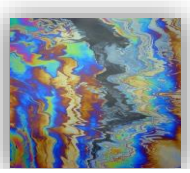
INVESTIGATE



REMEDIATE

REGENERATE

T E C H N I C A L R E P O R T

PRELIMINARY SOIL WASTE MANAGEMENT PLAN
AT
MAI TRAINING CENTRE AND
BUILDING 430 PHASE 2 EXTENSION,
BAE ENTERPRISE ZONE,
SAMLESBURY, LANCASHIRE
FOR
BAE SYSTEMS PLC

REPORT NO.C1251
FEBRUARY 2015

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CONTENTS

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PRELIMINARY SOIL WASTE MANAGEMENT PLAN, MAI TRAINING CENTRE AND BUILDING 430 PHASE 2 EXTENSION, BAE ENTERPRISE ZONE, SAMLESBURY, LANCASHIRE

CLIENT: BAE SYSTEMS PLC

ENGINEER: TRP CONSULTING

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1. INTRODUCTION

This preliminary waste management plan has been prepared in accordance with an email, dated 17th February 2015, from the Engineer on behalf of the Client.

The brief was set out in our estimate, ref. E1020 and dated 30th January 2015, with amendments as the investigation proceeded and includes a review of the development proposals and previous reports, drafting of a remediation strategy and materials management plan, completion of the Qualified Person Declaration in accordance with the Defintion of Waste Code of Practice (DoWCoP).

This preliminary report does not constitute a formal Materials Management Plan. The purpose of this report is to provide a preliminary appraisal of the soil waste management options for the site and to set out the methodology on which the Materials Management Plan (MMP) will be based.

This preliminary waste management plan assumes that the Building 430 Phase 2 Extension and the proposed MAI Training Facility will be dealt with under a 'Site of Origin' Scenario in accordance with the Definition of Waste: Development Industry Code of Practice (2011) (DoW CoP).

1.1 Site Location and Description

The Enterprise Zone development site is located within the BAE Samlesbury Aerodrome complex in the Balderstone area of Lancashire. The approximate National Grid Reference of the centre of the site is SD627308. The airfield is disused, however BAE maintain an active manufacturing facility, offices and infrastructure relating to the provision of technical services in the northern half of the aerodrome property.

This report is concerned with two development areas within the Enterprise Zone, namely the Building 430 Phase 2 Extension in the central area of the complex to the north of the runway and the proposed MAI Training Facility at the eastern end of the site. The two areas of interest are indicated on the appended Figures 1 and 2.

1.2 Previous Site Investigations

Numerous site investigations have been undertaken within the aerodrome complex. The following previous reports have been undertaken in the areas under consideration and should be read in conjunction with this report. The approximate locations of these previous investigations are indicated on the appended Figure 2.

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1.2.1 2000 Sub Surface North West Limited ref. 3578

Five light cable percussive boreholes were taken out to between 10.00m and 15.45m in the approximate area of the current Building 430 and the proposed Phase 2 extension.

The investigation found made ground to between 0.50m and 1.40m. The made ground was underlain by high, locally medium strength brown and grey mottled slightly gravelly slightly sandy silty clay.

Contamination analyses undertaken on the made ground found one elevated level of PAH and one slightly elevated level of arsenic when compared with the current generic assessment criteria for a commercial and industrial end use.

1.2.2 2002 Sub Surface North West Limited ref. 3843

This investigation covered the area of the current Building 430, prior to construction, and the area of the Building 430 extension. The investigation comprised twelve cable percussion boreholes, drilled to depths of approximately 15.00m below ground level.

The borehole found made ground and localised natural topsoil to depths of between 0.20m and 2.00m underlain by low and medium strength becoming high strength brown slightly gravelly slightly sandy silty clay.

No information regarding contamination was available for this investigation.

1.2.3 2008 White Young Green Environmental ref. E12850-1

The White Young Green Environmental investigation was centred on an area in the north eastern zone of the BAE complex with part of the investigation including the area of the proposed MAI Training Centre. The investigation comprised twenty two trial pits and ten window sampling boreholes.

Most of the exploratory holes are outside of the area of interest, however WS10, TP19, TP20, TP21 and TP22 were taken out in the general area of the proposed MAI Training Centre. The exploratory holes found made ground to a depth of between 0.30m and 0.40m then low and medium strength becoming high strength brown and orange brown mottled grey slightly gravel clay.

Contamination analyses undertaken on samples taken from these locations found no elevated contaminants when compared with the current generic assessment criteria for a commercial and industrial end use.

1.2.4 2008 Sub Surface North West Limited ref. 5071

The 2008 Sub Surface North West Limited investigation was undertaken in the area of Building 610, adjacent to the east of the Building 430 Extension. The investigation comprised six light cable percussive boreholes and eight trial pits.

The exploratory holes found made ground to depths of between 0.40m and 3.20m then medium strength locally very low, low and high strength brown locally slightly gravelly slightly sandy silty clay.

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Contamination analyses undertaken on the near surface strata found localised slightly elevated total petroleum hydrocarbons (TPH) and elevated polycyclic aromatic hydrocarbons (PAH) when compared with the current generic assessment criteria for a commercial and industrial end use.

1.2.5 2009 Atkins Limited ref. 5078304

The Atkins investigation was focussed on the area of the Building 430 Extension and comprised seven cable percussive boreholes to depths of between 15.0m and 28.2m, four rotary open hole to depths of between 25.5m and 39.0m, three trial trenches to depths of 3.1m, three trial pits to depths of 3.4m and five window sample holes to a maximum depth of 4.2m.

The exploratory holes encountered made ground to a maximum depth of 3.4m, underlain by low, medium and high strength red brown and grey mottled slightly gravelly sandy slightly silty clay.

Contamination analyses undertaken on the made ground and natural clay strata found no elevated levels of contamination when compared with the current generic assessment criteria for a commercial and industrial end use.

1.2.6 2014 Sub Surface Consultants Limited ref. 5887

This investigation was for the proposed MAI Training Centre and comprised six light cable percussive boreholes to depths of between 10.0m and 15.5m, and six trial pits to depths of between 0.5m and 2.5m.

The exploratory holes encountered made ground to depths of 0.25m and 1.60m, then medium strength locally high strength dark brown and brown slightly gravelly locally sandy silty clay.

Contamination analyses undertaken on the near surface strata determined no elevated levels of contaminants when compared with the generic assessment criteria for a standard land use of commercial and industrial.

1.2.7 2015 Sub Surface Consultants Limited ref. 5967

This investigation comprised three light cable percussive boreholes taken out in the area of the proposed Building 430 Phase 2 Extension and ten hand dug trial pits taken out in the access road and former runway in the southern part of the site.

Made ground was encountered in the light cable percussive boreholes to depths of between 0.80m and 1.00m, and in the hand dug pits made ground was encountered to depths of between 0.35m and 0.70m. The made ground was underlain by medium to high strength brown locally grey and brown slightly gravelly slightly sandy silty clay.

Contamination analyses undertaken on the near surface strata determined no elevated levels of contaminants when compared with the generic assessment criteria for a standard land use of commercial and industrial.

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2. WASTE MANAGEMENT REGULATIONS

2.1 Waste Framework Directive

The European Commission (EC) Directive 2008/98/EC on waste, commonly referred to as the Waste Framework Directive (WFD) 2008 provides the legislative framework for the collection, transport, recovery and disposal of waste, and is directly transcribed into UK law through the Waste (England and Wales) Regulations 2011.

The Waste Framework Directive defines waste as '*any substance or object which the holder discards or intends or is required to discard'*. The WFD 2008 also contains an explicit exclusion for '*uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated'*

Consequently, where it is proposed to re-use uncontaminated excavated soil the material is not classified as waste if it can be demonstrated that the soil is naturally occurring, is uncontaminated and has a definite use in the construction project on the same site.

Where excavated soil is made ground or is contaminated then the WFD considers the material to be waste. However, as discussed in Section 3 below, the CL:AIRE Definition of Waste: Development Industry Code of Practice (2011) provides a means of determining this material as non-waste under certain circumstances providing the guidance in the Code of Practice is observed.

2.2 Hazardous Waste Directive and The List of Wastes Decision

The List of Wastes Decision (2000/532/EC) (LoWD) provides:

1. a list of wastes (LoW), often called the European Waste Catalogue
2. the rules for using the list
3. the criteria used to assess if a waste on the list is hazardous

Annex III of the WFD and the LoWD use the classification of product chemicals as the basis for the assessment of hazardous waste.

In the UK the Environment Agency, Natural Resources Wales, The Scottish Environmental Protection Agency and the Northern Ireland Environment Agency have jointly published Technical Guidance WM2 to assist with hazardous waste classification in accordance with LoWD. Waste classification in accordance with WM2 will be required for any excavated material to be disposed of at a landfill site.

2.3 The Landfill Directive

The European Council Directive 1999/31/EC (Landfill Directive) requires that wastes meet certain Waste Acceptance Criteria (WAC). The WAC are based on leachate analyses and aim to protect controlled waters.

The Landfill Directive also requires member states to increasingly reduce the amount of waste consigned to landfill.

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3. DEFINITION OF WASTE CODE OF PRACTICE

It is proposed to manage excavated soil waste on the site in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (2011) (DoW CoP).

The DoW CoP provides a process which enables the reuse of excavated materials on-site or their movement between sites and provides an alternative to Environmental Permits or Waste Exemptions.

The DoW CoP enables the direct transfer and reuse of clean naturally occurring soil materials between sites, the conditions to support the establishment/operation of fixed soil treatment facilities, and the reuse of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

It is the responsibility of the holder of a material to make their own assessment of whether that material is waste or not. The DoW CoP allows the holder to make that assessment in accordance with current law.

If materials are dealt with in accordance with the DoW CoP then the EA considers that those materials are unlikely to be waste if they are used for the purpose of land development.

Good practice under the DoW CoP comprises three basic steps, described in the guidance document as follows:

1. Ensuring that an adequate Materials Management Plan (MMP) is in place, covering the use of materials on a specific site;
2. Ensuring that the MMP is based on an appropriate risk assessment, that underpins the Remediation Strategy or Design Statement, concluding that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner; and
3. Ensuring that materials are actually treated and used as set out in the MMP and that this is subsequently demonstrated in a Verification Report.

In order to demonstrate that the DoW CoP guidance has been correctly applied, the MMP and supporting evidence is subjected to scrutiny by a CL:AIRE registered Qualified Person. On approval of the MMP the Qualified Person submits a declaration to CL:AIRE. Once the declaration is submitted the materials can be used in accordance with the MMP and the Environment Agency will take the view that the materials are not waste.

All materials subject to excavation, disposal or treatment/re-use must be tracked and evidence retained to provide a transparent audit trail. The tracking system should include annotated site plans, robust inspection procedures, documentation from licensed waste carriers or non waste hauliers, control sheets with running tallys, delivery tickets and transfer notes, etc. This evidence collated should be provided in the verification report.

If the materials are not used in accordance with the MMP, or if it is not possible to demonstrate that the MMP has been adhered to then the Environment Agency may conclude that those materials have been discarded and are waste.

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4. RE-USE OF MATERIAL

4.1 Earthworks

It is anticipated that some 14500m^3 of material will be excavated out during the surface strip and foundation preparations for the proposed Training Facility of which some 8000m^3 will be sourced from the upper 300mm.

We understand from the Client's Engineer that it is proposed to reuse some of the excavated material in mounds in the proposed landscaped area at the eastern end of the proposed MAI Training Facility as indicated on Figures 3 and 4. In addition it is proposed to reuse some excavated material in landscaping adjacent to the Building 430 Phase 2 Extension in the general area indicated on Figure 5. Any excavated material surplus to these requirements is to be taken off site for disposal.

The anticipated earthworks material requirements are as follows:

Destination	**Re-Use Material Volume (m^3)**	**Waste Material Volume (m^3)**
Re-use in banking on Training Facility Site	3500	-
Re-use in landscaping at Building 430 site.	5000	-
Disposal off site	-	6000
Total	8500	6000

It should be noted that at the time of writing this preliminary report the landscaping proposals for the Building 430 Extension have not been finalised and the volumes of material required may be subject to change in the final MMP.

The exploratory boreholes and trial pits taken out in the area of the proposed MAI Training Centre found areas of shallow made ground and areas of natural ground with no clearly defined boundary. Consequently, we are unable to determine separate brownfield and greenfield zones and for the purposes of the material management plan we would consider the soil to be an uncontaminated brownfield source.

Contamination analyses undertaken in the area of the proposed MAI Training Centre during the 2008 White Young Green investigation and the 2014 Sub Surface Consultants investigation found no elevated levels of contaminants when compared with the published generic assessment criteria for a commercial and industrial end use. Consequently, with regard to chemical composition the material will be suitable for constructing earthworks in the proposed landscaped areas with no further treatment.

No consideration has been given in this report to the geotechnical suitability of the material for constructing earthworks.

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4.2 Topsoil

The re-use of material as topsoil will be dependent on assessment of the stockpiled material in accordance with BS 3882:2007. The exploratory holes indicated predominantly shallow made ground in the area closest to the existing road along the northern and eastern extents, and predominantly natural material in the southern and south western area. It would be prudent to create separate stockpiles for these two areas as the natural material is less likely to contain deleterious material and is therefore more likely to conform to the topsoil specification.

5. DISPOSAL OF SURPLUS & UNSUITABLE MATERIAL

5.1 Options for Management of Waste Soil

The MMP will detail the final volumes of soil to be re-used on site. Any material not designated for re-use in the MMP or subsequently found to be unsuitable for the proposed end use will be classified as waste and will need to be managed accordingly.

Potential alternative solutions include:

- Utilising the CL:AIRE register of materials and services to find any local development projects requiring material
- Exporting the surplus material to a regional soil hub for recycling
- Disposal at a registered landfill.

Under the WFD 2008 the waste producer bears all responsibility for the waste including where it is ultimately disposed, even when waste removal or treatment is undertaken by others. Consequently is essential to ensure that all waste carriers are licensed and that the material is disposed of at a properly registered landfill. All documentation for any material taken of site including consignment notes and chain of custody forms should be retained for inclusion in the verification report

5.2 Waste Classification

If surplus soil is to be disposed of at a licensed landfill facility then waste classification will be undertaken.

Given the localised variations in composition of the near surface strata we would recommend waste characterisation is undertaken post-excavation on the stockpiled material that is designated as surplus. Waste Acceptance Criteria (WAC) analyses should also be undertaken on the stockpiled material.

Our initial opinion, based on the contamination analyses undertaken in the area of the proposed MAI Training Centre during the 2008 White Young Green investigation and the 2014 Sub Surface Consultants investigation, is that the excavated material is likely to be classified as non-hazardous. The WAC analyses will determine whether the leachability characteristics allow the waste to be disposed of at an inert or a non-hazardous site.

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If any material is found to be unsuitable for use due to unexpected indications of chemical contamination (free product, discolouration, chemical odour, etc.) or excessive deleterious material then this material should be segregated from the main stockpile and subjected to a separate waste classification.

It should be noted that under the WFD 2008 it is not permissible to mix waste streams in order to dilute hazardous waste and producers have a duty to separate waste.

5.3 Non-Soil Waste

In the preparation of this preliminary report no consideration has been given to any non-soil waste that will be generated during the construction phase.

The Site Waste Management Plans Regulations (2008) were repealed on 1 December 2013. Although no longer a regulatory requirement in England, SWMPs are still considered to be good practice and in order to promote effective and sustainable management of non-soil waste streams we recommend a SWMP is developed.

6. GENERAL

We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or at our Preston office.

SUB SURFACE CONSULTANTS LIMITED
PRELIMINARY REPORT No. C1251
FEBRUARY 2015

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Senior Environmental Engineer
For and on behalf of
Sub Surface Consultants Limited

C. A. Marsden B.Sc.(Hons.), C.Eng., M.I.C.E.
Director
For and on behalf of
Sub Surface Consultants Limited.

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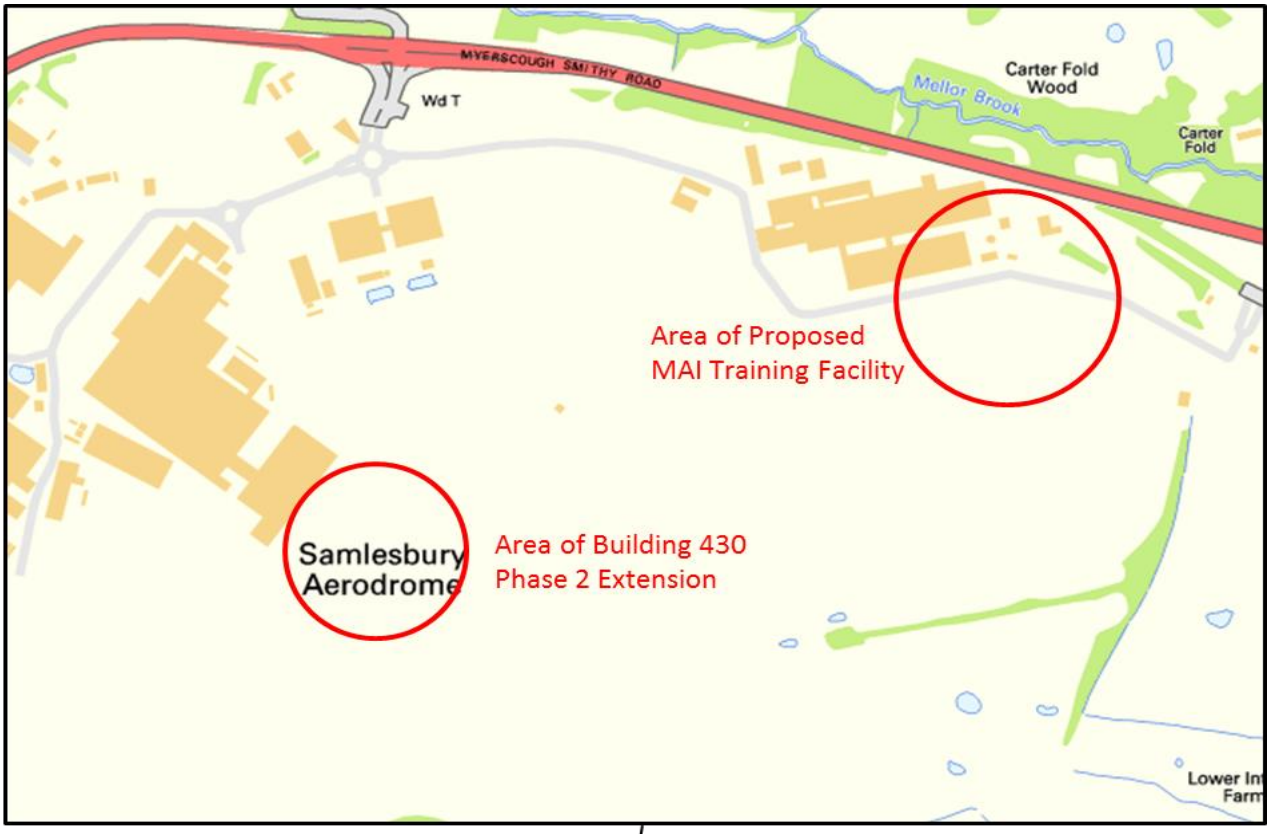
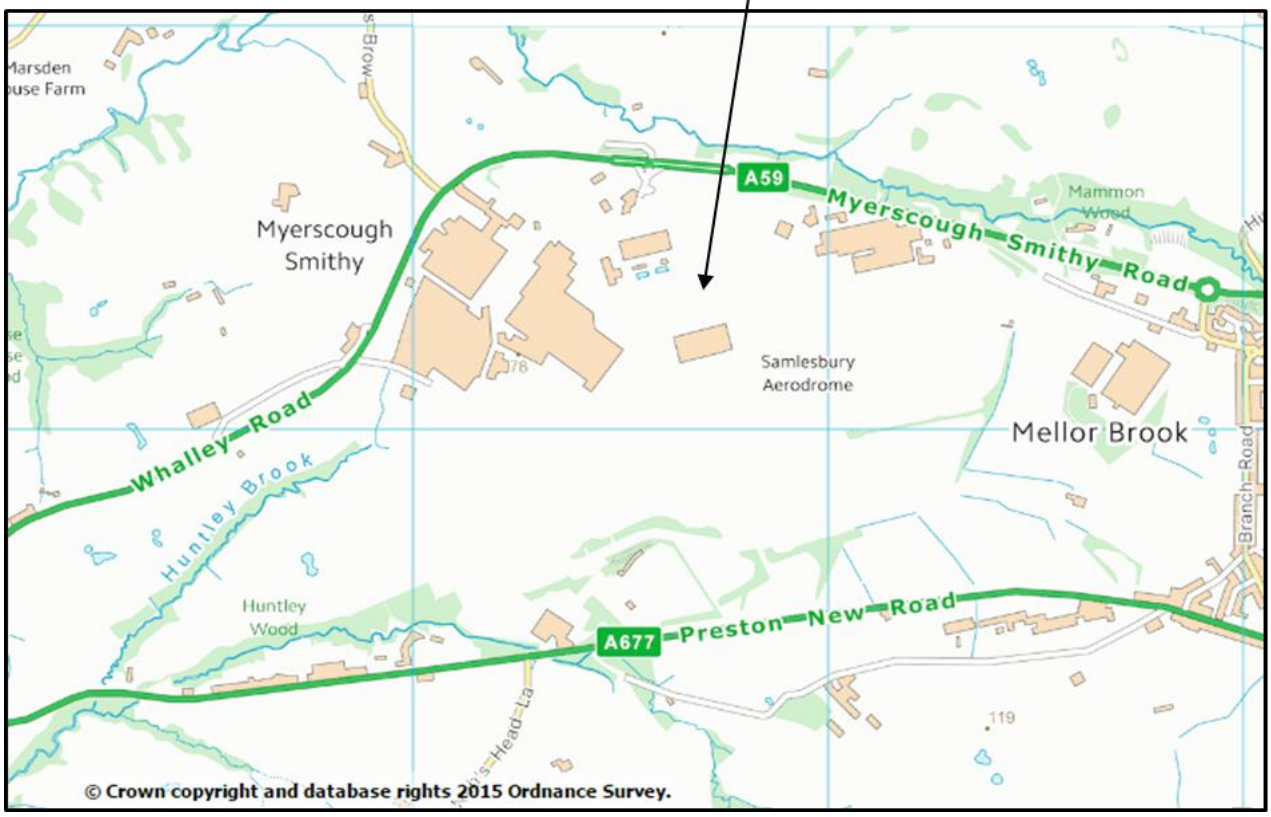
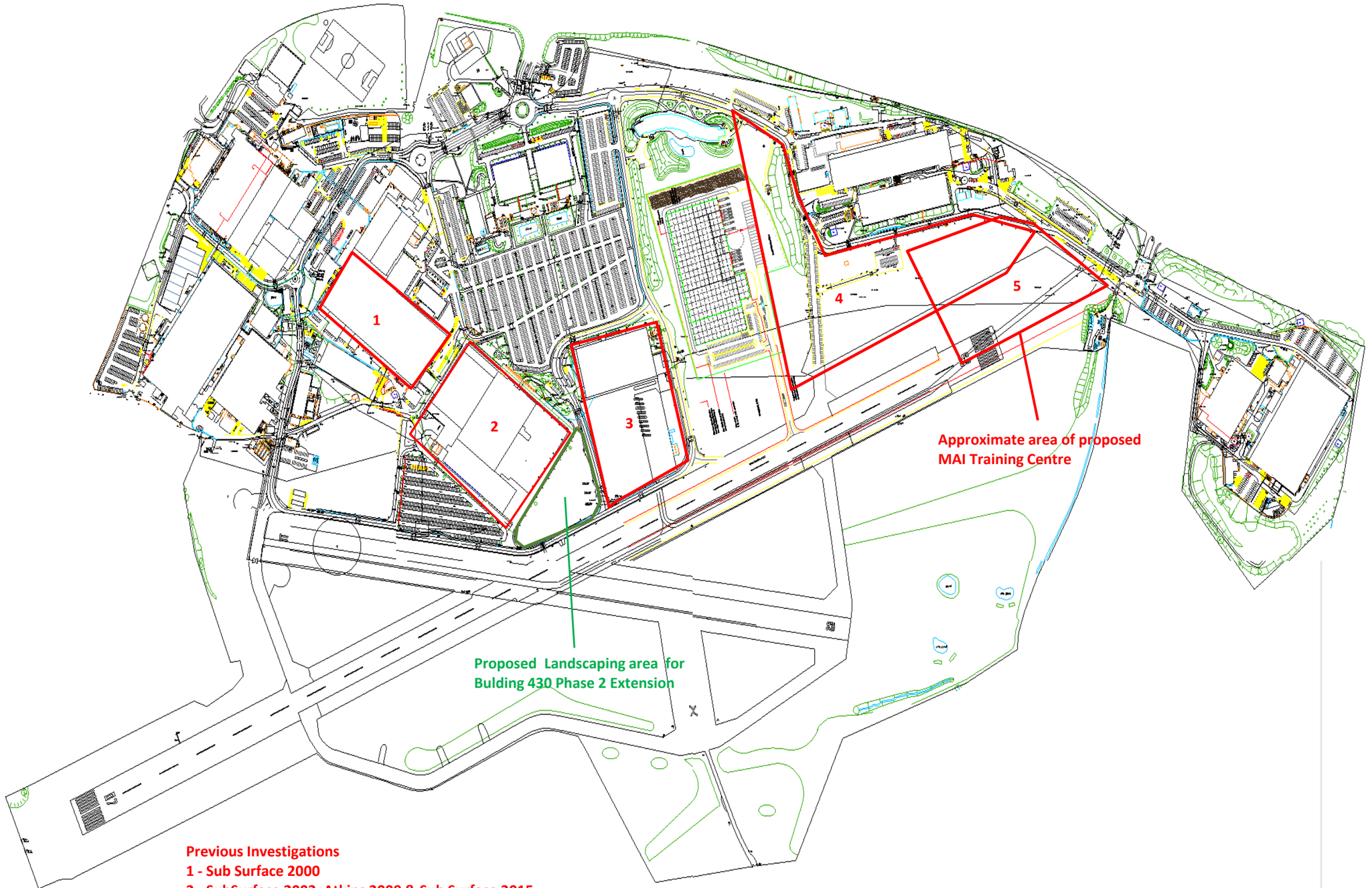




SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	General Site Location			
Site ENTERPRISE ZONE, SAMLESBURY AERODROME	Date Drawn 18/02/2015	Date Checked	Orientation N	Job No. C1251
Client BAE SYSTEMS PLC	Drawn By DJ	Checked By	Scale _	Figure No. 1



Previous Investigations
1 - Sub Surface 2000
2 - SubSurface 2002, Atkins 2009 & Sub Surface 2015
3 - Sub Surface 2008
4 - White Young Green 2008
5 - Sub Surface 2014

Plan supplied by Client's Engineer. For illustration purposes only, do not use for scale measurements.

Locations of Proposed Developments and
& Approximate Locations of Previous Investigations

Date Drawn	19-Feb-15	Job No.	C1251
Drawn By	DJ	Figure No.	2
Checked By		Scale	–
Date Checked	25	Orientation	

SUB SURFACE
SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site: ENTERPRISE ZONE, SAMLESBURY AERODROME

Client: BAE SYSTEMS PLC

Tanks

Do not scale from this drawing.
All dimensions should be checked on site.
Refer to architects for further information.

Site Boundary

3 Tone Block Paving:
Staggered bond; 3 tone mix of Silver Flack, Light Grey, Grey Flack
200 x 800 x 80mm

Single Tone Block Paving:
Staggered bond
Light Grey
200 x 800 x 80mm

Pedestrian Grade Bitmac:
Black

Vehicular Grade Bitmac:
Black

Permacrib
To engineer's specification

Cast Stone Seating
Escofet 'Mayo'
2000x950x450mm

Lawn (G30)
Low Maintenance Seed Mix:
British Seed House Ref: A4
35g/m²

Perennial and Annual Wildflower and Grass Meadow (G30)
5g/m²; Germinal Amenity Butterfly and Honey Bee Seed Mix
Mix to include: Festuca ovina, Leucanthemum vulgare, Centaurea cyanus, Papaver rhoeas, Knautia arvensis, Achillea millefolium

Ornamental Ground Cover Shrub Planting (G31)
3 litre pots; 3/m²
Species to include: Hebe topiaria, Euonymus 'Emerald Gaiety', Prunus zabeliana, Stephenandra incisa 'Crispa'

Prunus avium 'Plena' (G31): 7 No.
Select Standard, clear stem
10-12cm girth
Open Ground

Prunus avium 'Plena' (G31): 18 No.
Extra Heavy Standard, clear stem
14-16cm girth
Open Ground

Pinus sylvestris (G31): 17 No.
1.25-1.5m
15 litre pot

Betula pendula (G31): 21 No.
Multi-stem
2.5-3m tall, minimum 3 stems
8-10cm girth, Root Balled

Contours
At 0.5m height intervals
Indicative

Swale
See engineer's specification

NOTES

Rev	Date	Detail	Made	Chk'd	App'd
T03	10.02.15	Design updates: car park, fuel tank, plaza	EB	WGC	JG
T02	17.12.14	Carpark/site boundary edits; draft for comment	EB	WGC	JG
T01	11.12.14	Draft for Comment	EB	WGC	JG
T00	04.12.14	Draft for Comment	EB	WGC	JG

☐ PLANNING ☒ DRAFT ☒ FOR COMMENT ☐ TENDER ☐ CONSTRUCTION

Client:
BAE SYSTEMS

Project:
Training Facility
Samlesbury Aerodrome

Title:
Landscape General Arrangement

Design: EB	Sheet Size - A1 (594mm x 841mm)
Drawn: EB	
Chk'd: WGC	Date: 04.12.14
App'd: JG	Scale: 1:500 @ A1

N

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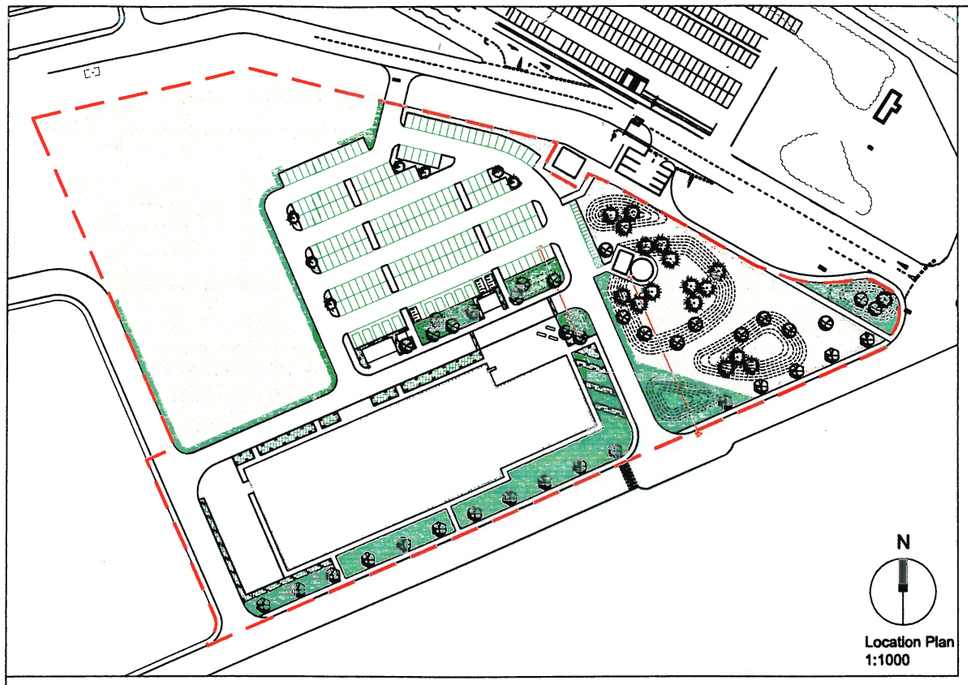
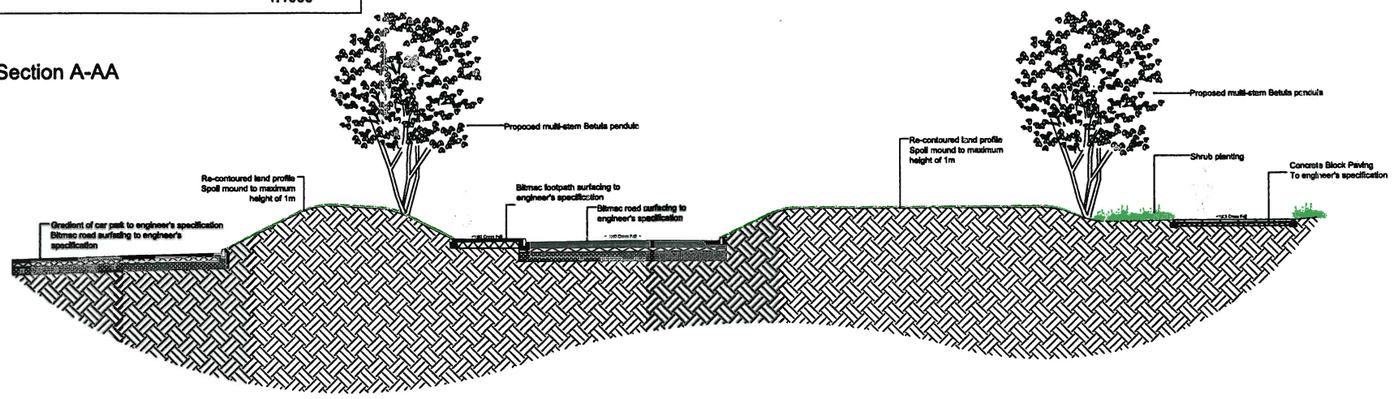
File Location	R:\M5241 BAE Systems Training Fac3ty\Drawings\02 Tender\CAD
No.	M5241-101
Rev	T03

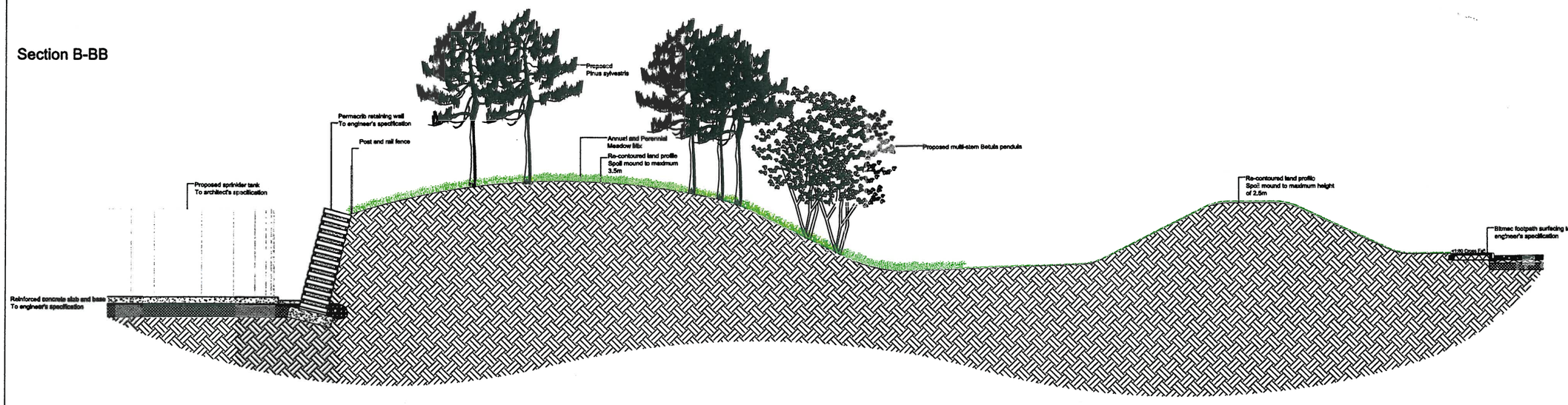


Location Plan
1:1000

Section A-AA



Section B-BB



Do not scale from this drawing.
All dimensions should be checked on site.
Refer to architects for further information.

NOTES

Rev	Date	Detail	Made	Chk'd	App'd
T02	10.02.15	Design updates to location plan	EB	WGC	JG
T01	17.12.14	Layout amendment; draft for Comment	EB	WGC	JG
T00	11.12.14	Draft for Comment	EB	WGC	JG

☐ PLANNING ☒ DRAFT ☒ FOR COMMENT ☐ TENDER ☐ CONSTRUCTION

Client:

BAE SYSTEMS

Project:

Training Facility
Samlesbury Aerodrome

Title:

Landscape Sections

Design: EB	Sheet Size - A1 (594mm x 841mm)
Drawn: EB	
Chk'd: WGC	Date: 05.12.14
App'd: JG	Scale: 1:100 @ A1

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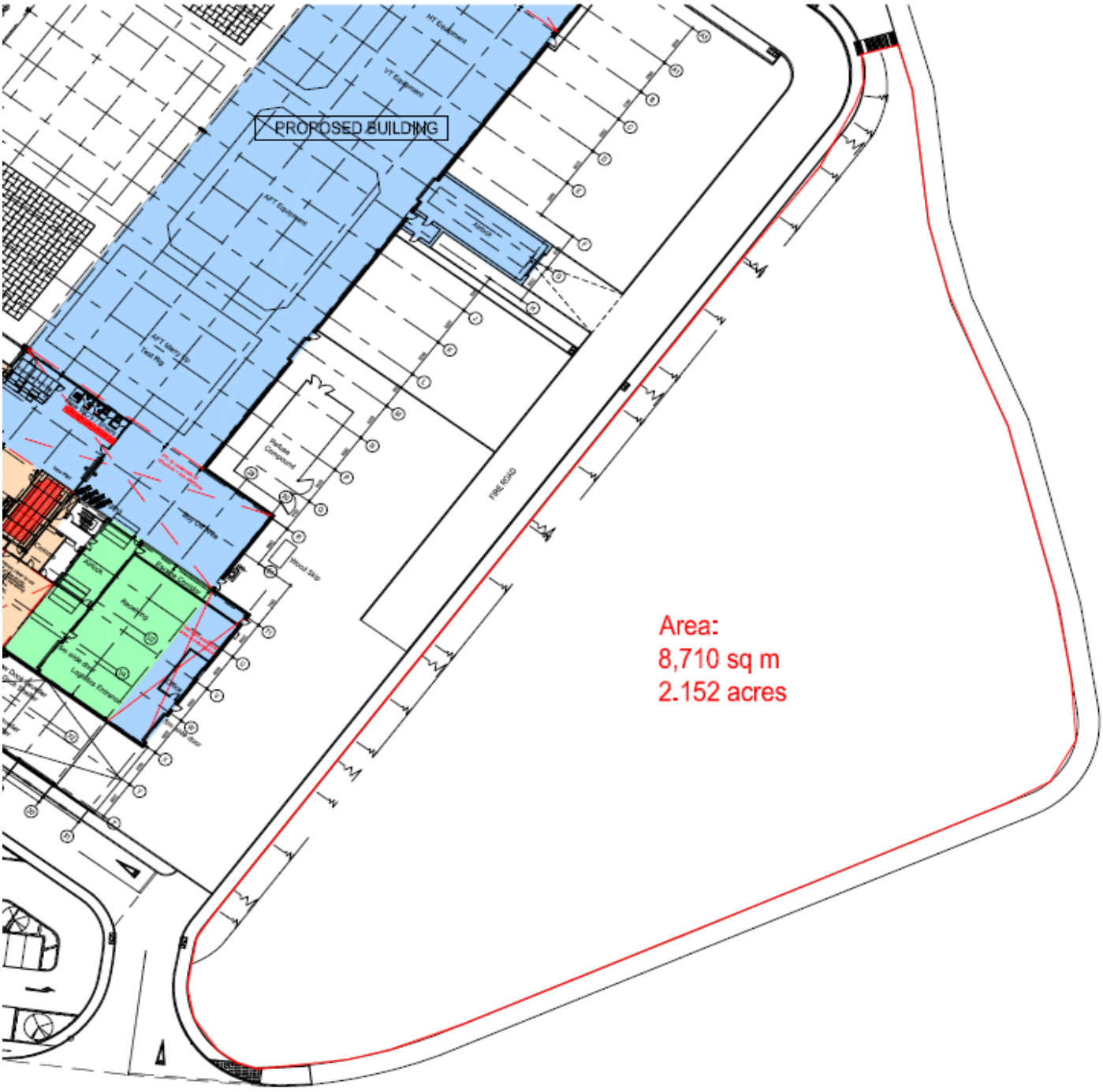
File Location: R:\M5241 BAE Systems Training Facility\Drawings\02 Tender\CAD

No.	Rev
M5241-200	T02



Plan supplied by Client's Engineer. For illustration purposes only, do not use for scale measurements.

SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907		Building 430 Area of Proposed Landscaping		
Site ENTERPRISE ZONE, SAMLESBURY AERODROME	Date Drawn 18-Feb-15	Date Checked	Orientation N	Job No. C1251
Client BAE SYSTEMS PLC	Drawn By DJ	Checked By	Scale –	Figure No. 5