Geo-Environmental

REMEDIATION STRATEGY AND VERIFICATION PLAN

for land at

CARVERS HILL WINERY, SHALBOURNE,

MALBOROUGH, SN8 3PS

on behalf of

UPPER HORNS FARM LLP



Report:	**REMEDIATION STRATEGY AND VERIFICATION PLAN**
Site:	**CARVERS HILL WINERY, SHALBOURNE, MALBOROUGH, SN8 3PS**
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1.0 INTRODUCTION

1.1 General

Following intrusive investigation works undertaken by Geo-Environmental Services Limited ('Geo-Environmental'), Geo-Environmental was appointed by Upper Horns Farm LLP to formulate a Remediation Strategy and Verification Plan in relation to the proposed development of land at Carvers Hill Winery, Shalbourne, Marlborough, SN8 3PS herein referred to as 'the site' (Figure 1).

The site has been subject to intrusive investigation undertaken by Geo-Environmental. Details of the reports produced, and the findings of these reports are summarised in Section 2.1.

The remedial strategy has been developed to reflect the findings from the assessments undertaken to date on this site taking account of the proposed commercial end use.

1.2 Objectives

The Remediation Strategy and Verification Plan (RSVP) sets out the proposed remedial works to be undertaken on the subject site to support its development for a proposed commercial end use (demolition of existing buildings and replacement with a new winery building).

1.3 Planning Permission

It is understood that a planning application for the site has been registered with Wiltshire Council under Planning Reference 20/10976/FUL dated 8th December 2020. The following condition relating to land contamination has been recommend by the Senior Public Protection Officer for any approval of the application (with the caveat that step (i) had been complied with):

No development shall commence on site until an investigation of the history and current condition of the site to determine the likelihood of the existence of contamination arising from previous uses (including asbestos) has been carried out and all of the following steps have been complied with to the satisfaction of the Local Planning Authority:

Step (i) A written report has been submitted to and approved by the Local Planning Authority which shall include details of the previous uses of the site and any adjacent sites for at least the last 100 years and a description of the current condition of the sites with regard to any activities that may have caused contamination. The report shall confirm whether or not it is likely that contamination may be present on the site and the potential impact of any adjacent sites.
Step (ii) If the above report indicates that contamination may be present on, under or potentially affecting the proposed development site from adjacent land, or if evidence of contamination is found, a more detailed site investigation and risk assessment should be carried out in accordance with DEFRA and Environment Agency's "Model Procedures for the Management of Land Contamination CLR11" and other authoritative guidance and a report detailing the site investigation and risk assessment shall be submitted to and approved in writing by the Local Planning Authority.
Step (iii) If the report submitted pursuant to step (i) or (ii) indicates that remedial works are required, full details must be submitted to the Local Planning Authority and approved in writing and thereafter implemented prior to the commencement of the development or in accordance with a timetable that has been agreed in writing by the Local Planning Authority as part of the approved remediation scheme. On completion of any required remedial works the applicant shall provide written confirmation to the Local Planning Authority that the works have been

completed in accordance with the agreed remediation strategy.

Reason: Core policy 56, To reduce the risks associated with land contamination

Further correspondence with the Senior Public Protection Officer has also confirm that step (ii) has been complied with following the submission of the Ground Appraisal Report for the site (ref. GE19533-GARv1.1-DEC20). A copy of the correspondence is included as Appendix A.

It should be noted that where CLR11 has been referenced within the proposed condition this document has subsequently been withdrawn and superseded by guidance of Land Contamination and Risk Management (LCRM). This RSVP has been developed to take account of the requirements of both CLR11 and LCRM.

2.0 BACKGROUND

This Remediation Strategy and Verification Plan (RSVP) has been developed from the findings of Geo-Environmental's intrusive investigation at the site.

An overview of salient findings of investigations pertaining to the site to date is presented below. For further information, the original reports should be referred to directly.

2.1 Previous Reports

The following investigations have been undertaken by Geo-Environmental at the site as detailed in the following reports:

- October 2020, Soakage Testing Letter Report, Ref. GE19475/RG01/201029, dated 29th October 2020;
- November 2020, Desk Study Report, Ref. GE19533/DSR/NOV20, dated 11th November 2020;
- December 2020, Ground Appraisal Report, Ref. GE19533/GARv1.1/DEC20, dated 21st December 2020.

October 2020, Soakage Testing Letter Report

The investigation comprised 4No. machine excavated trial pits to depths of between 0.60m and 3.00m bgl (TP1-4) with soakage testing undertaken in all four pits. The investigation revealed ground conditions comprising a mantle of Topsoil or Made Ground overlying clay based Head Deposits which in turn overlay the West Melbury Marly Chalk Formation. Groundwater was not encountered during the investigation. Infiltration rates of between 2.4×10^{-5}m/s and 6.8×10^{-5}m/s were recorded within the Chalk. An infiltration rate of 1.5×10^{-5}m/s was recorded within the single successful test (TP3) within the Head Deposits. There was an insufficient fall in head to calculate an infiltration rate for the test undertaken within location TP1.

November 2020, Desk Study Report

The report provided an account of a Preliminary Risk Assessment (PRA) for the site in the context of the proposed commercial redevelopment. The report found that the site had comprised a section of open field followed by the construction of what appeared to be farm/dairy buildings. A former above ground storage tank (AST) was noted in the south-west of the site. Some chemical storage may have taken place within the building in the west of the site based on warning signage observed. An above ground diesel tank was recorded approximately 10m to the west of the site.

The report identified the following potential sources for contamination associated with the site: shallow soils and Made Ground (if present), the former on-site AST and current off-site diesel AST (including potential hydrocarbon vapours); and potential on-site chemical storage. However, the risk assigned to these sources was predominantly low or very low, with moderate/low risk assigned to the potential impact of the ASTs on proposed water supply pipes and groundwater.

The report recommended intrusive investigation of the site.

December 2020, Ground Appraisal Report

This report provided an account of an intrusive investigation and contamination assessment of the site. The intrusive investigation comprised eight machine excavated trial pits with soil samples submitted for geochemical laboratory testing to support the contamination assessment. The investigation revealed ground conditions comprising Made Ground typically to depths up to 0.60m bgl overlying Head Deposits and West Melbury Marly

Chalk Formation. Made Ground was recorded in TP06 to 1.80m bgl containing pale grey sandy gravelly silt with frequent cobble and boulder sized concrete, some gravel and cobble sized brick. 5No. asbestos cement profiled roof sheet fragments were recorded in this material. A continuous groundwater body was not encountered during the intrusive investigation. A seepage of groundwater was recorded in TP07 at 1.60m bgl.

A quantitative risk assessment was undertaken which did not identify any elevated contaminates within the samples tested when compared to Tier screening criteria for a commercial land use. No asbestos was recorded within the soil samples tested. However, five fragments of profiled asbestos cement roof sheets were visually identified within Made Ground encountered in TP06 during the investigation. As such, remedial action in terms of human health would be required in relation to the asbestos containing material (ACM) within the soils encountered within TP06.

An assessment of the laboratory test results concluded that no action was required in terms of risk to Controlled Waters.

2.2 Site Context

The site was located at NGR 430920, 162730 and comprised an irregularly shaped area of land of approximately 0.42ha. The site comprised a section of farmyard including a large barn in the centre of the site, narrow building in the west, associated external yard and hardstanding areas, and an area of scrub and trees in the south. Topographically, the site was noted to slope gently downhill in a south-easterly direction.

The central barn comprised a number of linked structures generally with half height blockwork walls and profiled steel cladding on a steel framework. The roofs of the various structures comprised profiled steel but also asbestos cement in the western half of the overall building footprint. A small single storey brick built section was present in the north-west of the central barn which was utilised as an office. The floor of the central barn was formed of predominantly concrete with some earth sections. The barn was used for the storage of hay and straw, logs, and other non-contaminative agricultural paraphernalia. The west of the barn appeared to be periodically used for housing animals with straw lined pens present.

The western building was a long, narrow, single storey structure formed of prefabricated concrete walls with asbestos cement gables and roof. This building was used for storing a small heap of scrap metal in the south (wire, propane cylinders, boxes of nuts and bolts). Three vehicle batteries were also present placed on the concrete floor slab. Two pallets of sacks assumed to be grass seed were also stored in this building along with what appeared to be an area utilised for woodworking. The north of the building was indicated by warning signage to be used for the storage of chemicals.

The external areas surrounding the barns were largely concrete, with a limited area of grass to the north of the central barn and an area of trees and scrub in the south of the site. A pile of discarded timber (fence posts, pallets, brash, etc.) was present in the south of the site along with two trailers, stock trailer, livestock feeder sections and three empty intermediate bulk containers (IBCs).

Two concrete block stanchions for a former above ground storage tank were noted adjacent to the south of the large central barn. A steel tank was located to the west of the stanchions and was used for storing water and was connected to water supply pipework.

A further large barn was located to the west of the site, along with associated concrete yard areas. An above ground diesel tank was located to the south of this barn. The tank appeared to be a single skin, un-bunded steel tank of approximately 2,000 litre volume and was raised on an empty steel tank. Some staining was evident around the connection between the filling hose and tank. A ‘Dutch’ barn used to store agricultural machinery was located

to the east along with a large greenhouse to the south of this barn. A dry pond was located to the south-east with a residential property beyond. Paddocks were present to the south of the site. Carvers Hill Road ran alongside the northern boundary with residential properties and open fields beyond.

The site was shown from the historical mapping to comprise a section of open field followed by the construction of what appeared to be farm/dairy buildings.

The ground conditions encountered on site comprised a mantle of Made Ground overlying Head Deposits and West Melbury Marly Chalk Formation. Made Ground was recorded in TP06 to 1.80m bgl containing pale grey sandy gravelly silt with frequent cobble and boulder sized concrete, some gravel and cobble sized brick. 5No. asbestos cement profiled roof sheet fragments were recorded in this material.

The Head Deposits were shown as a Secondary Undifferentiated Aquifer. The West Melbury Marly Chalk was shown as a Principal Aquifer. The site was located outside any Source Protection Zone.

Investigation and testing of the soils at the site did not identify contaminant concentrations of concern within the Made Ground located across the site, with the exception of the presence of asbestos containing material (ACM) within Made Ground soils in the basement-like structure encountered by TP06 in the south of the site. It is considered that remedial action would be warranted to protect end users of a commercial development in this area of the site (see Figure 2). No contaminant concentrations of concern (including asbestos) within soils in other areas of the site were identified by the investigation and testing.

2.3 Proposed Site Use

The proposed development is understood to comprise the replacement of existing buildings with a new building to be used as a winery, and associated development infrastructure. A proposed site plan is included as Figure 3.

Where demolition is to take place appropriate asbestos surveys should be undertaken. If necessary, removal of asbestos containing materials by suitably competent and, if necessary, licenced contractors should be undertaken prior to demolition. Care should be taken to avoid spreading asbestos onto soils where it may become entrained within the soil mass.

2.4 Conceptual Site Model

Assessment of the investigation findings has identified potential hazards which were considered to require intervention (remediation) to mitigate the risk of harm in one area of the site. Remediation works are proposed to break the identified plausible pollutant linkages associated with contaminants of concern above respective assessment criteria should this former basement structure be located within an area of proposed soft landscaping thereby mitigating the associated risk of harm to human health.

If the area in the vicinity of TP06 was to be located in an area of soft landscaping the works would be undertaken in several phases on site:

1) Reduced dig of Made Ground in the area of the backfilled basement-like structure encountered by TP06 to accommodate the clean soil cover system if required by development levels.
2) The installation of a cover system in proposed areas of soft landscaping to break the source, pathway receptor pollutant linkage in the locations shown in Figure 2. Should the proposed reduced dig remove the Made Ground entirely in some locations, and appropriate validation of the removal undertaken, a cover system would not be required in these locations, subject to validation of the Made Ground removal.

The aim of the remediation is not necessarily to remove all contamination identified on site but to reduce the identified risk to an acceptable level with respect to human health.

Remediation measures are only required within one area of the site (see Figure 2) on the assumption that this area may be located within an area of proposed soft landscaping.

Where contaminated soils are located in an area of permanent hard cover, e.g. building footprint, road, or the like, and subject to the agreement of the regulatory authorities, then the hard cover would break the pollutant linkage and remediation would not be required in terms of the risk to human health, however limited works may be required in these areas to provide a suitable working platform for development to proceed and in relation to any longer term maintenance for any service runs locations in this area.

This Remediation Strategy and Verification Plan for the site will be updated and amended in response to any further unexpected contamination uncovered as part of the discovery strategy for the site in line with Section 7.0.

3.0 SOILS

3.1 Background

The ground conditions within the site have been established through several phases of intrusive investigation. Encountered soils comprised a mantle of Made Ground overlying Head Deposits and West Melbury Marly Chalk Formation. Made Ground was recorded in TP06 to a depth of 1.80m bgl and was found to contain pale grey sandy gravelly silt with frequent cobble and boulder sized concrete, some gravel and cobble sized brick. 5No. asbestos cement profiled roof sheet fragments were recorded in this material.

A review of chemical analyses of the soil samples from the site was undertaken. No exceedances above the respective generic guideline values for a commercial land use were identified. Additionally, no pesticide concentrations above the laboratory limits of detection were recorded within samples tested.

Geochemical testing of the shallow soils across the site did not return any positive identification for asbestos fibres within soil matrix of the submitted samples. However, five fragments of profiled asbestos cement roof sheets were visually identified within Made Ground encountered in TP06 during the investigation works. Laboratory bulk asbestos identification on a sample of this material confirmed the material comprised cement containing chrysotile asbestos. TP06 was excavated into a backfilled basement-like feature and recorded a depth and composition of Made Ground which was not encountered elsewhere during this investigation or the previous phase of soakage testing undertaken in October 2020.

Based on the above, it is considered that remedial action would be warranted to protect end users of a commercial development within this specific area of the site where site proposals are for this area to be utilised as soft landscaping.

3.2 Site Workers

It is the responsibility of the Principal Contractor and their appointed sub-contractors to implement and manage safe systems of work and prepare their own risk assessments in accordance with Health and Safety legislation in order to protect persons in their employ, as well as mitigate the risk of harm to others due to works in their control. Special consideration should be given to the provisions of the Construction (Design & Management) Regulations 2015, Health and Safety at Work Act and the Control of Substances Hazardous to Human Health regulations to protect the safety of persons in their employment. Additional guidance can be sought from the CIRIA publications entitled "A Guide for Safe Working on Contaminated Sites" and “Environmental Good Practice on Site Guide (fourth edition)”. Given the presence of asbestos within the Made Ground soils, the contractor should also ensure their compliance with the Control of Asbestos Regulation 2012.

In addition to the safe systems of works to be implemented alongside appropriate risk assessments and method statements, all site personnel shall benefit from on-site hygiene facilities including wash area, toilets and drying room. Separate canteen areas and welfare facilities should be provided. All eating and drinking should be restricted to the canteen area and only once site personnel have removed outer PPE and washed exposed skin.

In the event of dry spells, or where the exposed surface becomes dry, regular damping down of the surface of the site will be required to prevent the release of soil dust which could impact on site operatives or migrate off-site, thereby mitigating both off-site exposure and nuisance for neighbours.

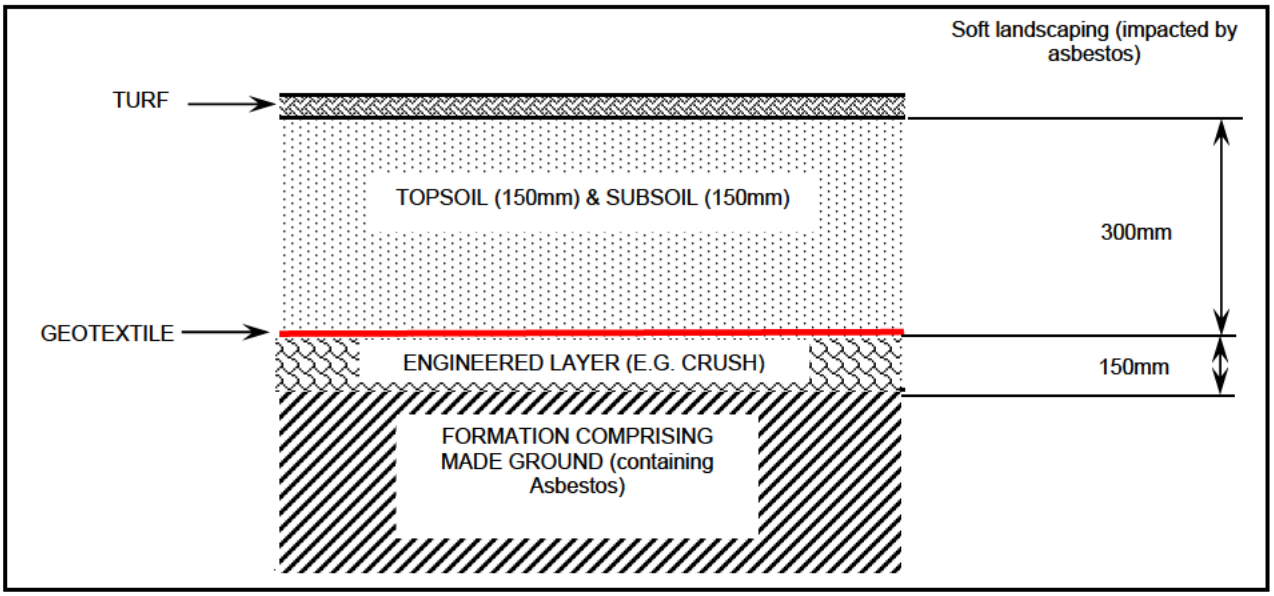
3.3 End Users

The contamination assessment has identified one area of the site where asbestos containing materials were recorded within Made Ground soils (TP06) associated with a backfilled basement type structure.

The impacted soils will either be removed entirely back to natural ground or a cover system, possibly in combination with a reduced dig in order to accommodate the soil cover system, will be installed if/where located within proposed soft landscaped areas in this vicinity (the backfilled basement-like structure encountered by TP06).

Given the nature of the contaminants identified within these soils (risk driver is Asbestos), the impacted soils will either be removed entirely, or a cover system, possibly in combination with a reduced dig in order to accommodate the soil cover system, will be installed within proposed soft landscaped areas. The cover system must comprise certifiably 'clean' topsoil and subsoil. Both aspects of the cover system must be chemically and physically suitable for the proposed end use. A minimum soil cover thickness of 450mm will be required. The upper 150mm of the cover system will comprise Topsoil. The cover system will incorporate a high visibility, deter-to-dig geotextile, e.g. Alert® deter to dig membrane or similar, to provide a warning of the underlying contaminated soils, overlying 150mm of hard-to-dig material such as crushed concrete overlain by a further membrane. Any soils imported onto the site should be verified free from contamination with chemical testing undertaken to confirm their suitability for use within areas of soft landscaping.

An example of the recommended cover system for use in areas of soft landscaping where asbestos impacted Made Ground is to remain in-situ is provided below:



The subsoil from across the remainder of the site has been subject to sampling and geochemical testing and has been demonstrated as being suitable for use within soft landscaping. Therefore, subsoil from areas not impacted by the identified Made Ground can be re-used within areas of soft landscaping, including re-use within the proposed soil cover system.

No significant volume of Topsoil has been encountered during investigation of the site and as such, importation of Topsoil would likely be required. Any soils imported onto the site should be verified free from contamination

with chemical testing undertaken to confirm their suitability for use within areas of soft landscaping. Soil importation is discussed further in Section 6.2.

Where contaminated soils are located in an area of permanent hard cover, e.g. building footprint, road, driveway or the like, then the hard cover would break the pollutant linkage and remediation would not be required in terms of the risk to human health, however limited works may be required in these areas to provide a suitable working platform for development to proceed and in relation to any longer term maintenance for any service runs locations in this area.

3.4 Inspection/Validation

Verification of remediation measures shall be required through regular inspection at key stages of the works to include:

- Excavation/removal of impacted soils via a reduced dig (where required);
- Inspection of the exposed formation where Made Ground soils are completely removed;
- The placement of the deter to dig geofabric over the exposed Made Ground formation where it is to remain in-situ;
- The placement of the hard-to-dig layer;
- The placement of a cover system, including verification of any additional imported subsoil and/or topsoil to allow for the installation of the capping system required in landscaped areas.
- Or confirmation that the development is the vicinity of TP06 and the former basement structure identified is located beneath an area of permanent hard cover.

Verification will include hand dug trial holes to confirm the correct thickness of cover layer and presence of deter-to-dig membrane. Photographic evidence will also be recorded including during the reduced dig, exposure of the sub-grade, and placement of the deter-to-dig membranes and hard-to-dig layer.

Details of these works will be presented within a Verification Report for the site and submitted to the Local Planning Authority.

3.5 Built Environment

The current guidance on the selection of materials for water supply pipes to be laid in contaminated land is contained in UK Water Industry Research's (UKWIR) report reference 10/WM/03/21 (re-issued 2010). However, the guidance is not mandatory and there have been concerns raised by various industry technical associations regarding the document and the methodologies proposed.

It is considered that barrier pipework would be required due to elevated TPH concentrations in a number of samples of shallow soils. The utility company should be consulted in order to confirm their specific requirements with respect to buried services and confirmation of the requirement documented within the validation report for the site.

As a matter of good practice and to maximise the protection to maintenance workers, it is recommended that clean, granular backfill is used in service runs and that marker tapes are used for all buried services.

4.0 CONTROLLED WATERS

The site overlies a Secondary Undifferentiated Aquifer (Head Deposits) and a Principal Aquifer (West Melbury Marly Chalk Formation). No evidence of gross soil impact or significant potentially mobile contaminants was recorded across the site as part of the investigation and testing.

Based on the ground and groundwater conditions, coupled with the chemical results no remedial works are considered necessary to protect groundwater from on-site soil contamination concentrations identified.

Should development works identify areas where further contamination or mobile contaminants are present, under the discovery strategy these materials should be further assessment and may need to be excavated/remediated to ensure there is no ongoing source of contamination with respect to controlled waters.

5.0 GROUND GASES

The Desk Study and subsequent investigation undertaken at the site has not identified any potential sources of ground gases on the site itself or within close proximity to the site, with the exception of the presence of a former AST onsite and an AST located 10m to the west of the site. These tanks have the potential to represent a source for hydrocarbon vapours, however no significant hydrocarbon contamination was identified as part of the intrusive investigation works. A discovery strategy will remain in place for the duration of the development works so if previously undiscovered hydrocarbon contamination is encountered it will be addressed as part of the discovery strategy. The ground investigations to date did not identify a significant thickness of Made Ground or highly organic material that could present a potential gas risk. Additionally, no volatile contaminants or evidence of hydrocarbon impact was recorded by the investigation to date.

As such, it is considered, in the absence of a plausible source of ground gases or vapours, or grossly impacted soils during the investigation to date, that gas or vapour protection measures would not be required for the proposed development.

6.0 WASTE

6.1 Waste Classification and Segregation

Waste may be defined as any substance or object in Annex 1 of the Waste Framework Directive which the holder discards, intends to discard, or is required to discard. The holder of waste is anyone in possession of waste or generates it and therefore both the contractor and ultimately the developer are responsible for safe disposal of waste.

The geochemical test results to date have been assessed for potential waste characterisation using the CATWASTE Soil screening tool, which indicated that all samples would be characterised as non-hazardous.

Where soils contain visible asbestos containing material, they would be classified as hazardous waste for the purposes of disposal.

Natural soils at the site (Head Deposits and West Melbury Marly Chalk Formation) are likely be classified as Inert Waste (under the respective EWC codes for naturally occurring soils), suitable for disposal at an inert landfill facility.

Once materials for disposal have been identified it is recommended that WAC testing be undertaken, and the results of the chemical analysis should be provided to the proposed landfill site for confirmation.

6.2 Importation of Soils

Subsoil and Topsoil shall not be imported to site without prior acceptance of provenance and chemical suitability. Import suitability criteria are presented in Appendix A. Where materials are to be imported on to the site for use as subsoil and Topsoil, these shall be derived from one of two sources, i.e. natural or processed. Where natural sourcing is proposed, the provenance of the material shall be determined by confirmation of the source site's history to confirm no previous potentially contaminative use, coupled with analysis of soils at a minimum rate of 3No. samples per source site (up to 250m^3) and 1 sample per 250m^3 thereafter. Where Topsoil or subsoil are derived from a manufactured source, testing would be undertaken at a rate of 1 sample per 50m^3 up to 10No. samples and then at one sample per 150m^3 thereafter if the source and initial sample results remain consistent. Use of an additional source would require repetition of this stepped sampling frequency. With regard to physical and nutritional composition, a minimum testing regime of 1 sample per 250m^3 is recommended for either source.

7.0 DISCOVERY STRATEGY

Whilst an intrusive investigation has been undertaken on the site, it remains possible that unexpected soil conditions may be encountered during the process of construction.

Should previously undiscovered contamination or unforeseen ground conditions be encountered during construction by the ground worker's, this should be reported to the site manager immediately in order that the consultant is notified. Where deemed necessary, the consultant shall attend the site to inspect the unexpected soil conditions and provide recommendations on the further actions required, if any. Where necessary the regulatory authority should be informed. Post any additional investigation or laboratory testing the results and any proposed remedial measures should be reported to the regulatory authority for consent, before proceeding or implementing the remedial measures.

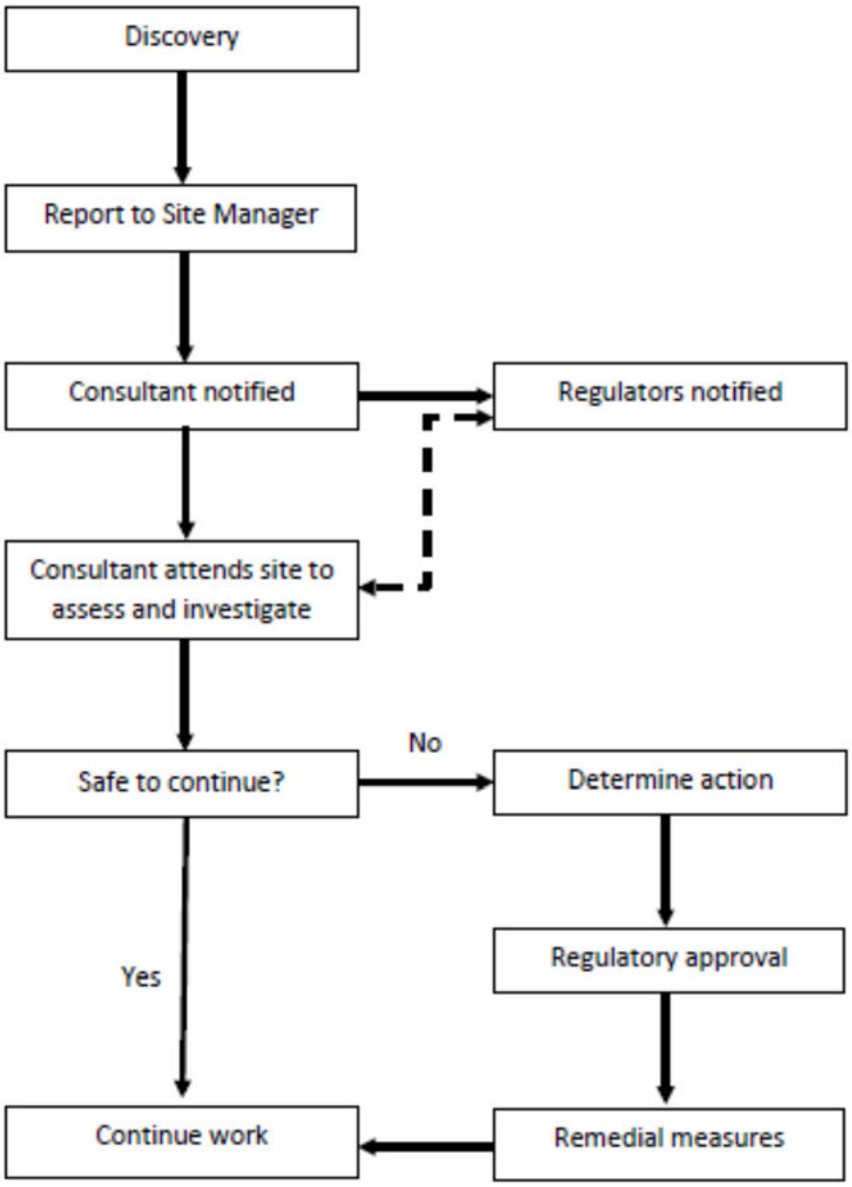
A copy of the discovery strategy should be lodged on site, and provisions made to ensure that all workers are made aware of their responsibility to observe, report, and act on any potentially suspicious, unforeseen or contaminated soils they may encounter.

Depending on the type, nature and extent of any such 'discovery', it may be necessary to halt works in that location until such time as the assessment has been completed. This should be reviewed on a 'discovery' specific basis and in conjunction with regulatory consultation.

As a general guide, where such unexpected conditions are encountered the following approach is recommended:

- All discoveries are to be reported to the Site Manager immediately and works at that location are to halt until further notice;
- The Site Manager is to report any such discoveries to the Client and the Consultant;
- Following notification from the Site Manager, the Consultant shall discuss the discovery with the Local Authority and if considered necessary, arrange to meet an Officer on site to view the discovery;
- The Consultant shall attend the site to record the location, extent and nature of the discovery and implement an appropriate sampling and analysis regime, taking due account of the type and nature of the discovery, known and probable land uses in that area of the site;
- Where remedial action is required, regulatory consultation and approval will be sought;
- A record will be produced by the Consultant and held on site (with copies held by the l Consultant, Client and Local Authority), detailing the discovery, assessment works undertaken, findings thereof, confirmation either of no action required or detailing the remedial action taken and validation thereof.

The process is shown below.



A copy of this strategy will be lodged on site, and provisions made to ensure that all workers are made aware of their responsibility to observe, report, and act on any potentially suspicious or contaminated materials they may encounter.

8.0 VERIFICATION

Verification is required to be undertaken throughout the course of the remediation works. The Verification Report will be submitted to the Client and Local Authority for formal approval.

The Verification Report will refer to the works as set out within this remediation strategy and verification plan and as required by any relevant planning conditions. The report will include records from site inspections including:

- Locations where the Made Ground was excavated and confirmation of disposal from site.
- Locations where Made Ground remains in-situ at the site.
- Details of cover system installations and validation of thicknesses and specification.
- Photographic evidence of the installation of the deter to dig geofabric and hard-to-dig layer beneath the soil cover systems.
- An audit trail for any imported subsoil and topsoil, including source, provenance, analytical results, placement location and thickness (should subsoil and/or topsoil be imported).
- Or confirmation that the development in the vicinity of TP06 and the former basement structure identified is located beneath an area of permanent hard cover.

A summary of verification proposals is presented in Table 8.1 below.

The Contractor will be required to deploy a competent person to manage the works and ensure that relevant records are kept in relation to the movement of materials around the site, disposal of any waste soils and pre-important compliance testing for any imported soils. In addition, the remedial works will be required to be inspected and validated (with appropriate notice for site attendance required) on behalf of the Client by Geo-Environmental in order to present independent verification.

Reference	Principal requirements	Design or construction related	Site visit required by Qualified Geo-Environmental Engineer	Supporting documentation
1.0 Verification general principles	Geo-Environmental are supervising remedial works for the site at Carvers Hill Winery, Shalbourne, Marlborough, SN8 3PS. These works require the installation of a cover system and/or reduced dig if/where proposed soft landscaping is proposed associated with Made Ground containing ACM recorded within a backfilled basement-like feature in the south of the site. The aforementioned work is in line with the findings of a site investigation and risk assessment previously undertaken by Geo-Environmental in respect of the development.	Construction	**Yes –** See below	Details of construction programme to be provided by client/contractor.
2.0 Reduced dig of Made Ground	Reduced dig exercise to excavate impacted Made Ground in the vicinity of TP06 (backfilled basement like feature) to accommodate the soil cover system thickness or to natural strata if shallower to be overseen and verified by Geo-Environmental.	Construction	**Yes – 5 days' notice required**	Regular visits to site required to confirm works being undertaken, validation sampling within natural soils following removal of the impacted material. Waste tickets.
3.0 Cover System (or confirmation of the placement of permanent hard cover in this area)				
3.1 Deter to dig geofabric	Deter to dig geofabric, such as Alert geofabric, to be laid over the exposed Made Ground formation in all affected gardens and areas of soft landscaping prior to placement of soil cover.	Construction	**Yes - 5 days' notice required**	Site inspection and photographic record of installation/placement.
3.2 Hard-to-dig layer	Hard-to-dig layer (e.g. crushed concrete) to be placed on geofabric followed by deter to dig geofabric, such as Alert geofabric.	Construction	**Yes - 5 days' notice required**	Site inspection and photographic record of installation/placement.
3.3 Soil cover systems	Cover systems to be constructed by the ground workers and inspected by Geo-Environmental.	Construction	**Yes - 5 days' notice required**	Provenance of site won soils used to complete cover system to be verified by the groundworks contractor.

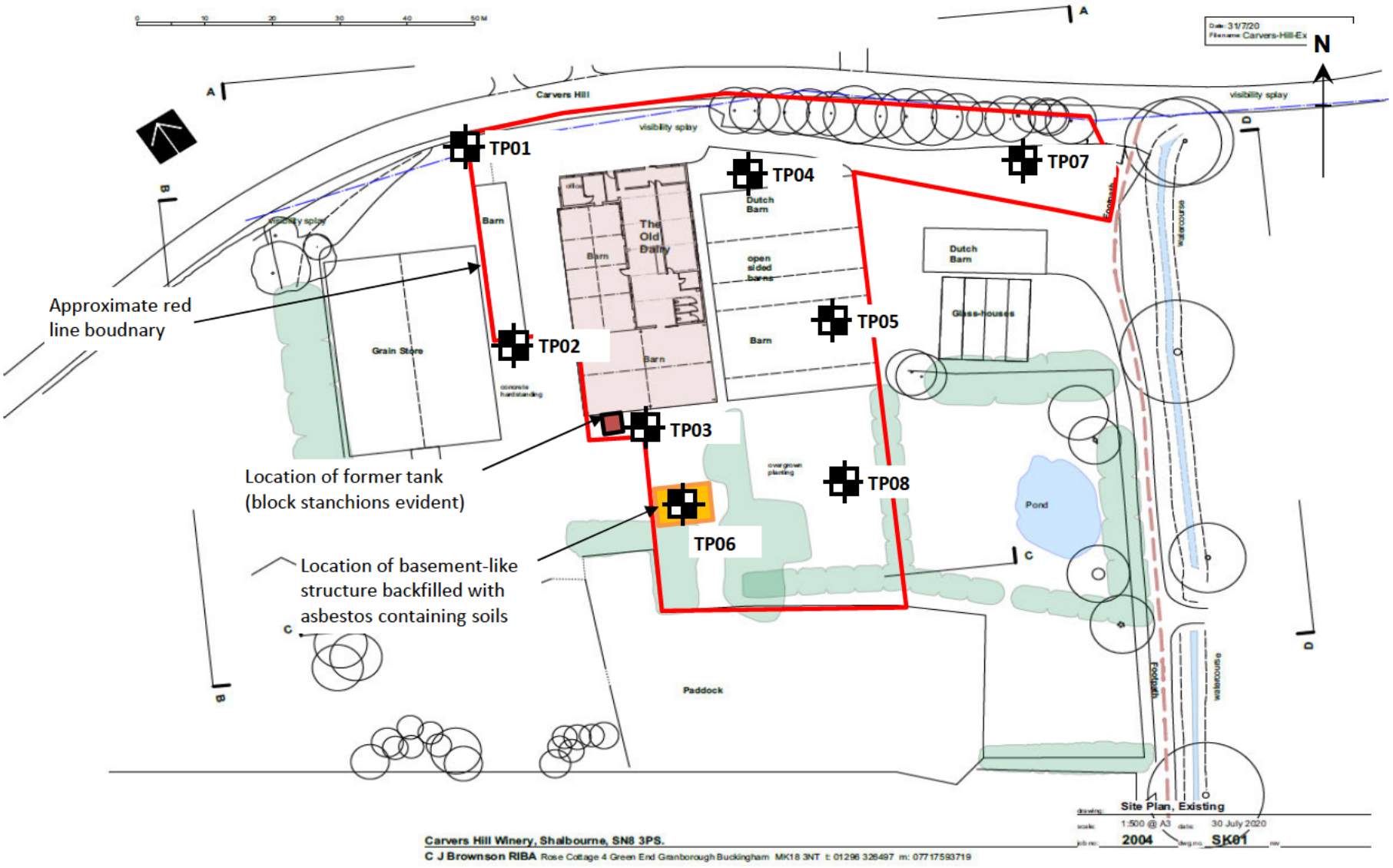
Reference	Principal requirements	Design or construction related	Site visit required by Qualified Geo-Environmental Engineer	Supporting documentation
				Placement of soils to be observed/inspected by Geo-Environmental. Thickness and construction of cover system to be verified by Geo-Environmental. Or if soils imported to site pre import analysis to be provide from source site for review prior to importation. Validation samples to be taken and chemical test results presented in the report. Thickness and construction of cover system to be verified by Geo-Environmental.
4.0 Waste Management	Waste soils arisings from the reduced dig in the area of Made Ground and any other waste soils will be disposed of appropriately. Waste tickets for the removal of arisings should be compiled for submission as part of the verification report for each phase of the development. The waste tickets will be required to demonstrate that the approximate amount of material being removed is equal to the summed volume on the waste tickets.	Design and Construction	**No (unless further WAC testing required where 5 days' notice required)**	Chemical test results (WAC) Waste tickets
5.0 Imported Soils	In-situ testing of any soils imported onto site for placement in landscaped areas will be carried out after placement in line with the frequencies detailed in Section 6.2 with comparison of results to assessment criteria for commercial end use.	Construction	**Yes**	Pre-import certification verifying the chemical quality of the topsoil and subsoil to be provided to Geo-Environmental for review prior to Importation.

Table 8.1 Details of verification visits required on site

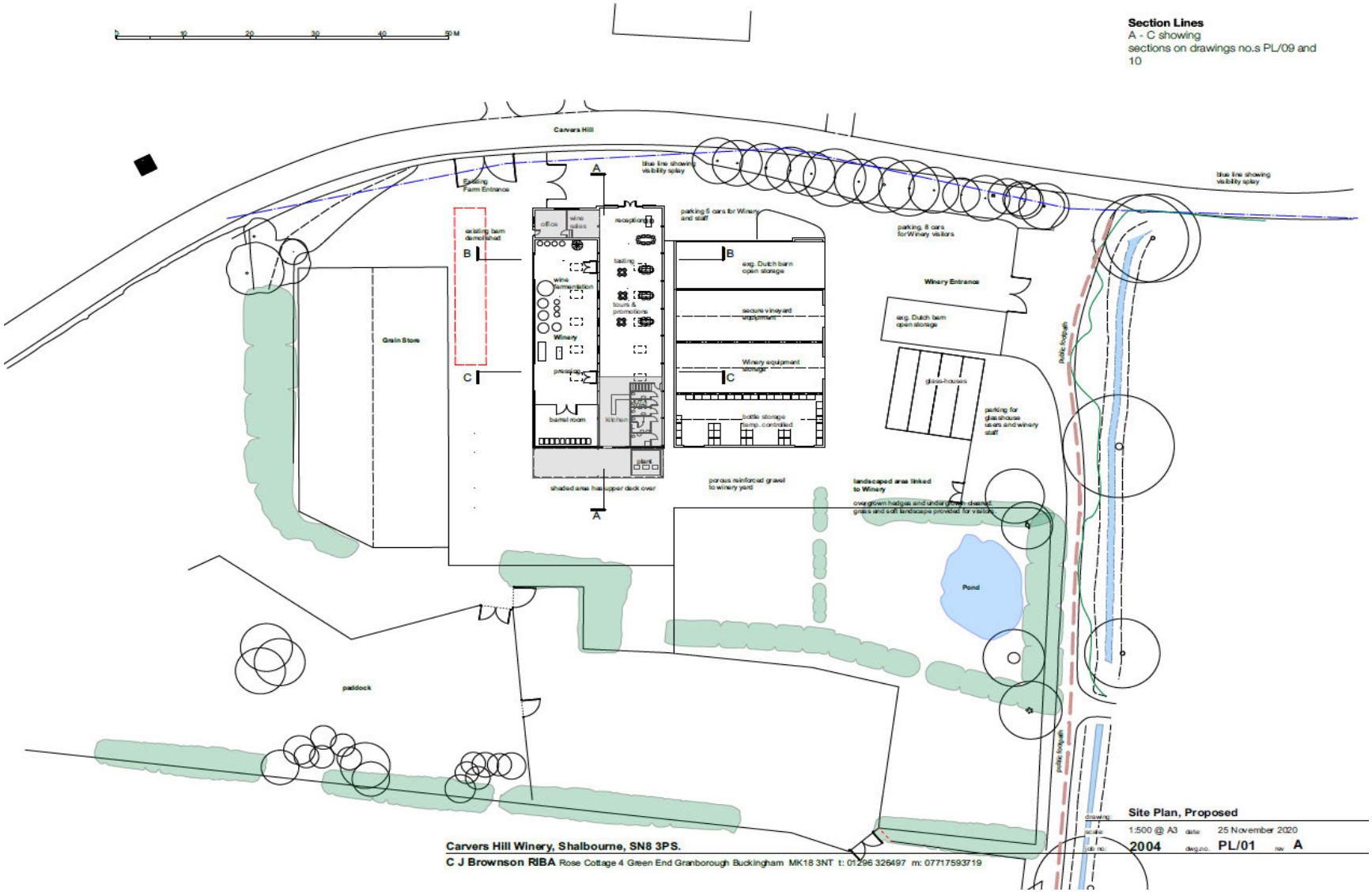
FIGURES



Project:	Carvers Hill, Shalbourne, Marlborough, Wiltshire, SN8 3PS			**Title**	Site Location Plan
Client:	Upper Horns Farm LLP			**Geo-Environmental Services Ltd** **Unit 7 Danworth Farm, Cuckfield Road** **Hurstpierpoint, West Sussex BN6 9GL** **+44(0)1273 832972 www.gesl.net**	Geo-Environmental
Ref No:	GE19846	**Revision:**	0		
Drawn:	SA	**Date:**	10/03/2021		
Figure:	1	**Scale:**	Not To Scale		



Project:	Carvers Hill Winery, Shalbourne, Marlborough, SN8 3PS			**Title**	Constraints Plan
Client:	Upper Horns Farm LLP			**Geo-Environmental Services Ltd** **Unit 7 Danworth Farm, Cuckfield Road** **Hurstpierpoint, West Sussex BN6 9GL** **+44(0)1273 832972 www.gesl.net**	Geo-Environmental
Ref No:	GE19846	**Revision:**	0		
Drawn:	SA	**Date:**	10/03/2021		
Figure:	2	**Scale:**	Not To Scale		



Project:	Carvers Hill Winery, Shalbourne, Marlborough, SN8 3PS			**Title**	Proposed Site Layout Plan
Client:	Upper Horns Farm LLP			**Geo-Environmental Services Ltd** **Unit 7 Danworth Farm, Cuckfield Road** **Hurstpierpoint, West Sussex BN6 9GL** **+44(0)1273 832972 www.gesl.net**	Geo-Environmental
Ref No:	GE19846	**Revision:**	0		
Drawn:	SA	**Date:**	10/03/2021		
Figure:	3	**Scale:**	Not To Scale		

APPENDIX A

Local Authority Correspondence

Shaun Armitage

From: Nobes, Peter [redacted]
Sent: 03 March 2021 14:50
To: Shaun Armitage
Subject: RE: 20/10976/FUL-Carvers Hill Farm Shalbourne-Demolition of agricultural buildings; construction of a new buildings on the footprint of the dairy building for the production of wine with ancillary wine tasting facilities

Hi Shaun

I hadn't been informed that the Ground Appraisal Report had been submitted but it is on the website! I can confirm that it satisfies step (ii) of the condition and look forward to receiving (and approving) the remediation strategy and the validation report.

Thanks for contacting me about this.

Peter Nobes
Senior Public Protection Officer
Environmental Health
01380-826320
Web: www.wiltshire.gov.uk

For current COVID-19 business and community advice please go to:
Business Support - http://www.wiltshire.gov.uk/news/articles/covid-business
Community Support - http://www.wiltshire.gov.uk/news/articles/covid19-community-pack
Government Advice - https://www.gov.uk/government/topical-events/coronavirus-covid-19-uk-government-response
NHS - https://www.nhs.uk/conditions/coronavirus-covid-19/

From: Shaun Armitag [redacted]
Sent: 03 M [redacted]
To: Nobes [redacted]
Subject: RE: 20/10976/FUL-Carvers Hill Farm Shalbourne-Demolition of agricultural buildings; construction of a new buildings on the footprint of the dairy building for the production of wine with ancillary wine tasting facilities

Dear Peter,

I have been passed the attached email from Nexus Planning who are the agents for the above planning application. Geo-Environmental are the contaminated land consultants working on this project.

I note in the attached that you recommend a caveat to note that step (i) of the recommended condition has been complied with, presumably in the submission of our Desk Study Report (re. GE19533-DSR-NOV20) for the site.

Are you able to confirm that our Ground Appraisal Report (ref. GE19533-GARv1.1-DEC20) has been received and, if so, that this satisfies step (ii) of the condition?

We have been instructed to prepare a Remediation Strategy and Verification Plan for the site which will no doubt cross your desk in due course.

Kind regards,

Shaun Armitage
BSc (Hons), FGS
Senior Consulting Engineer
[redacted]
W: www.gesl.net

Head office: Unit 7, Danworth Farm, Cuckfield Rd, Hurstpierpoint, West Sussex, BN6 9GL, UK
Bristol Office: Bristol Broad Quay, Broad Quay House, Prince Street, Bristol, BS1 4DJ
Birmingham Office: Birmingham Fort Dunlop, Fort Dunlop, Fort Parkway, Birmingham, B24 9FEL

Geo-Environmental

Geo-Environmental Services Limited has ISO9001, ISO14001 and OHSAS18001 accreditation.
The Company Registration No. is 3214980 and the VAT Registration No. is 679544479.

COVID-19 Response
Geo-Environmental Services Limited has been monitoring the developments on coronavirus (COVID-19) and has been putting in place its own mitigation plans. Now that the Government have advised that we have gone beyond the contain phase and into the delay phase, homeworking is now a default and the office will have a skeleton staff who can deal with deliveries, but because of the investment we have made in IT, this will not impact our clients in any way. For the last 10 years we have been gradually improving our IT infrastructure and all staff have the capability to work remotely and can take emails, calls and access files as they would normally. Most of our site work is in areas where there is a low risk of virus transmission and in higher risk areas we have protocols in place to minimise the risk of virus transmission. We are confident that we have the systems and protocols in place to ensure business continuity through these challenging times.

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APPENDIX B

Imported Soil Specification

IMPORTED SOIL SPECIFICATION

for the site at

CARVERS HILL WINERY, SHALBOURNE,

MALBOROUGH, SN8 3PS

on behalf of

UPPER HORNS FARM LLP



Report:	**IMPORTED SOIL SPECIFICATION**
Site:	**CARVERS HILL WINERY, SHALBOURNE, MALBOROUGH, SN8 3PS**
Client:	**UPPER HORNS FARM LLP**
Date:	**16/03/2021**
Reference:	**GE19846/ISS/MAR21**
Version:	**1.0**
Prepared by:	[redacted] **SHAUN ARMITAGE BSc (Hons), FGS** **SENIOR CONSULTING ENGINEER**
Reviewed by:	[redacted] **LAURA LEGATE CGeol, CSci, BSc (Hons), MSc, FGS,** **ENVIRONMENTAL DIRECTOR**
Approved by:	[redacted] **FIONA GOODE BSc (Hons), MSc, FGS, MIEnvSc, RSoBRA** **SENIOR CONSULTANT ENGINEER**

Geo-Environmental Services Limited
Unit 7, Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex, BN6 9GL
+44(0)1273 832972 www.gesl.net

AMENDMENT RECORD

Revision ref.	Date	Reasons for amendment	Author's initials	Reviewer's initials	Approver's initials
1.0	16/03/2021	First issue	SA	LL	FG

CONTENTS

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3.0	Nutritional Composition	5
4.0	Physical Composition	5
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6.0	Testing Rates and Compliance	6

1.0 Introduction

This document sets out the requirements for imported subsoil and Topsoil materials for any project undergoing redevelopment or other works where capping work is required in line with a commercial land use.

Within the specification reference has been made to topsoil and subsoil. Topsoil relates to the top layer of natural soil that can support healthy vegetation growth. Subsoil relates to the layer of soil immediately below the topsoil to the depth of the underlying broken rock or geological parent material.

The specification considers the chemical, nutritional and physical properties of soils that are to be imported onto site in order to ensure materials used are suitable for their intended use and do not introduce any new hazard or pollutant linkage on to the site.

Where there is any discrepancy between this specification and BS3882:2015 or BS8601:2013, the latter documents shall take precedence unless otherwise formally confirmed by the relevant regulator.

2.0 Chemical Composition

The chemical criteria listed below are based on the published Category 4 Screening Levels (C4SLs) by DEFRA and/or the relevant Suitable for Use Levels (S4ULs) published by LQM, for a commercial end use. From time to time these values may change in line with regulatory or UK policy changes. Such changes will require revision and re-issue of this document.

Where C4SLs or S4ULs are published for a range of Soil Organic Matter (SOM) values, these ranges and their respective SOM values have been presented and would be considered when assessing compliance with this Specification.

2.1 Method of Analysis

Samples should be analysed using UKAS or MCERTS accredited laboratories. For TPH analysis sample preparation must not include air drying.

2.1.1 Poly Aromatic Hydrocarbon (PAH)

The PAH analysis must include the EPA priority 16.

2.1.2 Total Petroleum Hydrocarbons (TPH)

The analysis for TPH should be undertaken on the ‘as received’ sample and not be subject to any pre-treatment and shall include aliphatic and aromatic carbon banding split.

2.2 Topsoil (0-300mm depth)

Tables 1, 1a, 1b and 1c provide a list of the maximum acceptable concentrations for a range of determinants for imported topsoil.

Determinant	Maximum concentration (mg/kg)
Inorganic	**SOM 6%**
Arsenic (total)	640
Boron (water soluble)	240000
Cadmium (total)	190
Chromium (total)	8600
Copper (total)	68000
Cyanide (total)	373
Lead (total)	2310
Mercury (total inorganic)	1100
Nickel (total)	980
pH	5.5 – 8.5
Selenium (total)	12000
Zinc (total)	730000
Asbestos	Absent
Organic	
Phenols (total)	440
Poly Aromatic Hydrocarbon (speciated)	See Table 1a
Total Petroleum Hydrocarbon (speciated)	See Table 1b

Table 1 Chemical Specification for Topsoil

Determinant	Maximum Concentration (mg/kg)		
	1% SOM	2.5% SOM	6% SOM
Acenaphthene	84000	97000	100000
Acenaphthylene	83000	97000	100000
Anthracene	520000	540000	540000
Benz(a)anthracene	170	170	180
Benzo(a)pyrene	35	35	36
Benzo(b)fluoranthene	44	44	45
Benzo(ghi)perylene	3900	4000	4000
Benzo(k)fluoranthene	1200	1200	1200
Chrysene	350	350	350
Dibenz(ah)anthracene	3.5	3.6	3.6
Fluoranthene	23000	23000	23000
Fluorene	63000	68000	71000
Indeno(1,2,3CD)pyrene	500	510	510
Naphthalene	190	460	1100
Phenanthrene	22000	22000	23000
Pyrene	54000	54000	54000

Table 1a Topsoil Specification for Speciated PAH

Determinant	Maximum Concentration (mg/kg)		
	1% SOM	2.5% SOM	6% SOM
Aliphatic			
EC 5-6	3200	5900	12000
EC >6-8	7800	17000	40000
EC >8-10	2000	4800	11000
EC >10-12	9700	23000	47000
EC >12-16	59000	82000	90000

Determinant	Maximum Concentration (mg/kg)		
	1% SOM	2.5% SOM	6% SOM
EC >16-35	1600000	1700000	1800000
EC >35-44	1600000	1700000	1800000
Aromatic			
EC 5-7 (benzene)	26000	46000	86000
EC >7-8 (toluene)	56000	11000	180000
EC >8-10	3500	8100	17000
EC >10-12	16000	28000	34000
EC >12-16	36000	37000	38000
EC >16-21	28000	28000	28000
EC >21-35	28000	28000	28000
EC >35-44	28000	28000	28000

Table 1b Topsoil Specification for Speciated TPH

Determinant	Phytotoxicity GAC (mg/kg)		
	pH <6.0	pH 6.0-7.0	pH >7.0
Zinc	200	200	300
Copper	100	135	200
Nickel	60	75	110

Table 1c Topsoil Specification for phytotoxicity

2.3 Subsoil (300-1000mm depth)

Tables 2, 2a, 2b and 2c provide a list of the maximum acceptable concentrations for a range of determinants for imported subsoil.

Determinant	Maximum concentration (mg/kg)
Inorganic	SOM 6%
Arsenic (total)	640
Boron (water soluble)	240000
Cadmium (total)	190
Chromium (total)	8600
Copper (total)	68000
Cyanide (total)	373
Lead (total)	2310
Mercury (total inorganic)	1100
Nickel (total)	980
pH	5.5 – 8.5
Selenium (total)	12000
Zinc (total)	730000
Asbestos	Absent
Organic	
Phenols (total)	440
Poly Aromatic Hydrocarbon (speciated)	See Table 2a
Total Petroleum Hydrocarbon (speciated)	See Table 2b

Table 2 Chemical Specification for Subsoil

Determinant	Maximum Concentration (mg/kg)		
	1% SOM	2.5% SOM	6% SOM
Acenaphthene	84000	97000	100000
Acenaphthylene	83000	97000	100000
Anthracene	520000	540000	540000
Benz(a)anthracene	170	170	180
Benzo(a)pyrene	35	35	36
Benzo(b)fluoranthene	44	44	45
Benzo(ghi)perylene	3900	4000	4000
Benzo(k)fluoranthene	1200	1200	1200
Chrysene	350	350	350
Dibenz(ah)anthracene	3.5	3.6	3.6
Fluoranthene	23000	23000	23000
Fluorene	63000	68000	71000
Indeno(1,2,3CD)pyrene	500	510	510
Naphthalene	190	460	1100
Phenanthrene	22000	22000	23000
Pyrene	54000	54000	54000

Table 2a Subsoil Specification for Speciated PAH

Determinant	Maximum Concentration (mg/kg)		
	1% SOM	2.5% SOM	6% SOM
Aliphatic			
EC 5-6	3200	5900	12000
EC >6-8	7800	17000	40000
EC >8-10	2000	4800	11000
EC >10-12	9700	23000	47000
EC >12-16	59000	82000	90000
EC >16-35	1600000	1700000	1800000
EC >35-44	1600000	1700000	1800000
Aromatic			
EC 5-7 (benzene)	26000	46000	86000
EC >7-8 (toluene)	56000	11000	180000
EC >8-10	3500	8100	17000
EC >10-12	16000	28000	34000
EC >12-16	36000	37000	38000
EC >16-21	28000	28000	28000
EC >21-35	28000	28000	28000
EC >35-44	28000	28000	28000

Table 2b Subsoil Specification for Speciated TPH

Determinant	Phytotoxicity GAC (mg/kg)		
	pH <6.0	pH 6.0-7.0	pH >7.0
Zinc	200	200	300
Copper	100	135	200
Nickel	60	75	110

Table 2c Subsoil Specification for phytotoxicity

3.0 Nutritional Composition

The nutritional criteria listed below are based on BS3882:2015 for topsoil and BS8601:2013 for subsoil. In the absence of published criteria, current guidance and best practice has been applied to derive appropriate criteria.

3.1 Topsoil & Subsoil

Table 3 details the minimum acceptable concentrations for imported topsoil and subsoil. The nutrient concentrations set out in Table 3 for Topsoil are based on those set out in BS3882:2015 which states *"Multipurpose topsoil is the grade suited to most situations where topsoil is required; however, there can be situations where specific purpose topsoil is required"*. In the event that an alternative specific Topsoil grade is required, i.e. acidic; calcareous; low fertility; low fertility acidic; or low fertility calcareous, the compliance criteria set out in BS3882:2015 shall be applicable in place of those set out in Table 3 below.

Topsoil/Subsoil	Parameter	Concentration
Topsoil (multipurpose grade only)	Phosphorous	16 – 140 mg/l
	Potassium	121 – 1500 mg/l
	Magnesium	51 – 600 mg/l
	Nitrogen	0.15 % m/m
	Carbon:nitrogen ratio	<20:1
Subsoil	Phosphorous	16 mg/l
	Potassium	121 mg/l
	Magnesium	51 mg/l
	Nitrogen	0.15 %
	Carbon:nitrogen ratio	<20:1

Table 3 Nutritional Specification for Topsoil and Subsoil

4.0 Physical Composition

The physical criteria listed below are based on BS3882:2015 Specification for Topsoil. In the absence of published criteria, current guidance and best practice has been applied to derive appropriate criteria.

4.1 Topsoil

Table 4 details the physical suitability requirements for imported topsoil and subsoil. Table 4 sets out acceptability criteria from BS3882:2015 for multipurpose Topsoil. In the event that an alternative specific Topsoil grade is required, i.e. acidic; calcareous; low fertility; low fertility acidic; or low fertility calcareous, the compliance criteria set out in BS3882:2015 shall be applicable in place of those set out in Table 4 below.

Topsoil/Subsoil	Parameter	Specification requirements
Topsoil (multipurpose Topsoil only)	Textural Classification	Sandy clay loam, sandy loam, loamy sand, sandy silt loam (as defined in BS3882:2015, Figure 1)
	Loss on Ignition	3 - 20% (for 5-20% clay soil) 5 - 20% (for 20-35% clay soil)
	Maximum Stone content:	>2mm = 30% >20mm = 10% >50mm = 0%
Subsoil	Textural Classification	Refer to BS8601:2013 Figure 1
	Loss on Ignition	2%

Topsoil/Subsoil	Parameter	Specification requirements
	Maximum Stone content:	>2mm = 40% >20mm = 20% >75mm = 0%

NB: Topsoil and Subsoil must be free from glass, brick fragments, plastic, metal, asbestos and other deleterious materials.

Table 4 Physical Specification for Topsoil & Subsoil

5.0 Source Requirements

5.1 Topsoil and Subsoil

The following will be required to be provided with all soils imported to site:

- A site plan detailing the location and address of the source site, including grid reference.
- Location description of source material, including historic and current site uses.
- Sample analysis results of material at source, including details of laboratory, date of sampling, date samples received by laboratory etc.

5.2 Manufactured soils

Where natural soils are unavailable manufactured soils may be utilised, and the following should be provided:

- Details of the soil manufacturing process, including criteria for received soils, quality control procedure and validation protocol.
- Soils should be tested at a minimum ratio of one sample per 50m³.

6.0 Testing Rates and Compliance

Sampling shall be undertaken in accordance with BS3882:2015 and BS8601:2013.

6.1 Topsoil

Where natural sourcing is proposed, the provenance of the material shall be determined by analysis of the soils at a minimum rate of 3No. samples per source site (up to 250m³) and 1 sample per 250m³ thereafter. Imported soils should be sampled once it has been laid on the site to support the analysis provided by the source supplier.

Where Topsoil is derived from a manufactured source, testing would be undertaken at a rate of 1 sample per 50m³, with a minimum of 3No. tests for any given potential source material (or production batch).

6.2 Subsoil

Where the source of the material is known validation sampling should be undertaken at a minimum rate of 3 samples per source (up to 250m³) and 1 sample per 250m³ thereafter. Imported soils should be sampled once it has been laid on the site to support the analysis provided by the source supplier.

Where subsoil is derived from a manufactured source, testing would be undertaken at a rate of 1 sample per 50m³, with a minimum of 3No. tests for any given potential source material (or production batch)

Where the source of the material is not known the validation sampling should be undertaken in-line with the testing rates as set out for cover systems to ensure the materials are suitable for their intended use. Further guidance on minimum testing under this scenario is presented in Section 6.3 below.

6.3 Cover Systems

Where a cover system/ capping layer is proposed as part of the required remedial measures, sampling frequency will follow the guidance set out by the NHBC in their guidance for clean cover systems (2010), outlined below:

- Sites with more than 30 plots testing should be conducted at a rate of one plot in four;
- Sites with between 20 – 30 plots testing should be conducted at a rate of one plot in three;
- Sites with between 5 -20 plots testing should be conducted at a rate of one plot in two;
- Sites with fewer than 5 plots testing should be conducted in every plot.

Where larger sites are broken down into smaller areas in terms of validation the higher rates of validation frequency may be required to allow earlier signoff by the Regulators/Warranty Providers in relation to these specific areas of the wider development.

6.4 Sample Failure

In the event that a sample fails to meet the specified criteria for any parameter the Environmental Consultant should be contacted for advice on the suitability of the materials.

Further testing may be required to provide reassurance that the exceedances are not representative of the soil and to provide clarification whether the soil is suitable for importation and/or proposed use.

6.5 Timing

Sampling and analysis undertaken by a manufactured topsoil supplier shall be no earlier than two weeks from the date of import, any results which are older than two weeks will be deemed not to be representative of the soils to be imported and rejected. Results showing consistency of batching may be requested to demonstrate consistency of the physical, chemical and nutritional composition of the material.

Imported soil suppliers and groundwork contractors are required to take reasonably practicable measures to ensure that compliance with this Specification does not hinder formal completion of individual plots or developments.

6.6 General Compliance

All analytical suites shall correspond with the chemical, nutritional and physical compliance criteria (as set out in Tables 1 to 4). The soil supplier shall ensure that the analytical limits of detection are equal or lower than the compliance values presented within this Specification. Where either testing suites or limits of detection do not comply with this Specification, the entire set of results shall be rejected.