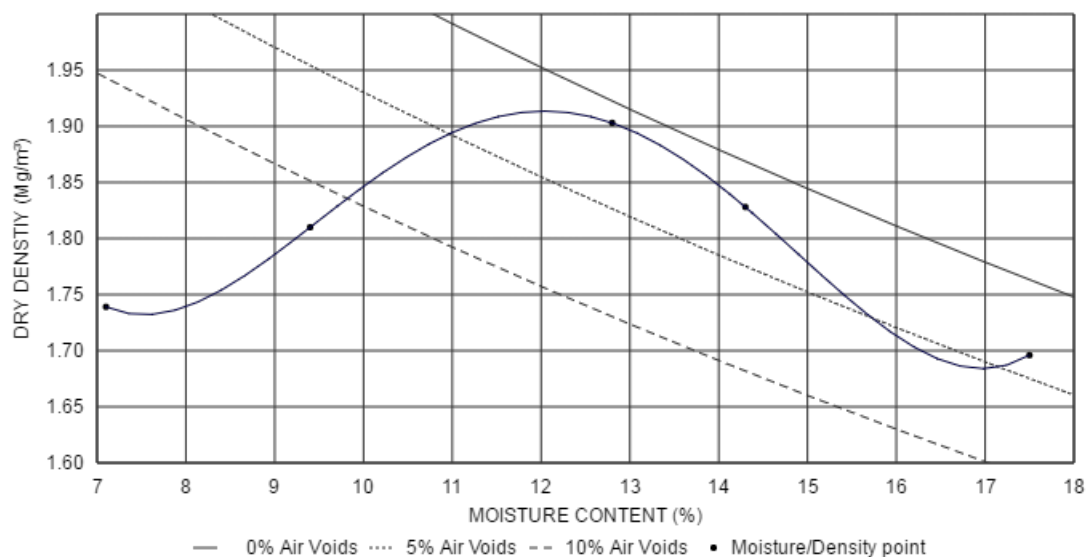
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TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 38160.8.1.1		
SAMPLE NUMBER:	56072	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	SP123 (1)	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	27/04/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	02/05/2018	MATERIAL:	Dark Brown Stoney Clay
DATE TESTED:	10/05/2018	LOCATION:	SP123 (1)
TESTED BY:	MG, DG, RB, AV	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTION SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.91 Mg/m³
OPTIMUM MOISTURE CONTENT: 12 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 22 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 9 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.55 Mg/m³
 (measured in accordance with BS 1377: 1990:part 2)

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.
 Amended report. This test report supersedes test report version 1

For and on behalf of CET
 Dan Gay - Laboratory Supervisor

D S

Approved Signatory
 14-May-18



0927

Report Format: L/Rep S11-S14a/8

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Report version 2

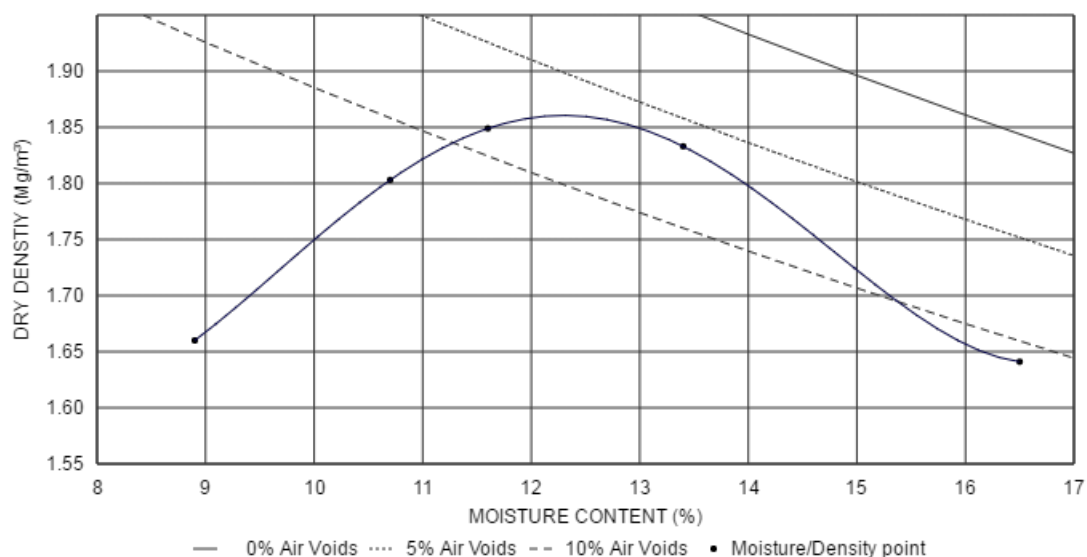
Page 1 of 1

TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 38160.19.1.1		
SAMPLE NUMBER:	56078	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	SP123 (3)	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	27/04/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	02/05/2018	MATERIAL:	Dark Brown Stoney Clay
DATE TESTED:	10/05/2018	LOCATION:	SP123 (3)
TESTED BY:	MG, DG, RB, AV	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.86 Mg/m³
OPTIMUM MOISTURE CONTENT: 12 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 18 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 2 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.65 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
 Dan Gay - Laboratory Supervisor

D S

Approved Signatory
 10-May-18



0927

Report Format: L/Rep S11-S14a/8

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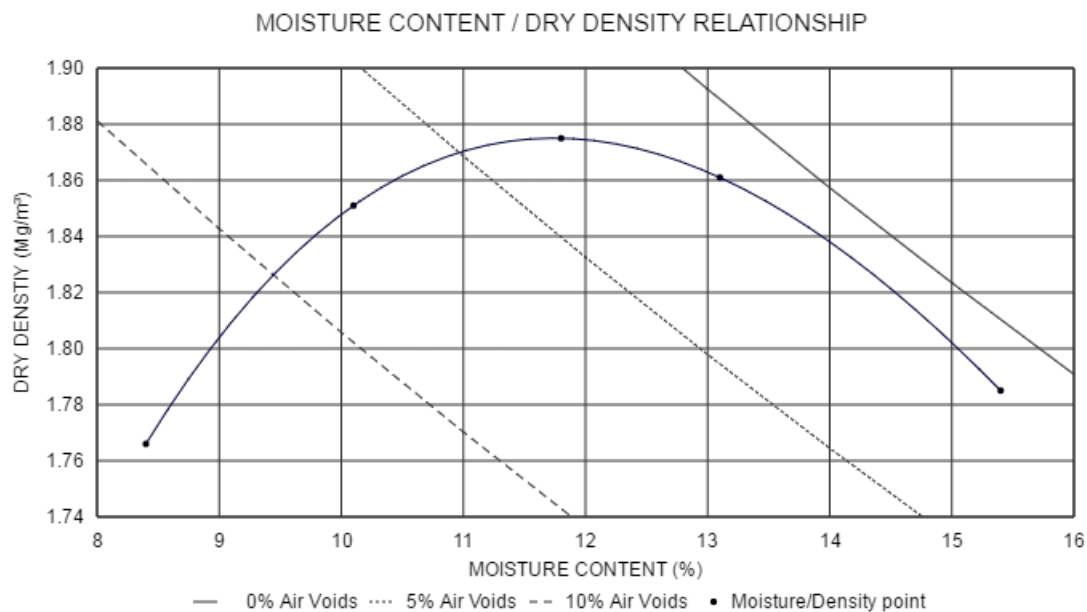
Report version 1

Page 1 of 1

TEST REPORT:	DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP		
	BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method		
REPORT NUMBER:	392872 / 39513.10.1.1		
SAMPLE NUMBER:	58733	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	Z3SP7	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	14/05/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	22/05/2018	MATERIAL:	2C
DATE TESTED:	18/06/2018	LOCATION:	Z3SP7
TESTED BY:	zF, DG, DI, BM, RB, AV, EU	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
VARIATIONS:	None	COMPACTON SAMPLE:	Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.88 Mg/m³
OPTIMUM MOISTURE CONTENT: 12 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 20 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 7 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.51 Mg/m³



Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
Dan Gay - Laboratory Supervisor

D S

Approved Signatory
18-Jun-18



Report Format: L/Rep S11-S14a/8

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Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE DENSITY

BS 1377:Part 2:1990 Gas Jar Method

REPORT NUMBER:

392872 / 39513.9.1.1

SAMPLE NUMBER:

See Below

CLIENT:

Cognition Land & Water Ltd

CLIENT REF:

See Below

ADDRESS:

Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED:

14/05/2018

SITE:

Pump Lane, Southall

SAMPLED BY:

Client

SUPPLIER:

Unknown

DATE RECEIVED:

22/05/2018

MATERIAL:

2C

DATE TESTED:

04/06/2018

LOCATION:

Z3SP7

TESTED BY:

MG, DG, BM, RH

ACCEPT. STD:

Contract Specification

TYPE OF SAMPLE:

Disturbed

PREPARATION METHOD: :

BS1377:Part1:1990 clauses 7.3 and 7.4.2

 ORIENTATION OF TEST SPECIMEN
 WITHIN ORIGINAL SAMPLE:

N/A

VARIATIONS:

None

RESULT

SAMPLE NO	CLIENT SAMPLE REF	MATERIAL	PARTICLE DENSITY Mg.m ³
58733	Z3SP7	2C	2.51

Remarks:

 For and on behalf of CET
 Dan Gay - Laboratory Supervisor



 Approved Signatory
 18-Jun-18


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Report Format: L/Rep S7A / rev.2

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Report version 1

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 39513.14.1.1

SAMPLE NUMBER: 58733

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Z3SP7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 14/05/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 22/05/2018

MATERIAL: 2C

DATE COMPLETED: 04/06/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, BM, AV, RH

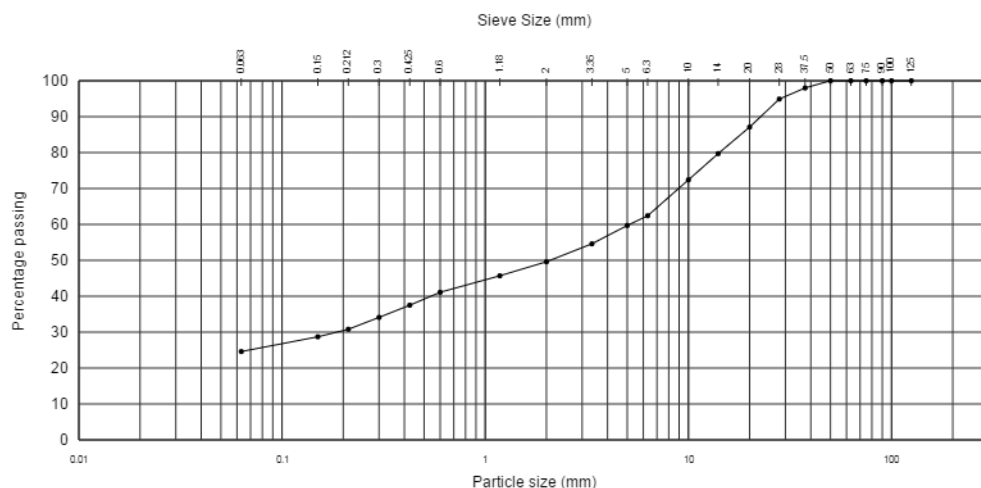
LOCATION: Z3SP7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	95	
20	87	
14	80	
10	72	
6.3	62	
5	60	
3.35	55	
2	50	15 - 80
1.18	46	
0.6	41	
0.425	38	
0.3	34	
0.212	31	
0.15	29	
0.063	25	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 10.6%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET

Dan Gay - Laboratory Supervisor



Approved Signatory

04-Jun-18



0927

Report Format: L/Rep S6a/9

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Report version 1

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TEST REPORT:

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

REPORT NUMBER:

BS EN 933-1 : 2012 Washing & Dry Sieving

SAMPLE NUMBER:

392872 / 39513.21.1.1

SAMPLE NUMBER:

58739

CLIENT:

Cognition Land & Water Ltd

CLIENT REF:

Zone 3- Type 1

ADDRESS:

Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED:

14/05/2018

SITE:

Pump Lane, Southall

SAMPLED BY:

Client

SUPPLIER:

Unknown

DATE RECEIVED:

22/05/2018

MATERIAL:

Type 1

DATE COMPLETED:

04/06/2018

CLASSIFICATION:

Type 1

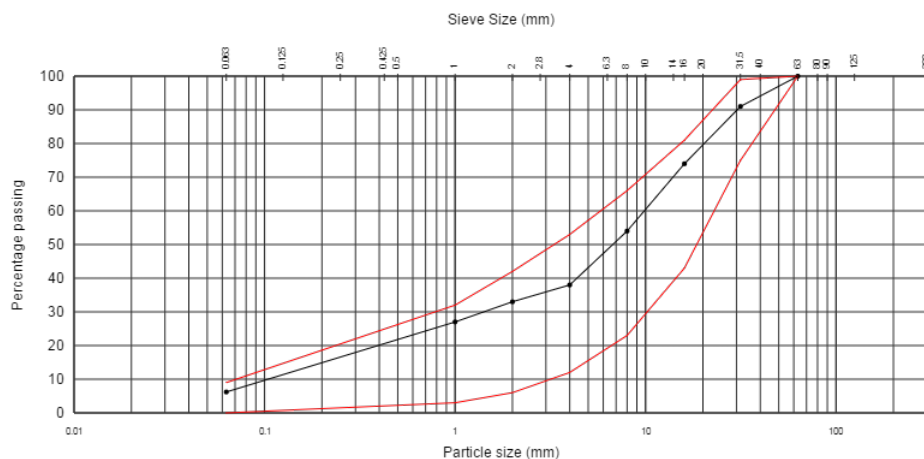
TESTED BY:

DG, BM, AV, MW, RH

LOCATION:

Zone 3- Type 1

RESULT



Type 1 - Specification For Highway Works (2016) Table 8/5, Clause 803

Uniformity Coefficient (D60/D10)

N/A

Specification

Difference in values passing 8 & 16mm test sieve: 20

7 - 30

Difference in values passing 4 & 8mm test sieve: 16

7 - 30

Sample complies with the grading specification

Moisture content: 9.0%

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
300	100	
125	100	
90	100	
80	100	
63	100	100 - 100
40	95	
31.5	91	75 - 99
20	80	
16	74	43 - 81
14	71	
10	59	
8	54	23 - 66
6.3	47	
4	38	12 - 53
2.8	36	
2	33	6 - 42
1	27	3 - 32
0.5	21	
0.425	19	
0.25	13	
0.125	8	
0.063	6.2	0 - 9

Remarks:

A certificate of sampling is not available.

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET

Dan Gay - Laboratory Supervisor



Approved Signatory

05-Jun-18



0927

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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 39513.20.1.1

SAMPLE NUMBER: 58739

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 3- Type 1

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 14/05/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 22/05/2018

MATERIAL: Type 1

DATE COMPLETED: 11/06/2018

CUT LOCATION: Unknown

TESTED BY: CD, DG, BM

FILL LOCATION: Zone 3- Type 1

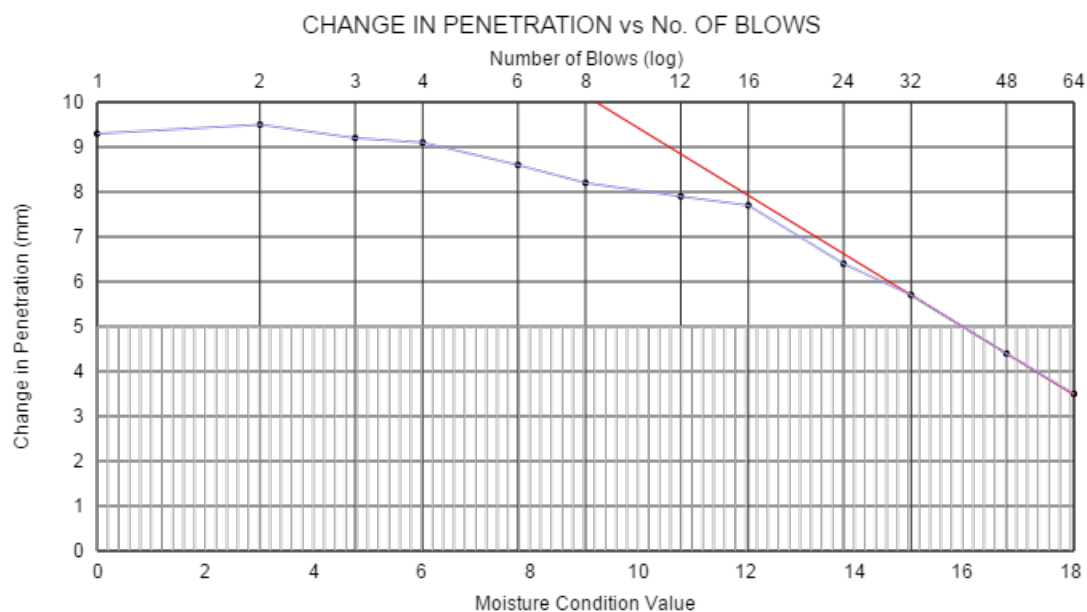
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	16.0
NATURAL MOISTURE CONTENT (%)	9.5
PERCENTAGE RETAINED 20mm (%)	3.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:

 For and on behalf of CET
 Dan Gay - Laboratory Supervisor



 Approved Signatory
 12-Jun-18


0927

Report Format: L/Rep S10a rev.3

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Report version 1

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 39513.17.1.1

SAMPLE NUMBER: 58739

CLIENT: Cognition Land & Water Ltd

CLIENT REF: Zone 3- Type 1

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 14/05/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 22/05/2018

MATERIAL: Type 1

DATE COMPLETED: 12/06/2018

CUT LOCATION: Unknown

TESTED BY: DG, BM, RB, JM

FILL LOCATION: Zone 3- Type 1

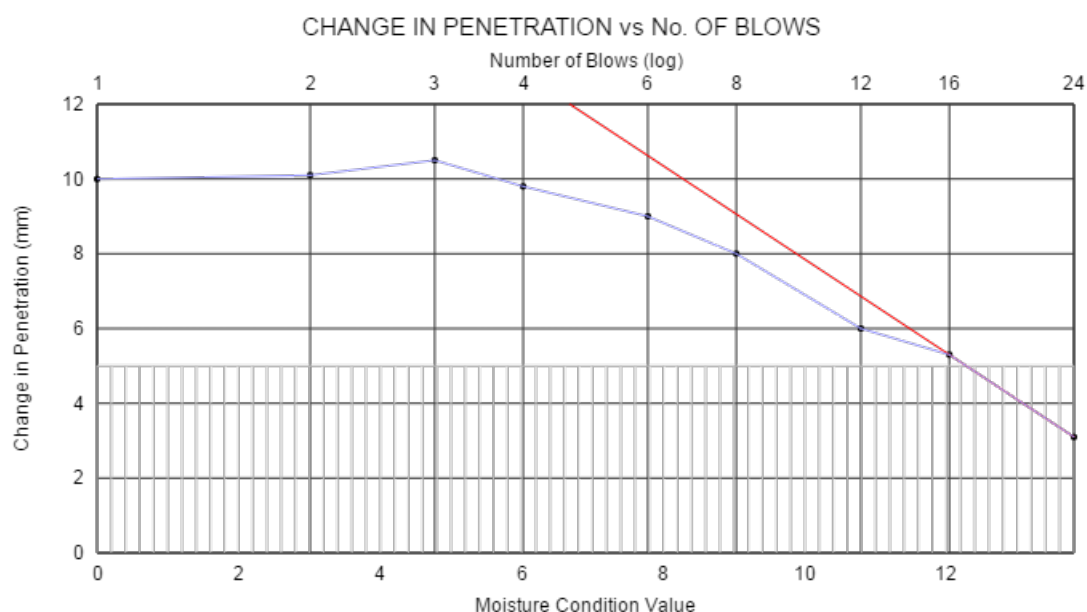
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	12.3
NATURAL MOISTURE CONTENT (%)	9.4
PERCENTAGE RETAINED 20mm (%)	22.4
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:

 For and on behalf of CET
 Dan Gay - Laboratory Supervisor



 Approved Signatory
 12-Jun-18


0927

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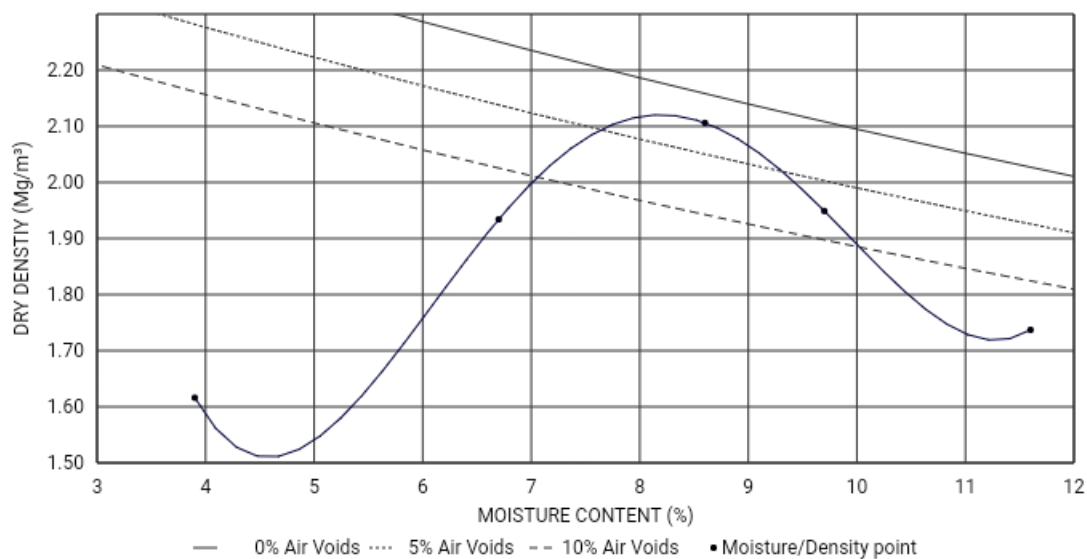
Page 1 of 1

TEST REPORT:	DETERMINATION OF REFERENCE DENSITY AND WATER CONTENT		
	BS EN 13286-4: 2003 - Vibrating Hammer		
REPORT NUMBER:	392872 / 39513.16.1.1		
SAMPLE NUMBER:	58739	CLIENT:	Cognition Land & Water Ltd
CLIENT REF:	Zone 3- Type 1	ADDRESS:	Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ
DATE SAMPLED:	14/05/2018	SITE:	Pump Lane, Southall
SAMPLED BY:	Client	SUPPLIER:	Unknown
DATE RECEIVED:	22/05/2018	MATERIAL:	Type 1
DATE TESTED:	06/06/2018	LOCATION:	Unknown
TESTED BY:	DG, BM, EU	ACCEPTED STD:	Contract specification
TYPE OF SAMPLE:	Disturbed	COMPACTION SAMPLE:	Separate samples
		VARIATIONS:	None

RESULT:

MAXIMUM DRY DENSITY: 1.99 Mg/m³
OPTIMUM WATER CONTENT: 8.5 %
AMOUNT (By Dry Mass) RETAINED >40.0mm: 7 %
MEASURED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.65 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CET
 Dan Gay - Laboratory Supervisor

D S

Approved Signatory
 07-Jun-18



0927

Report Format: L/Rep S11(EN)/rev.1

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Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33220.2.1.1

SAMPLE NUMBER: 46595

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 19/02/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, MW

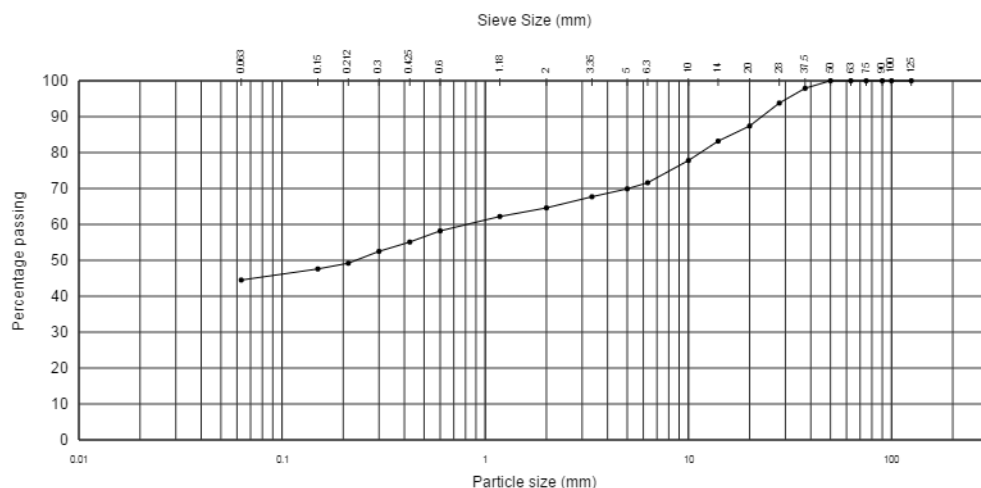
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	94	
20	87	
14	83	
10	78	
6.3	72	
5	70	
3.35	68	
2	65	15 - 80
1.18	62	
0.6	58	
0.425	55	
0.3	53	
0.212	49	
0.15	48	
0.063	45	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 21.7%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

19-Feb-18



0927

Report Format: L/Rep S6a/9

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Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33220.6.1.1

SAMPLE NUMBER: 46596

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 19/02/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, MW

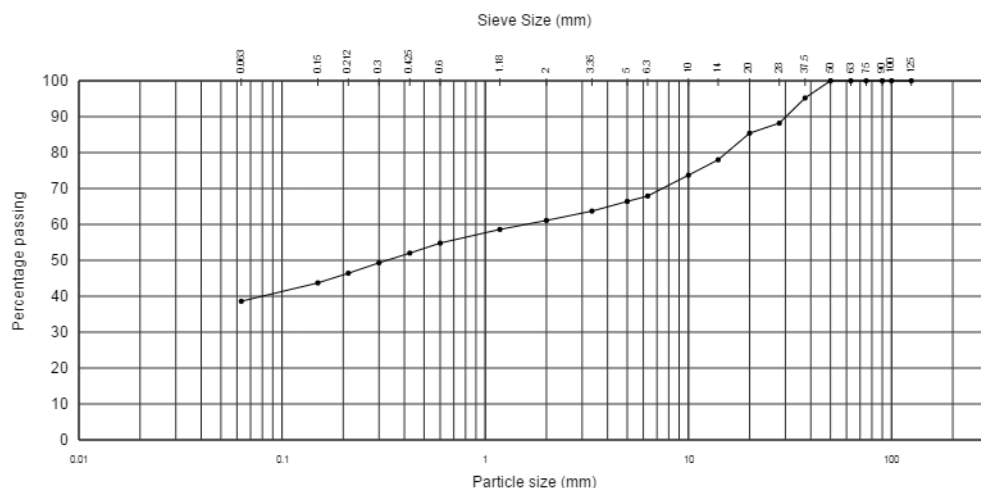
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	95	
28	88	
20	85	
14	78	
10	74	
6.3	68	
5	66	
3.35	64	
2	61	15 - 80
1.18	59	
0.6	55	
0.425	52	
0.3	49	
0.212	46	
0.15	44	
0.063	39	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 22.9%

 Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 19-Feb-18


0927

Report Format: L/Rep S6a/9

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TEST REPORT:

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33220.6.1.1

SAMPLE NUMBER: 46596

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 19/02/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, MW

LOCATION: SP16-7

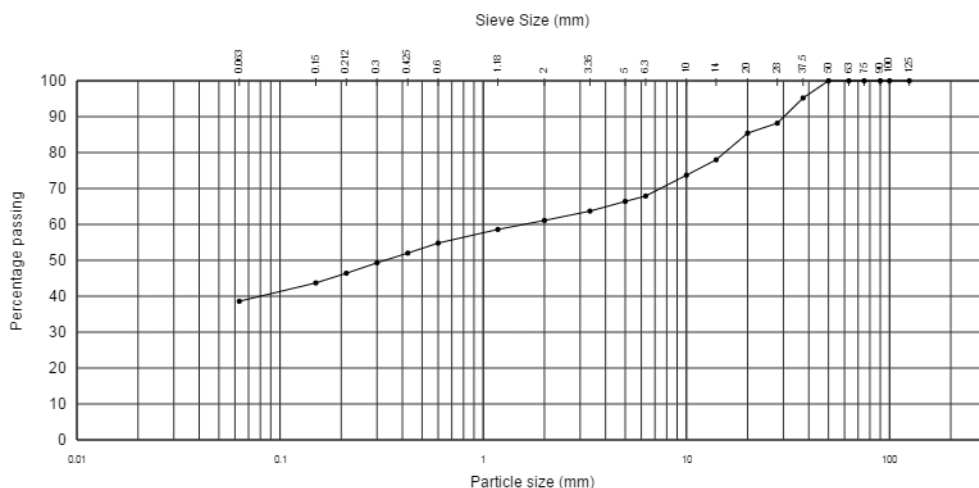
WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT



SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	95	
28	88	
20	85	
14	78	
10	74	
6.3	68	
5	66	
3.35	64	
2	61	15 - 80
1.18	59	
0.6	55	
0.425	52	
0.3	49	
0.212	46	
0.15	44	
0.063	39	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 22.9%

Remarks:
Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi
Dan Gay - Supervisor

D S

Approved Signatory
19-Feb-18



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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33220.10.1.1

SAMPLE NUMBER: 46597

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 19/02/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, AV, MW

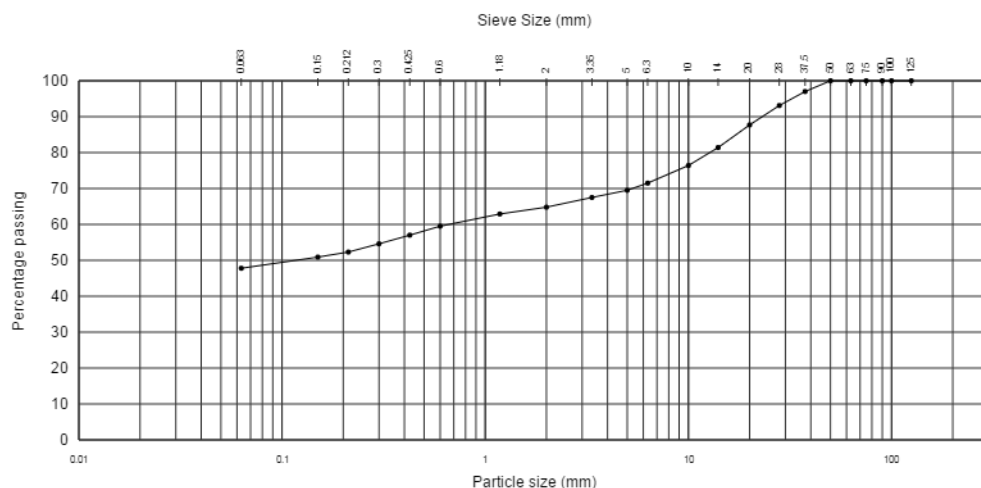
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	97	
28	93	
20	88	
14	81	
10	76	
6.3	72	
5	70	
3.35	68	
2	65	15 - 80
1.18	63	
0.6	60	
0.425	57	
0.3	55	
0.212	52	
0.15	51	
0.063	48	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 21.6%

 Remarks:
 Remaining sample will be retained for a minimum of 28 days from date of report.

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 19-Feb-18

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER:

392872 / 33220.12.1.1

SAMPLE NUMBER:

46598

CLIENT:

Cognition Land & Water Ltd

CLIENT REF:

SP16-7

ADDRESS:

Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED:

09/02/2018

SITE:

Pump Lane, Southall

SAMPLED BY:

Client

SUPPLIER:

Unknown

DATE RECEIVED:

14/02/2018

MATERIAL:

Brown silty clay occ gravel

DATE COMPLETED:

19/02/2018

CLASSIFICATION:

Class 2C

TESTED BY:

DG, DI, MW

LOCATION:

SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD:

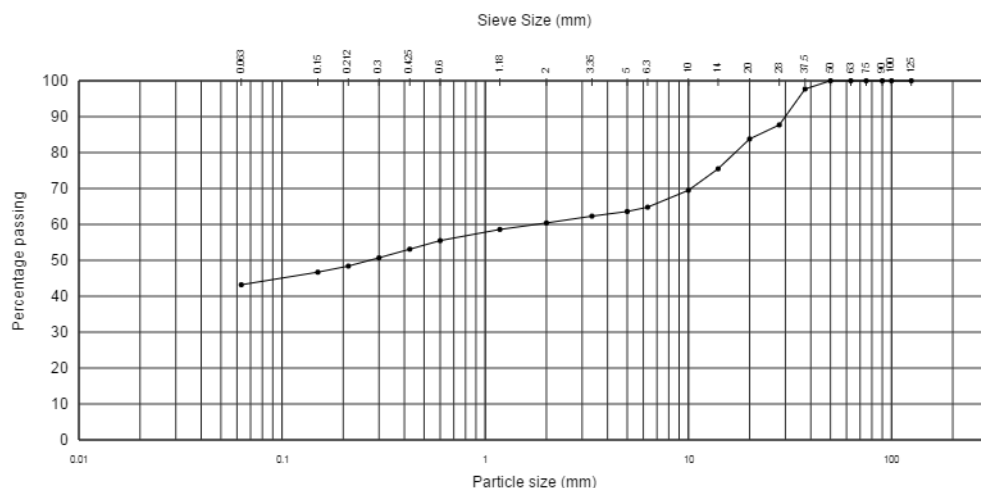
BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE:

Disturbed

VARIATIONS:

No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	88	
20	84	
14	76	
10	70	
6.3	65	
5	64	
3.35	62	
2	60	15 - 80
1.18	59	
0.6	56	
0.425	53	
0.3	51	
0.212	48	
0.15	47	
0.063	43	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 19.6%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

19-Feb-18

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33402.26.1.1

SAMPLE NUMBER: 47035

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 16/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 16/02/2018

MATERIAL: Dark Brown Stoney Clay

DATE COMPLETED: 21/02/2018

CLASSIFICATION: Class 2C

TESTED BY: MG, DG, AV, MW, FK

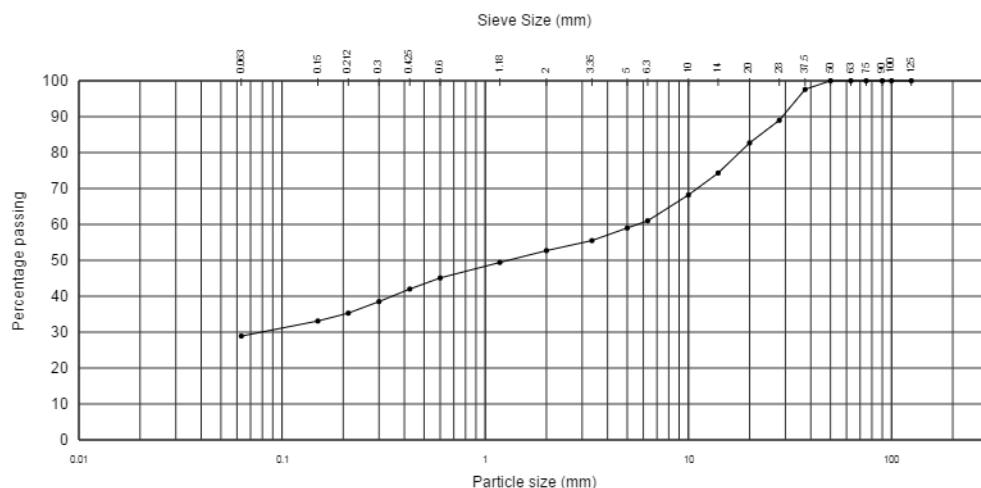
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	89	
20	83	
14	74	
10	68	
6.3	61	
5	59	
3.35	56	
2	53	15 - 80
1.18	49	
0.6	45	
0.425	42	
0.3	39	
0.212	35	
0.15	33	
0.063	29	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 21.3%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

21-Feb-18



0927

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33942.11.1.1

SAMPLE NUMBER: 47948

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 18/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 26/02/2018

MATERIAL: Soil

DATE COMPLETED: 02/03/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, MW

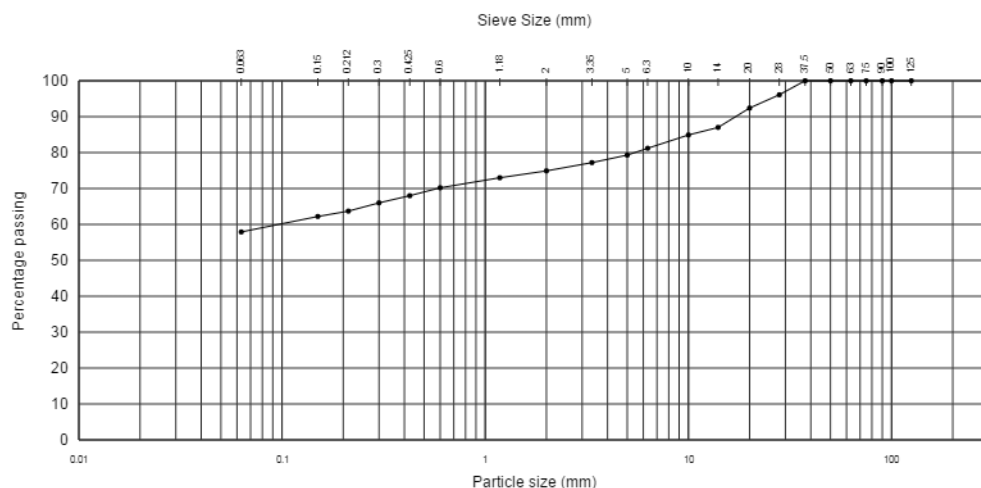
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	100	
28	96	
20	92	
14	87	
10	85	
6.3	81	
5	79	
3.35	77	
2	75	15 - 80
1.18	73	
0.6	70	
0.425	68	
0.3	66	
0.212	64	
0.15	62	
0.063	58	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 23.7%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

02-Mar-18

Report Format: L/Rep S6a/9

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Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33942.12.1.1

SAMPLE NUMBER: 47948

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 18/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 26/02/2018

MATERIAL: Soil

DATE COMPLETED: 02/03/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, AV, MW

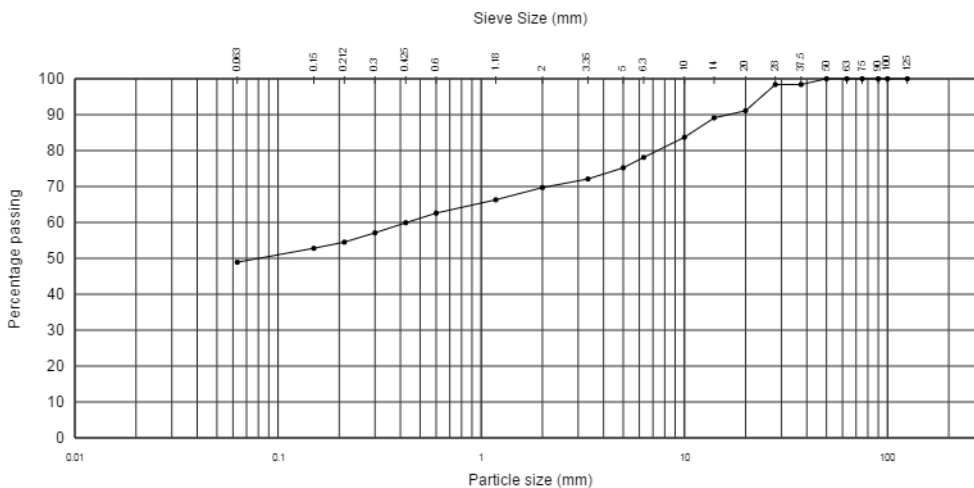
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	98	
28	98	
20	91	
14	89	
10	84	
6.3	78	
5	75	
3.35	72	
2	70	15 - 80
1.18	66	
0.6	63	
0.425	60	
0.3	57	
0.212	55	
0.15	53	
0.063	49	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 20.9%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

02-Mar-18

Report Format: L/Rep S6a/9

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TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33942.13.1.1

SAMPLE NUMBER: 47948

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 18/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 26/02/2018

MATERIAL: Soil

DATE COMPLETED: 02/03/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, AV, MW

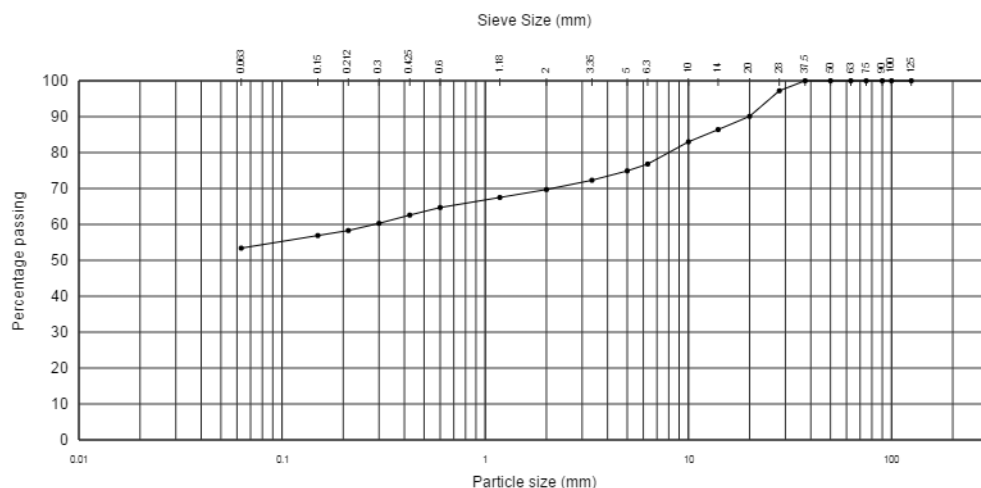
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	100	
28	97	
20	90	
14	86	
10	83	
6.3	77	
5	75	
3.35	72	
2	70	15 - 80
1.18	68	
0.6	65	
0.425	63	
0.3	60	
0.212	58	
0.15	57	
0.063	53	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 23.9%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

02-Mar-18

Report Format: L/Rep S6a/9

 Northdown House, Ashford Road
 Harrietsham, Nr Maidstone
 Kent ME17 1QW

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Report version 1



0927

Page 1 of 1

TEST REPORT:
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS 1377 - 2 : 1990, Method 9.2 Washing & Dry Sieving

REPORT NUMBER: 392872 / 33942.14.1.1

SAMPLE NUMBER: 47948

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 18/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 26/02/2018

MATERIAL: Soil

DATE COMPLETED: 02/03/2018

CLASSIFICATION: Class 2C

TESTED BY: DG, DI, AV, MW

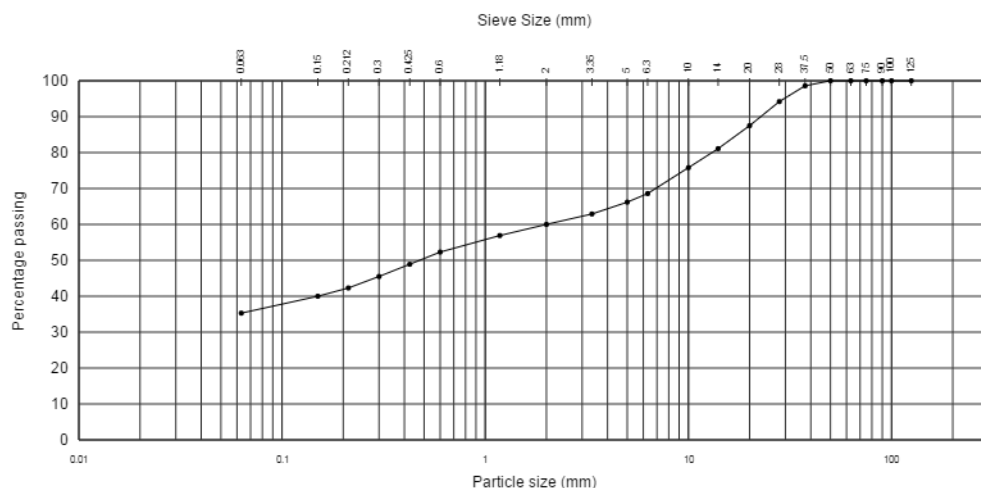
LOCATION: SP16-7

WITHIN ORIGINAL SPECIMEN: N/A

PREPARATION METHOD: BS 1377:Part 1:1990 clause 7.3 & 7.4.5

TYPE OF SAMPLE: Disturbed

VARIATIONS: No variations

RESULT

SIEVE ANALYSIS

Particle Diameter mm	Passing %	Specification Limits
125	100	100 - 100
100	100	
90	100	
75	100	
63	100	
50	100	
37.5	99	
28	94	
20	88	
14	81	
10	76	
6.3	69	
5	66	
3.35	63	
2	60	15 - 80
1.18	57	
0.6	52	
0.425	49	
0.3	46	
0.212	42	
0.15	40	
0.063	35	15 - 80

Class 2C - Specification for Highway Works (2016) Table 6/2 Earthworks Materials - Class 2C

Uniformity Coefficient (D60/D10) N/A

Sample complies with the grading specification

Moisture content: 20.5%

Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Dan Gay - Supervisor



Approved Signatory

05-Mar-18

Report Format: L/Rep S6a/9

 Northdown House, Ashford Road
 Harrietsham, Nr Maidstone
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 0843 2272362
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 www.cet-uk.com

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Report version 1



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Page 1 of 1

TEST REPORT : **DETERMINATION OF THE PLASTICITY INDEX OF SOIL**
BS 1377:Part 2:1990 clause 5.4

REPORT No.:	392872 / 33402.28.1.1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	47035	ADDRESS:	Springfield House
CLIENT REF:	SP16-7	SITE:	Pump Lane, Southall
DATE SAMPLED:	16/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Dark Brown Stoney Clay
DATE RECEIVED:	16/02/2018	LOCATION:	SP16-7
DATE TEST COMPLETED:	21/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	51%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	27%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	24%			
The Percentage Passing 425µm Test Sieve :	42%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

Remaining sample will be retained for a minimum of 28 days from date of report.

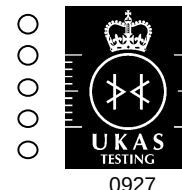
Page 1 of 1
REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



Approved Signatory
21-Feb-18

John Newbery - Laboratory Manager
Matt Oliver- Site Manager
Adrian McGilvery - Senior Technician
Chris Davidson - Laboratory Supervisor
Phil Mayhew - Operations Supervisor



TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	F18-392872-179047-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	179047/1	ADDRESS:	Springfield House,Oatlands Drive, Weybridge
CLIENT REF:	SP16-7 (46595)	SITE:	Pump Lane, Southall
DATE SAMPLED:	09/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Brown Silty Clay with Occ. Gravel
DATE RECEIVED:	14/02/2018	LOCATION:	SP16-7
DATE TEST COMPLETED:	20/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	56%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	20%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	36%			
The Percentage Passing 425µm Test Sieve :	55%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

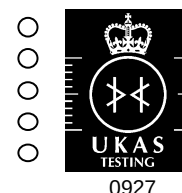
Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



 Approved Signatory
 21-Feb-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	F18-392872-179048-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	179048/1	ADDRESS:	Springfield House,Oatlands Drive, Weybridge
CLIENT REF:	SP16-7 (46596)	SITE:	Pump Lane, Southall
DATE SAMPLED:	09/02/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Brown Silty Clay with Occ. Gravel
DATE RECEIVED:	14/02/2018	LOCATION:	SP16-7
DATE TEST COMPLETED:	20/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	FK	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	57%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	20%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	37%			
The Percentage Passing 425µm Test Sieve :	52%			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

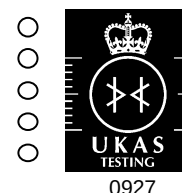
Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

For and on behalf of CET



 Approved Signatory
 21-Feb-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : DETERMINATION OF THE PLASTICITY INDEX OF SOIL
 BS 1377:Part 2:1990 clause 5.4

REPORT No.:	F18-392872-178659-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	178659/1	ADDRESS:	Springfield House,Oatlands Drive, Weybridge
CLIENT REF:	42938	SITE:	Pump Lane, Southall
DATE SAMPLED:	11/01/2018	SUPPLIER:	Site Won
SAMPLED BY:	Client	MATERIAL:	Granular Material with MG
DATE RECEIVED:	15/01/2018	LOCATION:	Lagoon Stockpile 3
DATE TEST COMPLETED:	17/01/2018	ACCEPT STD:	Contract Specification
TESTED BY:	EU	PREPARATION METHOD:	BS 1377:Part 1:1990
TYPE OF SAMPLE:	Disturbed	VARIATIONS:	No Variations

ORIENTATION OF TEST SPECIMEN WITHIN ORIGINAL SAMPLE: N/A

RESULT:

TEST DETAILS	TEST RESULT	SPECIFICATION DETAILS		
		Lower Limits		Upper Limits
THE LIQUID LIMIT OF THE SAMPLE: BS 1377: Part 2: 1990 clause 4.4 (1 point)	50%	N/A	-	N/A
THE PLASTIC LIMIT OF THE SAMPLE: To BS1377 : Part2 : 1990 cl 5.3	20%	N/A	-	N/A
THE PLASTICITY INDEX OF THE SAMPLE:	30			
The Percentage Passing 425µm Test Sieve :	49.2			
Sample History :	The material was tested after washing through a 425µm test sieve			

REMARKS:

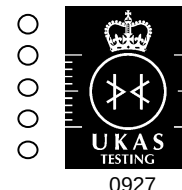
Specification details not applicable.

For and on behalf of CET

Remaining sample will be retained for a minimum of 28 days from date of report.

 Page 1 of 1
 REPORT FORMAT: L/Rep S3S4/rev.6

 Approved Signatory
 17-Jan-18

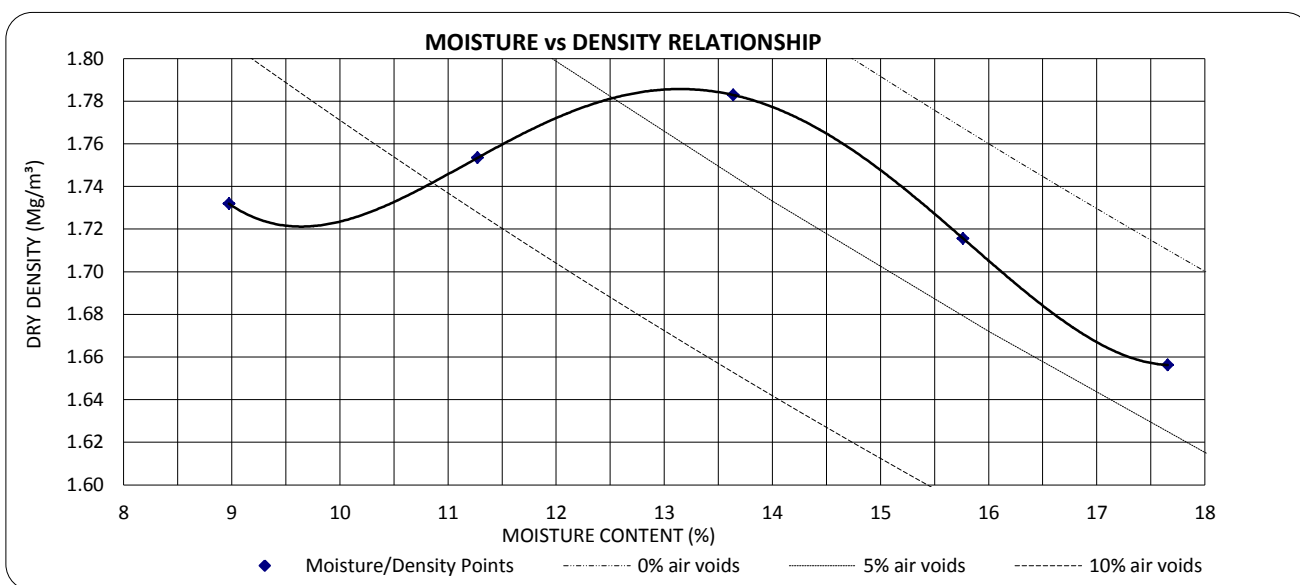
 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT : **DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP**
BS 1377: Part 4: 1990: clause 3.4 (2.5kg Rammer Method)

REPORT No.:	F18-392872-178665-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	178665/1	ADDRESS:	Springfield House, Oatlands Drive, Weybridge
CLIENT REF:	42948	SITE:	Pump Lane, Southall
DATE SAMPLED:	11/01/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Granular Material with MG (Medium level of stabilisation)
DATE RECEIVED:	15/01/2018	LOCATION:	Lagoon Stockpile 3
DATE TEST COMPLETED:	16/01/2018	ACCEPT STD:	Contract Specification
TESTED BY:	JW	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
TYPE OF SAMPLE:	Disturbed		
ORIENTATION OF TEST SPECIMEN		COMPACTION SAMPLE:	Separate Samples
WITHIN ORIGINAL SPECIMEN:	N/A	VARIATIONS:	None

RESULTS:

MAX DRY DENSITY	=	1.78 Mg/m ³
OPTIMUM MOISTURE CONTENT	=	14 %
AMOUNT (By Dry Mass) RETAINED ON 20mm TEST SIEVE	=	19 %
AMOUNT (By Dry Mass) RETAINED ON 37.5mm TEST SIEVE	=	10 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOID LINES	=	2.45 Mg/m ³



REMARKS:

For and on behalf of CET

Remaining sample will be retained for a minimum of 28 days from date of report.

Page 1 of 1
Report Format: L/Rep S12a rev.10

Approved Signatory
17-Jan-18

John Newbery - Laboratory Manager
Matt Oliver- Site Manager
Adrian McGilvery - Senior Technician
Chris Davidson - Laboratory Supervisor
Phil Mayhew - Operations Supervisor

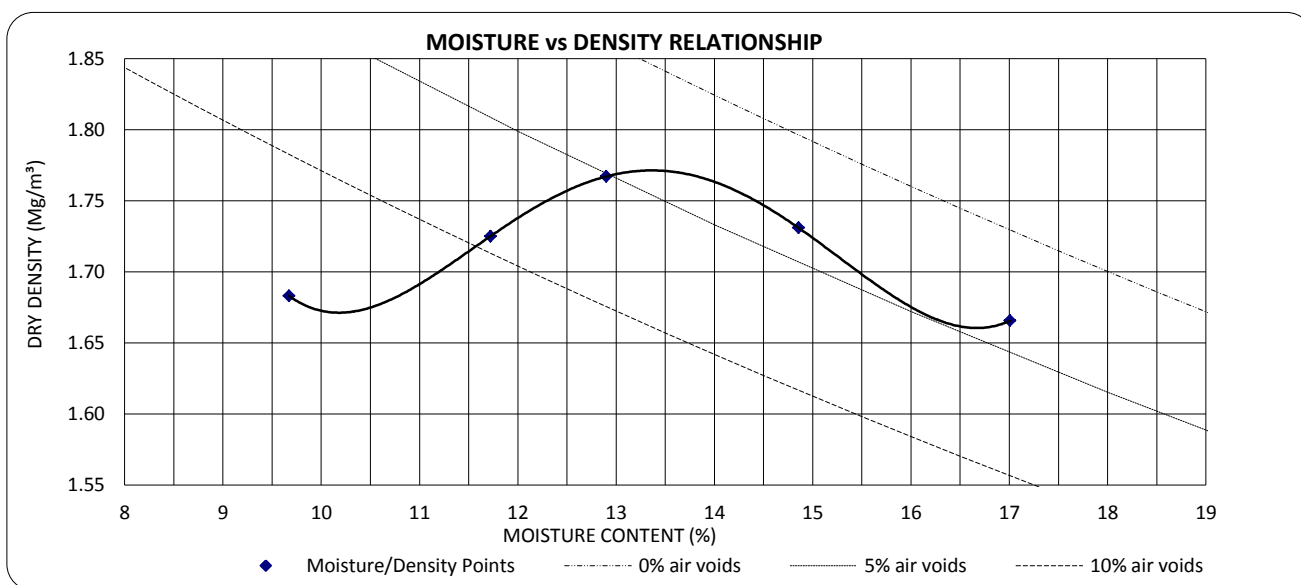


TEST REPORT : DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP
BS 1377: Part 4: 1990: clause 3.4 (2.5kg Rammer Method)

REPORT No.:	F18-392872-178664-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	178664/1	ADDRESS:	Springfield House, Oatlands Drive, Weybridge
CLIENT REF:	42947	SITE:	Pump Lane, Southall
DATE SAMPLED:	11/01/2018	SUPPLIER:	Details Not Supplied
SAMPLED BY:	Client	MATERIAL:	Granular Material with MG (Low level of stabilisation)
DATE RECEIVED:	15/01/2018	LOCATION:	Lagoon Stockpile 3
DATE TEST COMPLETED:	16/01/2018	ACCEPT STD:	Contract Specification
TESTED BY:	EU/JW	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
TYPE OF SAMPLE:	Disturbed		
ORIENTATION OF TEST SPECIMEN		COMPACTION SAMPLE:	Separate Samples
WITHIN ORIGINAL SPECIMEN:	N/A	VARIATIONS:	None

RESULTS:

MAX DRY DENSITY	=	1.77 Mg/m ³
OPTIMUM MOISTURE CONTENT	=	14 %
AMOUNT (By Dry Mass) RETAINED ON 20mm TEST SIEVE	=	29 %
AMOUNT (By Dry Mass) RETAINED ON 37.5mm TEST SIEVE	=	10 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOID LINES	=	2.45 Mg/m ³



REMARKS:

For and on behalf of CET

Remaining sample will be retained for a minimum of 28 days from date of report.

Page 1 of 1
Report Format: L/Rep S12a rev.10

Approved Signatory
16-Jan-18

John Newbery - Laboratory Manager
Matt Oliver - Site Manager
Adrian McGilvery - Senior Technician
Chris Davidson - Laboratory Supervisor
Phil Mayhew - Operations Supervisor



TEST REPORT: DETERMINATION OF DRY DENSITY / MOISTURE / CBR RELATIONSHIP

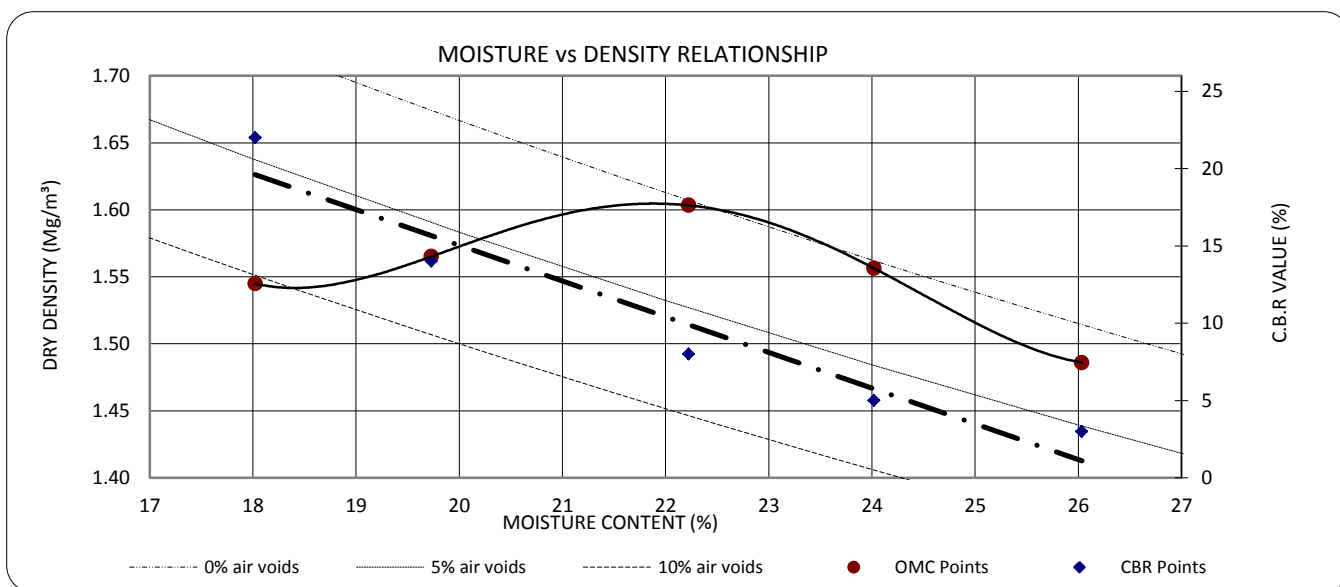
BS 1377: Part 4: 1990: clause 3.4 (2.5kg Rammer Method)

BS 1377 Part 4 : 1990 Clause 7

REPORT No.:	F18-392872-179028-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	179028/1	ADDRESS:	Springfield House,Oatlands Drive, Weybridge
CLIENT REF:	LAG-SP16 (46496)	SITE:	Pump Lane, Southall
DATE SAMPLED:	08/02/2018	SUPPLIER:	Stockpile
SAMPLED BY:	Client	MATERIAL:	Brown Silty Clay with Occ. Gravel + 2%OPC
DATE RECEIVED:	13/02/2018	LOCATION:	LAG-SP16
DATE TEST COMPLETED:	16/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	JW/AR/MG	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
TYPE OF SAMPLE:	Disturbed		
ORIENTATION OF TEST SPECIMEN		COMPACTION SAMPLE:	Separate Samples
WITHIN ORIGINAL SPECIMEN:	N/A	VARIATIONS:	None

RESULT:

MAX DRY DENSITY	=	1.60 Mg/m ³
OPTIMUM MOISTURE CONTENT	=	22 %
AMOUNT (By Dry Mass) RETAINED ON 20mm TEST SIEVE	=	4.8 %
AMOUNT (By Dry Mass) RETAINED ON 37.5mm TEST SIEVE	=	2.6 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOID LINES	=	2.50 Mg/m ³



REMARKS: Average CBR Value Reported

For and on behalf of CET

Remaining sample will be retained for a minimum of 28 days from date of report.

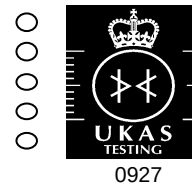
Page 1 of 1

Report Format: L/Rep S12-10 rev.1

Approved Signatory

16-Feb-18

John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor



TEST REPORT:
DETERMINATION OF DRY DENSITY / MOISTURE / MCV RELATIONSHIP

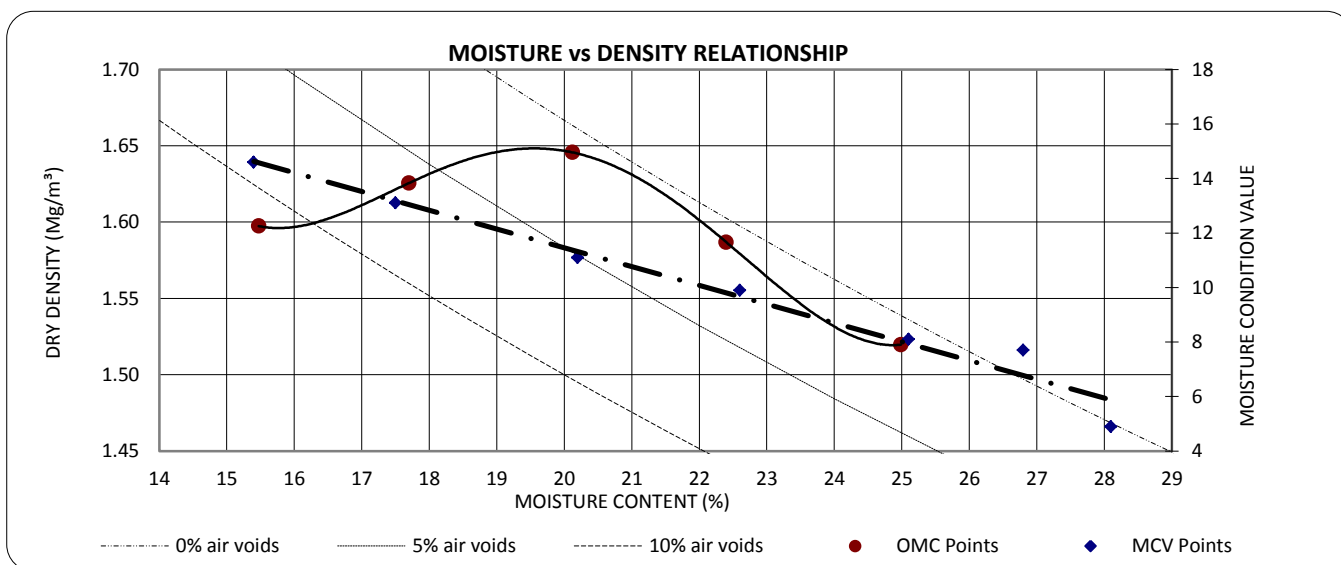
BS 1377: Part 4: 1990: clause 3.4 (2.5kg Rammer Method)

BS 1377 Part 4 : 1990 Clause 5.5

REPORT No.:	F18-392872-179029-1a	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	179029/1	ADDRESS:	Springfield House,Oatlands Drive, Weybridge
CLIENT REF:	LAG-SP16 (46502)	SITE:	Pump Lane, Southall
DATE SAMPLED:	08/02/2018	SUPPLIER:	Stockpile
SAMPLED BY:	Client	MATERIAL:	Brown Silty Clay with Occ. Gravel + 4%OPC
DATE RECEIVED:	13/02/2018	LOCATION:	LAG-SP16
DATE TEST COMPLETED:	15/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	MG/JW/RB	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
TYPE OF SAMPLE:	Disturbed		
ORIENTATION OF TEST SPECIMEN		COMPACTION SAMPLE:	Separate Samples
WITHIN ORIGINAL SPECIMEN:	N/A	VARIATIONS:	None

RESULTS:

MAX DRY DENSITY	=	1.65 Mg/m ³
OPTIMUM MOISTURE CONTENT	=	20 %
AMOUNT (By Dry Mass) RETAINED ON 20mm TEST SIEVE	=	4.8 %
AMOUNT (By Dry Mass) RETAINED ON 37.5mm TEST SIEVE	=	2.6 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOID LINES	=	2.50 Mg/m ³


REMARKS:

For and on behalf of CET

Remaining sample will be retained for a minimum of 28 days from date of report.

Page 1 of 1

Report Format: L/Rep S12-11 rev.10

Approved Signatory

16-Feb-18

 John Newbery - Laboratory Manager
 Matt Oliver- Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


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TEST REPORT: DETERMINATION OF DRY DENSITY / MOISTURE / CBR RELATIONSHIP

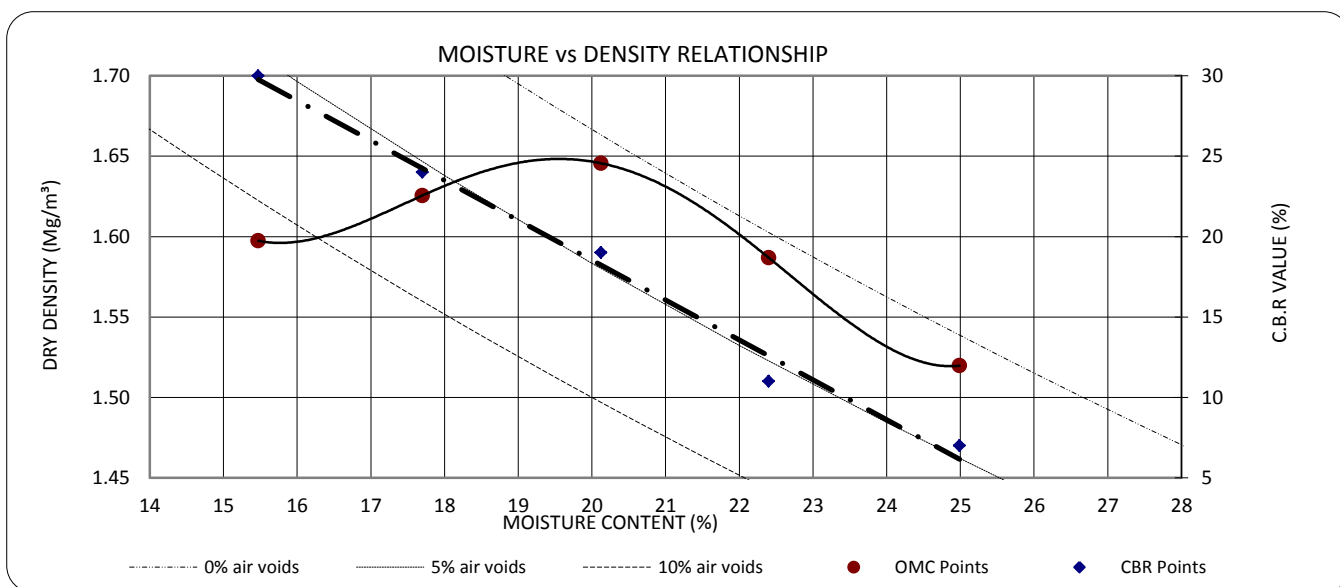
BS 1377: Part 4: 1990: clause 3.4 (2.5kg Rammer Method)

BS 1377 Part 4 : 1990 Clause 7

REPORT No.:	F18-392872-179029-1	CLIENT:	Cognition Land & Water Ltd
SAMPLE No.:	179029/1	ADDRESS:	Springfield House, Oatlands Drive, Weybridge
CLIENT REF:	LAG-SP16 (46502)	SITE:	Pump Lane, Southall
DATE SAMPLED:	08/02/2018	SUPPLIER:	Stockpile
SAMPLED BY:	Client	MATERIAL:	Brown Silty Clay with Occ. Gravel + 4% OPC
DATE RECEIVED:	13/02/2018	LOCATION:	LAG-SP16
DATE TEST COMPLETED:	15/02/2018	ACCEPT STD:	Contract Specification
TESTED BY:	RB/MG/JW	PREPARATION METHOD:	CBR Mould (BS1377:Pt1:1990 Cl7.6.3) : Material chopped to <20mm, for cohesive soil.
TYPE OF SAMPLE:	Disturbed		
ORIENTATION OF TEST SPECIMEN		COMPACTION SAMPLE:	Separate Samples
WITHIN ORIGINAL SPECIMEN:	N/A	VARIATIONS:	None

RESULT:

MAX DRY DENSITY	=	1.65 Mg/m ³
OPTIMUM MOISTURE CONTENT	=	20 %
AMOUNT (By Dry Mass) RETAINED ON 20mm TEST SIEVE	=	4.8 %
AMOUNT (By Dry Mass) RETAINED ON 37.5mm TEST SIEVE	=	2.6 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOID LINES	=	2.50 Mg/m ³



REMARKS: Average CBR Value Reported

For and on behalf of CET

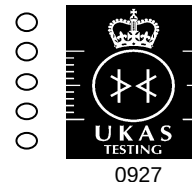
Remaining sample will be retained for a minimum of 28 days from date of report.

Page 1 of 1

Report Format: L/Rep S12-10 rev.1

Approved Signatory

16-Feb-18

 John Newbery - Laboratory Manager
 Matt Oliver - Site Manager
 Adrian McGilvery - Senior Technician
 Chris Davidson - Laboratory Supervisor
 Phil Mayhew - Operations Supervisor


TEST REPORT:

DETERMINATION OF DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS 1377:Part 4:1990 clause 3.4 2.5kg Rammer method

REPORT NUMBER: 392872 / 33123.2.1.1

SAMPLE NUMBER: 46505

CLIENT: Cognition Land & Water Ltd

CLIENT REF: LAG-SP16

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 08/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Stockpile

DATE RECEIVED: 13/02/2018

MATERIAL: Brown silty clay occ gravel+2%OPC

DATE TESTED: 16/02/2018

LOCATION: LAG-SP16

TESTED BY: CD, EU, TB, MW

ACCEPTED STD: Contract specification

TYPE OF SAMPLE: Disturbed

PREPARATION METHOD: CBR Mould (BS1377:Pt1:1990 Cl7.6.3)
: Material chopped to <20mm, for cohesive soil.

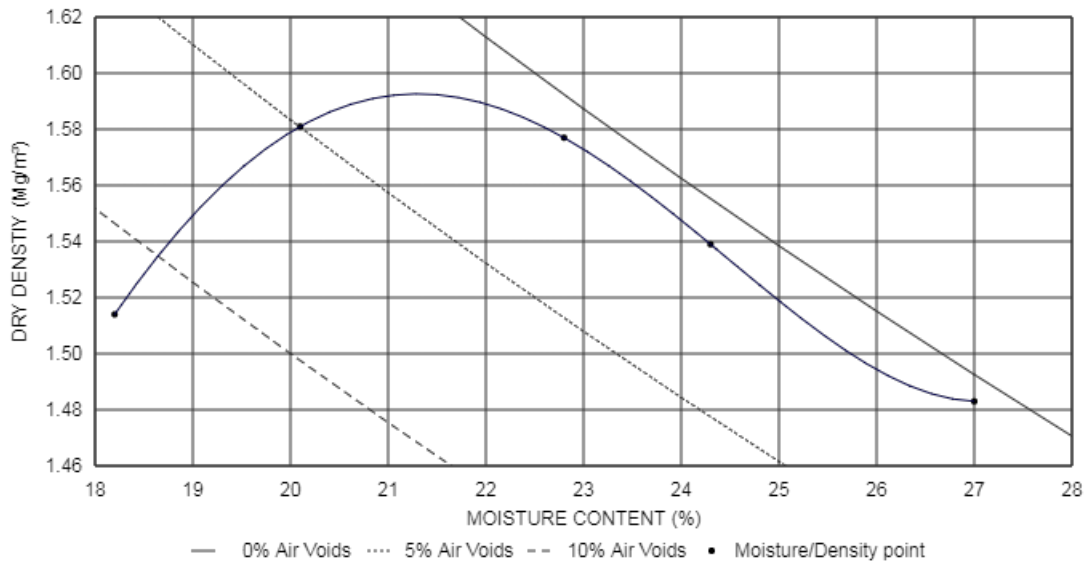
VARIATIONS: None

COMPACTION SAMPLE: Separate samples

RESULT:

MAXIMUM DRY DENSITY: 1.59 Mg/m³
OPTIMUM MOISTURE CONTENT: 21 %
AMOUNT (By Dry Mass) RETAINED ON >20mm TEST SIEVE: 6 %
AMOUNT (By Dry Mass) RETAINED ON >37.5mm TEST SIEVE: 2 %
ASSUMED PARTICLE DENSITY USED TO PLOT AIR VOIDS: 2.5 Mg/m³

MOISTURE CONTENT / DRY DENSITY RELATIONSHIP



Remarks:

Remaining sample will be retained for a minimum of 28 days from date of report.

For and on behalf of CETi

Chris Davidson - Laboratory Section Manager

Chris Davidson

Approved Signatory

16-Feb-18



0927

Report Format: L/Rep S11-S14a/8

Northdown House, Ashford Road
Harrietsham, Nr Maidstone
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www.cet-uk.com

CET is the trading name for CET Structures Limited.
Registered in England No. 02527130

Report version 1

Page 1 of 1

TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 31124.11.1.1

SAMPLE NUMBER: 42938

CLIENT: Cognition Land & Water Ltd

CLIENT REF: LGSP3

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 11/01/2018

SITE: Pump Lane, Southall

SAMPLED BY: client

SUPPLIER: Unknown

DATE RECEIVED: 12/01/2018

MATERIAL: Granular Material With MG 7F

DATE COMPLETED: 17/01/2018

CUT LOCATION: Unknown

TESTED BY: JN, MG, DG, RB, EU

FILL LOCATION: Lagoon Stockpile 3

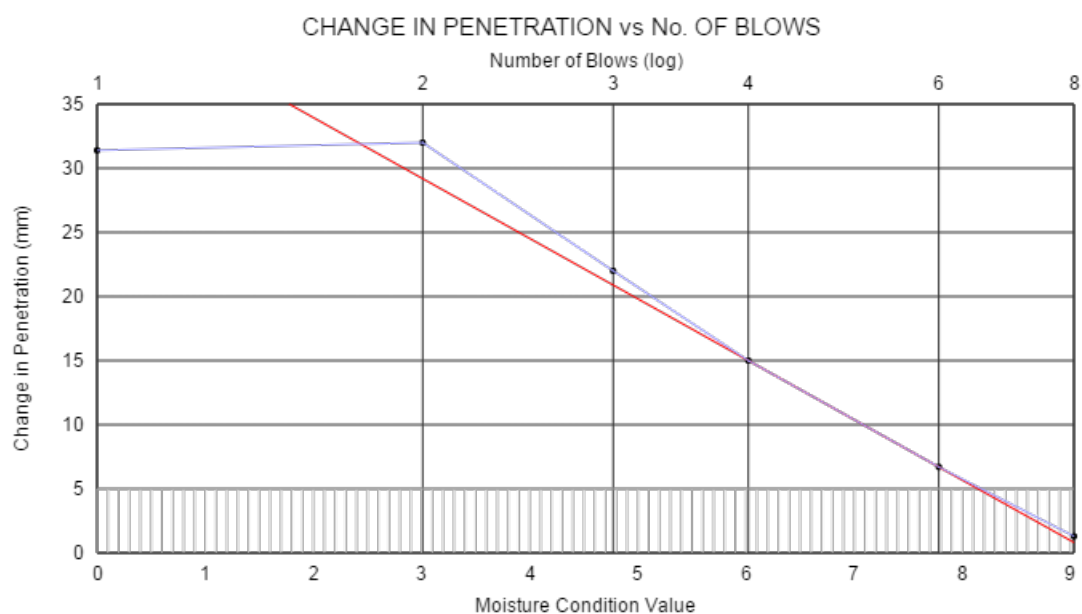
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	8.1
NATURAL MOISTURE CONTENT (%)	25.0
PERCENTAGE RETAINED 20mm (%)	8.6
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 Hsv:= 40

 For and on behalf of CET
 Dan Gay - Supervisor



 Approved Signatory
 17-Jan-18


0927

Report Format: L/Rep S10a rev.3

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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33220.1.1.1

SAMPLE NUMBER: 46595

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 20/02/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, JW

FILL LOCATION: SP16-7

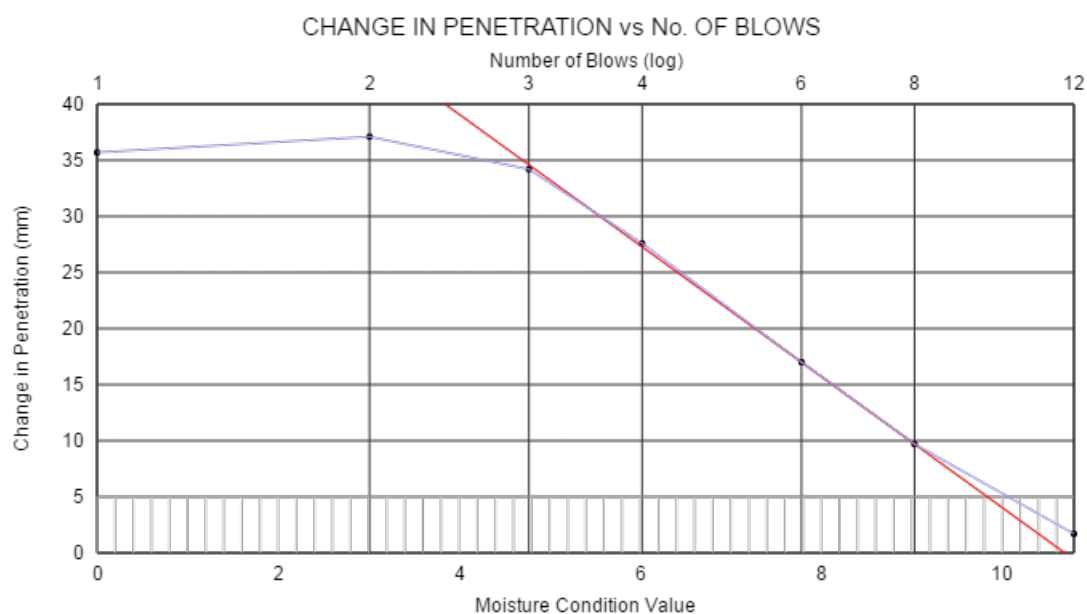
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	9.8
NATURAL MOISTURE CONTENT (%)	24.4
PERCENTAGE RETAINED 20mm (%)	13.3
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-54

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 20-Feb-18


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TEST REPORT:

DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33220.5.1.1

SAMPLE NUMBER: 46596

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 20/02/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, JW, TB

FILL LOCATION: SP16-7

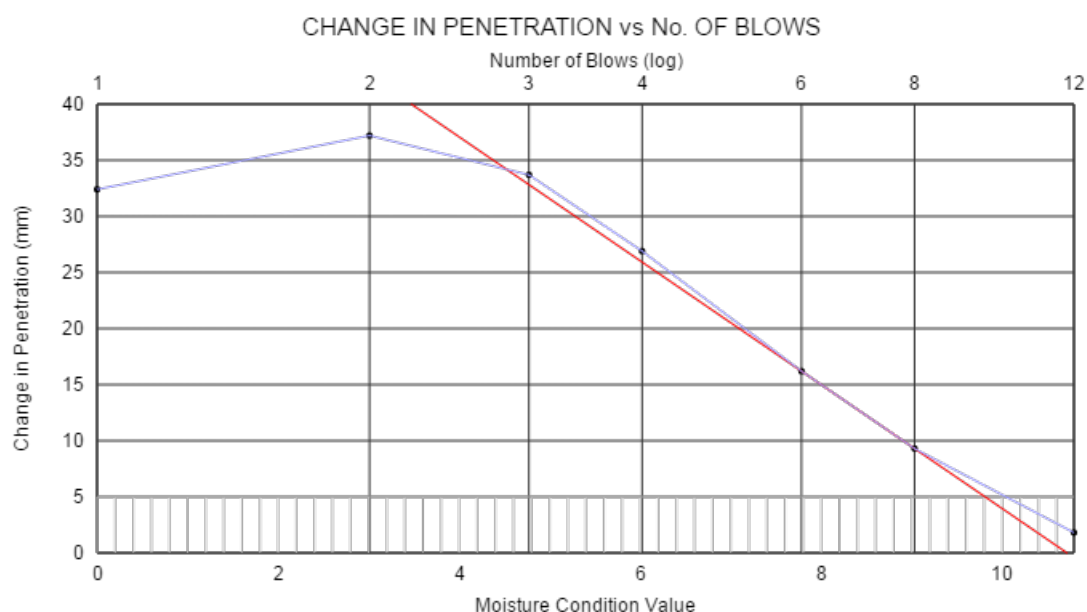
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	9.8
NATURAL MOISTURE CONTENT (%)	24.0
PERCENTAGE RETAINED 20mm (%)	9.2
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:
HSV: 74

For and on behalf of CETi
Dan Gay - Supervisor



Approved Signatory
20-Feb-18



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TEST REPORT:

DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33220.9.1.1

SAMPLE NUMBER: 46597

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 20/02/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, JW

FILL LOCATION: SP16-7

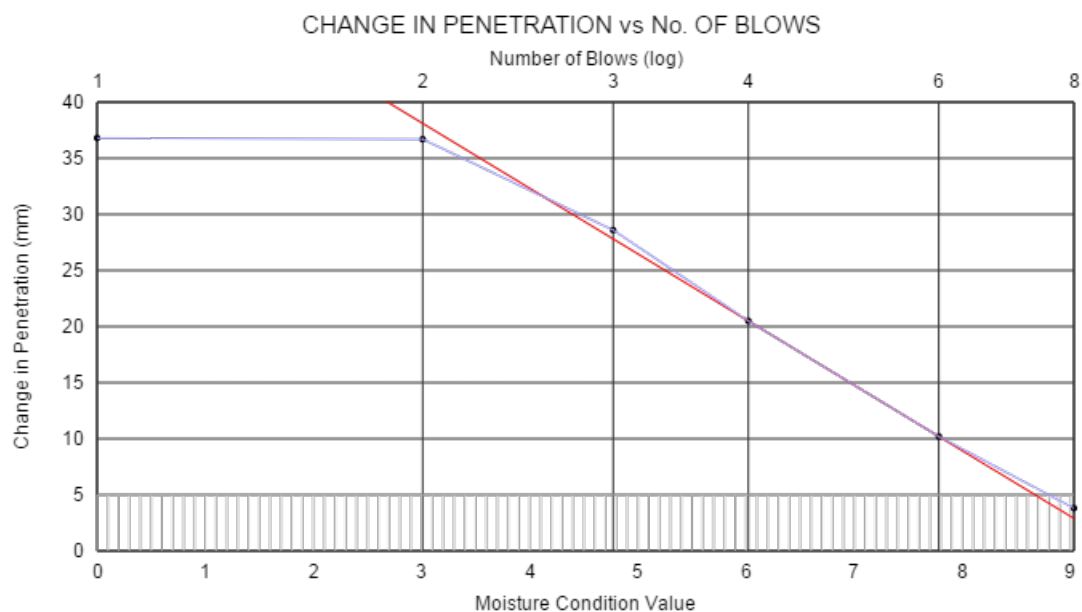
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	8.7
NATURAL MOISTURE CONTENT (%)	23.4
PERCENTAGE RETAINED 20mm (%)	8.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:
HSV-54

For and on behalf of CETi
Dan Gay - Supervisor

D S

Approved Signatory
20-Feb-18



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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33220.9.1.1

SAMPLE NUMBER: 46597

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 20/02/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, JW

FILL LOCATION: SP16-7

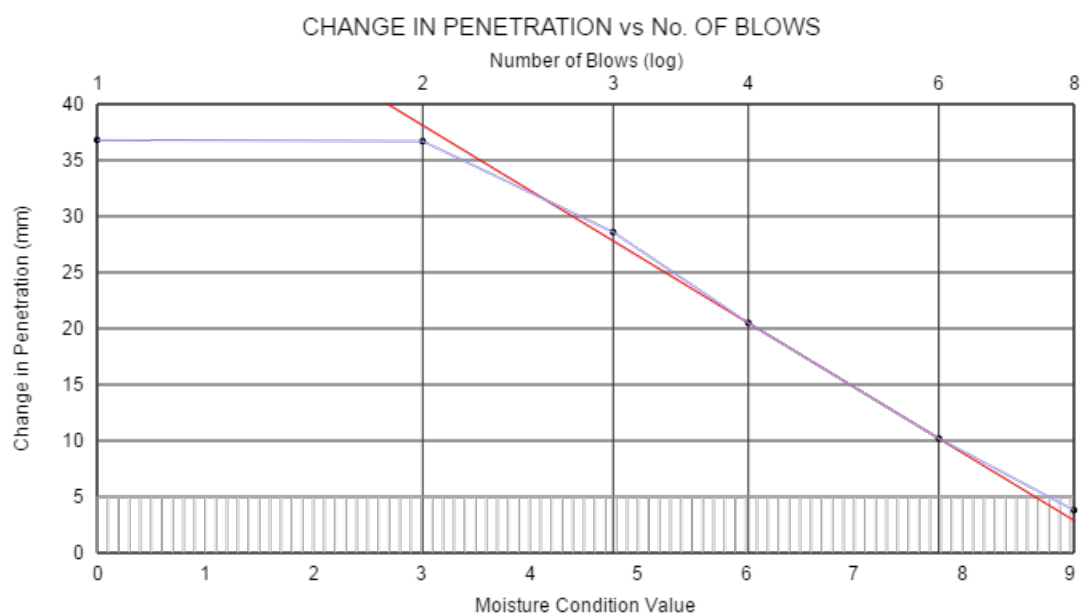
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	8.7
NATURAL MOISTURE CONTENT (%)	23.4
PERCENTAGE RETAINED 20mm (%)	8.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV-54

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 20-Feb-18


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TEST REPORT:

DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33220.11.1.1

SAMPLE NUMBER: 46598

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Otlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 09/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 14/02/2018

MATERIAL: Brown silty clay occ gravel

DATE COMPLETED: 20/02/2018

CUT LOCATION: Unknown

TESTED BY: DG, DI, JW

FILL LOCATION: SP16-7

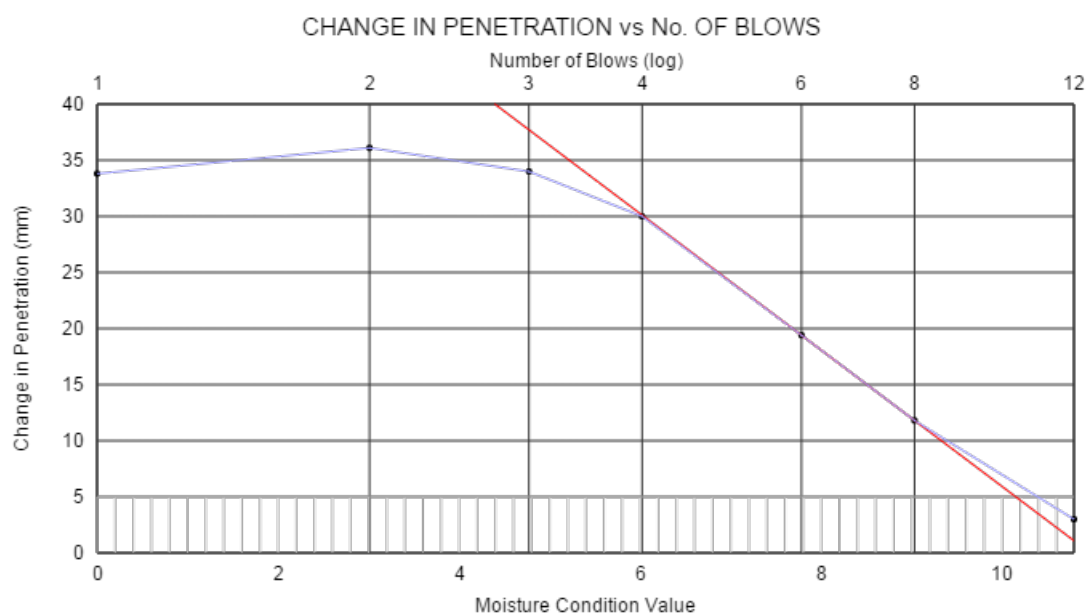
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	10.1
NATURAL MOISTURE CONTENT (%)	23.3
PERCENTAGE RETAINED 20mm (%)	11.0
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)



Remarks:
HSV-85

For and on behalf of CETi
Dan Gay - Supervisor

D S

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20-Feb-18



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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33402.30.1.1

SAMPLE NUMBER: 47035

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 16/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 16/02/2018

MATERIAL: Dark Brown Stoney Clay

DATE COMPLETED: 22/02/2018

CUT LOCATION: Unknown

TESTED BY: MG, DG, RB, TB

FILL LOCATION: SP16-7

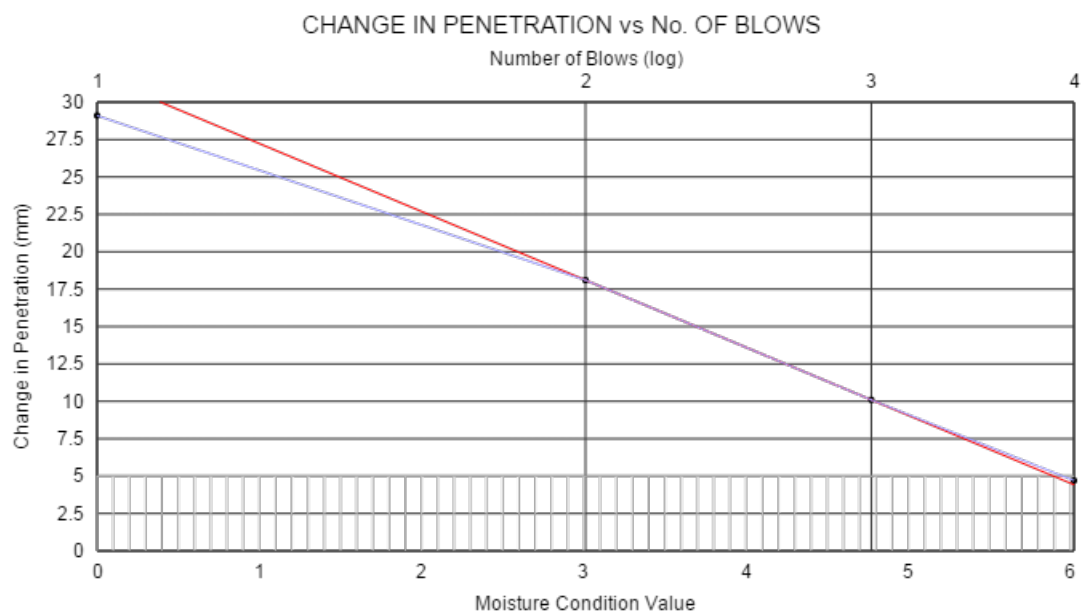
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	5.9
NATURAL MOISTURE CONTENT (%)	28.8
PERCENTAGE RETAINED 20mm (%)	16.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV: 26

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 22-Feb-18


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TEST REPORT:
DETERMINATION OF MOISTURE CONDITION VALUE (M.C.V.)

BS 1377 Part 4 : 1990 Clause 5.4 - Natural Moisture Content (Lab Test)

REPORT NUMBER: 392872 / 33402.30.1.1

SAMPLE NUMBER: 47035

CLIENT: Cognition Land & Water Ltd

CLIENT REF: SP16-7

ADDRESS: Springfield House, Oatlands Drive, Weybridge, Surrey, KT13 9LZ

DATE SAMPLED: 16/02/2018

SITE: Pump Lane, Southall

SAMPLED BY: Client

SUPPLIER: Unknown

DATE RECEIVED: 16/02/2018

MATERIAL: Dark Brown Stoney Clay

DATE COMPLETED: 22/02/2018

CUT LOCATION: Unknown

TESTED BY: MG, DG, RB, TB

FILL LOCATION: SP16-7

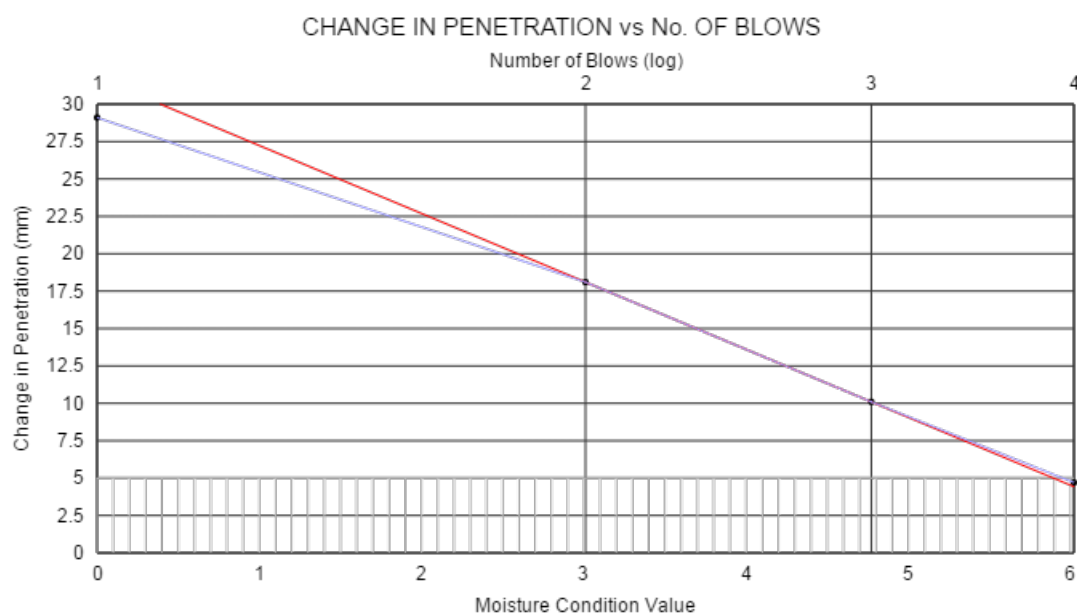
TYPE OF SAMPLE: Disturbed

CERTIFICATE OF SAMPLING: No

VARIATIONS FROM STANDARD: None

RESULTS:

MOISTURE CONDITION VALUE	5.9
NATURAL MOISTURE CONTENT (%)	28.8
PERCENTAGE RETAINED 20mm (%)	16.5
INTERPRETATION OF CURVE	Steepest straight line
PREPARATION METHOD	BS 1377: Part 4: 1990 clause 5.4 (Natural and sieved through 20mm test sieve)


 Remarks:
 HSV: 26

 For and on behalf of CETi
 Dan Gay - Supervisor



 Approved Signatory
 22-Feb-18


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