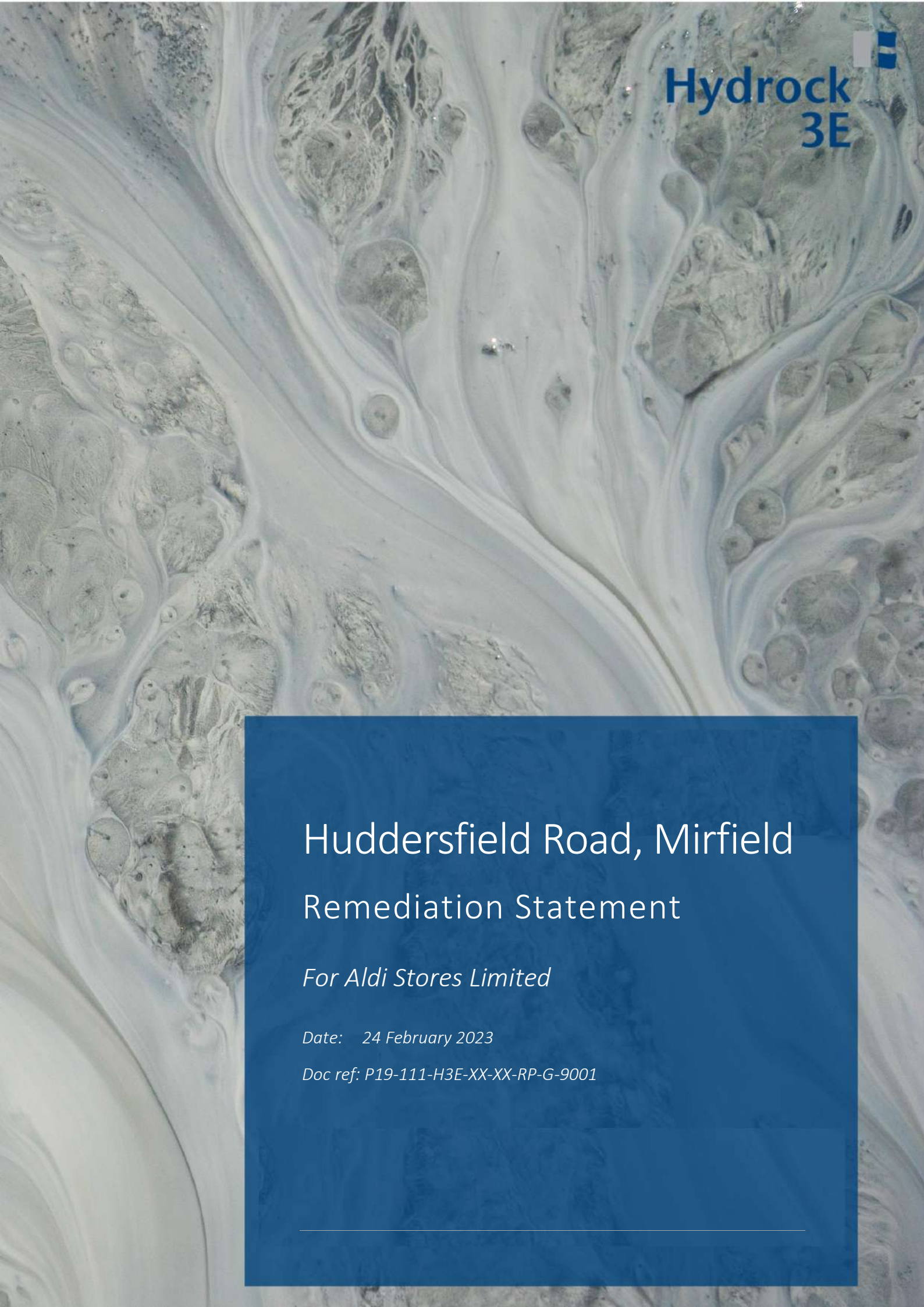

Huddersfield Road, Mirfield

Remediation Statement

For Aldi Stores Limited

Date: 24 February 2023

Doc ref: P19-111-H3E-XX-XX-RP-G-9001

DOCUMENT CONTROL SHEET

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1. INTRODUCTION

1.1 Commission

Hydrock 3E were commissioned by Aldi Stores Limited to prepare a Remediation Statement for land at Huddersfield Road, Mirfield, Huddersfield.

It is proposed to redevelop the site of an existing caravan sales and maintenance site with an Aldi food store as shown on the architects proposed site plan, included in Appendix A. The site is located between Huddersfield Road and the River Calder to the west of Mirfield town centre.

1.2 Uncertainties and Limitations

The report has been prepared by Hydrock 3E for the use of Aldi Stores Limited. Any third parties who use the information contained herein do so at their own risk. Hydrock 3E shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock 3E's appointment. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and Hydrock 3E do not owe them any Duty of Care or Skill.

This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the outlined scope of works. It has been assumed in the production of this report that the site is to be redeveloped for a commercial and public open space end use.

This report provides the findings of the assessment carried out in February 2023. The report has been prepared by Hydrock 3E on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed. Responsibility cannot be accepted for any conditions not revealed and which have not been taken into account by this report. At the time of the report preparation access for a site walkover was not permissible and all site observations are based on publicly available information.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock 3E cannot guarantee its accuracy or completeness. Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock 3E. Should this not be the case Hydrock 3E should be informed immediately as additional work may be required. Hydrock 3E is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

This assessment has been carried out in general accordance with recognised best practice. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock 3E.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

2. SUMMARY OF SITE INFORMATION

2.1 Site Description

The site is occupied by large portal frame building in the south eastern part, with temporary cabins immediately to the west structure along to the southern boundary adjacent to the permanent building. The remainder of the site is open with coated macadam surfacings for the storage and sale of caravans. The topography of the site is generally flat and level, with a very slight slope up to Huddersfield Road at the access. There are highway retaining walls along the northern boundary with the main road which increase in height away for the site access to a maximum of approximately 1.5m. The bank of the watercourse forming the south-western boundary slopes steeply down to the watercourse.

The site is bound by a stone wall topped and metal rail fencing. The boundary wall to the north west of the site retains the site with the neighbouring industrial buildings set and a lower level.

2.2 Existing Information

Locations for all the works are indicated on the enclosed Exploratory Hole Location Plan, Drawing G002 and DTSR Site Investigation Plan included as Appendix B.

The following reports should be read in conjunction with this remediation statement:

- Phase 1 Geotechnical and Geo-environmental Desk Study, prepared by Waterco Ltd, April 2019, ref: w8013-190429.
- Geo-Environmental Appraisal of a Site at 119 Huddersfield Road, Mirfield, prepared by DTS Raeburn (DTSR), March 2021, ref. E13431/1.
- Site Investigation Report – Sheet Piled Wall, prepared by Hydrock 3e, 23 May 2022, ref. P19-111/LTR/0002/AB.

Based on the past and present site uses, the potential for significant contamination is considered to be low to medium as the made ground used to raise levels of site is of unknown origin. In addition, the DTSR report identified there were elevated cadmium, selenium, nickel and PAH compounds within groundwater samples obtained from CP01, CP02 and CP05. DTSR suggest that contamination in CP01 may be associated with an off site source given the location up the site's hydraulic gradient. The groundwater in CP02 is potentially perched within cohesive made ground soils and therefore it may not be mobile. The contamination noted during the first visit in CP05 was not present in the second round of monitoring. Therefore, DTSR have assessed the risk to groundwater and adjacent watercourse is to be low, especially given the proposed betterment of the site, with increased in hard cover and updated positive site drainage. However, this assessment would be subject to LPA approval.

The DTSR report indicates that the made ground has been found to contain arsenic and PAH compounds at concentrations in excess of the respective GAC for a commercial development, together with the presence of asbestos fibres. The loose chrysotile and amosite asbestos fibres were identified in CP1 between 2-4m bgl within made ground soils. These materials were quantified as being at a concentration of 1.505% relative to the surrounding soil mass.

3. SUMMARY OF GROUND INVESTIGATIONS

3.1 Soil Profile and Visual Evidence of Contamination

The summary of the site wide ground conditions as identified by DTSR are as follows:

The site is underlain by made ground, which comprised of loose granular and soft cohesive soils with fragments of materials including sandstone, quartz, brick, concrete, tile, glass, ash and clinker proven to depths of between 3.5m and 6.2m below ground level (bgl). DTSR have assessed that the fill on site appears to have been end tipped and therefore no compaction or engineering of the soils has taken place.

The underlying natural soils comprised of medium dense sandy cobbly gravel with lenses of loose to medium dense clayey sand and predominantly firm sandy clay. These materials are all considered to be varying forms of Alluvial soils, as indicated on the BGS maps.

Beneath the drift deposits were weathered Coal Measures strata comprising of firm becoming stiff sandy gravelly clay in CP1 between 8.0 and 9.5m which was underlain by gravels of mudstone and sandstone to 11.0m. In CP01 and CP05 weak mudstone and sandstone were proven at depths of between 8.0 and 11.0m bgl with the remaining 3no. boreholes refusing on competent strata at depths of 11.0m and 15.5m.

3.2 Groundwater

Groundwater strikes were recorded within granular alluvial soil horizons during drilling of the cable percussion boreholes for both the DTSR and 3e investigation, at depths of between 5.5m and 9.3m bgl. No groundwater strikes were recorded within the made ground. However, small quantities of water were necessarily added during the drilling process, which may have masked any slow seepages. Subsequent monitoring of the groundwater levels within standpipe installations targeting the natural superficial soils recorded groundwater levels between 5.36m and 6.87m bgl. The groundwater levels are likely to be in continuation with the River Calder located adjacent the site to the south-west, and is likely to flow in a direction parallel to the river (i.e. approximately towards the south-east).

It should be noted that groundwater levels vary seasonally and that a higher water table than recorded could occur.

3.3 Chemical Screening

Soils

The DTSR investigation identified that with the exception of clumps of asbestos fibres there was no visual or olfactory evidence of ground contamination was apparent in any of the other exploratory holes.

DTSR carried out testing on up to 17no. samples for the following determinands:

- Metals: Arsenic, Boron, Copper, Cadmium, Chromium, Lead, Mercury, Nickel, Selenium Zinc.
- Hydrocarbons: Speciated Polyaromatic Hydrocarbons (PAH) and Total Petroleum Hydrocarbons (TPH) with Aliphatic/Aromatic banding, MTBE and BTEX.
- Other: Total Organic Carbon (TOC), Asbestos Screening and Quantification.

The testing undertaken by DTSR indicates that the maximum detected concentrations of all of the tested determinants were below the respective GAC, with the exception of arsenic (in 2/17 samples tested) and the PAH compounds benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene (in 1/17 samples

tested). All of the exceedances were detected in samples of made ground, with no elevated concentrations apparent in the underlying natural superficial deposits. The CLEA model indicates that for all of these determinants, the primary routes of exposure to humans within a commercial land-use are ingestion of soil or indoor dust and/or dermal contact. The inhalation pathway contributes less than 1% of total exposure.

On this basis, it is considered that the made ground soils could be retained beneath buildings and external hardstanding areas without presenting an unacceptable risk to long-term human health.

Loose chrysotile and amosite asbestos fibres were identified in one sample of made ground, which was subsequently quantified at a concentration of 1.505% relative to the surrounding soil mass.

Given the presence of elevated metals and PAHs together with the presence of occasional asbestos fibres mitigation measures will be necessary for any areas of soft landscaping. The presence of asbestos in soils presents a risk to human health only if fibres are able to be released into the air and subsequently inhaled. This is generally unlikely to be the case given that the ACM encountered were present at over 2m depth beneath the site. However, it is recommended that any surplus arisings generated from the proposed development (including the construction of foundations) are not retained within the uppermost 0.5m of soils beneath landscaping areas. It is also recommended that any new underground services are placed within a corridor of clean fill material, in order that future maintenance operatives do not come into contact with soils impacted by asbestos and other contaminants. The presence of localised ACM within the made ground should also be recorded in the Health and Safety file for the site.

Groundwater

There have been two rounds of groundwater sampling and testing carried out by DTSR from 5no. locations which were tested for heavy metals, speciated PAHs and speciated TPH, BTEX and MTBE.

The testing identified elevated concentrations of dissolved metals (cadmium, nickel and selenium within the groundwater sample recovered from Borehole CP1 from the first round of monitoring 16 February 2021, whilst concentrations of the PAH compounds fluoranthene, benzo(a)pyrene and benzo(b)fluoranthene in excess of the GAC were detected in the groundwater sample at Borehole CP2.

A repeat round of groundwater sampling was undertaken on 9th March 2021 in order to further assess whether the distribution of these results was consistent over a longer timer period, or whether the results were indicative of a 'snapshot' of dissolved contaminants being transported in mobile groundwater beneath the site. Unfortunately, DTSR were unable to recover a second groundwater sample from Borehole CP1 due to the cover of the installation having been damaged during ongoing site activities. However, an assessment of the results of analysis of the groundwater samples from Boreholes CP2 to CP5 indicated that concentrations of PAH compounds were in groundwater at CP2 on the second visit remained broadly consistent with those detected on the first visit.

Concentrations of all PAH compounds were below test detection limits in the groundwater sample recovered from Borehole CP5 on 9th March 2021. There were no exceedances of the GAC for the other tested determinants were exceeded in any of the boreholes.

DTSR suggested that this indicated that the elevated concentrations of dissolved metals detected in groundwater at CP1 on 16th February have not migrated in groundwater towards the River Calder, and also provides assurance that the elevated arsenic concentrations detected in the made ground at Boreholes CP1 and WS1 have not leached into the underlying groundwater at unacceptable concentrations.

The laboratory test data has indicated that the distribution of dissolved metals in groundwater is localised to the vicinity of Borehole CP1. The investigation has indicated that the groundwater within the alluvial soils beneath the site is controlled by the River Calder, and therefore probably flows from approximately north-

west to south-east across the site. This suggests that Borehole CP1, which was positioned in approximately the north-western corner of the site, is at an up-gradient location and that the test results may therefore indicate influence from an off-site source. The test results for both rounds of groundwater sampling show that exceedances of the GAC for PAH compounds were detected only at Borehole CP2. The installation fitted to CP2 targeted made ground that had a relatively high clay content. The test results are therefore consistent with the groundwater at CP2 representing a locally perched accumulation within the made ground. These observations, together with the evidently lower concentrations of PAH (generally below test detection limits) in the remaining groundwater samples suggest that the localised elevated PAH concentrations in the vicinity of CP2 do not present an unacceptable risk to the Groundwater Table within the underlying alluvium, or the adjacent River Calder.

On the basis of the foregoing, it is considered that ground contamination beneath the site presents a sufficiently low risk to controlled waters. However, in accordance with normal practice for the development of Brownfield sites, procedures should be identified for dealing with unforeseen contamination in the event that this becomes apparent during development. It is also recommended that infiltration drainage is not constructed within the made ground, in order to reduce the risk of mobilisation of any contaminants from soils into groundwater as a result of water infiltration.

Ground Gas

There are no landfill sites recorded in the vicinity of the site, however, as the site is considered to have made ground present of an unknown origins, which may give rise to ground gases. The DTSR identified deep made ground of varying compositions underlain by alluvial soils to depth and therefore the site is considered to be at a low to moderate risk from ground gas

The DTSR report includes monitoring of 8 wells on 4no. occasions over 16 days. A full set of data is missing from the report, however, the summary table present indicates Carbon Dioxide to a maximum concentration of 7.2%v/v, Methane was recorded to a maximum concentration of 0.1%v/v and depleted oxygen to 11.2%v/v. These results indicate that CIRIA Characteristic Situation 2 ground gas precaution measures are required for the site.

In addition, there is no risk from Radon at the site.

3.4 CONTAMINATION ASSESSMENT

Soils

The testing undertaken by DTSR indicates that the maximum detected concentrations of all of the tested determinants were below the respective GAC, with the exception of arsenic (in 2/17 samples tested) and the PAH compounds benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene (in 1/17 samples tested).

Loose chrysotile and amosite asbestos fibres were identified in one sample of made ground which was subsequently quantified at a concentration of 1.505% relative to the surrounding soil mass.

Potential Risk to Human Health

On the basis of the ground investigation and laboratory testing, it is considered that the made ground soils could be retained beneath buildings and external hardstanding areas without presenting an unacceptable risk to long-term human health. Areas of soft landscaping will need an appropriate thickness of clean imported capping materials and clean utility corridors should be incorporated to reduce the risk from asbestos fibres.

UKWIR analysis has not been undertaken as part of this assessment. Given the presence of hydrocarbon contamination (PAHs) in the shallow made ground on the site and groundwater, it is possible that water

supply pipes may need to be upgraded to barrier pipes. It is recommended that the results of this investigation are made available to the utility supplier to determine a suitable pipe material.

Remediation Overview

Prior to demolition and construction, it is recommended a separate asbestos management plan is prepared and implemented to prevent the exposure of construction staff and public to potential asbestos exposure.

In order to prevent the generation of dust, made ground will need to be suitably dampened to allow appropriate handling as a precaution to prevent generation of dust and covered when stockpiled to prevent drying together with suitable dust monitoring during periods of the intensive activity involving the made ground. In addition, if areas of made ground are trafficked by plant during construction then suitable precautions will be required to prevent dust generation. These recommendations are not exhaustive, but should form part of the site specific asbestos management plan for the site prepared by a specialist.

Following completion of the development, the pathway to the end user will be broken by use of hardstanding and managed landscaping throughout and the risk is negligible.

Where soft landscaping is required a remedial capping layer in landscaped areas will be sufficient to break the latent pollutant pathway between any remaining made ground and end users, with hardcover providing a pollutant break elsewhere. DTSR suggested a 500mm capping layer will be required in areas of soft landscaping.

It is recommended that buried utilities are placed within a clean material corridor to limit future contact with asbestos fibres buried at depth.

4. REMEDIATION METHOD STATEMENT

The following remediation statement details a method of working and validation that will ensure the site is left in a condition such that no significant risk is presented to human health or controlled waters / adjacent sites.

Any groundwater encountered during ground works will need to be assessed prior to disposal.

In summary, the following items are required and discussed in more detail below;

- Placement of 500mm remedial capping in limited areas of new soft landscaping where made ground soils are present.
- Inclusion of Characteristic 2 gas protection measures as part of store construction (to be designed and validated by others).
- Precautions will be required for the 'clean' corridor' for buried utilities (to be designed and validated by others).
- Given the presence of hydrocarbon contamination (PAHs) in the shallow made ground on the site, it is possible that water supply pipes may need to be upgraded to barrier pipes. It is recommended that the results of this investigation are made available to the utility supplier to determine a suitable pipe material (to be designed and validated by others).

If during the groundworks, other areas of gross contamination or soils, which differ from those encountered in the site investigations are exposed they will be assessed by a geo-environmental engineer from Hydrock 3e as part of the watching brief, the Local Authority Contaminated Land and Planning Officers notified and appropriate remediation carried out as necessary, following agreement with the Contaminated Land Officer.

Care should be taken when excavating around the site boundary as numerous boundary retaining walls and structures are present.

Unexpected Contamination

In the event of significant unexpected contamination being encountered, the works will be halted until:

- A suitably qualified person from Hydrock 3e is able to assess the situation;
- The regulatory authorities are consulted; and
- An agreed plan is put in place to deal with the contamination.

The assessment of the contamination will initially consist of sampling of the impacted materials in order to identify the contaminants of concern. Excavations will also be made in order to determine the lateral and vertical extents to determine the volumes of the affected soils.

Where the contaminants are similar in nature to the contaminants identified elsewhere on the site, remediation will be carried out in accordance with this strategy.

Where contaminants of concern are identified that have not previously ben encountered on site, the concentrations of these materials will be compared to the appropriate General Acceptance Criteria for the site. If the GAC are exceeded, a Detailed Quantitative Risk Assessment will be carried out to determine Site Specific Criteria.

Once appropriate remediation criteria have been established, a further remediation options appraisal will be carried out. Suitable remedial options will be further developed in order to meet the needs of the site.

Where additional methods of remediation are required that are not currently covered by this strategy, a methodology will be developed and agreed with the Environment Agency and or LPA as appropriate.

Once any additional remediation methodology has been agreed with the appropriate regulator, the Remediation Strategy will be updated to incorporate the additional works.

Made Ground Re-engineering

All made ground containing deleterious materials, including any topsoil, should be removed from areas where levels are to be raised with engineered fill. If this material cannot be maintained on site it should be removed to a suitably licensed disposal facility.

In the area of proposed Aldi store the following method shall be used:

- Any obstructions in area of proposed store footprint should be exposed and removed in methodical manner. It is recommended that no arisings are retained on site to reduce the risk of mobilising asbestos fibres, however, this will be included in the Asbestos Management Plan to be prepared by others. The depth of structures encountered should be recorded by survey as part of the as-built drawings for the earthworks.
- Engineering of any imported materials used to fill or raise site levels, should be carried out in accordance with the project earthworks specification, enclosed as Appendix C including all compaction testing.
- It is envisaged that excavations will be carried out using conventional excavation plant.
- Care should be taken when excavating or filling in the vicinity of the site boundaries particularly when excavating in loose soils or removing obstructions and should be addressed in a site specific method statement by the contractor.
- In the remainder of the site all obstructions should be removed to a minimum level of 1m below the proposed finished level, including below any proposed drainage structures.
- All site won concrete and brick materials should be crushed to a suitable grading and validated to ensure their suitability for re-use with respect to both contamination and physical properties.

Imported Soils (General Fill)

Any fill imported to site will need to be validated to ensure it is not pose a risk to the environment (i.e. uncontaminated).

All engineered fill should be placed in accordance with the 3e Earthworks Specification (enclosed as Appendix C) and design drawings.

All imported general fill materials used to raise levels should be screened for potential contaminants prior to importation to site using the acceptance criteria for capping soils provided in Table 1 as follows.

Table 1 – Imported General Fill Acceptance Criteria.

Determinand	Generic Assessment Criteria(1) (GAC) mg/kg
Arsenic	640
Boron	240000
Cadmium	190
Chromium	8600
Lead	2330(2)
Mercury	1100
Selenium	12000
Copper	68000
Nickel	980
Zinc	730000
TPH	
Aromatic TPH C5-C7 (benzene)	3200
Aromatic TPH C7-C8	7800
Aromatic TPH C8-C10	2000
Aromatic TPH C10-C12	9700
Aromatic TPH C12-C16	59000
Aromatic TPH C16-C21	1600000
Aromatic TPH C21-C35	1600000
Aromatic TPH C35-C44	26000
Aliphatic TPH C5-C6	56000
Aliphatic TPH C6-C8	3500
Aliphatic TPH C8-C10	16000
Aliphatic TPH C10-C12	36000
Aliphatic TPH C12-C16	28000
Aliphatic TPH C16-C35	28000
Aliphatic TPH C35-C44	28000
PAH compounds:	
Acenaphthene	84000
Acenaphthylene	83000
Anthracene	520000
Benzo(a)anthracene	170
Benzo(a)pyrene	35
Benzo(b)fluoranthene	44
Benzo(g,h,i)perylene	3900
Benzo(k)fluoranthene	1200
Chrysene	350
Dibenz(a,h)anthracene	3.5
Fluoranthene	23000
Fluorene	63000
Indeno(1,2,3-cd)pyrene	500
Naphthalene	190
Phenanthrene	22000
Pyrene	54000
Inorganics:	
Water soluble sulphate	0.5g/l(3)
Acidity (pH)	not less than 5
Asbestos	Presence not accepted

Notes:

(1) LQM/CIEH S4UL for commercial/industrial end use unless otherwise stated
(2) DEFRA, SP1010: Category 4 Screening Levels
(3) Upper level for Class 1 concrete (BRE Special Digest:2005)
Assessment criteria based on 1% soil organic matter

Please note that depending upon the provenance the imported materials only a selection of these determinands may need to be screened, see Section 3.17 and Table 3 as follows for details.

Imported Topsoil

Within the areas of proposed 'new' soft landscaping it is proposed to place a minimum of 500mm of imported topsoil or greater where the landscape architect design and specification requires. Any excavated soils can be re-used beneath areas of hardstanding.

The formation level should be suitably proof rolled prior to the placement of any fill materials. Reference should be made to the specification for topsoil, BS3882:2007 and project Landscape Architect specification.

The suitability of 'topsoil' and 'subsoil' is important to any landscaping project, whether for private dwellings, public parks and other construction projects where soft landscaping is required. 3e are not specialists in classifying 'topsoil' and 'subsoil' in terms of its suitability for reuse as a plant growth medium and the soils termed as either 'topsoil' or 'subsoil' within this report would need to be clarified as part of a soils resource survey by a specialist consultant.

Any arisings materials generated for offsite disposal should be stockpiled separately and clearly marked from other materials in order to prevent cross contamination.

All imported capping materials, including topsoil and subsoil, should be screened for potential contaminants prior to importation to site using the acceptance criteria for capping soils provided in Table 2 as follows.

Table 2 – Imported Topsoil Acceptance Criteria

Determinand	RESIDENTIAL END USE WITHOUT PLANT UP TAKE criteria (1)(mg/kg) in soil
Metals:	
Arsenic	40
Cadmium	85
Chromium	910
Lead	310(2)
Mercury	56
Selenium	430
Copper	7100
Nickel	180
Zinc	40000
PAH compounds:	
Acenaphthene	3000
Acenaphthylene	2900
Anthracene	31000
Benzo(a)anthracene	11
Benzo(a)pyrene	3.2
Benzo(b)fluoranthene	3.9
Benzo(g,h,i)perylene	360
Benzo(k)fluoranthene	110
Chrysene	30
Dibenz(a,h)anthracene	0.31
Fluoranthene	1500
Fluorene	2800
Indeno(1,2,3-cd)pyrene	45
Naphthalene	2.3
Phenanthrene	1300
Pyrene	3700
TPH	
Aliphatic EC 5-6	42
Aliphatic EC >6-8	100
Aliphatic EC >8-10	27
Aliphatic EC >10-12	130
Aliphatic EC >12-16	1100
Aliphatic EC >16-35	65000
Aliphatic EC >35-44	65000
Aromatic EC >5-7	370
Aromatic EC >7-8	860
Aromatic EC >8-10	47
Aromatic EC >10-12	250
Aromatic EC >12-16	1800
Aromatic EC >16-21	1900
Aromatic EC >21-35	1900
Aromatic EC >35-44	1900
Inorganics:	
Water soluble sulphate	0.5g/l(3)
Acidity (pH)	not less than 5
Asbestos	Presence not accepted

Notes:

(1) LQM/CIEH S4UL for residential end use without plant up take unless otherwise stated
(2) DEFRA, SP1010: Category 4 Screening Levels
(3) Upper level for Class 1 concrete (BRE Special Digest:2005)

Assessment criteria based on 1% soil organic matter

Validation Testing and Reporting Requirements

Prior to importation to site, soils used for general fill and soft landscaping will be tested for the determinands listed in Tables 1 and 2. The frequency of testing shall be as Table 3:

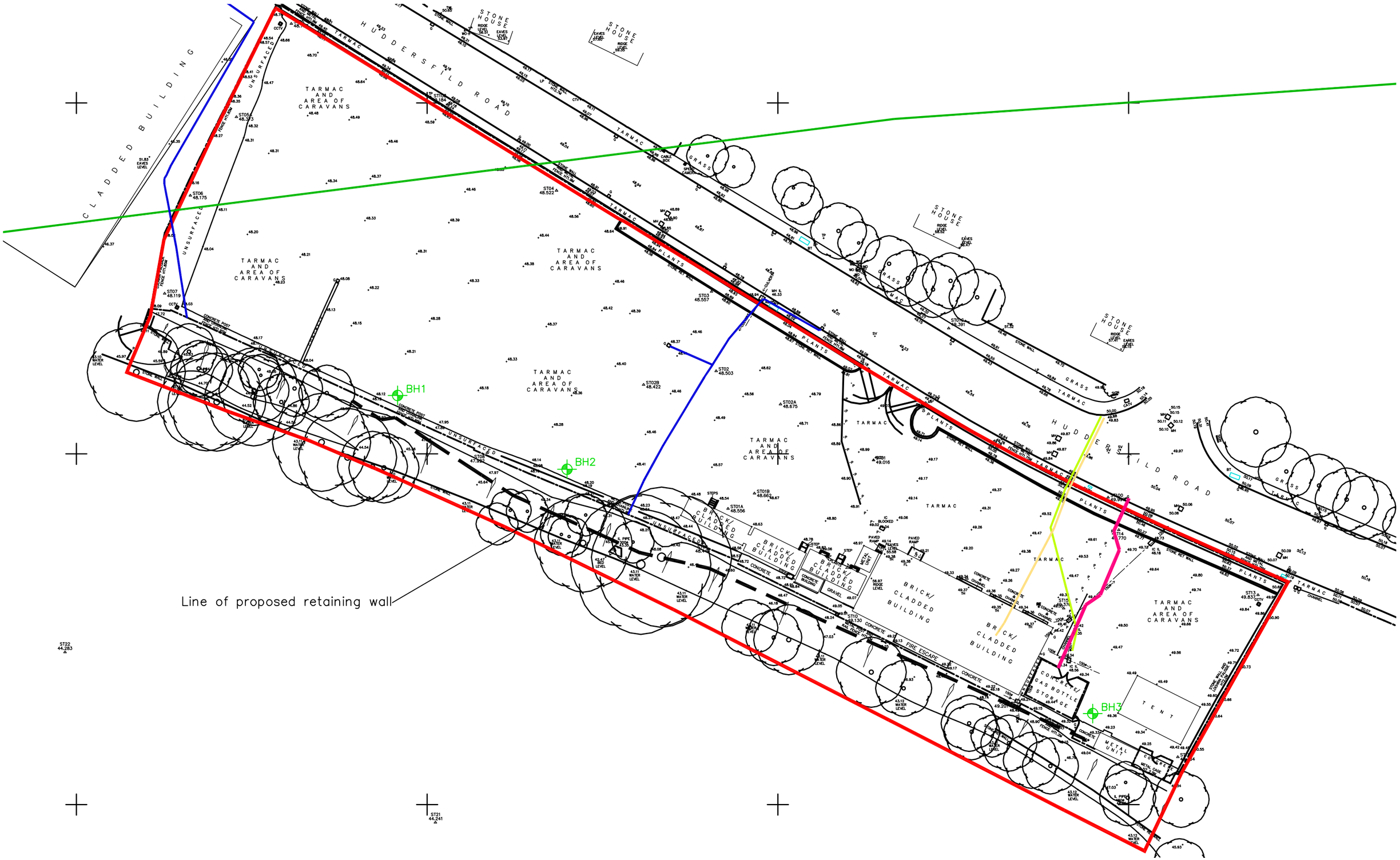
Table 3 – Imported Soil Testing Frequency

Type of material	Frequency of testing	Testing schedule
Crushed hardcore, stone, brick used as capping	Minimum 3 or 1 per 500m3 (whichever is greater)	• Standard metals/metalloids • Speciated PAHs • Asbestos • Leachate analysis
Greenfield/Manufactured Soils	Minimum 3 or 1 per 250m3 (whichever is greater)	• Standard metals/metalloids • Speciated PAHs • Asbestos
Brownfield/Screened Soils	Minimum 6 or 1 per 100m3 (whichever is greater)	• Standard metals/metalloids • Speciated PAHs • Asbestos • Banded TPH

On completion of the cut and fill exercise (if required) a validation report will need to be prepared. This will outline the works carried out and include any appropriate waste transfer notes and the results of any necessary validation testing of imported general fill.

An addendum report to this will be prepared once any topsoil/subsoil has been validated for suitability, which occurs generally in the latter phase of the construction of the new store.

Drawings



KEY

BH Borehole Location

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Project: Huddersfield Road, Mirfield for Aldi Stores Limited

Title: Exploratory Hole Location Plan

Scale	Drawn	Checked	Date
1:500 @ A3	AC	AB	Apr '22

Job No. P19-111 Drawing No. G0002 Rev 1

Appendix A

Proposed Site Layout

HUDDERSFIELD ROAD
HUDDERSFIELD ROAD
THE MALTINGS
RIVER CALDER
CLADDED BUILDING
UNIT A
CLASS A1 RETAIL UNIT
1,805m² Total GIA
1,881m² Total GEA
100 Total Car Parking Spaces
2.5m x 5m
(Incl. 6x disabled bays & 7x Parent & Child Spaces)
4 no. EVCP spaces with 20 no. future spaces
"SHARKS TEETH" ROAD MARKINGS TO BE PROVIDED ON APPROACH TO RELOCATED START OF 30mph ZONE (SUBJECT TO TRO)
NEW 40mph SIGN TO BE PROVIDED (SUBJECT TO TRO)
NEW 30mph SIGN TO BE PROVIDED (SUBJECT TO TRO)
NEW 30mph SIGN TO BE PROVIDED (SUBJECT TO TRO)
PROPOSED RETAINING WALL TO TIE INTO EXISTING WALL
EXISTING SPEED CAMERA AND ASSOCIATED ROAD MARKINGS TO BE RELOCATED. DETAILS TO BE CONFIRMED
GHOST ISLAND JUNCTION WITH RIGHT TURN LANE TO BE PROVIDED
EXISTING SPEED LIMIT SIGNAGE APPROX AND ROAD MARKINGS 20 - 65m EAST OF THIS POINT TO BE REMOVED (SUBJECT TO TRO)
6m Access route maintained to rear property
STONE HOUSE
Site totem signage
Pedestrian Crossing with drop kerbs and tactile paving
Autopa s/s bollards @1800 cts
Autopa s/s bollards 1 No per bay
Trolleys
Tarmac
Concrete
Pea gravel
Plant
Yellow markings on service ramp
Proposed retaining walls - subject to engineer design
Dashed shows bottom of bank / river level
Outline shows location of trees to be removed
PROPOSED 116m SHEET PILED RETAINING WALL, MAX RET. HEIGHT = 4.60m
1.8m Close boarded timber fencing
1.8m Close boarded timber fencing to boundary
Existing fence retained to boundary
Existing embankment
All other road and car park markings are to be white except EVCP
Double Car Charging Points to have bases set 100mm below surface level of finish
500 x 500 conc pads for chargers
Double Future Car Charging Points to have bases set 100mm below surface level of finish
PROPOSED RETAINING WALL TO RETURN SOUTH AROUND CORNER
New stone retaining wall to boundary 1100 high above path level
Proposed stone wall to boundary 1.1m high from Huddersfield road side
Concrete ramp 1 in 10 for emergency only
Min 1200 wide clear opening fire escape gate with push pad
Canopy above
Corderoy tactile paving
EXIT
+50.09
+43.12
+43.11
+43.12
55000
23900
19700
12500

Area of land within the title ownership but outside of the current fence line

Area of land within the title ownership but outside of the current fence line

TREE TO BE REMOVED

PROPOSED RETAINED TREE

PROPOSED NEW TREE

PROPOSED SITE PLAN
SCALE 1:250 @ A1

0 2.5 5 7.5 10 12.5m
SCALE 1:250

RED LINE APPLICATION BOUNDARY
1.86 ACRES (0.75 HA)

NOTE: ALL LEVELS SHOWN INDICATIVELY - SUBJECT TO ENGINEER DESIGN AND DETAILS

REV	DATE	DESCRIPTION	DRW	CHK
P01	17.11.22	Updated to AMA latest drawing recieved 16.11.22	GH	WH

Client
ALDI - Aldi Stores Ltd.

Project Title
Mirfield

Project Address
119 Huddersfield road
Mirfield
WF14 9DA

Drawing Title
SITE PLAN

Job No.	Originator	Zone	Level	Type	Role
79-E????	THPW	XX	ZZ	DR	A

System Classification	Drawing No.	Suitability	Revision
Zz_70_60_00-0001		D1	P01

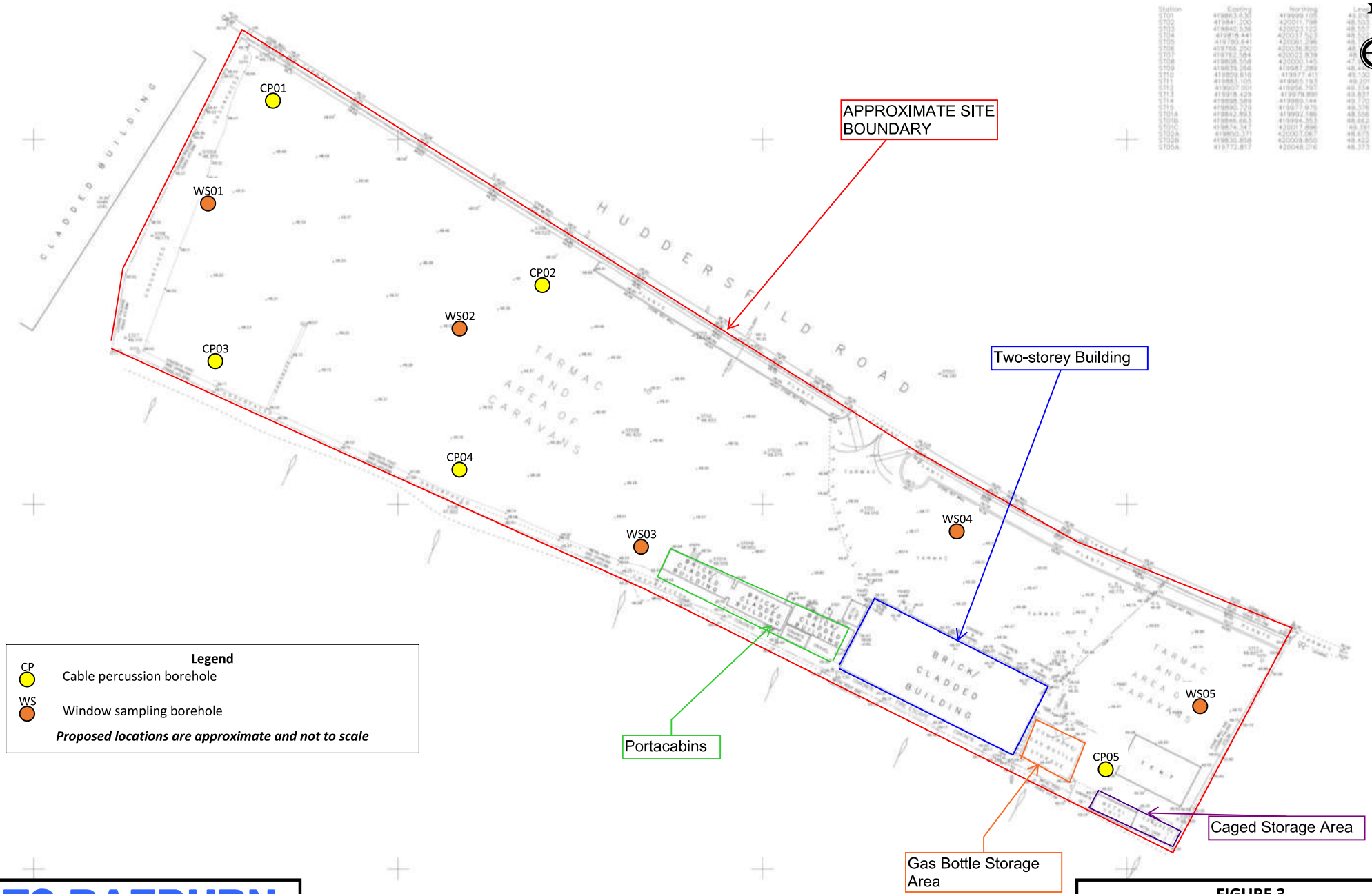
Drawn	Checked	Date	Scale	Size
GH	EM	24.05.22	1 : 250	A1

2 St. Johns North, Wakefield, WF1 3QA t. 01924 291800
Carvers Warehouse, 77 Dale Street, Manchester, M1 2HG t. 0161 2388555
The Old Rectory, 79 High Street, Newport Pagnell, MK16 8AB t. 01908 211577
101 London Road, Reading, RG1 5BY t. 0118 9507700
10 Gees Court, St Christophers Place, London, W1U 1JJ t. 0207 4091215

THP Project No.17166
THE HARRIS PARTNERSHIP
ARCHITECTS
www.harrispartnership.com

Appendix B

DTS Raeburn Site Investigation Plan



DTS RAEBURN
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING
Moor Lane, Witton, Birmingham B6 7HG
Telephone: +44(0)121 344 5885 Facsimile: +44(0)121 344 5888

FIGURE 3

Exploratory Hole Location Plan
Scale 1:500 @ A3

E13431/1 – Huddersfield Road, Mirfield
Prepared for: Morbaine Limited

Appendix C

Earthworks Specification

Issue 1, February 2023
P19-111

Project Specification

Earthworks

Hydrock 3E,
Riverside West, Whitehall Road, Leeds, LS1 4AW
Tel: 0113924 240 420

CONTENTS PAGE

1 GENERAL

1.1 The Engineer referred to in this specification shall mean the Consulting Structural Engineer.

1.2 The expressions approved and approval shall mean the written approval of the Engineer.

1.3 All British standards, specifications and British Standard Codes of Practice or any other standards referred to in this specification shall be the latest standards including all amendments published before the last day of returning tenders, unless otherwise stated.

1.4 The works described in this specification shall be carried out to the entire satisfaction of the Engineer. Clause 1.3 refers to the minimum standard of acceptance that may be supplemented, modified or amplified by this specification.

1.5 In the case of any variance the following order of precedence shall apply:

- 3e Specification Special Requirements - clause 13
- 3e Specification
- Reference clause 1.3

2 STANDARD OF ACCEPTANCE

2.1 The work shall be carried out in accordance with the Engineer's drawings, British Standard BS 6031, BS 8000 and the Highways Agency - Specification for Highway Works (hereinafter referred to as the HA Specification for Highway Works).

3 SITE INFORMATION

Site investigation information already obtained

3.1 Accompanying this specification is the information already obtained from the site in the form of borehole logs, trial pits, etc, as is appropriate to the site.

Further information

3.2 The Contractor shall visit the site, inspect the subsoil information and ascertain for himself the nature of the ground, obtain all necessary information in respect of overhead and underground services, obstructions, site access, position of adjacent properties and any other features that may affect the cost or programme of the work. No claim shall be considered arising from lack of knowledge in this respect.

3.3 It is the responsibility of the Contractor to satisfy himself as to the suitability of his equipment and methods in the soil conditions existing on the site.

3.4 Should the Contractor feel that he requires additional information in order to finalise his design, he is at liberty to carry out further site investigation work at his own expense. The Engineer shall however be notified of this requirement so that any necessary permissions may be obtained and the Engineer shall also be given the opportunity of attending the site during this additional investigation.

Groundwater level

3.5 The Contractor shall make all necessary enquiries concerning ground water level and allow for variations from this level when working on any part of the site.

Site features

3.6 Before starting work the Contractor shall verify with the Engineer and/or architect which existing fences, gates, walls, roads, paved areas and other site features are to be removed. Materials arising shall to be removed from site subject to approval by the Engineer and/or architect.

Trees and undergrowth

3.7 Before starting work the Contractor shall verify with the Engineer and/or architect those trees, shrubs and hedges that are to be removed.

3.8 As required, the Contractor shall clear site of all trees, bushes, scrub and undergrowth. The Contractor shall grub up main roots and fill voids with suitable material. The Contractor shall dispose of all timber.

Cultivated turf

3.9 Before starting work the Contractor shall verify with the Engineer and/or Architect those areas of turf are to be retained. At the contract's discretion, cost and/or profit, other turf shall be either lifted, sold, left or to be incorporated with the proposed development.

Schedule of Dilapidations

3.10 Prior to commencement on site the Contractor shall prepare and agree a Schedule of Dilapidations supported by photographs of all existing buildings, roads, footpaths, walls, fences, etc., adjacent to the site with the Engineer, the architect and statutory authorities. The Contractor shall include for all costs in respect of this schedule and allow for providing two additional copies of all written information together with the photographs for the exclusive use of the employer.

Existing levels

3.11 The Contractor shall satisfy himself that the existing levels of the ground shown on the drawings are correct and bring to the notice of the Engineer any discrepancies before any excavation is commenced. The drawings shall be deemed to be correct if no such notice is given to the Engineer.

4 DEFINITION OF MATERIALS

4.1 Suitable materials shall comprise all that which is acceptable for the contract and more particularly described in clause 4.9.

Unsuitable materials

- Material from swamps, marshes, etc.
- All organic or part organic material.
- Material susceptible to spontaneous combustion.
- Frozen materials. Such material may be re-defined as suitable when thawing has occurred at the discretion of the Engineer.
- Clay if the liquid limit exceeds 80% and/or the plasticity index exceeds 55%.

- Materials having a moisture content greater than the maximum permitted for such materials as defined by the Engineer. The Engineer may redefine such materials when sufficient drying has occurred.

Suitable materials

4.2 Cohesive soil including clays and marls with up to 20 percent gravel or rock and having a moisture content of not less than the value of the plastic limit minus 4, also chalk having a saturation moisture content of 20 percent or greater.

4.3 Well graded granular and dry cohesive soils including clays and marls containing more than 20 percent gravel or rock and/or a moisture content of less than the value of the plastic limit minus 4, sands and gravels, chalk having a saturation moisture content in the range of 15 to 20 percent.

4.4 No fill materials containing soluble sulphates in excess of 1.2 g/l when tested to BS 1377 shall be used within 3.0m of any concrete without specific approval of the Engineer.

Topsoil

4.5 Topsoil shall be the top layer of soil that can support vegetation and shall include turf.

Rock

4.6 Rock shall mean those hard geological strata or deposits requiring the use of blasting, wedges, pneumatic tools or approved mechanical rippers for it's excavation.

5 METHOD OF WORKING

5.1 The Contractor shall employ only that plant which is suitable for the soils to be handled. He shall not use plant that damages or reduces the natural strength of the soil either in its insitu state or during handling, placing and compacting.

5.2 Where excavation reveals a combination of suitable and unsuitable materials the Contractor shall, unless otherwise agreed by the Engineer, carry out the excavation in such a

manner that the suitable materials are excavated separately for use in the works without contamination by the unsuitable materials.

5.3 The Contractor shall not use explosives without the written permission of the Engineer.

5.4 Excavation from a cutting shall not proceed unless sufficient plant is available in the fill area to comply with compaction requirements.

5.5 The gradient of slopes formed by cutting and filling areas shall be defined in the contract and shall be well graded, trimmed and free of loose material.

5.6 The Contractor shall be deemed to have included for temporarily supporting as necessary any services, drains or ducts encountered.

5.7 Before starting work the Contractor shall submit details of proposed methods for carrying out general excavation/levelling for approval.

5.8 The Contractor shall be deemed to have allowed for the deterioration of material as a result of inclement weather and the replacement with suitable material as appropriate.

6 EXCAVATION

Materials arising

6.1 All materials arising from the excavations on site shall remain the property of the employer. When any such materials are approved by the Engineer to be used in the works in substitution for any materials that the Contractor would otherwise have provided, the materials shall be paid for by the Contractor at a price to be agreed.

Topsoil

6.2 Before commencing general excavation or filling the Contractor shall excavate topsoil from required area as indicated in the contract and keep separate from excavated subsoil. Not less than two weeks before excavating topsoil, the Contractor shall treat it with an approved herbicide to the manufacturer's recommendations.

Benching

6.3 Surfaces of excavations with a gradient greater than 1 in 5 that are to receive filling shall have horizontal benches cut to match the depths of compacted layers of filling.

Adjacent excavations

6.4 Where an excavation encroaches below a line drawn at an angle of 30^0 from the horizontal from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, shall be completed before the higher excavation is made.

Tolerances

Permissible deviations from formation levels:

- beneath mass concrete foundations +/-25mm
- beneath ground bearing slabs +10/-25mm
- beneath R.C. foundations +/-15mm
- embankments and cuttings +/-50mm

Earthwork support

6.5 The Contractor shall be entirely responsible for the sufficiency of all temporary earthwork support to excavations. Should a fall occur in any excavation, or excessive material be excavated, the Contractor shall carry out at his own expense any reinstatement or repairs which may become necessary as the result of such fall and excess. Any void caused by a fall shall be filled and compacted by the Contractor at his own expense, to the requirement of the Engineer.

Recorded and unrecorded features

6.6 The Contractor shall break out old foundations, beds, drains, etc., where indicated and to the extent stated on the drawings. The Contractor shall seal off drain ends, remove contaminated earth and disinfect as required by the local authority and the Contractor shall backfill as specified on the drawings.

6.7 Where old foundations, beds, basements, filling, tanks, service pipes, drains, etc., not shown on the drawings are encountered, the Contractor shall obtain instructions from the Engineer before proceeding.

Watercourses

6.8 The Contractor shall temporarily divert as necessary all field drains and other waterways not shown on the drawings and encountered during the excavations, and if possible, reinstate on completion or if it is not possible to reinstate, obtain instructions from the Engineer.

6.9 Existing watercourses that have been diverted and are to be filled shall be cleared of all vegetable growth and soft deposits before filling.

Excess excavation

6.10 The Contractor shall backfill any excavations taken wider than required with approved excavated material.

6.11 The Contractor shall backfill any excavations for strip foundations taken deeper than required with concrete, as directed by the Engineer.

7 DISPOSAL OF MATERIALS

7.1 All materials arising from the excavations and not used on the works shall be disposed of as directed by the Engineer.

Topsoil

7.2 Sufficient excavated preserved topsoil to carry out subsequent topsoiling operations shall be stockpiled in temporary spoil heaps.

7.3 The spoil heaps shall not be more than 3m high and shall be treated with an approved herbicide and covered with black polythene sheeting.

7.4 The Contractor shall make his own arrangements for the stockpiling of topsoil and suitable material for re-use on the contract unless otherwise provided for in the contract. Suitable material shall be compacted in stockpiles in accordance with clause 10.8

7.5 The Contractor shall remove surplus topsoil from site, subject to approval by the Engineer.

Surplus materials

7.6 The Contractor shall comply with the requirements of the Environment Protection Act 1990 with particular reference to the duty of care for the disposal of waste.

7.7 The Contractor shall be responsible for all testing and validation required by the Environment Agency and shall allow for all costs in connection with the same.

7.8 The Contractor shall provide the employer with copies of all necessary licences, approvals, delivery notes and receipts relating to the discharge of the duty of care for the disposal of waste.

7.9 The Contractor shall remove all suitable materials surplus to the contract requirements and unsuitable materials to an appropriately licensed landfill unless other provisions are specifically made in the contract, subject to approval by the Engineer.

Water

7.10 The permanent drainage system shall not to be used for disposal of water from excavations without approval by the Engineer and the local authority.

7.11 The Contractor shall keep all excavations free from water.

7.12 The Contractor shall not disturb material in or around excavations by pumping operations.

7.13 The Contractor shall obtain approval of the location of any sumps and fill with approved materials when no longer required.

8 FORMATIONS

Proof rolling and formation testing

8.1 All reduced level surfaces shall be rolled to give the compactive effort of 4 no. passes of 'Bomag' BW6 vibratory roller, or similar approved.

8.2 Where areas of unsuitable ground are found at the formation the Contractor shall excavate to such further depth as may be required to archive the required CBR. Such extra depth shall be filled with, acceptable general fill materials or sub-base/capping materials as required by the Engineer, unless other fill material is authorised. A minimum CBR value of 3% shall be proven in cut areas by testing as outlined in Section 12. Any soft spots identified and treated will need to be tested in accordance with Section 9 and tested accordingly, and achieve a minimum CBR of 3%

Inspections

8.3 The Engineer shall inspect the formation to all works before new work is laid on them. The Contractor shall give the Engineer not less than 24 hours notice of when formations shall be ready for inspection.

8.4 The last 150mm of excavations shall be removed just before inspection. Excavations shall be trimmed to the required profiles and levels, and all loose material shall be removed.

8.5 Unless otherwise instructed formations shall be sealed within 4 hours of inspection with concrete or other specified fill.

8.6 The Contractor shall obtain instructions if a natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings or if the formation contains soft or hard spots or highly variable material.

9 FILLING

General

9.1 For approval to be given for the filling the Contractor shall be required to demonstrate that the material is suitable and that the placing of the material conforms to the compaction requirements of the HA Specification for Highway Works.

9.2 The filling shall consist of materials that are selected to be free from deleterious materials. The material shall NOT contain the following:

- Colliery shales
- Ironstone shales
- Materials containing elevated sulphates
- Materials susceptible to frost damage, weathering or mechanical damage
- Material in fill areas which has deteriorated due to the ingress of surface water or the trafficking of the Contractor's plant shall be removed and replaced at the Contractor's expense.
- Fill areas shall be built up evenly over the full area, unless the contract requires otherwise, and sufficient camber shall be maintained at all times to enable surface water to drain from them. The containment or disposal of surface water, during the construction period shall be the Contractor's responsibility.
- The Contractor shall ensure that excavations and areas to be filled are free from organic material, loose soil, rubbish and standing water.
- Plant employed for transporting, laying and compacting shall be suited to the type of material being handled.
- The Contractor shall lay differing materials separately so that only one type of material occurs in each layer.

Benching in fill

9.3 Where during the progress of the work the difference in level between adjacent areas of filling exceeds 600mm, the Contractor shall cut into the edge of the higher filling to form benches having a minimum width of 600mm and a height equivalent to the depth of a layer of compacted filling. New filling shall be spread and compacted to ensure maximum continuity with the previous filling.

Cold weather working

9.4 The following conditions apply:

- Frozen material or materials containing ice shall not be used.
- Fill material shall not be placed on a frozen surface.

Imported material

9.5 Sources, types of suitable material and the moisture content at which they may be placed and compacted shall be those approved by the Engineer and agreed at tender stage.

9.6 The Contractor shall have delivered to site sample loads of any imported material proposed for use for the approval of the Engineer before any filling material is placed in position. A minimum of 48 hours notice shall be provided for inspection with a further 24 hours for approval. Grading analyses, aggregate crushing value or 10% fines test and Atterberg limits plus natural moisture content details, as appropriate, shall accompany all samples.

9.7 Materials shall be properly protected from snow, frost and inclement weather and any materials damaged shall be removed from the site immediately and replaced with sound materials.

Topsoil

9.8 Where required by the contract, areas to be landscaped shall be covered with topsoil to the depth specified in the contract documents.

9.9 The topsoil shall be reduced to a fine tilth with no stone or other debris with any dimension greater than two thirds of the thickness of the topsoil layer and not upstanding more than 50mm above the upper surface of the topsoil.

10 COMPACTION

10.1 All materials used in fill areas shall be compacted as soon as practicable after placing.

10.2 All suitable materials deposited in fill areas shall be compacted with suitable plant; an appropriate number of passes and shall not exceed the maximum depth of compacted layer for the type of material in use.

10.3 The works are to be in accordance with the HA Specification for Highway Works and reference should be made to the appropriate tables for guidance on classification and likely compaction required for fill materials. Compliance with this guidance shall not relieve the Contractor of his obligation to attain the required degree of compaction. The Contractor shall be responsible for selecting suitable plant and methods of working to ensure that the fill materials are compacted to achieve at least 95% of the maximum dry density and less than 5% air voids as defined by laboratory testing specified by the Engineer. In addition, a minimum CBR value of 3% shall be proven in filled areas by testing as outlined in Section 12.

10.4 The Contractor shall obtain the Engineer's approval for the type of excavation and compaction plant he proposes to use. Approval by the Engineer shall not relieve the Contractor of his obligation under this specification.

10.5 The final formation shall be graded and rolled to the specified levels and tolerances.

10.6 Under no circumstances shall earthmoving plant be accepted as compaction equipment under this clause.

11 SUPERVISION

11.1 The Contractor shall ensure that a competent supervisor is on the site during all working hours.

11.2 The Contractor shall allow the Engineer access to the works at any reasonable time and shall afford the Engineer reasonable facilities to enable him to check the adequacy of the works.

11.3 In the event of ground or other conditions changing such that the Contractor feels that a change in his plant or his method of working is required for compliance with clauses 5 and 10 he shall give the Engineer thirty six hours notice for approval of the proposed plant and working method.

12 TESTING

Formations

12.1 Following proof rolling, CBR tests are to be carried out on an approximate 20m x 20m grid (and such additional locations as may be advised by the engineer).

Fill Materials

12.2 Full depth of each layer of fill material shall be tested using a suitably calibrated nuclear density gauge or other approved test method at the rate of one test per 400m^2 with a minimum of two per layer and 1 sand replacement test per 10 nuclear density gauge test. A minimum of 3 laboratory compaction tests per material type or a minimum of 1 per 500m^3 placed, will be required as for comparison to against the validation test results.

12.3 In addition CBR tests are to be carried out on an approximately 20m x 20m grid (and such additional locations as may be advised by the engineer) on the completed areas of fill.

12.4 The Contractor shall test any of the materials used in the works, when so required by the Engineer, and shall at his own expense supply test samples, packed in suitable containers and forward them to a firm or testing laboratory nominated or approved by the Engineer for such tests as the Engineer shall require.

12.5 All testing is to be carried out by an approved UKAS accredited testing contractor.

12.6 A validation report is to be prepared to cover testing and any remedial actions taken and shall certify to the satisfaction of the all relevant parties and regulators that the works have been completed in accordance with the Specification for Earthworks.