

For the Receiving Site specification of the soil quality backed up by a risk assessment and site specific target levels.

[Where existing contamination on the receiving site there will be a desk study, site investigation, risk assessment and remedial action plan] If there is no identified contamination, then in lieu of a risk assessment setting remedial targets for suitable for use soils, a letter from a consultancy setting out acceptable soil quality, based on GACs for example, is acceptable]

Environmental Requirements

Phase 1 and two Phase 2 Environmental Site Assessments have been completed by EPS for the site. These are referenced below.

An environmental risk assessment is included in the reports referenced below. Re-use criteria for soils that are the subject of this MMP were presented to the Local Authority in a Remedial Strategy – see below.

UK20.5052 Phase I Environmental Assessment: Pfizer, 32 New Lane, Havant, PO9 2NG (January 2021)

UK20.5052C Phase II Geo-Environmental Assessment: Pfizer, 32 New Lane, Havant, PO9 2NG (March 2021)

UK20.5052F Supplementary Phase II Geo-Environmental Assessment: Pfizer, 32 New Lane, Havant, PO9 2NG (October 2021)

A Remedial Strategy and Implementation Plan has been prepared and is referenced below:

UK20.5052D Remedial Strategy & Implementation Plan: Pfizer, 32 New Lane, Havant, PO9 2NG (October 2021).

The environmental site soil re-use criteria are presented in the Remedial Strategy, which is included in Appendix B Item 2. The environmental re-use criteria have also re-iterated in a standalone table for ease of use, which is included as Appendix B Item 8. These were reviewed by the Local Authority and their acceptance of them is presented in Appendix B Item 3. EPS will oversee the environmental re-use of the materials.

Geotechnical Requirements

The geotechnical re-use criteria for site-won materials are presented in the Pinnacle Consulting Engineer's 'Specification for Works at or Below Ground Level' (19th July 2021) and 'Earthworks Specification (28th October 2021). These documents are included in Appendix B Item 1 & Item 7, and should be read in full. The earthworks specification requires a Chartered Geotechnical Engineer to 'fully assess, supervise and monitor all earthworks and ground improvement works for the scheme'.

In the Earthworks Specification Section 2.2.3, it states 'Site won material may be used as general fill material Class 1 and Class 2, but is not to be reused as either Class 6 or Class 7 selected fill, (as defined by the Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works) unless the Earthworks Geotechnical Engineer has demonstrated suitable testing and treatment to reclassify the material as suitable and has obtained prior written agreement from the Civil Engineer'. Section 2.3 also states that 'All works shall be carried out in accordance with this specification with reference to the latest edition of the Specification for Highway Works (SHW), where appropriate. The Contractor is wholly responsible for the design and installation of the lime and/or cement stabilised materials. Information should be provided to the Civil Engineer to prove the suitability of the modified materials for use within the works and the method of installation and compaction'. The design criteria are then stated in Section 3 of the 'Earthworks Specification'

In Section 4.2.5 of the specification, under 'Material for Filling under Suspended Slabs' it states, 'Hardcore or crushed demolition material as Clause 4.2.10 of this Specification may also be used for filling under suspended slabs. In Section 4.2.10 it expands on this aspect and states 'Hardcore and crushed demolition materials may be used as a sub-base material in car parks and certain lightly loaded situations where specifically noted on the Engineer's drawings. It shall consist of clean, hard, durable, chemically stable material, either broken stone, bricks or concrete and shall be free from extraneous matter which may have a deleterious effect on the permanent works such as timber, gypsum plaster or manganese bricks. It shall also be free of cohesive material. The material shall be uniformly graded and capable of passing a 75mm size sieve.'

Full reference to the Remedial Strategy, Specification for Works at or Below Ground Level and Earthworks Specification should be made (see Appendix B Items 1, 2 & 7).

Where contamination is suspected or known to be present

14a. Please provide copies or relevant extracts from the risk assessment(s) that has been used to determine the specification for use on the site. **This must relate to the place where materials are to be used.** This must be in terms of (i) human health (ii) controlled waters and (iii) any other relevant receptors. If a risk assessment is not relevant for a particular receptor given the site setting please explain why below:

(Includes assessment of soil quality and identifies areas where soils are contaminated, made ground or naturally occurring. Identifies where soils are to be excavated, and what is to happen to them, either removed from site, or exported under Cl:aire DoWCoP MMP. Where soils are contaminated, a risk assessment to demonstrate they can be left in situ for the proposed redevelopment, or the plan to excavate and dispose of them and how this will be managed)

Two site investigations, listed above in Section 13, were undertaken in the last 12 months. The findings of the investigation and risk assessment are summarised below.

The site was previously a pharmaceutical manufacturing facility and more recently a pharmaceutical distribution centre

The intrusive investigations found that the shallow and deeper soils from across the site do not pose a significant risk to future site users in a commercial setting. Moreover, laboratory testing of groundwater has not identified concentrations considered to pose a risk to the groundwater body, whilst soil vapour analysis has not identified a risk associated with intrusion of organic vapours into future buildings (or neighbouring properties).

From current findings, gross contamination of soils is not anticipated once groundworks begin as evidence of such would be expected to have been identified in the shallow groundwater, which it has not. However, localised soil contamination can be expected and has been evidenced in soil vapour analysis which indicates potential localised hot spots of volatile hydrocarbons and chlorinated solvents. In light of this, the approach to remediation during the earthworks phases is based on a formalised 'discovery strategy' to ensure any soil contamination is looked for, identified and managed appropriately. Once the groundworks are complete, verification that the soils left on site are suitable for the site use is required and this verification and its evidence is required to be presented in report form. The plan to collect the necessary evidence for such reporting is presented in the Remedial Strategy.

The now derelict buildings are pending demolition. Soils were assessed using generic criteria as detailed in the previous assessments. Commercial end use criteria were generally adopted for protection of human health. Certain contaminants (phthalates & petroleum hydrocarbons) have lower criteria taking account of saturation limits at the request of the local authority. These re-use criteria were agreed by the local authority (see correspondence in Appendix B – Item 3).

Re-Use Criteria

The environmental soil re-use criteria were set using the generic values for protecting human health but where the contaminant could breach saturation limits (in the case of petroleum hydrocarbons and phthalates), either a fraction of the saturation limit was used (25% - phthalates) or in the case of petroleum hydrocarbons, a total value (TPH CWG) not to be exceeded was also presented. In the absence of a nationally recognised generic assessment criteria for asbestos, the non-hazardous waste limit was adopted. These are presented in Appendix B – Item 2 & summarised in Item 8.

14b. Please attach any relevant documentation from the LA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP).

LA references:

See Appendix B Item 3 – Regulatory Correspondence

Appendix B Item 6 – Planning Decision Notice of Approval with Conditions

14c. Please attach any relevant documentation from the EA relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 and Table 2 of the CoP)

EA references:

Local EA waste team consultation response is included in Appendix B Item 5, with original EPS consultation email included as Appendix B Item 5b.

EA Position Statement on the Development Industry Code of Practice
See Appendix B Item 4.

14d. Please attach any relevant documentation from any other regulators (if relevant) relating to the excavation and reuse of the materials to demonstrate no objection (see 3.37 of the CoP)

Other references:

NOT APPLICABLE

Where contamination is not suspected

15a. Please attach copies or relevant extracts from the Desk Top Study that demonstrates that there is no suspicion of contamination.

NOT APPLICABLE (see Note 14)

15b. Please attach copies or relevant extracts from the site investigation/testing reports that adequately characterise the clean materials to be used (if appropriate).

NOT APPLICABLE (see Note 14)

15c. Please attach copies of any other relevant information (if available) confirming that land contamination is not an issue.

Reference(s):

NOT APPLICABLE (see Note 14)

Certainty of use

Various lines of evidence need to be provided to demonstrate that the materials are certain to be used. This includes:

The production of this MMP

An appropriate planning permission (or conditions that link with the reuse of the said materials)

An agreed Remediation Strategy(ies)

An agreed Design Statement(s)

Details of the contractual arrangements

Please identify in the following sections what lines of evidence relate to the site(s) **where the materials are to be used**.

16a. Planning Permission(s) relating to the site where materials are to be reused

APP/21/00200 | Demolition of existing buildings and redevelopment of site comprising erection of distribution warehouse (class B8) with ancillary offices and related facilities, vehicle storage deck, new access, landscaping and associated infrastructure. 32 New Lane, Havant, PO9 2NG. Decision notice is enclosed in Appendix A Item 6.

A16b. Explain how the reuse of the excavated materials fits within the planning permission(s) for each site.

The development requires a re-profiling (cut & fill) exercise as well as pile foundations which entails a reduced level dig across mainly the eastern half of the site to allow the placing of a piling mat and allow for site surface completions.

The Reduced Level dig is summarised in the plan presented in Appendix D Item 2 – Cut & Fill Isopachyte.

Average reduced level dig depth = 0.36m.

Area of RL dig = 33,431 m²

Approximate total volume RL dig = 12,175 m³.

16c. If planning permission is not required for any one site please explain why below e.g. permitted development, clean up of a chemical spill, surrender of an Environmental Permit, re-contouring within the existing permission:

Not Applicable

Where contamination is suspected or is known to be present

17. Please provide a copy of any Remediation Strategy(ies) that have been agreed with relevant regulators.

Reference:

The Remedial Strategy is presented in Appendix B – Item 2.

The agreement by the Local Authority is presented in Appendix B item 3.

(Includes assessment of soil quality and identifies areas where soils are contaminated, made ground or naturally occurring. Identifies where soils are to be excavated, and what is to happen to them, either removed from site, or exported under Cl:aire DoWCoP MMP. Where soils are contaminated, a risk assessment to demonstrate they can be left in situ for the proposed redevelopment, or the plan to excavate and dispose of them and how this will be managed)

Where contamination is not suspected

18. Please provide a copy of any Design Statement(s) that have been agreed (e.g. with the planning authority or in the case of permitted developments the client):

Reference:

NOT APPLICABLE (see Note 17)

Quantity of use

19. Please provide a break down of the excavated materials for each site and how much will be placed at each site or sub area of each site.

Where this is not specific to a single readily identifiable source refer to an annotated plan, schematic or attach a tabulated summary.

Reduced Level Dig = 12,175m³ (see Appendix C Item 2). Total cut area 33,431m²

Locations for re-use are presented in Appendix C Item 2.

Total fill volume – 10,460m³. Total fill area 31,315m²

Export volume (surplus) 1,715m³.

(NOTE this does not include site won and recycled crushed concrete /tarmac from demolition or concrete floor slab arisings which will be processed by crushing and screening. These separate crush arisings are likely to be used for piling mat construction to avoid the import of virgin aggregates as far as is practical, with the tarmac re-used in the buildings of new roads).

In this instance, an assumption is made that 0.2m thickness of the site is the surface and floor slabs which will be crushed to form a re-useable recovered aggregate for re-use as fill/piling mat. See Appendix D Item 3 Site Strip with Volumes. The crushed concrete and tarmac materials, with 20% bulking result in anticipated in 9,298m³ and 2,842m³, respectively.

Therefore the total material re-use volume anticipated to be covered by this MMP, and included in the verification reporting, is 10,460m³ + 9,298m³ + 2,842m³ = 22,600m³

An upper estimate of variation on these earthworks of 20% should be allowed for.

20a. How has consolidation/compaction being considered in the above mass balance calculations?

Bulking factors have not been applied as all volume measurements have been 'in-ground', with exception of site surfacing strip (Appendix D Item 3) which incorporates 20% bulking.

20b. How has loss due to treatment being considered in the above mass balance calculations (if applicable)?

Not applicable. No treatment of the material is proposed other than minor physical sorting of larger items such as bricks and concrete and organic materials where appropriate.

20c. How has the addition of treatment materials being considered in the above mass balance calculations (if applicable)?

Not applicable. No treatment of the material is proposed.

Note - An exact figure is not required but one that is reasonable in the circumstances and can be justified if challenged.

Contingency arrangements

Explain what is to happen in the following situations and identify the appropriate clauses in the contract(s) (Such clauses must be provided to the Qualified Person, preferably as a summary document): or

21a. What is to happen to, and who is to pay for out of specification materials?

Havant Property Investment LLP (Registered Number: OC431846)
38 Seymour Street
London
W1H 7BP
England

21b. What is to happen to, and who is to pay for any excess materials?

Havant Property Investment LLP (Registered Number: OC431846)
38 Seymour Street
London
W1H 7BP
England

21c. What happens if the project programme slips in relation to excavated materials or materials undergoing treatment?

Time allowed in programme for delays regarding managing excavated materials/treatment (no treatment is currently proposed).

21d. Other identified risk scenarios for the project (relating to excavated materials)?
Contract reference:

Ground risk related to excavated materials is with:

Havant Property Investment LLP (Registered Number: OC431846)
38 Seymour Street
London
W1H 7BP
England

The tracking system

22a. For all sites please describe the tracking system to be employed to monitor materials movements.

On a daily basis the earthworks works supervisor shall record the zone/s from which the material was excavated and the zone/s that it was placed in. In addition, EPS will undertake full time oversight of the remediation and materials tracking throughout the entire earthworks

phase. Remedial Oversight and tracking will be based on the use of the Survey123 app (Arc GIS) coupled with the site grid and stockpile plan as well as GPS positioning.

Duty of Care, as specified in Section 34 of the Environmental Protection Act 1990, will be followed in the excavation, disposal, treatment and re-use of any materials on site. All waste leaving site will be documented using waste transfer / consignment notes. A description of the waste, waste carrier details and destination will be recorded.

See:

Appendix C Item 1 – Phasing Plan

Appendix C Item 6 - Material Tracking Form

Appendix C Item 7- Site Grid

Where contamination is suspected or known to be present

State the procedures put in place to:

22b. Prevent contaminants not suitable for the treatment process being accepted

&

22d. Demonstrate that materials that do not require treatment and successfully treated materials reach their specific destination

In order to demonstrate the origin of any material originally sourced on site and reused as fill, it will be necessary to follow a disciplined procedure. Excavated soils that may be re-used on site will be stockpiled. The procedure for this is detailed in the Discovery Strategy and Materials Movement Flow Chart presented in the Remedial Strategy (Appendix B Item 2).

All materials that are suspected contaminated and are unexpected will be stockpiled and characterised in a 'Quarantine Area'. Soil quarantine and processing areas shown on Appendix D Item 1.

All soils stockpiled will have their source location recorded using the Site Grid – Appendix D Item 7 and the Survey 123/GPS process (Appendix C Item 6).

All soils re-used will come from stockpiles and will have the Source location grid reference recorded together with the re-use area grid reference also recorded. The analytical data will also be recorded as part of the verification.

This approach gives a 'cradle to grave' management and recording procedure for all soils that could be re-used on the site.

This procedure requires the use of a consigning system to control movements of on-site plant taking soil from cut areas to fill areas so that the soil can be traced through record keeping.

The operations of the consigning system should be recorded on a soil tracking spreadsheet. This shall be related to the Site Grid (Appendix D Item 7) of the site showing the location of the excavation blocks of soil and storage stockpiles.

Any unexpected contamination will be dealt with in accordance with the Discovery Strategy (included in Appendix B Item 2).

22c. Prevent cross contamination of materials not in need of treatment, wastes awaiting treatment and treated materials

All natural soils must be kept separate from topsoil, Made Ground and any materials that are considered to be impacted. The Contractor will ensure that organic materials such as trunks, roots and other vegetation are removed and that the topsoil is fully stripped from the underlying natural soils. Organic materials should not be incorporated into the compacted fill as the organic materials could generate ground gases as they decay and affect the geotechnical properties of the fill.

Arisings that are considered unacceptable for reuse by visual or olfactory inspection, as per the discovery strategy, should be excavated (providing that in doing so no unacceptable risks would be posed) and temporarily stockpiled in the separate 'quarantine' area. Sampling and testing should be carried out to satisfy the requirements of the waste management facility that will be accepting the material. Any arisings emitting strong odours or containing ACM should be removed from site as soon as possible. All stockpiles of soil in 'quarantine' shall be covered by polythene sheeting to minimise rainwater infiltration and mobilisation of contaminants. Stockpiles should be placed on an impermeable surface and be bunded. All such areas shall be clearly demarcated and identified as a temporary storage area for potentially contaminated soil. When dealing with the proposed excavation in the region of BH03 as per the Remedial Strategy, the contaminant of concern is a phthalate which will not present any clear field evidence. As such, the excavation will be guided by the extent of those exploratory locations in near proximity which were tested and found not to contain phthalates in the soils. Testing of the excavation will then prove if it is sufficient, or if it needs to be increased (taking account of the site-specific remedial criteria for phthalates presented in Appendix B Item 2).

22e. Ensure that waste for off-site disposal or treatment is properly characterised and goes to the correct facility

EPS will be on site throughout and can confirm there is a procedure for quarantining soils pending re-use or off-site disposal. If the soils are surplus or fail re-use criteria, they will undergo characterisation including waste acceptance criteria testing and EPS will be able to provide it. The analytical data shall be made available to the waste management facility and the haulier to ensure the waste goes to the correct facility.

23. Please attach a copy of the tracking forms / control sheets that are to be used to monitor materials movements. To include transfer of loads on site into stockpiles prior to treatment (if applicable), stockpiled after treatment (if applicable), stockpiled awaiting use (as appropriate) and final placement.

Reference:

See

Appendix C Item 1 – Phasing Plan

Appendix C Item 2 - Cut & Fill Isopachyte

Appendix C Item 6– Material Tracking Form

For Hub Sites within Cluster Projects & where materials need treatment before reuse

24. Please attach a copy of the Environmental Permit covering the treatment process. Or alternatively if the treatment is covered by a Mobile Plant Permit and associated Deployment Form, attach a copy of the EA agreement to the Deployment Form.

Permit reference / EA letter reference:

Not Applicable

Records

25. Where, and in what form, are records to be kept?

Records should be kept in electronic and hard copy format within the site office, and be available for review on request.

Note – records e.g. transfer notes, delivery tickets, Desk Top Study, Site Investigation, Risk Assessment(s), Verification Report(s) need to be kept for at least 2 years after the completion of the works and production of the Verification Report

Verification Plan

26. Provide or explain the Verification Plan which sets out how you will record the placement of materials and prove that excavated materials have been reused in the correct location and in the correct quantities within the development works.

A Remedial Strategy and Implementation Plan has been prepared for the site and has been approved by the Local Authority as per Appendix B Item 3. In addition, forming part of this verification report will be the Earthworks Completion and Validation Report as stipulated in Section 5.1 of Pinnacle's Earthworks Specification (Appendix B Item 7). This will be prepared by the contractor's Geotechnical Engineer and EPS will compile it into the overall Verification Report for the MMP (and submission to CL:AIRE).

The Contractor will record all waste movements occurring throughout the project (see soil tracking Appendix C Item 6). The Verification Report will detail the information as outlined below and it will be produced by EPS under reference UK20.50521.

- Pre-reclamation topographical features, including levels;
- Location, extent and depth of bulk excavation and excavated contaminant 'hotspots';
- Location and extent of all additional investigation works;
- Location and extent of all additional excavations;
- Location of stockpiled Hazardous waste;
- Location of stockpiled Non Hazardous waste;
- Location of stockpiled Inert waste;
- Position of proposed development;
- Position and depths of all validation sample points;
- Location of reused material.
- Full description of all excavation works undertaken, including details of volumes (in m3) of materials excavated from remediation areas and date(s) of excavation, sampling and construction progress;
- Digital photographs of excavations and stockpiles with descriptions and accompanied by a drawing identifying each vantage point;
- Results of analytical testing including MCERTS certification for soils and UKAS certification for water and asbestos;
- Confirmation of haulage subcontractor and waste disposal facilities, including legible photocopies of appropriate licences and chain of custody forms, consignment and/or transfer notes for waste materials;
- If applicable, records and data of any environmental monitoring undertaken;
- Legible copies of all laboratory test data, together with laboratory testing certificates, and if necessary, in-house AQC data.

Reference:

- EPS Remedial Strategy and Implementation Plan Appendix B Item 2.

Appendix A

- Item 1: Site Location Plan**
- Item 2: Site Layout Plan**
- Item 3: Exploratory Hole Location Plan**
- Item 4: Final Levels**
- Item 5: Warehouse Levels**

Appendix B

- Item 1: Below Ground Works Specification (Pinnacle)**
- Item 2: Remedial Strategy & Implementation Plan (EPS)**
- Item 3: Regulatory Correspondence**
- Item 4: EA Position Statement**
- Item 5: EA Consultation Response**
- Item 5b: EPS Consultation Email to EA**
- Item 6: Planning Decision Notice**
- Item 7: Earthworks Specification (Pinnacle)**
- Item 8: Summary Table of Environmental Re-Use Criteria**

Appendix C

- Item 1: Phasing Plan**
- Item 2: Cut & Fill Plan**
- Item 3: Site Strip Volumes**
- Item 4: Formation Volumes**
- Item 5: Formation Plan**
- Item 6: Material Tracking Form**
- Item 7: Earthworks Site Grid**

APPENDIX B

Environmental Re-Use Criteria



ENVIRONMENTAL RE-USE SOIL QUALITY (MMP) - Pfizer

PRINCIPAL CONTAMINANTS OF CONCERN

Please note these figures are upper threshold values for re-use of SITE-WON soils only through an MMP and they are intended to be used with a degree of professional judgement. They do not apply to imported materials and in most cases will be only hypothetical because the levels of contamination on site have been proven to be much lower. These are not remedial targets, as no remedial treatment is proposed.

Contaminant	Criteria (mg/kg)	Contaminant	Criteria (mg/kg)
Arsenic	640	MTBE	7,900
Calcium	410	Benzo(a)Pyrene (genotoxic PAHs)	76†
Chromium (VI)	49	Dibenz(ah)anthracene	3.5†
Chromium (III)	8,600	Naphthalene	190
Copper	68,000‡	Benzylbutyl Phthalate (BBP)**	6.6‡
Nickel	980‡	Bis (2-ethylhexyl)phthalate**	2.2‡
Mercury (elemental)	58	Chloroethene (Vinyl Chloride)	2.2
Lead	2,330	Trichloroethene (TCE)	3.4
Selenium	12,000	Tetrachloroethene (PCE)	130
Zinc	730,000‡	Asbestos (%) (All forms)	<0.1% & no visual fragments
Benzene	98‡	Visual Contamination: Soil to be free from an free phase hydrocarbons and asbestos. Soil containing invasive weeds such as Japanese Knotweed cannot be re-used.	
TPH CWG (Combined Aliphatic & Aromatic C5-35)	2,000‡		
Aliphatic C8-C10	2,000‡		

Notes

Soil Organic Matter – For certain re-use criteria, primarily volatile substances Soil Organic Matter will influence the risk. For these criteria, SOM of 6% has been assumed based on 2013 C4SL values (e.g. benzene) where other values are not available. For S4ULs 'Suitable For Use Levels for Human Health Risk Assessment' – LQM and CIEH (2014), values where SOM applies (i.e. not metals) an SOM of 1% has been assumed. For 2021 C4SL values (e.g. TCE), to ensure consistency with the 2013 values a SOM of 6% has been assumed. The contaminant benzene is the current C4SL most susceptible to changes in SOM along with the three chlorinated solvents. If appreciable levels of chlorinated solvents or volatile organics are identified where SOM would become an influencing factor, the data should be reviewed further with site specific SOM values. In these circumstances, review of where the materials in question are being placed will need to be undertaken to ensure the Conceptual Site Model for the site is not compromised (for instance by instating volatile contamination beneath the building without then installing any vapour protection). Theoretical scenarios are highly unlikely to become a reality at the Pfizer site though, as the vast majority of soils intended for re-use are expected to fall well below the re-use criteria (based on SI data undertaken to date)

‡ **Saturation Limits (petroleum hydrocarbons)** – To ensure the re-use values are pragmatic but provide assurance that no free-phase petroleum hydrocarbons are present, a Total (CWG) TPH value of 2,000mg/kg has been adopted. Where this is lower than the criteria for individual fractions, those criteria have not been shown (including for BTEX compounds).

‡ **Saturation Limits (phthalates)** - Following dialogue with the local authority, re-use values for these compounds are based on 25% of the saturation limits stated in the guidance EIC/AGS/CL:AIRE GAC 'Soil Generic Assessment Criteria' (2010) .

† **Genotoxic PAHs** – BaP will generally be adopted as a surrogate marker for genotoxic PAHs, provided the profile of the PAHs aligns with the approach outlined in Culp, S; Gaylor, D; Sheldon, W; Goldstein, L and Beland, F (1998). 'A Comparison of Tumours Induced by Coal Tar and Benzo(a)-pyrene in a 2-Year Biossay. This would include Dibenz(ah)anthracene, but not naphthalene.

‡ **Phytotoxicity** – These criteria are not aimed at risks to plants from metals such as Zinc, Copper and Nickel, as such risks are not considered to be a restriction to soils used with these criteria. To achieve ideal plant growing conditions, reference should be made to the maximum permissible levels within British Standard BS3882:2015 (table 1).

APPENDIX C

Regulatory Correspondence

HAVANT BOROUGH COUNCIL

Town & Country Planning Act 1990

Consultation on Planning Application

MEMORANDUM

From:	Environmental Health	To:	Development Control
Our Ref:	CONS/22/00131	Your Ref:	APP/21/00200
EH Case Officer Extn:	44 6677	Date:	09 March 2022
DC Case Officer:	David Eaves		
DC Case Officer Extn:	44 6549		
Application Number:	APP/21/00200		
Site Address:	32 New Lane, Havant, PO9 2NG		
Proposed Development:	Demolition of existing buildings and redevelopment of site comprising erection of distribution warehouse (class B8) with ancillary offices and related facilities, vehicle storage deck, new access, landscaping and associated infrastructure (approved 22.10.21). Request to discharge conditions 11 and 19 (received 27.10.21). Request to discharge conditions 14, 15, 16, and 27 (received 10/12/2021)		

Observations / Comments:

I have now had opportunity to review the submitted documentation in connection with condition 11 (contamination), comprising the 3 prior Golder Associates Reports (19125953.600/A.0, 20137712.600/A.0, 20137712.602/A.0), the EPS Ltd. Supplementary Phase 2 site investigation report (UK20.5052F iss.4), and the revised EPS Ltd. Remediation Strategy & Implementation Plan (UK20.5052D iss.6).

These documents have been read alongside relevant historical reports, 1997 ERM Phase 2 Site Investigation Report, 2008 ERM Combined Phase 1 & 2 Environmental Site Assessment, and 2015 Delta Simons Phase 1 & 2 Geo-Environmental Assessment, for environmental context both on-site, and on adjacent land.

The site has been afforded careful consideration as the results & conclusions of successive investigations collectively amount to an incoherent collection of data that do not readily fit a unified conceptual site model for the site. For example, groundwater levelling data obtained at different points in time display significant variability, at times indicating fully opposed hydraulic gradients in different areas of the site. Similarly, while soil results generally return low concentrations of contaminants of concern, groundwater results consistently return sporadic and variable detections of those contaminants over a distance which exceeds the full north/south length of the development land boundary, around 350m or so. Both primary contaminants and their breakdown products (chemicals formed by reductive de-chlorination) are represented at a number of locations, including boundary locations, with the pattern of detections being inconsistent with a single contamination plume migrating within a broadly stable/consistent/predictable groundwater regime.

Vapour results return concentrations that would be both higher than expected given the level of

contamination detected in either groundwater or soils, and at levels that would be of concern at sensitive locations. These factors suggest that there is material contamination either at the site or at/on adjacent land in some form that is sustaining such concentrations, despite the activity that is expected to be the source of the volatile contaminants ceasing at the site some time ago (meaning that losses to air via vapour should be permanently reducing residual contamination).

Contaminants of primary concern are denser-than-water volatile organics, and I am mindful that the local geology is known to be variable and to comprise of interbedded cohesive & granular deposits which have the potential to harbour isolated pockets of free product sporadically in contact with perched groundwater; capable of contributing to both groundwater concentrations & sustaining levels of soil vapour in the long term. In the absence of any specific suspected point of contaminant release, such deposits could be difficult to locate, as has proven to be the case on similar sites.

The Supplementary Phase II report does not explicitly include the scenario described above within its illustrative conceptual site model, and there are some issues with the human health vapour assessment – most notably I do not feel that the presented assessment supports ERM's un-supported conclusion that (the assessment shows-) that the vapour risk to off-site receptors is negligible. For similar reasons, I am not comfortable with accepting the Golder associates quantitative groundwater risk assessment – the parameterisation of the model is based upon a site conceptual model that I do not feel adequately reflects the documented results.

I remain unclear as to the conceptual model that should apply to the site, but it would appear clear that in at least two locations the contaminant source would be associated with the development land and not 'imported' from an adjacent site, and also that there is likely to be a contribution from adjacent land (via a groundwater pathway).

Notwithstanding the above, I am mindful of the significant investigatory effort that has been expended at the site to date, as well as the precautionary approach to remediation which aims to achieve overall betterment through the targeting of 'known-contamination-impacted' but arguably 'sub-significant' soils (given the commercial site context, and sensitivity status of controlled waters). Given this, I have sought to address some of the uncertainty, in particular in respect of the vapour assessment for sensitive human receptors off-site to the East, noting that ERM levelling data indicates that groundwater conditions can give rise to an NW>SE hydraulic gradient.

Vapour assessment

I have undertaken a CLEA 1.07 assessment with equivalent baseline parameters to those used within the EPS Supplementary Phase 2 Report. Notably, repeating the presented assessment has returned values which differ to the results presented in Appendix J, indicating some form of calculation or presentation error. Notwithstanding the above, and that the maximum recorded vapour result has not been selected as an assessment-driver in all cases (probably due to the phased monitoring-); I have confirmed that the vapour exposure results may be confidently regarded to represent a negligible risk for a commercial human receptor.

Using that model as a base, I have applied the results to a residential receptor, using the vapour extraction results to inform the risk assessment. On this basis it is only possible to consider exposure via vapour intrusion to habitable spaces – the model does not generate a hazard index where additional pathways are included. Given the documented depth to groundwater, in practice this only excludes the minor contribution derived from outdoor vapour inhalation. Whilst returning elevated results relative to the commercial assessment, the assessment returned hazard indices which fall below the trigger value for the majority of contaminants, with the exception of EC6-EC7(Toluene).

In principle, EC6-EC7 represents a material risk, returning a hazard index value >7 (on a C4SL basis – an indicator for regulatory purposes), relative to a trigger value of 1. The index value was further elevated on the standard model basis. Given that the EC6-EC7 parameter has been used by ERM to represent toluene (whilst in fact representing a wider group of congeners), I have repeated the assessment for this substance using the CLEA default values for the specific contaminant. This is reasonable given that it is known that the storage and handling of pure-product Toluene has occurred at the site, and in the majority of cases (including the at the location of the maximum recorded concentrations) there is reasonably close agreement between reported EC6-EC7 & Toluene concentrations.

The primary difference in model parameterisation (between EC5-EC6 & Toluene) is the saturation limits which limit phase partitioning behaviour – this value differs by several orders of magnitude between these parameters, and using the CLEA default values returns a hazard index for a residential receptor that is significantly reduced (below trigger level).

I have undertaken some sensitivity testing, and it is notable that in order to generate residential hazard indices above the trigger level, vapour concentrations elevated greater than one order of magnitude above the maximum site-recorded values are required. On this basis, the uncertainties as to the risk assessment are resolved, and I am able to agree that the initially concerning soil vapour results do represent an acceptably low risk to the sensitive offsite receptors.

Groundwater / Controlled Waters Risk

I am mindful that soil concentrations identified within the development red-line area do not indicate gross soils contamination. The concern that a source might exist is driven by the concentrations detected across the site within groundwater monitoring, and that despite evidence of both natural degradation & likely significant losses to soil vapour, and the length of time since cessation of manufacturing activity at the site; concentrations of tetrachloroethene are still being detected sporadically across the site.

Whilst I am not clear on all aspects of the Golder quantitative groundwater risk assessment, it is clear that it shows that the *modelled source* is unlikely to represent a significant risk to the Lavant, but also that the dimensions of the modelled source do not reflect the extent of detected contaminants across the site (and/or beyond its current boundaries). For this reason, I'm not sure that it's reasonable to dismiss the aggregate risk to controlled waters on this basis.

I am aware that significant site preparation groundworks have now been completed under both a contamination watching brief (provided by EPS), and a programme of groundwater quality monitoring. Qualitatively, I understand that no significant soil contamination has been identified throughout the works, and I note that the 3 rounds of groundwater monitoring undertaken since the commencement of site preparatory works have not identified concentrations of the principal contaminants of concern above the limit of detection. This is somewhat surprising given the results of the 2020/2021 investigations, and might be influenced to a degree by seasonal groundwater conditions (current hydraulic gradient). I would accept however that this empirical data does lend significant weight to the conclusions of the Golder risk assessment, and lends weight to the assessment that it is unlikely that an as-yet-undiscovered residual source of significant contamination exists within the boundary of the development land.

Uncertainty & Policy Context

Given the hydrogeology of the site, the nature of the principal contaminants of concern, and the available results – it may not be possible to fully characterise the site (explain all of the results). On related sites, Environmental Health has accepted that reliance upon the contamination watching brief throughout groundworks amounts to a reasonable & proportionate

measure to manage this residual uncertainty.

As regards the interpretation of NPPF para.183, and in particular the minimum standard (after remediation... land should not be capable of determined as contaminated land...); rather than interpreting the wording to mean 'land should *never* be capable of being determined as contaminated land' (183 b)), I believe that it is possible to interpret the policy to mean in practice that 'development proposals should be supported by adequate information to show that the site is not *likely* to be determinable as contaminated land upon completion of the proposed development' (183 b) & c)).

Local Policy (DM17) provides that development on contaminated land will be granted where an appropriate investigation of potential risks has been undertaken and identified risks are mitigated, and that remediation measures must ensure that the development does not have a negative effect on the wider environment. This leaves room for an interpretation where the ability to determine land as 'contaminated land' falls within the bounds of reasonable un-certainty, and is not considered likely.

That precautionary remedial works have been proposed (and I understand have largely now been undertaken), it is certain that there will be a degree of site betterment as a direct result of the works. Losses of volatile organics to atmosphere will also reduce residual concentrations over time in the long term. In this sense, and under the interpretations given above, it is reasonable to regard the policy obligations to have been met, notwithstanding the residual uncertainty which means that the of determination of the land as contaminated land at some point in the future cannot be ruled out with absolute certainty (e.g. in relation to new information, or new physical factors which adversely impact the current Conceptual Site Model (CSM)).

Recommendations

I recommend that condition 11 be discharged. Please list the following documents on the decision notice:

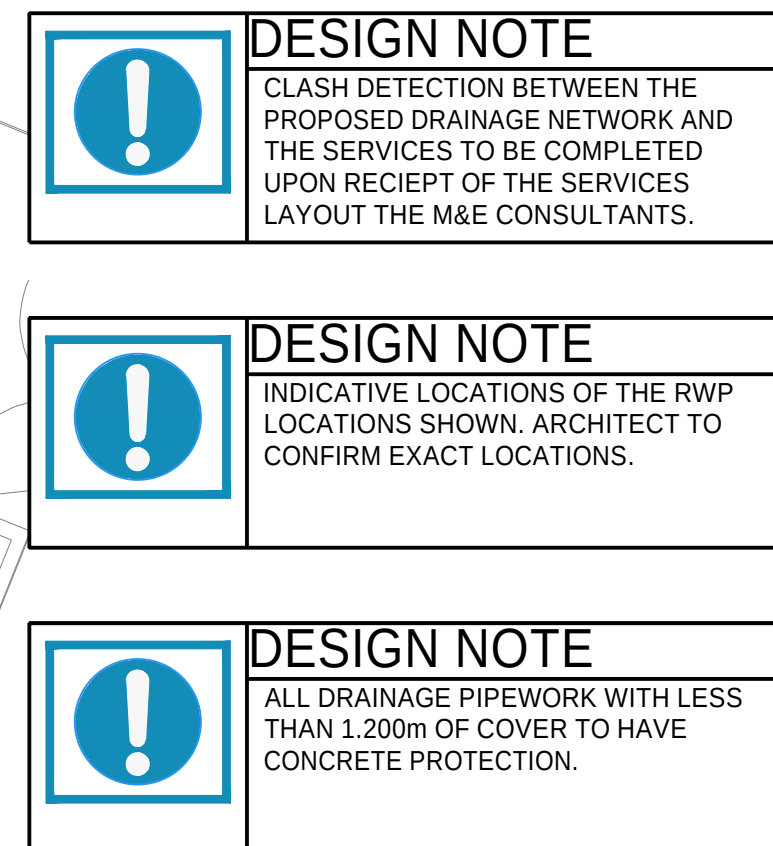
Golder Associates Divestiture Environmental Site Assessment 19125953.600/A.0
Golder Associates Groundwater Investigation 20137712.600/A.0
EPS Ltd. Supplementary Phase 2 site investigation report UK20.5052F iss.4
EPS Ltd. Remediation Strategy & Implementation Plan (UK20.5052D iss.6)

Whilst I have referenced groundwater monitoring data received directly from ERM, there should be no need to list these as supporting information in connection with the discharge of c.11. This data has provided additional context to assist our independent assessment of the submitted reports (similar to our own use of the CLEA model to generate hazard indices), but does not form part of the investigation required by this condition. These results will be submitted with the verification report required by c.12, anticipated in the coming weeks.

Mr. Jonathan Driver
Environmental Control Officer

APPENDIX D

Survey123 Records & Drainage Plan



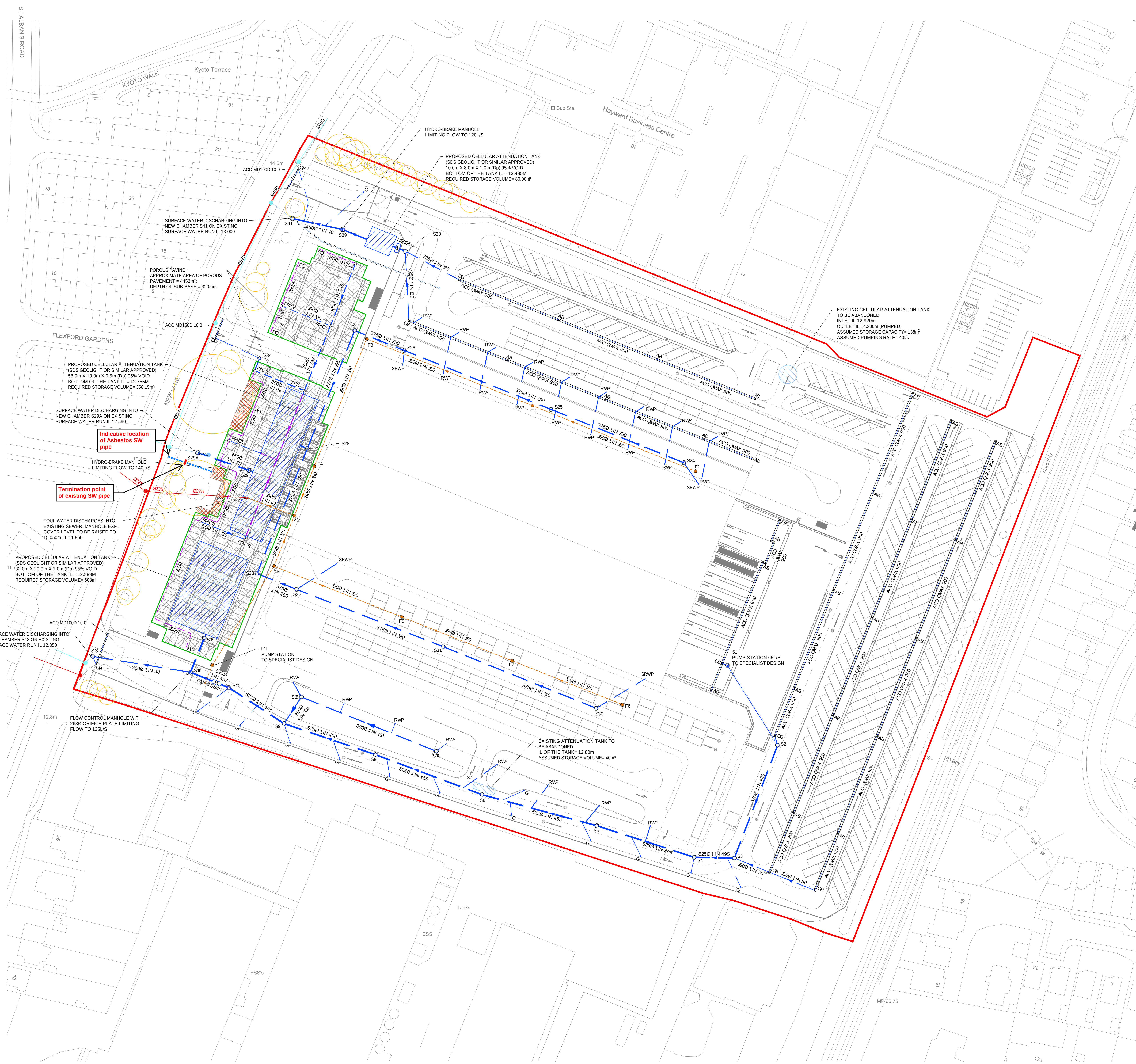
1. DO NOT SCALE THIS DRAWING. WE FIGURED DIMENSIONS.
2. FOR ALL RELEVANT NOTES, REFER TO STRUCTURAL AND CIVIL ENGINEERING PERFORMANCE SPECIFICATION.
3. ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.
5. FOR COVER AND INVERT LEVELS REFER TO PINNACLE DRAWING C200810-PIN-XX-XX-DR-C-00207 MANHOLE SCHEDULE.

	SITE BOUNDARY
	PROPOSED PRIVATE SURFACE WATER SEWER
	PROPOSED PRIVATE FOUL SEWER
	EXISTING PUBLIC SURFACE SEWER
	EXISTING PRIVATE SURFACE SEWER
	EXISTING PRIVATE SURFACE SEWER TO BE ABANDONED
	EXISTING PUBLIC FOUL SEWER
	PERFORATED PIPE
P0	PERMEABLE PAVING OUTLET
	PROPOSED PRIVATE SURFACE WATER RISING MAIN
	PROPOSED PRIVATE FOUL WATER RISING MAIN
	PROPOSED SURFACE WATER DRAINAGE CHANNEL
	PROPOSED ATTENUATION TANK
	EXISTING ATTENUATION TANK
	PROPOSED PRETREATMENT INTERCEPTOR
■ G	PROPOSED GULLY
■ OB	PROPOSED OUT BOX/ SUMP UNIT
■ AB	PROPOSED ACCESS BOX
■ RWP	PROPOSED RAINWATER PIPE
■ SRWP	PROPOSED SIPHONIC RAINWATER PIPE
○ PPIC	PROPOSED POLYPROPYLENE INTERCEPTION CHAMBER
	PROPOSED POROUS PAVING
	TREE PRESERVATION ORDERS (TPO) AREA
	NO DIG CONSTRUCTION AREA CELLWEBSYSTEM OR EQUAL APPROVED

1. ALL PRECAST CONCRETE UNITS ARE TO BE TO BS 5911 (CLASS 3 SULPHATE RESISTANT CEMENT).
2. ALL PROPOSED MANHOLE COVERS AND FRAMES ARE TO BE DUCTILE IIR COMPLYING WITH BS EN 1245.
3. ALL MANHOLE COVER LEVELS ARE APPROXIMATE AND SHOULD BE ADJUSTED TO THE ARCHITECT'S PROPOSED LEVELS.
4. CONTRACTOR IS TO ALLOW FOR ALL ABANDONED DRAINAGE RUNS AND MANHOLES / SOAKAWAYS TO BE EITHER PROTECTED UP OR REMOVED AS NECESSARY.
5. ALL PETROL INTERCEPTORS TO BE FITTED WITH OIL LEVEL ALARMS AND TO TERMINATE IN CUSTOMER SERVICES OR STAFF RECEPTION (TO BE AGREED WITH ARCHITECT / CLIENT). ALL INTERCEPTORS TO BE VENTED. LOCATION OF VENT PIPES TO BE AGREED BY THE DESIGN TEAM. CONTRACTOR TO ALLOW FOR POWER SUPPLY AND DUCTING AS NECESSARY.
6. ALL DRAINAGE CHANNEL AND GULLY GRATINGS TO BE CAST IIR HEEGLUARD AND TO D400 LOADING.
7. EXISTING MANHOLE COVER LEVELS TO BE ADJUSTED TO SUIT PROPOSED LEVELS.
8. ALL MANHOLE COVERS, DRAINAGE CHANNELS, AND GULLIES TO BE SET AT LOW POWER THAN THE PROPOSED FINISH LEVELS.
9. ALL PRIVATE DRAINAGE WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH BUILDING REGULATIONS PART 4, BS EN 752, THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY AND, WHERE PROVIDED, THE PINNACLE DRAINAGE SPECIFICATION.
10. THE EXACT POSITION, LEVEL, LINE, SIZE AND USE OF EXISTING DRAINAGE ARE TO BE CONFIRMED ON SITE. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER PRIOR TO THE SIGNATURE OF WORKS.
11. FOR NEW CONNECTIONS TO EXISTING MANHOLES, EXISTING MANHOLE COVERS TO BE BROKEN OUT AND REFORMED TO SUIT. CONCRETE/BRICK SURROUND TO BE MADE GOOD.
12. UNDER ROADS AND EXTERNAL PAVED AREAS ALL

P8	UPDATED DRAINAGE FOR 0.1m SITE RAISE	SC	DV	20/02/20
P8	REMOVED QUADRACEPTORS	RP	JJ	22/02/20
P1	FOR TENDER ISSUE - S28A REVISED.	TWR	JJ	09/08/20
P1	FOR TENDER ISSUE - OUTFALL NOTES ADDED	TWR	JJ	05/08/20
P09	FOR TENDER ISSUE	TWR	DV	26/02/20
P08	FOR TENDER ISSUE	JD	EQ	30/07/20
P07	REVISED PROPOSED OUTFALL MANHOLE INVERT LEVELS	SC	EQ	07/05/20
P07	REVISED DRAINAGE LAYOUT	SC	EQ	01/04/20
P05	UPDATED SITE LAYOUT	SC	09/02/20	
P04	UPDATED SITE LAYOUT	SC	05/02/20	
P03	REVISED DRAINAGE LAYOUT	SC	29/01/20	
P02	UPDATED CLIENT NAME	IL	SG	22/2/20
P01	FIRST ISSUE	IL	SG	27/02/20
REV	DESCRIPTION	BY	CHK	DATE

DRAWING STATUS			
TENDER			
SCALE @ A0 1:500	DATE JAN '21	DRAWN BY IL	CHECKED SG
DRG NO. C200810-PIN-XX-XX-DR-C-00205			REVISION P13
COPYRIGHT PINNACLE			





REMEDIAL OVERSIGHT & MATERIAL TRACKING (PFIZER, HAVANT)

Project Reference:	UK21.5634	
Title:	Remedial Oversight & Material Tracking (Pfizer, Havant)	
Client:	Havant Property LLP	
Date:	03/01/2022	
EPS Contact Details:	7B Caxton House Broad Street Cambourne Cambridge CB23 6JN	T: 01954 710666 F: 01954 710677 E: info@epstrategies.co.uk W: www.epstrategies.co.uk
Status:	Issue 1	

Author:	Reviewed:	Authorised:
		
Paul O'Connor	Marcus Bell	Will Evans
Consultant	Associate Director	Director

Excavation of Soil

Soil Location: ☐ Soil Excavation ☒ Stockpile	
Soil Grid Reference:	F3
Detailed Grid Reference:	50.85993, 0.97257
Stockpile Number:	SP03
Top of Excavation:	NA
Base of Excavation:	NA

General Image



Detailed Image





Destination of Moved Soil

New Soil Location: ☐ Backfilled into Excavation ☐ Stockpile	
Soil Grid Reference:	NA
Detailed Grid Reference:	NA
Stockpile Number:	NA

General Image
Detailed Image



Sampling / Comments

Origin Sample Taken:	Yes
Sample Reference:	SP03 F3 21
Destination Sample Take	
Sample Reference:	
Sampling Comments	
General Observations	

Additional Images





REMEDIAL OVERSIGHT & MATERIAL TRACKING (PFIZER, HAVANT)

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Status:	Issue 1	

Author:	Reviewed:	Authorised:
		
Paul O'Connor	Marcus Bell	Will Evans
Consultant	Associate Director	Director

Excavation of Soil

Soil Location: ☐ Soil Excavation ☒ Stockpile	
Soil Grid Reference:	F4
Detailed Grid Reference:	
Stockpile Number:	SP03
Top of Excavation:	
Base of Excavation:	

General Image



Detailed Image





Destination of Moved Soil

New Soil Location: ☐ Backfilled into Excavation ☐ Stockpile	
Soil Grid Reference:	
Detailed Grid Reference:	
Stockpile Number:	

General Image
Detailed Image



Sampling / Comments

Origin Sample Taken:	
Sample Reference:	
Destination Sample Taken:	
Sample Reference:	
Sampling Comments	
General Observations	

Additional Images





REMEDIAL OVERSIGHT & MATERIAL TRACKING (PFIZER, HAVANT)

Project Reference:	UK21.5634	
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Status:	Issue 1	

Author:	Reviewed:	Authorised:
		
Paul O'Connor	Marcus Bell	Will Evans
Consultant	Associate Director	Director

Excavation of Soil

Soil Location: ☐ Soil Excavation ☐ Stockpile	
Soil Grid Reference:	
Detailed Grid Reference:	
Stockpile Number:	
Top of Excavation:	
Base of Excavation:	

General Image
Detailed Image



Destination of Moved Soil

New Soil Location: ☒ Backfilled into Excavation ☐ Stockpile	
Soil Grid Reference:	C2
Detailed Grid Reference:	50.86065, 0.97208
Stockpile Number:	

General Image



Detailed Image



Sampling / Comments

Origin Sample Taken:	No
Sample Reference:	
Destination Sample Take	Yes
Sample Reference:	DT C2 01
Sampling Comments	
From directly below recently removed roadway.	
General Observations	

Additional Images





REMEDIAL OVERSIGHT & MATERIAL TRACKING (PFIZER, HAVANT)

Project Reference:	UK21.5634	
Title:	Remedial Oversight & Material Tracking (Pfizer, Havant)	
Client:	Havant Property LLP	
Date:	02/23/2022	
EPS Contact Details:	7B Caxton House Broad Street Cambourne Cambridge CB23 6JN	T: 01954 710666 F: 01954 710677 E: info@epstrategies.co.uk W: www.epstrategies.co.uk
Status:	Issue 1	

Author:	Reviewed:	Authorised:
		
Paul O'Connor	Marcus Bell	Will Evans
Consultant	Associate Director	Director

Excavation of Soil

Soil Location: ☐ Soil Excavation ☐ Stockpile	
Soil Grid Reference:	
Detailed Grid Reference:	
Stockpile Number:	
Top of Excavation:	
Base of Excavation:	

General Image
Detailed Image





Destination of Moved Soil

New Soil Location: ☒ Backfilled into Excavation ☐ Stockpile	
Soil Grid Reference:	E2
Detailed Grid Reference:	50.86035, 0.97246
Stockpile Number:	

General Image



Detailed Image



Sampling / Comments

Origin Sample Taken:	No
Sample Reference:	
Destination Sample Take	Yes
Sample Reference:	DTE201
Sampling Comments	
From directly below hardstanding	
General Observations	

Additional Images

