

SITE OFF MALTING LANE, DONINGTON

REMEDIAL METHOD STATEMENT
FOR
SEAGATE HOMES (UK) LTD

Project No:
GML19177

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Prepared for:
Seagate Homes (UK) Ltd
33 Boston Road South
Holbeach
Spalding
Lincs
PE12 7LR

Prepared by:
Geo-Matters Ltd
104 Bondgate
Castle Donington
Derby
DE74 2NR
info@geo-matters.com
<http://www.geo-matters.com>

Revision – 0

REMEDIAL METHOD STATEMENT FOR SITE OFF MALTING LANE, DONINGTON

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1.0 INTRODUCTION

Geo-Matters Ltd have been instructed by Seagate Homes (UK) Ltd (hereafter referred to as 'the Client') to prepare a Remedial Method Statement (RMS) for a proposed residential redevelopment at the Site off Malting Lane, in Donington ('the site') to address identified contaminant hotspots. The site is located at Ordnance Survey National Grid Reference 520190, 335200, as shown on plans within Appendix I.

1.1 Sources and Conditions

This RMS is based on the findings of the following reports for the site, as summarised below:

- Hydrock: Desk Study and Ground Investigation Malting Lane, Donington Ref MLD-HYD-XX-GI-RP-GE-1001 dated May 2017;
- Geo-Matters Ltd: GML1977 Report for Recent Delineation Works at the Site off Malting Lane, Donington (ref: AT/GML19177/DL1/1) dated August 2019)

It is assumed that the Regulators have seen and commented upon the above reports (from a contaminated land perspective) and that they have approved the works and recommendations made thus far. If this is not the case, it is recommended that the report is submitted to the regulators for comment.

The above reports must be read in conjunction with this document, which should not be referred to in isolation.

This RMS has been prepared on the understanding that the site is to be redeveloped for a residential end-use including associated infrastructure, private gardens and POS areas. If the development proposals change then the recommendations in this RMS may require amendment.

This report has been prepared for the sole use and reliance of Seagate Homes (UK) Ltd and is presented to propose an outline scope for remedial works, where required.

All recommendations within this RMS are subject to the formal approval of the Regulatory Authorities (i.e., EHO, EA and NHBC). It is recommended that this report be submitted to them by the Client in advance of any irrecoverable works on site.

The currently accepted Tier 1 Screening Values for the UK (i.e., C4SLs and similar screening values) are always being re-assessed and refined in response to advances in risk assessment and changes in policy / regulation(s). The newest accepted values have been utilised within this document. Other values may be released or approved by regulators / third parties which may be adopted for this site prior to the completion of the project.

1.2 General Considerations

The possibility of significant variation in ground conditions existing between sampling locations cannot be discounted and this report only comments on the findings within the previous reports. Groundwater conditions are based on observations made at the time of the investigation and may be subject to significant variation due to seasonal or other effects.

It is assumed that the Client and their selected redevelopment contractors will adhere to all relevant regulations in connection with health and safety and demolition works (including, but not limited to, Construction (Design and Management) Regulations 2015).

This document relates only to remedial works in connections with soils. All remaining considerations (i.e. structural considerations, utility diversions etc.) should be addressed to the suitable specialist engineers / consultants as appropriate by the Client.

1.3 Supervision of Remedial Works

The Client will need to appoint a suitable third-party environmental consultancy (i.e., Geo-Matters Ltd) to supervise and validate all remedial works. However, the appointed remedial / earthworks contractor(s) will be responsible for the provision of suitable and sufficient personnel to undertake and complete the works recommended within this document.

2.0 SUMMARY CONCEPTUAL SITE MODEL

Full details relating to the site setting and ground conditions encountered are presented within the previous report (as referenced in Section 1.1). The following presents a summary conceptual site model as background information to put the proposals presented within this RMS into perspective.

2.1 Site Setting

Brief Site Description

The site forms part of a single open agricultural field. The field was not under crop at the time of our investigation, but aerial mapping shows recent arable land uses. Ditches containing water are present along the northern and western site boundaries. The site is set within a mixed residential, agricultural and light industrial area which is slightly to the west of the centre of Donington.

Geology / Hydrology

The underlying solid geology across the site (Oxford Clay Formation) is recorded as an 'Unproductive Strata'. Unproductive strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. Although no groundwater or surface water abstraction licenses are recorded within a 250m radius of the site and the site is not set within an Environment Agency 'Source Protection Zone'.

Potential Sources of Contamination

A stockpile of tipped waste, disused farm machinery and a base of former building was reported on site within the third party report. They, also, identified mounds comprising reworked dry clay intermixed with topsoil with fragments of metal, plastic pipes, bags, tiles and other assorted debris with some surface low level asbestos were present. Concrete hardstanding was also noted to the entrance of the subject site.

2.2 Ground Conditions

A third party identified asbestos and PAH hotspots on site. The recent delineation report undertaken by Geo-Matters Ltd in August 2019 comprised the advancement of 17 No. trial pits to a maximum depth of 1.10m below existing ground level (begl) including delineation sampling around identified exceedances.

Made ground

Made ground comprising reworked topsoil was encountered in DTP01 to DTP06 (inclusive) and DTP09 to DTP14 (inclusive) to depths of between 0.20m begl (in DTP10) and 0.50m begl (in DTP05) where fully penetrated. The made ground

generally comprised light brown sandy gravelly topsoil which contained variable proportions of anthropogenic materials including brick, tile, cement, concrete, plastic, charcoal and clinker fragments.

Topsoil

Topsoil was encountered in DTP07, DTP08 and DTP15 to a depth of 0.30m begl and generally comprised brown sandy silty clay with rare coarse and subrounded gravel of mixed lithology.

Natural Strata

The topsoil / made ground were underlain (where fully penetrated) by soft to firm light brown and grey mottled sandy clays. Organic / putrescible materials were not identified within any of the exploratory locations completed during the recent investigation.

Visual and Olfactory Evidence of Contamination

During the recent ground investigation, **no** other significant visual or olfactory evidence of any potential contamination was noted within the exploratory locations advanced at the site.

Groundwater

No groundwater was encountered during this investigation however, the exploratory locations were completed at relatively shallow depths therefore reference must be made to the third-party reports. During the site works conducted by the third party, slight seepages of groundwater were encountered within the Tidal Flat Deposits at depths ranging from 1.0m to 2.10m bgl during their field works.

2.3 Sources (Contamination)

Identified Contaminant Areas

The chemical analysis undertaken by both the third party and Geo-Matters Ltd in 2019 indicated that soil concentrations in the natural subsoils across the site were below the respective assessment criteria based on a proposed residential end use with private gardens and the natural subsoils appear 'clean'.

PAHs

The topsoil/ made ground was found to be localised contaminated (exceedance in PAH & Asbestos). The third party found exceedance of PAH at CPT11, TP01, MS1, MS2, MS4 and MS5. Geo-Matters Ltd found exceedance in PAHs only in DTP10 at 0.00-0.20m begl.

Asbestos

Geo-Matters Ltd have not identified any asbestos which were taken from the central / mound area. However free fibers of asbestos were recorded by the third party (in CPT11, TP02 and MS2) and fragments of potentially asbestos containing materials were noted by Geo-Matters Ltd in the mounds in the western part of the subject site during the recent investigation, including on the ground between DTP01 and DTP02 and in made ground soils in DTP12.

No detections of asbestos were recorded in the underlying natural soils by either the third party or Geo-Matters Ltd.

2.4 Receptors

The site is to be redeveloped for a residential end use. Therefore, Tier one screening values for a residential end use with plant uptake were used in the recent delineation report as these are the most stringent scenario with regards to contaminant screening values. The main receptors which have been considered within this RMS comprise future residential end users.

Groundworkers have not been considered as receptors within this document as it is anticipated that the company / companies undertaking such works will implement their own health and safety protocols with due reference to the findings contained within this report and those listed above, and shall therefore not be considered any further within this assessment.

2.5 Source / Pathway / Receptor Linkage

Based on the findings of our previous assessments / investigations, it is considered that potential pollutant linkages are present associated with the identified contamination and future residential site users. These include the following:

- Direct ingestion of soil and dust;
- Ingestion of home-grown vegetables etc.;
- Dermal contact with soil and dust;
- Inhalation of vapour, fibres and dust.

Remedial works are therefore required to break the identified linkages.

3.0 REMEDIATION STATEMENT

3.1 Remediation Rationale

It is considered that the remedial works outlined herein should be sufficient to break all identified pollutant linkages to human health receptors for the contaminated soils encountered. The remedial works identified herein would include either the capping of made ground or the removal of these contaminated materials within the area of concern as presented within Appendix I, thereby breaking the pollutant linkages for the identified receptors. All hotspots are contained within a 'scrub' area previously utilised for storage of disused farm machinery etc located in the NE of the site ('the area of concern').

Where contaminated materials are covered by permanent hardstanding / structures; as part of final layouts; then this would be considered to suitably break the pathways identified thus far, meaning that further remedial works would not be required, unless otherwise mentioned. Where/if materials are removed from the area of concern to construct a proposed road through, these should be either taken off site for disposal, or placed under permanent hard standing (the Client should confirm to the regulators their preference) and undertake these works in accordance with all appropriate permits etc.

The proposed hotspots should be subject to the following:

- Either capping of the area (min. 600mm thickness) with 'clean' topsoil / subsoil or
- Full removal of all contaminated soils where present near surface;
 - Where materials are removed from the ground, then either removal of contaminated materials from site or placement of materials elsewhere on site within POS areas beneath a minimum capping layer of 600mm thickness; and in addition;

Where asbestos contaminated made ground is identified, capping protocols / requirements should follow those described herein, although it is recommended that hand-picking of visible asbestos-containing debris is also undertaken to avoid any further spread of release of 'free fibres' within the soil matrix.

All movements / disturbance of asbestos contaminated made ground materials will need to be **undertaken under controlled conditions** (as explained in subsequent sections).

3.1.1 Other Contamination / Related Issues

Additional / previously unidentified contamination should be dealt with on an *ad hoc* basis as outlined in Section 4.0. All movement(s) of soils and other arisings must be undertaken under the appropriate regulatory authority licensing / exemption procedures.

Any importation works must be undertaken in full compliance with all regulatory licensing procedures, and validation of the soils prior to importation will be required, subject to the approval of the Local Authority.

4.0 REMEDIATION SPECIFICATION

4.1 Capping Specification

As outlined in Sections 2 and 3, feasible pollutant linkages have been identified at the site associated with PAHs and asbestos.

Remedial measures will be required within the Area of Concern **ONLY** where the locations fall within gardens and / or other soft landscaped areas; should the materials be left *in situ*; in order to break the identified pollutant linkages. A capping thickness of 600mm is recommended. Alternatively, in instances where all contaminated ground is removed (e.g. for off-site disposal) or is not present within 600mm of finished levels then capping would **not** be required, with the exception of NHBC standard cover thicknesses for aesthetic purposes.

4.2 Capping Materials

Issues relating to the validation of capping soils following their placement are detailed in Section 5.

4.2.1 Capping Thicknesses

The following table of capping thicknesses to protect human health are proposed where contaminated made ground remains *in situ*, subject to regulatory review of this RMS.

Table 4.0: Summary of Recommended Capping Rationale[^]

Location	Recommended Capping Thickness	Rationale	Capping Make-up
Area of Concern	600mm*	Asbestos & PAHs	150mm Topsoil 450mm Subsoil

* Capping only required if contamination remains *in situ*.

[^] Subject to regulatory approval.

Appropriate inspection(s) and analyses will be necessary should classification of topsoil material be required against standards such as BS3882: 2015 'Specification for Topsoil'.

Any soils imported to the site will need to be proven chemically suitable for the residential end-use (to the satisfaction of the regulators) and have the appropriate licencing in place.

4.3 Utilities

It is recommended that utilities providers should be contacted (prior to the completion of any irrecoverable works) for confirmation that utility construction materials which have been selected by the Client meet with their approval. However, it is noted that soils at the site are mostly 'clean' apart from the area of concern, previously discussed.

4.4 Additional Contamination

Should significant suspected additional / previously unidentified contamination be encountered within soils during future redevelopment, works should cease immediately and Geo-Matters Ltd should be informed without delay. An inspection of these soils by an Engineer from Geo-Matters Ltd will be necessary in order to determine requirements for further remedial works, if required.

Where contamination is suspected / identified then we should be contacted immediately and the soils must be removed under engineer's supervision. Validation sampling should be undertaken as described in Section 5.0. Excavated soils should be removed from site under appropriate waste management guidelines or retained on site and treated in accordance with the general remedial approach prescribed above. Cross contamination with 'clean' site soils, and the absence of run-off managements systems (i.e. contaminated fluids from excavated soils) must be avoided by site staff.

5.0 VALIDATION

The validation of completed remedial works will be required to provide the Regulatory Authorities with sufficient information to permit their approval for the works undertaken and outlined within this report. The following section outlines the necessary validation works associated with each phase of remedial works. All validation records should be presented to the relevant Regulatory Authorities for approval as necessary and should also be retained for inclusion within an overall completion report for the site.

The exact nature of the validation requirements will be dependent on the works completed and recommendations are provided within the following sub-sections.

All recommendations are subject to the approval of the relevant Regulatory Authorities.

All soil samples must be retrieved by an Engineer, and be analysed at a UKAS / MCERTS accredited laboratory.

5.1 Excavation of Soils

Where contaminated soils etc. are excavated, an engineer from Geo-Matters Limited will need to be present to record the works.

Validation inspections / sampling may be required within all resultant excavations (and beneath excavated soils etc.) following these works so that they can be approved by the regulatory authorities.

It is recommended that designated storage / treatment areas be identified in advance by the Client so that all excavated soils can be stored in an appropriate manner prior to their disposal / remediation.

Asbestos Containing Materials

Where made ground containing proven asbestos fibres is excavated (i.e. CPT11 and MS2), it must be handled under controlled conditions. This must be prescribed and managed by your specialist contractor, but is likely to include the following at all times as a minimum:

- Impacted made ground materials must be kept damp and watered down thoroughly with an appropriate fibre suppressant to avoid the movement of dust across the site and beyond its boundaries. This may, for example, be managed through the dousing of areas by hose before and during all excavation works;
- All site workers involved in the movement of these materials must wear appropriate PPE at all times, including suitable masks and disposable overalls; and
- Suitable changing areas and PPE disposal systems should be in place (i.e. bespoke changing units).

5.2 Importation of Capping Soils

As outlined in Section 4.1, capping soils are required to provide a barrier to break exposure pathways.

If site levels permit / or within foundation arisings then clean site won soils could be used as part of the capping make-up. Any shortfall will need to be imported to site under all relevant permits / approvals.

It is recommended that capping soils; both imported and site won; are approved for use by the relevant Regulatory Authority and that the correct EA licence (or CL:AIRE MMP) is approved and in place prior to importation subject to Local Authority / NHBC Approval.

A list of Proposed Imported Capping Screening Values relating to soils for a residential end-use (with gardens) is presented within Appendix II.

5.3 Placement of Capping Soils

Capping Soils

Capping soils will need be validated following their placement to confirm that appropriate thicknesses of soil have been applied in the designated area. Validation is likely to include confirmation that an appropriate thickness of soils is present. An inspection report based on 1 No. validation points per 4 plots within the proposed capping area is considered sufficient, subject to the approval of the relevant Regulatory Authority. All works in connection with the validation of capping soils should be undertaken by an Engineer from Geo-Matters Ltd.

The validation reports produced as part of these works will include a description of the validation(s) and their findings, suitable photographic records and any other relevant information.

All findings should be presented to the relevant Regulatory Authority / NHBC for approval and signed off on a plot-by-plot basis following completion of each set of validation works where appropriate.

5.4 Management of Materials on Site

As the remediation works may involve the movement of soils and other materials around the subject site, it is considered prudent to recommend control measures in order to ensure that cross-contamination and / or loss of materials is prevented.

Where contaminated materials are excavated from the ground for off-site disposal, they should be either directly loaded into waiting wagons, or alternatively stored in a designated area of the site awaiting removal. Stockpiles will need to be placed on a suitable barrier (i.e. membrane) to avoid contaminating other soils on site and should be covered over with a suitable barrier (membrane) to restrict infiltration, run-off and generation of airborne asbestos fibres from wind-blown dust. All such stockpiles should be identified on site with markers / signs.

Geo-Matters Ltd should be present on site to inspect the removal, relocation and placement of all sensitive materials. All stockpiles should be identified on site with markers / signs. Testing suites should be sufficient to enable the characterisation of the materials inspected.

6.0 CONTACTS

Presented below are the relevant Local Authority and Environment Agency details for reference:

South Holland District Council

Paul Jackson – Place Manager
Council Offices
Priory Road
Spalding
Lincs
PE11 2XE
Tel: 01775 764 723

Environment Agency

Anglian Region
Spalding Office
Winfrey Avenue
Spalding
PE11 1RQ
Tel: 0370 850 6506

7.0 DEVELOPER RESPONSIBILITIES

The following section provides an outline summary of the responsibilities of the developer for forthcoming works at the subject site for the sake of clarity.

7.1 Utilities / Supply Pipes

The developer will be responsible for all liaison and agreement with the appropriate water utility provider to ensure the correct grade of piping etc. are selected and utilised at the site.

7.2 Earthworks and Capping Soils

The developer will ensure the correct and appropriate construction of final development platforms including the provision and placement of clean capping soils. The developer should ensure that all necessary licenses, permits and exemptions (as applicable) are correctly in place prior to the commencement of site redevelopment works.

7.3 Environmental Safeguards

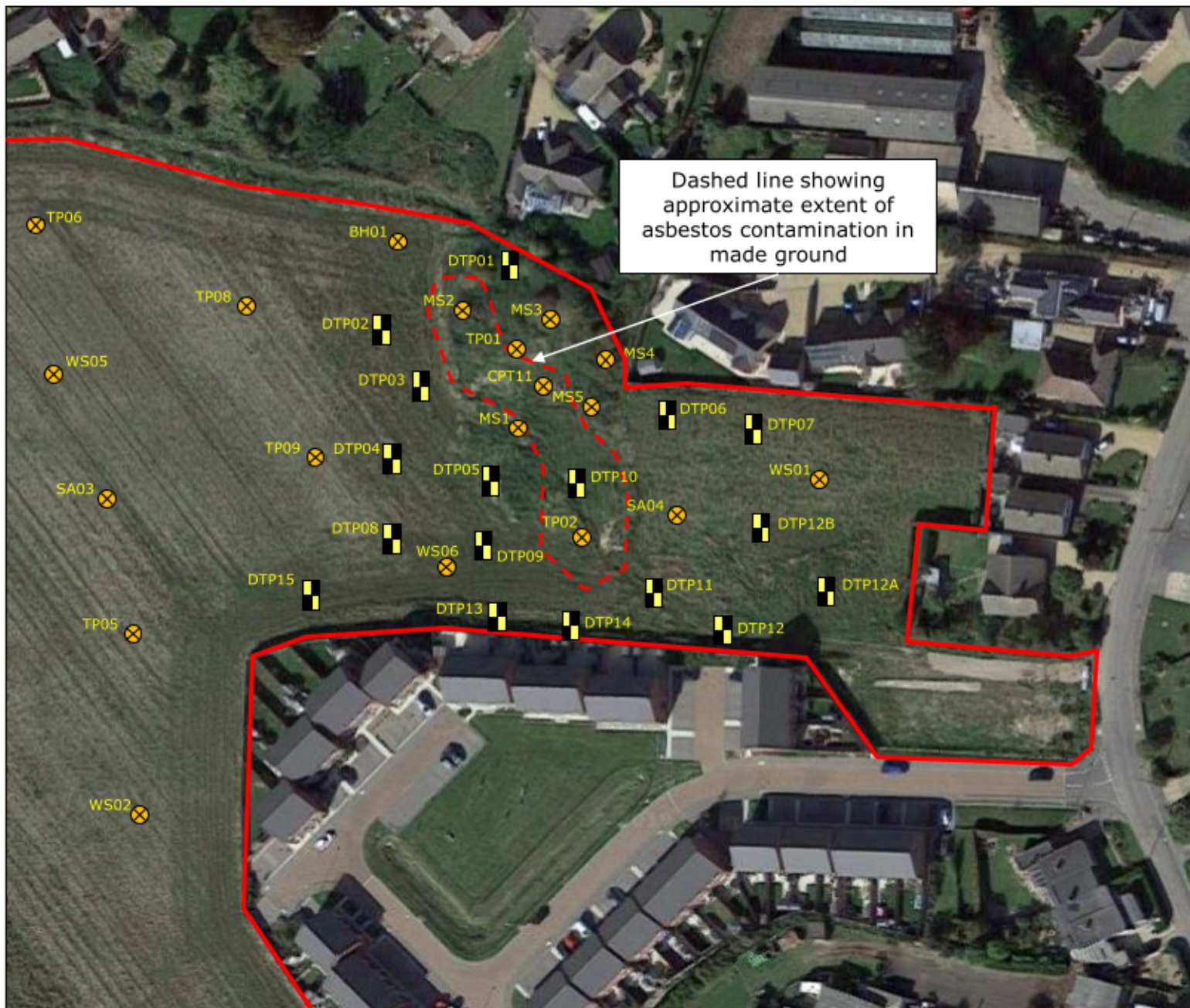
Consideration should be given to the protection of receptors (including human health receptors and controlled waters receptors) during the *ex situ* storage of materials at the site.

The site staff should ensure that all appropriate environmental controls are implemented prior to, and during, all remedial works. With regards to the storage of contaminated soils, this should comprise the placement of all such soils upon either impermeable hardstanding or suitable barrier membranes. These areas may need to be surrounded by a bund which will prevent run-off from contaminated materials from impacting other areas of the site or off-site receptors. In addition, stockpiles must be covered during periods of rainfall so that additional contaminated leachate run-off is not generated.

The contractor responsible for the remedial works should ensure that an appropriate area is designated for the completion of these works.

APPENDIX I

Site Plans



DO NOT SCALE
 NOTES: Approx. Boundary of area investigated

Approx. Location of Geo-Matters Ltd pits

Approx. location of 3rd party boreholes / trial pits

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 consulting engineers

www.geo-matters.com
 info@geo-matters.com

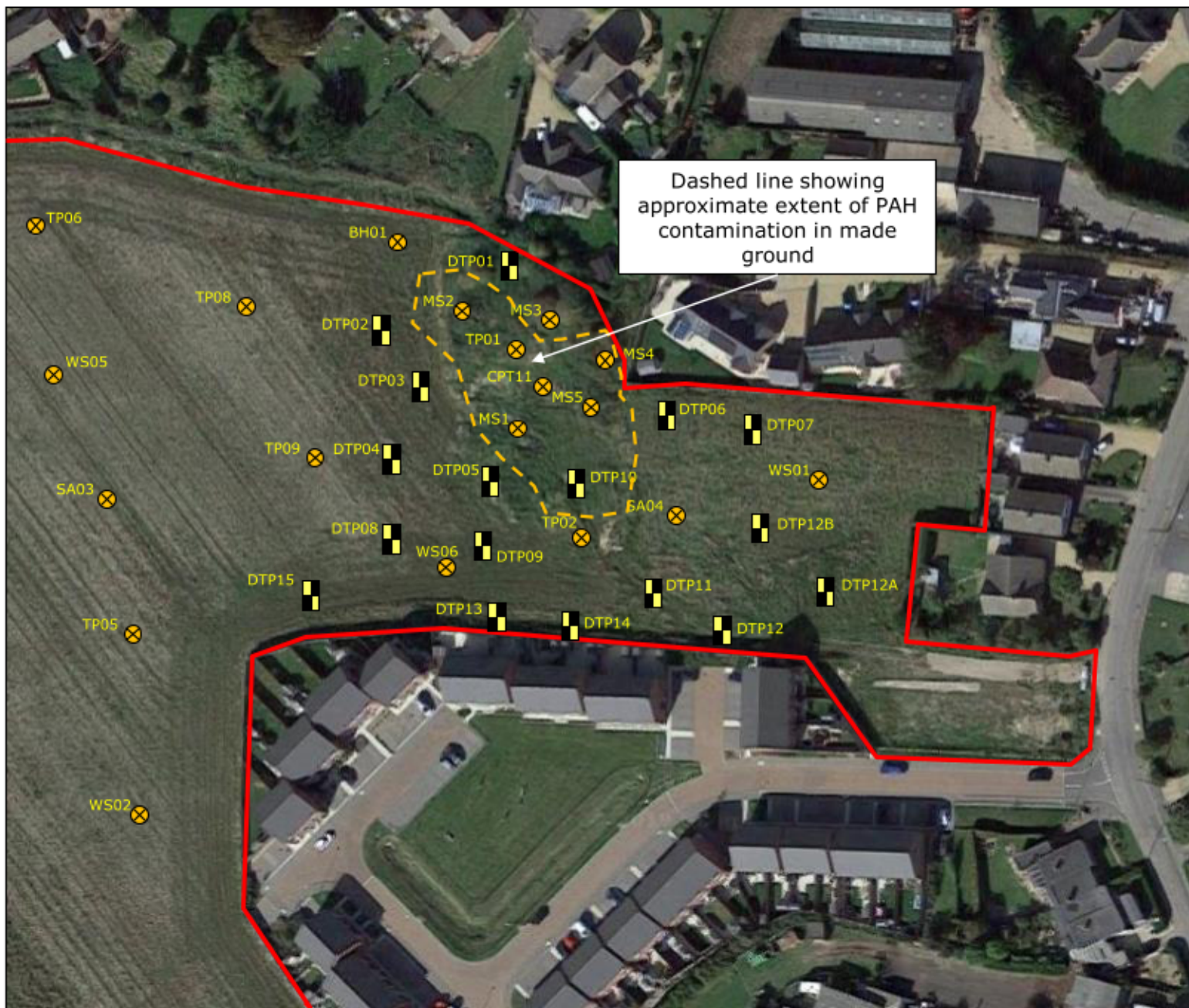
CLIENT:
 MINSTER PROPERTY GROUP

PROJECT:
 Site off Malting Lane, Donington,
 Spalding, PE11 4XA

TITLE:
 Asbestos Delineation Plan

SCALE@SIZE: NTS	ISSUE: Final
DESIGN/DRAWN: JR	DATE: August 2019
PROJECT No: GML19177	DRAWING No: 003a

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- DO NOT SCALE
- NOTES:
-  Approx. site boundary
 -  Approx. Location of Geo-Matters Ltd pits
 -  Approx. location of 3rd party boreholes / trial Pits

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consulting engineers

www.geo-matters.com
info@geo-matters.com

CLIENT:
 MINSTER PROPERTY GROUP

PROJECT:
Site off Malting Lane, Donington,
Spalding, PE11 4XA

TITLE:
PAH Delineation Plan

SCALE@SIZE: NTS	ISSUE: Final
DESIGN/DRAWN: JR	DATE: August 2019
PROJECT No: GML19177	DRAWING No: 003b

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APPENDIX II

Generic Import Screening Values

Geo-Matters Limited

Threshold Concentrations for Import Material

Determinand	Tier 1 Screening Values (mg/kg)
Metal / Metalloids	
Arsenic	37
Cadmium	11
Chromium (VI)	6
Lead	200
Selenium	250
Nickel	130
Copper	2400
Zinc	3700
Mercury	40
Inorganics	
Water Soluble Sulphate	0.5g/l
Asbestos	ND ^c (<0.001%)
Organics	
Benzo(a)pyrene	2.2
TPH	
Aliphatic & Aromatic C ₆₋₁₀	27
Aliphatic & Aromatic C ₁₀₋₂₅	75
Aliphatic & Aromatic C ₂₅₋₄₀	1100
Phenols	280

^a DEFRA pC4SL values at 1% SOM for a residential with plant uptake end use ^b LQM 'S4UL' values at 1% SOM for a residential with plant uptake end use

^c GML general screening level

ND = Not Detected