



# Farlington Water Treatment Works

## **Proposed DAF Treatment Building and Associated Facilities Land Contamination Desktop Study**

Portsmouth Water Ltd.

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# Executive Summary

Portsmouth Water is proposing to undertake improvements at Farlington Water Treatment Works (WTW) to improve the efficient treatment of water supplies and to support the operation of the proposed Havant Thicket Reservoir for public drinking water supply. Portsmouth Water is seeking to locate additional water treatment equipment comprising a new Dissolved Air Flotation (DAF) plant in a new building on the Farlington WTW site alongside existing water treatment infrastructure.

This Phase 1 Land Contamination Desk Study Report has been prepared to inform the outline planning application for the proposed new DAF plant building and associated facilities. The purpose of the report is to identify potential contamination risks associated with the proposed development.

The site is situated within the existing Farlington WTW, located within Farlington in Portsmouth, Hampshire. The site is a working WTW which provides potable water to the Portsmouth and Havant area. The WTW comprises existing treatment equipment housed within a series of buildings, a former Slow Sand Filter (SSF) basin, a bulk fuel tank located on a reinforced concrete slab and several underground reservoirs and pipework.

The WTW dates back to 1908 and has been in continuous ownership by Portsmouth Water since that time. Prior to the construction of the WTW, the site was predominantly farmland. The districts of Farlington and Drayton have been present 500m to the south and west of the site since 1898. Several pits and quarries were present surrounding the site from 1870, including an old chalk quarry which was present adjacent to the west of the site between 1870 and 1991.

Made Ground is expected to be present on the site, associated with existing SSF basin and other infrastructure. No superficial deposits are recorded to be present underlying the site. Head deposits are reported adjacent to the south of the site within the wider WTW. The bedrock underlying the site is expected to comprise the White Chalk Sub-Group, comprising Newhaven Chalk Formation.

The site is in an area unlikely to be affected by coal mining. Several BGS recorded mineral sites for chalk and sand and gravel are located within 500m of the site.

The White Chalk Sub-Group bedrock underlying the site is classified by the Environment Agency as a Principal Aquifer and the Head deposits are classified as a Secondary Undifferentiated Aquifer. The site is not indicated to be located within a groundwater Source Protection Zone and there are no groundwater abstractions located within 500m of the site.

There are no surface watercourses located within 500m of the site. The Farlington WTW site lies in an area with a low risk of fluvial or tidal flooding. There is also limited potential for groundwater flooding to occur at the site.

The Fort Purbeck Scheduled Monument is located approximately 200m to the north west of the site. The site is located within the East and West of Gillman Road Site of Importance for Nature Conservation (SINC). Purbeck Park Ancient Woodland is present 428m to the north of the site. The site is also located within a Nitrate Vulnerable Zone.

There is a historic registered inert landfill located 390m to the south of the site and three licensed waste management sites located within 500m of the site including a physical waste treatment facility, a waste transfer site and a metal recycling site. There is a former fuel station located 300m to the south of the site.

Potential on-site sources of contamination include Made Ground associated with the construction and operation of the existing WTW and the existing SSF basin and Made Ground associated with the construction and operation of existing roads.

Potential off-site contamination sources include Made Ground associated with the construction and operation of the wider WTW, the bulk fuel tank within the wider WTW, Made Ground associated with adjacent roads, the former quarry adjacent to the west of the site (likely to have been infilled) and former mineral sites, historic landfill, waste management sites, former fuel station and industrial / commercial uses located within 500m of the site.

The site is recorded as being at a high risk of encountering UXO, as the WTW was a Luftwaffe target during WWII.

Sensitive receptors include human health receptors (on-site operatives, maintenance workers and visitors of the DAF plant and off-site operatives, maintenance workers and visitors within the wider WTW and occupants of surrounding residential and commercial properties); Controlled Waters receptors (principal aquifer and secondary undifferentiated aquifer); property receptors (on-site and

off-site services and structures); and ecological receptors (East and West of Gillman Road SINC on-site and off-site and Purbrook Park Ancient Woodland off-site).

Potential contamination impacts may occur during the construction and operation of the proposed development. Construction activities could potentially introduce new sources of contamination and disturb and mobilise existing sources of contamination, which may pose a risk to human health and controlled water receptors. The operation of the proposed development may potentially introduce new sources of contamination and below ground services could create additional potential pathways for the migration of potential contamination. Potential waste soils will be generated during construction through excavations and during installation of services.

Based on the findings of the desk study, the risks to human health are considered to be very low to low and the risks to controlled waters as moderate/low. Risks to property / services are identified to be very low to low, and the risks to ecology as very low.

Further assessment of the ground conditions underlying the site through additional ground investigation including contamination chemical testing is recommended to confirm the contamination status of the site and inform the potential for material re-use.

# 1. Introduction

## 1.1. General

Portsmouth Water has commissioned Atkins Ltd (Atkins), a member of the SNC Lavalin Group, to prepare an outline planning application for proposed improvements at Farlington Water Treatment Works (WTW). The works will improve the efficient treatment of water supplies and support the operation of the proposed Havant Thicket Reservoir (HTR) and associated pipeline for public drinking water supply. Portsmouth Water is seeking to locate additional water treatment equipment comprising a new Dissolved Air Flotation (DAF) plant in a new building on the Farlington WTW site alongside existing water treatment infrastructure.

This Phase 1 Land Contamination Desk Study Report has been prepared to inform the outline planning application for the proposed new DAF plant building and associated facilities.

## 1.2. Purpose and Structure of Report

The purpose of this report is to identify potential contamination risks associated with the proposed development through preparation of a factual summary of the available information.

An outline of the report content is provided below.

- Section 2 provides a description of the site and the Proposed Scheme.
- Section 3 provides a summary of the desk study information obtained to establish the environmental setting of the site.
- Section 4 provides a Preliminary Conceptual Site Model developed through the identification and assessment of risk presented by potential contaminant linkages.
- Section 5 provides conclusions and recommendations.

## 1.3. Limitations

The conclusions and recommendations of this report are based on the project description and redline boundary included in Appendix A, which were provided at the time of writing the draft report (July 2020).

The findings, opinions and recommendations presented in this report are based on information obtained from a variety of third party sources as detailed within this report. Atkins has not been able to independently verify third party information and for the purposes of this assessment has assumed that such information is accurate and complete. Therefore, whilst this report and the opinions contained herein are accurate to the best of Atkins' knowledge and belief, Atkins cannot and does not guarantee the completeness, reliability or accuracy of the descriptions or conclusions based on supplied third party information.

## 2. Site Description

### 2.1. Location

The site is situated within the existing Farlington WTW, located within Farlington in Portsmouth, Hampshire. The WTW is bordered by Portsdown Hill Road (B2177) and Portsmouth Golf Course to the north and residential areas to the east, south and west. The primary access to the WTW is from Gillman Road.

The site location is shown on Drawing No. HTR-ATK-PT-FR-DR-A-0001 included in Appendix A.

### 2.2. Current Site Use

The site is a working WTW which provides potable water to the Portsmouth and Havant area. The WTW treats spring water pumped from Bedhampton and Havant springs and provides a cumulative flow to four adjacent service reservoirs, two of which are located at either side (west and east) of the WTW.

The Farlington WTW property area is approximately 1,500m<sup>2</sup> and comprises existing treatment equipment housed within a series of buildings, a concrete basin within a brick boundary wall (a former Slow Sand Filter (SSF) basin), a bulk fuel tank located on a reinforced concrete slab and several underground reservoirs and pipework.

The site is located at an elevation of between 45m and 50m above ordnance datum and gently slopes north to south, with the water treatment buildings and facilities set within the gradient of the site between open areas of grassland.

### 2.3. Proposed Scheme

The following works are proposed at Farlington WTW:

- A new building to provide Dissolved Air Flotation (DAF) treatment plant for HTR water only, complete with pH correction and coagulant chemical dosing facilities;
- Replacement of the media in the existing Farlington rapid gravity filters with Granulated Activated Carbon (GAC) media<sup>1</sup>, and associated refurbishment / plant upgrade works;
- Sludge holding tank, adjacent to the proposed building;
- Vehicle access from Gillman Road to a service/delivery yard adjacent to the proposed building to empty the sludge tank and to allow direct access to the floor level of the building;
- Potential above-ground water pipeline from the existing site inlet overflow into an underground reservoir to the south of the proposed building;
- Underground water pipelines, chambers and connections between the new treatment building and existing treatment facilities; and
- Temporary contractors' compound, parking area and a construction materials storage area within the WTW site.

It is proposed that the new DAF plant and chemical dosing and storage assets are housed in a new building on the existing Farlington WTW site in order to assimilate with the existing treatment infrastructure on site. The location for the proposed building is within an existing concrete basin (the former SSF basin) which is currently used occasionally as an overflow tank facility.

A plan of the scheme and the DAF Treatment Building are shown on Drawing No. HTR-ATK-PT-FR-DR-A-0003 and HTR-ATK-PT-FR-DR-A-0005 included in Appendix A.

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<sup>1</sup> GAC media is a black grainy sand-like substance. Pesticides and organic compounds bind to its surface so are removed from the onward flowing water.

## 3. Environmental Setting

### 3.1. General

An Envirocheck report [1] has been used to provide information relating to the site and surrounding areas and is presented in Appendix B. Further information has also been obtained from a land use enquiry report provided by Portsmouth City Council [2] (included in Appendix C) and publicly available sources of information including BGS geological mapping [3] and BGS Geoindex [4], Defra's MAGIC online mapping [5] and Zetica online unexploded ordnance (UXO) risk maps [6].

### 3.2. Site History

A review of the historical and current land use of the site and surrounding area (within 500m of the site) has been undertaken to identify the nature and location of potentially contaminative activities that may have taken place on or adjacent to the site.

Historical maps between 1868 and 1999 at a 1:2,500 scale and between 1870 and 2020 at a 1:10,000 scale are presented within the Envirocheck report [1]. A summary of the site history is provided below.

The site forms part of the Farlington WTW which dates back to 1908 and provides potable water to the Portsmouth and Havant area and has been in continuous ownership by Portsmouth Water since that time. Prior to the construction of the WTW, the site was predominantly farmland.

As part of the development of the WTW, two upper reservoirs and a lower reservoir (including a pumping station) were constructed 300m to the west and 500m to the south west of the site in 1898. In 1932, filtration beds and valves were constructed on the site and adjacent to the upper reservoirs, with the site labelled as a Filtration Works and Reservoirs. In 1982, an additional building was constructed 50m to the east of the site and in 1991, a covered reservoir was constructed 50m to the east of the site. In 2017, a detached building to accommodate membrane filter equipment was constructed to the south of the existing building group and a further building was constructed directly north of the main building group to house a centrifuge plant and skip, with a lamella plant adjacent. In 2020, an additional reservoir has been constructed 50m to the north of the site.

The area surrounding the site was predominantly farmland in 1870. The districts of Farlington and Drayton have been present 500m to the south and west of the site since 1898, becoming more built up between 1932 and the present day. Fort Purbrook is present 300m to the north of the site. The fort is indicated on historical maps from 1932, but was constructed in the 1860s as one of a series of forts built for the defence of Portsmouth against landward attacks [7].

An old quarry (Farlington Farm Chalk Pit) was present adjacent to the west of the site between 1870 and 1991. A chalk pit and gravel pit and associated air shafts were present 500m to the north and north west of the site from 1870 to 1909. The pits and quarry are assumed to have been infilled.

### 3.3. Geology

#### 3.3.1. Made Ground / Artificial Deposits

Made Ground is expected to be present on the site, associated with existing SSF basin and other infrastructure. Reference to historical plans of the existing SSF basin [8] indicate that it is approximately 29m (95' 6") wide, orientated west-east. The depth of the SSF basin is not recorded on the historical plans but is noted as having a side slope of 1:6. A main collecting channel approximately 0.4m (1'4") wide is located beneath the base of the SSF basin, in the centre orientated west-east.

The SSF basin is expected to have been constructed out of concrete, brick and graded stone with Portland cement rendering [8]. It should also be noted the existing structure was built on slightly sloping ground and the southern part of the existing structure may have been founded on a layer of fill used to even up the site. The quality and nature of this fill is unknown.

The historical plans of the SSF basin are provided in Appendix D.

Potentially infilled land is also indicated to be present adjacent to the west of the site within the area of the former old quarry (Farlington Farm Chalk Pit) [1].

### 3.3.1. Superficial Deposits

Reference to BGS mapping [3] indicates that no superficial deposits are recorded to be present underlying the site. Head deposits are reported adjacent to the south of the site within the wider WTW.

### 3.3.2. Bedrock

The bedrock underlying the site is expected to comprise the White Chalk Sub-Group, comprising Newhaven Chalk Formation [3].

## 3.4. Mineral Extraction and Ground Stability

### 3.4.1. Mining and Natural Cavities

The Envirocheck report [1] indicates that the site is in an area unlikely to be affected by coal mining.

Deneholes (medieval chalk extraction pits) are noted as being present in Hampshire. These are characteristically two to three metres deep and comprise a narrow shaft with a number of chambers radiating from the base [9]. No recorded deneholes have been identified within 1km of the site.

Several types of karst dissolution features within the White Chalk Sub-Group are recorded in this region [10] including sink / swallow holes. However, no dissolution features have been recorded within the site boundary.

### 3.4.2. Mineral Sites

There are seven BGS recorded mineral sites located within 500m of the site [1] as summarised in Table 3.1.

**Table 3.1 BGS Recorded Mineral Sites**

Site Name	Type	Commodity	Status	Distance and Direction
Farlington Farm Chalk Pit	Opencast	Chalk	Ceased	Adjacent to the west of the site
Farlington Redoubt	Recycled	Aggregates for recycling	Active	168m north east
Camp Down	Opencast	Chalk	Ceased	206m east
Bedhampton Chalk Pit	Opencast	Chalk	Ceased	252m north east
Crookhorn Lane Gravel Pit	Opencast	Sand and gravel	Ceased	297m north east
Privet Coppice Chalk Pits	Opencast	Chalk	Ceased	323m and 366m north west

### 3.4.3. Ground Stability

The ground stability conditions found at the site, according to the Envirocheck report [1] are listed in Table 3.2.

**Table 3.2 Ground stability conditions**

Condition	Potential
Collapsible ground stability hazards	Very low
Compressible ground stability hazards	No hazard
Ground dissolution stability hazards	Very low to low
Landslide ground stability hazards	No hazard
Running sand ground stability hazards	No hazard
Shrinking or swelling clay ground stability hazards	Very low

### 3.4.4. Radon

The Envirocheck report [1] states that the site is in a lower probability radon area, as less than 1% of homes are above the action level. Therefore, no radon protective measures are necessary in the construction of new buildings on site (e.g. welfare building).

It should be noted that it is not a requirement to test new non-domestic buildings for radon gas. However, under the Health and Safety at Work Act, the employer has a duty to ensure that the risk to employees from radon is kept within acceptable levels.

## 3.5. Hydrogeology

### 3.5.1. Aquifer Designation

The White Chalk Sub-Group bedrock underlying the site is classified by the Environment Agency as a Principal Aquifer and the Head deposits are classified as a Secondary Undifferentiated Aquifer [5].

The site is not indicated to be located within a groundwater Source Protection Zone. However, a Zone 1c (Inner Protection Zone – subsurface activity only) is located approximately 500m to the north east of the site.

### 3.5.2. Licenced Groundwater Abstractions

There are no groundwater abstractions located within 500m of the site [1].

### 3.5.3. Discharge Consents to Groundwater

There is one licensed discharge consent located 163m to the north east of the site at a machinery hire operator for the discharge of trade effluent / site drainage to land via soakaway [1].

## 3.6. Hydrology

### 3.6.1. Hydrological and Drainage Information

There are no surface watercourses located within 500m of the site [1].

### 3.6.2. Flood Risk

The Farlington WTW site lies in Environment Agency Flood Zone 1 [1] and is therefore not subject to fluvial or tidal flooding at least up to the 1 in 1000 (0.1%) annual probability. There are no known watercourses in the near vicinity of the site. There is also limited potential for groundwater flooding to occur at the site [1].

### 3.6.3. Licenced Surface Water Abstractions

There are no surface water abstractions located within 500m of the site [1].

### 3.6.4. Discharge Consents to Surface Water

There are no current licensed discharge consents to surface water located within 500m of the site [1].

### 3.7. Pollution Incidents to Controlled Waters

There are no pollution incidents to controlled waters located within 500m of the site [1].

### 3.8. Historical and Ecologically Important Sites

Reference to the Envirocheck report [1] indicates that Fort Purbeck Scheduled Monument is located approximately 200m to the north west of the site. Ten Grade II Listed Buildings are present within 500m of the site including a church, old rectory and several monuments.

The site is located within the East and West of Gillman Road Site of Importance for Nature Conservation (SINC). Purbrock Park Ancient Woodland is present 428m to the north of the site. The site is also located within a Nitrate Vulnerable Zone.

### 3.9. Landfill Sites

Reference to Envirocheck report [1] indicates that there is a historic registered landfill (pumping station) located on Eveleigh Road 390m to the south of the site which received inert waste from 1 May 1984. Authorised waste included excavated natural materials and road making materials. The licence holder was Portsmouth Water Company. The licence is listed as lapsed/cancelled/surrendered.

### 3.10. Waste Management Sites

There are three licensed waste management sites located within 500m of the site [1] including:

- A physical waste treatment facility located 163m to the north east of the site on Portsdown Hill Road. The licence is dated 8 April 2002 and is listed as modified;
- A registered waste transfer site located 183m to the north east of the site on Portsdown Hill Road. The site was licenced to receive  $\geq 25,000$  and  $< 75,000$  tonnes of waste per year. Authorised waste included arisings from cable trench excavations, including chalk, sand and gravel. The licence is dated 1 December 1991 and listed as lapsed/ cancelled/surrendered; and
- A metal recycling site (mixed) / scrap yard located 275m to the south east of the site on Havant Road. The site was licenced to receive  $< 10,000$  tonnes of waste per year. Authorised waste includes scrap metal. The licence is dated 18 December 1992 and is listed as issued/operational as far as is known.

### 3.11. Local Authority Pollution Prevention and Controls

Reference to Envirocheck report [1] indicates that there is a Local Authority Pollution Prevention and Control site located 117m to the east of the site. It is licensed for PG3/1 blending, packing, loading and use of bulk cement. The licence is dated 4 May 2010 and is listed as permitted.

### 3.12. Contemporary Trade Directories

The Envirocheck report [1] indicates there is eight active contemporary trade directories within 500m of the site that have the potential to use contaminants of concern. These include:

- The Eveleigh Road landfill located 390m south;
- A carpet, curtain and upholstery cleaners located 155m east;
- The metal recycling site located 275m south east;
- A garage located 297m east;
- A washing machine servicing and repairs located 290m south west;
- A tyre dealer located 298m south;
- A commercial vehicle dealer located 373m south; and
- A concrete producer located 389m south.

### 3.13. Fuel Stations

There is a fuel station entry for Farlington Garage located 300m to the south of the site [1]. The fuel station is listed as obsolete.

### 3.14. Unexploded Ordnance

Unexploded ordnance (UXO) risk maps for the site [6] are included in Appendix E. The site is recorded as being at a high risk of encountering UXO. Farlington WTW was a Luftwaffe target during WWII which accounts for the high risk rating. Information provided by Portsmouth City Council [2] indicates that three bomb raids were recorded at the site in 1940 and 1941, although no further information is provided. It should be noted that Portsmouth Water has operated the Farlington WTW site from before the Second World War and Atkins has not received any records from Portsmouth Water to indicate that the area received any bomb hits, nor is there a change in the structure that would indicate such an event. However, it is recommended that a detailed UXO desk study is undertaken prior to breaking ground.

## 4. Preliminary Conceptual Site Model

### 4.1. Introduction

Land contamination is assessed through the identification of risk presented by potential contaminant linkages (PCLs), i.e. Source – Pathway – Receptor relationships, and the development of a Conceptual Site Model (CSM). The approach in the following sections is in accordance with the Environment Agency CLR11<sup>2</sup> [11] and the Guiding Principles for Land Contamination (GPLC) documents [12] which provide the technical framework for the development of such CSMs and the application of risk assessment (qualitative or quantitative) to consider whether potential pollutant linkages are significant and require appropriate management or mitigation.

The assessment involves the development of a CSM which describes the source-pathway-receptor relationship between potential sources of contamination and associated contaminants from both on-site and off-site sources, receptors to such contamination (humans, controlled water (groundwater/surface water), ecological systems (flora and fauna of conservation designations) and property) and potential pathways between the two. If all three are present or considered likely to be present, they are described as PCLs which can be subject to the risk assessment process.

The question of whether risk is unacceptable in any particular case involves scientific and technical assessments together with appropriate criteria by which to judge the risk and conclude the level of risk which would be unacceptable.

The basic approach to the human health and controlled water risk assessment reported here follows the principles given in CLR11 and GPLC, i.e. application of the following assessment hierarchy:

- Tier 1 risk screening by establishment of potential pollutant linkages, i.e. the preliminary conceptual site model (PCSM).
- Tier 2 generic quantitative assessment using Generic Assessment Criteria (GACs) that represent 'minimal' or 'tolerable' risk.
- Tier 3 quantitative risk assessment using Site Specific Assessment Criteria (SSACs) that represent 'unacceptable risk', or where generic assessment criteria are not available or they are not applicable to the CSM.

At this stage, a PCSM has been developed using the proposed scheme details and desk study information summarised in the preceding sections of this report, i.e. a Tier 1 assessment.

It should be noted that under current health and safety legislation, construction and maintenance workers are required to carry out appropriate risk assessments and instigate appropriate mitigating measures to protect themselves, other human receptors and the environment from contamination which may be present. Such risks must be adequately mitigated by the measures required under current legislation, specifically the Construction Design Management (CDM) Regulations [13] which requires that potential risks to human health and the environment from construction activities are appropriately identified and all necessary steps taken to eliminate / manage that risk. On this basis, it been assumed that personal protective equipment (PPE) and health and safety best practices will be adopted during the construction works and acute risks to construction workers / site visitors have therefore not been considered as part of this assessment.

### 4.2. Risk Estimation

Through consideration of the potential consequence and likelihood of exposure occurring, a potential risk rating for each PCL has been assigned and is presented in Table 4.5. The purpose of this assessment is to focus upon the potential risks present based on the proposed scheme with no mitigation measures. The definitions of estimated risk are taken from CIRIA report C552 [14] and have been summarised in Table 4.1 below.

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<sup>2</sup> It is noted that CLR11 is due to be withdrawn in 2020 and replaced by updated online guidance: Environment Agency (June 2019) Land contamination: Risk Management (Draft).

**Table 4.1 Definitions of estimate risk**

Risk Level	Definition
Very High Risk	There is a high probability that severe harm could arise to a designated receptor or there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not already undertaken) is required and remedial works may be necessary in the short term and are likely over the long term.
Medium Risk	It is possible that harm could arise to a designated receptor. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the long term.
Low Risk	It is possible that harm could arise to a designated receptor, but it is likely that this harm, if realised, would be mild. Further investigation is not necessarily required, however should be considered to confirm that there is no unanticipated contamination present.
Very Low Risk	The possibility of harm to the designated receptor is either not plausible or, if the possibility of harm is plausible, risk is considered to be very unlikely with attenuation along the exposure pathway. Further investigation is not necessarily required, however may be considered to confirm that there is no unanticipated contamination present.

The risk is evaluated through the probability matrix presented in Table 4.2. The definitions of probability and consequence are given in Appendix F.

**Table 4.2 Estimation of the level of risk by comparison of consequence and probability**

		Consequence			
		Severe	Medium	Mild	Minor
Probability (Likelihood)	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

### 4.3. Preliminary Conceptual Site Model (PCSM)

Based upon the historical and present land uses identified in the Envirocheck report [1] and other desk study sources, a PCSM has been produced, identifying potential sources of contamination, migration or exposure pathways and receptors for the site.

The following sections are described in terms of the potential source – pathway – receptor PCLs, which are defined by interpretation of the information contained within this desk study and the details of the proposed development, correct at the time of writing (July 2020).

#### 4.3.1. Potential Contaminants

The potential sources of contamination and associated groups of potential contaminants of concern have been identified from the desk-based review of information and are outlined in Table 4.3 below. The list of activities and contaminants of concern listed in the table below should not be considered

exhaustive and provides a guide to the likely range of contaminants which may be present at or around the site.

**Table 4.3 Summary of potential sources of contamination**

	<b>Activity / Feature</b>	<b>Potential Contaminants</b>
On-site	Made Ground associated with the construction and operation of the existing WTW including the existing SSF basin.	Metals, fuel oils and hydrocarbons and inorganic compounds (unknown treatment chemicals) including the potential for asbestos.
	Made Ground associated with the construction and operation of existing roads (Gillman Road).	Fuels and oils attributed to spills from vehicles on the road, plus exhaust particulates. A range of inorganic and organic contaminants including the potential for asbestos.
Off-site	Made Ground associated with the construction and operation of the wider WTW.	Metals, fuel oils and hydrocarbons and inorganic compounds (unknown treatment chemicals) including the potential for asbestos.
	Bulk fuel tank located within the wider WTW.	Fuel oils and hydrocarbons.
	Made Ground associated with the former quarry adjacent to the west of the site.	Infilled Made Ground of unknown origin with a range of inorganic and organic contaminants including hydrocarbons, polyaromatic hydrocarbons (PAHs), metals, asbestos and potential for ground gas.
	Made Ground associated with the construction and operation of adjacent roads (Gillman Road and Portsdown Hill Road).	Fuels and oils attributed to spills from vehicles on the road, plus exhaust particulates. A range of inorganic and organic contaminants including the potential for asbestos.
	Historic landfill site located 390m to the south of the site.	A range of inorganic and organic contaminants including hydrocarbons, PAHs, metals, asbestos and ground gas.
	Former mineral sites located within 500m of the site.	Infilled Made Ground of unknown origin with a range of inorganic and organic contaminants including hydrocarbons, PAHs, metals, asbestos and potential for ground gas.
	Waste management sites located within 500m of the site.	A range of inorganic and organic contaminants including hydrocarbons, PAHs, metals and asbestos.
	Industrial / commercial uses located within 500m of the site including cleaners, garage, concrete producer, vehicle dealer and tyre dealer.	A range of inorganic and organic contaminants including hydrocarbons, fuel oils, PAHs, metals, asbestos, acids and solvents.
Former fuel station located 300m to the south of the site.	Fuel oils and hydrocarbons.	

### 4.3.2. Potential Receptors

Potential receptors which are relevant to the current and future site use are presented in Table 4.4.

**Table 4.4 Summary of potential receptors**

Receptor groups	Potential receptors
Human health (on-site)	Operatives, maintenance workers and visitors of the DAF plant
Human health (off-site)	Operatives, maintenance workers and visitors within the wider WTW
	Occupants of surrounding residential and commercial properties
Controlled Waters Receptors (on and off-site)	Groundwater in Principal bedrock aquifer and Secondary Undifferentiated Superficial aquifer
Property on and off-site)	Existing on-site and off-site services and structures
	Proposed on-site services and structures
Ecological (on and off-off-site)	East and West of Gillman Road SINC (on-site and off-site)
	Purbrook Park Ancient Woodland (off-site)

### 4.3.3. Potential Migration / Exposure Pathways

This section details the potential migration or exposure pathways between the sources of contamination and receptors identified above. For a pollutant linkage to exist between the contaminant sources identified and the potential receptors, a pathway must exist.

#### Potential Human Exposure Pathways:

Potential exposure pathways to the identified on-site human receptors include:

- Dermal contact with and ingestion of contaminants in soils, soil-derived dusts and water; and
- Inhalation of soil derived dust, fibres and gas/vapours.

The potential exposure pathways to the identified off-site human receptors include:

- Dermal contact with and ingestion of contaminants in soil-derived dusts and water that may have migrated off site; and
- Inhalation of soil derived dust, fibres and gas/vapours which may have migrated off site.

#### Potential Controlled Waters Exposure Pathways:

- Leaching of contaminants in soil to groundwater in underlying aquifer; and
- Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifer.

#### Potential Property Exposure Pathways:

- Direct contact of contaminants in soil and/or groundwater with existing buried services; and
- Migration of contaminated groundwater, ground gas and/or vapours along strata and preferential pathways such as service routes or differentially permeable strata.

#### Potential Ecological Exposure Pathways:

- Migration of contaminated waters/dust/fibres and subsequent uptake by flora or ingestion/ inhalation/dermal contact by fauna.

### 4.3.4. PCSM and Underpinning Assessment Assumptions

Table 4.5 presents the key information included in the PCSM prepared for the site in its current undeveloped state and also for future scenarios (construction and operation). The assessment has been undertaken using the following assumptions:

- The site has been developed as described in Section 2.3; and
- Construction has been carried out in accordance with appropriate Health and Safety and environmental protection requirements.

**Table 4.5 Preliminary Conceptual Site Model**

Source	Receptor		Contaminant exposure / migration pathway	Probability	Consequence	Risk Category	Comment
<p><b>ON-SITE:</b> Made Ground associated with the construction and operation of the existing WTW including the existing SSF basin.</p> <p><i>Metals, fuel oils and hydrocarbons and inorganic compounds (unknown treatment chemicals) including the potential for asbestos.</i></p> <p>Made Ground associated with the construction and operation of existing roads (Gillman Road).</p> <p><i>Fuels and oils attributed to spills from vehicles on the road, plus exhaust particulates. A range of inorganic and organic contaminants including the potential for asbestos.</i></p>	<p><b>Human health:</b> On-site</p>	Operatives, maintenance workers and visitors of the DAF plant	<p>Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.</p> <p>Inhalation of contaminants in soil, soil-derived dust, fibres and gas/vapours.</p>	Unlikely	Medium	Low risk	<p>There will be short term exposure of soils during construction although best practice site management procedures are likely to be implemented which will minimise short term exposure risk.</p> <p>Post construction works, the site will comprise hardstanding or grassed areas minimising potential for end users to come into direct contact with soils or for dust to be generated.</p> <p>Ground gases are unlikely to be a significant concern as infrastructure is likely to be vented.</p> <p>Future maintenance on the site may require localised excavation with potential for workers to come into direct contact with soils or inhale soil derived dusts.</p> <p>This work is likely to be short term and infrequent. It has been assumed that PPE and health and safety best practices will be adopted to manage acute risks to operatives, maintenance workers and site visitors.</p>
		Operatives, maintenance workers and visitors within the wider WTW	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water which may have migrated off-site.	Unlikely	Mild	Very low risk	<p>Following the construction of the DAF plant ground cover at the site will comprise hardstanding or grassed areas with minimal areas of exposed bare soil therefore it is unlikely that off-site human health receptors will be come into contact / ingest potential soil contaminants which may have migrated off-site.</p>
	Occupants of surrounding residential and commercial properties	Inhalation of contaminants in soil, soil-derived dust, fibres and gas/vapour which may have migrated off-site.	Unlikely	Mild	Very low risk		
	<p><b>Controlled Waters:</b> On-site and off-site</p>	<p>Principal Bedrock aquifer and Secondary Undifferentiated Superficial aquifer</p>	Leaching / migration of contaminants in soil to groundwater in underlying aquifers.	Low likelihood	Medium	Moderate / Low risk	<p>The works are likely to result in disturbance of soils and unknown Made Ground / fill material during excavation and construction which may result in the release of contaminants in unsaturated Made Ground soils with potential migration to groundwater.</p> <p>Best practice procedures required to be implemented to minimise leaching of unsaturated soils in excavations and stockpiles into underlying aquifers.</p>
Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers.			Low likelihood	Medium	Moderate / Low risk		
<p><b>Property / services:</b></p>	<p>Existing on-site and off-site services and structures</p>	<p>Direct contact of contaminants in soil and/or groundwater with buried services.</p>	Unlikely	Mild	Very low risk	<p>Current and future below ground infrastructure is assumed to have been / will be constructed to</p>	

Source	Receptor		Contaminant exposure / migration pathway	Probability	Consequence	Risk Category	Comment
	On-site and off-site		Migration of contaminated groundwater, ground gas and/or vapours along strata and preferential pathways such as service routes or differentially permeable strata.	Unlikely	Medium	Low risk	<p>appropriate standards for the site to withstand attack from soil chemistry.</p> <p>Ground gases may be generated from areas of infilled ground. Ground gas has the potential to migrate into proposed on-site structures in permeable strata. However, ground gases are unlikely to be a significant concern as infrastructure is likely to be vented.</p>
		Proposed on-site services and structures	Direct contact of contaminants in soil and/or groundwater with buried services.	Unlikely	Mild	Very low risk	
			Migration of contaminated groundwater, ground gas and/or vapours along strata and preferential pathways such as service routes or differentially permeable strata.	Unlikely	Medium	Low risk	
	<b>Ecological Receptor:</b> On-site and off-site	East and West of Gillman Road SINC (on-site and off-site)	Migration of contaminated waters / dust / fibres and subsequent uptake by flora or ingestion / inhalation / dermal contact by fauna.	Unlikely	Mild	Very low risk	<p>The works are likely to result in disturbance of soils and unknown Made Ground / fill material during excavation and construction which may result in the release of contaminants in unsaturated Made Ground soils with potential migration to groundwater. Best practice procedures required to be implemented to minimise migration of contaminated waters / dust / fibres.</p> <p>Following the construction of the DAF plant ground cover at the site will comprise hardstanding or grassed areas with minimal areas of exposed bare soil therefore it is unlikely that off-site ecological receptors will be come into contact / ingest potential soil contaminants which may have migrated off-site.</p>
		Purbrock Park Ancient Woodland (off-site)		Unlikely	Minor	Very low risk	
<p><b>OFF-SITE:</b></p> <p>Made Ground associated with the construction and operation of the wider WTW.</p> <p>Bulk fuel tank located within the wider WTW.</p> <p>Made Ground associated with the former quarry adjacent to the west of the site.</p> <p>Made Ground associated with the construction and operation of adjacent roads</p>	<b>Human health:</b> On-site	Operatives, maintenance workers and visitors of the DAF plant	<p>Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.</p> <p>Inhalation of contaminants in soil, soil-derived dust, fibres and gas/vapours.</p>	Unlikely	Mild	Very low risk	<p>The surrounding area comprises either hardstanding or vegetation which will reduce dust generation and therefore the limit the potential for dermal contact, ingestion and inhalation pathways.</p> <p>Potentially contaminated groundwater may migrate onto site from off-site sources with the potential for direct contact in excavations.</p> <p>It been assumed that PPE and health and safety best practices will be adopted to manage acute risks to operatives, maintenance workers and site visitors.</p>

Source	Receptor		Contaminant exposure / migration pathway	Probability	Consequence	Risk Category	Comment
<p>(Gillman Road and Portsdown Hill Road). Historic landfill site located 390m to the south of the site.</p> <p>Former mineral sites located within 500m of the site.</p> <p>Waste management sites located within 500m of the site.</p> <p>Industrial / commercial uses located within 500m of the site including cleaners, garage, concrete producer, vehicle dealer and tyre dealer.</p> <p>Former fuel station located 300m to the south of the site.</p> <p><i>A range of inorganic and organic contaminants including metals, fuel oils and hydrocarbons, PAHs and inorganic compounds (unknown treatment chemicals), acids and solvents including the potential for asbestos and ground gas.</i></p>			Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers.	Unlikely	Medium	Low risk	
	<b>Property / services:</b> On-site	Existing on-site services and structures	Direct contact of contaminants in soil and/or groundwater with buried services.	Unlikely	Mild	Very low risk	Current and future below ground infrastructure is assumed to have been / will be constructed to appropriate standards for the site to withstand attack from soil chemistry.
		Proposed on-site services and structures	Direct contact of contaminants in soil and/or groundwater with buried services.	Unlikely	Medium	Low risk	Ground gases may be generated from areas of infilled ground including the adjacent infilled quarry. Ground gas has the potential to migrate to site in permeable strata. However, ground gases are unlikely to be a significant concern as infrastructure is likely to be vented.
	<b>Ecological Receptor:</b> On-site	East and West of Gillman Road SINC (on-site)	Migration of contaminated waters / dust / fibres and subsequent uptake by flora or ingestion / inhalation / dermal contact by fauna.	Unlikely	Mild	Very low risk	<p>The surrounding area comprises either hardstanding or vegetation which will reduce dust generation and therefore the limit the potential for dermal contact, ingestion and inhalation pathways.</p> <p>Potentially contaminated groundwater may migrate to the site from off-site sources. However, given the distance from potential off-site receptors to the site, risks are considered to be low.</p>

#### 4.4. Waste Classification and Material Reuse

Potential waste soils will be generated during construction through excavations and during installation of services. Excavated soils may be re-used on site, if required. However, where excess soils are generated or where soil arisings generated from the earthworks are classified as unsuitable for re-use on site, these materials may require disposal off-site.

If material is proposed to be removed or re-used off-site or reused on-site as part of the works, it will require appropriate classification and / or sorting to demonstrate suitability. The actual material to be excavated should be analysed and assessed as suitable for re-use by assessing potential risk to human and controlled water receptors. There should also be a clear requirement for reuse in the scheme design and may require consideration as part of a materials management plan or U1 exemption. It is the Contractor's responsibility to appropriately classify material excavated and ensure adequate testing is completed.

## 5. Conclusions

### 5.1. Conclusions

Based on the findings of the desk study, the risks to human health are considered to be very low to low and the risks to controlled waters as moderate/low. Risks to property / services are identified to be very low to low, and the risks to ecology as very low.

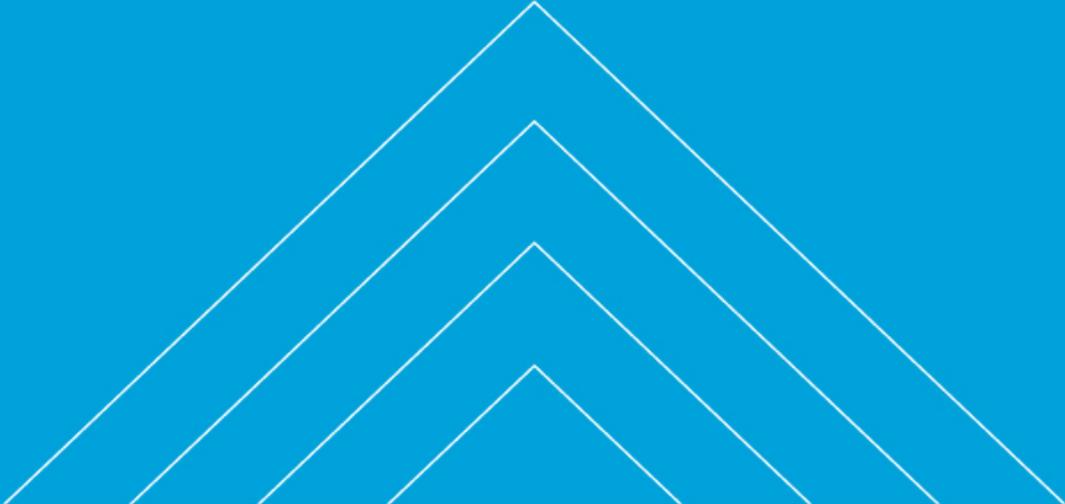
### 5.2. Recommendations

Further assessment of the ground conditions underlying the site through additional ground investigation including contamination chemical testing is recommended to confirm the contamination status of the site and inform the potential for material re-use.

## 6. References

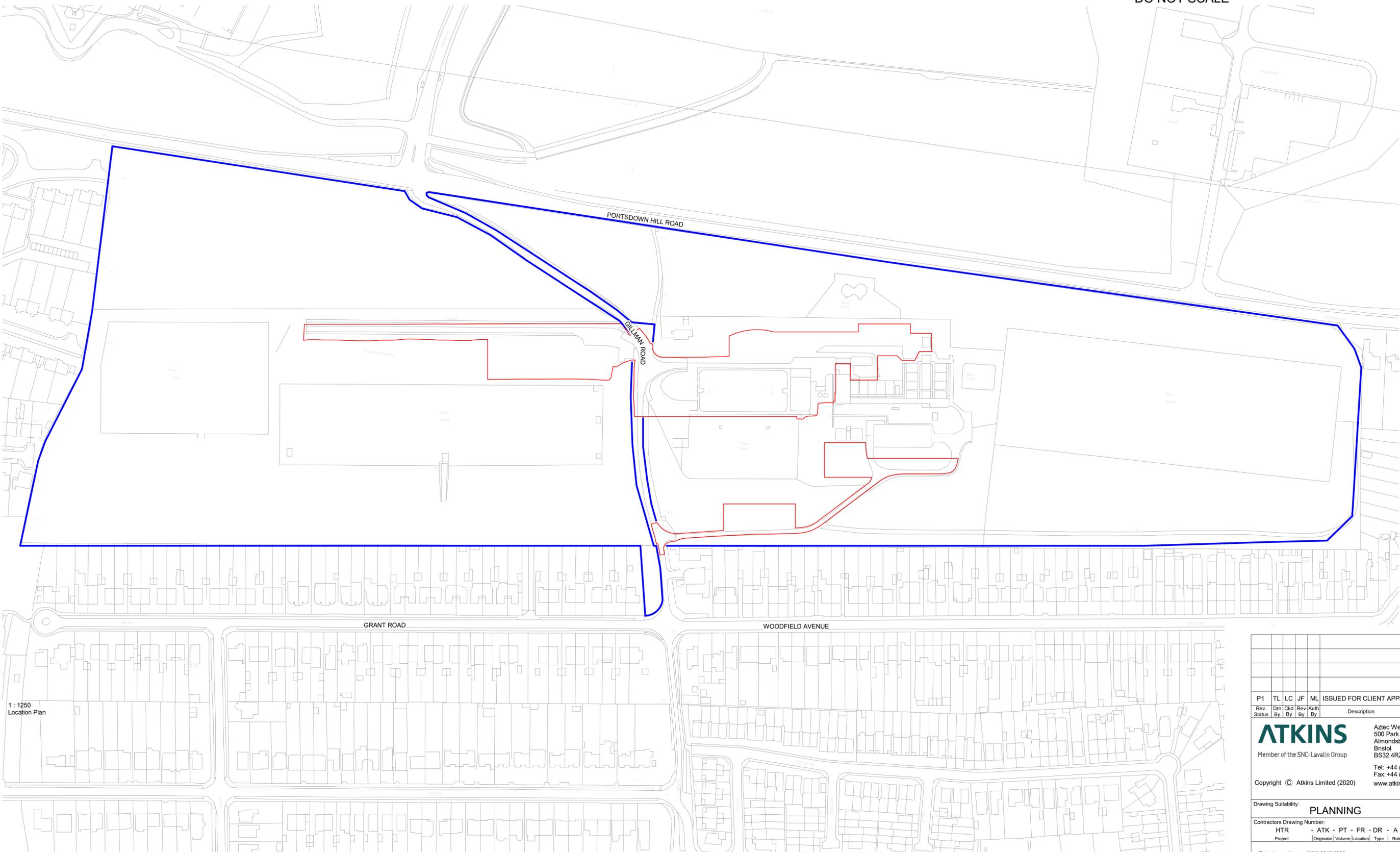
- [1] Landmark Information Group, “Envirocheck Report (235219081\_1\_1): Portsmouth Water Plc, Farlington Treatment Works,” 2020.
- [2] Portsmouth City Council, “Land Use Enquiry for Farlington Water Treatment Works, Gillman Road, Portsmouth, PO6 1BL,” June 2020.
- [3] BGS, *1:50,000 Solid and Drift Geological Map Series: 316, Fareham*, 1998.
- [4] BGS, “Geoindex (onshore and offshore),” 2020. [Online]. Available: <http://www.bgs.ac.uk/geoindex/>. [Accessed July 2020].
- [5] DEFRA, “Interactive Mapping,” [Online]. Available: <https://magic.defra.gov.uk/>. [Accessed July 2020].
- [6] Zetica, “UXB Online Risk Map,” [Online]. Available: <https://zeticauxo.com/downloads-and-resources/risk-maps/>. [Accessed July 2020].
- [7] Historic England, “National Heritage List for England,” [Online]. Available: <https://historicengland.org.uk/listing/the-list/list-entry/1387127>. [Accessed July 2020].
- [8] Portsmouth Waterworks Company , “Historical Plans of the Filter Beds,” 1924, 2925.
- [9] BGS, “Deneholes,” 2019. [Online]. Available: <https://www.bgs.ac.uk/research/engineeringGeology/shallowGeohazardsAndRisks/sinkholes/deneHoles.html>. [Accessed 19 February 2020].
- [10] BGS, “Karst hydrogeology of the Bedhampton and Havant springs,” 2016. [Online]. Available: <https://www.bgs.ac.uk/research/groundwater/about/karstAquifers/bedhamptonHavantSprings.html>. [Accessed 19 February 2020].
- [11] Environment Agency and Defra, “Model Procedures for the Management of Contaminated Land,” R&D Publication CLR11, 2004.
- [12] Environment Agency, “GPLC1: Guiding Principles for Land Contamination,” 2010.
- [13] United Kingdom Parliament, “Construction (Design & Management) Regulations (SI 2015/51),” 2015.
- [14] Construction Industry Research and Information Association (CIRIA), “Contaminated Land Risk Assessment: A guide to good practice (C552),” 2001.

# Appendices

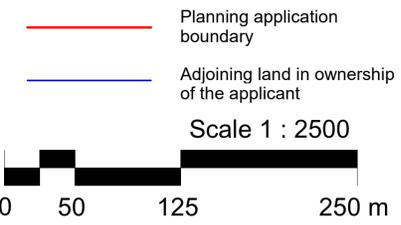


# Appendix A. Drawings and Figures

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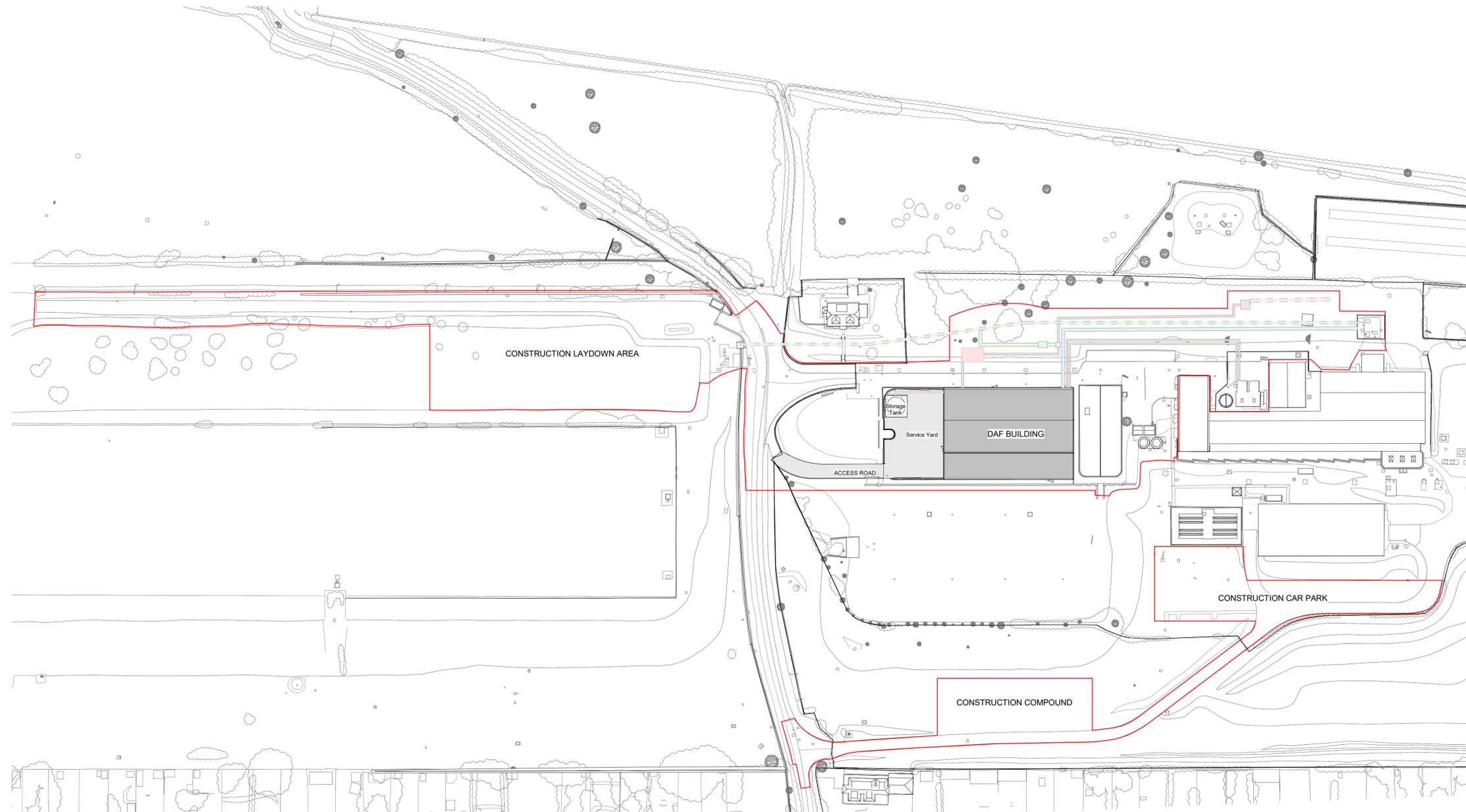


1 : 1250  
Location Plan



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Rev	Dr	Ch	Rev	Auth	Description	Date
Status	By	By	By	By		
						Aztec West 500 Park Avenue Almondsbury Bristol BS32 4RZ Tel: +44 (0)1454 662000 Fax: +44 (0)1454 663333 www.atkinsglobal.com
Copyright © Atkins Limited (2020)						
Drawing Suitability: <b>PLANNING</b>						Status: <b>S2</b>
Contractors Drawing Number: HTR - ATK - PT - FR - DR - A - 0001						
Project: [Originator] [Volume] [Location] [Type] [Role] [Number]						
Telephone: Havant (023) 9249 9888 Fax: Havant (023) 9245 3632 Website: www.portsmouthwater.co.uk Registered Office: PO Box 8 West Street Havant Hampshire PO9 1LG REGISTERED IN ENGLAND No. 2536455						
Project Ref. No: HTR		Sheet: 1 of 1		Scale: 1 : 1250		Sheet Size: A1
Project Title: <b>FARLINGTON WATER TREATMENT WORKS</b>						
Drawing Title: Farlington WTW Proposed Dissolved Air Flotation (DAF) Treatment Facilities <b>Location Plan</b>						
Portsmouth Water Drawing Number:						Rev: P1

DO NOT SCALE



1 : 750  
Proposed Site Plan

BELOWGROUND SITE PIPEWORK

- New below ground pipework connection chambers
  - Existing raw reservoir water pipeline
  - New raw reservoir water pipeline
  - New spring water main pipeline to site
  - Existing spring water main pipeline to site
  - New DAF treated water
  - New below ground sludge pipework
- Refer to drawing 0007 for more detail

General Note:

Scale @ A3: 1:1500

Planning application boundary

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Rev. Status	Drn. By	Ckd. By	Rev. By	Auth. By	Description	Date

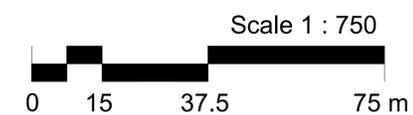
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Member of the SNC-Lavalin Group

Aztec West  
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Almondsbury  
Bristol  
BS32 4RZ  
Tel: +44 (0)1454 662000  
Fax: +44 (0)1454 663333  
www.atkinsglobal.com

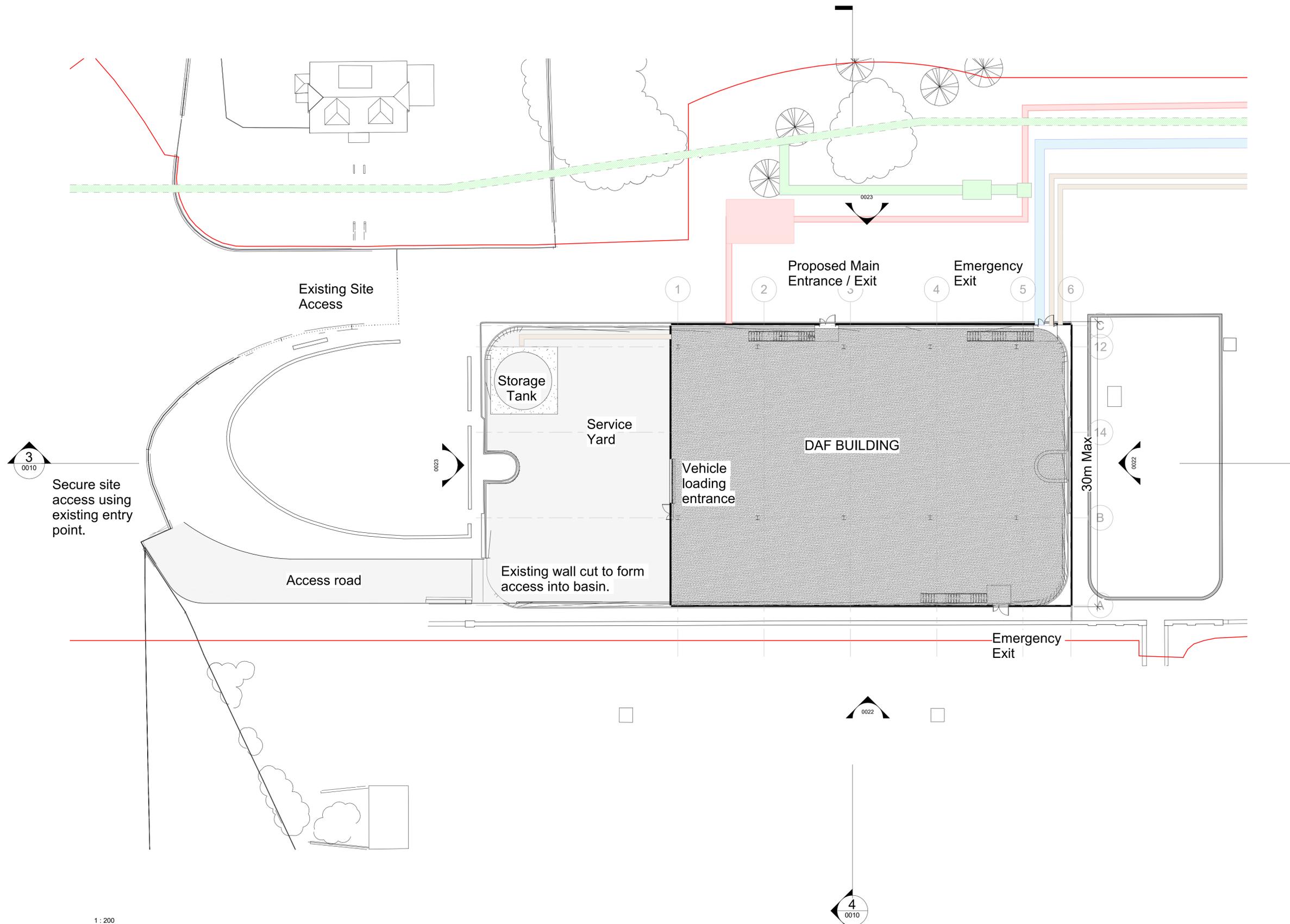
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Drawing Suitability: <b>PLANNING</b>	Status: <b>S2</b>														
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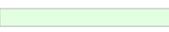
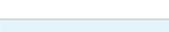
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Drawing Title: Farlington WTW Proposed Dissolved Air Flotation (DAF) Treatment Facilities <b>Proposed Site Plan</b>			
Portsmouth Water Drawing Number:			Rev: <b>P1</b>



DO NOT SCALE



BELOWGROUND SITE PIPEWORK

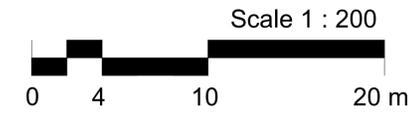
-   New below ground pipework connection chambers
-  Existing raw reservoir water pipeline
-  New raw reservoir water pipeline
-  New spring water main pipeline to site
-  Existing spring water main pipeline to site
-  New DAF treated water
-  New below ground sludge pipework

 Planning application boundary

**3**  
0010  
Secure site access using existing entry point.

**4**  
0022

1 : 200  
Proposed GA Block Plan



P1	TL	LC	JF	ML	ISSUED FOR CLIENT APPROVAL	10.07.20												
Rev.	Drn	Ckd	Rev	Auth	Description	Date												
Status	By	By	By	By														
						Aztec West 500 Park Avenue Almondsbury Bristol BS32 4RZ Tel: +44 (0)1454 662000 Fax: +44 (0)1454 663333 www.atkinsglobal.com												
Member of the SNC-Lavalin Group						Copyright © Atkins Limited (2020)												
Drawing Suitability: <b>PLANNING</b>						Status: <b>S2</b>												
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Drawing Title: Farlington WTW Proposed Dissolved Air Flotation (DAF) Treatment Facilities <b>Proposed GA Block Plan</b>																		
Portsmouth Water Drawing Number:						Rev: <b>P1</b>												

# Appendix B. Envirocheck Report

Available upon request

# Appendix C. Portsmouth City Council Land Use Enquiry Report



**Portsmouth**  
CITY COUNCIL

## **Land Use Enquiry**

**for**

## **Farlington Water Treatment Works, Gillman Road, Portsmouth PO6 1BL**

**17 June 2020**

**Prepared for**

**Atkins**

**By**

**Contaminated Land Team, City Development & Cultural Services, Portsmouth  
City Council, Civic Offices, Guildhall Square, Portsmouth, PO1 2AU**

**Portsmouth City Council  
Contaminated Land Team - Land Use Enquiry**

**Farlington Water Treatment Works, Gillman Road, Drayton and  
Farlington, Portsmouth PO6 1BL**

This report is a summary of the information held by the Contaminated Land Team in their geographical information system (GIS), databases and other sources on 17 June 2020. It is produced from a search within approximately 50m of the site boundary, except where otherwise stated.

The CLT also holds the following information that has not yet been captured onto the GIS:

- Scanned copies of historic maps from the late 1940s to the current day and 1946/47 historic aerial photographs
- Trades database compiled from a search of the trades section of the directories held in the central library at approximately five-yearly intervals during the periods between 1823-2001.  
Note: the majority of larger or more potentially contaminative trades have already been captured on the GIS and are included in the trades section of this report.
- Petroleum licence database compiled from documents held by CLT dating from 1909 to the present day including petroleum licence ledgers, a Hampshire Fire Brigade derelict tank register, and files for current and recently cancelled licences. Licences for volumes  $\geq 500$  gallons have already been captured on the GIS and these details are included in the trades section of this report.  
Note: the records for currently licensed sites are now held by: Hampshire County Council, Trading Standards Service, Montgomery House, Monarch Way, Winchester SO22 5PW.
- Scanned or paper copies of reports submitted relating to site conditions – for example desk studies, site investigation reports etc. The boundaries, reference numbers and brief details of these reports are included in this report.
- Industrial estate registers 1983 to 2003. Later registers can be viewed on line at [www.portsmouth.gov.uk](http://www.portsmouth.gov.uk). Some of this data has been captured and is included in the trades section of this report. Data capture is on-going and not complete.

These are available to view at the Civic Offices by prior appointment.

### Important Note:

It must be clarified that the information enclosed does not represent a comprehensive desk study search. The information presented is a summary of the information available on the CLT geographical information system as at 17 June 2020, and it should in no way be regarded as definitive. This service's search of archive data in the Portsmouth area is not complete. We have not researched any source of information from outside of the CLT GIS to complete this enquiry.

I would recommend that you undertake further research to verify the existence and exact nature/location of the land uses identified. The site may also have been put to additional potentially contaminative uses of which this department has no record. Further information is likely to be available by consulting deeds, contacting current/former site occupants etc. The British Standard Report BS10175:2011 - *Investigation of Potentially Contaminated Sites, Code of Practice* and Environment Agency Contaminated Land Report 11 (CLR11) - *Model Procedures for the Management of Land Contamination* provide further guidance on completing a comprehensive desk study.

If you are undertaking a development in the City it is important that the information enclosed, and that derived from your further enquiries is used to:

- a) Complete a full and comprehensive desk study for the site to identify all potential uses of concern, and
- b) Target site investigation locations.

In addition, it is important to ensure the chemical analysis scheduled during the site investigation includes the contaminants most likely to be present given the former uses of the site. To this end I would direct you to guidance given in the Industry Profiles produced by the former DoE (now DEFRA).

I would recommend that once you have completed your desk study research, that you copy the report and your site investigation design to this department for comment before commencing the investigation. This is especially important if you are seeking to discharge a planning condition in relation to site investigation. Please note that the CLT will need a minimum of 28 days to consider your report/proposals. If you proceed without agreeing your proposals, you proceed at risk. Further investigation may then be needed at a later date.

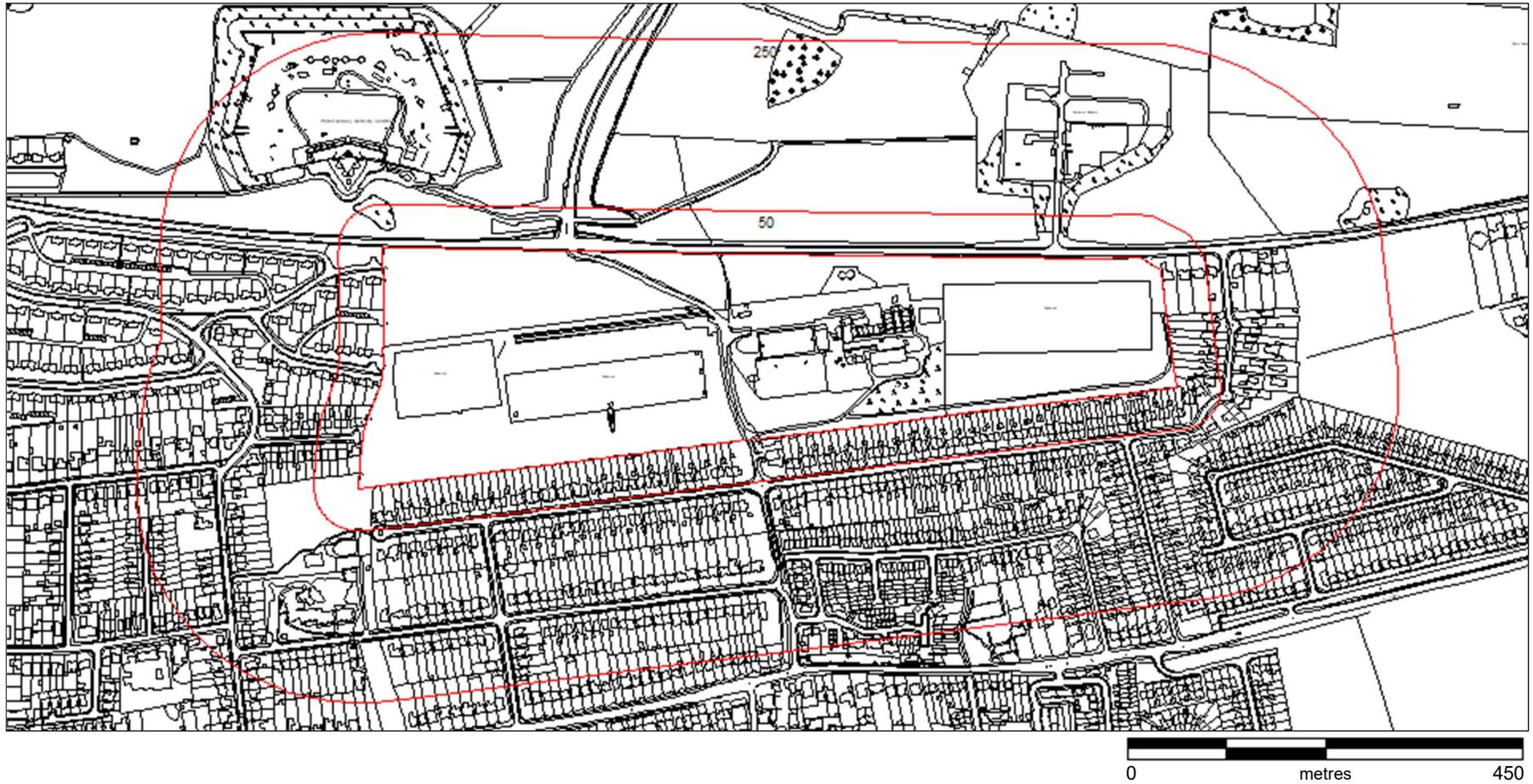
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## 1. Site Overview



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## 2. Summary Report Datasheet

Layer Name	Search Distance	Selected?	No. Selected
Derelict License Files	50 m	No	0
Current License Files	50 m	No	0
Cancelled License Files	50 m	No	0
Historical Coasts	50 m	No	0
Historical Streams	50 m	No	0
Historical Wells	50 m	No	0
Portsmouth Bomb Raids WWII	50 m	Yes	3
Historical Streets	50 m	Yes	2
Desk Study Area	50 m	No	0
Site Investigation Area	50 m	Yes	1
Remediation Area	50 m	No	0
Animal Products & Processing	50 m	No	0
Asbestos Processing	50 m	No	0
Chemical	50 m	No	0
Energy, Oil & Coal	50 m	Yes	1
Engineering Works	50 m	Yes	1
Metal Production & Finishing	50 m	No	0

<b>Layer Name</b>	<b>Search Distance</b>	<b>Selected?</b>	<b>No. Selected</b>
Ministry of Defence Land	50 m	Yes	2
Miscellaneous	50 m	Yes	3
Transport & Infrastructure	50 m	No	0
Textiles, Dyers, Ceramics & Glass	50 m	No	0
Industrial Estates	50 m	No	0
Waste Disposal & Unknown Infill	250 m	Yes	8
Waste Treatment Sites	50 m	No	0
Wood Processing	50 m	No	0

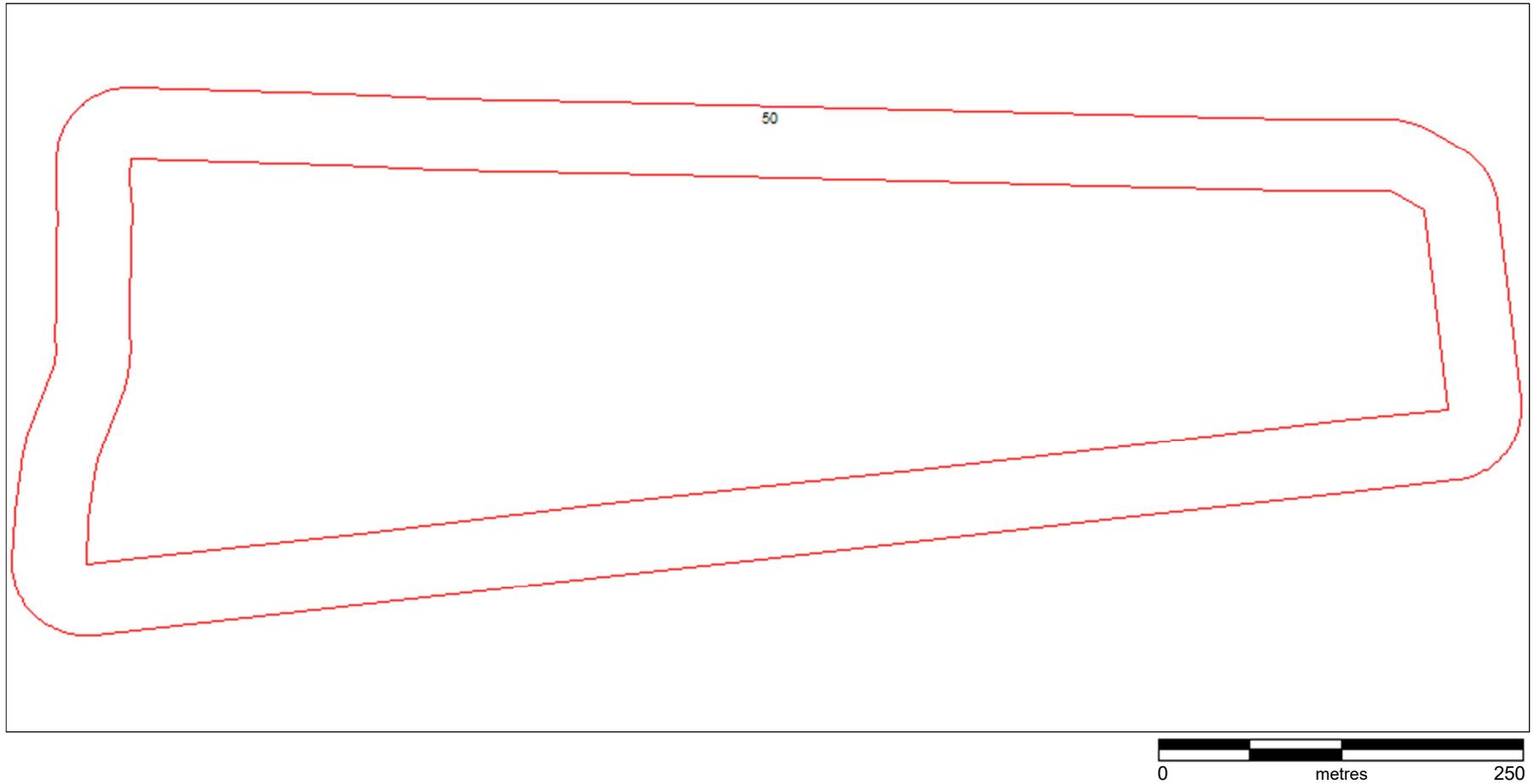
**End of summary report**

### 3. Site Location



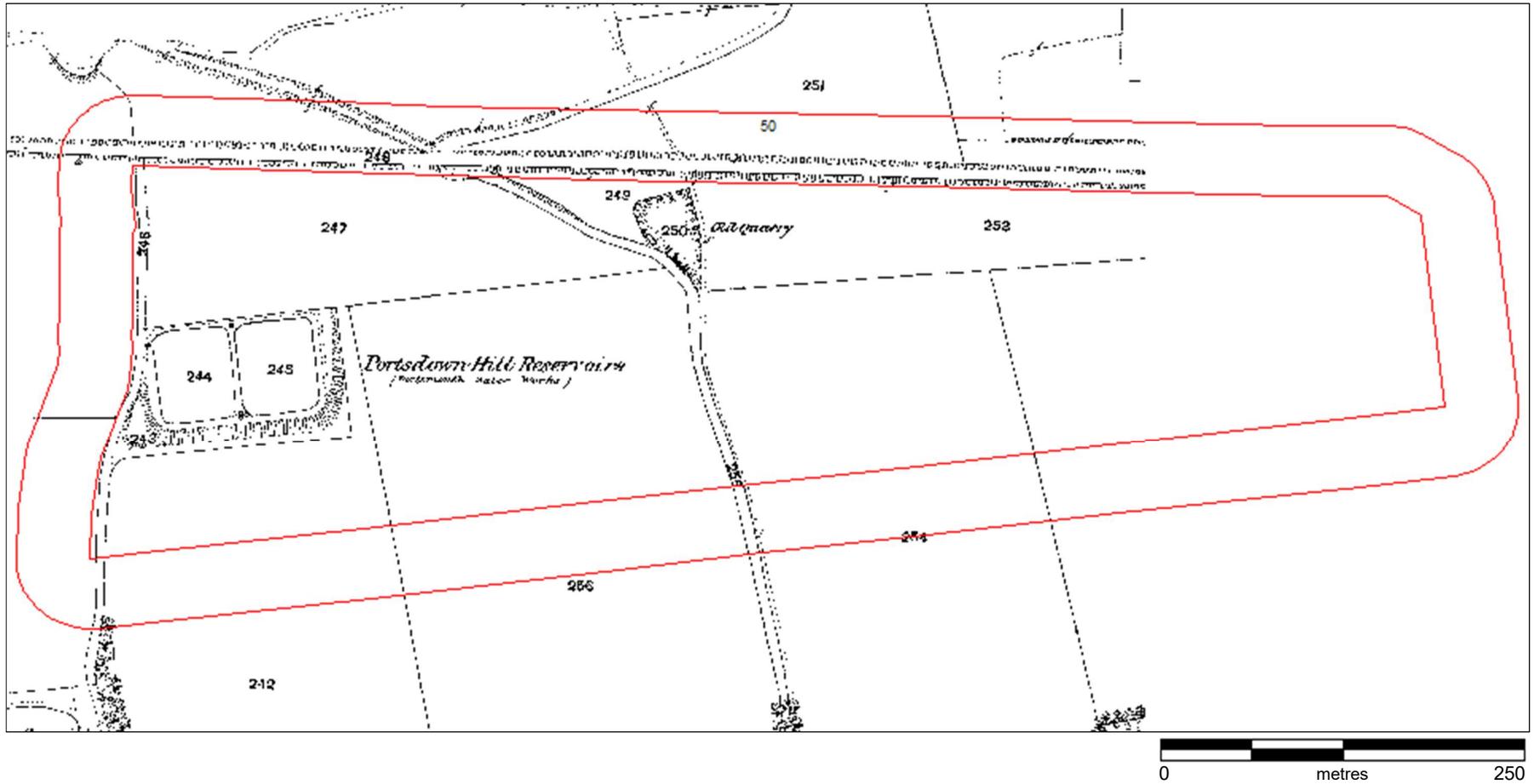
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#### 4. Historic Map c.1860



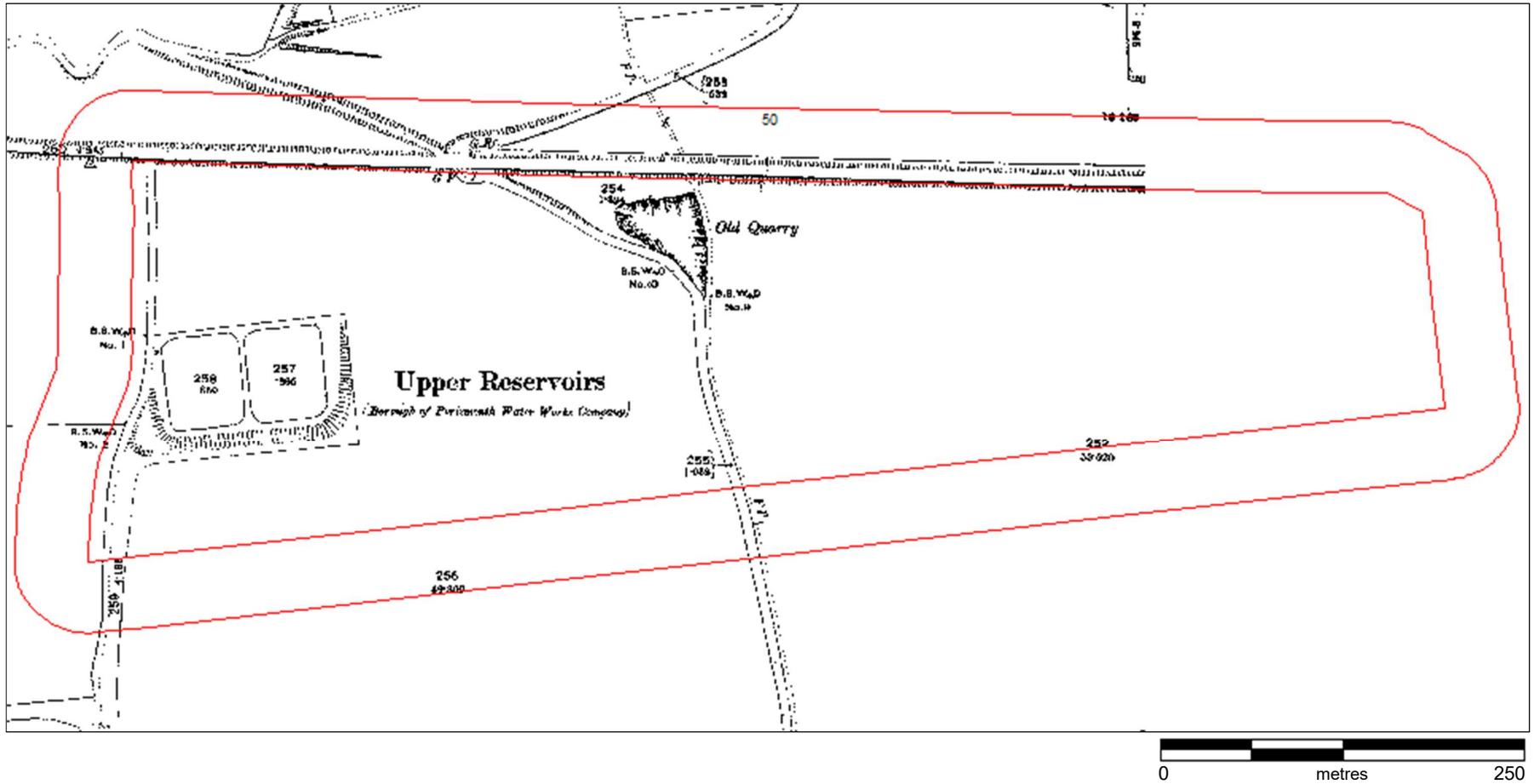
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## 5. Historic Map c.1870



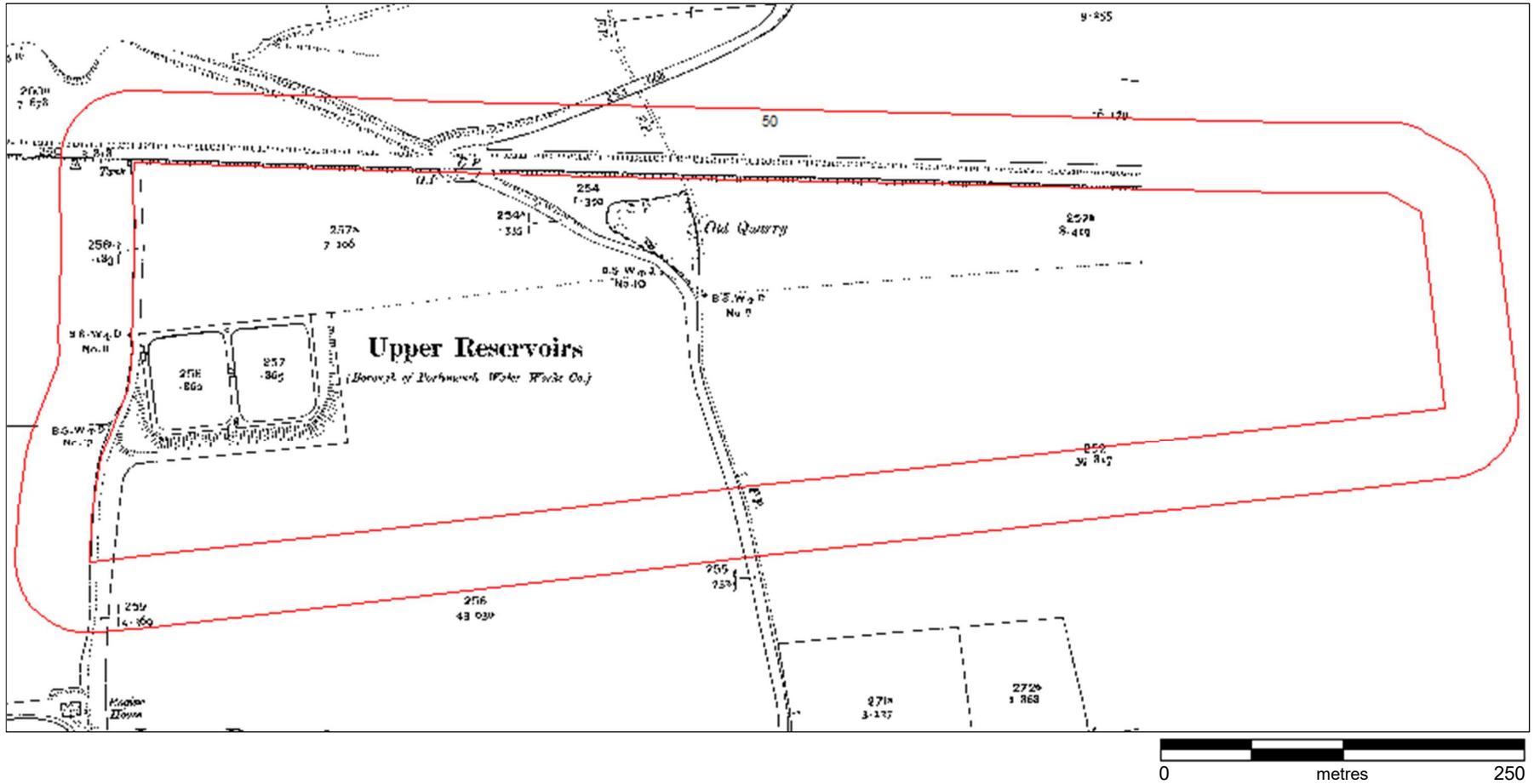
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## 6. Historic Map c.1898

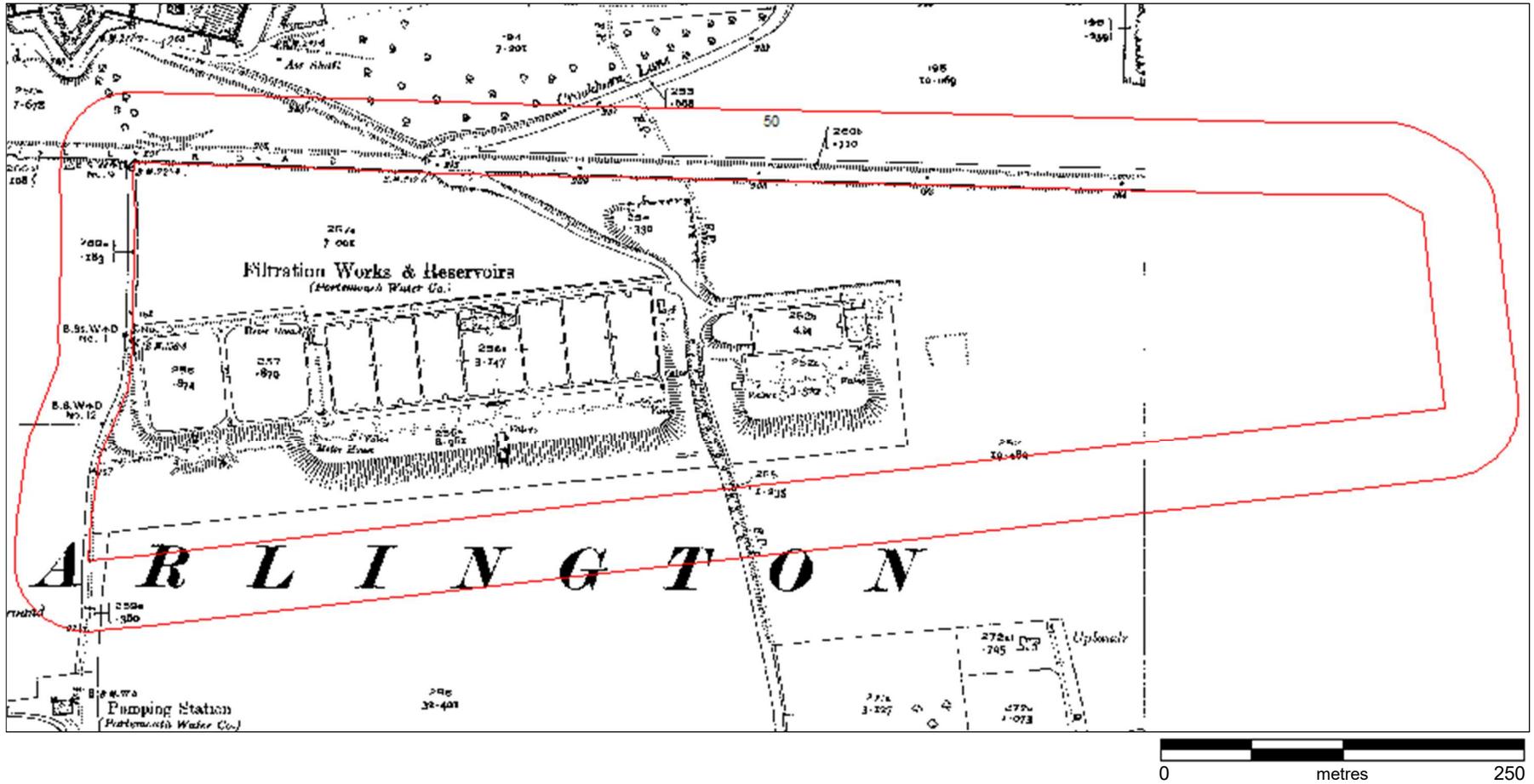


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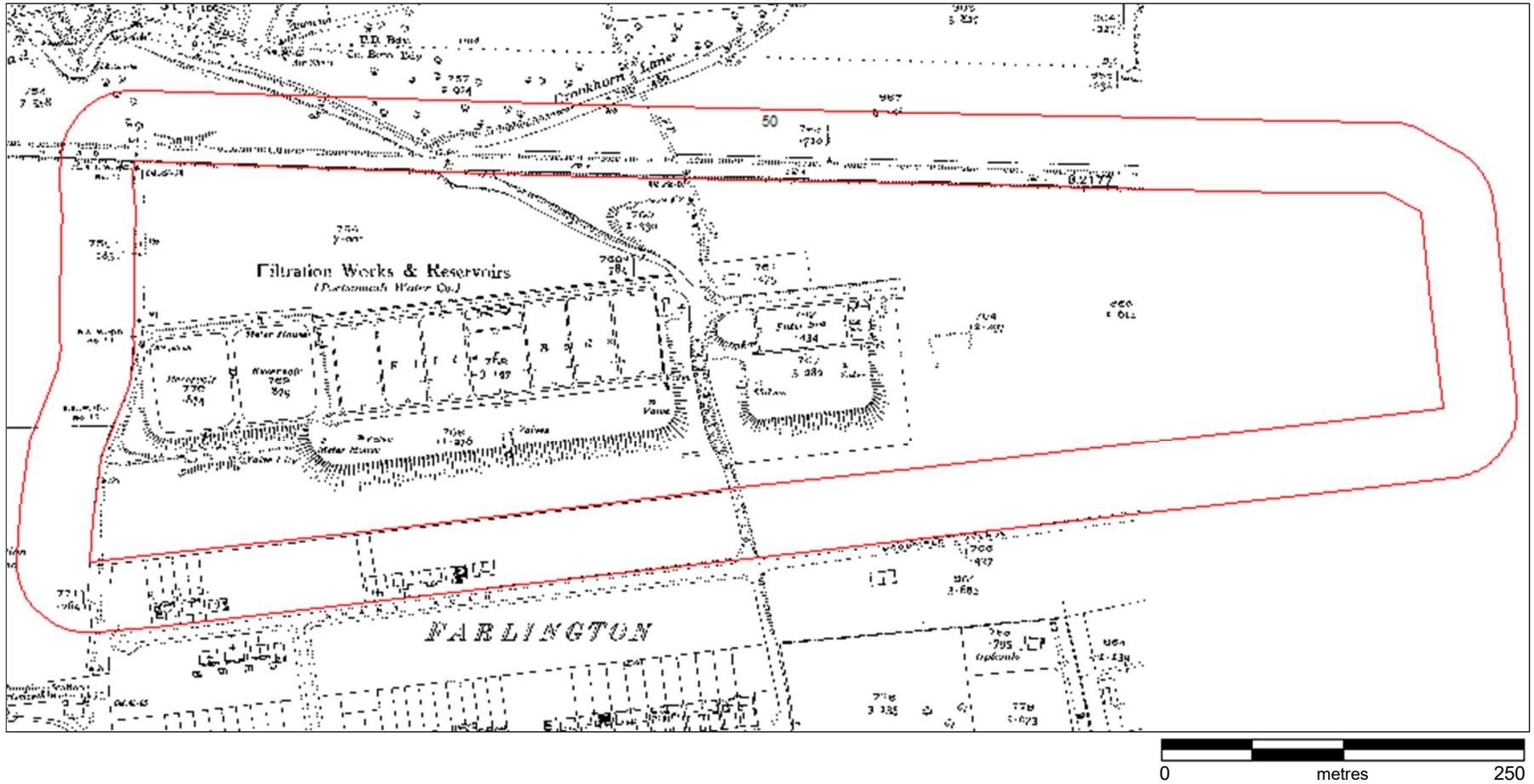
## 7. Historic Map c.1910



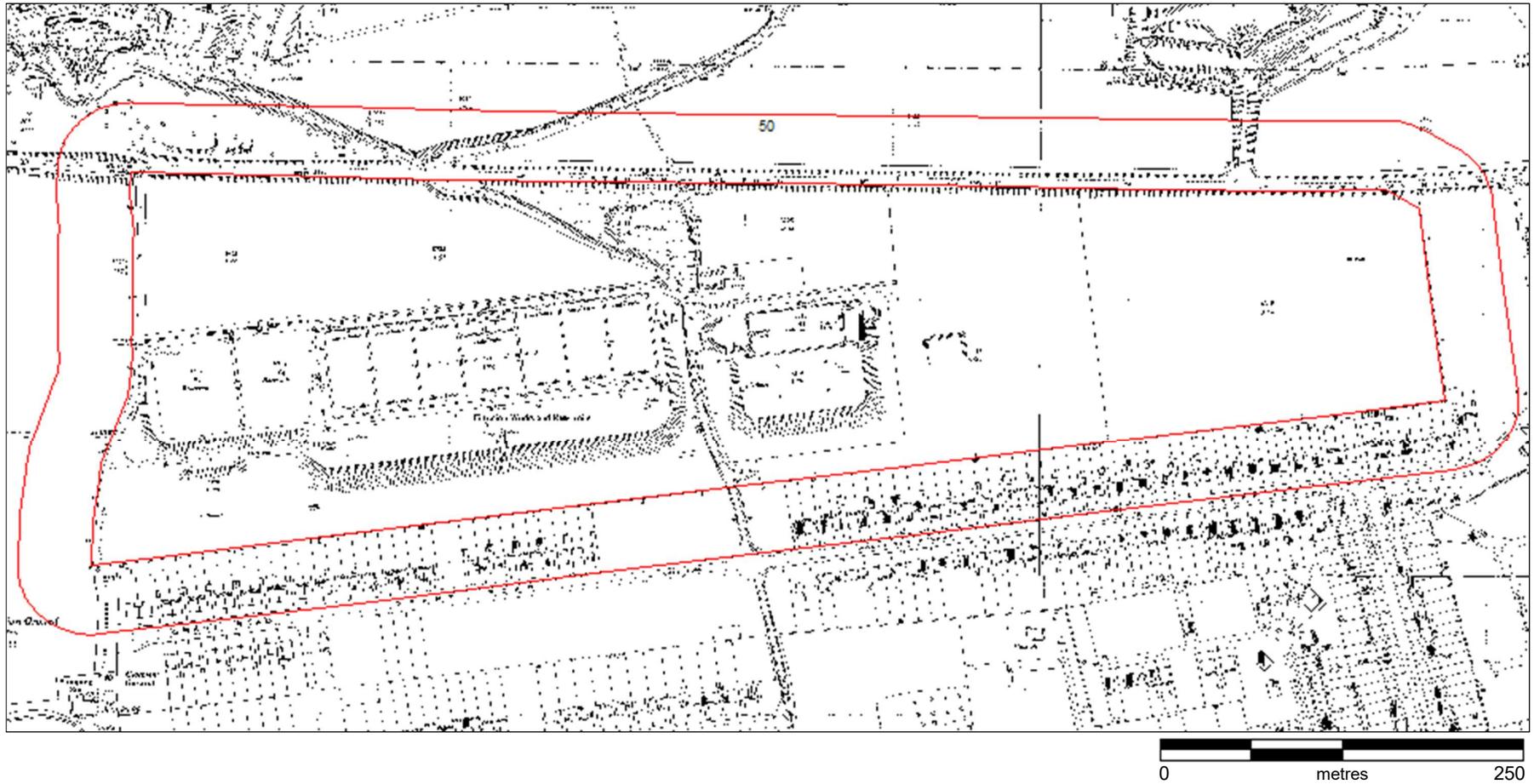
## 8. Historic Map c.1932



## 9. Historic Map c.1938

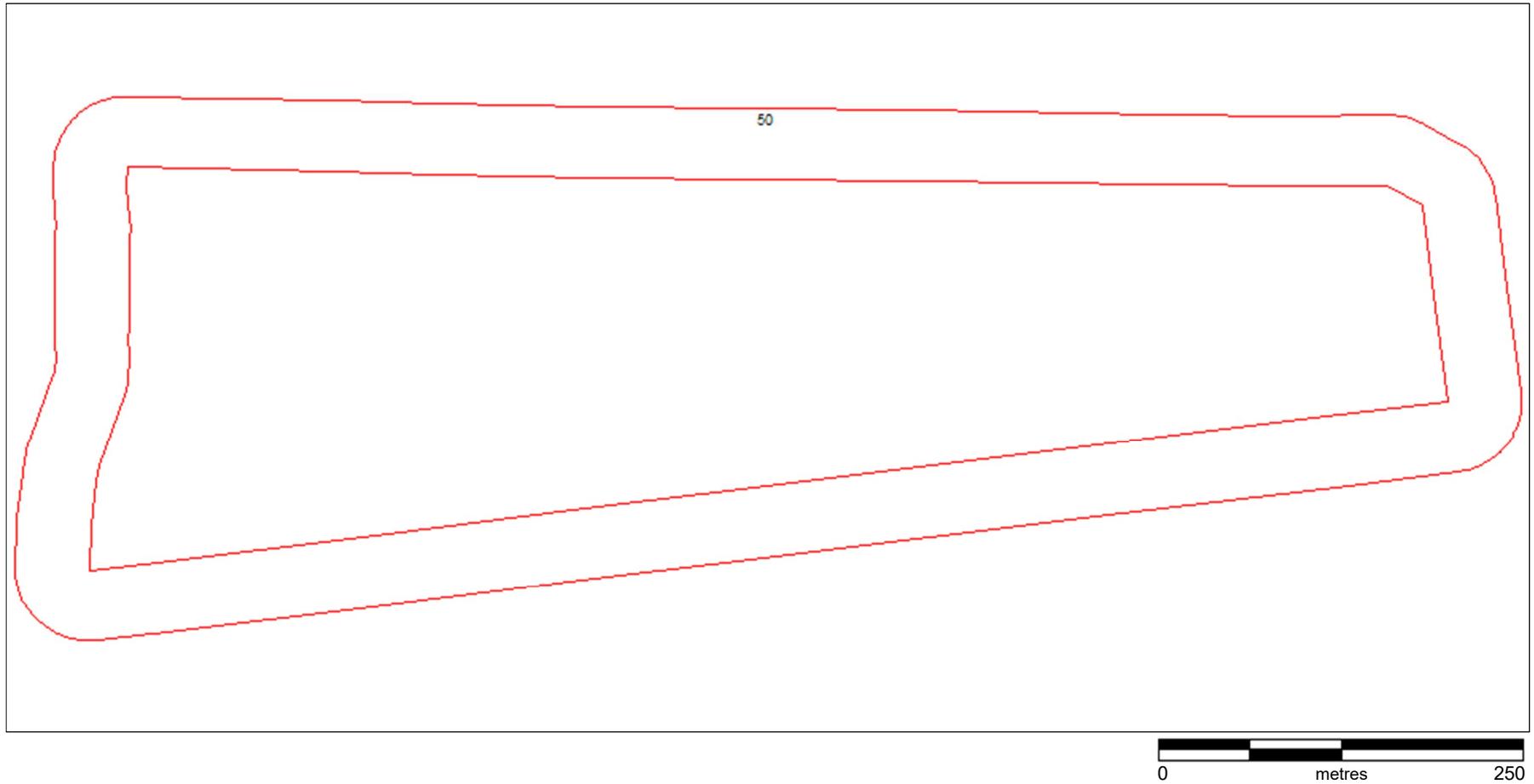


## 10. Historic Map c.1952



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## 11. Aerial Photography Post War



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## Historical Maps and Features

**Historical Maps** - The historical maps are extracts from scanned paper maps and there may be some discrepancy in the exact location of the site boundary shown on these maps. Maps may not be available for the area in all of the map epochs. All maps produced can be seen in the summary report above.

**Historical Coasts** - Recorded as shown on historical maps.

**Historical Streams** - Recorded as shown on historical maps.

**Historical Wells** - Recorded as shown on historical maps by the symbols W - well, DW - draw well, P-pump.

**Historical Streets** - Recorded as shown on historical maps and from other sources such as Kellys street directories and other historical sources.

**Portsmouth Bomb Raids WWII** - PCC Bomb Map.

Please Note: If records are not available within the search area for any of the above, the map will not be provided.

### 12. Derelict License Files

No records were selected on this layer.

### 13. Current License Files

No records were selected on this layer.

### 14. Cancelled License Files

No records were selected on this layer.

### 15. Historical Coasts

No records were selected on this layer.

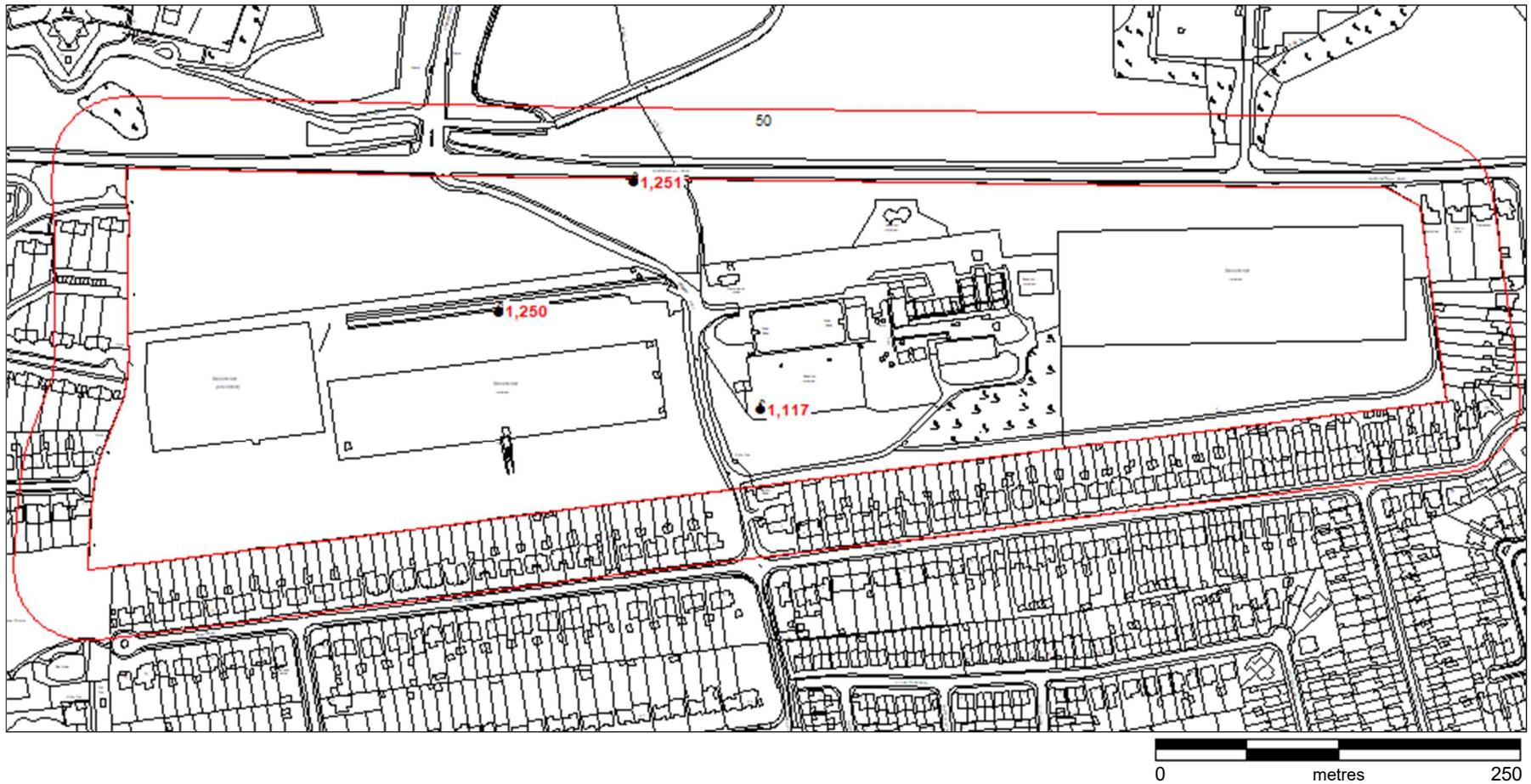
### 16. Historical Streams

No records were selected on this layer.

## **17. Historical Wells**

No records were selected on this layer.

## 18. Portsmouth Bomb Raids WWII



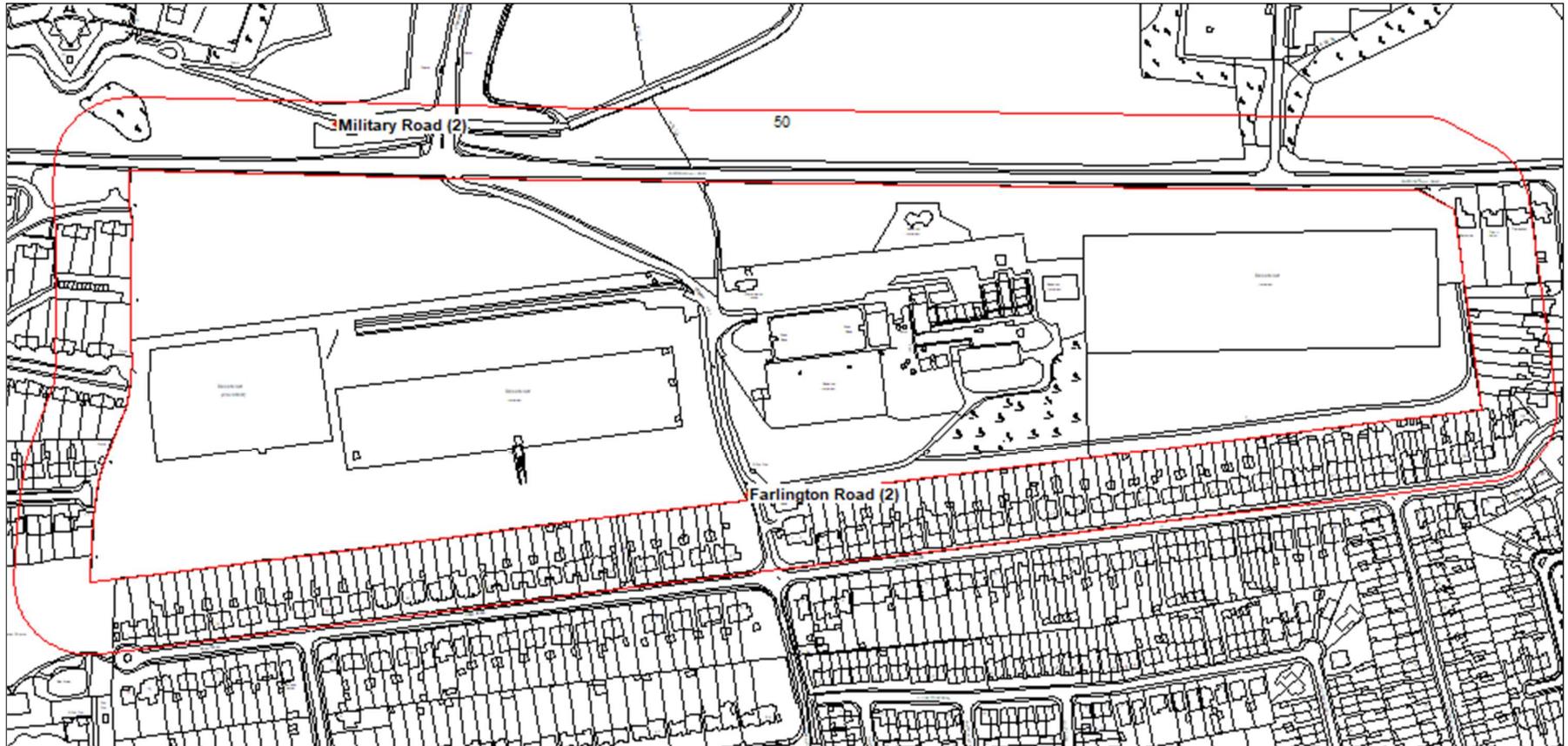
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### 18.1 GIS Data for Portsmouth Bomb Raids WWII

Date of Raid	Record No	Raid ID	Notes	Approx. distance (m)
<b>On site</b>				
08/04/1941	1117	29	No data	0
19/11/1940	1250	17	No data	0
19/11/1940	1251	17	No data	0
<b>Off site - Within 50m</b>				
None				

If date of raid is unknown, date will be displayed as 00:00:00.

## 19. Historical Streets



## 19.1 GIS Data for Historical Streets

Total of 2 record(s) identified within 50 metres  
1 record(s) identified on site.

### **Record 1 of 2**

Historic Street Name: Farlington Road (2)  
Start Date: 1932  
Start Source Doc: OS County Series Historic Map sheet 76.09  
End Date: 1939-40  
End Source Date: Kellys Directory of Portsmouth  
Comments: No Data  
District: Farlington  
Approximate distance from site: 0 m

### **Records identified within 50 metres buffer**

### **Record 2 of 2**

Historic Street Name: Military Road (2)  
Start Date: 1951  
Start Source Doc: 1:1250 OS Historic Map sheet 6806SW  
End Date: 1968  
End Source Date: 1:1250 OS Historic Map sheet 6806SW  
Comments: No Data  
District: Drayton  
Approximate distance from site: 35 m

## Site Reports

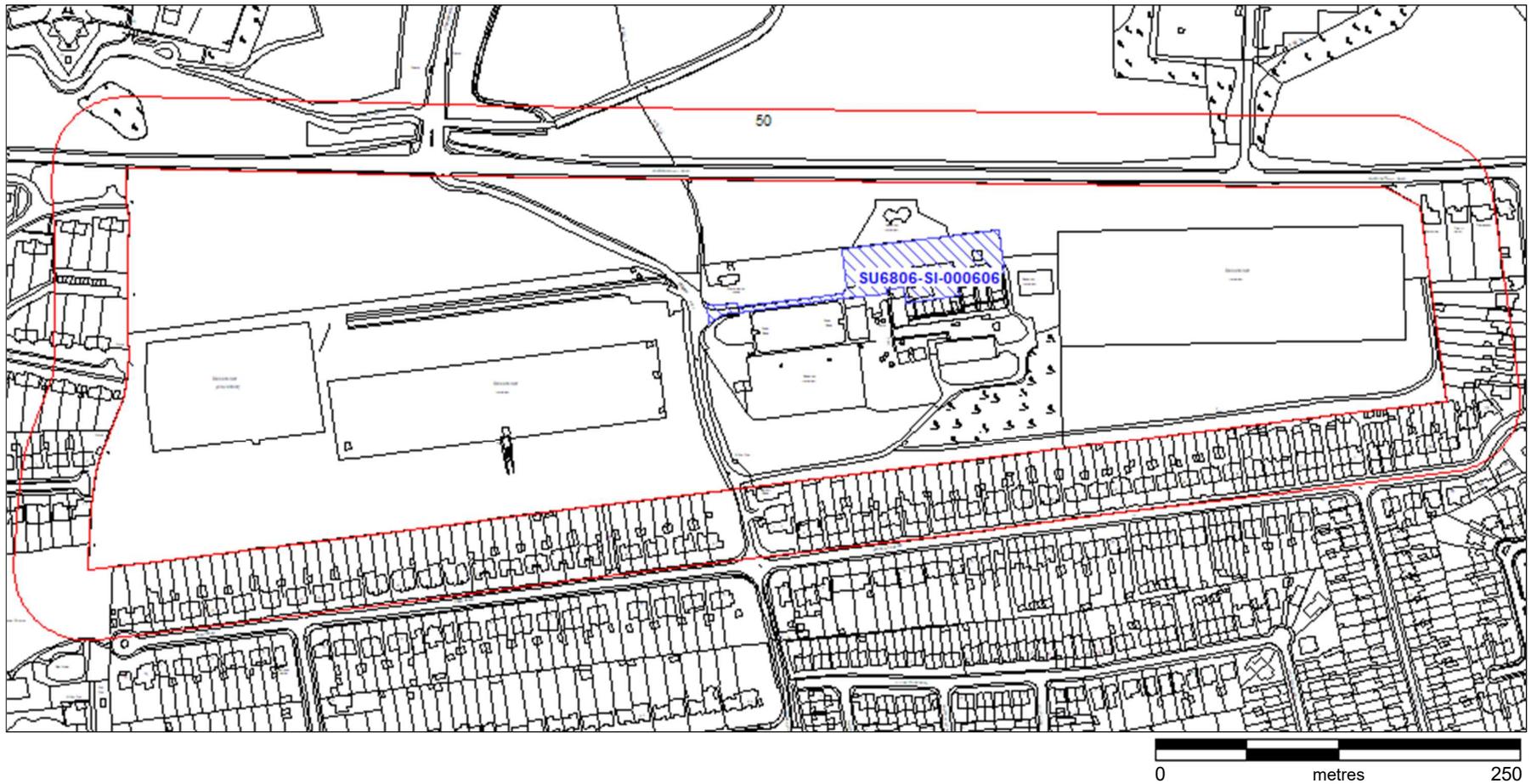
The CLT record the location of sites for which we hold reports in three layers: Desk Study, Site Investigation and Remediation Strategies/Verification. Maps for each of these layers follow with a text summary identifying the reports. Most of the reports are now in digital format and will be copied onto CD and enclosed with this report. If reports are in paper format only they can be viewed at the Civic Offices by appointment.

Note: If records are not available within the search area for any of the above, the map will not be provided.

## 20. Desk Study Area

No records were selected on this layer.

## 21. Site Investigation Area



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## 21.1 GIS Data for Site Investigation Area

Total of 1 record(s) identified within 50 metres  
1 record(s) identified on site.

### **Record 1 of 1**

Site Name: Farlington Water Works Gillman Road  
Report Title: Trial Hole Excavation Report, Decision notice, Cover Letter and Chemical Test Results  
Consultant: Portsmouth Water  
Date: June 2017  
Report Number: JB/tb/220617  
File Reference: SU6806-SI-000606  
Contaminant Test: No Data  
Gas Test: No Data  
Risk Assessment: No Data  
Approximate distance from site: 0 m  
Approximate area: 4268 sq.metres

## 22. Remediation Area

No records were selected on this layer.

## GIS Trades Data

The CLT is currently in the process of transferring historical data from its Trades and Petroleum Licence Databases onto the GIS. Features shown on historic maps (for example tanks, electricity sub-stations, warehouses, timber yards, and engineering works) have been captured onto the GIS and information from the databases has been added where available.

The historic location of sites is carefully researched. The location of properties within historic streets has been determined using the Kellys Directories' 'street' sections and relating the numbers and house names listed to the properties shown on the OS historic map for the appropriate date. Property numbers from the 1950s onwards are shown on the 1:1250 OS maps and current numbers are shown on the OS vector map on the GIS. Other historic sources such as maps in deeds held by PCC may also have been used to determine historic property numbering, however it must be noted that there could be errors in locating properties, especially for very early dates. A description of how the location was determined is included in the attributes for each boundary.

To make it easier to see the Trades boundaries on the map the data has been recorded in 13 different layers grouped according to trade type. Each boundary has a unique Site ID which is displayed on the map and links to the text reports that follow. Where there are too many overlapping boundaries or labels to be seen clearly a more detailed map has been inserted into the report. The layers which do not have any recorded data within 50m of the enquiry site are not listed.

It is important to note that this phase of data capture is not complete and that not all of the trades with the potential to have caused ground contamination are represented spatially on the GIS.

The trade categories are as follows:

**Animal Products & Processing Trades** *including food processing, non food processing, and leatherworks.*

**Asbestos Trades** *including manufacturing works, products, removal contractors.*

**Transport Trades & Infrastructure** *including garages & filling stations, haulage centres, road vehicle manufacturers, docks, railway land, airport land.*

**Chemical Trades** *including production, refining, bulk storage, retail/storage, industrial gases, rubber manufacturing, processing and retail.*

**Textile/Dyers/Ceramics/Glass/Resin Trades** *including textile and textile products manufacture, dye works, ceramic including brickworks, mineral processing, glass manufacture, fibreglass, resin, mineral fibre, rope manufacture.*

**Engineering Trades** *including electrical and electronic equipment works, heavy mechanical engineering, light mechanical engineering, ordnance works, railway engineering works, shipbuilding, repair and shipbreaking, aircraft works, miscellaneous works.*

**Metal Production & Finishing Trades** *including electroplating and other metal finishing works, iron and steel works, lead works, non-ferrous metal works, metal recycling, scrapyards, metalliferous mining.*

**Energy Trades** *including gas/coke works, oil refineries, bulk oil storage, power stations, nuclear facility, radiation substance licence, bulk coal storage, substations, bitumen/asphalt/tar distillation works, natural gas works/storage.*

**Wood Processing Trades** *including pulp and paper manufacturing works, timber products manufacturing works, treatment and storage of timber and products, charcoal works.*

**Ministry of Defence Land** *including miscellaneous uses, explosives testing/firing ranges, historic military sites. Note: HM Naval Base is captured as Dockland (MOD) in the Transport trades category.*

**Miscellaneous Trades** *including dry cleaners, laundries, photographic processing, printing and bookbinding, builders yards, ironmongers, miscellaneous storage and high street traders, hospitals, cemeteries, tanks.*

**Waste Treatment & Disposal Sites** *including, incinerators, hazardous waste treatment plant, drum and tank cleaning and recycling plant, sewage, recycling centre/ transfer stations, solvent recovery works. Note: The Landfill and Spoil Heaps sub categories of this overlay are included in the Landfill part of this report.*

### **23. Animal Products & Processing**

No records were selected on this layer.

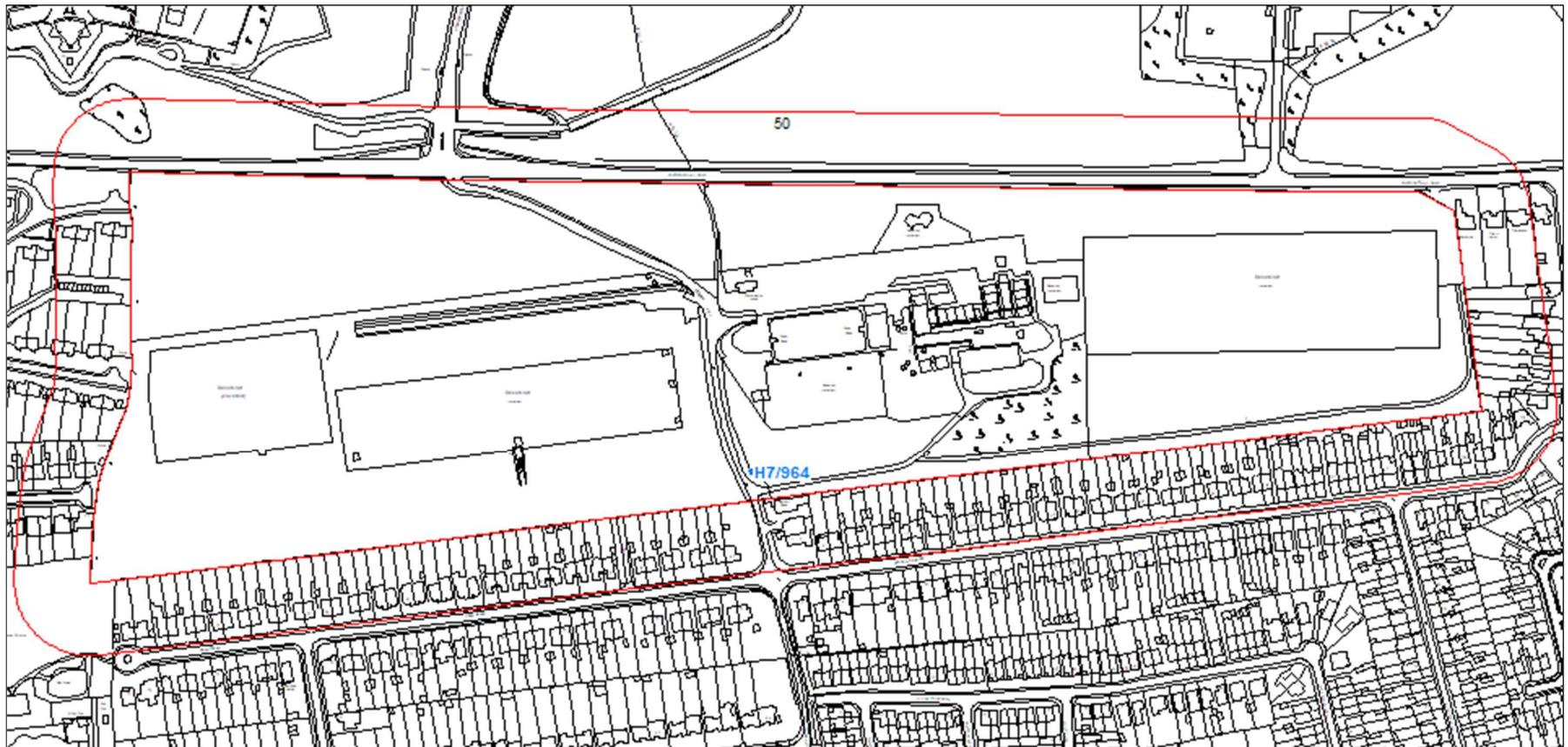
### **24. Asbestos Processing**

No records were selected on this layer.

### **25. Chemical**

No records were selected on this layer.

## 26. Energy, Oil & Coal



## 26.1 GIS Data for Energy, Oil & Coal

Total of 1 record(s) identified within 50 metres  
1 record(s) identified on site.

### **Record 1 of 1**

Site ID: H7/964

Site Name: Southern Electricity Board

Site Address: Gillman Road, Farlington

Approximate distance from site: 0 m

Approximate area: 8 sq.metres

Date and Source Validation: From Date - 1967

From Source - OS mapsheet SU6806 SW

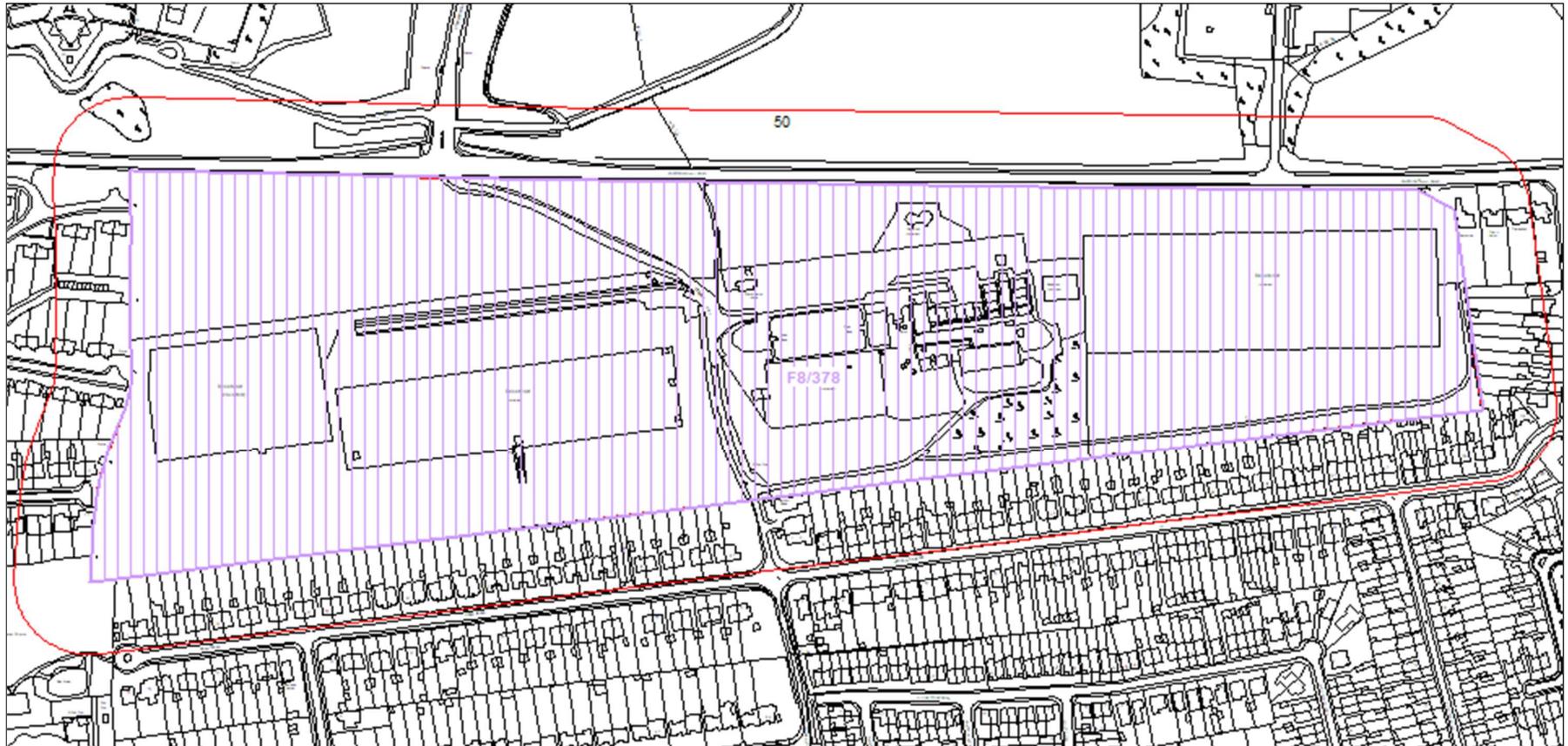
To Date - 2001

To Source - OS vector map

Location Validation: Boundary drawn on 2001 OS vector map

Use Summary: Electricity substation

## 27. Engineering Works



## 27.1 GIS Data for Engineering Works

Total of 1 record(s) identified within 50 metres  
1 record(s) identified on site.

### **Record 1 of 1**

Site ID: F8/378

Site Name: Portsmouth Water Company

Site Location: Farlington Road (hist) / Gillman , Road, Farlington

Approximate distance from site: 0 m

Approximate area: 191488 sq.metres

Licence Information: Two petrol licence nos for Portsmouth Water Co at Farlington but addresses do not make it clear which site each refers to. OS historic maps 1910 to 1952 show the Engine House / Pumping Station at the Evelegh Rd site. All licences are listed below and either may have been at this site.

Petroleum licence database:

1932,1933 Portsmouth Water Co, 600 galls, licence no 460 (Pumping Station).

1946 Portsmouth Water Co, 1000 galls, licence no 460 (Farlington Reservoirs).

1947,1953 Portsmouth Water Co, 600 galls, licence no 460 (Pumping Station).

1939 Portsmouth Water Co, 500 galls, licence no 633 (Pumping Station).

1946 Portsmouth Water Co, 500 galls, licence no 633 (Farlington Reservoirs).

1947 Portsmouth Water Co, 500 galls, licence no 633 (Pumping Station).

Date and Source Validation: From Date - 1869

From Source - OS historical map

To Date - 2000

To Source - OS 1:1250 map

Location Validation: Reservoirs shown on all OS maps from 1869. Boundary drawn on 2000 OS map.

Trade Details: 1938,1946 Portsmouth Water Co, water works.

Comments: Farlington Road became Gillman Road between 1938 & 1951.

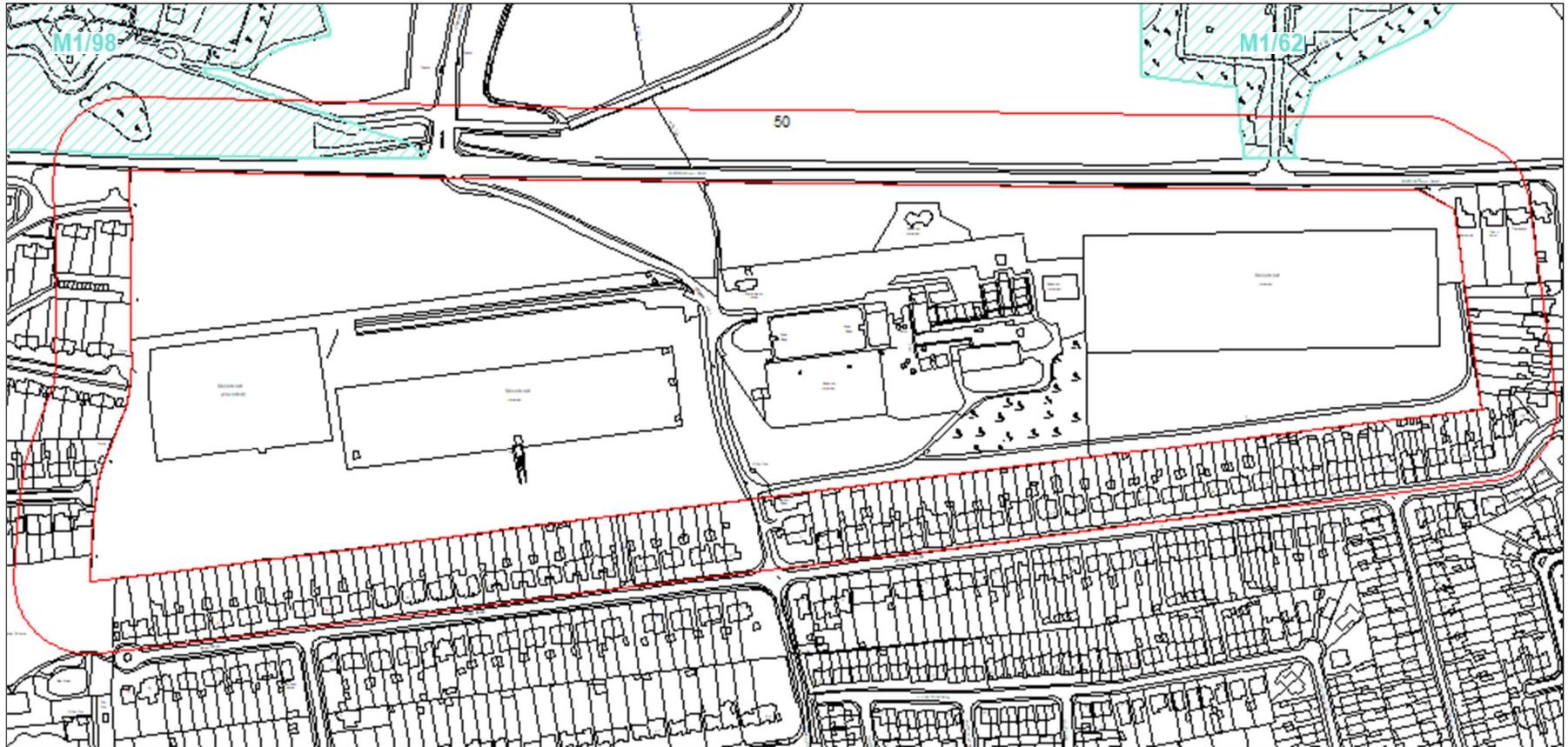
The Portsmouth Papers No 12, Portsmouths Water Supply 1800-1860 gives information on construction of the various waterworks. The Farlington Works were built on the marshes between 1808 & 1811 - 'While the brick-layers built the engine-house on the Marshes, a gang of some eighty labourers excavated three reservoirs near by. The water was to be pumped from the two collecting basins on the Marshes into the service reservoir on Portsdown Hill, whence it would flow to the town by gravity'. A diagram shows this first reservoir at the Evelegh Rd site (now Solent Infants School). The 1869 OS map shows two small reservoirs further up the hill at the W end of this site but the booklet gives no information on the date of their construction.

Use Summary: Water works

## 28. Metal Production & Finishing

No records were selected on this layer.

## 29. Ministry of Defence Land



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## 29.1 GIS Data for Ministry of Defence Land

Total of 2 record(s) identified within 50 metres  
0 record(s) identified on site.

### **Record 1 of 2**

Site ID: M1/62

Site Name: Farlington Redoubt

Site Address: Portsdown Hill Road, Portsmouth

Approximate distance from site: 21 m

Approximate area: 38635 sq.metres

Date and Source Validation: From Date - 1860

From Source - Local Studies Research Guide

To Date - 1952

To Source - 1952 OS map

Location Validation: Position established from 2001 OS map and Local Studies Resource Guide. Boundary drawn on 2001 OS map. The dates given above need further research. (See notes.)

Comments: The following entry is from the Local Studies Resource Guide to The Defence of Portsmouth Harbour:

FARLINGTON REDOUBT: A mortar and gun platform, linked with Fort Purbrook by a covered way. Now used as a depot by the Southern Gas Board.

Use Summary: Mortar and gun platform

### **Record 2 of 2**

Site ID: M1/98

Site Name: Land at Fort Purbrook, Portsdown Hill

Site Address: Fort Purbrook, Peter Ashley Road

Approximate distance from site: 11 m

Approximate area: 86524 sq.metres

Date and Source Validation: From Date - 1860

From Source - The Portsmouth Papers No 3 (see Comments)

To Date - 1972

To Source - PCC deed

Location Validation: Boundary transferred from CENG GIS.

Drawn as shown on PCC deed plan.

Comments: The Portsmouth Papers No 3, 'Palmerston's Folly', The Portsdown and Spithead Forts states that work on the forts had begun before the end of 1860. Mr Thomas Thistlethwaite of Southwick Park received ?95,200 compensation for upwards of 900 acres taken over, another 1000 acres over which clearance rights were obtained in order to improve the field of fire, and the general damage to the amenities of his estate by the loss of its 'great commanding feature'. By February 1862 an army of labourers was at work felling the hundreds of trees that then crowned the hill and cutting deep excavations in the chalk. All five forts on the hill were completed by 1868.

Palmerston Forts Society, FortLog, Portsmouth 10, Fort Purbrook states that - During World War Two the fort seems to have been derelict until the 65th Chemical Warfare Company moved in in June 1940. Used for army barracks / naval radar training to 1968.

Transferred to PCC ownership on 10/03/1972 from Secretary of State for Defence. The following entry is from the Local Studies Resource Guide to The Defence of Portsmouth Harbour: FORT PURBROOK: Owned by Portsmouth City Council and partly restored. Currently used as a store for reclaimed materials. The two horse pounds operated by Havant and Portsmouth Councils are leased to a riding school. Work is in progress to create a Youth Centre. Five barrack rooms are being restored and normal services put in for this purpose. The parade ground is used as a campsite and there are plans to develop this.  
Use Summary: Fort, army barracks, naval radar training, youth activities centre.

### 30. Miscellaneous



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### 30.1 GIS Data for Miscellaneous

Total of 3 record(s) identified within 50 metres  
2 record(s) identified on site.

#### **Record 1 of 3**

ID: N5/1442

Site name: Filtration Works and Reservoirs

Location: Filtration Works and Reservoirs, Portsdown Hill Road

Approximate distance from site: 0 m

Approximate area: 149 sq.metres

Date and Source Validation: From Date - 1968

From Source - 1:1250 OS historic map sheet SU6806SW

To Date - 1968

To Source - 1:1250 OS historic map sheet SU6806SW

Location Validation: Tanks named on 1968 1:1250 OS map. Boundary drawn on 2004 OS vector map.

Use Summary: Tanks

#### **Record 2 of 3**

ID: N5/1445

Site name: Filtration Works and Reservoirs

Location: Filtration Works and Reservoirs, Portsdown Hill Road

Approximate distance from site: 0 m

Approximate area: 286 sq.metres

Date and Source Validation: From Date - 1968

From Source - 1:1250 OS historic map sheet SU6806SW

To Date - 1968

To Source - 1:1250 OS historic map sheet SU6806SW

Location Validation: Tanks named on 1968 1:1250 OS map. Boundary drawn on 2004 OS map. Site shown on 2004 OS map but not named

Use Summary: Tanks

#### **Record 3 of 3**

ID: N5/1438

Site name: Military Road

Location: Military Road, (Corner of lane leading to reservoirs)

Approximate distance from site: 1 m

Approximate area: 10 sq.metres

Date and Source Validation: From Date - 1910

From Source - OS county series historic map sheet 76.09

To Date - 1910

To Source - OS county series historic map sheet 76.09

Location Validation: Tank named and boundary drawn on 1910 OS historic map.

Use Summary: Tank

### **31. Transport & Infrastructure**

No records were selected on this layer.

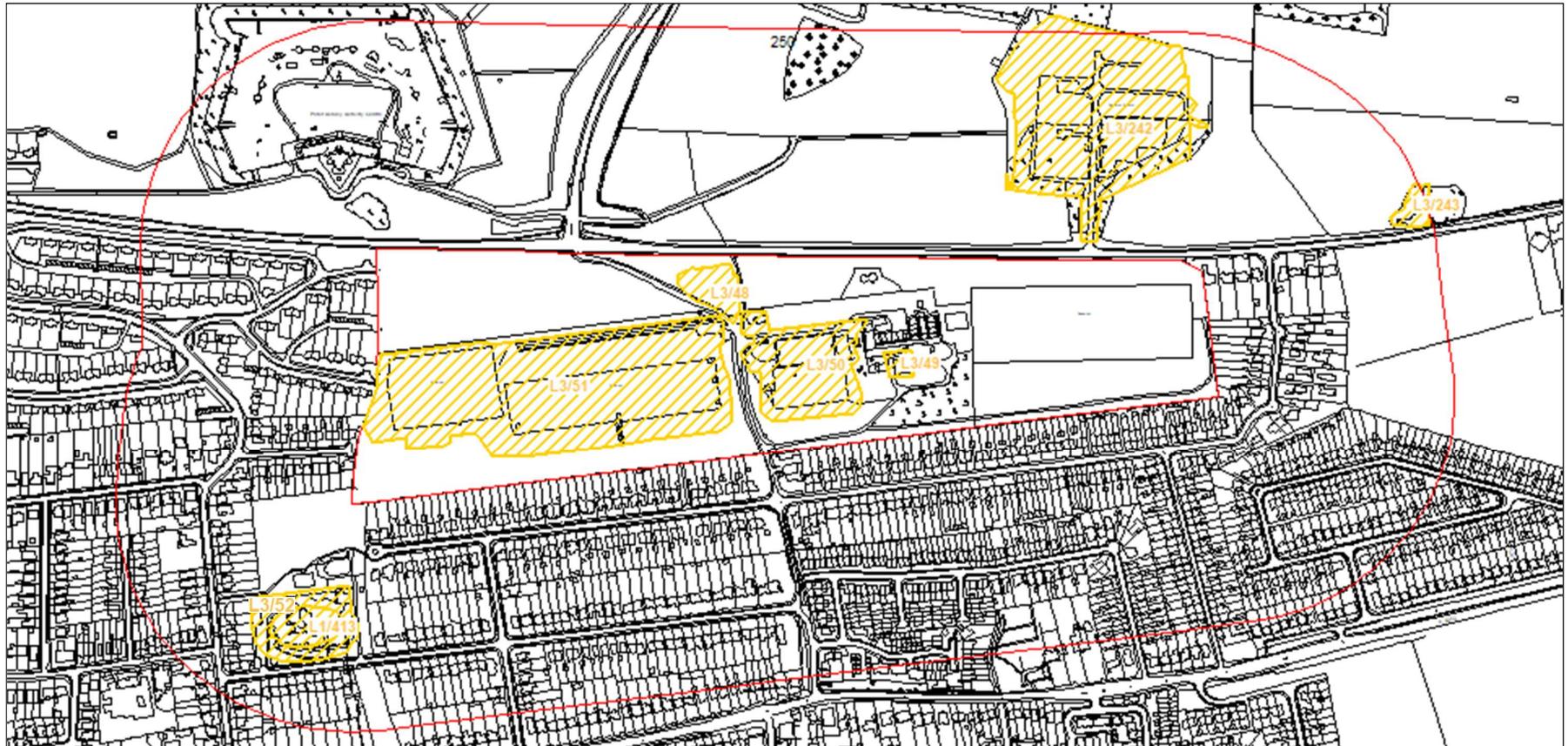
### **32. Textiles, Dyers, Ceramics & Glass**

No records were selected on this layer.

### **33. Industrial Estates**

No records were selected on this layer.

### 34. Waste Disposal & Unknown Infill



### 34.1 GIS Data for Waste Disposal & Unknown Infill

Total of 8 record(s) identified within 250 metres  
4 record(s) identified on site.

#### **Record 1 of 8**

Site ID: L3/48  
Site Name: Portsdown Hill  
Approximate distance from site: 0 m  
Approximate area: 2626 sq.metres  
Date and Source Validation: From Date - 1869  
From Source - OS County Map Series  
To Date - 1952  
To Source - Os County Map Series  
Location Validation: OS line partly followed  
Use Summary: Chalk Pit

#### **Record 2 of 8**

Site ID: L3/49  
Site Name: Portsdown Hill  
Approximate distance from site: 0 m  
Approximate area: 780 sq.metres  
Date and Source Validation: From Date - 1932  
From Source - OS County Map Series  
To Date - 1952  
To Source - Os County Map Series  
Location Validation: Partly Traced OS data  
Use Summary: Miscellaneous Hole

#### **Record 3 of 8**

Site ID: L3/50  
Site Name: Portsdown Hill  
Approximate distance from site: 0 m  
Approximate area: 11669 sq.metres  
Date and Source Validation: From Date - 1932  
From Source - OS County Map Series  
To Date - 1952  
To Source - OS County Map Series  
Location Validation: OS markings  
Use Summary: Filter Bed

**Record 4 of 8**

Site ID: L3/51  
Site Name: Portsdown Hill  
Approximate distance from site: 0 m  
Approximate area: 44605 sq.metres  
Date and Source Validation: From Date - 1869  
From Source - OS County Map Series  
To Date - 1952  
To Source - OS County Map Series  
Location Validation: Mostly traced OS line  
Use Summary: Reservoirs

**Record 5 of 8**

Site ID: L1/413  
Site Name: Portsmouth Water Company Pumping Station  
Site Address: Eveleigh Road, Farlington  
Approximate distance from site: 118 m  
Approximate area: 2685 sq.metres  
Licence Information: Licence issued :  
1984 Portsmouth Water Company, Waste Disposal Licence No 12/4, Landfill site.  
Date and Source Validation: From Date - 1984  
From Source - Waste Disposal Licence 12/4  
To Date - 1984  
To Source - Waste Disposal Licence 12/4  
Location Validation: Area licensed shown on plan with licence. Boundary drawn on 1938 OS map.  
Trade Details: 1984 Portsmouth Water Company, landfill site.  
Use Summary: Landfill Site

**Record 6 of 8**

Site ID: L3/52  
Site Name: Drayton Reservoir  
Approximate distance from site: 89 m  
Approximate area: 7762 sq.metres  
Date and Source Validation: From Date - 1869  
From Source - OS County Map Series  
To Date - 1952  
To Source - OS County Map Series  
Location Validation: Partly Traced OS line  
Use Summary: Reservoir

**Record 7 of 8**

Site ID: L3/242  
Site Name: Farlington Redoubt  
Approximate distance from site: 21 m  
Approximate area: 32805 sq.metres  
Date and Source Validation: From Date - 1952  
From Source - OS County Map Series  
To Date - 1952  
To Source - OS County Map Series  
Location Validation: Traced OS line  
Use Summary: Pit

**Record 8 of 8**

Site ID: L3/243  
Site Name: Portsdown Hill Road  
Approximate distance from site: 210 m  
Approximate area: 1346 sq.metres  
Date and Source Validation: From Date - 1952  
From Source - OS County Map Series  
To Date - 1952  
To Source - OS County Map Series  
Location Validation: Traced OS line  
Use Summary: Miscellaneous Hole

**35. Waste Treatment Sites**

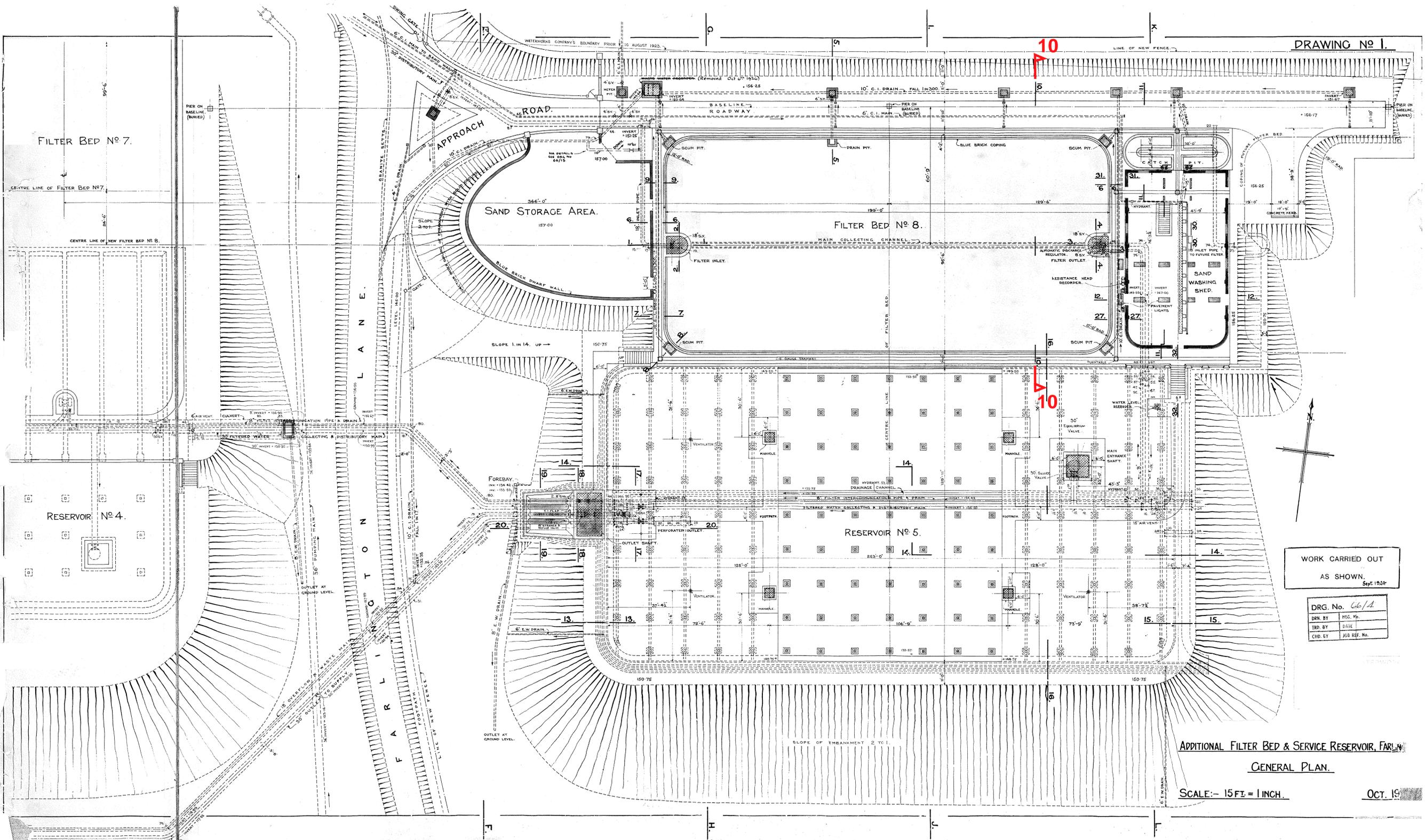
No records were selected on this layer.

**36. Wood Processing**

No records were selected on this layer.

**End of detailed report**

# Appendix D. Historical plans of the Slow Sand Filter basin



WORK CARRIED OUT AS SHOWN. Sept. 1924

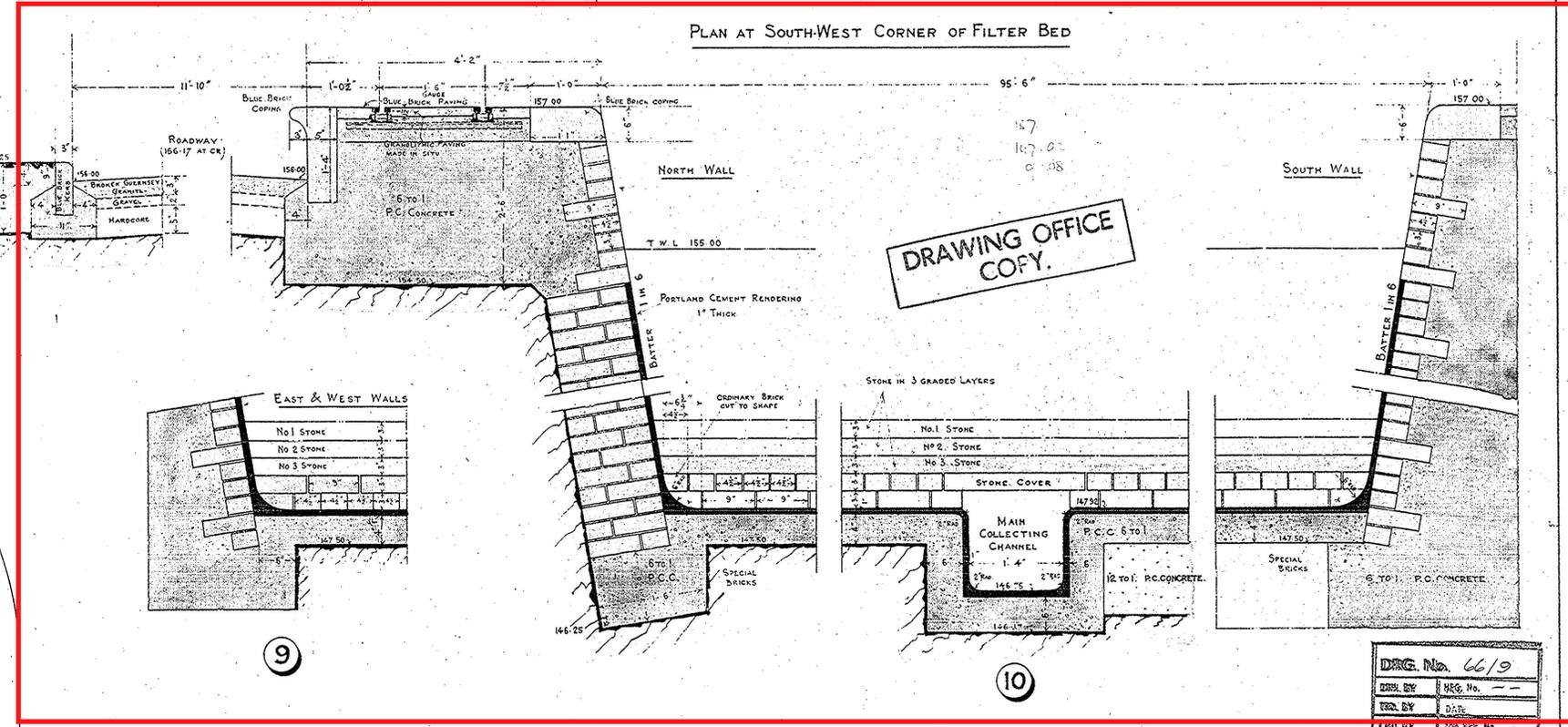
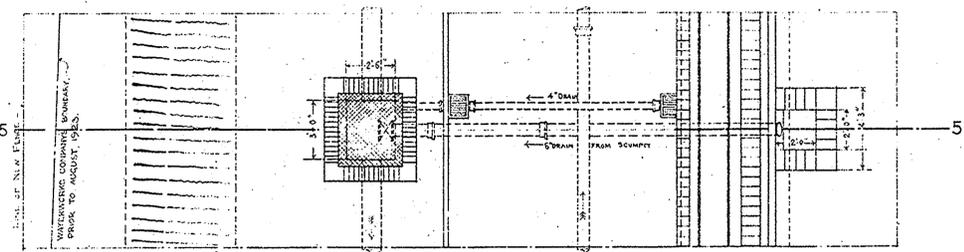
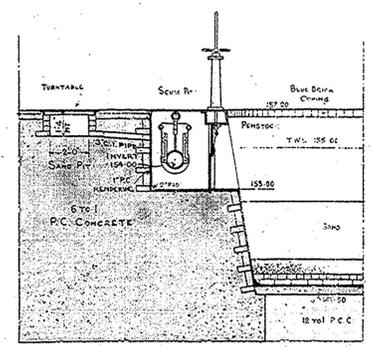
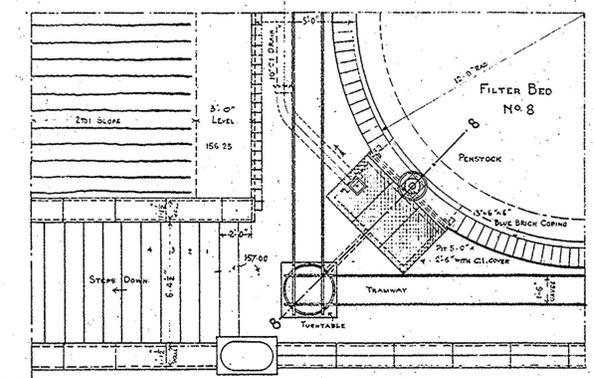
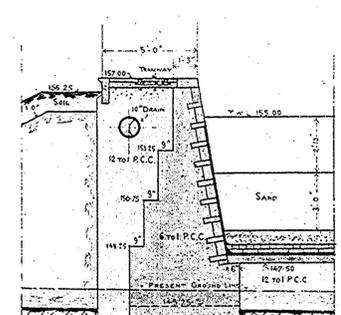
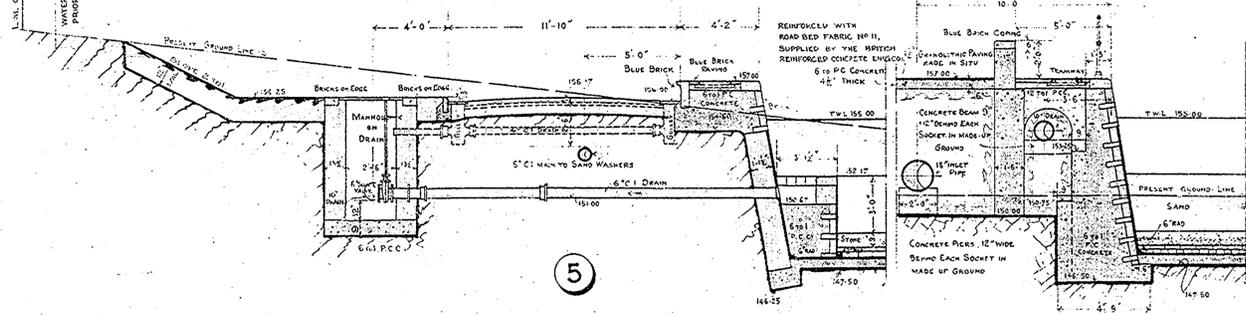
DRG. No.	66/A
DRN. BY	M.S.C. M.P.
TRD. BY	DATE
CHD. BY	JUB. REF. No.

ADDITIONAL FILTER BED & SERVICE RESERVOIR, FARLINGTON GENERAL PLAN.

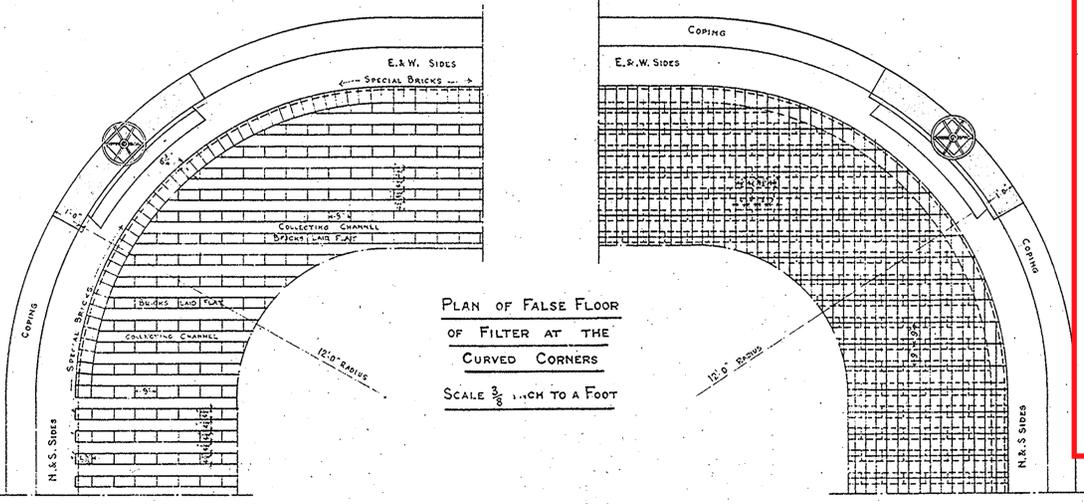
SCALE: - 15 FT. = 1 INCH.

OCT. 1924

WORK CARRIED OUT AS SHOWN  
 FROM AUGUST 1924



DRAWING OFFICE COPY.



9

10

WORK CARRIED OUT AS SHOWN. Sep 1924

THE BOROUGH OF PORTSMOUTH WATERWORKS COMPANY.  
 ADDITIONS TO SAND FILTRATION WORKS & SERVICE RESERVOIRS ON PORTSDOWN HILL.

DETAILS OF FILTER & ROAD ON NORTH SIDE OF WORKS.  
 SCALES 1/4 INCH TO 1 FOOT, 3/8 INCH TO 1 FOOT, 1 INCH TO 1 FOOT.

PORTSMOUTH WATERWORKS COMPANY.  
 No. 24177/F.H.G.  
 D.34. 111 D.31.

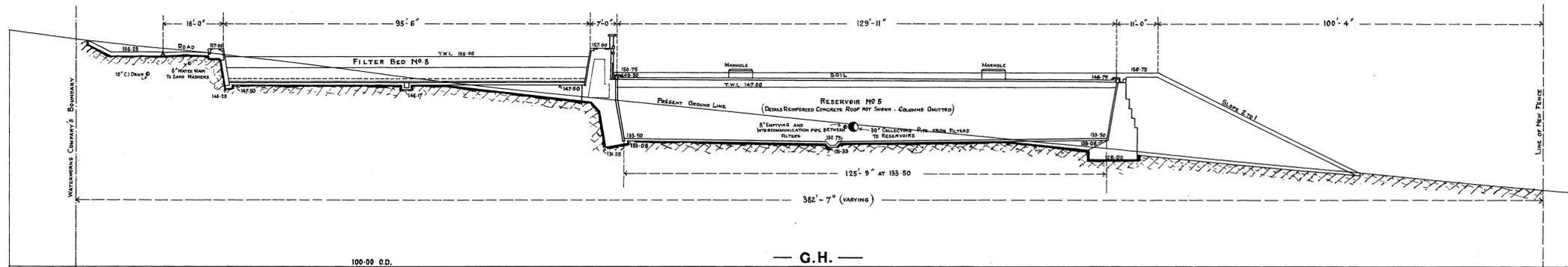
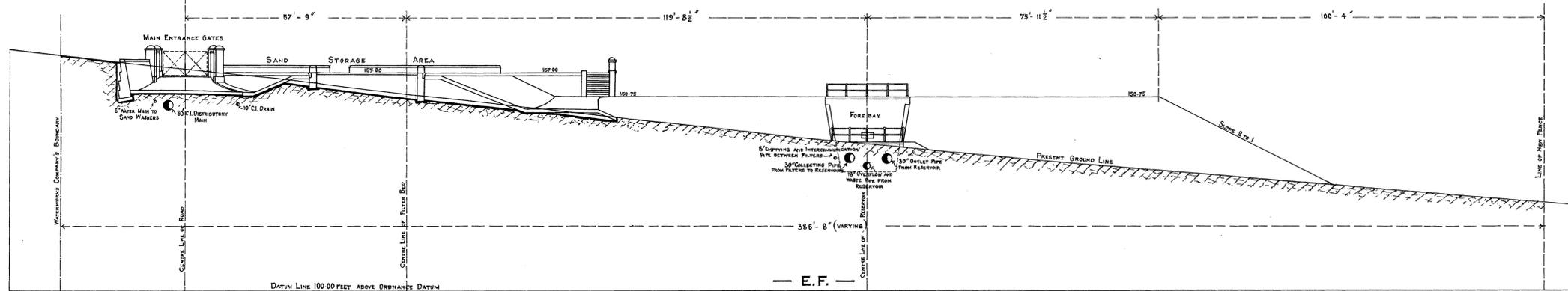
SEPT. 1924.

THE BOROUGH OF PORTSMOUTH WATERWORKS COMPANY.

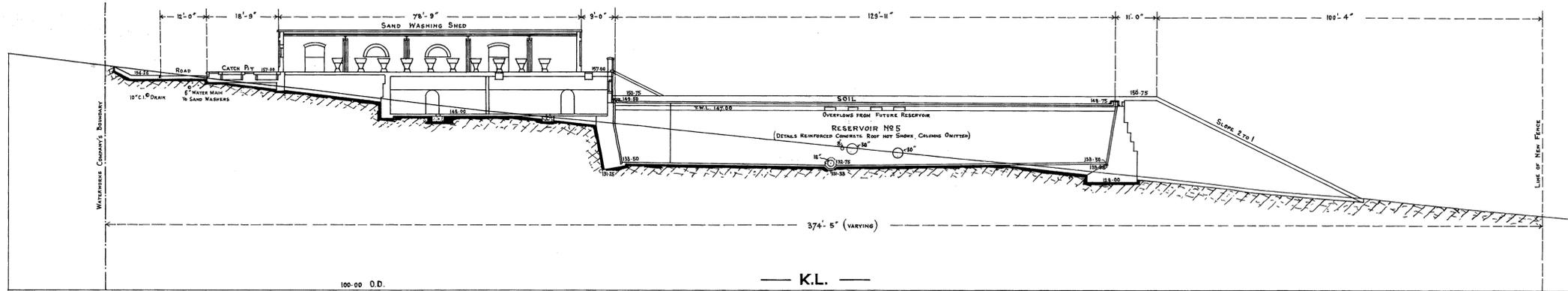
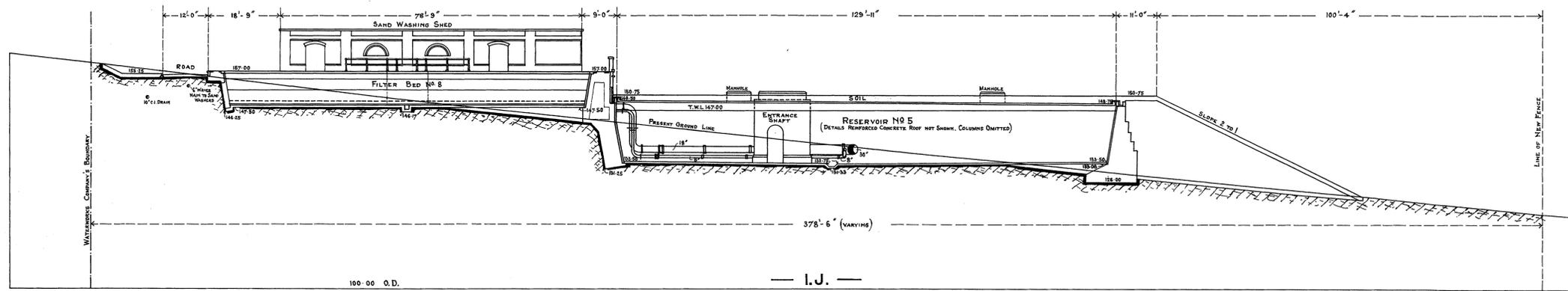
INTENDED ADDITIONS TO SAND FILTRATION WORKS & SERVICE RESERVOIRS ON PORTSDOWN HILL.

GENERAL SECTIONS OF FILTER BED AND RESERVOIR — NATURAL SCALE 1:15 FEET TO 1 INCH —

CONTRACT DRAWING No 4.



NOTE: FOR CORRECT THICKNESSES OF SOILING, VIDE "QUANTITIES", BILL No 8.



100

150

570

550

100

150

500

280

500

300

Water Dept. Boundaries

Extension of fence line south of existing works

27

Section 575 feet east of and parallel to Centre line of Filter Bed No. 2

Section 625 feet do do

Section 675 feet do do

Section 725 feet do do

DRAWING OFFICE COPY.

Reservoir  
25' x 30' x 4' = 3000 cu ft  
25' x 30' x 4' = 3000 cu ft

PROPOSED No. 6 RESERVOIR

DRG. No. 66/3	
DRW. BY	NEG. No. --
TRD. BY	DATE
CHD. BY	JOB REF. No.

PORTSMOUTH WATERWORKS COMPANY.	
No. 24171/F	
Date --	
Filed in D-34 D-3A	

Sections across Site of Proposed Filter Beds and Reservoirs on East Side of Furlington Lane - March 1921 - Natural Scale, 1 inch = 15 feet.



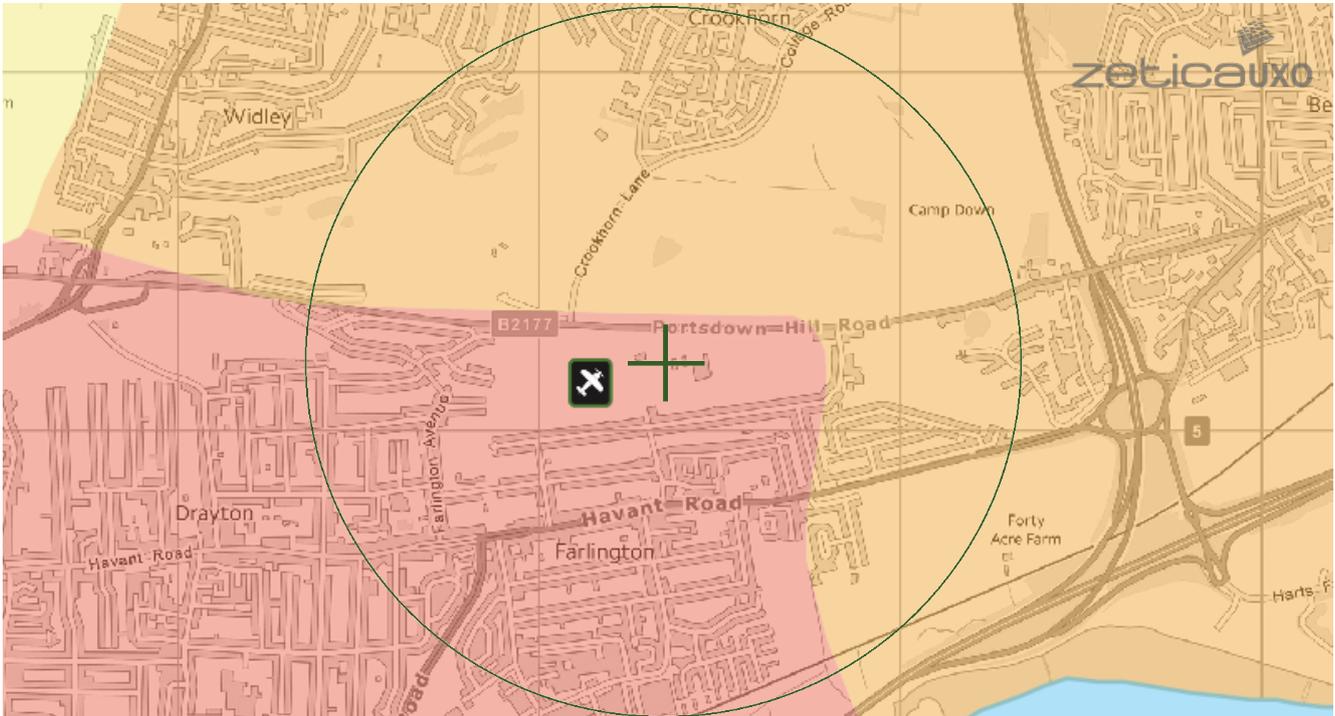
# Appendix E. Unexploded Bomb Risk Map

# UNEXPLODED BOMB RISK MAP



## SITE LOCATION

Map Centre: 468355,106194



## LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military
- industry
- UXO find
- transport
- dock
- Luftwaffe targets
- utilities
- Bombing decoy
- other

### How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment\* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment\* is necessary.

### What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

**Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.**

### If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

### If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

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It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

\*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

# Appendix F. Definitions of Probability and Consequence

**Table F.1 - Risk estimation - classification of probability**

Classification	Definition of the probability of harm / pollution occurring
High Likelihood	The contaminant linkage exists and it is very likely to result in harm / pollution in the short term, and/or will almost inevitably result in harm / pollution in the long term, and/or there is current evidence of harm/pollution. Likelihood is defined as more likely than not and meets the definition of 'significant possibility' within Part 2A Contaminated Land Statutory Guidance.
Likely	The source, pathway and receptor exist for the contaminant linkage and it is probable that harm / pollution will occur. Circumstances are such that harm / pollution is not inevitable, but possible in the short term and likely over the long term. Likelihood is defined as reasonably possible and meets the definition of 'significant possibility' within Part 2A Contaminated Land Statutory Guidance.
Low Likelihood	The source, pathway and receptor exist and it is possible that harm / pollution could occur. Circumstances are such that harm/pollution is by no means certain in the long term and less likely in the short term.
Unlikely	The source, pathway and receptor exist for the contaminant linkage but it is improbable that harm / pollution will occur even in the long term.

**Table F.2 - Risk estimation - classification of consequence**

Classification	Definition of consequence
Human Health Receptors – Site end user or other sensitive receptor	
Severe	Acute damage to human health based on the effects on the critical human receptor. Concentrations of contaminants above appropriate site specific assessment criteria. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Medium	Chronic damage to human health based on the effects on the critical human receptor. Concentrations of contaminants above appropriate site specific assessment criteria. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Mild	No appreciable impact on human health based on the potential effects on the critical human receptor. Concentrations of contaminants above generic assessment criteria but below appropriate site specific assessment criteria.
Minor	No appreciable impact on human health based on the effects on the critical human receptor. Concentrations of contaminants below appropriate generic assessment criteria.
Human Health Receptors – Site construction workers	
Severe	Exposure to hazardous substances resulting in a reportable death, major injury, 3-day injury or illness/disease under RIDDOR.
Medium	Exposure to hazardous substances resulting in a dangerous occurrence reportable under RIDDOR. Exposure to hazardous substances resulting in exceedance of a workplace exposure limit.
Mild	Exposure to hazardous substances resulting in limited effects such as headache, dizziness, nausea. Exposures below the workplace exposure limits. Not reportable under RIDDOR.

Classification	Definition of consequence
Minor	Minor exposure to hazardous substance resulting in no appreciable ill health effects.
<b>Controlled Water Receptors</b>	
Severe	Pollution of a Principal Aquifer within a source protection zone or potable supply characterised by a breach of drinking water standards. Pollution of a surface water course characterised by a breach of an Environmental Quality Standard (EQS) at a statutory monitoring location or resulting in a change in General Quality Assessment (GQA) grade of river reach. Discharge of a List I or List II substance to groundwater. Pollution meets Part 2A Contaminated Land Statutory Guidance definition.
Medium	Pollution of a Principal Aquifer outside a source protection zone or a Secondary A Aquifer characterised by a breach of drinking water standards. Pollution of an industrial groundwater abstraction or irrigation supply that impairs its function. Substantial pollution but insufficient to result in a change in the GQA grade of river reach Pollution meets Part 2A Contaminated Land Statutory Guidance definition.
Mild	Low levels of pollution of a Principal Aquifer outside a source protection zone or an industrial abstraction, or pollution of a Secondary Aquifer. Low levels of pollution insufficient to result in a change in the GQA grade of river reach, pollution of a surface water course without a quality classification.
Minor	No appreciable pollution, or pollution of a low sensitivity receptor such as a non-aquifer or a surface water course without a quality classification
<b>Property Receptors – Buildings, Foundations and Services</b>	
Severe	Catastrophic damage to buildings, such as explosion. Catastrophic failure of foundations and services. Substantial damage to a Scheduled Monument significantly impairing the by reason of which the monument is scheduled. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Medium	Substantial damage to buildings and foundations rendering the structures unsafe. Substantial damage to services impairing their function. Significant damage to a Scheduled Monument significantly impairing the reason of which the monument is scheduled. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Mild	Significant damage to buildings and foundations but not resulting in them being unsafe for occupation. Damage to services but not sufficient to impair their function. Damage to a Scheduled Monument but no significant impairment to the reason of which the monument is scheduled.
Minor	Easily repairable damage to buildings, foundations and services.
<b>Property Receptors – Crops and Livestock and Ecological Receptors</b>	
Severe	Substantial loss in the value of crops or domestically-grown produce. Death to livestock, domesticated animals or wild animals subject to shooting or fishing rights. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Medium	Substantial diminution in yield (over 20% reduction) of crops or domestically-grown produce. Serious disease or other serious physical damage to livestock, domesticated animals or wild animals subject to shooting or fishing rights. Harm meets definition of 'significant harm' within Part 2A Contaminated Land Statutory Guidance.
Mild	Harm to crops but not resulting in a substantial loss in value or diminution in yield (less than 20% reduction). Limited harm in terms of disease or other physical

Classification	Definition of consequence
	damage to livestock, domesticated animals or wild animals subject to shooting or fishing rights.
Minor	No appreciable harm, or harm to a low sensitivity receptor.

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