



REMEDIATION STRATEGY AND VERIFICATION PLAN FOR SYMMETRY PARK, OXFORD

TE1585-TE-00-XX-RP-GE-005-V01

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Prepared for:

Tritax Symmetry Ltd

Prepared by: J Mullen

Tier Environmental Ltd

Warrington	London	Manchester	Bromsgrove	Bristol	Sheffield
HQ Telephone 01244 684900			Telephone 01925 818388		
Website: www.tieruk.com			Email: environmental@tieruk.com		

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EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by Tritax Symmetry Ltd to undertake a Remediation Strategy and Verification Plan for Symmetry Park, Oxford based on the results of previous Geoenvironmental risk assessments.
Proposed land use	The proposed development comprises the erection of a combined research, development, and production facility together with associated infrastructure and the realignment of an existing watercourse.
Remediation Strategy	<p>Low levels of chrysotile asbestos (<0.001%) were recorded in a single soil sample obtained from a mound currently located in the north of the site. Due to the isolated low level recorded, it is considered that the material could be reused beneath a cover system within landscaping bunds on the wider Symmetry Park development, out with the Unit 1 site boundary. A watching brief will be required while moving the mounds to identify and remove any visible asbestos containing materials (ACMs); if encountered these will need to be removed from site as hazardous waste.</p> <p>Residual material from a former Foot and Mouth pyre is located on the site and has been shown to cover an area of approximately 88m². It is proposed that the material shall be excavated, placed in sealed containers and transported to a suitable APHA registered disposal facility. The works are to be undertaken under an APHA exhumation licence.</p> <p>In the event that previously unidentified contamination should be encountered during the redevelopment works, works shall be ceased within this part of the site and the area should then be investigated further by a suitably qualified geo-environmental engineer and sampled as necessary. The Contaminated Land Officer (or equivalent) at the Local Authority should also be notified immediately.</p> <p>A Verification Report shall be prepared on completion of the site wide earthworks. A separate Verification Report shall be prepared on completion of the remediation of the residual material associated with the Foot & Mouth pyre.</p>



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1. INTRODUCTION

Tier Environmental was commissioned by Tritax Symmetry Ltd to undertake a Land Contamination Risk Management (LCRM) Remediation Strategy and Verification Plan for an area of land referred to as Symmetry Park, Oxford, which is located at land between M40 Junction 9 and the A41, Little Chesterton, Bicester, Oxfordshire, OX25 3PD (the "Site").

The title of this report is in accordance with that described in the Land Contamination Risk Management guidance (available at <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>) which has superseded CLR 11:

- Stage 3 - LCRM Remediation Strategy

This Remediation Strategy has been prepared with respect to discharge of Planning Condition 14 of planning application 22/01144/F.

1.1. Proposed Development

Under current proposals, the development will comprise the erection of a new high quality combined research, development and production facility comprising of Class B2 floorspace and ancillary office floorspace with associated infrastructure including: formation of signal-controlled vehicular access to the A41 and repositioning of existing bus stops; ancillary workshops; staff gym and canteen; security gate house; a building for use as an energy centre (details of the energy generation reserved for future approval); loading bays; service yard; waste management area; external plant; vehicle parking; landscaping including permanent landscaped mounds; sustainable drainage details; together with the demolition of existing agricultural buildings within the red line boundary; and the realignment of an existing watercourse.

As such, in accordance with the '*Updated technical background to the CLEA model*' (Environment Agency, 2009) and '*Suitable 4 Use Levels*' (LQM / CIEH 2015) the proposed generic land use for this development is commercial.

1.2. Previous Reports

This report has been prepared based on information presented in the following reports prepared by Tier Environmental:

- Preliminary Risk Assessment Report Unit 01, Oxford North, Symmetry Park, Oxfordshire (TE1585-TE-00-XX-RP-GE-001-V02), dated 26th November 2021.
- Ground Investigation Report, Oxford North, Symmetry Park (TE1585-TE-00-RP-GE-004-V04), dated January 2022.
- Addendum to Ground Investigation Report, Symmetry Park, Oxford (TE1585-TE-00-XX-TN-GE-001-V01), dated August 2022.

1.3. Background and Previous Works Summary

A ground investigation was undertaken by Tier Environmental between September and October 2021, the results of which are presented in the above GIR report. The ground investigation comprised the drilling of 4 No. cable percussive boreholes and 6 No. window sampler boreholes, excavation of 27 No. trial pits, soakaway testing and plate bearing tests.

Ground conditions were found to typically comprise topsoil overlying subsoil and alluvium and bedrock strata of the Peterborough Mudstone Member. The Peterborough Mudstone Member was typically encountered as soft to firm Clay (between 3.00 and 5.40mbgl).



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There are two mounds present on the north of the site, a large mound which is approximately 8m tall, 115m long by 45m wide and one smaller mound. Anecdotal information indicated that the larger mound comprised material that was imported for use as a screening bund and the smaller mound comprised site won material/surface scrape associated with the recent construction of the barns to the north.

No contaminants of concern in excess of Generic Assessment Criteria for protection of human health or controlled waters were recorded during the investigation.

Low levels of chrysotile asbestos (<0.001%) were detected in a single soil sample obtained from the large mound. No Asbestos Containing Materials were detected.

A second phase of investigation was undertaken by Tier Environmental in February 2022 in the vicinity of an historic Foot and Mouth pyre. The results of the investigation are presented in the technical note referenced in Section 1.3. Residual clinker from the pyre was recorded below topsoil and Made Ground at depths between 0.6m bgl and 1.3m bgl. The pyre material was found to cover an area of approximately 88m². The location of the Foot & Mouth pyre material is shown in Drawing TE1585-TE-00-XX-DR-GE-001 (Appendix A).

1.4. Anticipated Outline Remedial Works

Based on the results of the initial ground investigation, Tier did not recommend any specific remedial measures within the GIR (Tier Environmental, January 2022).

Assessment of the gas monitoring data and the CSM placed the site in a Characteristic Situation 1 – very low risk scenario in accordance with CIRIA C665 for which ground gas protection measures are not required. Ground gas mitigation has therefore not been considered further within this Remediation Strategy.

The mounds in the north of the site will need to be relocated to accommodate the proposed development layout. These materials are to be removed from the Unit 1 area for reuse as landscape bunds along the M40. Due to the trace concentration (<0.001%) of asbestos previously identified in TP21 at 1.0m bgl within the mound, a watching brief will be required to identify and remove any visible asbestos containing materials (ACMs); these will need to be removed from site as hazardous waste.

The second phase of investigation in the area of the historical Foot and Mouth pyre identified residual clinker associated with the pyre covering an area of approximately 88m². As the pyre is located within an area of proposed cut as part of the proposed regrading works, it is recommended that the residual clinker material be excavated under an exhumation licence to be issued by the Animal and Plant Health Agency (APHA) and disposed of at a suitably licenced facility.

1.5. Objectives

On the basis of the above, the objectives of this report are to:

- Present the Refined Conceptual Site Model derived within the previous Tier Environmental GIR Report and Addendum relating to the former Foot & Mouth pyre..
- Present a Remediation Strategy and Verification Plan to address reported.
 - Low levels of asbestos recorded in soils within a mound currently on the north of the Site.
 - Excavation and disposal of material associated with the historical Foot and Mouth pyre.



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This report, which was designed to meet the requirements of all relevant current guidance including 'Land contamination: risk management' (LC:RM) (which supersedes CLR11) presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the defined objectives.

1.6. Assumptions

The following assumptions are made in this report:

- It is assumed that ground levels will not change significantly from those described in this report or as shown on proposed development drawings. If this is not the case, then amendments to the recommendations made in this report may be required.
- The ground investigations that have informed this remediation strategy were designed with due consideration of known or suspected constraints (including underground services and access constraints).
- Any references to observations of suspected asbestos-containing materials are for information only and should be verified by a suitably qualified asbestos specialist and/or confirmed by laboratory analysis.
- The use of the term 'Topsoil' within this report is based on a visual identification only and that these materials have not been classified in accordance with BS3882:2015.
- The use of the terms 'shallow' and 'deep' within this report (from a geotechnical perspective) assume *typically* between ground level to circa 3.00m below ground level (bgl) for 'shallow' and greater than 3.00m bgl regarded as 'deep'
- The comments and opinions presented in this report are based on the findings of the desk study and ground conditions encountered during intrusive investigation works performed by Tier Environmental and the results of tests carried out within one or more laboratories. There may be other conditions prevailing on the Site which have not been revealed by these previous investigations and which have not been taken into account by this report.
- Responsibility cannot be accepted for any conditions not revealed by the previous investigations. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of intermediate ground conditions should be undertaken if deemed necessary.

This report has been prepared for the sole use of Tritax Symmetry Ltd. No other third party may rely upon or reproduce the contents of this report without the written approval of Tier Environmental. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and the authors do not owe them any Duty of Care or Skill.



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2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Symmetry Park, Oxford
Site address	Land between M40 Junction 9 and A41, Grange Farm, Little Chesterton, Bicester, Oxfordshire, OX25 3PD. A site location plan is included as Drawing No. TE1585-TE-00-XX-DR-GE-001-V01 within Appendix A.
National Grid Reference (NGR)	455415, 219774
Approximate Site area	19.26Ha / 47.59 acres
Site shape	The site is rectangular in shape centrally with corridors of land extending to the north, west and east. Site boundary plans are presented in Appendix A.
Current land use on the Site	<p>The majority of the site is currently a mixture of arable and pastoral agricultural land. There is a brook that runs offsite to the west and traverses the site from west to east towards the southern central part of the site. There is a track that runs from the farm offsite north to the northern part of site.</p> <p>There is an area of hardstanding extending from an access gate along the southern boundary with the A41. There is also an area of hardstanding/stone in the north-eastern part of the site that is used for vehicle parking.</p> <p>Across the site are a number of hedgerows and trees defining the site boundary and internal field boundaries.</p>
Surrounding land uses	<p>Grange Farm with associated farm buildings is located along the northern/northeast border.</p> <p>The western boundary is defined by agricultural land, a brook, woods with a pond and the M40 motorway beyond.</p> <p>The southern boundary is defined by the A41 road with agricultural land and the village of Wendlebury beyond. A graveyard is approximately 60-80 metres beyond the southern (eastern end) boundary.</p> <p>The eastern boundary is defined by hedgerows, Grange Farm, agricultural fields and the hamlet of Little Chesterton.</p> <p>The northern boundary is defined by agricultural fields.</p>
General topography and ground levels	<p>The site is lower than the A41 (68m AOD) by approximately 1m at 67m AOD to the south. The site slopes gently centrally to the stream from the north (circa 71m AOD) and south to approximately 66m AOD.</p> <p>Access to the Site is via the A41 to the south or Grange Farm to the north.</p>



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3. REVISED CONCEPTUAL MODEL

The revised combined conceptual site model and conceptual exposure model, developed for the proposed future land use from the desk study information and results of the subsequent ground investigation has been reproduced below.

The potential pollutant linkages identified, and a generic quantitative risk assessment are presented in Table 3.1. The terms used in the generic quantitative risk assessment are defined in Appendix C.



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Table 3.1 Revised Assessment of Potential Pollutant Linkages.

Justification / Comments	Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
<ul style="list-style-type: none"> The site is currently agricultural land for grazing and crops. The site has been agricultural land for over 120 years. There is some evidence of Made Ground in the southern field which is associated with former compound for M40 construction (Archaeology Aerial photograph confirmed it). The site is situated between the M40 Junction 9 (west) and the A41 (south). The northern boundary is Green Lane and to the east agricultural land. There are Alluvial Deposits within the centre of the site, along watercourse and to the east/northeast and these are primarily silty sandy gravelly CLAY. The exploratory logs show these deposits to be around 0.50-1.60m thick which correlate with the BGS logs of 1.00-1.50m thick. Additionally in the north western part of the proposed building (WS01) River Terrace Deposits were possibly identified with evidence of SAND. Beneath the majority of the development plot is extremely weathered MUDSTONE recovered as dark grey CLAY. With evidence of Kellaways Sand Member to the west of the development and Kellaways Clay Member to the extreme north and west (toward M40). Little groundwater was encountered; it was sporadic and perched in various formations as mainly seepages. The majority of the site is classed as an unproductive aquifer with the Kellaway Sand Member, the River Terrace Deposits and Alluvial Deposits classified as Secondary A Aquifer. There are no SPZ or potable/non potable water abstractions within 500m of site. No recorded landfills within 500m of site and the radon risk is less than 1%. There are no other potential sources of ground gas identified within the site walkover or within the site's boundaries. There is a small brook that runs parallel to the M40 and then cuts west to east through the southern end of the site (to be diverted as part of the redevelopment). There is a wooded area with a large pond along the southern edge of the site adjacent to the M40 Junction 9 southbound slip road. At this stage there is no ecology report signifying any risks to protected species. Localised within TP21 (mound in northern area) <0.001% Chrysotile asbestos identified. This mound will be removed from the Unit 1 site and reused on the wider Symmetry Park development to construct the landscaped bunds adjacent to the M40 as shown on Drawing No. 'TE1585-TE-XX-00-DR-GE-008-V01' included within appendix A. Residual clinker from a former Foot & Mouth pyre is located on the site. Samples of the material were confirmed not to contain Anthrax. As the material is in a proposed area of cut for the development, the material is to be excavated and removed to an appropriate waste disposal facility under an APHA exhumation licence. 	Made Ground in southern field as part of former compound and in the northern part of site where barns/outbuildings were constructed in circa 2009-2015.	Heavy Metals, PAHs, TPHs	Dust migration and inhalation	Future Site Users/Construction Workers	Medium	Unlikely	Low risk
	Vapour inhalation		Medium		Unlikely	Low risk	
	Lateral and vertical migration of mobile contaminants		Secondary A Aquifers and Unnamed Brook onsite	Medium	Unlikely	Low risk	
	Leaching and migration via groundwater			Medium	Unlikely	Low risk	
	Made Ground in Mound to North of site Boundary	Asbestos	Dust migration and inhalation	Future Site Users/Construction Workers	Medium	Low Likelihood	Low risk
	No significant ground gas sources identified	Ground Gases	Lateral / vertical migration via preferential pathway	Future Site Users/Construction Workers	Severe	Negligible	Very Low Risk
			Vapour inhalation		Severe	Negligible	Very Low Risk
	Foot and Mouth Pyre	Viral contaminants (Foot & Mouth Virus)	Direct contact, aerosol transfer	Livestock/wildlife	Severe	Low likelihood	Low Risk

For definition of the terms used in the qualitative risk assessment, please see Appendix C.



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4. REMEDIATION STRATEGY

4.1. Introduction

Tier Environmental considers that a combined remedial approach will be required to address the following potential contaminants of concern:

- Low levels (<0.001%) of asbestos in a mound of material currently located on the north of the site
- Residual clinker associated with an historical Foot and Mouth pyre

In addition, due consideration has been made within this remediation strategy for previously unidentified and localised visual / olfactory evidence of gross contamination.

4.2. Anticipated Remedial Works

Based upon the findings of the ground investigation the following Remediation Strategy has been devised in order to make the Site safe and suitable for redevelopment, as proposed:

- Removal and verification of residual clinker associated with the historical Foot & Mouth pyre
- Excavation and verification of material located in a mound on north of the Site for re-use in landscaping bunds out with the Unit 1 development plot.
- Bulk earthworks to achieve the proposed development levels, including with fill materials compacted in accordance with a recognised specification, such as Specification for Highways Works Series 600.
- Re-use of site won Made Ground materials to be conducted via a Materials Management Plan (if greater than 1,000 tonnes) in accordance with the Definition of Waste Code of Practice. If less than 1,000 tonnes of Made Ground to be reused, the works will be undertaken under a U1 Exemption.

The above integrated strategy is designed to mitigate the risk to human health from the potential for inhalation of asbestos fibres and the risk to human health and the environment including livestock from the residual material associated with the historical Foot & Mouth pyre.

4.3. Asbestos

Low levels of asbestos have been recorded in a mound of soil currently located on the north of the site. No Asbestos Containing Materials were identified. It is therefore proposed that the material shall be reused in landscaping bunds outside the Unit 1 Site boundary. It is recommended that the material is placed within the bunds beneath a clean cover system comprising 300mm of topsoil and subsoil.

The depth of clean cover placed shall be verified. Hand dug pits will be excavated on a 50m grid within landscaping bunds to ensure that a combined thickness of 300mm of subsoil and topsoil has been placed. Hand dug pits shall be photographed and submitted as part of the verification.

4.4. Foot & Mouth Pyre

It is proposed that the residual clinker in the area of the Foot and Mouth pyre shall be excavated and removed off site to a suitable APHA Cat-1 permitted disposal facility. The works shall be undertaken under an APHA exhumation licence and materials transported off-site by an APHA registered



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carrier. It is proposed that approximately the upper 0.6m of topsoil and reworked natural which overlies the clinker shall be excavated and stockpiled for reuse on site. Approximately 0.1m of the overburden (clay) and the underlying clinker shall be excavated and placed in sealed containers prior to removal off-site to a suitable facility. It is envisaged that the material shall be taken to an APHA Cat-1 permitted incinerator for treatment/disposal. To date, Tier has not identified a suitably licensed landfill that could receive the F&M clinker without pre-treatment.

The proposed method for removal of the material comprises:

- Excavation of overlying Topsoil and Made Ground to a depth of approximately 0.6m bgl for re-use within the wider development.
- Excavation of Made Ground and clinker to natural strata and placement of material in sealed barrels for transportation. Made Ground and clinker to be placed on Visqueen/tarpaulin to minimise the spread of potential Foot & Mouth into the shallow topsoil.
- Transportation of the containers to an appropriate disposal facility by an APHA registered waste carrier.
- Backfilling of all the shallow trenches with the appropriate material.
- Spraying with EndoSan50 disinfectant (or APHA approved equivalent) of all plant and machinery, including tarpaulin, buckets and tracks.

Verification

Supervision of the excavation, storage and packing of soils from the foot and mouth pyre shall be undertaken by Tier Environmental. A verification report shall be prepared on completion of the excavation and disposal to support discharge of the relevant planning conditions.

4.5. Contingency for any Unknowns or Previously Unidentified Localised Contamination

Whilst the ground investigation works conducted to date are regarded as comprehensive, Tier Environmental wishes to demonstrate that due consideration has been given at an early stage on possible remedial solutions in the event that local grossly impacted soils or groundwater are identified on Site.

Should any suspicious material be encountered during the redevelopment works, works shall be ceased within this part of the site and the area should then be investigated further by a suitably qualified geo-environmental engineer and sampled as necessary. The Contaminated Land Officer (or equivalent) at the Local Authority should also be notified immediately. Samples (if deemed necessary) will be forwarded to a UKAS/MCERTS accredited laboratory for a suite of analytical testing deemed appropriate based upon an appraisal of the material identified.

Once the results of the analysis are known and have been interpreted, the final required remedial action (if any) and remedial targets (as appropriate) will be determined and approved with the relevant regulatory authorities.

4.6. Environmental Monitoring and Mitigation

Introduction

In order to mitigate the environmental impacts of the works on nearby surrounding land users, a programme of measures will be implemented during the remediation works.

Dust Mitigation

Localised asbestos containing soils were recorded in the northern mound therefore the movement of these material should be undertaken in accordance with the Control of Asbestos Regulations 2012 and CAR-SOIL.



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Appropriate measures shall be implemented at all times during the remediation/enabling works, to minimise dust emissions. Soils will be dampened down, as necessary, and activity will be minimised in extremely windy conditions to prevent dust nuisance. An adequate supply of water shall be maintained on site at all times to allow for dust suppression activities to be carried out at short notice.

When dusty material is being loaded onto trucks, extra care will be taken to ensure that the drop height is minimised. Trucks will be suitably covered when leaving the site with contaminated material to prevent dust migration.

The amount of disturbed surfaces left exposed for significant time periods will be minimised. Stockpiles of fine or loose materials should be tamped down or covered, if necessary, to reduce the production of dust. Traffic both entering and working on the site shall obey a maximum speed limit of 10 mph.

Noise

The requirements of BS 5228:1997 "Noise and Vibration Control on Construction Sites" shall be adhered to at all times. All machinery shall be fitted with effective silencers and shall be serviced at regular intervals. No plant shall be operated with engine covers raised.

Run-off into Drains

All potential drainage on site and any discharge points will be identified, including land drains, foul sewers, surface water drains and any combined drains. These will be marked, as appropriate, for easy identification.

Works will be minimised during periods of heavy rainfall to reduce the likelihood of contaminated run-off. Temporary containment and cover measures or tamping down of stockpiles to reduce run-off shall be used where necessary.

4.7. Waste Soils – Basic Characterisation and WAC

Material associated with the historic Foot and Mouth pyre that is to be removed from site shall be stored in sealed containers and transported to an appropriate APHA Cat-1 disposal facility by an APHA registered waste carrier. Confirmation should be sought from the disposal facility with regard to any additional testing of the clinker that may be required.

Any further materials that require removal from the Site will be exported from the site to the appropriate landfill and shall be hauled by a registered waste carrier in accordance with Duty of Care Regulations, 1991 and the Hazardous Waste Regulations, 2005.

Basic waste characterisation has determined that Made Ground soils are non-hazardous for all soils on site. The results of WAC tests have confirmed that Made Ground in the vicinity of TP06, TP12 and TP24 is suitable to be disposed to an inert landfill, if required.

It is anticipated that natural soils will be suitable for disposal to an inert landfill, if required.

Any ACMs identified during the works, notably within the northern mound, will need to be segregated, placed in suitable containers and disposed of as hazardous waste.

There will be requirement for the waste producer to provide appropriate Waste Acceptance Criteria (WAC) testing of the soils for disposal to ensure that the soils are appropriately classified and that the landfill is licensed to receive such soils.



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4.8. Verification Report

The supervising engineer should ensure that the requirements of the strategy are complied with. On satisfactory completion of all remedial works, a verification report should be produced. This report will comprise all relevant site records and act as certification that the remedial preparation works have been carried out in accordance with this remediation strategy.

The Verification Report shall include the following:

- A description of the works undertaken in accordance with the Remediation Strategy described above
- Records of the works
- Progress photographs
- Waste Transfer Notes
- Chemical verification test results

A separate Verification Report shall be produced for the Foot & Mouth Pyre by the supervising engineer. In addition to the information outlined above the report shall include information on the methodology used for excavation and storage of the Foot & Mouth material, copy of the APHA exhumation licence and details of the waste carrier together with evidence of their APHA registration.



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5. REGULATORY APPROVALS

The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigations. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval.



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7. GLOSSARY OF TERMS

ACEC	Aggressive Chemical Environment for Concrete (classification)
aOD	Above Ordnance Datum
bgI	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
Designated location	Site (and the ecosystem on that site) protected under national or international legislation. A potential ecological receptor to be considered as part of the assessment of land contamination. Example designated locations include SSSIs (q.v.), SACs (q.v.), national nature reserves, Ramsar sites and bird special protection areas.
DQA	Data Quality Assessment
DQO	Data Quality Objective
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
K _{ow}	Octanol-water partition coefficient
LEL	Lower Explosive Limit
LL	Liquid Limit
LoD	Limit of Detection (analytical)
LoQ	Limit of Quantification (analytical)
Mean Value Test	Statistical test (described in the CIEH Guidance) to estimate the mean value of a normally distributed population of data at a given level of confidence. Normally for contaminated land assessment, the 95th percentile (referred to as the 95%UCL or US95) is applied as a reasonable but conservative estimate of the mean concentration for comparison with the relevant assessment criteria.
Maximum Value Test	Statistical test (described in the CIEH Guidance) to identify whether an elevated concentration within a normally distributed data set forms part of the underlying population from which it has been sampled or whether it is an outlier (such as a localised area of contamination) that merits further consideration.
MC	Moisture Content
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
PI	Plasticity Index
PID	Photoionisation Detector
PL	Plastic Limit
ppm	Parts per million
ppmv	Parts per million by volume
QA	Quality Assurance
QC	Quality Control
SAC	Special Area of Conservation
SOM	Soil Organic Matter



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SPT	Standard Penetration Test
SPZ	Source Protection Zone (see Appendix E)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest
SVOC	Semi-Volatile Organic Compound
TEF	Toxicity Equivalent Factor
TPH	Total Petroleum Hydrocarbons
TWA	Time Weighted Average
US95	95 th percentile estimate of the true mean value of a data population (also known as 95%UCL).
VOC	Volatile Organic Compound

APPENDIX A - DRAWINGS

Legend:

— Site Boundary



Tier Environmental Ltd,
Suite 513, Chadwick House,
Warrington Road,
Birchwood, WA3 6AE

CLIENT: Tritax Symmetry Ltd

PROJECT TITLE:
Oxford North, Symmetry Park, Oxfordshire

DRAWING TITLE:
Site Location Plan

DRAWING REF: TE1585-TE-00-XX-DR-GE-001-V01

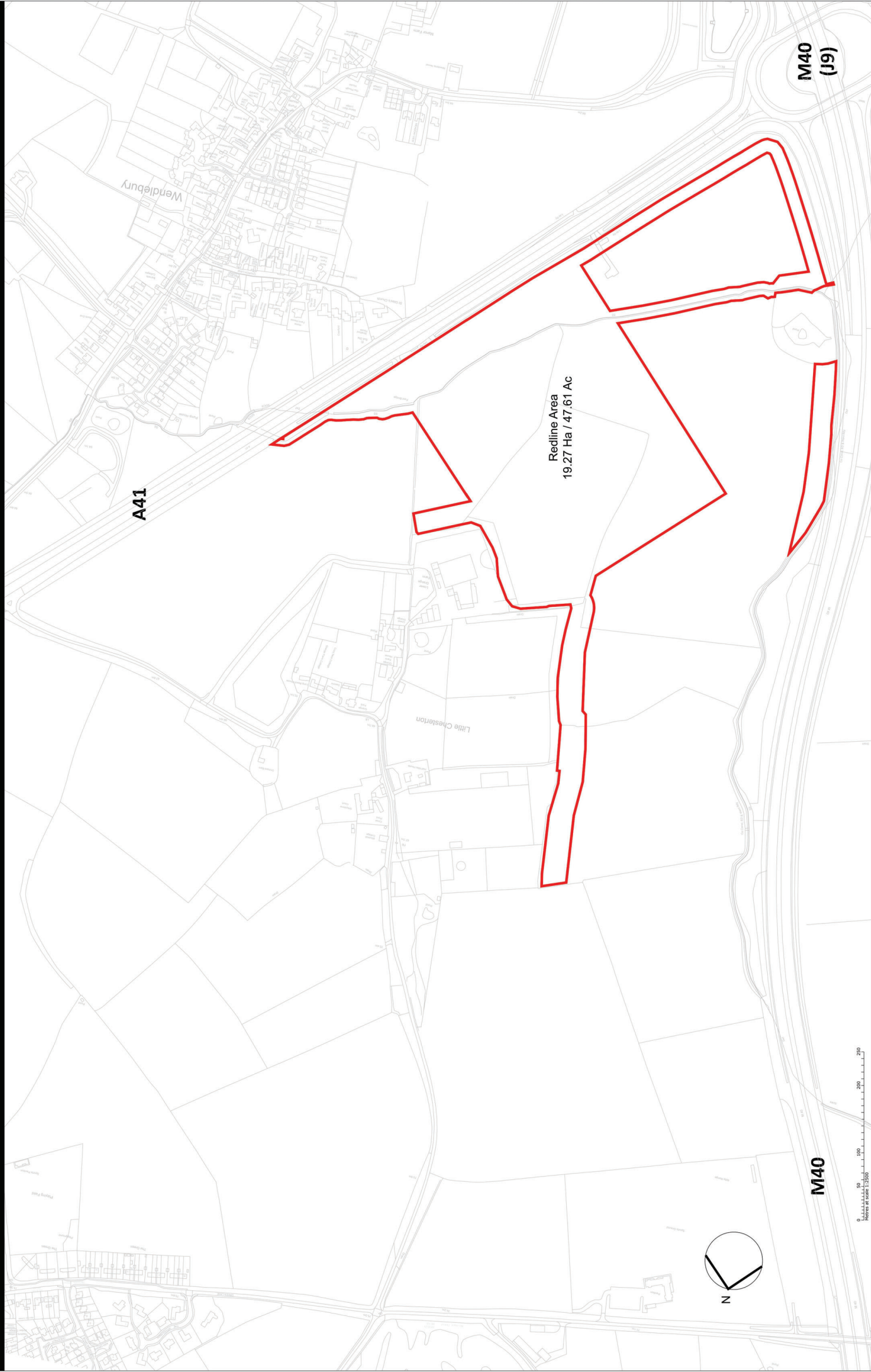
AUTHOR: SDM

REVIEWER: SDM

SCALE: NTS

DRAWING DATE:
June 2021

DRAWING STATUS:
FINAL



SGP
Architects + Masterplanners

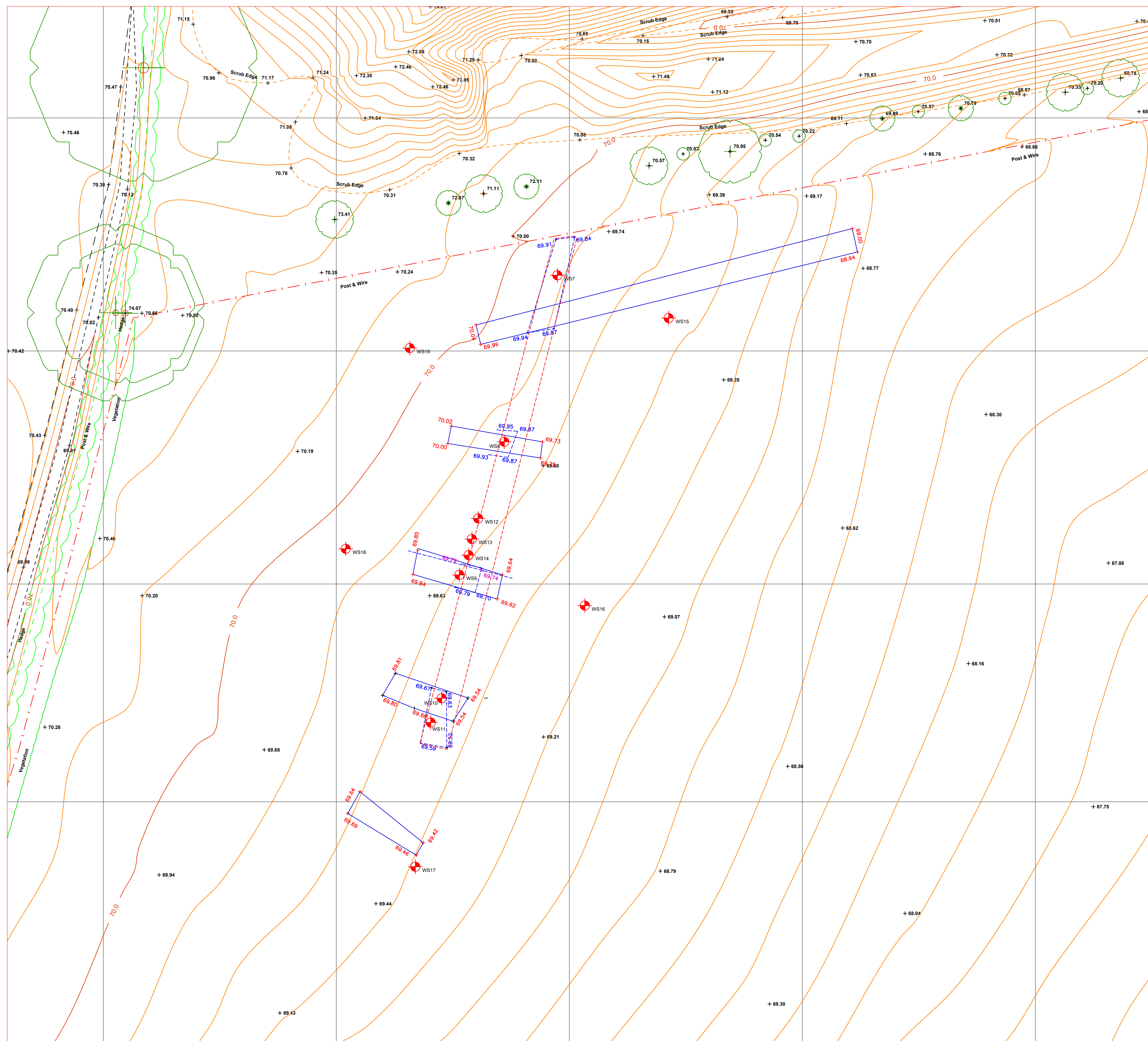
Waterfront House,
28 Smith Way, Grove Park,
Leamington Spa,
CV32 3JX
T: +44 (0)116 247 0557
www.sghgroup.co.uk

SGP File Ref: 13-222
Project No: 13-222
Drawn By: MMS
Date: 09/2021

Rev: P4
Scale: 1:2500 @A1

Rev: Date: Description

TRITAX SYMMETRY
A TRITAX BIG BOX COMPANY



Notes

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS TOGETHER WITH THE APPROPRIATE SPECIFICATIONS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO CHECK ALL DIMENSIONS ON SITE. DIMENSIONS MUST NOT BE SCALED FROM THIS DRAWING. ANY DISCREPANCIES TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT IN WRITING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES, UNLESS NOTED OTHERWISE

001	24.08.2022	By - CS
Revisions		
Status		
FINAL		



Tier Environmental Ltd.
 Chadwick House
 Warrington Road
 Birchwood
 Warrington | Wa3 6AE
 t: 01925 818388

Client
TRITAX_SYMMETRY

Project
OXFORD_NORTH

Title
FOOT_AND_MOUTH_LOCATION_PLAN

Scale NTS	Drawn CS	Revision
Date 24.08.2022	Checked JM	001

Drawing Ref :
 TE1585-TE-00-XX-DR-GE-001_FOOT & MOUTH LP

TE1585 **001**

A1

APPENDIX B - PREVIOUS SITE INVESTIGATION REPORT (AVAILABLE AS A SEPARATE DOCUMENT)

**APPENDIX C - DEFINITIONS OF TERMS USED IN QUALITATIVE AND QUANTITATIVE
RISK ASSESSMENTS**

CIRIA C552 Terminology

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present, and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of risk	High Likelihood	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	very low risk	Very low risk

1. Develop a remediation strategy.
2. Remediate.
3. Produce a verification report.
4. Do long term monitoring and maintenance, if required

You must always start with a preliminary risk assessment.

The risk assessment stage is an iterative process. You can do the 3 tiers in order or progress from a preliminary risk assessment to a detailed quantitative risk assessment. As part of a generic or detailed quantitative risk assessment you will need to collect detailed information about the site. This is usually through an intrusive site investigation.

Depending on the level of risk or regulatory requirements, you can proceed from a preliminary risk assessment to the options appraisal stage. If you proceed direct to the options appraisal stage, you still need to collect the detailed site investigation information required by the generic and detailed quantitative risk assessments. This is to confirm that your approach is viable and acceptable.

Following the risk assessment stage, if you conclude that the risks are acceptable, with agreement from the relevant regulator, you can end the process.

If there are unacceptable risks, then remediation or mitigation is required. Follow stages 2 and 3 in order.

In stage 2 options appraisal, you will:

- look at the most feasible options
- produce a shortlist of options
- use evaluation criteria to assess them
- select which ones are the most suitable to take forward to stage 3

In stage 3 remediation and verification, you will produce a remediation strategy, do the remediation and then produce a verification report.

You will decide at the options appraisal stage if long term monitoring and maintenance is the remediation option. You may need to do post-remediation monitoring for further verification.

The risk assessment and subsequent investigation, remediation and verification must address all potential sources of pollutants that may be present on the site (the "hazards"), all receptors that may be harmed by these (e.g., human health, controlled waters, ecological receptors) and the pathways by which the contamination may be transported from the contaminant source(s) to the receptor(s). This is defined within the conceptual model for the site, which represents the characteristics of the site in a form that shows the possible pollutant linkages. As further information becomes available (for example, through site investigation), so the conceptual model will be refined.

Remedial action can be specified at any phase within this assessment process to break the identified pollutant linkage in determining whether or not to undertake further assessment or to undertake remediation, the potential cost-savings arising from a more thorough assessment of the pollutant linkages and more tightly defined remedial strategy must be considered against the direct costs involved in the work and the time that this will take to execute and gain regulatory approval.

A different approach to the statistical appraisal of data is required depending on whether the assessment is being undertaken to assess land as Contaminated Land in accordance with the regulations or whether the assessment is to assess whether the site is suitable for new development in accordance with the Planning regime. The statistical approach to assessment is discussed further in CL:AIRE:2020 "Professional Guidance: Comparing Soil Contamination Data with a Critical Concentration".

Some form of Detailed Quantitative Risk Assessment (DQRA) will be essential for those cases where appropriate GAC values cannot be established for the contaminant linkages under consideration.

APPENDIX D - COMPLYING WITH CONTROL OF ASBESTOS REGULATIONS 2012

Complying with Control of Asbestos Regulations (CAR): Risk Assessments, Licensing and Training

This appendix outlines CAR risk assessments and where they should be applied in relation to assessing and remediating brownfield sites. The information below details the different classifications of work with asbestos under CAR, summarises the legal requirements for asbestos awareness training for all involved in the investigation and management of asbestos containing soil (ACS), and details the potential requirements for suitable proficiency training relating specifically to ACS.

CAR RISK ASSESSMENTS

A CAR Risk Assessment is required for any work which may expose employees to asbestos. It is recommended that a precautionary approach is adopted if there is any doubt about risks associated with asbestos.

There are three main activities for potential asbestos exposure during work on brownfield sites:

- Site reconnaissance visits;
- Site investigation works; and
- Site remediation.

CAR risk assessments are needed at each stage but may be incorporated during the site investigation stage into the overarching health and safety risk assessments.

The CAR risk assessment must:

- Identify the type of asbestos to which employees are liable to be exposed, where possible, or assume it is present in different forms;
- Determine the type and extent of exposures to asbestos that may occur during the work
- Identify the steps to be taken to prevent exposure or reduce it to the lowest level reasonably practicable; and,
- Consider the effects of control measures that have been or will be taken.

The CAR risk assessment should include any information used to inform the risk assessment such as asbestos reports or desk study information. In the event that this information is not available, the assessor should be assumed that all forms of asbestos may be present on Site.

For all investigation and remediation of ACSs, a detailed written work plan should be produced and followed as detailed on the HSE website and in the CAR.

The CAR risk assessments for specific investigations or remediation projects, will determine whether or not work is 'licensable work' (LW), notifiable non-licensable work' (NNLW) or 'non-licensed work' (NLW). In addition, training requirements are also defined by the CAR risk assessment.

Some examples of control measures that apply during site reconnaissance, site investigation works, and site remediation are given below and should be applied depending on the asbestos risks identified for the Site at each stage of investigation:

- Avoiding stirring up dust;
- Cleaning footwear after site works;
- Removing and bagging any overalls for disposal/laundry;
- Respirators and hygiene facilities for high risk sites;
- Segregated welfare units;
- Wetting ground
- Minimising soil disturbances;
- Implementation or retention of capping/break layers;
- Implementation of awareness training;
- Air monitoring;
- Managing stockpiles;
- Area segregation;
- Wheel washing
- Road washing/cleaning

It is important to note that during Site reconnaissance visits, Site investigation works and Site remediation that asbestos should not be considered in isolation and control measures are likely to form part of a wider health and safety precautions.

Respiratory protective equipment (RPE)

RPE is the last line of defence and its requirement would be defined by the CAR risk assessment. HSE (2013b) advises that RPE should have an assigned protection factor of 20 or more for all work with asbestos. In certain instances, full face-piece, positive pressure respirators with a protection factor of 40 are necessary (to EN 12942:1998, TM3).

Suitable types of RPE for most *short* duration non-licensed asbestos work:

- Disposable respirator to standards EN149 (type FFP3) or EN1827 (type FMP3)
- Half mask respirator (to standard EN140) with P3 filter
- Semi-disposable respirator (to EN405) with P3 filter

These filters are not suitable for people with beards/stubble or for long or continuous use.

LICENSING

CAR defined certain types of activities involving asbestos as 'licensable work' (LW) or as 'notifiable non-licensable work' (NNLW). All other work would be 'non-licensable work' (NLW).

LW is defined as:

- work where exposure is not 'sporadic and low intensity'
- work where the risk assessment cannot demonstrate that the control limits (four hour and 10 minute limits) will not be exceeded
- work on asbestos coating
- work on AIB or insulation where risk assessment is either of first two points above or not of short duration (where short duration is defined for any work liable to disturb asbestos as taking less than two hours per week (including ancillary work) and no one person carries out that work for more than one hour').

NNLW includes work with:

- AIB or asbestos insulation of short duration that is not licensable
- fire-damaged asbestos cement or asbestos cement damaged so as to create significant dust and debris
- asbestos ropes, yarns, woven cloths in poor condition or handling cutting or breaking up the materials
- asbestos papers, felts and cardboard in poor condition, unencapsulated or not bound into another material.

Work with weathered asbestos cement, air monitoring and collecting samples of ACM in buildings would not normally be notifiable.

It is impossible to specify definitively what activities will and will not be licensable. This decision should be made as part of the CAR risk assessment. CAR is not primarily aimed at work with ACSs and there is little published information on airborne asbestos concentrations during work with ACSs. Nevertheless, CAR will require some remediation projects, and occasionally site investigations, to be LW. Investigations on other sites may involve NNLW. The decision as to whether work is LW or NNLW should be made during the CAR risk assessment by those in charge of the brownfield site investigations and remediation projects.

TRAINING REQUIREMENTS

Asbestos health and safety courses are offered by a number of providers in the UK. Training courses that include the problem of identifying ACMs in soil should be undertaken at regular intervals by those involved in the investigation, assessment and management of sites where ACs are known or suspected. It is the role of the employer to identify the level of training required for an employee based on their role, experience and duties. Reference to Regulation 10 of CAR should be referred to for more information on training requirements.

Recognising asbestos within soils is challenging due to the heterogeneity of such soils and the discolouration of asbestos by smeared soil. Specific training for ground workers should include understanding fibre release potential, potential control measures in the field, how to take representative ACSs safely, sample labelling and what analytical tests are available and when they should be implemented.

Health and safety training required under CAR includes asbestos awareness, non-licensable work (including notifiable non-licensable work) and licensable work with asbestos.

In addition to health and safety training, some staff involved in the technical identification on site of ACMs, sampling and analysis may require technical proficiency training (competency training).

Training vs. Competence

HSE (2005) identifies that 'training alone does not make people competent. Training must be consolidated by practical experience so that the person becomes confident, skilful and knowledgeable in practice on the job'. It is critical that ACS surveyors demonstrate competency with details of relevant field experience alongside training and examples of previous works/references.