

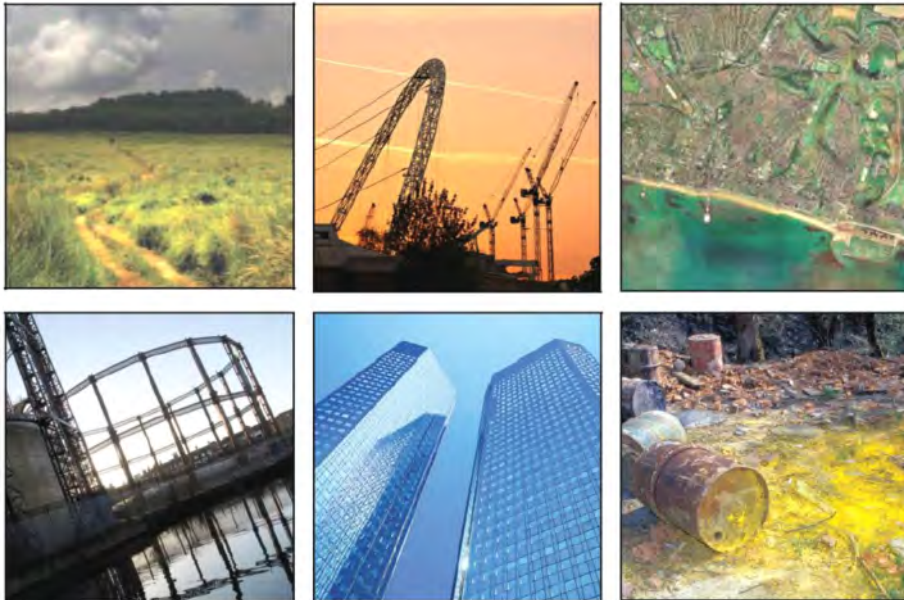


Land off Mill Road,  
Hertford, SG13 7AG

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Phase 1 - Environmental Risk Assessment  
For  
*BRB Residuary*

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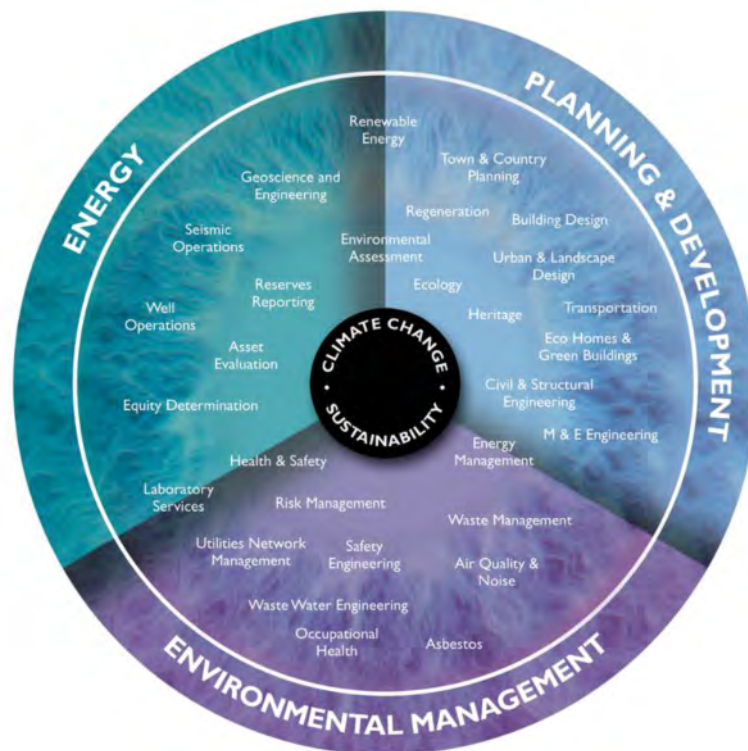
HLEI17433/001R  
June 2011

Report Type:	Phase 1 Environmental Risk Assessment		
Report Status:	FINAL		
Project Reference:	HLEI14907		
	Consultant	Signature	Date
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*This report has been prepared within the RPS Group Quality Management System to British Standard EN ISO 9001:2008*

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*RPS Health, Safety & Environment (London office) is certified to Environmental Management Standard ISO 14001.*



## CONTENTS

### *EXECUTIVE SUMMARY*

- 1.0 INTRODUCTION
- 2.0 LAND USE (*INCLUDING SITE VISIT & HISTORICAL REVIEW*)
- 3.0 ENVIRONMENTAL SETTING, REGULATORY CONSULTATIONS & ADDITIONAL INFORMATION
- 4.0 ENVIRONMENTAL RISK ASSESSMENT
- 5.0 CONCLUSIONS & RECOMMENDATIONS

### APPENDICES

- A FIGURES (Location Plans, Aerial Photo & Historical Map Extracts)
- B PHOTOGRAPHS
- C SUMMARY OF PART IIA OF THE EPA 1990 (*The Contaminated Land Regime*)
- D GENERAL NOTES

## EXECUTIVE SUMMARY

Section	Summary
<b>Site Details</b>	<p>Area: 1.16 hectares</p> <p>NGR: TL330129</p> <p>Current use: The north western corner is currently a Speedy Hire office and goods yard and an operational waste transfer station.</p> <p>Proposed use: Mixed use, may include residential with soft landscaped and garden areas.</p>
<b>Site History</b>	<p>Historical maps indicate that the site has been used as railway land with various configurations of track and buildings since before 1881. Since the 1960s the railway has no longer been operational though the tracks and walkways remain on site in various stages of disrepair. The north western area of the site is currently a Speedy Hire office and goods yard, and waste transfer centre. The remainder of the site is derelict land with medium dense to dense vegetation coverage.</p> <p>Numerous commercial and industrial land uses have historically been in close proximity to the site, notably the gas works to the north of the site, infilled gravel pits on site and to the east and north of the site, gravel pits to the north of the site, works to the north and south west and the railway land immediately south of the site. Recent developments have superseded the majority of these land uses with the site currently bounded to the north and west by residential housing.</p>
<b>Environmental Setting</b>	<p>The site is located within a moderately sensitive environmental setting due to the underlying Secondary A and Principal Aquifers relating to the Kempton Park Gravel and Lewes Nodular Chalk. The site is in a Groundwater Source Protection Zone III. Residential properties are located to the north and west of the site.</p>
<b>Consultations</b>	<p>East Hertford Council advises that the site has not been designated as contaminated land under Part 2A of the Environmental Protection Act. The site is on the council's list of prioritised sites. However, due to its current use the council does not have any plans to investigate the site in the near future in connection with contaminated land either formally or informally, based upon information known at the time.</p>
<b>Risk Assessment</b>	<p>There is the potential for a degree of localised contamination to be present beneath the site associated with the previous and current land use, both on site and in close proximity to the site.</p>

Section	Summary
	<p><i>Following redevelopment, the proposed new building and hard standing cover will break the potential dermal contact and inhalation/ ingestion of soil or dust pathways. However, these pathways would remain active in landscaped and garden areas. Pathways for migration of vapours may still be active following redevelopment.</i></p> <p><i>The site is located above a Secondary A Aquifer and Principal Aquifer (relating to the Kempton Park Gravel and Lewes Nodular Chalk), and there is the potential for contamination (if present) to migrate to groundwater. Lateral migration of shallow groundwater is likely to occur within the Kempton Park Gravel and Lewes Nodular Chalk.</i></p> <p><i>In view of the above, the risk to future site users, groundwater and the wider environment, is considered to be <b>low to moderate</b> for the proposed redevelopment.</i></p>
<b>Recommendations</b>	<i>Intrusive site investigations will likely be required to assess the ground conditions and contamination status of the site prior to redevelopment.</i>

## 1.0 INTRODUCTION

RPS Health, Safety & Environment (RPS) was commissioned by **BRB Residuary** to undertake an environmental review of a plot of land located at **Mill Road, Hertford, SG13 7AG**.

The principal aim of the review was to determine whether there was the potential for contamination to be present, which could impact future site uses/occupiers and the wider environment, significantly constrain the proposed use of the site or affect the development process. The site's suitability for its proposed use has been determined following the guidance outlined in Planning Policy Statement (PPS) 23, which requires an assessment of the potential risks associated with contamination at the site through the identification of significant 'pollutant linkages' (see below).

The environmental review comprised:

- i) a site inspection;
- ii) a review of the historical land use associated with the site to assess the potential for ground contamination;
- iii) a review of the environmental setting to assess the sensitivity of the surrounding environment to contamination/pollution;
- iv) consultation with the regulatory authorities to establish whether any significant environmental issues have been recorded, which may impact upon the site; and
- v) qualitative environmental risk assessment in consideration of the site's current and proposed use.

The environmental risk assessment presented within this report has been prepared having regard to the *source-pathway-receptor* model introduced under Part IIA of the Environmental Protection Act 1990, and associated guidance on contaminated land published by the *Department of Environment, Food and Rural Affairs* [and its predecessors]. The methodology is essentially a qualitative assessment, based on the identification and evaluation of potential 'source-pathway-receptor pollutant linkages'. On the basis of this risk assessment, consideration has been given to the potential for the site to be designated as 'contaminated land' (under the local authority contaminated land inspection strategy) as defined in Part IIA of the Environmental Protection Act 1990. See Appendix C for further details of the Environmental Protection Act 1990 and the risk assessment process.

The scope of the report is in general accordance with:

- British Standard requirements for the '*Investigation of potentially contaminated sites - Code of practice*' (ref. BS10175:2001);

- *'Model Procedures for the Management of Land Contamination' - Contaminated Land Report (CLR) 11;*
- *Planning Policy Statement (PPS) 23 - Planning and Pollution Control: and*
- *DEFRA Circular 01/2006 Environmental Protection Act 1990: Part 2A - Contaminated Land.*

Where appropriate, consideration has also been given to the following:

- The potential for environmental liabilities to occur under other associated regimes, for example the Water Resources Act 1991 and the Environmental Damage Regulations 2009;
- Key constraints on site redevelopment, including the impact of other environmental issues (e.g. asbestos, flooding, ecology);
- General compliance issues for existing site activities / operations in the context of current legislation.

Details of the limitations of this type of assessment are described in Appendix D.

## 2.0 LAND USE

### 2.1 Site Inspection

The site currently comprises a plot of vegetated land with a Speedy Hire office building and goods yard and a waste transfer station located on north western area of the site. The following section is based on observations made during a site walkover undertaken on 24<sup>th</sup> June 2011.

#### 2.1.1 The Site

Section	Description
<i>Background:</i>	The site is centred at National Grid Reference TL330129. It is roughly triangular in shape and occupies an area of 1.16ha.
<i>Site Layout:</i>	At the time of the site walkover, a Speedy Hire office building and goods yard and a waste transfer station were located on the north western area of the site. The remainder of the site consisted of derelict land with disused rail tracks and walkways that have become overgrown and were in varying states of disrepair.
<i>Activity / Operations:</i>	Speedy Hire office building and goods yard and a waste transfer station operated on the north western area of the site. The remainder of the site was not operational but was accessible to the public <i>via</i> a gate in the fence.
<i>Building Structure(s) and cover:</i>	<p>Speedy Hire operated from a brick built building located on the north western area of the site. The area surrounding the building was used as the Speedy Hire goods yard with a waste transfer station located immediately north of the Speedy Hire yard. Both were within the site boundary. Semi permanent buildings were present in the waste transfer yard and functioned as offices and break-out areas for operational staff. No historical buildings associated with past land use on the site were observed during the walkover.</p> <p>The remnants of railway tracks and walkways ran west – east through the centre of the site (see Photos 2, 3 and 4). Vegetation had intruded into the old railway track bed and walkways. The area of the site not associated with the waste transfer station and Speedy Hire was medium to densely vegetated, predominantly by deciduous semi mature to mature shrubs, trees and ivy. The eastern area of the site was very densely vegetated by shrubs and bushes restricting visual inspection of this area.</p>
<i>Drainage:</i>	No formal drainage was observed during the walkover.
<i>Storage / Tanks:</i>	A tank is indicated on historical maps to have been present on the site (see section 2.2.1). However, dense vegetation obscured much of the eastern side of the site and the tank was not observed. No evidence of above ground or underground tanks was observed in the accessible area of the site during the walkover.
<i>Waste:</i>	<p>A waste transfer station was present on the north western area of the site (See Photo 7). Skips on site contained garden waste, cardboard and housing brick and rubble.</p> <p>Fly tipping in the form of general household waste was present across the site,</p>

Section	Description
	predominantly in the areas close to the site boundary fence.
<i>Air Emissions:</i>	No significant sources of air emissions were identified during the site inspection.
<i>Electricity Transformers:</i>	No electrical transformers / substations were observed on site.
<i>Visual Contamination:</i>	Rusty, old empty metal barrels were sporadically scattered across the site. No contamination was identified in the immediate vicinity of these barrels, indicating that they may have been empty when fly tipped (see Photo 6).  No further visual signs of contamination were present on the site.
<i>Statutory Nuisance:</i>	No indications of statutory nuisances were observed during the site inspection.
<i>Other Issues:</i>	No <i>Japanese Knotweed</i> or <i>Giant Hogweed</i> was readily identified on the site at the time of the survey. However, dense vegetation, especially on the eastern area of the site reduced the ability to thoroughly assess the whole site. <i>(It should be noted that identification can be limited by the seasons)</i> . An ecology survey of the site, conducted by RPS in June 2011, identified Wall Cottoneaster on site (ref Phase I Habitat and Scoping Survey HLEE 17430). This is listed on Schedule 9 of the Wildlife and Countryside Act as an invasive species. This plant should therefore be removed as part of any development works.

### 2.1.2 The Surrounding Area

At the time of the walkover, neighbouring land consisted of the following:

Direction	Description
<i>North:</i>	Residential properties.
<i>East:</i>	Network Rail land.
<i>South:</i>	Predominantly Network Rail land with a children's nursery adjacent to the south west corner.
<i>West:</i>	Residential properties.

## 2.2 Site History

### 2.2.1 Historical Map Review

The following review is based on available past editions of readily available Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500 and 1:10,000 dated 1881 to 2011. Extracts from selected historical maps are given in Appendix A.

On-site Land Use and Features	Dates
The Hertford Branch ran west-east through the centre of the site	Prior to 1881 – Present
<i>Two further rail lines south of the aforementioned Hertford line</i>	1898 - Present
<i>One further rail line north of the aforementioned Hertford line</i>	1898 - Present
<i>The railway tracks were no longer in operation</i>	1960s - Present
The north of the site remained undeveloped	Prior to 1881
The south of the site remained undeveloped.	Prior to 1881
Gashouse Lane ran north-south through the east of the site	Prior to 1881 - 1898
A pit was located on the far eastern area of the site (extending eastwards and southwards from the site). The pit appears to have been infilled by 1898 for the development of the railway.	Prior to 1881 - 1898
Small building on the western side of the site	1989 – 2011
Three small buildings along northern boundary of the site	1923 – 1963
Three small buildings along the southwestern boundary of the site	1923 - 2011
Tank on north eastern area of the site	1960 - 2011
Waste transfer station in the north western area of the site	1994 - present
Speedy Hire offices and goods yard	1990s – Present

Surrounding Land Uses (250m radius)	Orientation	Distance	Dates	
			From	To
Unmarked pit <i>Became residential flats</i>	North	5	1898 2011	2011 Present
Rail lines and station building	South	5	1898	Present
Residential housing	North	10	1923	Present
Plant depot <i>Became council depot</i> <i>Became residential housing</i>	West	10	1975 1993 2011	1993 2011 Present
Electricity Works <i>Became works</i> <i>Became depot</i> <i>Became residential housing</i>	North	13	1946 1960 1975 2011	1960 1975 2011 Present
Rail sidings <i>Disused but still present</i>	East	30	Prior to 1881 1960	1960 Present
Depot	North	30	1963	2011
Pond	North	40	1960	1963
Lea Basin/Navigation	North	40	Prior to 1881	Present
Gravel pit	North	47	1898	1975
Depot	North	67	1987	2006
Works units	North	82	1975	Present
Goods shed	East	97	Prior to 1881	1970
Works	Southwest	100	1963	2011
Christ's Hospital	South	104	1898	1963
Tanks and chimney	North	104	1923	1925
Columbia Graphophone <i>Renamed as 'works'</i>	North	114	1923 1960	1960 Present
Rail sidings <i>Disused but still present</i>	East	125	Prior to 1881 1960	1960 Present
Rail sidings <i>Disused but still present</i>	West	125	Prior to 1881 1960	1960 Present
Pond	North east	128	1946	1963
Depot	Southwest	129	1963	1993
Saw mill	west	141	1898	1925
Dicker Mill (Oil cake) <i>Manufacturing details no longer indicated</i>	North	151	Prior to 1881 1946	1946 Present
Works	Southwest	151	1963	2011
Pond <i>Pond enlarged to partially include that which was 128m from the site</i> <i>Reduced in size</i>	North east	193	1946 1963 1975	1963 1975 1987
Gas works <i>Gas works not labelled but present on map</i>	North	198	Prior to 1881 1946	1946 Present

### 3.0 ENVIRONMENTAL SETTING, REGULATORY CONSULTATIONS & ADDITIONAL INFORMATION

#### 3.1 Geology & Hydrogeology

Based on British Geological Survey mapping 1:50,000-scale survey sheet No.239 and Environment Agency Groundwater Vulnerability mapping, the stratigraphic sequence and aquifer classifications beneath the site are as follows:

Strata	Age	Description & approximate thickness	Aquifer Classification
Kempton Park Gravel	Devensian	Sand and gravel, locally with lenses of silt, clay or peat.	Secondary A
Lewes Nodular Chalk	Turonian	Composed of hard to very hard nodular chinks and hardgrounds with interbedded soft to medium hard chinks (some grainy) and marls; some griotte chinks. The softer chinks become more abundant towards the top. Nodular chinks are typically lumpy and iron-stained (usually marking sponges). Brash is rough and flaggy or rubbly, and tends to be dirty. First regular seams of nodular flint, some large, commence near the base and continue throughout.	Principal

Made Ground is likely to be present across the site as a result of past construction and/or demolition activities. No site investigation reports have been reviewed to verify this.

The site is located above a Secondary A Aquifer relating to the Kempton Park Gravel and a Principal Aquifer relating to the Lewes Nodular Chalk. Secondary A Aquifers are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers. Principal Aquifers provide a high level of water storage and may support water supply and / or river base flow on a strategic scale.

According to Environment Agency data, the site is located within a zone III Groundwater Source Protection Zone (Total Catchment area).

#### 3.2 Water

##### 3.2.1 Surface Water

There are five watercourses within 1km of the site which are classified under the Environment Agency's General Quality Assessment (GQA) scheme for river quality, as detailed below.

Watercourse / body. Monitoring point.	Quality Classification	Approx. Distance and Direction from Site
Lee (Navigation 'H')	B – Good	87 NW
River Lee	B – Good	206 NW
River Beane	B – Good	339 NW
River Rib	B – Good	768 N
River Lee	A – Very good	865 NE

The River Lee Navigation runs south west – north east 46m northwest of the site.

### 3.2.2 Flood Risk

According to the Environment Agency (EA) flood map, the site is not located within an indicative floodplain.

### 3.2.3 Water Abstractions

Information provided by the Environment Agency indicates that there are records of twenty three licensed groundwater abstractions and six licensed surface water abstractions within 2km of the site. The details of these are as follows:

Licence Holder	Source	Use	Approx. Distance & Direction from Site
Celtic Technologies Ltd	Groundwater	Groundwater remediation	279m NE
Frogmore Developments Ltd	Groundwater	Cooling	305m SE
Sainsbury's Supermarket Ltd	Groundwater	Process water	503m W
Mcmullen & Sons Ltd	Groundwater	Process water	511m SW
Ekins and Co Ltd	Groundwater	General use	575m W
Mcmullen & Sons Ltd	Groundwater	Process water	575m W
Mcmullen & Sons Ltd	Groundwater	Process water	607m SW
Veolia Water Central Ltd	Groundwater	Potable water	639m W
Three Valleys Water Plc	Groundwater	Potable water	639m W
Mr J Chapman	Groundwater	General farming and domestic use	901m NE
Mr J Chapman	Groundwater	Drinking, cooking, sanitary, washing	988m NE
Thames Water Utilities Ltd	Surface	Potable water	1143m NE
Thames Water Utilities Ltd	Surface	Potable water	1158m NE
Veolia Water Central Ltd	Groundwater	Potable water	1328m W
Three Valleys Water Plc	Groundwater	Potable water	1328m W
Bardon Farmers	Groundwater	General farming and domestic use	1524m NE
Dj Vigus	Surface	General Agriculture	1670m N
R M Newton & P Newton and Son	Groundwater	General farming and domestic	1699m N
Mr P Newton	Groundwater	General farming and domestic	1699m N
The Carmelite Monastery	Groundwater	Household water	1838m NE
Hanson Quarry Prod Europe Ltd	Groundwater	Dust suppression	1925m NE
Brazier Aggregates Ltd	Groundwater	Concrete manufacture	1930m NE
R M Newton & P Newton and Son	Surface	Spray irrigation	1949m N
Mr P Newton	Surface	General farming and domestic	1949m N
Mr P Newton	Surface	Spray irrigation	1949m N
Thames Water Utilities Ltd	Groundwater	Potable water	1950m E
J T Jansen & Son	Groundwater	Horticultural watering	1980m SW
Veolia Water Central Ltd	Groundwater	Potable water	2000m N
Three Valleys Water Plc	Groundwater	Potable water	2000 N

### 3.3 Landfills and Waste Sites

Information provided by the Environment Agency and the Local Authority indicates that there are three recorded landfill sites within 500m of the site.

License Holder	Last Input Date	Waste Type and Details	Approx. Distance and Direction from Site
Local Authority – Hertfordshire County Council	Not supplied	Not supplied	133 NE
A Fairhead and Sons Ltd	19.08.1970	Deposited waste, including inert waste	259m NE
Not supplied	Not supplied	Deposited waste, including inert waste	416m NW

Information provided by East Hertford Council indicates an unlicensed landfill to be present within 500m of the site, located at Hartham Park.

Information provided by the Environment Agency and the Local Authority indicates that there are two recorded waste management facilities, two waste transfer sites and two waste treatment/disposal sites within 1000m of the site.

Source of Record	Licence Details	Waste Type and Details	Approx. Distance and Direction from Site
<b>Licensed Waste Management Facility</b>			
Land at Mead Lane	License - 80273	Household, commercial and industrial transfer station	42m NW
Unit 10a, Caxton Hill	License - 80608	Physical treatment facility	941m S
<b>Registered Waste Transfer Sites</b>			
J Bridgwater & Son Ltd	License – 94/326	No restriction on the source of waste	On site
V J Green	License – 84/169	No restriction on the source of waste	379m NE
<b>Registered Waste Treatment or Disposal Site</b>			
W Archer and Sons Ltd	License – 92/294	Scrapyard	64m E
Mc Mullen & Sons Ltd	License 85/192	Incineration	921m W

### 3.4 Pollution Incidents/Contaminated Land

Environment Agency data indicate that there are records of twenty minor (category 3) and six significant (category 2) pollution incidents within 1000m of the site. The significant incidents are indicated below:

Location/Address	Pollutant	Date	Approx. Distance and Direction from Site
Hertford	Unknown chemicals	22.02.1989	182m SW
Hertford	Unknown sewage	24.07.1990	274m N
Rowleys Road	Unknown agricultural	31.05.1996	701m E
Mead Lane	Storm sewage	23.09.1998	805m NE
Hertford	Unknown oils	06.04.1989	866m W
Mead Lane	Unknown oils	10.11.1993	895m NE

One prosecution relating to Controlled Waters is indicated within 1000m of the site. The prosecution was against Straight Cutting relating to a blocked sewer resulting in raw sewage entering a nearby watercourse on 26<sup>th</sup> October 2006. The incident was located 713m east of the site.

East Hertford Council advises that the site has not been designated as contaminated land under Part 2A of the Environmental Protection Act. The site is on the council's list of prioritised sites. However, due to its current use the council does not have any plans to investigate the site in the

near future in connection with contaminated land either formally or informally, based upon information known at the time.

East Hertford Council is not aware of any Part B Processes within 500m of the site.

### 3.5 Authorised Processes

#### 3.5.1 Environmental Permits

Records of one Integrated Pollution Control (IPC) and fourteen Local Authority Pollution Prevention and Control (LAPPC) prescribed processes authorised under the Environmental Protection Act 1990 or Pollution Prevention and Control Act 1999 are within 1000m of the site.

Licence Holder	Permitted Activity	Approx. Distance and Direction from Site
<b>Integrated Pollution Control</b>		
Fluoro Carbon Ltd	Inorganic Chemical processes	553m SE
<b>Local Authority Pollution Prevention and Control</b>		
South Western Tar Distributors	Bitumen and tar processes	5m N
Hartwell Ford Plc	Respraying of road vehicles	136m N
Marshal Panelcroft	Respraying of road vehicles	164m NE
Watts Industrial Polymers Ltd	Rubber processes	184m E
Marley Floors and Waterproofing	Bitumen and tar processes	320m E
Irons Professional Dry Cleaners	Dry cleaning	362m SW
County Care Executive Dry Cleaners	Dry cleaning	381m SW
Florocarbon Company Ltd	General coating processes	476m SE
Sovereign Dry Cleaners	Dry cleaning	489m SE
Dupre Vermiculite	Exfoliation of vermiculite and expansion of perlite	503m E
W Day (Precision Moulds) Ltd	Iron, steel and non-ferrous metal foundry processes	521m NE
Stephen Austin and Sons Ltd	Coating processes and printing	556m SE
Lancaster Hertford	Respraying of road vehicles	812m SE
W Waters & Sons Ltd	Petrol filling station	895m SW

Information provided by the Environment Agency indicates one Local Authority Pollution Prevention and Control Enforcement within 500m relating to air pollution on Mead Lane 18m E of the site.

#### 3.5.2 Discharge Consents

Information provided by the Environment Agency and the Local Authority indicates that there are five discharge consents recorded within 1000m of the site.

Licence Holder	Discharge Type	Approx. Distance and Direction from Site
British Waterways Board	Sewage – final/treated	473m NE
East Hertfordshire District Council	Other matter	795m W
Durlcan Brothers Ltd	Other matter	866m W
M T.J Mines	Sewage – final/treated	932m NW
John Gerrard	Sewage – final/treated	970m NE

### **3.5.3 COMAH**

There are no records of any operations under the Control of Major Accident Hazards (COMAH) within 2000m of the site.

### **3.5.4 Notification of Installations Handling Hazardous Substances**

Information provided by the Environment Agency and the Local Authority indicates that there is one Notification of Installation Handling Hazardous Substances recorded within 1000m of the site. An active license is held by Transco at Holder Holder Station located 317m northeast of the site.

### **3.6 Radon**

According to the Indicative Atlas of Radon in England and Wales published by the Health Protection Agency and the British Geological Survey, the site is not located in an area at risk from radon gas.

### **3.7 Coal Authority**

The site is not located in an area potentially affected by coal mining activities.

### **3.8 Sensitive Sites / Designated Protected Areas**

Natural England data indicates that there are no SSSIs, SPAs, SACs, RAMSAR, Nature Reserves or other protected / sensitive environmental areas within 1km of the site. The site is located within a Nitrate Vulnerable Zone and an Area of Adopted Greenbelt lies 65m Northwest of the site.

## 4.0 ENVIRONMENTAL RISK ASSESSMENT

This Risk Assessment consists of an appraisal of the source-pathway-receptor 'pollutant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part IIA of the Environmental Protection Act 1990. For a risk to exist (under Part IIA), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- **Source** of contamination (Hazard).
- **Pathway** for the contaminant to move from the source(s) to receptor(s).
- **Receptor** (Target) that could be affected by the contaminant(s).

Receptors include human beings, other living organisms, crops, controlled waters and buildings / structures. The assessment includes a qualitative review for the 'significant possibility of significant harm' (SPOSH). The mere presence of a contaminant source / hazard at a site does not mean that there will necessarily be attendant risks or that the site will be designated as 'contaminated land'. For further details see Appendix D.

In addition, the assessment includes consideration of redevelopment constraints, the site's 'suitability for use' and the perception by any future purchasers regarding the potential impact on investment value/saleability.

The Risk Assessment sections comprise three sections:

- Section 4.1: A summary of current and historical land use and environmental sensitivity information demonstrated as a tabular *Conceptual Model* with contaminant *Source*, *Pathway* and *Receptor* components (in accordance with *Model Procedures for the Management of Land Contamination* - *Contaminated Land Report (CLR) 11*).
- Section 4.2: Details of notable environmental issues and key operational issues (outside ground contamination aspects) are highlighted in this section.
- Section 4.3: An assessment of Overall Risk compiling the findings of Sections 4.1 - 4.3, together with the likelihood of occurrence and its commercial impact. This risk is assessed separately in relation to 'Ground Contamination' and 'Other Environmental Issues', and has been classified under three broad categories:
- **Low risk** - it is considered unlikely that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.
  - **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.
  - **High risk** - there is a high potential that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.

## 4.1 Conceptual Model

### Source: (Land Use)

Possible historical sources of contamination on the site include the infilled pit on the eastern area of the site, the former use as railway land, made ground associated with the construction and demolition of various buildings on site and a former tank on the eastern area of the site. The north western area of the site currently operates as a Speedy Hire office and goods yard and a waste transfer station.

Potential off-site historical and current sources of contamination within 150m of the site include works, gasworks, railway sidings, tanks and other industrial uses and infilled gravel pits.

Land uses such as engineering works, manufacturing processes and railway land are commonly associated with a degree of contamination due to the storage and day-to-day use of fuels and solvents. A potential for ground gas production is also considered due to the infilled ponds and gravel pits in close proximity of the site.

In light of the above, there is a moderate likelihood for contamination to exist beneath parts of the site.

### Pathways:

The site is underlain by Kempton Park Gravel, which is classified as a Secondary A Aquifer. This overlies a Principal Aquifer relating to the Lewes Nodular Chalk. The Kempton Park Gravel is likely to be highly permeable and there is the potential for any contamination to migrate vertically to groundwater within this body. Pathways of lateral migration of groundwater to off-site receptors are also potentially active.

The proposed development is likely to include residential housing with soft landscaping. As a result, there is the potential for site users to come into contact with contamination (if present) beneath the site. The potential pathways for future site occupants in landscaped areas and gardens include dermal contact, inhalation and ingestion of soil and/or dust particles, inhalation of vapours and the ingestion of homegrown vegetables (if grown). In areas of hardstanding/building cover the pathways of dermal contact and inhalation of soil and dust would not be active. Pathways of migration of vapours may still be active following redevelopment.

There is also the potential for exposure pathways to exist for ground workers involved in redevelopment works, via dermal contact, ingestion of soils and inhalation of dust and vapours.

**Receptors: (Environmental Sensitivity)**

Overall, the site is considered to be located within a moderately sensitive environmental setting.

The most sensitive receptors on site and in the immediate vicinity include:

Secondary A aquifer relating to the Kempton Park Gravel

Principal aquifer relating to the Lewes Nodular Chalk

River Lee, 46m northwest of the site

Residential properties immediately north and west of the site

Future residents and users of the proposed development

Ground workers

*Note: Operational health and safety issues are beyond the remit of this report.*

**4.2 Overall Risk****Risk Assessment:****Rating: Low / Moderate**

There is the potential for a degree of localised contamination to be present beneath the site associated with the previous and current land use both on the site and in close proximity to the site.

The site development is likely to include residential properties with associated soft landscaping. Should there be elevated concentrations of contamination on the site, the lack of a physical barrier in the soft landscaping areas would provide possible exposure to future site users *via* the ingestion and inhalation of vapours, inhalation or ingestion of soil and dust particles and dermal contact. In areas of hardstanding/building cover the pathways of dermal contact and inhalation of soil and dust would not be active. Pathways of migration of vapours may still be active following redevelopment.

The site is located above a Secondary A Aquifer and a Principal Aquifer (relating to the Kempton Park Gravel and Lewes Nodular Chalk), and there is the potential for contamination (if present) to migrate to groundwater. Lateral migration of shallow groundwater to off site receptors may occur within the Kempton Park Gravel and Lewes Nodular Chalk.

In view of the above, the risk to future site users, groundwater and the wider environment, is considered to be **low to moderate** for the proposed redevelopment.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions have been drawn from the observations recorded and the information collated and reviewed as part of this Risk Assessment:

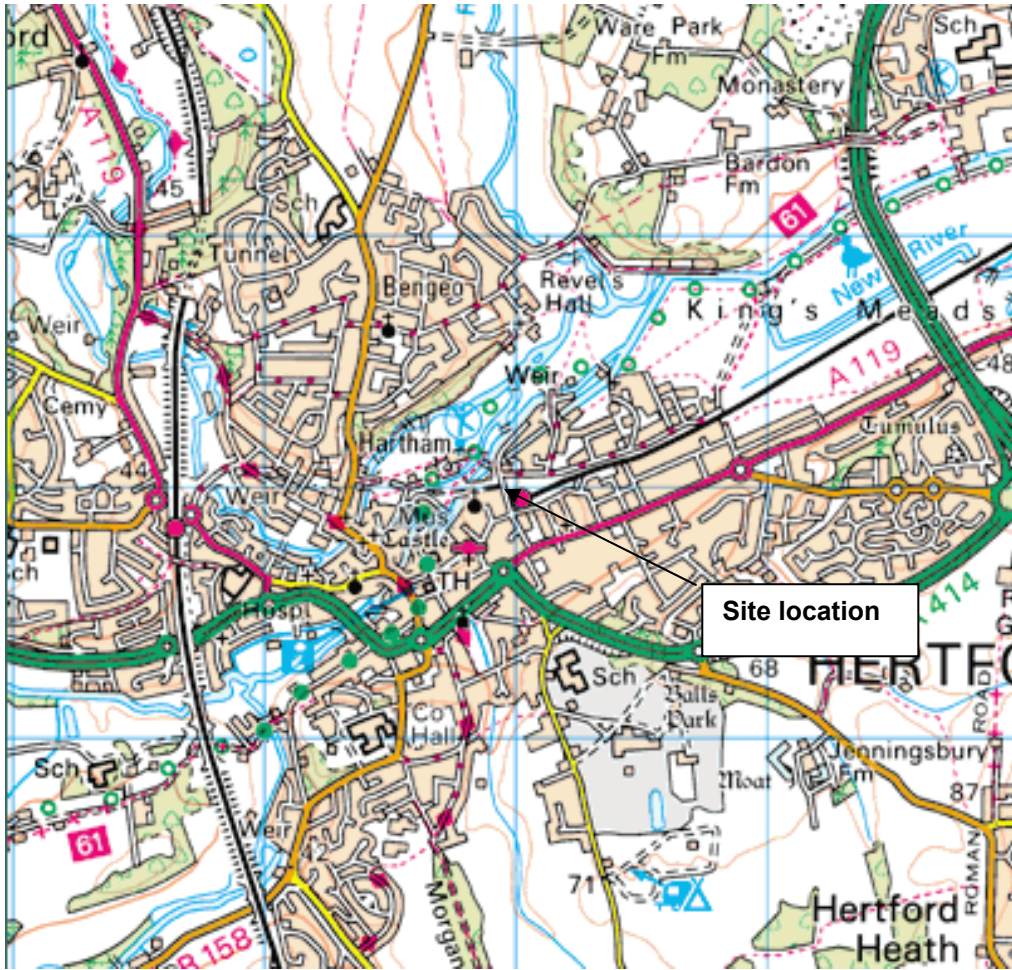
On the basis of the RPS assessment it is unlikely that the site would be designated as 'contaminated land' and investigated by the Local Authority beyond the initial desk based review of the borough.

Overall, RPS has not identified a significant risk of third party liability or regulatory action associated with ground contamination, while the site remains in its current use and form.

Intrusive site investigations will likely be required to satisfy standard environmental planning conditions (under Planning Policy Statement 23) set by the local authority. Due to the potential for a degree of contamination to be present, localised remedial/mitigation measures, particularly in garden / landscaped areas may be required during redevelopment. This should be further assessed following the intrusive site investigations.

APPENDIX A:  
FIGURES

***Appendix A*** - 12 Pages

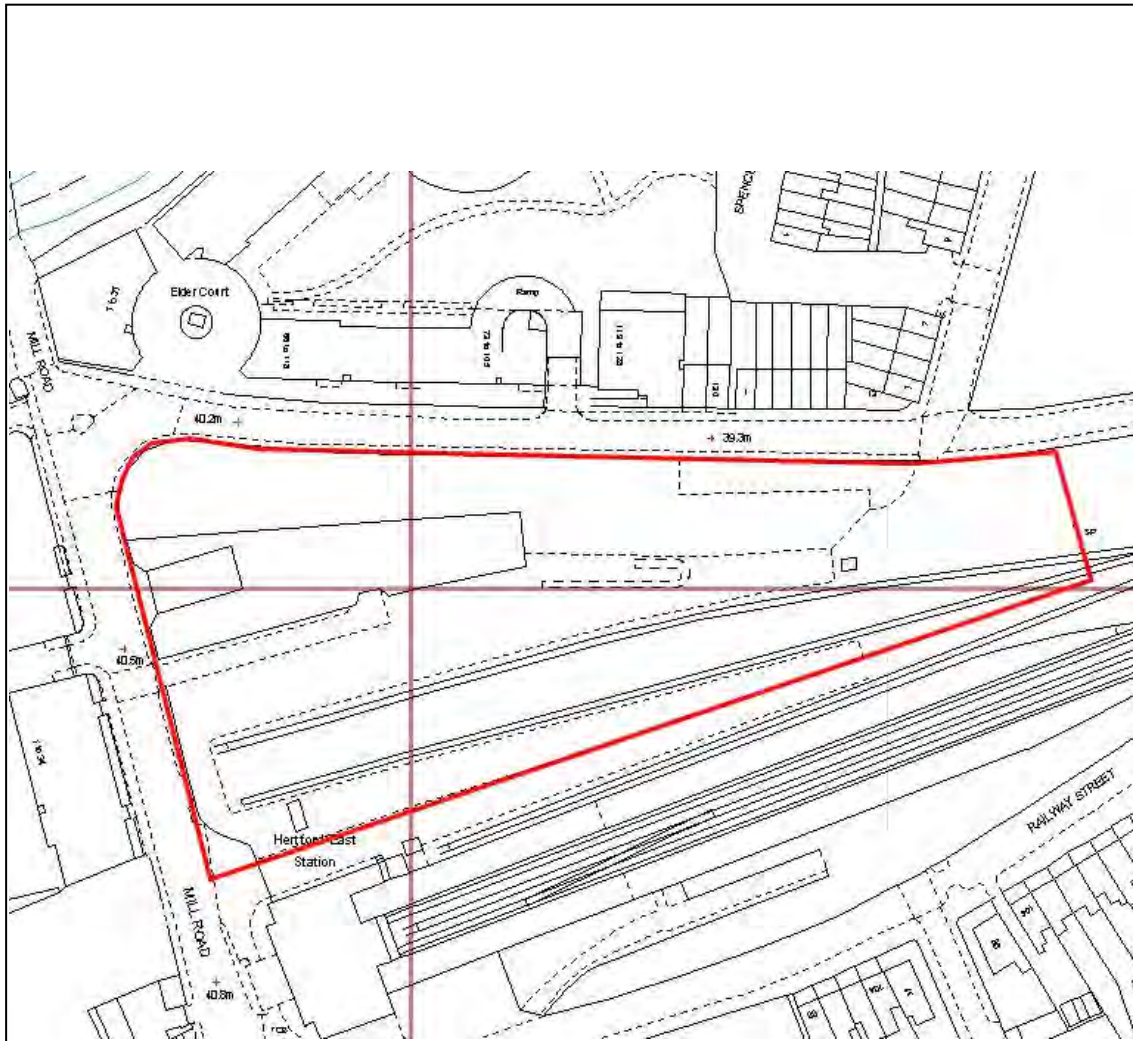


Project: Mill Road  
Project Ref: HLEI 17433  
Figure 1: Site Location Plan  
Map Date: Current  
Scale: Not to scale

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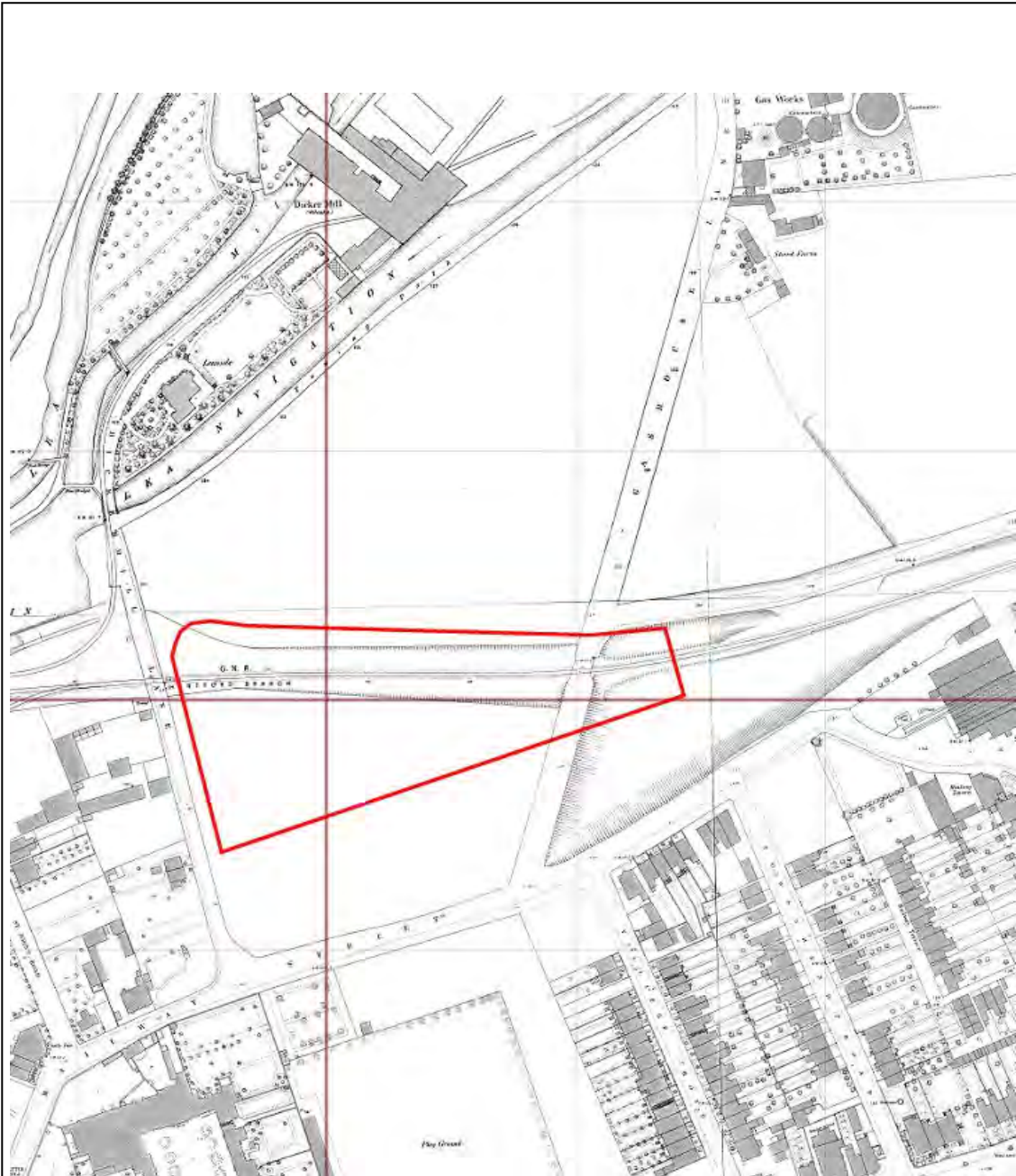
— Site boundary

Project: Mill Road  
 Project Ref: HLEI 17433  
 Figure 2: Site Boundary Plan  
 Map Date: Current  
 Scale: Not to Scale



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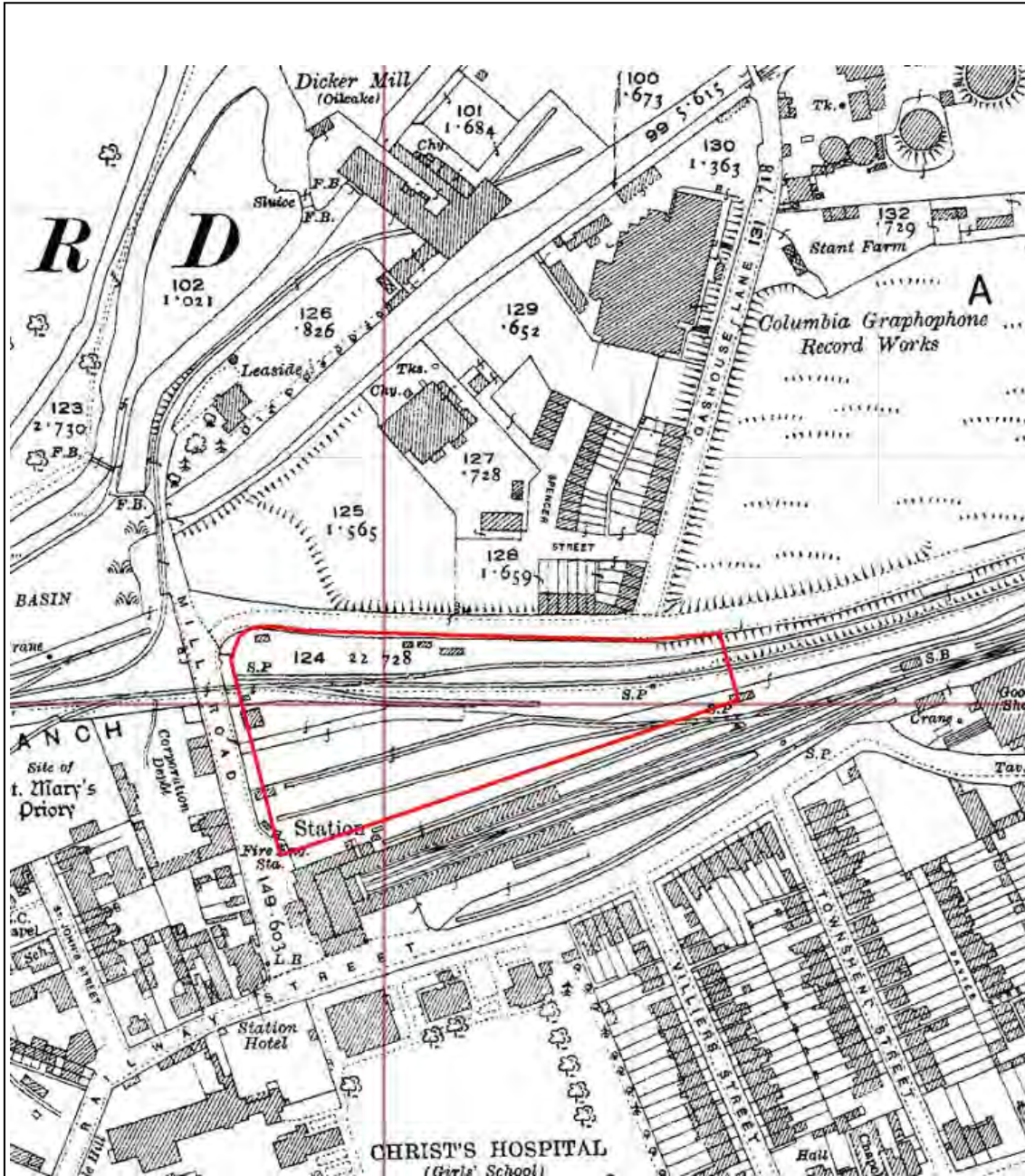
Project: Mill Road  
Project Ref: HLEI 17433  
Figure 3: Historical Map Extract  
Map Date: 1881  
Scale: Not to Scale



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Figure 4: Historical Map Extract

Map Date: 1923

Scale: Not to Scale

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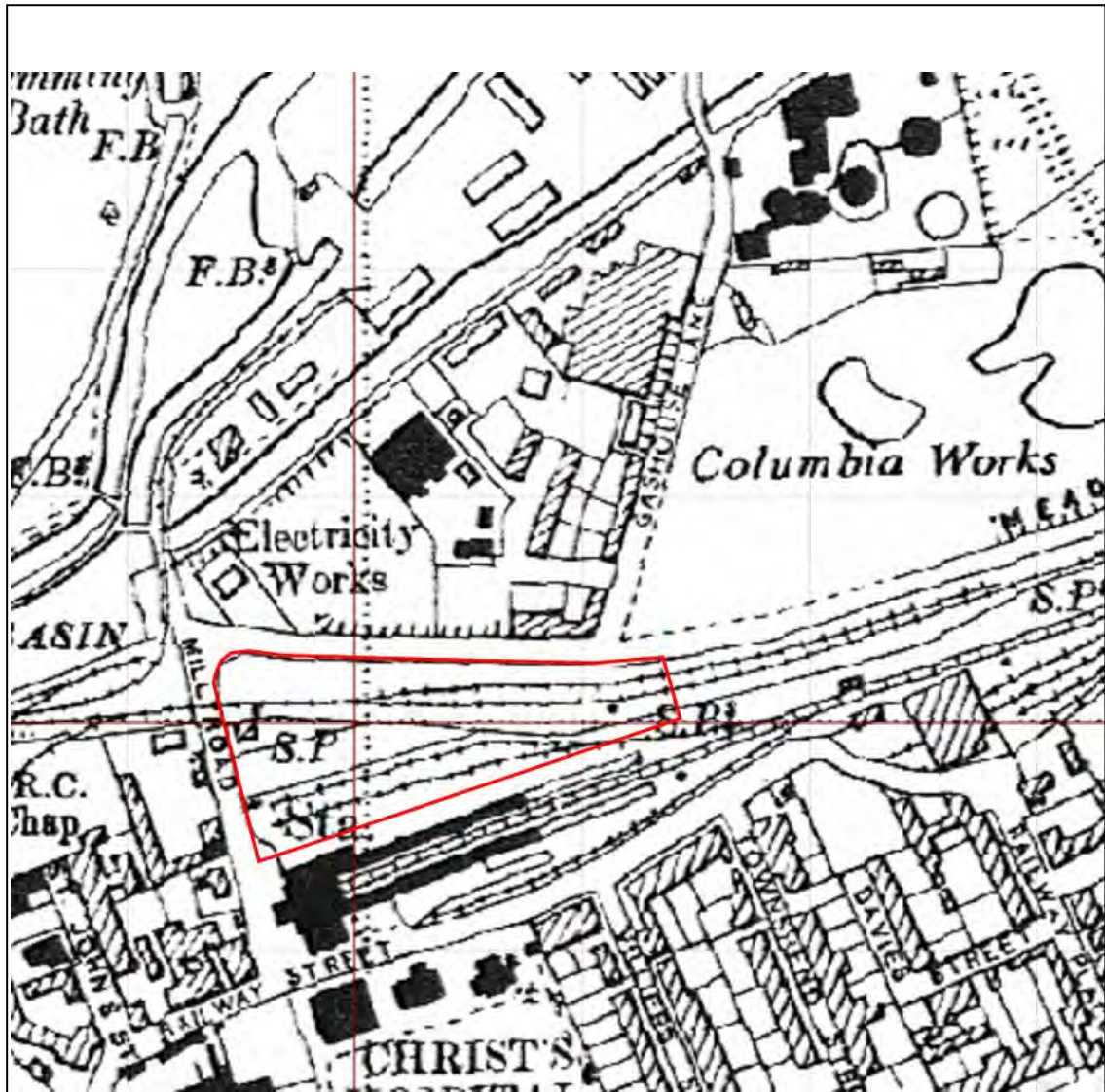


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Figure 5: Historical Map Extract

Map Date: 1946-51

Scale: Not to Scale

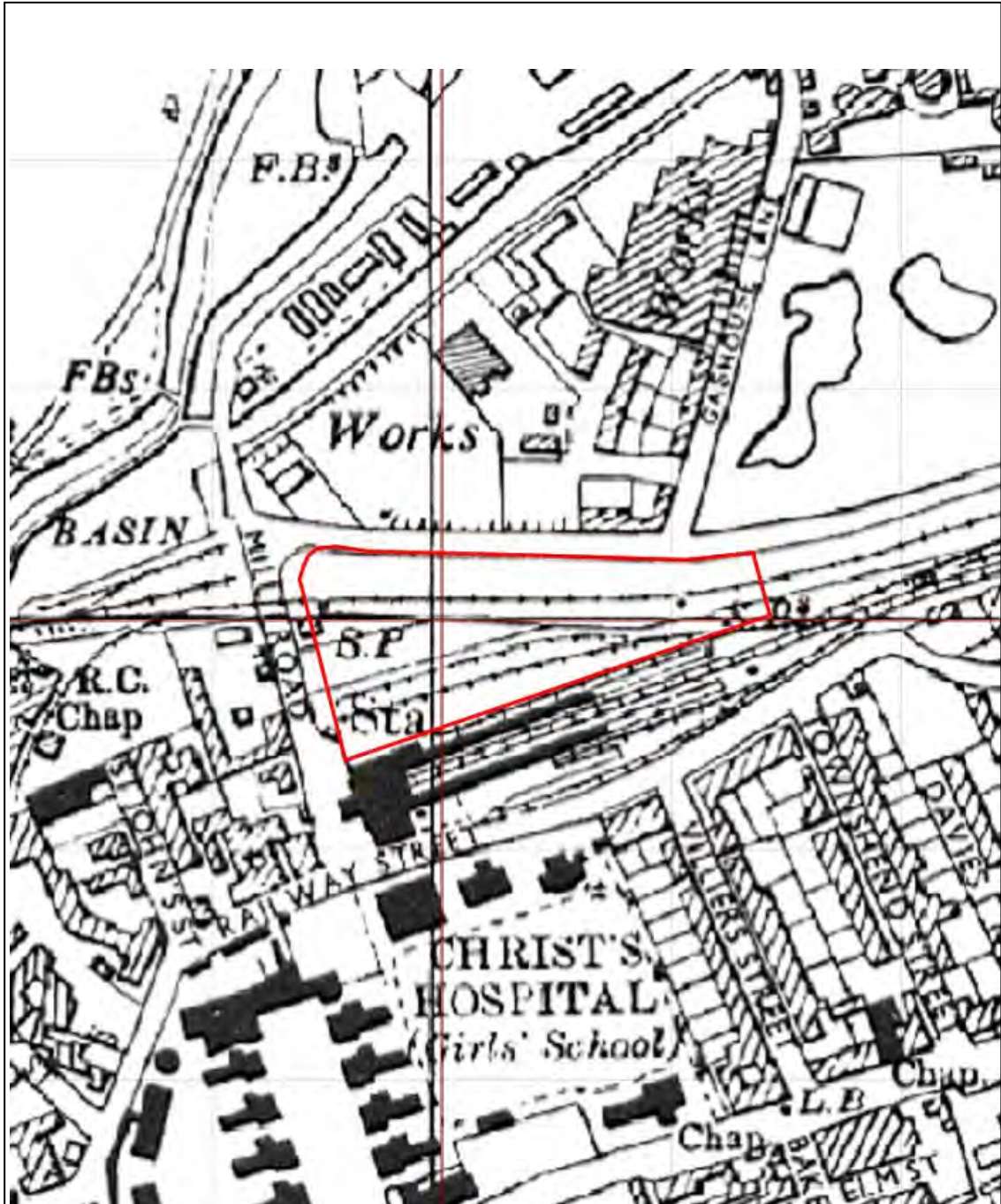


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Project: Mill Road

Project Ref: HLEI 17433

Figure 6: Historical Map Extract

Map Date: 1960

Scale: Not to Scale



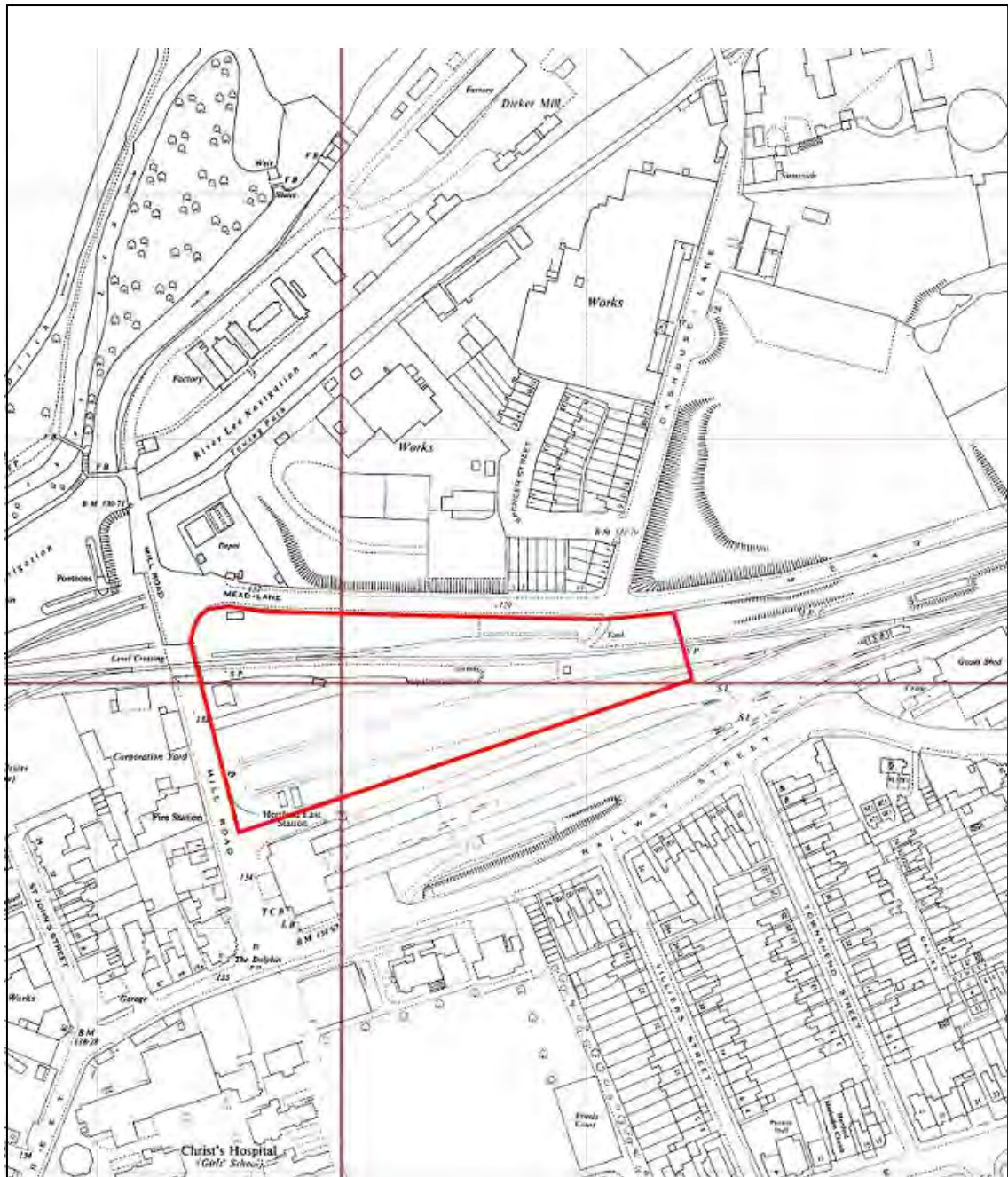
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Project Ref: HLEI 17433

Figure 7: Historical Map Extract

Map Date: 1963

Scale: Not to Scale

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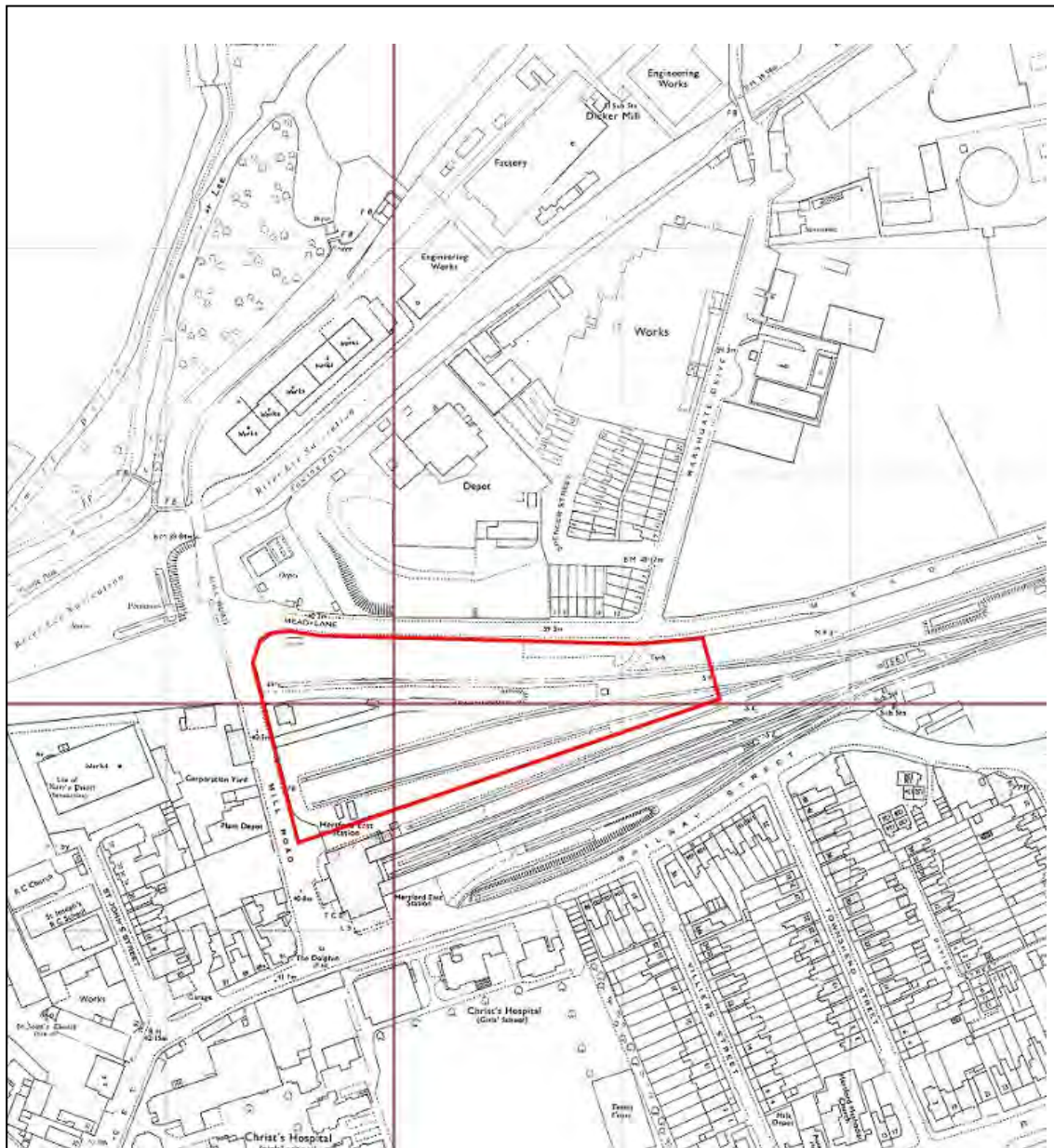


Project: Mill Road  
Project Ref: HLEI 17433  
Figure 4: Historical Map Extract  
Map Date: 1963-64  
Scale: Not to Scale

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Figure 4: Historical Map Extract

Map Date: 1975

Scale: Not to Scale

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Project: Mill Road

Project Ref: HLEI 17433

Figure 4: Historical Map Extract – Aerial Photograph

Map Date: 2011

Scale: Not to Scale

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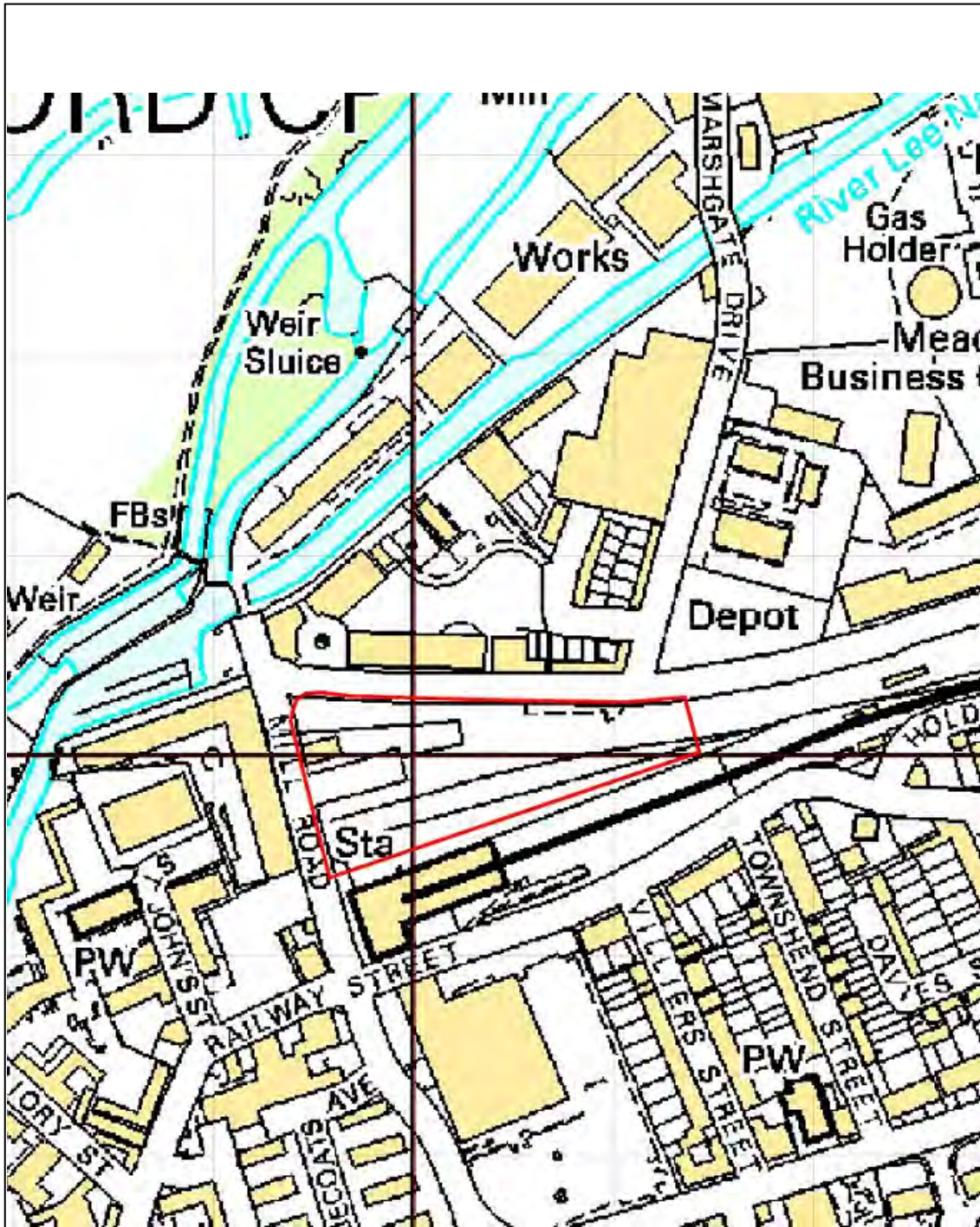


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Project: Mill Road

Project Ref: HLEI 17433

Figure 4: Historical Map Extract

Map Date: 2011

Scale: Not to Scale

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APPENDIX B:  
PHOTOGRAPHS

***Appendix B*** - 4 Pages



**Photo 1 : Looking east along Mead Lane.**



**Photo 2 : Looking west through the central area of the site.**



**Photo 3 : Evidence of the former railway tracks through the site.**



**Photo 4 : Evidence of the former railway tracks through the site.**



**Photo 5 : Dense vegetation on far eastern area of the site.**



**Photo 6 : General view of the central area of the site.**



**Photo 7 : Speedy Hire centre on northern area of the site.**



**Photo 8 : Network Rail land to the south of the site.**

APPENDIX C:  
Part IIA (The Contaminated Land Regime)

***Appendix C - 2 Pages***

## ***Contaminated Land Definition***

Under Section 57 of the Environmental Act 1995, Part IIA was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land. Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 2001<sup>1</sup>, providing a definition of 'contaminated land' and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.

**According to the Act, contaminated land is defined as 'any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:**

- a) *Significant harm* is being caused or there is a *significant possibility* of such harm being caused;  
or
- b) *Pollution* of controlled waters<sup>2</sup> is being, or is likely to be, caused<sup>3</sup>.

The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term 'possibility of significant harm being caused' should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.

The following situations are defined where harm is to be regarded as significant:

- i. Chronic or acute toxic effect, serious injury or death to humans
- ii. Irreversible or other adverse harm to the ecological system
- iii. Substantial damage to, or failure of, buildings
- iv. Disease, other physical damage or death of livestock or crops
- v. The pollution of controlled waters<sup>4</sup>.

With regard to radioactivity, contaminated land is defined as 'any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a *significant possibility of such harm being caused*<sup>5</sup>'.

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<sup>1</sup> In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2001 and The Contaminated Land (England) Regulations 2006; in Scotland by The Contaminated Land (Scotland) Regulations 2000; and in Wales by The Contaminated Land (Wales) Regulations 2001, replaced by the Contaminated Land (Wales) Regulations 2006.

<sup>2</sup> In Scotland the term "controlled water" has been updated to "water environment" under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

<sup>3</sup> The definition will be amended to apply to "significant pollution" of controlled waters as the Water Act 2003 is implemented.

### **The Risk Assessment Methodology**

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystems or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

### **The Risk Assessment**

By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) - takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence - takes into account both the potential severity of the hazard and the sensitivity of the receptor.

For further information please see the Contaminated Land section on the DEFRA website ([www.defra.gov.uk](http://www.defra.gov.uk)).

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<sup>4</sup> Groundwater in this context does not include waters within underground strata but above the saturated zone.

<sup>5</sup> The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

APPENDIX D:  
GENERAL NOTES

## **RPS HEALTH, SAFETY & ENVIRONMENT**

### *Phase 1 - Environmental Risk Assessment / Desk Study Environmental Review*

#### General Notes

1. A "desk study" means that no site visits have been carried out as any part thereof, unless otherwise specified.
2. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.
3. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.
4. The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
5. No sampling or analysis has been undertaken in relation to this desk study.
6. Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
7. Where any data supplied by the Client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.
8. This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.
9. The copyright in the written materials shall remain the property of the RPS Company but with a royalty-free perpetual licence to the Client deemed to be granted on payment in full to the RPS Company by the Client of the outstanding amounts.
10. The report is provided for sole use by the Client and is confidential to them, their professional advisors, no responsibility whatsoever for the contents of the report will be accepted to any person other than the Client. [Unless otherwise agreed]
11. These terms apply in addition to the RPS Group "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail.) In the absence of such a written contract the Standard Terms of Business will apply.