



GOLDER

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REPORT

Divestiture Environmental Site Assessment

Havant, Hampshire PO9 2NG, UK

Submitted to:

Pfizer Inc.

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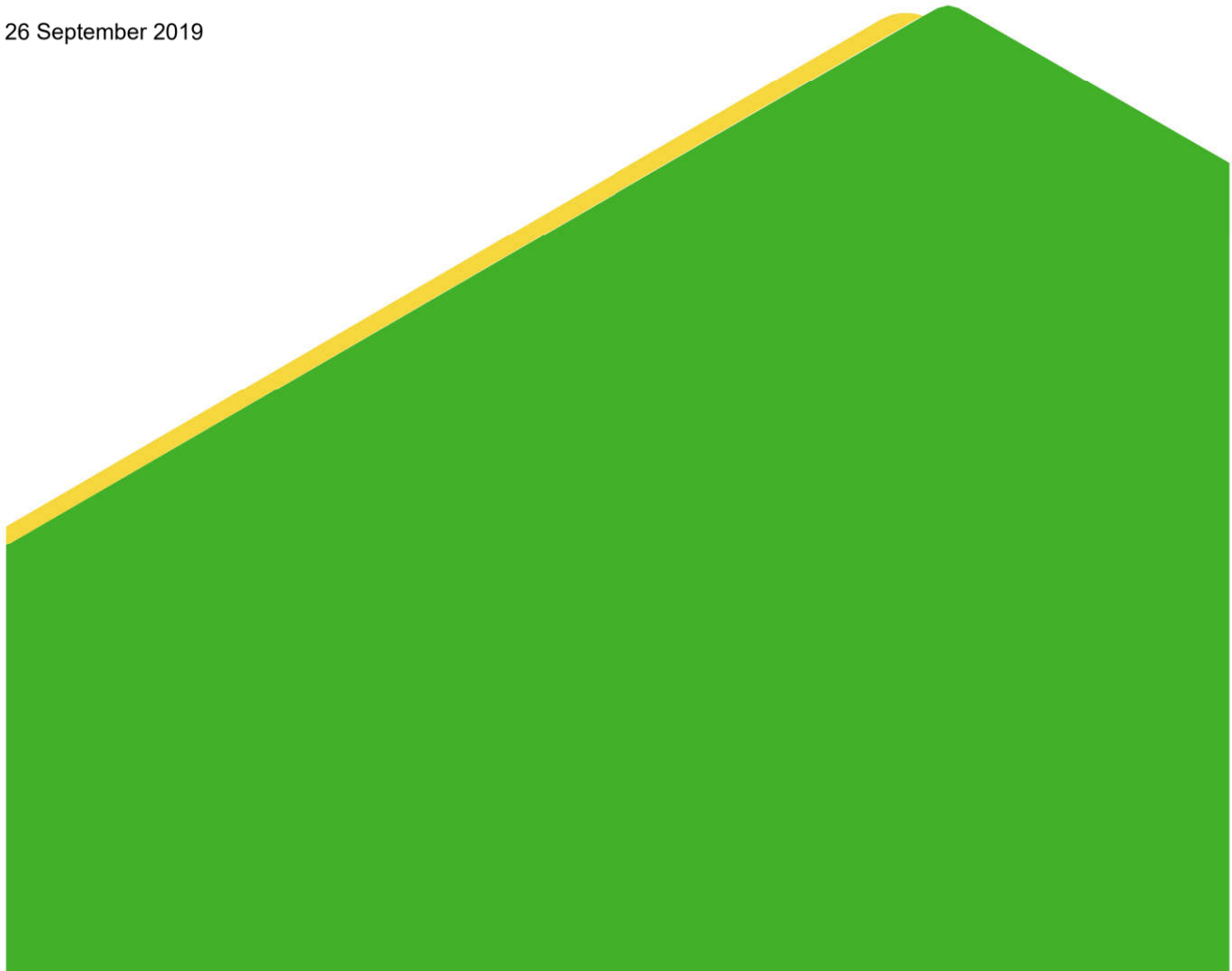
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Executive Summary

Golder Associates Inc. was retained by Pfizer Inc. (Pfizer) to complete a Divestiture Environmental Site Assessment (DESA) at the Pfizer Havant manufacturing facility located at 32 New Lane, Havant, Hampshire PO9 2NG, UK (hereinafter referred to as the "Site"). The work was carried out by Golder Associates (UK) Limited (Golder). This DESA summarizes the information reviewed and the observations made during the Site visit, which took place on June 6-7 2019. All conclusions should be read in the context of the study limitations, which are presented in this report.

The Site, which operates as John Wyeth & Brother Limited, is comprised of an injectables repackaging facility with associated cold stores. No manufacturing processes take place at the facility; injectables are received in bulk packaging and are repackaged for onward supply. In addition to associated cold stores for goods in and repackaged products, the Site also operates a small blast freezer for gel packs used in freight transport containers to keep products cool.

The Site has an area of approximately 16.51 acres (66,827 m²) with approximately 28,054 m² of building area. The Site is fully fenced. All doors to the buildings are equipped with card access sensors. Most areas are monitored by closed-circuit television (CCTV) cameras. The main access to the Site is via the roadway along the western Site boundary.

Based on the review completed, no significant areas of environmental concern are known to exist at the Site. Key observations identified during the Site visit and document review are summarized below:

■ **Waste Management**

No process wastewater is generated at the Site.

Wastes appeared to be generally well managed. A small accumulation of liquid hazardous wastes in small containers and an accumulation of potential construction-type wastes were observed, but it was unclear when these wastes had been generated. As per the Site representative, all wastes will be transferred off-site for disposal before the statutory period of 12 months by 31 December 2019.

■ **Hazardous Substances**

Only relatively small quantities of chemicals and oils are handled at the Site, including engineering maintenance oils and solvents, and diesel used in back-up generators.

Asbestos presence has been assessed at the Site, with only limited quantities remaining (for example in walkway gaskets). An asbestos management plan is in place for remaining asbestos-containing materials.

■ **Subsurface Conditions**

The Site has been subject to development during its commercial lifetime, including demolition and construction activities.

Soil and groundwater investigations at the Site have been carried out in 1996-1999 and 2008-2009 across various areas of the Site. These investigations reported few detections in both soil and groundwater above assessment criteria. None of the detected substances were deemed to pose any significant risk to receptors, including human health impacts on construction/demolition workers or employees at the Site, or off-site receptors. The site conditions were deemed to be suitable for ongoing industrial/commercial use. The Site is not classified as contaminated land in accordance with Part IIA of the Environmental Protection Act 1990.

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Borehole Locations (ERM, 1997)

APPENDIX G

Borehole Locations (ERM, 2008)

1.0 INTRODUCTION AND BACKGROUND

1.1 Objective and Assessment Personnel

Golder Associates Inc. was retained by Pfizer Inc. (Pfizer) to complete a Divestiture Environmental Site Assessment (DESA) at the Havant site located at 32 New Lane, Havant, Hampshire PO9 2NG, UK (hereinafter referred to as the “Site”).

The objective of this assessment was to evaluate the potential for significant environmental issues associated with the Site, including soil/groundwater impacts and/or environment, health and safety (EHS) compliance matters, as a result of past or current operations.

The DESA Site visit was conducted on June 6-7, 2019 by representatives of Golder Associates (UK) Limited (Golder). In addition, the Pfizer Havant Site Leader and EHS Manager were present and provided information during the Site visit. The purpose of the Site visit was to perform a visual reconnaissance of the Site, review available Site EHS documents, and conduct interviews with Pfizer representatives. No sampling, testing, experimentation or other methods of sampling or analysis were performed.

1.2 Scope of Work

The methodology used by Golder in achieving the objectives included:

- Visiting the Site and make a visual reconnaissance of the premises;
- Reviewing information provided by the Site related to current and historical operations, property layout, previous Site evaluations, and environmental permitting compliance issues;
- Interviewing Site representatives concerning current and historical operations, previous Site evaluations, and environmental permitting compliance issues;
- Reviewing available relevant geological and hydrogeological information;
- Reviewing a Landmark Envirocheck report (environmental database search); and
- Summarizing the information gathered during these activities in a factual DESA report.

1.3 Information Sources

Sources of material reviewed, consulted or examined in this assessment are presented in the Reference Section (Section 6.0).

1.4 Limitations of the Report

The following limitations should be noted when using this report:

- This report has been prepared for, and at the request of Pfizer (the Client). Save for the Client, no duty is undertaken, or warranty or representation made to any party with respect to the opinions, advice, or conclusions herein presented. No third party is entitled to rely upon the contents of the report without written authorization from Golder to do so, and Golder will not be responsible for independent conclusions, opinions, or recommendations made by others based on the findings presented in the report;
- All work carried out in preparing this report has used, and is based upon, Golder’s professional knowledge and understanding of the current, June 2019, relevant UK standards, codes, and regulations, technology and legislation.

- Changes in the above may cause the opinion, advice, or conclusions set out in this report to become inappropriate or incorrect. Following delivery of this report, Golder will have no obligation to advise the Client of any such changes, or of their repercussions.
- Golder acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Golder will consider all information provided to it in the context of Golder's knowledge and experience and all other relevant information known to Golder. To the extent that the information provided to Golder is not inconsistent or incompatible therewith, Golder shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of all such information and Golder shall have no obligation to verify the accuracy and completeness of such information. In discussing previous investigations, the conclusions presented are those drawn in the historical reports.
- The content of this report represents the professional opinion of experienced environmental consultants. Golder does not provide specialist legal advice.
- In the Summary and Conclusions section of this report and in the Executive Summary, Golder has described its key findings and observations. However, other parts of this report will often indicate the limitations of the information obtained by Golder and therefore the Summary and Conclusions section and the Executive Summary ought not to be relied upon until considered in the context of the whole report.
- The Golder Site visit included a walking tour of areas accessible by foot and made available to Golder for review during the Site visit.

Pfizer also recognizes and acknowledges that (1) the information in the Report relates only to the property specifically described in the report and is presented in accordance with and subject to the scope of work agreed to by Pfizer; (2) the information and conclusions provided in the Report apply only to the subject property as it existed at the time of Golder's Site visit. Should Site use or conditions change or should there be changes in applicable laws, standards or technology, the information and findings in the Report may no longer apply; (3) Golder makes no representations regarding the value or marketability of the property or its suitability for any particular use, and none should be inferred based on the Report; (4) the Report is intended to be used in its entirety and no excerpts may be taken to be representative of the findings of this investigation; and (5) environmental land use issues and constraints of possible relevance (e.g., wetland surveys, sensitive habitats) were not included in the scope of services.

To the extent this section (1.4) differs from the agreement between Pfizer and Golder, the terms of that agreement shall govern.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Site is located at 32 New Lane, Havant, Hampshire PO9 2NG, UK, approximately two kilometres north of the English Channel coast and five kilometres east of the city of Portsmouth. A Site location map is presented as **Figure 1** appended in **Appendix A**. The coordinates for the approximate centre of the Site are 50°51'35.27" north latitude and 0°58'15.178" west longitude. Photographs taken during the Site visit are presented in **Appendix B**.

2.2 Surrounding Land Use

The Site is shown on **Figure 2** in **Appendix A**. A 2014 aerial photograph showing the Site (with the former "North Site" also marked) is shown in **Figure 3** in **Appendix A**. The surrounding land uses are described as follows:

- North – The Site is bounded by an industrial estate, comprising light industrial activities. To the north east is an area of ground, formerly containing a distribution warehouse owned by Pfizer, and now containing a newly built (2019) industrial/commercial building (at the time of the Site visit, unoccupied);
- East – A railway line is located immediately to the east of the Site, with residential properties beyond;
- West – Residential properties;
- South – A plastics extrusion business (Sumika Polymer Compounds).

2.3 General Site Description

The Site is owned by John Wyeth & Brother Limited (a subsidiary of Pfizer Inc.). The Site has an area of approximately 16.51 acres (66,827 m²) with approximately 28,054 m² of building area. The Site is fully fenced. All doors to the buildings are equipped with card access sensors. Most areas are monitored by closed-circuit television (CCTV) cameras. The main access to the Site is via the roadway along the western Site boundary.

The Site is developed with the following main buildings/ structures (see **Table 1**):

Table 1: Summary of on-Site Buildings and Structures

Building Name	Year Built	Number of Floors	Current Use
Low Bay Warehouse (Building N)	1964-1966	1	Warehousing
European Distribution Centre (EDC) - High Bay Warehouse (Building P)	2002	1	Warehousing
Biotech Packaging Facility (BPF) (Building G)	2009	1	Repackaging of injectable products
Packaging facility and offices (Buildings H, K, L)	1981-1990	2	Repackaging of injectable products, offices
Cold Stores 2 and 3 (Building Z)	2011	1	Cold stores

Other than areas of car parking and roads/walkways, much of the remaining Site area is open land following demolition of buildings as described in Section 3.0. Demolished areas have been covered with gravel.

2.4 Utilities

According to the Site representatives, water is supplied from the local mains. No water is used for processing at the Site. Relatively small amounts of water are used for domestic-type purposes (e.g. drinking, sanitary). No abstraction wells are located on Site.

Electricity is supplied by a utility company through the switch-room located at the north of the Site. Six electrical substations are located on Site. According to the Site representatives, the transformers are dry-type units (do not contain polychlorinated biphenyls (PCBs)). In addition, there are four diesel-powered emergency generators located on-Site. A small 50 kilowatt solar photovoltaic (PV) area (owned by Pfizer) is present on part of the north west area of the Site, reportedly supplying electricity to Security and to the chilled water system.

Storm water drains were observed throughout the Site, which discharge to a local Southern Water surface water drain.

Sanitary wastewater is discharged to a local Southern Water foul water sewer. No process wastewater is generated at the Site, and no wastewater treatment system is present.

2.5 Current Operations

The Site receives, repackages and distributes injectable products. These principally include Trumenba meningitis vaccine, Prevenar 13 pneumococcal disease vaccine, Trazimera biosimilar monoclonal antibody treatment for metastatic breast cancer, and Enbrel biologic TNF inhibitor. Products are received in bulk packaging and are repackaged into end-user packaging. No manufacturing takes place at the Site.

Cold stores are present for storage of both goods in and out. A small blast freezer is also present, used to freeze gel packs used in air transport of products.

2.6 Environmental Setting

The physical setting of the Site and region are discussed in the sections below.

Topography

The topography of the Site and surrounding areas is generally flat, at around 15 m above ordnance datum.

Geology

According to the British Geological Survey the Site's geology can be summarized as follows:

- Quaternary drift deposits (River Terrace Deposits) lie immediately beneath the Site, consisting of sand, silt and clay, with clay and gravel at the far west of the Site; and
- London Clay lies beneath the drift deposits.

It is understood from commentary contained in previous Site investigation reports that Reading Beds (sands and clays) underlie the London Clay, followed by Upper Chalk at an estimated depth of around 65-70 m.

Anticipated geology in terms of the Quaternary deposits and underlying clay have been confirmed during ground investigations undertaken at the Site by ERM over the period 1996 - 2008.

Hydrogeology

The drift deposits are classified as a Secondary A aquifer, i.e. permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to

rivers. These are generally aquifers formerly classified as minor aquifers. The bedrock is not classified as a productive aquifer.

It is inferred from topography and location of nearby watercourses and the coast, that groundwater flow is likely to be from north to south. This inference has been supported by previous ground investigations carried out at the Site by ERM over the period 1996 – 2008 which confirmed the expected north to south groundwater gradient.

There are no groundwater abstractions within 1 km of the Site noted in the Landmark Envirocheck report.

The Landmark Envirocheck report notes that the Site is located in a Source Protection Zone (zone 1c (Inner Protection Zone): travel time of 50 days or less to the groundwater source - subsurface activity only). This is a zone defined by the Environment Agency to identify where contamination risk from any activities might cause pollution to public water supplies sourced from groundwater. These zones are used by the Agency to respond appropriately to pollution threats.

Hydrology

The nearest surface water body is the River Lavant, around 50 m west of the Site. In addition, the coast (English Channel) is located around 2 km south of the Site.

2.7 Environmental Database Information

2.7.1 Current On-site Activities

The Landmark Envirocheck report notes a Licensed Waste Management Facility at the Site location (licence number 19987, issued to John Wyeth and Brother Ltd). The report notes that this was last modified on 11 June 2011. As per the Site representative, the Site still holds this licence and is valid for the In-House Waste Storage Facility under permit number WP3692HF/V002.

The Landmark Envirocheck report notes a Registered Waste Transfer Site at the Site location (licence reference 13/22, dated 11 June 2001). This was storage of special waste (i.e. hazardous waste), with “very small” input rate (<10,000 tonnes/year). The report notes that this is “Operational as far as is known”. Based on information provided by the Site representative, this is the same licence as noted above.

The Site is not defined as contaminated land in accordance with Part IIA of the Environmental Protection Act 1990. The Landmark Envirocheck report did not identify any pollution incidents at the Site.

2.7.2 Current Off-site Activities

2.7.2.1 Trade Directory Entries within 250 m of the Site

Trade directory entries for businesses taking place within 250 m of the Site include:

- Office equipment servicing and maintenance;
- Printers;
- Engineers;
- Printed circuit services;
- Plastics – raw materials;
- Builders’ merchants;
- Joinery manufacturers;
- Road haulage services;

- Electronic equipment – manufacturers and assemblers;
- Abrasive products – manufacturers and distributors;
- Various light manufacturing, servicing and distribution businesses; and
- Sand, gravel and other aggregates.

2.7.2.2 Discharge Consents within 500 m of the Site

There was one discharge consent listed within 500 m of the Site; Mr. K Harvey, Maintenance Manager (company not noted) was permitted to discharge to a river 92 m to the north west of the Site. This consent appears to have been located between a local Scout building and a primary school, and appears to have been revoked in 1992.

2.7.2.3 Other Permits within 500 m of the Site

Sumika Polymer Compounds Ltd holds an Integrated Pollution Prevention and Control permit (reference EA/EPR/BX8076IX, dated 7 September 2005) 48 m south of the Site. The process type is not noted.

Thermofil Polymers (UK Ltd) holds a Local Authority Pollution Prevention and Control permit (reference Ao0598, dated 28 November 1994) 28 m south west of the Site, for processes for the manufacture of fibre reinforced plastics.

Vision Travel International Ltd holds a Local Authority Pollution Prevention and Control permit (reference HBC/IPPC/07/08915, dated 2 January 2008) 137 m south of the Site, for waste oil burners, less than 0.4MW net rated thermal input.

Thermofil Polymers (UK Ltd) holds a Local Authority Pollution Prevention and Control permit (reference Epa1/1/97, dated 15 January 1997) 206 m south west of the Site, for coating manufacturing.

There are no current off-Site waste management facilities within 500 m of the Site.

Transco plc operates a lower-tier Control of Major Accident Hazards (COMAH) site 323 m north of the Site. In addition, British Gas plc holds a Planning Hazardous Substances consent at what appears to be the same location for presence of liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not).

2.7.2.4 Pollution Incidents

Nine pollution incidents to Controlled Waters within 1 km of the Site are documented and reported in the Landmark Envirocheck report. Eight of the pollution incidents were Category 3 (minor) incidents, involving relatively small quantities of oils, petrol, sewage or rubble/litter/solids discharged 152 m – 924 m from the Site between 1992 - 1999.

One incident was Category 2 (significant), involving the discharge of organic chemicals 223 m south west (down/side gradient) of the Site in 1995.

Golder concludes that the risk of adverse impact to the Site as a result of the above incidents is likely limited.

3.0 SITE HISTORY

3.1 General Information

A summary of Site development history is provided below based on information provided by Site representatives, information from previous Site investigations, and information gained through review of historical maps.

The Site is thought to have been agricultural land until around 1956-1957, when pharmaceutical manufacturing operations began. Primary and secondary manufacturing has taken place at the Site historically, including installation of a small fine chemicals plant in the 1960s.

A plan, showing locations across the Site where buildings were first developed, alongside a summary of key development activities, is provided in **Appendix D**. Various demolition/replacement and upgrades to facilities have occurred over the Site history.

Key developments included the following:

- 1956/1957: Development of the first pharmaceutical manufacturing building and boiler house;
- 1960-1963: Development of the Fine Chemical Manufacturing Unit (FCMU);
- 1965: First SMA (infant milk formula) building developed;
- 1971: SMA building redeveloped with larger footprint, including balloon warehouse for milk storage;
- 1975: Further development of the FCMU;
- 1976: Tableting building developed;
- 1978: Bulk liquids (cough syrups) building developed;
- 1981: Main pharmaceutical manufacturing & packaging facility developed;
- 1985: North Site purchased from Goodmans Loudspeakers, and used as UK Distribution Centre;
- 1989: Original pharmaceutical facility demolished, SMA balloon warehouse removed;
- 1992: New over-the-counter manufacturing and packaging facility constructed;
- 1992: Solvent recovery plant installed;
- 1993: North Site¹ distribution centre upgraded;
- 1996: Upgrade of tablet manufacturing facility;
- 1997-1998: Fine chemicals plant demolished and solvent warehouse constructed;
- 2000: North Site cold store constructed;
- 2002: European Distribution Centre (Building P) constructed;
- 2009: Biotech Packaging Facility (Building G) constructed;
- 2011: Cold stores 2 & 3 (Building Z) constructed, tableting building demolished;

¹ The North Site was sold in 2017 and is no longer owned by Pfizer. Information on the North Site is included for informational purposes and is not the subject of this current DESA.

- 2012: Boiler house, workshop, office block & centre site demolished;
- 2015: North Site distribution centre demolished; and
- 2017: Reception, restaurant & IT (Building V) demolished. North Site sold.

In addition, the business leased a small area of land immediately to the south east of the Site from the neighbouring plastics company from 2002-2017. This land was reportedly used at various times for car parking and non-hazardous waste storage. The lease was terminated in 2017, with no outstanding requirements relating to this reported.

3.2 Previous Environmental Investigations

Several previous environmental investigations have been undertaken at the Site. The results of these investigations are summarized below.

3.2.1 ERM Phase I Environmental Assessment 1995

ERM EnviroClean (ERM) undertook a Phase I environmental assessment at the Site in 1995 (report reference 3505, November 1995), including the “North Site” area to the north east of the current Site and which Pfizer sold in 2017. This assessment reported potential soil and groundwater contamination risk from solvent storage and solvent-containing effluent discharge to the drainage system in the area of the FCMU and recommended that a Phase II investigation be carried out.

3.2.2 ERM Phase II Investigation 1996

A Phase II site investigation was carried out by ERM in 1996 (report reference 4063, January 1997) around the area of the FCMU, which was earmarked for demolition at the time and was subsequently demolished around 1997-1998.

This Phase II investigation included drilling 12 groundwater monitoring wells, and soil boreholes at 40 locations around the FCMU and 42 locations across the wider Site. A plan, showing sampling locations, is presented in **Appendix E**.

Results of testing were compared against a range of national and international standards used at the time. These were as follows:

- UK: Inter-departmental Committee for the Redevelopment of Contaminated Land (ICRCL) Guidance Note 59/83, Guidance on the Assessment and Redevelopment of Contaminated Land (DoE, 2nd edition, 1987);
- Holland: Dutch Ministry of Public Housing, Land-use and Environment, Notification Letter on Intervention Values for Soil and Groundwater Remediation (VROM, 1994);
- Canada: Guideline for Use at Contaminated Sites in Ontario (Ministry of Environment and Energy, June 1996); and
- United States: Environmental Protection Agency Region IX, Preliminary Remediation Goals (PRGs) Second half 1995 (September 1 1995).

ERM noted that the ICRCL values were used in the UK as an indication of the suitability of the soil in connection with the redevelopment of land. The Dutch guideline levels were commonly used in Europe as a reference point for the assessment of contamination impact on the groundmass and groundwater environments. Where compounds were detected during the investigation but were not present within the ICRCL or Dutch values, recourse was made to the Canadian guidance, or the US guidance if not present in the Canadian guidance.

It is noted that the Phase II site investigation included sampling locations on the North Site which was sold in 2017. The key results for samples obtained on-Site only included the following:

3.2.2.1 Soil Samples

Volatile Organic Compounds (VOC)

Minor detections, but no results above assessment criteria.

Semi-Volatile Organic Compounds (SVOC)

No SVOCs were reported above the assessment criteria on the Site.

Metals

Zinc was reported at a concentration of 2500 mg/kg in one sample (NSSB37, located by the inflammable storage area of the FCMU) compared to the Dutch Intervention Value (DIV) of 720 mg/kg. Barium was reported above the DIV of 625 mg/kg at concentrations of 1570 mg/kg in sample BH7 located on the eastern edge of the Site and 1160 mg/kg at sample NSSB13 located immediately southeast of the FCMU. Lead was reported above the DIV of 670 mg/kg at NSSB13 (immediately southeast of the FCMU). Arsenic was reported consistently across the investigated area at low levels (i.e., less than 22 mg/kg). Although the reported concentrations were below the DIV, the levels are slightly above the ICRCL guideline for domestic gardens. ERM concluded that, due to the consistent low levels across the Site, the Arsenic concentrations were naturally occurring. Golder note: this conclusion is consistent with research carried out by the British Geological Survey for the government (DEFRA) on normal background concentrations of various substances in soils. The Technical Guidance Note TGS01 (July 2012) on Arsenic identifies a normal background concentration in most soils of 32 mg/kg.

Total Petroleum Hydrocarbons (TPH)

TPH was detected, but no results were reported above assessment criteria.

3.2.2.2 Soil Results - Conclusions

ERM concluded that there were no expected adverse human health effects to demolition workers or site personnel and no ecological effects resulting from soil conditions assessed in their investigation.

3.2.2.3 Groundwater Samples

VOC

Trichloroethylene (TCE) was reported in samples near the border of the North Site and the main Site, including one sample above the DIV (690 micrograms per liter or µg/l at BH1, as compared to the DIV of 500 µg/l). Cis-1,2 dichloroethane, a breakdown product of TCE, was also reported at BH1. Lower concentrations (below the assessment criteria) of TCE and cis-1,2 dichloroethane were reported at boreholes downgradient of BH1 (i.e., BH7, BH8 and BH9). ERM also noted that BH1 was up hydraulic gradient from any potential sources of solvent impacts from the Site (i.e., around the FCMU). ERM noted reports that there may have been a solvent store in the area of BH1, prior to acquisition by Wyeth Laboratories in the 1980s, and that it appeared likely that the reported TCE resulted from this previous use.

Acetone was reported in BH3 (in the FCMU area) at a concentration of 14400 micrograms per liter (µg/L) above Canadian guidelines for non-potable water. In addition, isopropanol was reported in BH3 at a concentration of 9200 µg/L, however, no guideline values had been set for isopropanol.

SVOC

Some SVOC detected, but below assessment criteria.

Metals

Some metals detected, but below assessment criteria.

3.2.2.4 Groundwater Results - Conclusions

ERM concluded that the TCE may have been associated with a historic solvent store located to the north east of the site [*Golder note*: This area of land was formerly owned by an electronics manufacturer (Goodmans) prior to acquisition by Wyeth. Pfizer constructed a distribution warehouse on this land, which was demolished and sold in 2017].

ERM noted that concentrations of acetone and isopropanol levels in BH3 were possibly caused by damage to the drainage system present in this area. A drainage survey had been undertaken around the time of the Phase II investigation, and had reported some damage to this system.

ERM noted that all down gradient wells contained low concentrations of analytes (including TCE and other substances reported in wells to the north of the site) and concluded that the groundwater at the Site was not of major concern in relation to off-Site receptors.

3.2.3 ERM Phase II Site Investigation 1997

An additional Phase II site investigation was undertaken in 1997 (report reference 4063, August 1997) at the request of the Environment Agency (EA), following the EA's review of the previous Phase II report.

This investigation involved taking further groundwater samples from BH1 and BH3 and undertaking further soil and groundwater sampling in the vicinity of BH1 (additional soil and groundwater samples at five locations, and soil samples at a further nine locations). A plan, showing sampling locations, is presented in **Appendix F**.

Reference values used were as in the previous investigation.

In addition, a surface water run-off discharge point to the nearby Lavant stream was identified. At the request of the EA, this scope of work also included sampling the discharge point and upstream of the discharge point. It was not possible to sample downstream due to lack of flow.

3.2.3.1 Soil Samples

Only minor detections of VOC were noted.

3.2.3.2 Groundwater Samples

TCE was reported at 2 µg/l in BH1, GP31 (1 µg/l), and GP36 (110 µg/l). These, and all other VOCs were reported below DIVs. No SVOCs were detected.

3.2.3.3 Surface Water Samples

Samples were obtained at the Site discharge point and at an upstream location. The analytical results reported all analytes below the DIV. It was noted that the levels of ethylbenzene and xylenes were slightly higher at the Site discharge point compared to upstream.

No SVOCs were detected in surface water samples.

Certain metals were detected, but the same metals were also present at similar or higher levels in the upstream sample, so ERM concluded these were not related to Site activities.

3.2.3.4 Conclusions

ERM concluded that due to the absence of significant levels of VOCs in the groundmass, there was no real evidence of an ongoing source of organic compounds in the shallow groundmass. As such, there was no requirement for remediation of these soils.

ERM concluded that given the relatively low levels of VOCs in the perched groundwater and the absence of a groundmass source in the area, there was no immediate or obvious long-term requirement for remedial action to be instigated on the shallow groundwater.

ERM also noted that the surface water results showed no obvious impact on the Lavant stream from Site surface water run-off.

3.2.4 ERM Groundmass Removal Works 1999

As mentioned previously, a 1996 drainage survey reported potential damage to the drainage system. As part of the Site's plans to demolish the FCMU, ERM was commissioned to oversee excavation of the solvent area drainage channel and sump (report reference 6115, November 1999).

The final excavation measured around 27 m long, 1 m wide and 0.3 m – 1.9 m in depth. Various stockpiles of materials were removed during the excavation, and materials that appeared to be visually impacted were separated for disposal. Approximately 30 m³ of impacted material was transported to a licensed landfill for proper disposal. Samples were taken of the excavation walls in addition to composite samples of excavated soils. The soils samples were sent for laboratory analysis and assessed against criteria used in previous Phase II investigations at the Site. VOCs and TPH were detected in some samples, but all were below DIVs.

ERM noted that there was some visual evidence of slightly impacted groundmass immediately below the concrete slab to the north of the excavation. Due to the relatively minor nature of this it was not deemed cost effective to break further ground to remove this material. ERM concluded that this would have been below a level requiring any remedial actions.

3.2.5 ERM Phase I and II Site Investigations, Tableting/Dispensary area 2008

ERM carried out Phase I and II site investigations in the area of the current BPF prior to demolition of the former tableting and dispensary buildings at this location and development of the BPF (report reference 0081829.04, June 2008). This area was down gradient (south) of the area focused on in the 1996-1997 investigations.

Twelve boreholes were drilled, and soil samples taken. Groundwater monitoring was carried out at five of these locations. A plan, showing sampling locations, is presented in **Appendix G**.

ERM assessed potential risks to human health for site occupiers using a Generic Quantitative Risk Assessment (GQRA). Published Soil Guideline Values (SGVs) for residential and commercial land uses were limited in the number of chemicals that were available. Where these were not available, Generic Assessment Criteria (GACs) were developed for standard residential and commercial land uses (as described in CLR10 and subsequent briefing notes) by ERM, using similar exposure assumptions and receptor characteristics to those used for the development of the SGVs.

Groundwater analytical data was compared to human health drinking water criteria; Drinking Water Standards (DWS) and UK Water Supply Regulations.

Key results included the following:

3.2.5.1 Soil

All substances detected were below assessment criteria.

3.2.5.2 Groundwater

One sample was reported with arsenic concentration slightly above the generic assessment criterion used (12.3 µg/l compared to the 10 µg/l assessment value). This criterion was the UK drinking water standard, so was considered to be very conservative.

TCE was reported at low concentrations, below the assessment criterion, in two out of five wells (at 2 µg/l compared to the 10 µg/l assessment value). No TCE was detected in the other three wells.

ERM concluded that there were no significant risks to human health or the environment from ground conditions. The report was submitted to the local authority as part of the planning application for the BPF.

3.2.6 ERM Phase II Investigation, Wastewater Sumps 2009

Following connection of the Site to the main foul water sewer, ERM undertook some further sampling in 2009, consisting of three boreholes around the area of two underground concrete pits which had been used to receive sanitary wastewater (report reference 0107283, January 2010). This area was down gradient (south) of the former fine chemicals plant.

Results were compared to relevant GACs, as in the 2008 Phase II investigation.

Key results included the following.

3.2.6.1 Soil

One sample (BH1) had a concentration of total chromium of 348.9 mg/kg. Since there is no total chromium GAC, the result was compared to the chromium VI GAC of 330 mg/kg to represent a worst-case scenario. ERM concluded that the total chromium concentration did not pose a risk to human health since it is unlikely that all of the total chromium consisted of chromium VI. Additionally, the formation of chromium (VI) would require oxidising conditions in the ground and the groundwater sampling conducted by ERM indicated that reducing conditions were in fact present.

3.2.6.2 Groundwater

Two samples had a chromium concentration above the fresh water environmental quality standard, but below the drinking water standard.

3.2.6.3 Conclusions

ERM concluded that no remedial action was required, assuming ongoing commercial use of the site.

4.0 SITE OBSERVATIONS

During the Site visit on June 6-7, 2017, Golder was accompanied by a representative of the Site EHS team. The following sections summarize Site conditions and features noted at the time of the Site reconnaissance. Photographs taken during the Site visit are presented in **Appendix B**.

4.1 Material Use and Storage

During the Site walkthrough, Golder observed the storage of raw materials and chemicals used on-Site. Few chemicals are used at the Site. Substances present include the following:

- Small quantities of engineering maintenance oils and chemicals, stored in bunded areas/dedicated storage units;
- Small quantities of printing inks, stored in metal storage units;
- Laboratory chemicals, stored in dedicated storage units;
- Diesel:
 - Four back-up generators, with integral double skinned fuel storage (EDC generator, BPF generator, generators 2 & 3). No information was available on the fuel capacities of these generators;
 - Mobile bowser, double skinned, for refuelling one forklift truck and one roadsweeper, capacity 2,000 litres; and
 - Sprinkler pump diesel tank, double skinned, capacity approx. 550 litres.

4.2 Underground Storage Tanks

No underground storage tanks were identified at the Site. Based on information provided by the Site representative, there are no records indicating that there were historic USTs on site.

4.3 Aboveground Storage Tanks

Other than the fuel storage noted above, no aboveground storage tanks were identified at the Site.

4.4 Hazardous and Non-Hazardous Waste Management

Relatively small amounts of hazardous wastes are generated at the Site as follows:

- Maintenance-related oils, oily wastes, aerosol cans, etc;
- Printing inks;
- Batteries;
- Fluorescent tubes; and
- Lab waste smalls.

These wastes were observed to be stored in small containers outside on a drip tray (liquids) or in suitable containers (solids).

The Environment Agency carried out a hazardous waste generator audit of the Site on 29 November 2017. The report following this audit noted the following:

- That hazardous wastes were transferred from the Site infrequently, and that no waste should be stored on-Site for longer than 12 months; and
- Some minor administrative findings in relation to hazardous waste consignment notes, such as time of waste pick up was missing.

No follow up or enforcement action was taken by the Agency following this audit. Site representatives stated that all observations following this audit had been closed out.

The audit report noted the following hazardous waste arisings from the Site over the period April 2016 – July 2017:

- Solid wastes containing hazardous substances, 840 kg;
- Lead batteries, 2,827 kg; and
- Absorbents, oil filters, wiping cloths etc., 400 kg.

Key non-hazardous wastes generated include office wastes and packaging waste. Some shredding, baling and compacting of non-hazardous wastes takes place at the Site. As per the Site representative, these operations are conducted under Tier 4 exemptions. The registration number for these operations is WEX195956.

A small accumulation of non-hazardous construction-type wastes was observed in a cordoned off area outside, including materials such as tiles and rubble in cubic metre waste bags, with an adjacent drip tray containing small chemical-containing bottles (contents not known). It was not known how long this material had been stored there. Note: based on information provided by Site representatives after the Site visit, this material has since been properly disposed.

Site representatives reported that the Site has no compliance obligations under the Producer Responsibility Obligations (Packaging Waste) Regulations 2007. We note that, in any case, this is a matter for the relevant group company in the UK, and is not relevant to the Site property.

In addition to the above, some (generally non-hazardous) product waste is generated. This is sent for secure or non-secure destruction as appropriate, depending on the nature of the material.

Records are kept of waste contractor registrations and waste movements (transfer notes and consignment notes).

4.5 Potable / Process Water

According to the Site representatives, mains water is used for sanitary purposes. No process water is used at the Site.

No water abstraction wells were identified at the Site.

4.6 Wastewater and Storm Water

No process wastewater is generated at the Site. No wastewater treatment processes are undertaken.

Small quantities of laboratory chemicals/washings are discharged to lab sinks in the case of acids/alkalis, or collected for disposal in the case of solvents or other chemicals. Site representatives reported that no discharge consent is required for this.

Sanitary wastewater is discharged to the mains foul sewer system. No consent is required for this discharge.

Storm water is discharged to main surface water sewer system. No oil interceptors were identified at the Site. No consent is required for this discharge.

Two underground concrete pits are present, which formerly were used to hold sanitary wastewater before the Site was connected to the sewer system. These are reportedly not used now but are still in place.

4.7 Air Emissions

The Site is not required to have an environmental permit controlling emissions to air. A permit was held historically for solvent use, but this was revoked around 1997 when the FCMU and associated solvent recovery plant ceased operation.

4.8 Soil, Groundwater and Surface Water Conditions

As noted in Section 3.2, a number of site investigations have taken place. No significant issues or regulatory actions were generated by these assessments. No visual evidence of impacts to the soils, groundwater and surface water was observed on Site during the Site visit.

4.9 Spills

No observable evidence of spills or releases such as staining or stressed vegetation was noted on Site during the Site visit.

Two historical spills were reported. A leak of aluminium sulphate from an aboveground tank in the former bulk liquids area reportedly occurred in the late 1970s/early 1980s. The quantity of the leak is not known but was reportedly contained within the Site's sanitary drainage system. ERM site investigations conducted between 1996 – 2008 did not detect any impacts potentially associated with this. In 2009, approximately 30 litres of diesel leaked from a truck and was captured in the Site's surface water drainage system. This was pumped out by a waste management contractor and disposed off-Site.

Neither of these spills was reported to a regulator, and no such reporting was required.

4.10 Other Environmental Observations

4.10.1 Asbestos

No suspected asbestos containing materials (ACM) were observed during the Site visit.

ACM have been present in buildings throughout the Site's history, but most of this material has been removed during demolition works over the last 10 years.

An asbestos register is maintained. This identifies only relatively minor areas of potential ACM remaining at the Site, in particular gaskets in walkways above offices in Building H. These materials are subject to periodic inspection as part of an asbestos management plan and are labelled.

4.10.2 Polychlorinated Biphenyls (PCBs)

No PCBs are known to be currently or historically used or stored on Site. According to the Site representative, the transformers located at the Site do not contain PCBs.

4.10.3 Refrigerants

The following refrigerants were identified at the Site:

Table 2: Refrigerants present

Equipment	Refrigerant	Quantity (kg)
Chiller no.1	R134a	2 x 98
Chiller no.2	R134a	2 x 104
Chiller no.3	R134a	2 x 104
Chiller no.4	R134a	2 x 104
Chiller no.5	R134a	2 x 104
Chiller no.6	R134a	2 x 104
EDC cold store system A	R507	468
EDC cold store system B	R507	465
EDC cold store system C	R507	90
Cold store 2, AHU 0201 system 1	R134a	26.0
Cold store 2, AHU 0201 system 2	R134a	26.5
Cold store 2, AHU 0202 system 1	R134a	18.0
Cold store 2, AHU 0202 system 2	R134a	18.5
Cold store 2, AHU 0203 system 1	R134a	23.5
Cold store 2, AHU 0203 system 2	R134a	23.5
Cold store 2, AHU 0204 system 1	R134a	23.0

Equipment	Refrigerant	Quantity (kg)
Cold store 2, AHU 0204 system 2	R134a	23.5
Cold store 2, AHU 0301 system 1	R134a	15.5
Cold store 2, AHU 0301 system 2	R134a	16.0
Cold store 2, AHU 0302 system 1	R134a	15.5
Cold store 2, AHU 0302 system 2	R134a	15.5
Cold store 2, AHU 0303 system 1	R134a	15.5
Cold store 2, AHU 0303 system 2	R134a	15.5
Cold store 2, AHU 0304 system 1	R134a	16.0
Cold store 2, AHU 0304 system 2	R134a	15.5
Blast freezer	No information on refrigerant content was available during our assessment	

Refrigeration plant is maintained regularly by an appropriately certified contractor (primarily Johnson Controls).

In addition to the above refrigerants, HFC227ea is present in a fire suppression system in a server room.

4.10.4 Lead-Based Paints

No lead-based paint survey has been conducted at the Site.

4.10.5 Radioactive Materials

The Site does not currently or historically use any radioactive materials at the Site.

4.10.6 Nuisance

No complaints were reported from the public regarding noise or odor from the Site.

4.11 Environmental Permits

We did not identify any environmental permits in force at the Site, and none appeared to be required.

5.0 SUMMARY AND CONCLUSIONS

Golder has completed the DESA at 32 New Lane, Havant, Hampshire PO9 2NG, UK. This DESA summarizes the information reviewed and the observations made during the Site visit on June 6-7, 2019. All conclusions should be read in the context of the study limitations, which are presented in this report.

Based on the review completed, no significant areas of environmental concern are known to exist at the Site. Key observations identified during the Site visit and document review are summarized below:

■ **Waste Management**

No process wastewater is generated at the Site.

Wastes appeared to be generally well managed. A small accumulation of liquid hazardous wastes in small containers and an accumulation of potential construction-type wastes were observed, but it was unclear when these wastes had been generated. As per the Site representative, all wastes will be transferred off-site for disposal before the statutory period of 12 months by 31 December 2019.

■ **Hazardous Substances**

Only relatively small quantities of chemicals and oils are handled at the Site, including engineering maintenance oils and solvents, and diesel used in back-up generators.

Asbestos presence has been assessed at the Site, with only limited quantities remaining (for example in walkway gaskets). An asbestos management plan is in place for remaining asbestos-containing materials.

■ **Subsurface Conditions**

The Site has been subject to development during its commercial lifetime, including demolition and construction activities.

Soil and groundwater investigations at the Site have been carried out in 1996-1999 and 2008-2009 across various areas of the Site. These investigations reported few detections in both soil and groundwater above assessment criteria. None of the detected substances were deemed to pose any significant risk to receptors, including human health impacts on construction/demolition workers or employees at the Site, or off-site receptors. The site conditions were deemed to be suitable for ongoing industrial/commercial use. The Site is not classified as contaminated land in accordance with Part IIA of the Environmental Protection Act 1990.

6.0 REFERENCES

- Presentation provided by Site representatives (PGS Havant overview, 2019);
- Landmark Envirocheck report for the Site (June 2019);
- Phase I site investigation (ERM, November 1995, ref. 3506);
- Phase II site investigation (ERM, January 1997, ref. 4063);
- Additional Phase II site investigation (ERM, August 1997, ref. 4063);
- Groundmass removal report (ERM, November 1999, ref. 6115);
- Phase I and II site investigation, Tableting/Dispensary area (ERM, June 2008, ref. 0081829.04);
- Soil and groundwater assessment, former wastewater sump area (ERM, January 2010, ref. 0107283);
- A sample of waste duty of care transfer notes and destruction records;
- Lease termination – confirmation of release, land leased from Sumika Polymer Compounds (UK) Ltd (June 2017);
- Refrigerant plant logs;
- Asbestos SOP-59585 (February 2019);
- Asbestos survey (1993);
- Asbestos register spreadsheet (2019);
- Fuel tanks spreadsheet (2019);
- Site plans, 1995-2017;
- Site aerial photos, 1999-2018;
- Environment Agency Hazardous Waste Audit Report (ref. PFIZE-291117-Prod-HW);
- Foul and surface water drainage plan (undated, no reference); and
- Site history plan (drawing no. 4859, issue 10).

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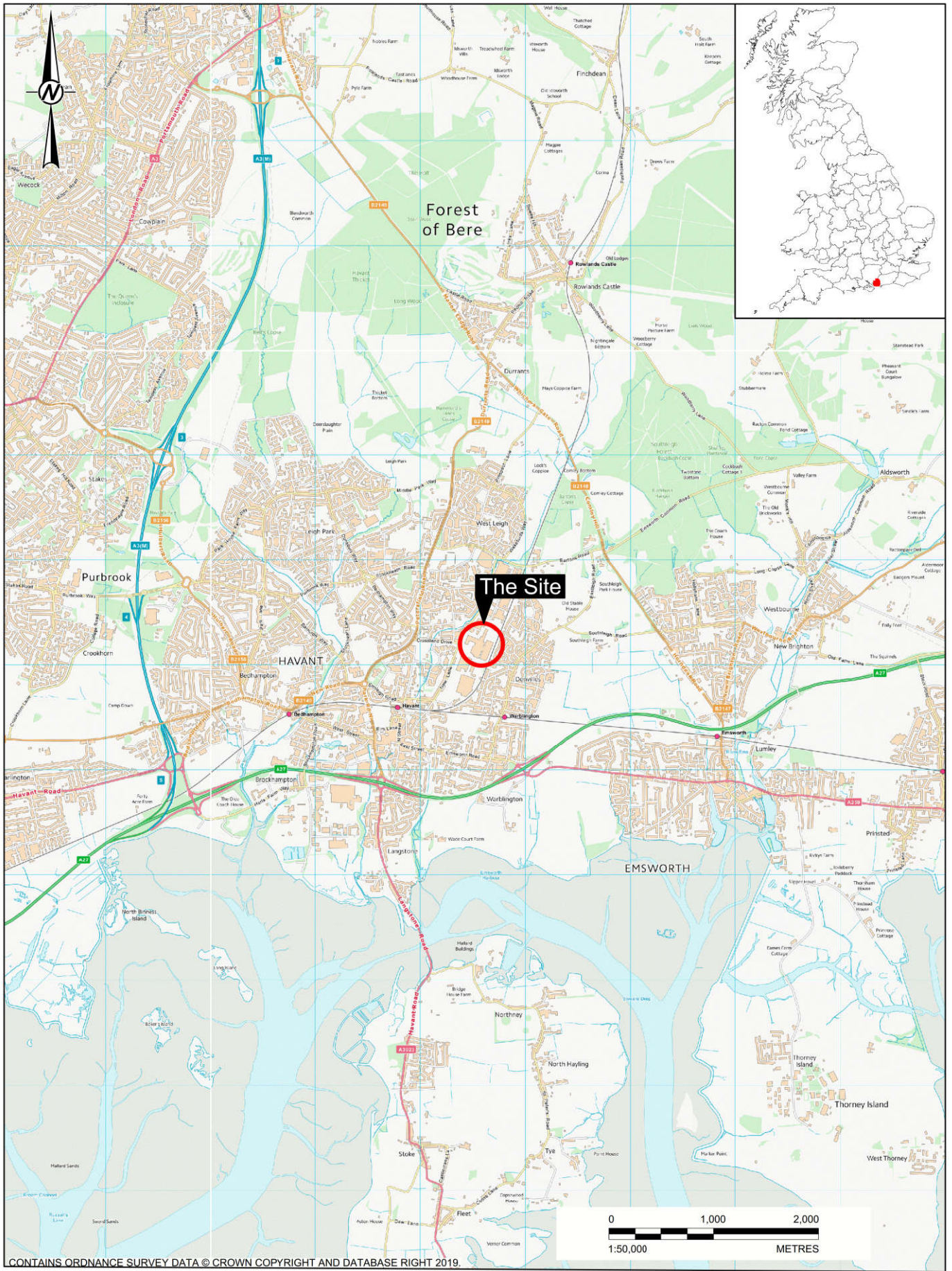
At Attenborough House, Browns Lane Business Park, Stanton-on-the-Wolds, Nottinghamshire NG12 5BL

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APPENDIX A

Site Location and Layout Plans



CLIENT
PFIZER

PROJECT
DESA HAVANT

CONSULTANT

YYYY-MM-DD 2019-06-17

DESIGNED ST

PREPARED ECS

REVIEWED ST

APPROVED DH

TITLE
SITE LOCATION PLAN

PROJECT NO.
19125953

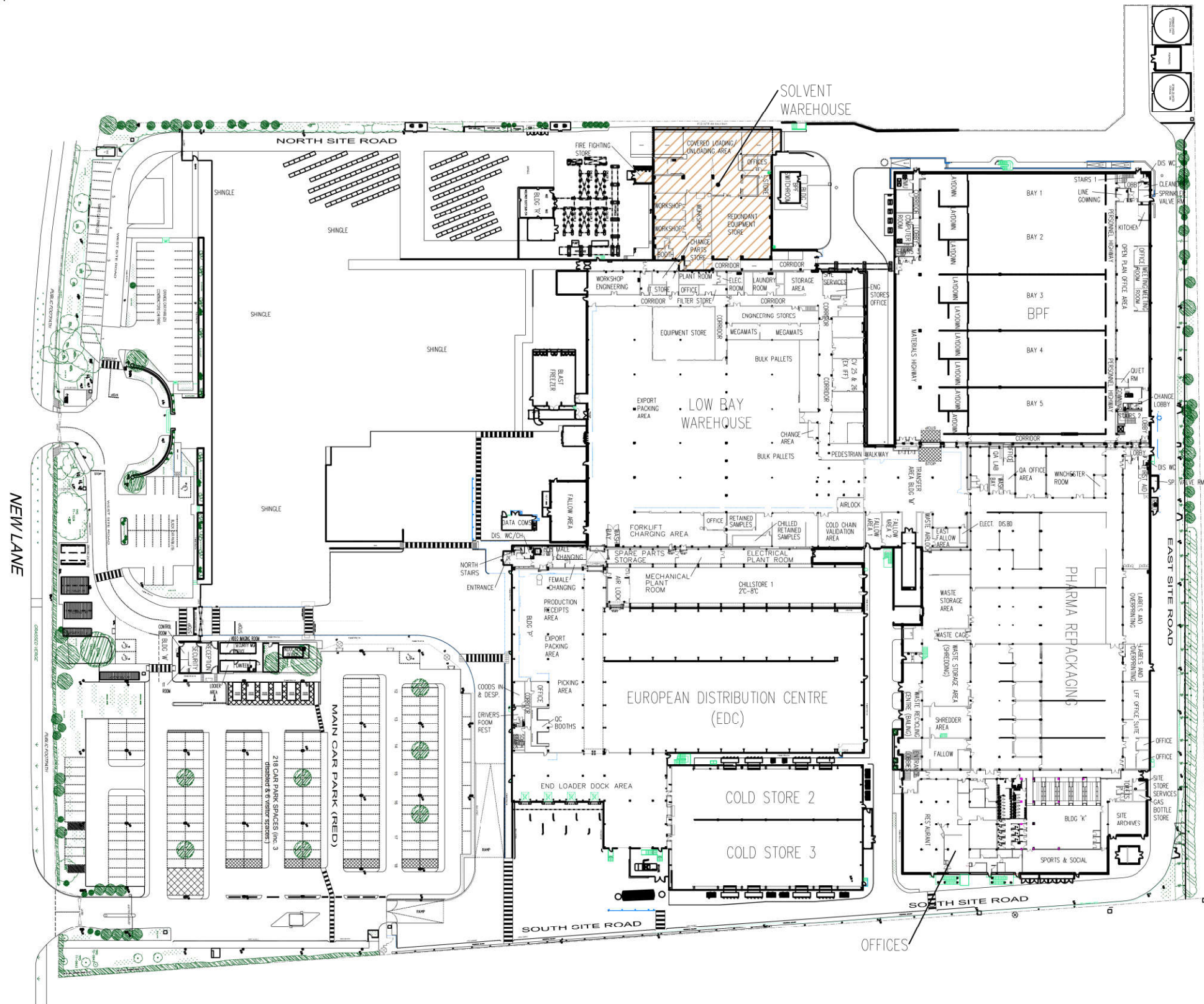
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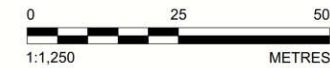


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LEGEND
SOLVENT WAREHOUSE

REFERENCE(S)
BASE MAP TAKEN FROM PFIZER BIOTECH DRAWING NO 4859 (003), DATED 1 NOVEMBER 2016.



CLIENT
PFIZER

PROJECT
DESA HAVANT

TITLE
SITE LAYOUT PLAN

CONSULTANT	YYYY-MM-DD	2019-06-17
	DESIGNED	ST
	PREPARED	ECS
	REVIEWED	ST
	APPROVED	DH



PROJECT NO. 19125953	CONTROL 1001-PO-0002	REV. A	DRAWING 2
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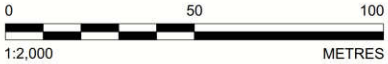
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- LEGEND**
- APPROXIMATE SITE BOUNDARY
 - APPROXIMATE EXTENT OF NORTH SITE (2014) BEFORE DEMOLITION, SALE AND SUBSEQUENT REDEVELOPMENT

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CLIENT
PFIZER

PROJECT
DESA HAVANT

TITLE
ADDITIONAL SITE LAYOUT PLAN

	CONSULTANT	YYYY-MM-DD	2019-06-17
	DESIGNED	ST	
	PREPARED	ECS	
	REVIEWED	ST	
	APPROVED	DH	

PROJECT NO. 19125953	CONTROL 1001-PO-0002	REV. A	DRAWING 3
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm

APPENDIX B

Photolog

Divestiture Environmental Site Assessment, John Wyeth and brother Ltd, New Lane, Havant, Hampshire PO9 2NG

PHOTO 1

Main entrance



PHOTO 2

Loading bays.



PHOTO 3

Solvent warehouse, solar PV installation in foreground (note: while this building is called the “Solvent Warehouse”, it is no longer used to store significant quantities of solvents)



PHOTO 4

Solar PV installation on open land at the north east of the property



PHOTO 5

East fence line, showing east side of packaging/office building, with BPF behind.



PHOTO 6

Solar PV installation, with Low Bay Warehouse and EDC behind.



PHOTO 7

Inside European
Distribution Centre

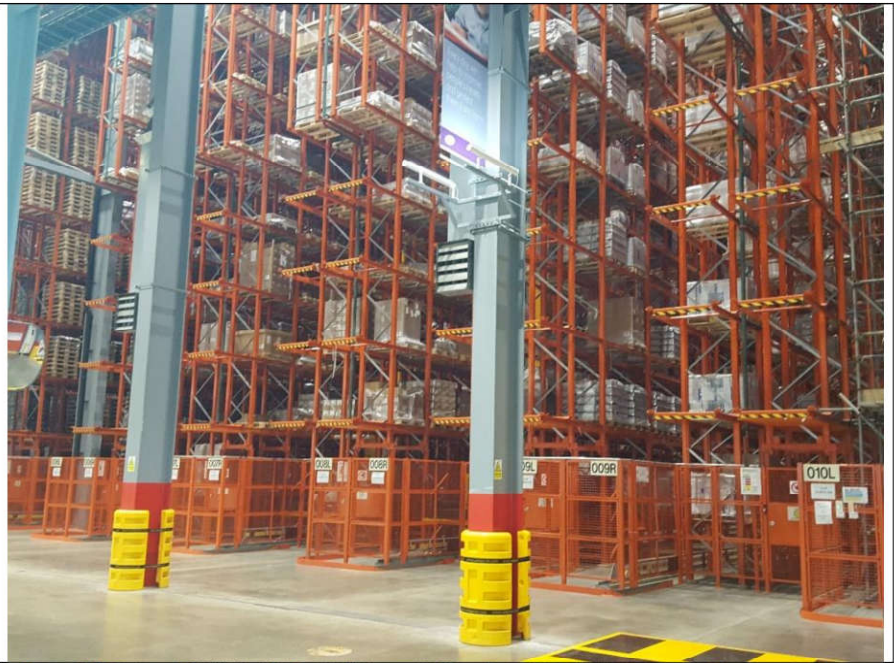


PHOTO 8

Inside cold store



PHOTO 9

Blast freezer



PHOTO 10

Examples of mobile generators present at the site



PHOTO 11

Mobile fuel bowser, stored undercover in the Solvent Warehouse



PHOTO 12

Example of hazardous substance storage cabinet.



PHOTO 13

Packaging waste stored on open land at the west of the property



PHOTO 14

Examples of solid waste storage.



PHOTO 15

Example of liquid waste storage.



PHOTO 16

Construction-type waste accumulation.

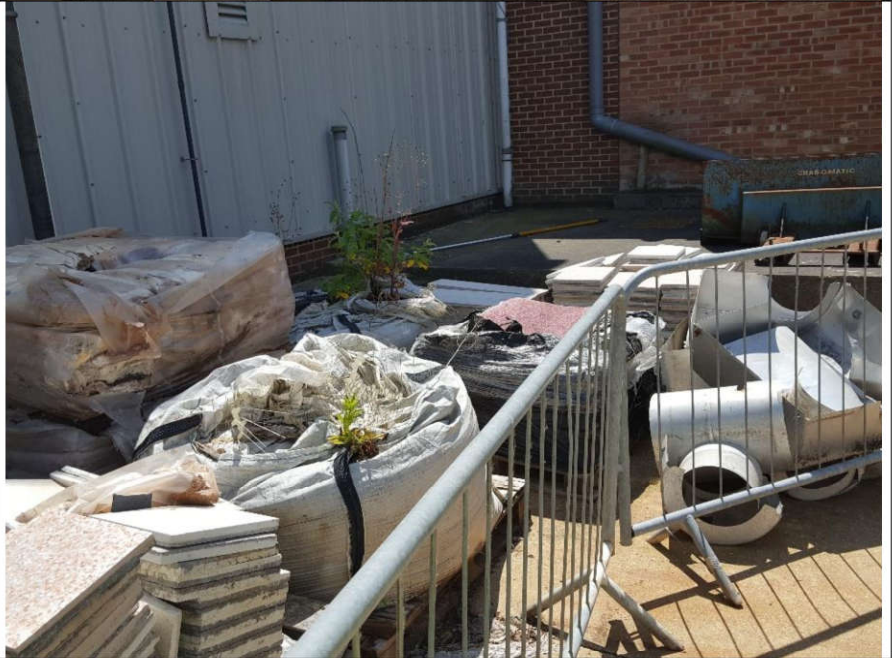


PHOTO 17

Sprinkler tanks and pumphouse at the north east of the property.



PHOTO 18

Examples of small electrical transformers present

