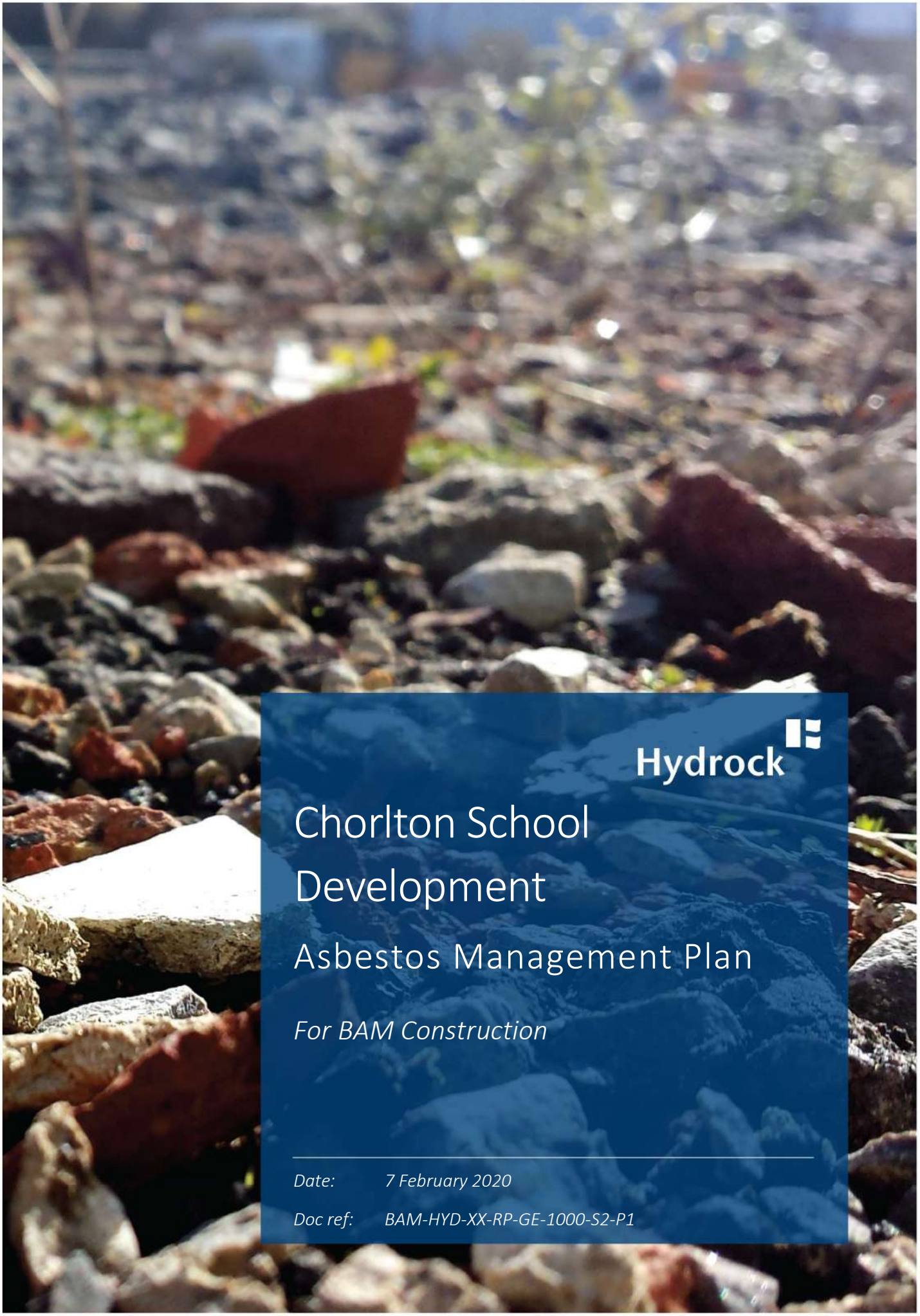
APPENDIX H

ASBESTOS MANAGEMENT PLAN FOR CHORLTON HIGH SCHOOL (*HYDROCK CONSULTANTS LTD*)



Hydrock

Chorlton School Development

Asbestos Management Plan

For BAM Construction

Date: *7 February 2020*

Doc ref: *BAM-HYD-XX-RP-GE-1000-S2-P1*

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Issued by	Hydrock Consultants Limited Northern Assurance Buildings 9 Buildings 9-21 Princess Street Albert Square Manchester M2 4DN United Kingdom	T +44 (0)161 804 5550 E manchestercentral@hydrock.com www.hydrock.com
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Prepared by		James Macfarlane BSc (Hons) AFAAM
Checked by		Danny Hope BSc (Hons) MSc MCIWEM CEnv C.WEM SiLC
Approved by		Danny Hope BSc (Hons) MSc MCIWEM CEnv C.WEM SiLC

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EXECUTIVE SUMMARY (KEY POINTS)

SITE INFORMATION AND SETTING	
Objectives	The overall purpose of this report is to place BAM, as the Principal Contractor, in a fully informed position with regards to the known spatial distribution and environmental risk posed by Asbestos in Soils (AiS), and to provide recommendations to mitigate those risks as far as reasonably practicable.
Client	BAM Construction
Site name and location	Chorlton School, 401 Mauldeth Road, Manchester, M21 7SX.
Proposed development	The proposals for the site are the construction of a 2 & 3-storey secondary school with associated areas of car park, cultivated landscaped areas and multi-use games area (MUGA) pitch in the east. The northeast of the site will be retained (once renovated) as a part of the Greater Manchester Police forces dog/horse training facility.

Summary of Requirements/Recommendations

Preliminaries:

1. Dissemination of the 'Asbestos Management Plan' (this document) to interested parties.
2. Further ground investigation works to investigate for visible ACM within Made Ground materials particularly around WS10, WS21 & WS27.
3. Provision of site-specific 'Asbestos Awareness' training for all site operatives whose work may bring them into contact with asbestos containing materials.
    a. Review any existing asbestos training to ensure all test certification are current and in-date.
4. Display 'Asbestos Awareness Poster' (as provided in Appendix G) in prominent locations on site to highlight examples of potential visible asbestos containing materials and to reiterate the sitewide 'Discovery Strategy'.
5. Site Induction to outline of the asbestos contamination identified to date, any designated asbestos areas and the requirements of the site-wide 'Discovery Strategy'/'Emergency Procedure'.
    a. Toolbox talks to be provided to supplement/highlight any change in known asbestos areas or AMP reviews.
6. Dedicated pedestrian routes should be installed to ensure foot traffic across asbestos contaminated areas is minimised as far as reasonably practicable.
7. Haulage routes to avoid traversing over potentially contaminated Made Ground.
8. Setup changing facilities and boot wash on perimeter of construction zone.
9. Preliminary air monitoring should be conducted to set baseline fibre levels (See Section 7).
10. Implementation of the 'Discovery Strategy' and 'Emergency Procedure' in Class A, B & C material.
11. Provision of a competent 'Asbestos Watching Brief' during excavation works in Class B & C material.
12. All known class C material (as presented in Drawing BAM-HYD-XX-XX-M2-GE-0002.S2.P1 in Appendix B) should be suitably segregated with heras fencing (or similar). The aim being to limit the potential for cross contamination and prevent plant and pedestrians accessing the area until all remedial works and verification has been successfully completed.

Earthworks:

13. Class A material:
    a. Control measures should focus on standard site hygiene practices, standard dust control, and ensuring the material is appropriately managed to prevent cross contamination.

The requirements for Class A materials are described further in Table 4.1 and Section 5.2

    b. Area 3 – Includes Class C material.

14. Class B material:

a. Control measures should focus on sound site hygiene practices, simple precautionary dust control, and ensuring the material is appropriately managed to prevent cross contamination.
b. An asbestos watching brief will be required during the excavation of all Class B materials.
c. Material should be excavated in sections keeping the relatively uncontaminated topsoil cap.
d. Undertake activity and personal UKAS accredited air monitoring for airborne fibre.

The requirements for Class B materials are described further in Table 4.1 and Section 5.2

e. Area 3 – Includes Class C material.

15. Class C material:
    a. CAR 2012 will apply in these areas and precautionary measures in accordance with the regulations will be required.
    b. An asbestos watching brief will be required during the excavation of all Class C materials.
    c. Material should be excavated in sections keeping the relatively uncontaminated topsoil cap.
    d. Undertake activity and personal UKAS accredited air monitoring for airborne fibre.
    e. Control measures should focus on strict site hygiene practices, targeted dust control, protection of the workforce, use of asbestos compliant PPE and RPE, decontamination procedures and ensuring the material is appropriately managed to prevent cross contamination.
    f. Hand-picking or treatment may also be required to remove visible fragments in order to make a reusable engineered fill material or allow the material to be appropriately segregated prior to disposal.
16. Class D & E:
    a. If identified during the course of the earthworks, specific requirements will need to be assessed in accordance with the Control of Asbestos Regulations 2012 on a case by case basis.
    b. Assistance from a Licensed Asbestos Removal Contractor and/or notification to the HSE may be required in some circumstances.
17. Verification of works following completion in accordance with the CCG Remediation Strategy and Verification Plan (Ref: CCG-C-20-11468).
18. Asbestos Management Plan to be reviewed/updated as new information becomes available during the earthworks.

The executive summary forms part of Hydrock Asbestos Management Plan (Report number: BAM-HYD-XX-RP-GE-1000-S2-P1) and should not be read in isolation.

1. INTRODUCTION

1.1 Background

On the 23rd of January 2020, Hydrock Consultants Limited (Hydrock) was commissioned by BAM Construction (the Client) to prepare an Asbestos Management Plan (AMP) for a proposed development at Chorlton School, 401 Mauldeth Road, Manchester, M21 7SX (the Site).

Hydrock understands that the proposed development is to comprise a new 2 & 3-storey secondary school with associated areas of car park, cultivated landscaped areas, multi-use games area (MUGA) to the south, and a 4G football pitch to the east. The northeast of the site will be retained (once renovated) as a part of the Greater Manchester Police forces dog training facility.

Previous investigations at the site have identified positive asbestos in several samples across the site mainly within the Made Ground material. It is thought that this contamination is likely as a result of previous demolition activities or the historical importation of contaminated demolition arisings from unknown sources.

This report has been prepared in accordance with Hydrock's proposal referenced C-12547-E-FP-002 Rev.A (dated 15th January 2020) and the Client's instructions to proceed.

1.2 Objectives

The overall purpose of this report is to place BAM Construction, as the Principal Contractor, in a fully informed position with regards to the known spatial distribution and environmental risk posed by Asbestos in Soils (AiS), and to provide recommendations to mitigate those risks as far as reasonably practicable.

This report will aim to align BAM, their subcontractors and their Health and Safety advisors, with the most relevant industry good practice guidance for managing AiS risks at the site.

Specific objectives are to:

1. Collate and assess existing information provided by BAM, their sub-contractors, advisors and all available ground condition reports.
2. Provide applicable AiS guidance and assessment tools for the management principals; and
3. Set out a good-practice framework for the management of asbestos during the groundworks and Construction phase, such that BAM are both continually informed and in control.

The report will remain a live document throughout the works package and any further/new information regarding asbestos contamination should be added accordingly. On that basis, the recommendations provided by Hydrock may require periodic reassessment. Alterations to the recommendations will be communicated accordingly with each reissue of the document.

1.3 Available information

Each issue of his report has been compiled with reference to the following site-specific information and datasets. The data has been sub-divided to indicate which datasets were used to compile the preliminary report (BAM-HYD-XX-RP-GE-1000-S2-P1) and data that was subsequently supplied as part of each reissue.

Information/Datasets used in preliminary report issue:

1. Dunelm Geotechnical & Environmental*. 2018. PHASE 1 SITE INVESTIGATION. (Ref. M566)
2. Dunelm Geotechnical & Environmental. 2018. GEOENVIRONMENTAL APPRAISAL FOR LAND AT HOUGH END CENTRE, CHORLTON. (Ref. M566/02)
3. Geotechnics. 2019. PROPOSED CHORLTON HIGH SCHOOL – ASBESTOS INVESTIGATION (FACTUAL REPORT). (Ref. PN193988)
4. Coffey. 2019. CHORLTON HIGH SCOOL – 2019 ASBETOS SCREENING RESULTS. (Ref. 03229AA_P_001B)
5. CCG. 2020. ADDITIONAL GROUND INVESTIGATION REPORT AT CHORLTON SCHOOL. (Ref. CCG-C-19-11430

**cover sheet states "Encon Associates".*

BAM has obtained some of the above documents to provide information for the site. However, the Dunelm reports are not assigned to the Client and as such are only used for information purposes. No reliance has been placed on them, however the data contained therein has been used to compare to the observations made in subsequent reports.

Anecdotal information on potential asbestos contamination issues have also been provided by Messrs Ewan Bell (BAM), Daniel Kerfoot (CCG) and James Macfarlane (Hydrock).

This report has been compiled on the basis of the above gathered evidence only. Hydrock Consultants have not undertaken any ground investigation works and the accuracy of this document relies wholly on the information supplied by third-parties. No discrepancies in actual ground conditions can therefore be attributed to Hydrock.

1.4 Regulatory context and guidance

The protection of workers and the general public from exposure to asbestos from work-related activities is regulated by the "Control of Asbestos Regulations", 2012 (“CAR 2012”). Further clarification and guidance are provided in the associated Approved Code of Practice, "Managing and working with asbestos", 2013 ("L143").

The CAR 2012 and L143 documents are predominantly focussed on construction and demolition industries. Existing guidance from the HSE for asbestos is readily applied to the presence of asbestos in buildings and asbestos that is lying on the surface of the ground. However, guidance is not easily transferred to asbestos encountered in soil and was not written with ground contamination or groundworks in mind. This key point leads to uncertainty when working on sites with AiS, contamination and the requirements applicable to site personnel to effectively manage risk during groundwork activities.

Due to this uncertainty, several industry led publications have been produced to clarify and standardise works with AiS. Most notably, the Joint Industry Working Group CAR-SOIL™ provides interpretation of the asbestos regulations and assists decision makers manage works with Asbestos in Soil and Construction & Demolition materials.

The risk of asbestos-related work activities is reflected in Part 2,11(1) of CAR 2012 which states that an employer must “*prevent the exposure to asbestos of any employee employed by that employer so far as is reasonably practicable; and where it is not reasonably practicable to prevent such exposure, to take*

the measures necessary to reduce exposure to asbestos of any such employee to the lowest level reasonably practicable".

Furthermore, Regulations 4 of CAR 2012 places the duty to manage those risks on all non-domestic premises with the duty holder. The duty holder is required to manage the risk from asbestos and prevent harm by:

- ensuring that a suitable and sufficient assessment is carried out as to whether asbestos is or is liable to be present;
- where the assessment shows that asbestos is or is liable to be present in any part of the premises the duty holder must ensure that:
    1. a determination of the risk from that asbestos is made;
    2. a written plan identifying those parts of the premises concerned is prepared; and
    3. the measures which are to be taken for managing the risk are specified in the written plan.
- periodically review the information and ensure that the conclusions of the assessment and every review are recorded.

All other persons working on, or within, the premise must co-operate with the duty holder so far as is necessary to enable the duty holder to comply with the duties as set out under Regulation 4.

In situations where the assessment concludes that there is a potential to encounter asbestos such that it poses a risk to site personnel, an Asbestos Management plan (AMP) must be compiled. The AMP should take account of the above requirements and set out how the risks identified from asbestos will be managed, including, but not limited to:

- identifying the person(s) responsible for managing the asbestos risk;
- detailing the known and unknown asbestos risks (including locations) and the likelihood of encountering those risks;
- providing details on the procedure to be followed should unexpected asbestos containing material be encountered during the works;
- providing recommendations on the required mitigation measures and training; and
- identifying appropriate methods to be used to ensure the mitigation measures are effective.

2. SITE CONDITIONS

2.1 Site Location

Chorlton School, 401 Mauldeth Road, Manchester, M21 7SX, is located approximately 5km from central Manchester centred on OS Grid Ref 83115,393488. The current site configuration consists of open playing fields, including a dog training centre for Greater Manchester Police, and ~3,000m² of concrete hardstanding to the north of the site.

The general site setting is residential, with further open grassed land to the east. The site is surrounded on the north, south and west by residential properties and a railway line directly on the southern border. There are no residential properties directly on the site border. To the east is an open field which is not part of the development layout and is not considered further within this report.

The site is being redeveloped as a new school. Significant excavations, reprofiling and foundation installation are anticipated as part of the development.

2.2 Site History

Based on the 2018 Phase 1 Desk Study compiled by Dunelm, former uses of the site include a Territorial Army (TA) Centre (between 1950 - 1954) and the Waverley Care Home (between 1971 - c.2009). By c.2009 all buildings have been demolished, leaving the site in its current configuration.

Further investigations by Hydrock identified that the site was previously part of the RAF's 'Alexandra Park Aerodrome' which was operational between 1919 to 1924. Several large Belfast Truss Hangers are evident from aerial photography, however the exact configuration of the buildings on the current development boundary can only be estimated.



Plate 1: Evident Belfast Truss Hangers (source: https://www.forgottenairfields.com/)

It is thought that the majority of the asbestos contaminative issues identified to date can be attributed to the use of asbestos containing materials (ACM) in the construction of both the aerodrome and TA centre buildings. Evidence of extensive use of presumed asbestos cement can be seen in the 'Plate 1' above.

Furthermore, asbestos containing materials (ACM) were commonly used within boiler rooms/houses as insulation or fire proofing due to their high resistance to thermal stress. Asbestos was also known to be used extensively in the construction of MOD/RAF barracks and associated municipal buildings.

The identification, removal and disposal of asbestos prior to demolition has not always been as stringently controlled as the current UK guidance requires. Waste asbestos was commonly included in crushed demolition arisings and hence can be commonly found in the soils and Made Ground on many of the UK's brownfields sites.

While asbestos would have been likely used in the construction of the Waverley Care Home, the demolition in c.2006-2009 would likely have ensured that asbestos removal works would have been conducted prior to demolition (removal in accordance with the Control of Asbestos Regulation 2006). Similarly, the waste regulations would likely have prevented any demolition arisings being left on the site post demolition of the care home. It is unlikely any contaminative sources can be attributed to the Waverley Care Home demolition.

2.3 Proposed development

The scope of work relevant to this site-wide report includes the excavation and reprofiling of the existing land to create the development platform. This is likely to include the excavation of a substantial volume of Made Ground material with the potential to contain visible ACM and loose asbestos fibres. All available anecdotal and supplied information has been used to assess the potential risk of encountering ACM during the works and to provide recommendations accordingly.

The current scope of the BAM works includes:

- Further trial pitting / in-situ testing of the soils as part of a further ground investigation package to identify the potential for visible asbestos contamination issues (to be confirmed);
- Conduct a substantial earthworks package to reprofile the site due to drainage requirements. The finish levels are likely to exceed the current ground level once completed;
- Excavation and remediation of in-situ contamination in accordance with the CCG Remediation Strategy and Verification Plan (RSVP) (Ref: CCG-C-20-11468);
- Testing of stockpiled remediation and earthworks arisings for either disposal to landfill or reuse in accordance with the CCG's RSVP (Ref: CCG-C-20-11468) and CCG's Materials Management Plan (MMP) (Ref: CCG-C-20-11427);
- Importation of suitable subsoils and topsoil material to raise site levels and/or install the clean capping specification in accordance with the CCG's RSVP (Ref: CCG-C-20-11468); and
- Construction of the school facility; including the installation of foundations, services corridors, carparks and sport facilities;

Not all Made Ground arisings are destined for disposal to landfill and testing will be required to ensure material placement and reuse is in accordance with the CCG RSVP & MMP.

3. ASBESTOS OCCURRENCES

3.1.1 Dunelm Geotechnical & Environmental. 2018. PHASE 1 SITE INVESTIGATION. (Ref. M566)

See Section 2.2 - Site History

3.1.2 Dunelm Geotechnical & Environmental. 2018. GEOENVIRONMENTAL APPRAISAL FOR LAND AT HOUGH END CENTRE, CHORLTON. (Ref. M566/02)

Dunelm undertook a package of ground investigation works following a Phase 1 Desk Study in April 2018. The scope included:

- 2nr. Cable percussion boreholes (BH1-2);
- 8nr. Window sample boreholes (WS1- WS8); and
- 3nr. Hand dug inspection pits (HP1-3).

A total of eight samples were screened for asbestos within topsoil material, and three within the Made Ground material. Subsequent quantification testing was conducted on all positive samples and the following positive identifications were reported:

» 'Chrysotile & Crocidolite cement fragments' were recorded at 0.003%w/w in WS03 at a depth of 0.20m bgl within the topsoil material.

» 'Chrysotile fibrous debris' asbestos was recorded at 0.061%w/w in BH01 at a depth of 0.30m bgl within the Made Ground material. However, the DETS laboratory report included in appendix C identifies the contamination as both 'Chrysotile fibrous debris' and 'Cement' one of which must be an error in reporting.

No asbestos was visually identified within any of the Topsoil or Made Ground materials and visible asbestos was not recorded in any of the field data logs.

The Dunelm report notes evidence of limited AiS contamination at generally low levels in the sample results only, no visible contamination was identified.

On the basis of the above, Dunelm indicated in their report that undetected asbestos may be present elsewhere on site and that earthworks are supervised by a qualified asbestos surveyor and undertaken in accordance with the Control of Asbestos Regulations 2012.

3.1.3 Geotechnics. 2019. PROPOSED CHORLTON HIGH SCHOOL – ASBESTOS INVESTIGATION (FACTUAL REPORT). (Ref. PN193988) & Coffey. 2019. CHORLTON HIGH SCOOL – 2019 ASBESTOS SCREENING RESULTS. (Ref. 03229AA_P_001B)

The above reports were carried out as one package of works. Geotechnics provided all site works and the factual site investigation report, Coffey provided interpretation of the results.

The two combined reports were conducted specifically to obtain further information on the potential presence of asbestos or asbestos containing materials (ACM's) in the soil matrix. The scope included:

- 17nr. hand dug inspection pits excavated to 0.30m below ground level (TP01-TP17);
- 1nr. hand dug inspection pits excavated to 0.40m below ground level (TP18).

A total of 22nr. samples were screened for asbestos within topsoil and Made Ground material. Subsequent quantification testing was conducted on all positive samples; however, sample analysis was

only conducted to a Limit of Detection (LOD) of <0.1%w/w which is generally considered suitable for waste categorisation only.

An LOD of <0.1% provides a poor assessment for risk estimation purposes as the actual quantity of fibre present may be many orders of magnitude below 0.1%. It should be noted, however, that all quantifications provided in the geotechnics report are <0.1% with no exceedances of the Hazardous waste threshold.

The following positive identifications were reported:

- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP01 at a depth of 0.15m bgl within the Made Ground material.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP02 at a depth of 0.30m bgl within the Made Ground material.
- Chrysotile and Crocidolite 'ACM debris' was recorded in TP04 at a depth of 0.30 bgl within the Made Ground material. No quantification was possible.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP05 at a depth of 0.30 bgl within the Made Ground material.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP06 at a depth of 0.30 bgl within the Made Ground material.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP10 at a depth of 0.30 bgl within the Made Ground material.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP12 at a depth of 0.30 bgl within the Made Ground material.
- Chrysotile 'Asbestos cement debris' was recorded at <0.1%w/w in TP15 at a depth of 0.30 bgl within the Made Ground material.
- Chrysotile 'fibre bundles' were recorded at <0.1%w/w in TP17 at a depth of 0.30 bgl within the Made Ground material.

No asbestos was visually identified within any of the Topsoil or Made Ground materials and visible asbestos was not recorded in any of the field data logs.

The Dunelm report notes evidence of limited AiS contamination at generally low levels in the sample results only, no visible contamination was identified.

On the basis of the above, Dunelm indicated in their report that undetected asbestos may be present elsewhere on site and that earthworks are supervised by a qualified asbestos surveyor and undertaken in accordance with the Control of Asbestos Regulations 2012.

3.1.4 CCG. 2020. ADDITIONAL GROUND INVESTIGATION REPORT AT CHORLTON SCHOOL. (Ref. CCG-C-19-11430

CCG undertook a package of ground investigation works to provide additional ground conditions data in January 2020. The scope included:

- 40nr. Window sample boreholes were sunk to maximum depth of ~1m (WS01-WS40);

A total of 80nr. samples of topsoil, Made Ground, subsoil and tarmac were screened for asbestos. Subsequent quantification testing was conducted on all positive samples and the following positive identifications were reported:

- Chrysotile Cement (1.362%) & Crocidolite/Chrysotile Insulation (0.102%) was recorded at 1.50%w/w in WS10 at a depth of 0.20m bgl within the Made Ground material.
- Chrysotile/Crocidolite Cement was recorded at 0.047%w/w in WS20 at a depth of 0.15m bgl within the Made Ground material.
- Chrysotile 'Lagging' was recorded at 0.253%w/w in WS21 at a depth of 0.30m bgl within the Made Ground material.
- Chrysotile/Crocidolite Cement was recorded at 0.618%w/w in WS25 at a depth of 0.30 – 0.50m bgl within the Made Ground material.
- Chrysotile/Crocidolite Insulation was recorded at 0.043%w/w in WS27 at a depth of 0.20m bgl within the Made Ground material.
- Chrysotile/Crocidolite Cement was recorded at 0.003%w/w in WS29 at a depth of 0.40m bgl within the Made Ground material.
- Chrysotile Cement was recorded at 0.048%w/w in WS35 at a depth of 0.40m bgl within the Made Ground material.

All of the positive results were recorded in the Made Ground material and no positive results were found within the topsoil. Three of the seven positive sample results would be considered 'Hazardous Waste' on the basis of the gravimetric analysis alone.

No asbestos was visually identified within any of the Topsoil or Made Ground materials and visible asbestos was not recorded in any of the field data logs.

3.1.5 Additional anecdotal Information

Alexandra Park Aerodrome

Further investigation subsequent to a review of Dunelm 2018 Phase 1 Desk Study, Hydrock identified that the site was previously part of the RAF's 'Alexandra Park Aerodrome' which was operational between 1919 to 1924. Several large Belfast Truss Hangers are evident from aerial photography, however the exact configuration of the buildings on the current development boundary can only be estimated.

It is not known if the demolition of these buildings was controlled, but given the date of the demolition (c.1925) segregation of any asbestos containing materials is unlikely to have been as thorough as required by today's standards.

It is thought that the majority of the Made ground arisings are likely to be from the resultant demolition arisings of the aerodrome and/or TA Centre.

It is therefore not clear the extent to which ACM's were removed prior to the demolition of the old structures.

Other potential asbestos risks / sources

A review of aerial photographs and imagery indicate that the boundary of the site is largely residential and there is no evidence of large industrial land use close to the site boundary. The railway to the south of the site was renovated in c.2009-2013. This indicates that the risk of off-site airborne fibre contamination which may adversely affect the site is very low.

It is not known if any imported recycled crush material, Made Ground, waste products or topsoil have been brought to the site since the demolition of the TA centre.

No other offsite risks/sources have been identified.

3.2 Summary

All borehole, hand dug trial pits and asbestos sampling locations have been agglomerated in drawing BAM-HYD-XX-XX-M2-GE-0001.S2.P1 to provide an overview of the contamination identified to date. This drawing provides a visual representation of the spread of the asbestos contamination and should be read in in conjunction with the below.

There is evidence to suggest that the topsoil material is relatively free of asbestos contamination with only one positive sample identifying low level Chrysotile/Crocidolite cement contamination within Dunelm's WS03 sample at 0.003%w/w.

The majority of the sample results suggest that the asbestos contamination is generally restricted to the Made Ground layer which ranges from minor Chrysotile/Crocidolite Cement contamination at 0.003%w/w (in CCG's WS29 at 0.40mbgl) to Crocidolite/Chrysotile Insulation at 1.50%w/w in (in CCG's WS10 at 0.20mbgl). Furthermore, the contamination appears to be more concentrated to the western side of the site as only six locations reporting positive incidences have been identified towards the east.

Samples obtained during the field work indicate that in terms of asbestos containing material type, loose asbestos fibres and asbestos are more likely to be encountered. Three incidences of asbestos 'insulation/lagging' were recorded but only during laboratory analysis rather than visibly during the field work.

No visible asbestos containing materials were noted within any of the previous investigation borehole and hand dug trial pit logs. It is noted that thus far, extensive earthworks and material movements have not yet commenced and the above inference is based solely on information gained form boreholes and shallow hand dug trial pitting.

Given the sites history (Alexandra park aerodrome & TA centre), there remains a high likelihood that once significant earth movements commence visible asbestos containing material will be identified during the earthworks. The extent, type and frequency of any visible asbestos cannot be estimated at this time.

The above indicates that there are several gaps in the information regarding asbestos and how/if ACM's were fully and effectively removed prior to demolition of the aerodrome and TA centre.

3.3 Discussion

The risk to human health from asbestos is related to the inhalation of asbestos fibres. Therefore, any asbestos cement fragments or friable material presents a negligible risk if buried and undisturbed. Friable asbestos may generate elevated airborne fibre levels if lying on the soil surface or disturbed

within near surface soils. Cement fragments may also do so if they are broken up and pulverised such as may occur during excavation or materials processing activities.

Hydrock considers it likely that further AiS will be encountered during the site works where disturbance of Made Ground material is required. Therefore, there remains the potential to encounter visible fragments of ACM (of unknown type, location and frequency) sporadically throughout the works package. Additionally, it is considered highly likely that during disturbance of Made Ground some soils will have the potential for elevated loose fibre contamination which could, if not handled correctly, give rise to significant airborne fibre release.

Due to the variable presence of asbestos across the site, and within differing material types, Hydrock recommend the use of differing 'Material Classifications' for risk estimation purposes. Defining the various material classifications will allow averaging areas to be assigned to either areas of the site or material types and thus the control measures required to safely undertake the earthworks package.

4. ASBESTOS CONTAMINATION ASSESSMENT

4.1 Material classification

Based on the available site information (as summarised in Section 3), five potential 'Material Classifications' have been identified (A-E) which describe the known risk of asbestos contamination.

Currently, all material falls within Class A-C. Class D & E have been provided to cover potential scenarios where visible, clearly identifiable, asbestos containing materials are identified during the site works.

4.1.1 Class A Materials

Data compiled to date indicates that some material/areas of the site which require excavation are unlikely to exhibit any asbestos contamination and are dominated by samples where asbestos was not detected or is unlikely to be present. It is highly unlikely that any asbestos contamination is present or will be identified and therefore standard earthworks control measures are applicable.

Outline of requirements:

- CAR 2012 does not apply in these areas.
- Control measures should focus on standard site hygiene practices, standard dust control, and ensuring the material is appropriately managed to prevent cross contamination.

The requirements for Class A materials are described further in Table 4.1 and Section 5.2.

4.1.2 Class B Materials

Data compiled to date indicates that some material/areas are dominated by low-level/trace loose fibre contamination, with an absence of 'clearly identifiable' visible asbestos.

Outline of requirements:

- CAR 2012 does not apply in these areas.
- Control measures should focus on sound site hygiene practices, simple precautionary dust control, and ensuring the material is appropriately managed to prevent cross contamination.
- A watching brief will be required during the excavation of all 'Class B' material to assess the ground for potential hotspots of visible contamination or elevated loose fibre. Where hotspots are identified the precautionary/control measures implemented should be increased to Class C, D or E accordingly.
- The retention of any material will be subject to any material testing requirements in accordance with the CCG RSVP (Ref: CCG-C-20-11468) and CCG's MMP (Ref: CCG-C-20-11427).

The requirements for Class B materials are described further in Table 4.1 and Section 5.2.

4.1.3 Class C Materials

Data compiled to date indicates that some material/areas are dominated by pervasive loose fibre contamination or elevated concentrations of asbestos fibre. Class C material may also include the presence of incidental or significant quantities of visible ACM within the soils.

Outline of requirements:

- CAR 2012 will apply in these areas and precautionary measures in accordance with the regulations will be required.
- Material should be excavated in section keeping the relatively uncontaminated topsoil cap in place until the contaminated Made Ground is ready to be excavated the levels provided in the CCG RSVP (Ref: CCG-C-20-11468).
- Control measures should focus on strict site hygiene practices, targeted dust control, protection of the workforce, use of asbestos compliant PPE and RPE and ensuring the material is appropriately managed to prevent cross contamination.
- A watching brief will be required during the excavation of all 'Class C' material to assess the ground for potential hotspots of visible contamination or elevated loose fibre. Where hotspots are identified the precautionary/control measures implemented should be increased accordingly.
- Hand-picking or treatment may also be required to remove visible fragments in order to make a reusable engineered fill material or allow the material to be appropriately segregated prior to disposal.

  NB. This may require the deployment of an Environmental Permit or Regulatory Position Statement (RPS215) dependant on volumes of material to be treated.

- The retention of any treated material will be subject to any material testing requirements in accordance with the CCG RSVP (Ref: CCG-C-20-11468) and CCG's MMP (Ref: CCG-C-20-11427).

The requirements for Class C materials are described further in Table 4.1 and Section 5.3.

4.1.4 Class D Materials

While the current site data indicates there is an absence of visible ACM, the subsequent identification of Non-Licensable ACM (such as asbestos cement or other bonded ACM) over and above incidental will require the use of control measure in accordance with the Control of Asbestos Regulations 2012.

Outline of requirements:

- Works should be conducted as Non-Licensed works including the use of appropriate face fit tested RPE, PPE, designated work areas, decontamination procedures and operatives with the appropriate level of information, instruction and training.

  Further assessment of the requirements will be required on a case by case basis.
- There may be a requirement to notify the works through the online ASB NNLW1 form.

  Further assessment of the requirements will be required on a case by case basis.
- Hand-picking or treatment may also be required to remove visible fragments in order to make a reusable engineered fill material or allow the material to be appropriately segregated prior to disposal.

  NB. This may require the deployment of an Environmental Permit or Regulatory Position Statement (RPS215) dependant on volumes of material to be treated.

- The retention of any treated material will be subject to any material testing requirements in accordance with the CCG RSVP (Ref: CCG-C-20-11468) and CCG's MMP (Ref: CCG-C-20-11427).

The requirements for Class D materials are described further in Table 4.1.

4.1.5 *Class E Materials*

While the current site data indicates there is an absence of visible ACM, the subsequent identification of 'clearly identifiable/original form' (CIOF) Licensable ACM over and above incidental will require the use of control measure in accordance with the Control of Asbestos Regulations 2012.

Outline of requirements:

- Licensable products include the CIOF identification of asbestos sprayed Coatings, asbestos insulation or asbestos insulation board (AIB).
- Work will require the assistance of a Licensed Asbestos Removal Contractor, potentially working under ASB5 notification to the HSE.
- The requirement for notification to the HSE will need to be assessed by the LARC based on the type of ACM encountered, anticipated fibre release and duration of the required removal works. Notification comes with a statutory 14-day notification period.
- Works should be conducted as licensed asbestos works including the use of appropriate RPE, PPE, designated work areas and decontamination measures in accordance with the Control of Asbestos Regulation 2012.

The requirements for Class E materials are described further in Table 4.1.

4.2 Averaging Areas

Each 'Averaging Area' has been assigned a material classification (A-E) based on the known risk of contamination and therefore fibre release potential.

Table 4.1 and Table 4.2 provides a summary of the averaging areas and material classifications and should be read in conjunction with drawing BAM-HYD-XX-XX-M2-GE-0002.S2.P1 in Appendix B.

The potential risk of encountering more significant ACM within Made Ground across the site must be accounted for. Section 5 of this report makes some recommendations to minimise those risks. The controls and recommendations must be adequately conveyed to ground operatives and some basic mitigation measures should be adopted to prevent potential exposure.

Table 4.1. Material assessment based on available data.

Location & Material Type	Observations & Recommendations
In-situ naturally occurring soil (sitewide) **Class A Material***	No occurrences of visible asbestos identified during fieldwork. Similarly, no incidences of loose fibre contamination have been identified within the in-situ naturally occurring soil inferring that the risk of encountering asbestos during excavation is negligible. Risk to construction staff and neighbouring residents is considered to be negligible. Control measures required during excavation, movement and stockpiling: • Basic material handling, control measures and general site hygiene requirements required as stated in Section 5.2; • All operatives must hold Asbestos Awareness (applicable to asbestos in soils); • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' apply (see Section 8 & Appendix A respectively); • Ensure all in-situ naturally occurring soil are stockpiled separately from all other material classes.
Topsoil (sitewide) **Class A Material***	No occurrences of visible asbestos identified during fieldwork and no visible asbestos has been noted on the surface of the topsoil to date. Low level Chrysotile/Crocidolite cement contamination within only one sample (WS03 sample at 0.003%w/w) inferring that the risk of fibre release during excavation is very low to negligible. Risk to construction staff and neighbouring residents is considered to be very low to negligible. Control measures required during excavation, movement and stockpiling: • Basic material handling, control measures and general site hygiene requirements required as stated in Section 5.2; • All operatives must hold Asbestos Awareness (applicable to asbestos in soils); • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' apply (see Section 8 & Appendix A respectively); • Care should be taken during removal to segregate topsoil from potential impacted Made Ground below to avoid cross contamination of the otherwise uncontaminated topsoil; • The sitewide topsoil is currently providing a clean cap to Class B & C materials and should be maintained until the contaminated Made Ground beneath is ready to be excavated to the levels provided in the CCG RSVP (Ref: CCG-C-20-11468). • The topsoil material should be removed in a logical manner and it is advised that sections are removed gradually rather than a sitewide strip of all topsoil at the start of the project.
Area 1 – Concrete/ hard standing **Class A Material***	No occurrences of visible asbestos identified during fieldwork and no visible asbestos has been noted on the surface of the concrete hardstanding to date. Similarly, no incidences of loose fibre contamination have been identified in this area inferring that the risk of fibre release during excavation is very low to negligible.

	Risk to construction staff and neighbouring residents is considered to be very low to negligible. Control measures required during excavation, movement and stockpiling: • Basic material handling, control measures and general site hygiene requirements required as stated in Section 5.2; • All operatives must hold Asbestos Awareness (applicable to asbestos in soils); • During the initial breakout of the concrete slab a competent asbestos watching brief should attend to inspect the underside of broken out concrete material to check for ACM adhered the base of the concrete slab. Similarly, any hardcore material below slab levels should be inspected for the presence of ACM contamination. If no ACM are identified the requirement for a competent asbestos watching brief can be scaled back. • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' apply (see Section 8 & Appendix A respectively); • Care should be taken during the break out and segregation of the concrete from potential impacted Made Ground below to avoid cross contamination of the otherwise uncontaminated concrete.
Area 1 – Made Ground Class B Material*	No occurrences of visible asbestos identified during fieldwork and no visible asbestos has been noted on the surface to date. Similarly, no incidences of loose fibre contamination have been identified in this area inferring that the risk of fibre release during excavation is very low to negligible. However, the potential for loose fibre and visible asbestos contamination remains and therefore a Class B material classification has been assigned. Risk to construction staff and neighbouring residents is considered to be low. Control measures required during excavation, movement and stockpiling: • Basic material handling, control measures and general site hygiene requirements required as stated in Section 5.2; • All operatives must hold Asbestos Awareness (applicable to asbestos in soils); • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' apply (see Section 8 & Appendix A respectively); • All excavation works to be attended by a competent asbestos watching brief; • Use of targeted dust suppression where appropriate (accounting for environmental/natural moisture content of the soil); • Appropriate air monitoring strategy to provide activity based and personal sampling for airborne asbestos fibre
Area 2 – Made Ground Class B Material*	No occurrences of visible asbestos identified during fieldwork and no visible asbestos has been noted on the surface to date. Positive sample results indicate that there is a potential for loose Chrysotile 'fibre bundles' and incidental asbestos cement (0.618%) contamination. However, the area is dominated by 'non-detects', and in the absence of visible fragments of asbestos the risk of fibre release during excavation is considered to be low provided appropriate control measures are utilised. Therefore, a Class B material classification has been assigned. Risk to construction staff and neighbouring residents is considered to be low unless visible asbestos containing materials are identified during the ground works.

	Control measures required during excavation, movement and stockpiling: • Basic material handling, control measures and general site hygiene requirements required as stated in Section 5.2; • All operatives must hold Asbestos Awareness (applicable to asbestos in soils); • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' (see Section 8 & Appendix A respectively) apply; • All excavation works to be attended by a competent asbestos watching brief; • Use of targeted dust suppression where appropriate (accounting for environmental/natural moisture content of the soil); • Appropriate air monitoring strategy to provide activity based and personal sampling for airborne asbestos fibre.
Area 3 – Made Ground Class C Material*	No occurrences of visible asbestos identified during fieldwork and no visible asbestos has been noted on the surface to date. Positive sample results indicate that there is a potential elevated loose fibre and fibrous debris within the Made ground material. Furthermore, three samples indicated the potential presence of asbestos insulation/lagging type material, albeit identified in the laboratory and not visibly identified in the field. In the absence of visible fragments of Licensable and Non-Licensable asbestos containing materials the risk of fibre release during excavation is considered to be low – moderate. Therefore, a Class C material classification has been assigned. Risk to construction staff is considered to be moderate and the risk to neighbouring residents is considered to be low provided appropriate control measures are utilised. Control measures required during excavation, movement and stockpiling: • Control measures should focus on strict site hygiene practices, targeted dust control, protection of the workforce, use of asbestos compliant PPE and RPE and ensuring the material is appropriately managed to prevent cross as stated in Section 5.2 and 0; • Erect heras fencing around the designated asbestos areas to ensure access to non-essential personnel is restricted; including » A single point of access and egress through a primary decontamination facility. • All excavation works to be attended by a competent asbestos watching brief, ideally a competent remediation or asbestos removal contractor; • Use of targeted dust suppression where appropriate (accounting for environmental/natural moisture content of the soil); • All plant to be restricted to the area for the duration of the excavation works; with » All plant being thoroughly decontaminated upon exiting the designated asbestos area. • Upon commencing works, an assessment of the excavated soils coupled with preliminary air monitoring should be conducted to inform if all the below are required:

	» Ground operatives must hold task specific asbestos training (applicable to asbestos in soils); » Ground operatives to be provided with Type 5/6 Cat 3 disposable coveralls; » Ground operatives to be provided with washable footwear and disposable gloves; » Ground operatives to be provided with face fit tested FFP3 orinasal ½ masks; » All plant operatives to adhere to a closed cab policy (i.e. doors and windows shut); • Stockpiling area to be kept segregated and where necessary stockpiles should be kept covered; • Lockable asbestos waste skip onsite for double bagged used PPE/hand-picked waste; • Appropriate air monitoring strategy to provide activity based and personal sampling for airborne asbestos fibre; • Implementation of the sitewide 'Discovery strategy' and 'Emergency Procedure' (see Section 8 & Appendix A respectively) apply; This work is likely to be consider Non-Licensed asbestos works in accordance with CAR2012 despite the absence of visible ACM. Additional task specific training will be required for all ground operatives including, but limited to, safe use and maintenance of RPE and PPE, decontamination procedure, waste handling and water suppression techniques.
General sporadic ACM and loose fibre. Class D Material & Class E Material	Based on the results of the trial pits, visible fragments of both Licensable and Non-Licensable may have gone undetected to date. Similarly, elevated loose fibre should be anticipated in all Made Ground material types. There is also the potential that further as yet unidentified hotspots may remain undiscovered due to the discrete nature of asbestos contamination. Any such discoveries should be assessed if works are likely to constitute 'Non-Licensed' or 'Licensed' asbestos works. Each instance should be assessed on a case by case basis. Licensed works are likely to require the assistance of a notification to the HSE and further assistance from a Licensed Asbestos Removal Contractor (LARC). Earthworks should be conducted in accordance with the 'Discovery strategy' provided in Section 8 and Appendix A and Hydrock should be informed of any new or unexpected contamination finds.

** subject to the identification of further significant visible licensable and non-licensable asbestos containing materials.*

Table 4.2. Additional in-situ/potential asbestos containing materials.

Location & Material Type	Observations & Recommendations
In-situ asbestos cement pipes	Any suspected or unanticipated asbestos cement pipes identified during the earthworks should be tested for the presence of asbestos and removed in accordance with CAR2012 and relevant industry guidance. Earthworks should be conducted in accordance with the 'Discovery strategy' provided in Section 8 and Appendix A and Hydrock should be informed of any new or unexpected contamination finds.
In-situ pipes and ducts	Service chambers, duct covers and in situ pipes have not been noted within the recent ground investigation works. However, give the sites history, there is a potential of encountering in-situ ducts, pipes and services beneath the Made Ground and demolition arisings which have not yet been identified. There remains the potential that some of these pipes could be insulated with asbestos containing material or ducts could be lined/shuttered with asbestos cement/insulation boards. Any suspected or unanticipated ducts or pipes identified during the earthworks should be tested for the presence of asbestos and removed in accordance with CAR2012 and relevant industry guidance. Earthworks should be conducted in accordance with the 'Discovery Strategy' provided in Section 8 and Appendix A and Hydrock should be informed of any new or unexpected contamination finds.

5. RECOMMENDED CONTROL MEASURES

5.1 Sitewide

Haulage Routes and Vehicle Movements

Haulage routes should be restricted to known clean material negating the need for road going vehicles to traverse across potentially contaminated Made Ground.

Site vehicle movements over Made Ground should be avoided where possible to avoid cross contamination with clean haulage routes.

UKAS accredited asbestos air monitoring

Upon commencement of the project, air monitoring should be conducted to provide a base level of background asbestos fibre in air. The preliminary monitoring should be conducted prior to any excavation works commencing.

Hydrock recommend that further activity based sampling and personal sampling are conducted once excavation works commence which can be compared to the baseline monitoring. Activity based samples should be conducted daily at the start of the bulk earthworks to ensure the general mitigation measures are effective, and once a new type of material classification is being worked upon. Further details are provided in Section 7.

All air monitoring must be conducted by a UKAS accredited laboratory and undertaken in accordance HSG248 – '*Asbestos: The analysts' guide to sampling, analysis and clearance procedure*'.

Validation/Auditing

Upon completion of the works the Contractor must contact a suitably qualified geo-environmental consultant to arrange an inspection of the excavation areas in accordance with CCG's RSVP (Ref: CCG-C-20-11468).

Testing

The frequency of testing of material for disposal should be conducted no less than the requirements of the receiving landfill or the specific requirements of the site-wide MMP.

The suite of testing will be dependent on the receiving landfill and the anticipated classification of the waste (Haz, Non-Haz, Inert). Testing is likely to include a combination of the following:

- Chemical
- Waste Acceptance Criteria (WAC)
- Asbestos Screen (Inc. Quantification if positive)

The frequency of testing of material for retention should be in accordance with CCG's RSVP (Ref: CCG-C-20-11468).

5.2 Areas 1&2 – Includes Class A & B Material

Basic material handling and control measures

For excavation works in material where 'CAR 2012 DOES NOT APPLY', basic control measures and a logical excavation sequence should be sufficient to ensure nuisance dust is minimised, limit the spread of contaminated soils and the reduce the potential for cross contamination.

In general, this will include any material where only incidental occurrences of visible asbestos may be identified or material where test results show evidence of only very low-level or sporadic incidences of loose fibre. The same principles can be applied to the excavation of clean naturally occurring materials.

The following should be adopted on a site wide basis for the duration of the earthworks package:

General site hygiene

- Provisions for a changing facility on the perimeter of the construction zone to be utilised by all site staff when leaving the construction zone and returning to the site welfare.
  - » Eliminating site clothing from the site offices and welfare will greatly reduce the potential for contaminated soils being moved from the construction zone to potentially desiccating environment (e.g. to the site welfare, personal vehicles or taken home).
  - » Upon exiting the construction zone all employees will be required to remove their work boots, over trousers and site-specific PPE for storage in the changing facility in-between shifts and at the end of the working day;
  - » Bathroom amenities should be provided within the changing facility and workers should utilise the provided amenities to wash hands and face – prior to eating, drinking or smoking and at the end of each shift;
  - » Provisions for a boot wash should be installed at the entrance to the changing facility and utilised before entering the changing facility;
- Smoking, eating or drinking shall not be permitted in construction zone and should only be undertaken in designated areas (i.e. In the vicinity of lunch room/site sheds or off-site);
- Due to the known (and potential) presence of asbestos fibre within the Made Ground across the site, clean segregated walkways should be installed in areas of heavy footfall once the Made Ground is exposed.
  - » Clean imported stone should be used (e.g. pipe bedding, quarried stone or virgin aggregate).
- Workers must utilise personal protective equipment in accordance with site procedures including but not limited to:
  - » High visibility over trousers;
  - » High visibility jacket;
  - » Hard Hat;
  - » Safety boots;
  - » Gloves; and
  - » Eye protection.

Additionally, it is recommended that site workers have a change of clothes and leave work clothes at the site to prevent the spread of contaminated soil outside the work place. Site clothing should be left in the changing facilities provided overnight.

General dust mitigation measures

The following applies to Made Ground and other materials of anthropogenic origin; there are no restrictions on excavation of the clean, naturally occurring materials.

Dust generation is a potential pathway for contaminated soils and asbestos fibres and should be suppressed where practicable.

During the excavation of topsoil and Made Ground general nuisance dust should be reduced as far as reasonably practicable. The Contractor will need to assess the requirement on a case by case basis, but the uses of water suppression should be considered to ensure the material is kept damp during the excavation work.

The aim of water suppression is to ensure soils are kept damp to mitigate the release of dust without causing complete saturation. Constant use of water suppression is not considered necessary. The Contractor will need to assess ground and weather conditions and decide when and where water suppression will be applicable.

Controlled Digging Techniques & Basic Material Management

Potential environmental impacts may be associated the following works involving soils at the site:

- excavation and stockpiling;
- on-site movement of soil;
- on-site retention of soil; and
- disposal operations of contaminated soils.

Some best practice recommendations have been provided below to assist the ground operatives avoid disturbance of unexpected AiS, reduce the potential for cross contamination, and recognise ACM at the earliest opportunity.

Whilst it has been stated that some areas of the excavation works are likely to fall outside the remit of CAR 2012 (see section 6.6) any excavation works should be conducted in a controlled and careful manner. In general, this will include the use of 'layered excavation' practices, where all excavation works should be conducted in 100mm - 250mm layers. Layering the excavation works will provide plant and ground operatives the best opportunity to identify suspected ACM, while minimising the potential for disturbance.

- All material arising from the concrete, topsoil and clean naturally occurring materials (Class A material) should be placed in a separate stockpiling to all other material classifications. Broadly this material should be free of asbestos contamination and cross contamination must be prevented;
  - » No requirement for 'layered excavation'.
- All material arising from predominantly uncontaminated Made Ground (Class B material), should be excavated placed in a separate stockpile as all other material classifications;
  - » material should be excavated in 100 - 250mm layers to ensure the site operatives have the best opportunity to identify visible ACM and take action accordingly;

  - drop heights should be minimised;
  - double handling should be avoided where feasible; and
  - consideration should be given to stockpiling the material on a geotextile membrane if stockpiling on an otherwise clean surface.
  - If material is being retained for long term storage prior to reuse, the stockpile should be covered to prevent fibre release due to weathering. Consideration should be placed on ensuring the top of the stockpile is concave to trap rain water and keep the material moist.
- All material arising from Made Ground with elevated fibre concentrations (Class C material), should be excavated placed in a separate stockpile as all other material classifications;
  - material should be excavated in 100 - 250mm layers to ensure the site operatives have the best opportunity to identify visible ACM and take action accordingly;
  - drop heights should be minimised;
  - double handling should be avoided where feasible; and
  - consideration should be given to stockpiling the material on a geotextile membrane if stockpiling on an otherwise clean surface.
  - If material is being retained for long term storage prior to reuse, the stockpile should be covered to prevent fibre release due to weathering. Consideration should be placed on ensuring the top of the stockpile is concave to trap rain water and keep the material moist.
- Stockpiles of imported material should be well away from potentially contaminative sources such as Made Ground excavation works and contaminated stockpiles to minimise the potential for cross-contamination.

All material stockpiles should be labelled accordingly and tested for either site retention or offsite disposal. Excavated soils should be segregated and stockpiled with soils of similar soil types to avoid the potential for cross contamination. Should the potential for the excavation of two or more soil domains (i.e. fill and natural soils) be present, it is recommended that a segregation process is undertaken.

Watching brief requirements

Based on the information provided, an asbestos specific watching brief is not deemed necessary for Class A materials as the majority of operatives will be provided with site-specific asbestos awareness training.

Any excavation in Class B & C material should be attended by a competent asbestos watching brief. An environmental/asbestos consultancy will be able to provide a suitable watching brief provided they have the relevant skill set for working with asbestos in soils.

It may be prudent to consider an additional watching brief from an asbestos removal contractor in some instances as they have the ability to hand pick and remove minor visible asbestos as it arises which may assist in preventing stoppages and delays.

Further details on the training can be found in Section 6.4.

5.3 Area 3 – Includes Class C material

As noted in Sections 6.6, parts of the earthworks may be considered 'Working with Asbestos Containing Materials' as defined in the Control of Asbestos Regulations 2012.

Broadly, this work will fall into three categories:

1. Excavation, stockpiling and treatment of Class C materials in area 3 to facilitate retention or offsite disposal to landfill in accordance with the site-wide MMP in a cost-effective manner;
2. Further Class C material identified during the ground works in areas 1 & 2 through implementation of the sitewide discovery strategy; and
3. Work with visible licensed and non-license ACM over and above incidental fragments.

The following information is for use by the Contractor as a specification of a suitable methodology to comply with the requirements of CAR2012 while ensuring the material can be processed, retained or disposed of in the most cost-effective manner.

A suitable contractor must be selected on the basis of working on contaminated land and have sufficient insurance documentation which includes working with asbestos containing material.

Note: The requirements stipulated in 6.1 also apply to Class C material, below are additional requirements when working with Class C material.

Notification of works with asbestos

Should visible asbestos insulation, coatings and insulation board or degraded non-licensable asbestos be identified during the works, notification to the Health and Safety Executive (HSE) may be required. Asbestos works will either be categorised as 'Notifiable Licensed Work', 'Notifiable Non-Licensed Work' or 'Non-Notifiable Non-Licensed Work'.

Hydrock's assessment of the works categories is based on the currently available data which is interpreted in accordance with the CL:AIRE / JIWG's CAR-SOIL™ document. However, it is the Contractors responsibility to assess all available information and advise the Client if a Licensed Asbestos Removal Contractor or notification to the HSE will be required.

Additionally, there may be other bodies who may require information on the project, for example the Environment Agency. This document does not cover these requirements and it is the Contractors responsibility to ensure compliance.

Paperwork

A detailed site-specific Plan of Works (POW) and Risk Assessment should be produced by the Contractor detailing how the material is to be excavated in a safe and controlled manner. The POW should take account of the information available and the tasks to be completed. The POW should assess the risks of asbestos and provide a workable methodology but should also consider other site risks such as buried services, plant movement and excavations among others.

A site-specific induction should be compiled and presented to all active site personnel and site visitors.

All known service drawings should be compiled by the Client and issued to the Contractor.

Training

All site staff works within asbestos areas must be trained to a minimum of Asbestos Awareness, this includes all excavator operatives, dumper operatives and any other staff. It is the Contractors responsibility to decide what additional asbestos training needs are required for specific tasks.

However, as a minimum, ground operatives directly involved with the hand picking of non-licensed asbestos containing materials should be trained to a minimum of Cat B 'Working with Non-licensed Asbestos Containing Materials' and any licensed works will require Cat C 'Working with Licensed Asbestos Containing Materials'.

Any work which is 'notifiable' will require the operatives to be under medical surveillance and maintain exposure records.

This document does not cover all required documentation/qualifications required to work with asbestos containing materials. It is the Contractors responsibility to ensure compliance.

Site setup

Working areas must be segregated from the main site works by double clipped Heras fencing (or similar). Signage must be erected on the perimeter of the fencing to the works to indicate the potential for coming into contact with asbestos.

A single point of access and egress should be used to ensure that all personnel within the working area are entering and exiting the area via primary decontamination facilities. This provides better security to ensure all non-essential personnel are excluded from the area, while ensuring that all operatives are forced to transit through the primary decontamination facilities. The primary decontamination facilities should be setup on the boundary of the working area at the point of egress and should include as a minimum:

- A boot wash for the decontamination of footwear upon exiting the area;
- Clean water & wet wipes for the decontamination of exposed skin (hands and face) and RPE.
- Clear & Red 1000-gauge asbestos bags for disposable PPE and used decontamination materials;
- Requirement for a full decontamination unit should be assessed by the Contractor.

Mobile atomisers should be available within the area at all times and used as required at the point of excavation. Localised hand-held dust suppression should be made available for ground operatives undertaking hand picking works.

An enclosed lockable asbestos waste skip should be available onsite for the storage of hand-picked asbestos waste and used PPE. The skip must be secured in double clipped Heras (or similar) fencing with appropriate asbestos warning signage erected. When not in use, the skip and skip compound should remain locked at all times.

Preliminary air monitoring by a UKAS accredited laboratory should be conducted during site setup and prior to excavation works commencing. The data will provide a base line airborne fibre level which can be used as a comparison once site works commence (See 'Air Monitoring' in Section 7).

Personal Protective Equipment (PPE) & Respiratory Protection Equipment (RPE)

Note: the below is relevant to Asbestos specific PPE/RPE, general construction PPE will also be required. The Contractor is to advise on what addition construction PPE is required for site works based on their standard operating procedures.

All ground operatives whilst undertaking hand picking works must wear compliant PPE and RPE in accordance with CAR212. Advice should be sought from the requirements provided in CAR2012, 'HSG210 Task Sheet EM6' and 'HSG247 – Asbestos: The Licensed Contractors Guide'. This included but not limited to:

- Disposable overalls – Type 5/6 Cat 3 (BS EN ISO 13982-1+A1);
- Half-mask respirator (to standard EN 140) with P3 filter (face fit tested);
- Nitrile Gloves – or similar disposable types; and
- Washable steel toe capped footwear;

The requirement for the ground operatives to wear RPE and PPE during the watching brief and machine operative roles will need to be based on site conditions and should be assessed by the Contractor.

Watching brief / Asbestos removal operatives

A dual-purpose watching brief should be included in asbestos areas who have the responsibility to inspect and segregate material as it is being excavated and hand pick any ACM as it arises. The nominated asbestos trained operatives must be competent and experienced at working with asbestos contaminated land and be sufficiently experienced with working in close proximity to large construction vehicles.

Should the watching brief engineer identify ACM which requires hand picking they should signal the machine operative to place the bucket on the ground prior to undertaking hand picking. Alternatively, a centralised processing operation might be the best option for hand-picking (e.g. a picking line).

Excavation works

Excavation works should be conducted in a logical manner to minimise the potential for cross contamination. All excavation work is to be covered by a watching brief with the ability to halt works and hand pick any ACM as it arises at the point of excavation. The number of ground operatives should be conducive to the risk of visible fragments being identified. For example, only a single watching brief engineer may be required during the excavation of where sporadic or occasional ACM has been identified as there is a low likelihood of encountering significant ACM.

Plant should be retained inside the asbestos area until all works with class C materials have been completed. Once completed, the excavator, dumper all other items of plant used in the area should be decontaminated to prevent cross contamination prior to commencing work on the natural, reworked and uncontaminated soils.

Handpicking ACM

All operatives involved in the hand-picking works should be asbestos trained to the relevant level of the material being picked (licensed or non-licensed) and have the appropriate equipment, PPE and RPE and stated previously.

An 'Asbestos works supervisor' should be appointed who will ensure all required equipment and materials are present and in adequate supply (e.g. bags, tape hand held water suppression). The Asbestos works supervisor will also ensure that all operatives mask checks have been undertaken prior to commencing works and that the correct PPE/RPE is being worn.

If ACM is encountered, the watching brief engineer must signal the machine operative to place the bucket on the ground prior to undertaking hand picking. All operatives must have been briefed on the safe system of works with regards to man and machine working in close proximity.

Upon identifying a piece, and providing it is in a damp condition, it will be hand-picked and deposited into a UN approved and asbestos marked bag. In the event that the ACM is dry then it must be wet sprayed prior to hand picking to reduce the potential for fibre release.

All hand-picked material must be placed directly into red waste bags. Once a waste bag becomes full (approx. 20kg) then it will be sealed with tape and placed to ground.

Each bag of waste will be double bagged inside a clear outer bag, the bag sealed and deposited into the sealed skip. All bags of asbestos must be placed into a lockable waste storage container (skip/segregated waste compartment) at the end of each shift.

As work is being undertaken outdoors on an exposed open site there is unlikely to be significant fibre liberation, however, the rules of decontamination must still apply. At the end of each shift, the operatives must clean their footwear in the boot wash and remove their PPE and RPE using primary decontamination methods in accordance HSG210 'Asbestos essentials' Task Sheet EM8 (although Type H vacuums will not be required).

Stockpiling areas

It is envisaged that several waste/material streams will be produced during the works most of which will be subject to laboratory testing. Waste/material Streams:

- Double bagged asbestos waste (Inc. used PPE) – Hazardous;
- Made Ground – Non-Hazardous; or
- Made Ground - Hazardous.

Segregated stockpiling areas should be setup on the boundary of the working area to permit the laboratory testing of materials for disposal or retention. Testing bays should be setup along the haul road so disposal vehicles can be loaded directly without leaving the clean haul road.

Multiple stockpiling areas should be used to keep different types of material segregated, prevent cross-contamination and assist in material tracking, examples of the suggested material types are provided below:

- Unprocessed contaminated material requiring disposal;
  - I.e. Hand-picking not a feasible remediation option.
- Unprocessed contaminated material requiring processing;
  - I.e. hand-picking a feasible remediation option.
- Processed material requiring testing prior to disposal;
- Processed material requiring testing prior to retention;

- Uncontaminated material (e.g. natural soils)

Covering of hazardous stockpiles may be beneficial to avoid any windblown fibre release to potentially clean stockpiles and the local environment.

Plant decontamination

The use of heavy equipment such as excavators and dumpers can increase the potential for cross-contamination to occur.

During the made ground excavation works cross contamination is a potential risk, any plant used in the excavation of contaminated soils should be decontaminated prior to excavating 'cleaner' material.

This is likely to include pressure washing the bucket of excavators and the rear of dumpers prior to the plant being used to excavate or transport 'cleaner' materials.

6. SITE MANAGEMENT OF ASBESTOS IN SOILS

6.1 Roles and Responsibilities

The main responsibilities for the onsite management and administration of this AMP falls to the Client as land owner, but also the Principal Contractor ("PC") in their role of controlling the on-site risks. Both parties combined must ensure that the appropriate preventative and control measures are implemented and maintained during works. This control can be achieved by application of this AMP as a preventative and control measure. An AMP provides guidance and acts as a resource to inform and protect personnel required to work at the sites where ACM and asbestos contamination is present and hence to protect their health, safety and well-being.

All sub-contractors and site operatives should be provided with the site reporting procedure. This procedure will usually include the reporting of any asbestos related issues (e.g. encountering unexpected visible contamination or laboratory analysis >0.001%) to the site management team in a timely manner.

Table 2 - Key site contacts for reporting asbestos incidences.

Name	Company	Role	Phone Number	Email
Ged Flanagan	BAM	Project Director	0161 8779274	gflanagan@bam.co.uk
Ewan Bell	BAM	Project Manager	07796 278874	ewbell@bam.co.uk
David Bolderston	BAM	Site Manager	07857 272250	dbolderston@bam.co.uk

The Client / Principal Contractor / Employer has a responsibility in relation to asbestos to:

- comply with legislative requirements;
- provide and maintain, as far as practicable, a safe working environment and have a written procedure on the control of asbestos (such as within this AMP);
- provide adequate information, instruction and training (IIT) for employees and supervisors relating to asbestos (at level relative to the risk and CAR2012);
- ensure, as far as reasonably practicable, that all asbestos or ACM is identified;
- update employees on a continuous basis on the location of new or unanticipated asbestos discoveries and ensure it is controlled and communicated effectively;
- set out the required control measures to mitigate the risk from asbestos as far as reasonably practicable; and
- where applicable, provide appropriate personal protective clothing and respiratory protective equipment (PPE/RPE) and personal decontamination facilities.

6.2 Site Personnel

Employees must also be committed to working in accordance with this AMP and participate in maintaining the health and safety of themselves and their co-workers. This might be achieved as a

result of their personal experience, training (e.g. Asbestos Awareness), or by complying with the site rules, emergency and reporting procedures.

Site operatives have a responsibility in relation to asbestos to:

- take reasonable care that their actions do not endanger the health and safety of themselves and others;
- comply with instructions given by the Client/PC for their own health and safety and that of others;
- comply with all work procedures and instructions related to asbestos;
- co-operate with supervisors and managers in their fulfilment of legislative obligations;
- report immediately to their supervisor any perceived asbestos risk;
- wear and maintain in good order any protective clothing and apparatus provided to them; and
- ensure all supplied equipment is in good working order.

6.3 Lines of Communication

It will be the overarching responsibility of the Project Manager to update the Client should asbestos related issues arise onsite. While the Client cannot delegate their duty, they are normally reliant on the swift passage of information from the site team (PC) to be able to react accordingly.

Hydrock should be informed of any unexpected ACM finds or positive laboratory test results as soon as practicable. Hydrock will then reassess the AMP with the new data and reissue it with further recommendations if required.

6.4 Staff Training & Experience

Training and sharing of information are the most important elements of this AMP. All site personnel employed at the site who have the potential to encounter ACM must be provided with Category A 'Asbestos Awareness' training as a minimum.

The training must include a site-specific module relating to the asbestos in soils found to date, the training should not be confined to a generic asbestos awareness focussed around asbestos in buildings. The course should provide site operatives with sufficient knowledge to be able to spot fragments of ACM, within soils, construction and demolition arisings (and pipes/ducts), and provide them with an adequate awareness of the health risks associated with asbestos.

All site personnel involved in the direct excavation, processing, handling and testing of made ground should be provided with 'asbestos awareness' (as specified above) as a minimum.

Appropriate asbestos awareness training is intended to provide site operatives the knowledge required to identify the warning signs of visible AiS and to act accordingly. These actions are mainly to: cease works; make the area safe; and report the incident to the site management team.

It may prove prudent to train some staff to a higher level of training so work to 'make safe' or 'encapsulate' suspected ACM's can be undertaken while waiting for a competent asbestos contractor/consultant to attend site. This training should be Category B 'Working with non-licensed Asbestos' and the syllabus and practical training should be based on training needs analysis. Practical training should include, but not limited to:

- The appropriate use of RPE/PPE;

- Safe wetting down of ACM's to minimise fibre release;
- Safe covering suspected ACM's with 1000guage polythene;
- Safe quarantine/fencing of area;
- Decontamination procedure;
- Bagging, storage and disposal procedure for used PPE/RPE.

It is not necessary to train operatives to undertake hand picking work as this activity will be carried out by a competent asbestos contractor where required.

6.5 Site Inductions & Permits to Dig

All site operatives must be provided with a site induction as part of the CDM Regulation (2015). A section in the site induction which focuses on the site-specific issues relating to AiS should be included. The induction should include a site plan identifying the known areas of asbestos risks and any area which is deemed to have a potentially high risk of encountering otherwise unexpected asbestos contamination.

Hydrock have compiled a drawing displaying the relative risk posed by AiS across the site for inclusion within the site induction. Drawing BAM-HYD-XX-XX-M2-GE-0002.S2.P1 in Appendix B.

The induction should include details of:

- the nature of the work carried out by the worker and if excavation work in Made Ground is required;
- the nature of the risks associated with work within Made Ground;
- the control measures required to carry out the work safely;
- the procedure to be followed upon encountering unexpected ACM; and
- who any issues should be reported to.

A record of the induction and the date it was undertaken should be recorded. If new information or a reissue of this AMP occurs, a toolbox talk should be provided to update the site staff on any new requirements.

Presuming that a permitting system is in place at Chorlton, a section should be added to the 'permit to dig/work' form to record any asbestos related risks in the area to be excavated and the applicable control measures. This will provide proof that the area has been checked and that task specific information has been passed to the excavation team.

6.6 Asbestos Licensing

The information provided thus far has been assessed by a competent person (the principal author of this report) and the information has been inputted into the CL:AIRE / JIWG 'Decision Support Tool for work categorisation' for work in Made Ground.

Given the information currently provided, general site works in Class A & B materials are likely to fall outside the remit of the Control of Asbestos Regulations in terms of licensing assessment (i.e. CAR DOES NOT APPLY). However, it should be noted that several tasks and locations on the site areas will require the use of operatives trained specifically to 'work with asbestos containing materials'. Additionally, several gaps in the information have been identified which will require further assessment prior to commencing works (See Section 9)

See Appendix C for a copy of the CL:AIRE / JIWG Decision Support Tool (DST) for excavations in Made Ground.

6.7 Site Records

A detailed site-specific Risk Assessment and Method Statement (RAMS) specifying how the material is to be excavated in a safe and controlled manner will need to be produced by the Contractor. All RAMS should take account of the information within this document and include a section for asbestos risks.

The RAMS should assess the risks of asbestos and provide a workable methodology but should also consider other site risks such as buried services, plant movement and excavations among others. Additional RAMS will be required from any subcontractors who have a specific task to complete relating to 'working with asbestos' (Class C, D & E materials). For example, an asbestos removal contractor who may be employed to undertake hand picking works will require an additional RAMS for their specific work activity.

A material tracking system should be used and maintained to keep a record of all excavated material and stockpiles in accordance with CCG's MMP (Ref: CCG-C-20-11427).

7. AIR MONITORING REQUIREMENTS

7.1 Background Monitoring

Air monitoring should be undertaken at the site to establish site background fibre levels. These results will be used as a comparison once the main works commences to ensure there is no measurable difference in airborne fibre levels during the works.

If elevated airborne fibre levels are present on, or at, the boundary of the site at this stage, then the relevant concentration can be discounted during subsequent air monitoring visits due to background contamination. This of course does not mean that the Contractor can dispense with their responsibilities referred to within this AMP and may require further investigation / assessment to understand the source and fibre types being recorded.

Airborne asbestos fibre control limits applicable to any work with asbestos will include:

- <0.01 f/mL - **acceptable limit**
  - » Equal to background and detectable limits. Level to achieve for air clearances.
- >0.01 f/mL - **alert/action required**
  - » Review control measures, investigate the cause and implement controls to eliminate or minimise exposure.

The preliminary air monitoring should include 1 day of monitoring by a UKAS accredited laboratory. This should consist of 12 static background fixed monitoring points situated down wind of the main excavation area and run for a minimum of 4 hours. Period monitoring should then be conducted on an ad hoc basis during any periods of weather when the creation of nuisance dust is potentially at its highest.

Further monitoring should be conducted by a UKAS accredited laboratory during the excavation and processing of Class B and C materials to ensure that the mitigation measures in place are suitable and sufficient. This should consist of 1 week of monitoring undertaken whilst excavation works are being conducted. The analyst will be able to provide advice on the air monitoring strategy and suitable locations for monitoring points, but an example scope for each full day visit is detailed below:

- 4nr. static reassurance monitoring points situated down wind of the main excavation area and run for a minimum of 4 hours.
- 4nr. static activity/reassurance monitoring points situated down wind of the main excavation in close proximity to the works area (within 10 metres).

Based on the available data for the site all static tests results should not exceed the original background fibre level or 0.01 f/ml, whichever is greater.

The frequency of air monitoring visits can be downgraded once they have proven that all control measures are suitable and sufficient. Should areas of sporadic or gross visible ACM contamination be identified the requirement for air monitoring should be made on a case by case basis.

7.2 Personal Monitoring

Personal air monitoring should be conducted by a UKAS accredited laboratory during the excavation and processing of class C materials to ensure the P3 filtered half mask in use are sufficient.

Should areas of sporadic or gross visible ACM contamination be identified the requirement for personal monitoring should be made on a case by case basis.

8. DISCOVERY STRATEGY

In areas of the site where no works are taking place but it is suspected that asbestos containing materials may exist at depth, there will only be a potential risk if these materials are exposed on the ground surface. If there are buried ACM on the site, they cannot give rise to airborne fibres unless uncovered.

The procedure to be followed in the event of suspected ACM being uncovered can be found in Appendix A.

The primary response should be to avoid any further disturbance of the material and to prevent access by the placement of appropriate barricades.

If the material appears friable or there is a risk of further disturbance from the weather (such as high winds) the material should be dampened down and covered with heavy gauge polythene or geo-fabric, either of which should then be secured with clean fill material, rocks or other heavy items.

Warning signs should be put in place, and the discovery should be included in any daily toolbox talks until the risk is removed by a competent asbestos contractor.

All incidents concerning the uncovering of suspected ACM are to be dealt with and recorded via the site management team. In no circumstances should site operatives or sub-contractors attempt to deal with the contamination.

Report the incident to the site management team immediately, including details of;

- date and time of uncovering;
- nature of the problem and location;
- supply any photographs if held; and
- details of the response/action taken.

The management team will then organise a suitably qualified & experienced asbestos specialist to investigate the suspected ACM and obtain representative samples if required.

Once the material has been confirmed as containing asbestos the material may be removed in accordance with the CAR 2012 and the approved ACOP's. If the material is confirmed to be 'non-asbestos' the fencing can be removed and works can recommence.

Details of the event should be passed to Hydrock for inclusion in subsequent reissues of this AMP.

8.1 Working with Asbestos

No hand-picking should be conducted by operatives who hold asbestos awareness only.

9. UNCERTAINTIES AND LIMITATIONS

9.1 Site-specific comments

Due to the constraints imposed by the hard standing to the north of the site, and relatively narrow information provided for visible asbestos, Hydrock recommends that further information regarding full extent of the contamination is sought.

Due to the extensive topsoil cap across the site, further information should be sought that the inferred extent and frequency of asbestos discussed in this report is a reasonable reflection of actual ground conditions. A further sub-surface inspection may include the use of trial pits to inspect the Made ground material for evidence of visible contamination.

It should be noted that although substantial boreholes have been conducted across the site only a small percentage of Made Ground material has been inspected. Due to the discrete nature of asbestos in soils further sporadic and/or frequent areas of asbestos contamination may remain undiscovered. The provided 'Discovery Strategy' should be used to ensure unidentified contaminated material is dealt with swiftly and efficiently.

9.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of the BAM Construction Ltd (the Client), under the terms of appointment for Hydrock. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided.

This report details the findings of work carried out by others and the reports cannot therefore be relied upon. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

Hydrock has used reasonable skill, care and diligence to assess the information and estimate the risks posed by asbestos without compromising the practical difficulties of undertaking largescale earthworks package. The inherent variation of ground conditions allows only averaged areas to be estimated and actual conditions at any locations and depths may vary significantly. At intermediate locations, between the supplied boreholes ground conditions can only be inferred.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

The work has been carried out in general accordance with recognised best practice. 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.

Please note that notwithstanding any site observations concerning the presence or otherwise of asbestos-containing materials, this report does not constitute a formal survey of all potential asbestos hazards as asbestos is an immobile and difficult contaminant to delineate. The full extent of asbestos contamination within the site boundary is unlikely to be revealed until all vegetation and topsoil is removed and extensive ground excavation works commence.

9.3 Asbestos Management Plan review/updates

This AMP is a working document designed to effectively manage and minimise asbestos-related health risks to personnel working on, living adjacent to, or visiting the site and should be reviewed/updated as new information becomes available.

A mechanism for ensuring this AMP is periodically reviewed should be in place for the duration of the project. In particular Hydrock should be informed should any new information, results, reports or incidents relating to asbestos become available. The AMP should be revised and reviewed by a competent person as changes to the current understanding of site contamination conditions, work requirements, legislation, or construction scope, arise.

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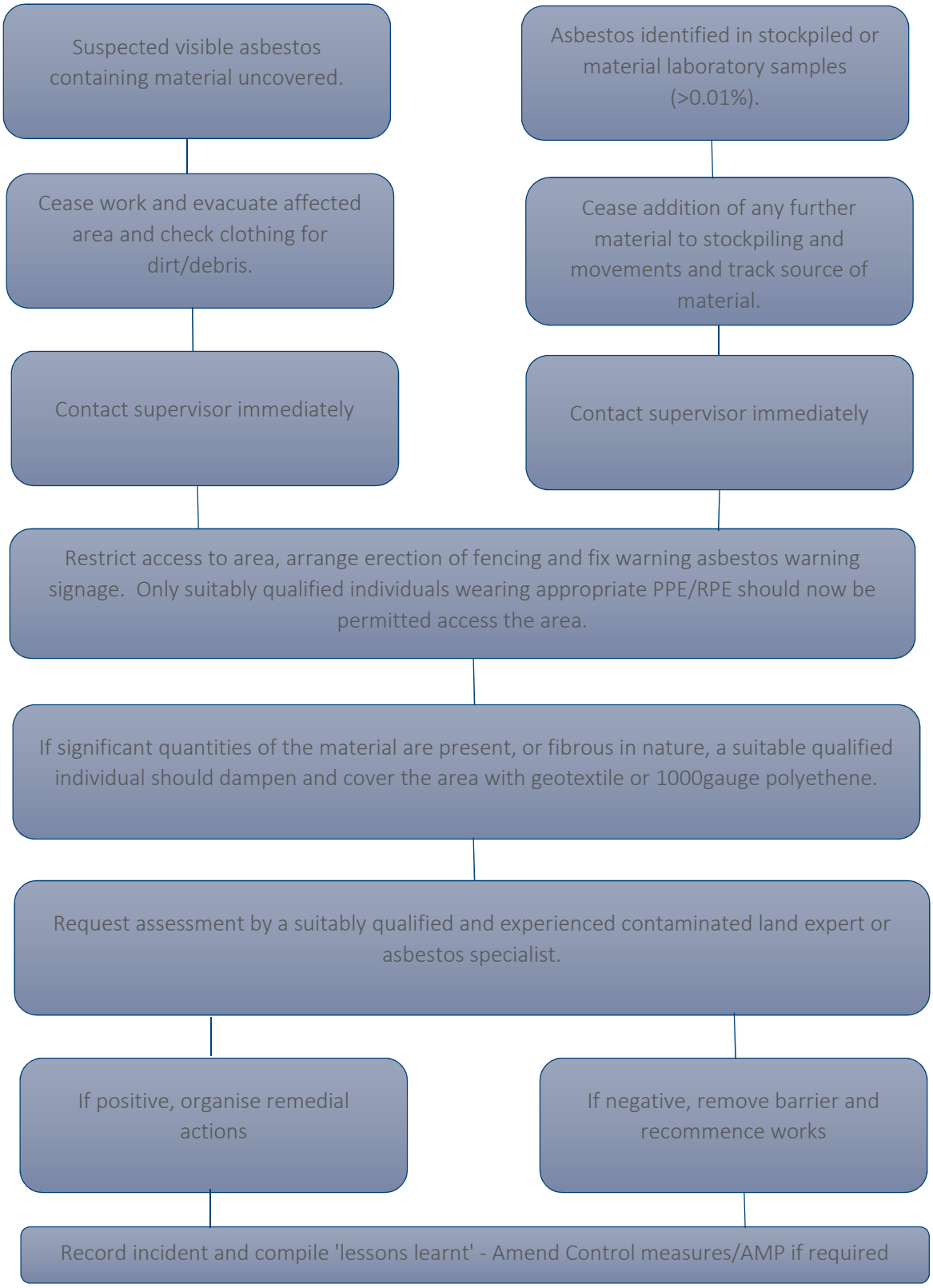
Appendix A - Emergency procedure



Appendix B - Drawings

OS NORTH

WS39 TP18 D-WS08 0.3m : 0.061% WS40 TP17 WS37 D-WS07 WS34 WS38 TP16 WS35 0.4m : 0.048% D-WS01 D-BH02 WS27 0.2m : 0.043% WS36 D-DCP01 WS26 D-DCP02 TP02 WS18 WS02 0.3m : <0.1%% 0.2m : 0.003% WS10 WS19 WS28 0.2m : 1.5% WS2 TP04 D-HP03 TP01 WS11 D-WS03 0.15m : <0.1%% WS20 0.15m : 0.047% WS29 0.4m : 0.003% D-BH03 D-DCP03 WS12 WS21 0.3m : 0.253% TP06 D-WS05 WS30 WS3 TP03 0.3m : 0.005% D-DCP04 D-WS04 WS13 WS22 D-WS06 WS4 D-DCP05 WS14 WS31 TP10 TP13 WS32 WS23 TP05 WS5 D-HP02 0.3m : <0.1%% WS15 TP07 WS24 TP09 0.3m : <0.1%% TP12 WS33 TP15 0.3m : <0.1%% WS6 WS16 WS25 0.30-0.50m : 0.618% WS7 TP08 WS17 D-HP01 WS8 TP11 0.3m : <0.1%% WS1 WS9 TP14 0.2m : <0.1%%

KEY

- Quantified asbestos >0.01%
- Quantified asbestos <0.01% - <0.001%
- Quantified asbestos <0.1% (unreliable data)
- Screened - No asbestos detected

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
xxxxxxx

REV.	FIRST ISSUE					
P1	LW	06/02/20	JM	06/02/20	DH	06/02/20
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
4 Lakeside
Festival Way
Stoke-on-Trent
ST1 5RY
t: +44(0) 1782 261919
e: stoke@hydrock.com
or visit www.hydrock.com

CLIENT
BAM CONSTRUCTION

PROJECT
CHORLTON HIGH SCHOOL

TITLE
ASBESTOS OVERLAY

HYDROCK PROJECT NO.	SCALE @ A3
C-12547	1:1000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
BAM-HYD-XX-XX-DR-GE-0001	P1

OS NORTH

Area 1

Area 2

Area 3

WS39 TP18 D-WS08 0.3m : 0.061% WS40 TP17 WS37 D-WS07 WS34 WS38 TP16 WS35 0.4m : 0.048% D-BH02 D-DCP01 WS26 D-DCP02 TP02 WS18 WS02 0.3m : <0.1% 0.2m : 0.003% WS27 0.2m : 0.043% D-WS01 WS36 WS10 0.2m : 1.5% WS2 D-HP03 TP01 WS11 0.15m : <0.1% WS19 TP04 WS28 D-WS03 WS20 0.15m : 0.047% D-BH03 WS29 0.4m : 0.003% D-DCP03 WS12 WS3 WS21 0.3m : 0.253% TP06 D-WS05 WS30 TP03 0.3m : 0.005% D-DCP04 D-WS04 WS13 WS22 D-DCP05 WS4 D-WS06 WS31 TP10 TP13 WS14 WS32 TP05 WS23 WS5 D-HP02 0.3m : <0.1% WS15 WS6 TP07 TP09 0.3m : <0.1% WS24 TP12 WS33 TP15 0.3m : <0.1% WS16 WS25 0.30-0.50m : 0.618% WS7 TP08 WS17 D-HP01 WS8 TP11 0.3m : <0.1% WS1 WS9 TP14 0.2m : <0.1%

KEY

- Quantified asbestos >0.01%
- Quantified asbestos <0.01% - <0.001%
- Quantified asbestos <0.1% (unreliable data)
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Hydrock
4 Lakeside
Festival Way
Stoke-on-Trent
ST1 5RY
t: +44(0) 1782 261919
e: stoke@hydrock.com
or visit www.hydrock.com

CLIENT
BAM CONSTRUCTION

PROJECT
CHORLTON HIGH SCHOOL

TITLE
ASBESTOS AREAS

HYDROCK PROJECT NO.	SCALE @ A3
C-12547	1:1000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
BAM-HYD-XX-XX-DR-GE-0002	P1

Appendix C – CL:AIRE / JIWG Decision support tool

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for the Categorisation of Work Activities Involving Asbestos in Soil or Construction & Demolition Materials in accordance with CAR 2012

This spreadsheet tool provides the user with a decision support platform designed by the Joint Industry Working Group to assist in the categorisation of work under CAR2012, and supports the JIWG Industry Guidance on the Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition Materials (CAR-SOIL™,2016). The spreadsheet should be used by **competent persons** in conjunction with the guidance in this publication. The spreadsheet does not replace the sound professional judgement of a competent person.

The aim of developing this tool is to provide industry with a consistent decision making format that is aligned with UK health & safety and environmental regulatory policies, and is consistent with the wider objectives of the JIWG.

The hazard and risk ranking approaches take influences from the HSG227 material and priority scoring systems and identifies key hazard and risk factors that are relevant to the management of risk from exposure to asbestos contaminated soils, made ground or construction & demolition materials.

The spreadsheet is designed to lead the user through a series of options for each identified factor. These factors are grouped into Stages with each stage providing a numerical and/or qualitative hazard or risk ranking phrase. The user is lead sequentially through each Stage with the stages ordered from left to right. A step by step guide to each stage is provided below:

General points:

Always choose the dropdown option that best fits your understanding of factor under consideration. If one option does not sufficiently reflect the dominant situation on-site re-run the DST using the most applicable options sequentially.

NB - inputs may be based on a combination of field visual observations and laboratory analysis. The tool may be used to model actual ground conditions, or to develop outputs for hypothetical and potential scenarios hat may be encountered on site. Where assumptions are made based on field observations, justification for those must be provided in the Plan of Work.

Acknowledgements:

DST developers: Simon Cole - AECOM, Garry Burdett - Health & Safety Laboratory, Steve Forster - Remedia Group

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.
This tool has been developed and is made freely available by the JIWG.

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	C-12547
Site Name	Chorlton School
Client	BAM
Run by	J. Macfarlane
Date	06.02.2020
Scenario details	Class A Material - Natural Soils - No ACM contamination identified or anticipated

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Trace quantities - <0.0001 to 0.001 %wt/wt	0
Sub-total		**0**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Negligible**

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.001 fibres/ml	0
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Naturally occurring rock, stone (crushed or not)	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Negligible	0
Sub-total		**8**
Exposure ranking		Low
Combined hazard and exposure ranking	**8**	Very Low

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	CAR do not apply
RPE*	None
Dust Suppression**	None
Hygiene/Decontamination***	None

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	C-12547
Site Name	Chorlton School
Client	BAM
Run by	J. Macfarlane
Date	
Scenario details	Class A - Topsoil - Single low level detection in one sample, no visible ACM

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Bonded ACMs: cement, vinyl, composites, textured decorative coatings, bitumen products	1
Extent of degradation of ACMs at outset of work	Degraded (Significant degradation in ACM; material has lost its basic integrity)	3
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Distribution of Visible Asbestos Across Affected Area	Occasional/random occurrences of visible contamination by ACMs	1
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Trace quantities - <0.0001 to 0.001 %wt/wt	0
Sub-total		**0**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Negligible**

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It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.001 fibres/ml	0
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Naturally occurring rock, stone (crushed or not)	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Negligible	0
Sub-total		**8**
Exposure ranking		Low
Combined hazard and exposure ranking	**8**	Very Low

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	CAR do not apply
RPE*	None
Dust Suppression**	None
Hygiene/Decontamination***	None

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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Asbestos in Soil and Construction & Demolition Materials

Project Reference	C-12547
Site Name	Chorlton School
Client	BAM
Run by	J. Macfarlane
Date	06.02.2020
Scenario details	Class B - Made Ground - Dominated by an absence of loose fibre with a few positive low level samples - No visible

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	Sporadic/random occurrences of visible contamination by ACMs	2
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Trace quantities - <0.0001 to 0.001 %wt/wt	0
Sub-total		**0**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Negligible**

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It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.01 fibres/ml	1
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Made Ground - Recycled Aggregate, Track Ballast	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Very low	1
Sub-total		**10**
Exposure ranking		Low
Combined hazard and exposure ranking	**10**	Very Low

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	CAR do not apply
RPE*	None
Dust Suppression**	None
Hygiene/Decontamination***	None

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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Asbestos in Soil and Construction & Demolition Materials

Project Reference	C-12547
Site Name	Chorlton School
Client	BAM
Run by	J. Macfarlane
Date	06.02.2020
Scenario details	Class C - Made Ground - Dominated by positive hits for loose fibre and cement (3 incidencies of reported insu) - No Visi

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	Occasional/random occurrences of visible contamination by ACMs	1
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Low quantities - >0.01 to <0.05 %wt/wt	2
Sub-total		**14**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Medium**

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.1 fibres/ml (4 Hr TWA) or <0.6 fibres/ml (10 minute STEL)	2
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Made Ground - Recycled Aggregate, Track Ballast	4
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Sub-total		**13**
Exposure ranking		Medium
Combined hazard and exposure ranking	**27**	Medium

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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Appendix D - Photographs



Photograph 1. Example of incidental Asbestos Cement in Made Ground (stock photograph)



Photograph 2. Example of incidental frequent Asbestos Cement in Made Ground (stock photograph)



Photograph 3. Example of Asbestos Cement adhered to base of concrete slab (stock photograph)



Photograph 4. Example of Fibrous asbestos board/Insulation board (stock photograph)



Photograph 5. Example of ClOF Asbestos Insulation in Made Ground (stock photograph)



Photograph 6. Example of a duct containing asbestos insulated pipes and asbestos debris (stock photograph)

Appendix E – Bulk Sample Results

(Awaiting Results)

Appendix F – Air Monitoring Certificates

(Awaiting results)

Appendix G – Asbestos Awareness Poster

POTENTIAL ASBESTOS CONTAINING MATERIALS AT CHORLTON SCHOOL DEVELOPMENT

THE MAJORITY OF ASBESTOS IDENTIFED TO DATE IS SMALL BUNDLES OF LOOSE ASBESTOS FIBRE WITHIN THE MADE GROUND. HOWEVER, IN SOME AREAS OF SITE THERE IS THE POTENTIAL TO ENCOUNTER VISBLE ASBETOS CONTAINING MATERIAL WITHIN THE SOIL. CHECK THE ASBESTOS MANAGEMENT PLAN OR WITH YOUR SUPERVISOR PRIOR TO STRTING WORK!



Photo 2 – Example of asbestos fibrous board in Made Ground.



Photo 1 – Example of Asbestos Cement fragments in Made Ground.



Photo 3 – Example of Asbestos Insulation in Made Ground.

PRIOR TO STARTING WORKS

1. Check Asbestos Management Plan for known locations asbestos contamination.
2. Discuss works with supervisor.
3. Ensure adequate procedures/controls are included in your RAMS.
4. Is asbestos awareness required for your works?
5. Is an asbestos watching brief required?
6. If in doubt, postpone works and check with your supervisor.

DURING WORKS

1. Proceed with care.
2. Check excavation arisings for suspected asbestos materials.
3. If you spot any suspect material, cease works immediately and follow adjacent procedure.

