



Airborne Environmental Consultants Ltd



**LAND ASSESSMENT FOR
ASBESTOS IN SOILS AT**

**PROSPECT HOUSE (CAMBERWELL PARK SCHOOL),
BANK HOUSE ROAD,
BLACKLEY,
MANCHESTER,
M9 8TL**

March 2020



AEC are UKAS accredited for asbestos in soils analysis

Report prepared for:	Sheraz Malik, Interserve Construction Ltd Woodhouse Drive Wigan Lancashire WN6 7NT
Report reference:	J180234
Issue date:	March 2020
Survey completed by: Scott Brookes Lead Surveyor	
Approved by: Darren Evans Technical Director	

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1.0 EXECUTIVE SUMMARY

A land assessment and sampling of soils for asbestos contamination has been undertaken by AEC at Prospect House (Camberwell Park School), Bank House Road, Blackley, Manchester, M9 8TL.

This executive summary should be read in conjunction with Section 2.0 (Project Scope), 4.0 (Inaccessible Areas) and Section 5.0 (Recommendations) as well as Appendix I (Item Number Location Plans) and Appendix II (Sample Register & Results).

During the assessment the following asbestos containing materials have been identified:

- Bitumen pipe
- Bitumen pipe debris
- Cement

Urgent remedial actions are required at this stage. However, the identified asbestos materials will require safe management as documented in Regulation 4 of the Control of Asbestos Regulations 2012 if excavation is not immediately planned. Advised remedial actions are detailed in the recommendations section of this report.

N.B. For further sample details, please refer to Appendix II Building Register & Results and Appendix III Certificate of Bulk Fibre Analysis.

2.0 INTRODUCTION AND AEC's BRIEF

At the request of Sheraz Malik of Interserve Construction Ltd, Airborne Environmental Consultants Ltd have carried out a soils and land assessment for asbestos contamination at Prospect House (Camberwell Park School), Bank House Road, Blackley, Manchester, M9 8TL to facilitate the removal of the remaining concrete slab and the soil / crush beneath in preparation for the next construction phase on the site.

AEC have been requested to provide the following services:

- To provide an experienced asbestos assessment team to site to carry out a surface assessment for contamination by asbestos-containing materials (ACMs) to the land identified on the plan drawn on site by AEC.
- To carry out trial pits in specified locations to a depth of 200mm, with samples taken from a cross section of the removed soil / crush.
- To analyse any soil samples for asbestos content as per AEC's UKAS accreditation to ISO 17025. This to include a stage 1 analysis/screen for identified asbestos materials with analysis proceeding to stage 2 (gravimetric assessment of asbestos content) where ACMs are identified.
- To prepare a detailed written report showing the location, extent and condition of any identified asbestos materials along with any remedial recommendations necessary. All recommendations shall be made considering the proposed excavation of the land.

The survey was carried out by Scott Brookes of AEC and was completed on Thursday 12th March 2020.

SURVEY PLAN

The exact areas to be surveyed and the location of the trial pits requested by the customer, as well as any variations to the scope agreed on site, are as follows:

Area to be surveyed	Any variations to scope or exclusions by customer on site
Surface assessment and trial pits from the footprint of the former Camberwell Park School site. Trial pits were dug to a depth of 200mm.	None

The methodology associated with this survey is given in Appendix V of this report.

A GUIDE TO THE SURVEY RESULTS

An item number is used throughout this report to relate to a soil sample relating to its location on site.

When soil is sampled for asbestos analysis it is given a unique laboratory sample number so that the bulk sample can be traceable within AEC's UKAS accredited laboratory. In addition to the laboratory sample number the bulk sample is given an item number, which relates the possible asbestos installation to its location on site. Where a material has not been sampled, but is strongly presumed (typically to be the same as a sampled installation) or presumed (typically if not accessible) to contain asbestos, the material is also given an item number, again relating the installation to its location on site. The item number is used on the item number location plans in Appendix I and in the building register and results in Appendix II to help identify where the asbestos installations are located on site.

Appendix I and Appendix II must be read in conjunction with the rest of this survey report, especially Section 4.0 Inaccessible areas and project specific restrictions and Section 5.0 Recommendations.

The certificate of bulk fibre analysis in Appendix III uses a laboratory sample number to show the result of the analysis carried out on a soil sample taken on site during the survey. To relate a laboratory sample number on the certificate of bulk fibre analysis to the building register and results in Appendix II, and thus find the location of the asbestos installation on site, simply look up the laboratory sample number in the sample register to obtain its item number or vice versa, if you are reading the sample register and results in Appendix II and wish to obtain further details on the analysis carried out on a bulk sample. If you have any concerns about the accuracy of the data, contact AEC in the first instance, as queries may be answered and additional costs prevented.

For a full explanation of the various headings used in the building register and results table see Appendix II.

Sampling of soils and land assessment for asbestos is not accredited by UKAS to ISO 17020.

3.0 DESK STUDY AND GENERAL SITE INFORMATION

Prior to land excavation a geotechnical study is typically commissioned by the client prior to any works and before asbestos sampling.

Information on possible other land contaminants and hazards must be supplied by the client prior to the asbestos investigation works so that an accurate assessment of risk can be undertaken and so that the assessment of the site can proceed safely.

AEC have requested this information and a review of this has revealed the following:

3.1 Desk study

Information requested	Information provided
Building(s) Type / Address	Prospect House (Camberwell Park School), Bank House Road, Blackley, Manchester, M9 8TL
Age(s) of construction	1970s
Site description	The site to be assessed is the former Camberwell Park School. The site consists of the concrete slab of the footprint of the school and surrounding grass verged areas to the rear of the former school.
Usage of site	Site to be excavated is in the final process of demolition to remove the slab and prepare it for the new construction works to commence.
Site conditions	Concrete slab and exposed grassed areas.
Drawings / Plans	Ref: FS0831-JMA-01-00-DR90-0001
Information on any existing contaminants / hazards	It was noted in AEC demolition report ref J155670 that AIB packers, asbestos cement collars were present to within the floor makeup within the kitchen area. It was also noted the AIB shuttering and asbestos cement shuttering were present within the sewage duct access points throughout the site.

3.2 General site conditions and description

Surface	The surface consists of a thick layer of screed over a layer of concrete with a layer of poured bitumen between. The bitumen has been sampled and has been identified as non-asbestos, please refer to AEC report J180146 for further details. A bitumen felt damp proof course was present throughout the site and this has been sampled as part of this survey and has been identified as non-asbestos. The areas to the rear of the school were landscaped grass verges, no visible ACMs were present to these areas.
Trial pits	Immediately below the surface to a depth of approximately 200mm is a clay soils layer with a mix of brick, stone and crush mixed in.

	It should be noted that during the excavation of several pits, asbestos bitumen pipework was exposed. Some of this pipework had already been excavated and consequently damaged leaving asbestos bitumen pipe debris mixed into the adjacent spoil stacks. Clay waste pipes were also observed within several trial pits around the site.
General site conditions	Parts of the concrete slab were being removed as part of the demolition process, this was mainly to the former kitchen area where the AIB packers and cement collars have already been identified. At the time of the survey there were also trial pits being dug for an environmental geologist survey throughout the site. A number of these trial pits were utilised during this asbestos survey to acquire samples of the excavated soil.

4.0 INACCESSIBLE AREAS & PROJECT SPECIFIC RESTRICTIONS

During the assessment, the following areas were agreed with the site representative of Interserve Construction Ltd to be inaccessible for the following reasons:

4.1 Agreed inaccessible areas whilst on site
N/A
4.2 Access limitations
Trial pits on the slab were accessed by operatives working for Inglenorth breaking through the screed and concrete slab. This limited the amount of trial pits that could be dug during the survey. Upon the discovery of the asbestos bitumen pipes the survey was concentrated on exposing the potential locations of any further pipes beneath the slab.
4.3 Unsafe conditions
N/A
4.4 Client restrictions
N/A

4.5 General restrictions

AEC have visually inspected the surface of the site and within the excavated trial pits and taken samples of the material excavated from the pits down to an approximate depth of 200mm.

Trial pits are however a localised snapshot of conditions pertaining underground and there is always the possibility of these not being fully representative of sub-surface conditions or of hotspots not being identified using a trial pit assessment approach.

Although the presence of asbestos has not been identified in many of the trial pits excavated as part of this assessment, it should be presumed that asbestos could be present and caution should be exercised during any excavation works carried out in the future.

If any suspect materials are encountered in these areas it is recommended that works cease immediately until such time that the material can be sampled, analysed and confirmed to be asbestos-free.

5.0 RECOMMENDATIONS

Recommendations are based upon the product type and condition for removal on land and are also based upon the HSE guidance document HSG 264 material assessment, and a subjective risk assessment based upon the future use of the site.

Should any ACMs be identified then work to remove these materials shall be considered as licensable asbestos removal works or notifiable non-licensed work (NNLW).

Work involving either the deterioration of non-licensed products, or work on degraded (i.e. those in a poor condition, such as fly-tipped waste) non-licensed products are classed as NNLW and the work notified to HSE.

Please note that the implementation of appropriate remedial measures is a requirement under the Control of Asbestos Regulations 2012 where there is a risk of exposure to asbestos. This will also apply to future management of the site if ACMs are to remain under the land i.e. to comply with regulation 4 of CAR 2012. AEC shall also use the document CAR-SOILS by CL:AIRE as best practice when dealing with land contaminated with asbestos.

In view of the findings of the survey, and it is known that excavation is planned at some point in the future, the following recommendations are made:

5.1 It is recommended that if this report is to be used for future excavation or exploration purposes then AEC be employed to revisit the site to monitor the excavation works and/or attend site should any suspicious materials or 'hot spots' be identified.

5.2 It is recommended that AEC be employed to attend site during excavation of soils known to contain ACMs to provide risk assessment advice, such as site segregation, perimeter and personal air monitoring etc.

5.3

Items requiring immediate remedial action (as soon as possible and ideally within 3 months)

Items 13, 15, 17, 18, 19 and 20. Installations and fragments of non-licensed products should be removed by 'litter picking' from surface / soil.

5.4

Items requiring remedial action in due course (within 6 months).

N/A

5.5

Management actions to be implemented as soon as possible but have no immediate risk of exposure.

N/A

- 5.6 It is recommended that an independent, UKAS accredited asbestos laboratory be employed to manage/monitor any required asbestos removal, and where appropriate carry out all visual inspections and air monitoring as outlined in HSG 248 Asbestos: The analysts guide for sampling, analysis and clearance procedures.
- 5.7 If any areas detailed in Section 4.0 Inaccessible Areas are to be accessed or worked upon it is recommended that the areas be subjected to an appropriate investigation prior to works commencing. Until that time asbestos should be presumed to be present in these areas.
- 5.8 It is recommended that, if this report is being relied upon for tendering purposes, the amounts of asbestos materials in the register are approximate estimates only, from the surface survey and trial pits. Sites should be visited to confirm exact amounts. This report is not a specification.
- 5.9 There is a possibility of further ACMs being present due the techniques employed to investigate i.e. localised trial pits.

N.B.

1. It is a requirement of the Control of Asbestos Regulations 2012 to use licensed asbestos removal contractors for all significant work with asbestos sprayed coatings, asbestos insulation/lagging, and asbestos insulating board (AIB) and where the Control Limit may be exceeded. This applies to works on land as well as in buildings. This work requires a 14–notification period to HSE for contaminated land, as considered construction, prior to commencement of works. Further to this, it is a requirement of the Control of Asbestos Regulations 2012 that work involving either the deterioration of non- licensed products, or work on degraded (i.e. those in a poor condition) non–licensed products be classed as notifiable non–licensed work (NNLW) and the work be notified to HSE. It is considered that in almost all cases, work on asbestos in soils or contaminated land will involve deteriorated materials and therefore be NNLW. Licensed asbestos removal contractors are not legally required for work with lower risk asbestos products such as asbestos cement, bitumen products, vinyl flooring products, textured coatings etc, or for NNLW work. However, in ALL instances of work with asbestos the requirements of the Control of Asbestos Regulations 2012 will apply and appropriate assessments, plans of work, controls, PPE/RPE and training will be required.
2. It is a requirement of Regulation 4 of the Control of Asbestos Regulations 2012 that all remedial actions be carried out. Following this, the implementation of an asbestos management plan should be carried out, which should be subject to annual review and include periodic condition inspections of all identified ACMs. This applies to land where ACMs are in the soil and are landscaped.
3. In cases of emergency where the uncontrolled release of asbestos is suspected, AEC can offer an independent analytical consultancy service for items such as initial advice, sampling, air monitoring and subsequent management of licensed contractors for any make-safe/removal work that may be found to be necessary, by employing licensed contractors for any advice regarding the report or for any technical assistance relating to any other issues then do not hesitate to contact one of the following.

Darren Evans – Technical Director
darren.evans@aec.uk.net

Daniel Shuttleworth – Quality Manager
daniel.shuttleworth@aec.uk.net

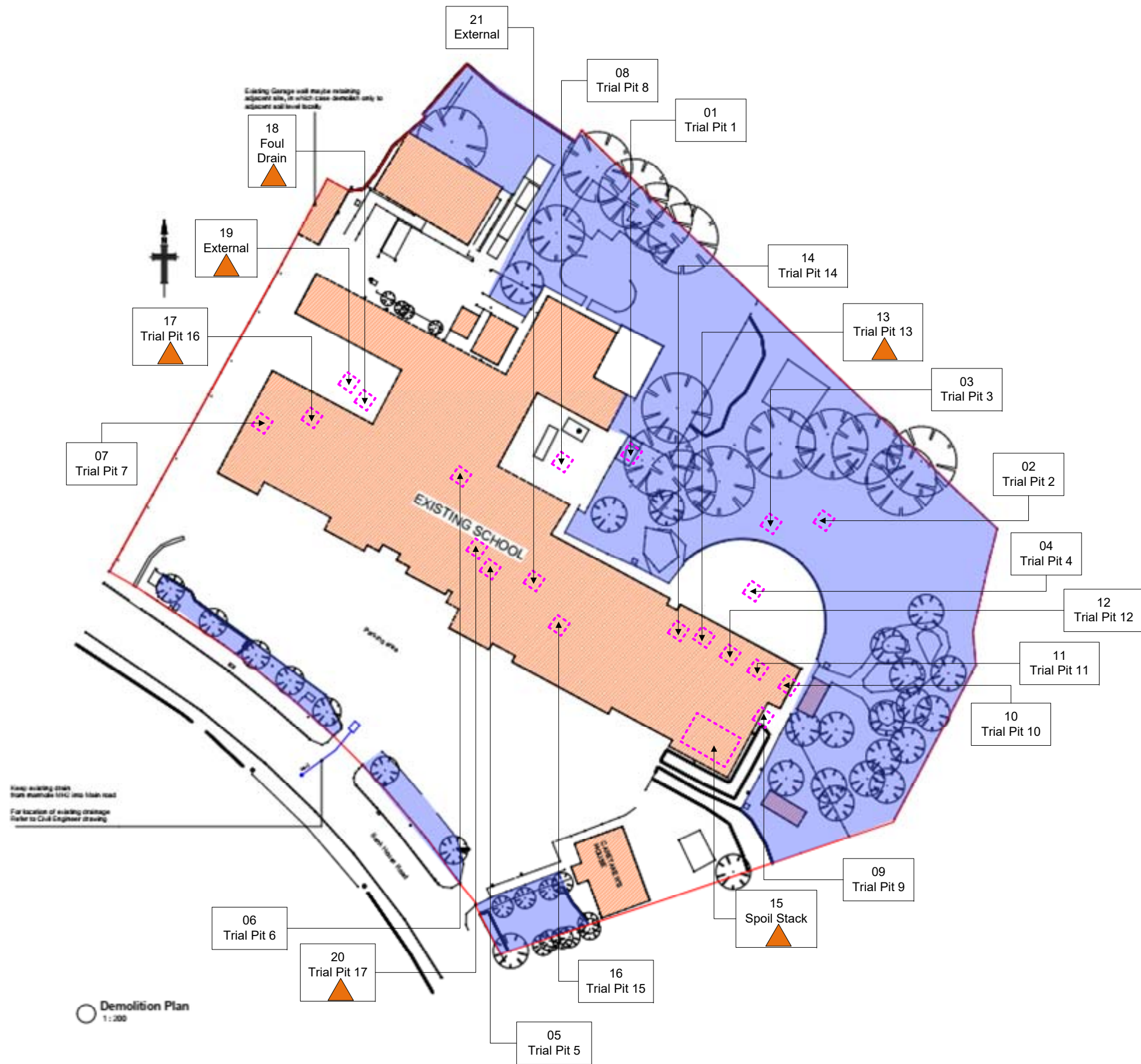
AEC contact details are as follows:

Airborne Environmental Consultants
23 Wheelforge Way
Ashburton Road
Trafford Park
Manchester
M17 1EH

Telephone: 0161 872 7111
Fax: 0161 872 7112

APPENDIX I

ITEM NUMBER LOCATION PLANS



KEY:

- : Item Number (WHITE)
- : Licensable asbestos (YELLOW)
- : Non-licensable asbestos (ORANGE)
- : Limitations of survey (PINK OUTLINE)

FIGURE 1 – Prospect House (Camberwell Park School), Bank House Road, Blackley, Manchester, M9 8TL

Item number locations and extent of identified asbestos products NOT TO SCALE.

Interserve Construction Ltd (Wigan)

PROJECT REF: J180234



AIRBORNE ENVIRONMENTAL CONSULTANTS LTD.
23 Wheel Forge Way
Ashburton Point, Trafford Park
Manchester
M17 1EH

Tel: 0161 872 7111
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APPENDIX II

SAMPLE REGISTER AND RESULTS

Item No.	Sample No.	Location	Description	Asbestos type	Recommendation
1	FK001153	Soils, 10.03.20 Excavation Site - External - Trial pit 1 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, hardcore crush, stones and clay.	NAD	None
2	FK001154	Soils, 10.03.20 Excavation Site - External - Trial pit 2 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, general rubbish/debris, stones and clay.	NAD	None
3	FK001155	Soils, 10.03.20 Excavation Site - External - Trial pit 3 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, general rubbish/debris, stones and clay.	NAD	None
4	FK001156	Soils, 10.03.20 Excavation Site - External - Trial pit 4 - Soil sample taken from the top 200mm layer, beneath the tarmac layer	The soil makeup consists of soil, brick, rubble and clay.	NAD	None
5	FK001157	Soils, 10.03.20 Excavation Site - External - Trial pit 5 - Soil sample taken from the top 200mm layer, beneath the concrete layer	The soil makeup consists of soil, concrete and rubble.	NAD	None
6	FK001158	Soils, 10.03.20 Excavation Site - External - Trial pit 6 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, concrete and rubble.	NAD	None
7	FK001159	Soils, 10.03.20 Excavation Site - External - Trial pit 7 - Soil sample taken from the top 200mm layer, beneath the concrete	The soil makeup consists of soil, concrete and rubble.	NAD	None
8	FK001160	Soils, 10.03.20 Excavation Site - External - Trial pit 8 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None
9	FK001169	Soils, 10.03.20 Excavation Site - External - Trial pit 9 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None
10	FK001170	Soils, 10.03.20 Excavation Site - External - Trial pit 10 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None

Item No.	Sample No.	Location	Description	Asbestos type	Recommendation
011	FK001171	Soils, 10.03.20 Excavation Site - External - Trial pit 11 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None
012	FK001172	Soils, 10.03.20 Excavation Site - External - Trial pit 12 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None
013	FK001173	Soils, 10.03.20 Excavation Site - External - Trial pit 13 - Bitumen pipe buried beneath soil and associated debris to the ground	The soil makeup consists of soil, crush and rubble. Please note the pipe is buried beneath the soil and appears to be running down to the fence line.	Chrysotile	Remove
014	FK001174	Soils, 10.03.20 Excavation Site - External - Trial pit 14 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, crush and rubble.	NAD	None
015	FK001176	Soils, 10.03.20 Excavation Site - External - Spoil stack adjacent trial pit 13 - Bitumen pipe debris on and mixed in the spoil stack	The spoil stack is made up from soil, concrete, crush and rubble.	Chrysotile	Remove
016	FK001177	Soils, 10.03.20 Excavation Site - External - Trial pit 15 - Soil sample taken from the top 200mm layer	The soil makeup consists of soil, concrete, crush and rubble.	NAD	None
017	FK001178	Soils, 10.03.20 Excavation Site - External - Trial pit 16 - Bitumen pipe buried beneath soil and associated debris to the ground	The soil makeup consists of soil, crush and rubble. Please note the pipe is buried beneath the soil and appears to be running down to the nearest foul water duct.	Chrysotile	Remove
018	FK001179	Soils, 10.03.20 Excavation Site - External - Foul drain, north corner - Cement used as shuttering to the underside of the foul drain entrance	Brick and concrete built sewage duct containing a clay waste pipe beneath the removed access point.	Chrysotile	Remove

Item No.	Sample No.	Location	Description	Asbestos type	Recommendation
019	FK001180	Soils, 10.03.20 Excavation Site - External - Area adjacent trial pit 16 - Bitumen debris to the ground	The soil makeup consists of soil, crush and rubble.	Chrysotile	Remove
020	SP FK001178	Soils, 10.03.20 Excavation Site - External - Trial pit 17 - Bitumen pipe buried beneath soil and concrete slab	Please note the debris is scattered throughout the area.	Chrysotile	Remove
021	FK001181	Soils, 10.03.20 Excavation Site - External - Concrete slab - Felt used as a damp proof course beneath the former walls throughout the site	Please note the pipe is buried beneath the soil and appears to be running down to the nearest foul water duct.	NAD	None

APPENDIX III

CERTIFICATE OF BULK FIBRE ANALYSIS

CERTIFICATE OF BULK FIBRE ANALYSIS

PROJECT REF: J180234

CERT NO.: J180234

CUSTOMER: Interserve Construction Ltd

DATE RECEIVED: 13.03.20 - 16.03.20

DETAILS: Woodhouse Drive
Wigan
Lancashire
WN6 7NT

DATE ANALYSED: 13.03.20 - 17.03.20

DATE REPORTED: 18.03.20
(Verbal)

DATE REPORTED: 18.03.20
(Document)

SITE DETAILS: Prospect House (Camberwell Park School), Bank House Road, Blackley, Manchester, M9 8TL

SAMPLED BY: Scott Brookes, Andy Wrotniak,
Christopher Harrington

Sample No.	Sample Location	Sample Description	Sample Comments	Asbestos Type(s)
FK001153	External - Trial pit 1 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001154	External - Trial pit 2 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001155	External - Trial pit 3 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001156	External - Trial pit 4 - Soil sample taken from the top 200mm layer, beneath the tarmac layer	Soil matrix with stone	No ACMs identified	NAD
FK001157	External - Trial pit 5 - Soil sample taken from the top 200mm layer, beneath the concrete layer	Soil matrix with stone	No ACMs identified	NAD

Comments: UKAS accredited for identification and site sampling. All analysis in accordance with HSG248 - Asbestos: The analysts' guide for sampling, analysis and clearance procedures 2005 and AEC 2 - Procedures manual for asbestos bulk sampling and identification of asbestos fibres.

Descriptions marked ‘**’ in this report/certificate denote information supplied by the customer. AEC cannot take responsibility for the accuracy and representative nature of samples taken by customers. All sample location information given by AEC within the report is the opinion of the surveyor. Sample comments that are **FFP = Fine fibres present, ‘but too thin to identify’** or **FFP/AL = Fine fibres present, asbestos like ‘but too thin to identify’**. **Trace = one or two fibres only were identified**. This report shall not be reproduced, except in full, without approval of the laboratory, to provide assurance that parts of the report are not taken out of context.

Asbestos types: Chrysotile = white asbestos; † = Asbestos Amosite = brown asbestos; Crocidolite = blue asbestos; Tremolite; Actinolite; Anthophyllite; NAD = No Asbestos Detected.

Signed:  Analysis completed at Manchester Laboratory. Authorised on behalf of Airborne Environmental Consultants Ltd.	Print: Steve Cassidy Position: Lab Analyst Date: 17.03.20
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Sample No.	Sample Location	Sample Description	Sample Comments	Asbestos Type(s)
FK001158	External - Trial pit 6 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001159	External - Trial pit 7 - Soil sample taken from the top 200mm layer, beneath the concrete	Soil matrix with stone	No ACMs identified	NAD
FK001160	External - Trial pit 8 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001169	External - Trial pit 9 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001170	External - Trial pit 10 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD

Comments: UKAS accredited for identification and site sampling. All analysis in accordance with HSG248 - Asbestos: The analysts' guide for sampling, analysis and clearance procedures 2005 and AEC 2 - Procedures manual for asbestos bulk sampling and identification of asbestos fibres.

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Signed:  Analysis completed at Manchester Laboratory. Authorised on behalf of Airborne Environmental Consultants Ltd.	Print: Steve Cassidy Position: Lab Analyst Date: 17.03.20
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Christopher Harrington

Sample No.	Sample Location	Sample Description	Sample Comments	Asbestos Type(s)
FK001171	External - Trial pit 11 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001172	External - Trial pit 12 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001173	External - Trial pit 13 - Bitumen pipe buried beneath soil and associated debris to the ground	Black fragment	-	Chrysotile
FK001174	External - Trial pit 14 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001176	External - Spoil stack adjacent trial pit 13 - Bitumen pipe debris on and mixed in the spoil stack	Black fragment	-	Chrysotile

Comments:

UKAS accredited for identification and site sampling. All analysis in accordance with HSG248 - Asbestos: The analysts' guide for sampling, analysis and clearance procedures 2005 and AEC 2 - Procedures manual for asbestos bulk sampling and identification of asbestos fibres.

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Signed:  Analysis completed at Manchester Laboratory. Authorised on behalf of Airborne Environmental Consultants Ltd.	Print: Steve Cassidy Position: Lab Analyst Date: 17.03.20
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Sample No.	Sample Location	Sample Description	Sample Comments	Asbestos Type(s)
FK001177	External - Trial pit 15 - Soil sample taken from the top 200mm layer	Soil matrix with stone	No ACMs identified	NAD
FK001178	External - Trial pit 16 - Bitumen pipe buried beneath soil and associated debris to the ground	Black fragment	-	Chrysotile
FK001179	External - Foul drain, north corner - Cement used as shuttering to the underside of the foul drain entrance	Grey fragments	-	Chrysotile
FK001180	External - Area adjacent trial pit 16 - Bitumen debris to the ground	Black/grey fragment	-	Chrysotile
FK001181	External - Concrete slab - Felt used as a damp proof course beneath the former walls throughout the site	Grey/black fragment	-	NAD

Comments:

UKAS accredited for identification and site sampling. All analysis in accordance with HSG248 - Asbestos: The analysts' guide for sampling, analysis and clearance procedures 2005 and AEC 2 - Procedures manual for asbestos bulk sampling and identification of asbestos fibres.

Descriptions marked ‘***’ in this report/certificate denote information supplied by the customer. AEC cannot take responsibility for the accuracy and representative nature of samples taken by customers. All sample location information given by AEC within the report is the opinion of the surveyor. Sample comments that are **FFP = Fine fibres present, ‘but too thin to identify’** or **FFP/AL = Fine fibres present, asbestos like ‘but too thin to identify’**. **Trace = one or two fibres only were identified**. This report shall not be reproduced, except in full, without approval of the laboratory, to provide assurance that parts of the report are not taken out of context.

Asbestos types: Chrysotile = white asbestos; † = Asbestos Amosite = brown asbestos; Crocidolite = blue asbestos; Tremolite; Actinolite; Anthophyllite; NAD = No Asbestos Detected.

Signed:  Analysis completed at Manchester Laboratory. Authorised on behalf of Airborne Environmental Consultants Ltd.	Print: Steve Cassidy Position: Lab Analyst Date: 17.03.20
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APPENDIX IV
PHOTOGRAPHS



Item 1 - Trial pit 1 - Soil sample taken from the top 200mm layer



Item 2 - Trial pit 2 - Soil sample taken from the top 200mm layer



Item 3 - Trial pit 3 - Soil sample taken from the top 200mm layer



Item 4 - Trial pit 4 - Soil sample taken from the top 200mm layer, beneath the tarmac layer



Item 5 - Trial pit 5 - Soil sample taken from the top 200mm layer, beneath the concrete layer



Item 6 - Trial pit 6 - Soil sample taken from the top 200mm layer



Item 7 - Trial pit 7 - Soil sample taken from the top 200mm layer, beneath the concrete



Item 8 - Trial pit 8 - Soil sample taken from the top 200mm layer



Item 9 - Trial pit 9 - Soil sample taken from the top 200mm layer



Item 10 - Trial pit 10 - Soil sample taken from the top 200mm layer



Item 11 - Trial pit 11 - Soil sample taken from the top 200mm layer



Item 12 - Trial pit 12 - Soil sample taken from the top 200mm layer



Item 13 - Trial pit 13 - Bitumen pipe buried beneath soil and associated debris to the ground



Item 14 - Trial pit 14 - Soil sample taken from the top 200mm layer



Item 15 - Spoil stack adjacent trial pit 13 - Bitumen pipe debris on and mixed in the spoil stack



Item 16 - Trial pit 15 - Soil sample taken from the top 200mm layer



Item 17 - Trial pit 16 - Bitumen pipe buried beneath soil and associated debris to the ground



Item 18 - Foul drain, north corner - Cement used as shuttering to the underside of the foul drain entrance



Item 19 - Area adjacent trial pit 16 -
Bitumen debris to the ground



Item 20 - Trial pit 17 - Bitumen pipe
buried beneath soil and concrete slab



Item 21 - Concrete slab - Felt used as a
damp proof course beneath the former
walls throughout the site

APPENDIX V

SURVEY METHODOLOGIES

Site surveys

The aim of the survey is to determine if ACMs are present and:

- where they occur,
- what forms of ACMs are present,
- what types of asbestos are present, and
- how frequently they occur (or the amount).

The survey normally comes in two parts: the preliminary assessment and the main survey.

The survey information should be used to plan and guide site activities to prevent exposure to asbestos or to reduce it as far as reasonably practicable and, in addition, to reduce the spread of asbestos, as required by regulation 16 of CAR 2012.

During the site survey the surveyor will be looking for the presence of visible asbestos, initially on the surface. Unless the site is presumed to be an asbestos manufacturing or storage site or port area where asbestos was unloaded, the surveyor will be looking for asbestos products or fragments of products. However, due to previous or ongoing physical damage and weathering, the material will often be broken into various size fragments and will more readily release asbestos fibres.

It is the exposure to respirable airborne asbestos fibres that present a risk to workers and others. Therefore the survey will also need to assess whether asbestos fibres are present and how many can be released. To do this representative samples have to be collected and analysed.

It should also be noted that the geographical location of the site, time of year, and the soils type will greatly influence the probability of airborne respirable becoming generated, and once asbestos has been identified, these shall be considered in the work risk assessment and plan of work (see separate document).

The scope of the survey is aimed to assist in planning the remediation of the land. However, it should be noted that other regulatory and legal regimes can apply, both for asbestos in land and other contaminants. This is a risk assessment to allow the safe remediation of the land and is not designed to certify the land as 'asbestos free'.

Preliminary assessment

The preliminary stage of the risk assessment for asbestos usually comprises of a desktop study and a preliminary site survey, and is typically carried out by the developer, as stated previously, and is a geotechnical exercise during land development, and will consider the historical site information, local history, Ordnance Survey maps etc. Following this, the site is visited and walked over to visually assess the site and to compare the desktop information. During the preliminary survey one or two typical samples of each of the various types of suspected ACMs (if identified) should be collected for laboratory analysis, to confirm that they contain asbestos and which types.

The findings should be recorded and possible locations, types of asbestos, potential 'hot spots' should be marked on location plans for further assessment in the main survey. A hot spot could be an area of potential waste buried, a filled-in basement, site of old buildings, beneath hard-stand etc. If there is no reason to suspect ACMs are present following the preliminary assessment then the main survey is not deemed to be required, though the plan of work for the development should reflect this and have emergency procedures in place if ACMs are identified during the works.

Main survey – this report

Initially, a systematic visual asbestos surface survey over the whole of the site for asbestos shall be carried out, using plans / maps supplied by the client of the work areas, and any suspected specific areas highlighted in the preliminary assessment. The results of the findings should then be marked upon the map* or plan.

The main survey will usually consist of a semi-quantitative or quantitative surface and/or depth survey to more accurately locate, map and zone where asbestos is present. For the purposes of the risk assessment requirements of CAR 2012 (Reg 6), a semi-quantitative in-situ assessment of the amount of asbestos material present is usually sufficient but for Planning and Part 2A assessment purposes, there may also be a need for quantitative laboratory measurement of the amount (e.g. weight percent) of ACMs and unbound asbestos fibres in the samples collected.

Surface

When planning the survey, consideration must be given to the condition of the site, as the accuracy of the survey can be affected by these conditions i.e. the weather (surface water, snow etc.), vegetation cover, and any surface material (e.g. mud, crush / fill, topsoil, hard-standing etc.). For example, a muddy surface or an overgrown site will make the visual identification of asbestos product fragments or free-fibre extremely difficult. Sampling should initially be of 'visible' materials rather than random sampling of sludge / soil / debris etc. and this shall be carried out using the following method:

- Mark a grid of the area to be assessed e.g. 10m x 10m squares (depending on the size of the area being assessed), 1m x 20m trench as sample unit sizes. The grid will be dependent on the findings of the preliminary survey.
- Each grid should be examined for surface contamination. The surveyors should be looking for fragments e.g. AC, floor tiles etc, or for fibre in clumps.
- Representative samples should be taken of any suspect materials on the surface, and the location & extent marked upon plans for the report.

Where no visible materials are present, and the preliminary assessment suggests the land to be contaminated with asbestos, then representative soil samples are collected and analysed. This is typically a representative sample from a designated sample unit area of the site e.g. in a sample unit size of 10m², the sample is collected from an area of 1m². If the sample unit size is 10m² and covered with vegetation, the sample from 1m² is because the smaller area is reasonably practicable to be worked with a spade / fork, where the entire area is not. The sample is then 'coned & quartered' to give a representative sample of approximately 1 to 2 litres or kilogrammes, from the top 20mm of the soil. The sampling should collect small representative sub-samples to look for fine asbestos fibres in the laboratory analysis.

Depth

If nothing is visible on the surface, and depth samples are required, then the following process can be carried out, firstly for visible asbestos materials, and as in the case for the surface, samples of soil for fine fibre later. Excavated material, either from a trench, or from hole / trial pit can be excavated and spread out on the surface or a plastic sheet, then visually inspected by sifting / raking through the soil from sequential depths e.g. at 0.5m or 1m intervals, to look for suspected ACMs. It should be noted that asbestos in the ground will not usually spread or leach. A depth profile of the asbestos content can be built up from the successive excavations. If no visible product or fibre, then samples can be cone & quartered and analysed.

Health and safety considerations for excavations must be included in the method statement:

- Following excavations, trenches and pits should be backfilled.
- Staff should not enter trenches or excavations unless they are properly shored up.
- Staff should not enter excavations on the digger bucket.

Sampling methodology

Documented methodology suggests one of two methods to ascertain sampling numbers / frequency. These are either probability-based sampling which is usually random samples per zone or grid area, for example this can be, say, 2 random samples per 1mx1m square, or one sample at the centre of each square. Or judgemental sampling, which is targeting a specific area using previous knowledge as directed by a client / prelim survey or a surveyor's judgement considering the site and surface. Most sites will have a combination of both.

A visual survey of the surface for ACMs has the advantage that a large percentage of the site can easily be inspected but only for larger fragments. For smaller asbestos fragments/fibres/bundles it is usually only possible to examine a very small area (or volume) of the site and to do this a representative soil sample must be collected and analysed.

The number and design of the samples should be appropriate to the site and should consider the preliminary assessment, and will usually depend upon the location on the site, the number, the size of the sample and sub-sample. AEC shall take a minimum of two surface and two depth samples for analysis, where there is no obvious and identified contamination.

A representative soil sample from a 1 m² area, with then be coned and quartered to collect a ~1 -2 litres representative sample for laboratory analysis. Usually the top 1-2 cm of soil is sampled for a surface survey. For a depth survey, successive soil profiles are sampled, which may be of 0.50m to 1m depth, depending on the method used.

When sampling soils and made ground, the available area to sample and the sample itself will be subject to the presence of large pieces of non-asbestos debris (bricks, metal, concrete slabs) and vegetation (trees, roots, bushes and grass). These will reduce the available area for sampling and in some cases, it may be necessary to move the sampling point and area sampled, to be able to collect a sample, if a large obstacle is present. Where practicable, large non-asbestos obstructions / materials can be removed and discarded before sampling.

Sampling equipment

In addition to sampling equipment and methodology for sampling in buildings as per AEC procedures to ISO 17020 HSG 264, the following equipment will be required.

- Site plan / OS maps,
- Compass, GPS or GNSS,
- 50m tape & pegs,
- Shovel, spade, trowel, rake, fork, sieve, wheel barrow,
- Coning and quartering equipment (an aluminium plate, mixing board, plastic sheets),
- Sample packaging – larger bags for the 1 – 2 kg samples,
- Cleaning equipment e.g. bucket, hand pumped water spray, water container,
- Powered auger/corer / mechanical digger.

Coning & quartering

This is typically a representative sample from a designated sample unit area of the site e.g. in a sample unit size of 10m², the sample is collected from an area of 1m².

The soil should be sub-sampled by coning and quartering (or riffing). Coning and quartering is done by placing the soil from the sample unit onto a board with an easy to clean surface or 1000 gauge polythene sheet wrapped over it. The material is then shovelled into a cone-shaped heap, by repeated shovelling of the edges of the heap onto the top. When the material has been well-mixed in this way a thin metal plate (or similar) is then used to divide the pile into quarters. Two opposite quarters are removed and the remaining quarters mixed and reformed into a cone-shaped heap, as before. Three successive cycles of cone and quartering will reduce the soil volume to around 2L (1/8) of the original volume for packaging and labelling and transport to the laboratory.

For the large volumes of soil moved in trench samples during a depth survey, it is not practical to take a representative sample of the whole sample unit by coning and quartering and during the detailed field inspection for fragments, a series of scoops/ shovels taken at regular intervals from the spoil, is used to give a sample, which is then cone and quartered to give a 2 litre sample volume. This will represent a much smaller fraction of the soil profile removed. For depth samples from small site area where a powered auger or corer has been used, the whole sample can be placed in an appropriate container to preserve the core and soil profile for laboratory examination.

If required, an estimate of the amount of ACMs seen can be made to allow the site to be zoned. For example, this can be in the form of:

- The number of individual pieces of asbestos found per unit area (e.g. in 1m²).
- The number and size of the asbestos pieces found per unit area.
- The estimated visible area of the ACMs, (using image analysis measurement of the digital images).
- The estimated mass of ACMs or asbestos

A mass measurement is not required for CAR 2012 i.e. for the risk assessment for remediation. However, for other regulatory purposes (e.g. the assessment of regulated asbestos waste), it may also be desirable to estimate the mass of asbestos present. This requires the surveyor to collect all the visible suspected asbestos from a specified area for gravimetric analysis.

APPENDIX VI

GENERAL RESTRICTIONS

GENERAL RESTRICTIONS

AEC have instructed all survey teams that health and safety considerations are paramount during our work. If the survey team find an area where access or sampling will present a risk to themselves or others, they have been given authority to cease works until such time that the risk can be controlled to acceptable levels. This may include accessing excavations, slopes, spoil heaps or in proximity to plant etc. if such a situation arises AEC shall inform the customer and explore the possible solutions to the problem. In such instances, AEC will expect the customer to sign to show that the restriction has been agreed.

It should be noted that the findings of the survey are discussed across the report in its entirety. Readers should note the contents in all sections of the report and should not rely purely on the information given in individual sections of the report.