ARUP

Proposed Data Centre at Thorney Lane Business Park, Iver

Ground Contamination Desk Study and Preliminary Risk Assessment

Reference: ARP-276894-24-XX-XX-LQ-RP-00005

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Executive summary

This report sets out the ground contamination desk study and preliminary risk assessment for the proposed development of a data centre at Thorney Business Park in Iver. The report presents and assesses the latest desk-based information for the site considering the historical and current land uses, environmental setting and development proposals to produce a preliminary assessment of potential contamination risks. This report has been prepared to support a planning application for the proposed redevelopment and is intended to satisfy the requirement for a preliminary risk assessment that would be expected as a planning requirement.

Several ground investigation reports have been used to inform the understanding of ground conditions across the site and to support the development of a conceptual site model and risk assessment. Details of the contamination data collected from the various phases of investigation is provided within two separate GQRAs, one for the eastern and western areas of the site and is not included here.

Site setting

The site is split into two principal parts. The eastern area of the site is the main development area and is located within the western end of Thorney Business Park. The proposed data centre and bulk of the development works will be located in this area. The western areas of the site comprises strips of land in the north, east and south of an arable field to the west of Thorney Business Park. Development in the western area will be limited to an emergency access road, and utilities and drainage connections. The site is bounded by Thorney Business Park to the east, the Grand Union Canal (Slough Branch) to the north, Great Western railway to the south and further fields and a traveller's community compound to the west.

There are some residential receptors in the vicinity of the site including a traveller's community compound located immediately north of the western part of the site and a residential development approximately 300m southeast of the eastern part of the site.

Site history

The eastern part of the site was quarried from the late 1800s to around the late 1940s as part of a larger works that extended to the east. The area appears to have been backfilled with general Made Ground fill. The area was redeveloped in the 1960s as a concrete works and engineering works, and then as Thorney Business Park around 2010. During these periods there were a variety of potential point sources for contamination, in particular fuel and lubricant oil storage. There was also a fire in an asbestos clad building in the northeast of the site in 2008 that destroyed the structure and may have spread firefighting runoff and other contamination into the drainage system.

The western part of the site was open fields until it was also quarried in the 1960s to 1980s, independently to the eastern site area. The western site area was backfilled with landfill including domestic waste. The final date of landfilling is unconfirmed, but mapping suggests that this was probably in the late 1980s.

The surrounding area includes several other completed landfills, and an active mineral extraction works to the southwest.

Ground conditions

The eastern area of the site has undergone several phases of ground investigation including works to support the current proposed development which includes geoenvironmental analysis of the soil, groundwater and ground gas. There have been several phases of investigation in the western area of the site though coverage is more limited, and these investigations were not undertaken to support the current development proposals.

Ground conditions at the site are heavily influenced by the mineral extraction with highly variable thicknesses of residual natural superficial deposits of Lynch Hill Gravel Member and locally Langley Silt and Made Ground fill or landfill material in the west.

The bedrock geology comprises the London Clay Formation over Harwich Formation, Lambeth Group and the Chalk Group. The shallow aquifer in the Lynch Hill Gravel Member is designated as a principal aquifer. Though its sensitivity is reduced by the limited residual thickness in places. The granular parts of the Lambeth Group and the Harwich Formation are designated as secondary aquifer while the deeper Chalk

Group is designated as a principal aquifer. The site is not located within a source protection zone and there are no potable water abstractions within 2km of the site. Previous ground investigation and monitoring has recorded shallow groundwater in the superficial at elevations of around 24m to 31.3m above ordnance datum (m OD) across the site. Groundwater water has also been recorded in Made Ground and landfill material at similar levels and is likely to have a degree of connectivity given the local variability in the ground conditions. In the east of the site the groundwater levels suggested a south to southeasterly flow. Insufficient monitoring data is available to confirm flow directions in the west.

Potential for contamination

Potential sources of contamination at the site include the Made Ground fill in the east and landfill material in the west. In the east there is also the potential for localised impacts from the previous industrial activities and a former fire. The landfill to the west is primarily an offsite source with the bulk of the landfill outside the site boundary but it also encroaches onto the southern arm of the western field and locally onto the northern arm (in the west) and eastern arms (in the south).

A detailed discussion of the ground investigation in eastern and western areas of the site will be provided in the GQRAs

The findings of the preliminary risk assessment are summarised as follows:

Description	Risk assessment (without mitigation)
Environmental sensitivity	Moderate
Development sensitivity	Low
Potential for significant contamination	Eastern area – Low to moderate Western area - Moderate
Risk of harm to human health (workers and site visitors) during construction	Low to moderate
Risk of harm to human health (neighbouring site users) during construction	Low to moderate
Risk of harm to human health (future site users) during operation	Low to moderate
Risk of harm to human health (maintenance workers) during operation	Moderate
Risk of pollution to groundwater (principal Lynch Hill Gravel aquifer)	Moderate
Risk of pollution to groundwater (secondary Lambeth and Harwich aquifer)	Low
Risk of pollution to groundwater (principal Chalk aquifer)	Moderate / low to moderate
Risk to onsite building materials and services	Low
Risk to planting in future soft landscaping areas	Low

1. Introduction

1.1 Background

Ove Arup & Partners International Limited (Arup) has been appointed by the future site operator (the Client) to provide environmental consultancy support for the redevelopment of western part of Thorney Business Park and land adjacent to the west for a data centre and ancillary infrastructure.

The site was previously granted a hybrid planning permission (reference PL/22/1775/FA) in May 2024 for a Data centre. The Client is submitting a new planning application with an updated development scheme and Arup have been appointed to prepare ground contamination risk assessments and reporting to support the application.

This report sets out the desk study and preliminary ground contamination risk assessment for the site. Arup has also prepared ground contamination risk assessment reports for the eastern [1] and western areas [2] of the site which set out the Generic Quantitative Risk Assessments (GQRAs). Arup is also in the process of undertaking a Detailed Quantitative Risk assessment (DQRA) [3] and developing a remediation strategy [4] in support of the redevelopment proposals. The GQRAs are intended to accompany the main planning application while the DQRA and remediation strategy are planned to be submitted for condition discharge at a later date following finalisation of scheme design.

1.2 Planning context

The future site operator is submitting a new planning application for the proposed redevelopment. Further details on the proposed redevelopment at included in Section 2.4.

There is an existing hybrid planning application (PL/22/1775/FA) that was granted on 29 May 2024 by Buckingham Council to the previous site owners.

The planning permission for the hybrid application included a requirement for the completion of tiered contaminated land risk assessments and a remediation strategy and similar requirements are expected for the new application. This report is intended to satisfy the requirement for a preliminary risk assessment for the new planning application.

1.3 Report objectives

The objectives of this report are to:

- Identify and assess relevant sources of information concerning historical site uses, environmental setting, site sensitivity, ground conditions and the potential for ground contamination at the site and in the surrounding area within the updated redline boundary of the proposed development.
- Assess the potential for ground contamination and undertake a preliminary risk assessment based on a conceptual site model, considering risks associated with the construction and operational stages of the proposed development.
- Identify next steps, including the requirement for ground investigation and further contamination assessment.
- Provide information sufficient to support the upcoming planning application and to satisfy the requirement for a preliminary risk assessment.

This desk based ground contamination preliminary risk assessment has been prepared in general accordance with the National Planning Policy Framework [5], BS10175:2011+A2:2017 the British Standard for the investigation of potentially contaminated sites (BS10175) [6] and Environment Agency (EA) Land Contamination Risk Management (LCRM) guidance [7].

1.4 Information sources

The following sources of information have been utilised in the preparation of this report:

- Groundsure Enviro Insight [8] and Geo Insight [9];
- British Geological Survey GeoIndex website [10];
- Department of the Environment (1995), Industry Profiles [11].

Various risk assessments, ground investigation and similar reports have been utilised in the preparation of this report to help inform the ground conditions, conceptual site model and preliminary risk assessment. However, this report excludes any detailed review or assessment of contamination levels which is provided separately in the GQRA. Relevant reports:

- Arup 2025, Proposed data centre at Thorney Business Park, Iver. Ground contamination risk assessment - eastern site area. [1];
- Arup 2025, Proposed data centre at Thorney Business Park, Iver. Ground contamination risk assessment - western site area. [2];
- Delta-Simons, Geo-Environmental Assessment, Land at Thorney Business Park, Ref: 21-0054.05, April 2022 [12]
- Delta-Simons, Geo-Environmental Risk Assessment, Thorney Business Park – Site Two, Ref: 21-0054.06, July 2022 [13]
- Delta-Simons, Additional Geo-Environmental Assessment, Thorney Business Park, Ref:94284.568550, January 2024 [14]
- Hughes Craven, Mineral Assessment, Land at Thorney Business Park Iver, Buckinghamshire (Ref: HC/0741/20), April 2022 [15]
- Oxford Archaeology, Archaeological Desk-Based Assessment, dated May 2022, Ref: 8098 Version 4 [16]
- Santec, Thorney Lane, Iver: Infiltration Testing, Factual Report, Ref:330202081R1, April 2022 [17]
- Delta-Simons, Interim Factual Geotechnical and Interpretive Environmental Report, Thorney Business Park – Access Road, Ref: 88279.546252, January 2022 [18]
- ESI Consulting, Geo-environmental Assessment, Thorney Lane Business Park, Ref: 66597R1, April 2018 [19]
- Environ, Phase II Environmental Site Investigation Report, Land at Thorney Business Park, Ref: UK11-21071, February 2015 [20]
- Lucion Group. Thorney Business Park, Iver. Interim Geo-Environmental Assessment Report. 88279.546252. November 2024. [21]
- Richard Jackson plc, Ground Investigation Report, Thorney Lane, Ref: 30326, June 2008 [22]
- CC Ground Investigation Limited, Western Rail Link to Heathrow (WRLtH) Phase 2B. Ground Investigation, October 2018 [23]
- 1st Line defence, Detailed Unexploded Ordnance (UXO) Risk Assessment. DA-20371-00. July 2024. [24]
- Concept, Ground Investigation Report - Factual. Thorney Lane Phase 1 Due Diligence. Issue 2. 24/3980-GIR-F01 [25]
- Concept, Ground Investigation Report - Factual. Thorney Lane DC1. 25/4047-GIR-F01. July 2025. [26]

1.5 Limitations

This report has been produced by Arup for the use of the Client in connection with the proposed redevelopment of the site. It takes into account our client's particular instructions and requirements and addresses their priorities at the time. It is not intended for, and should not be relied upon by, any third party except as provided for in Arup's appointment with the Client.

Arup has based this report on the sources of information detailed within the report text and believes them to be reliable but cannot and does not guarantee the authenticity or reliability of third-party information. Notwithstanding the efforts made by the professional team in undertaking this contamination assessment, it is possible that ground conditions and contamination other than that potentially indicated by this report may exist at the site.

This report has been prepared based on current legislation, statutory requirements, planning policy and industry good practice at the time of writing. Any subsequent changes or new guidance may require the findings, conclusions and recommendations made in this report to be reassessed in the light of the circumstances. Should the proposed layout or use of the site change, the assessments and conclusions presented in this report may need to be revised.

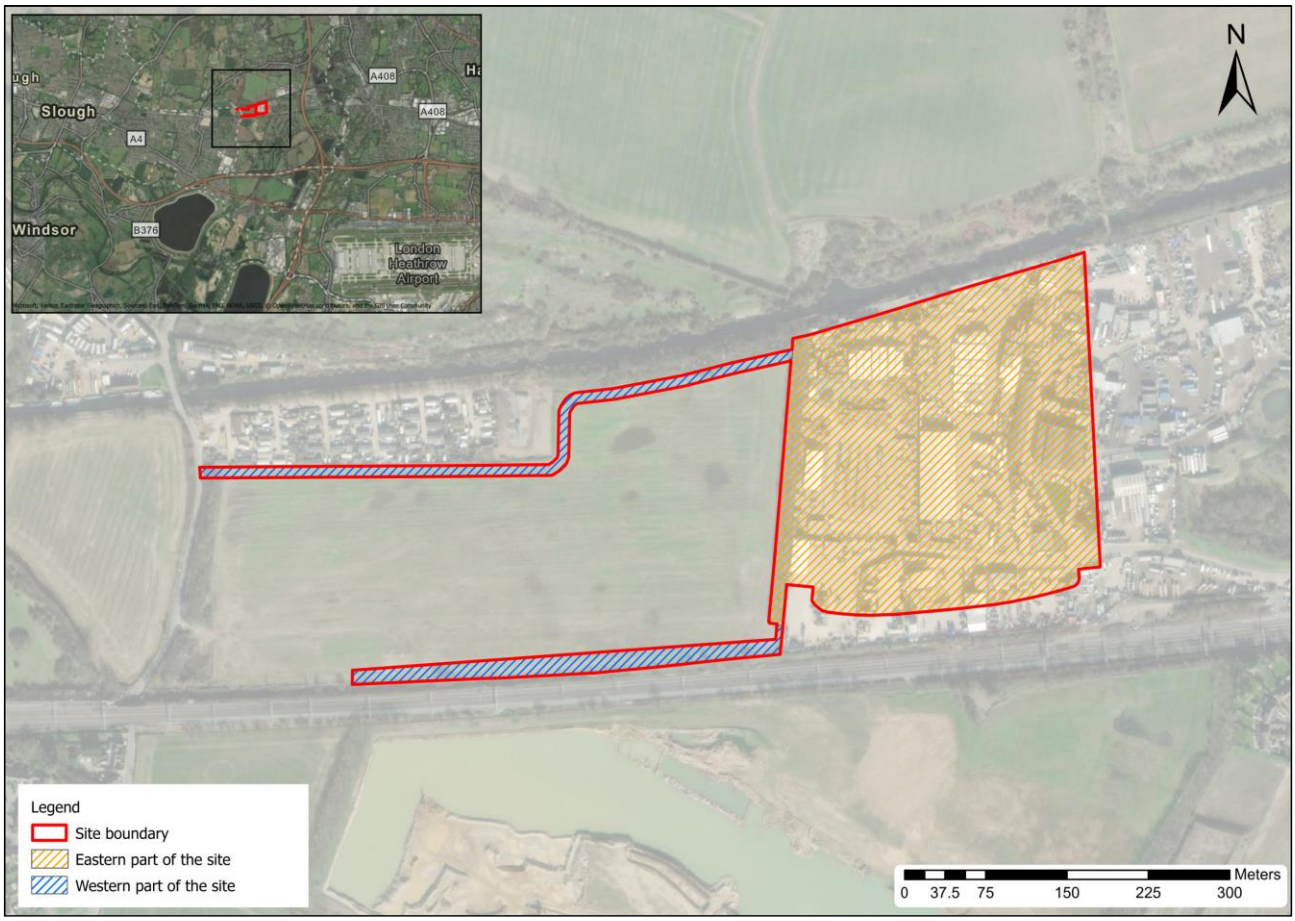
This report does not present a survey or assessment of the location, condition or liabilities associated with hazardous materials in the building fabric and the implications of those hazardous materials. Arup has not carried out a survey of hazardous materials in the buildings, for example asbestos containing materials or lead, as part of this assessment. This report does not assess geotechnical constraints and hazards.

2. The site

2.1 Site location

The site is located approximately 1.2km south of Iver town centre in Buckinghamshire. The site occupies an area of approximately 10 hectares (Ha) primarily within Thorney Business Park as well as sections of an agricultural field to the west. The National Grid co-ordinates for the site are TQ029800. The site boundary plan and location are shown in Figure 1.

Figure 1 Site location plan



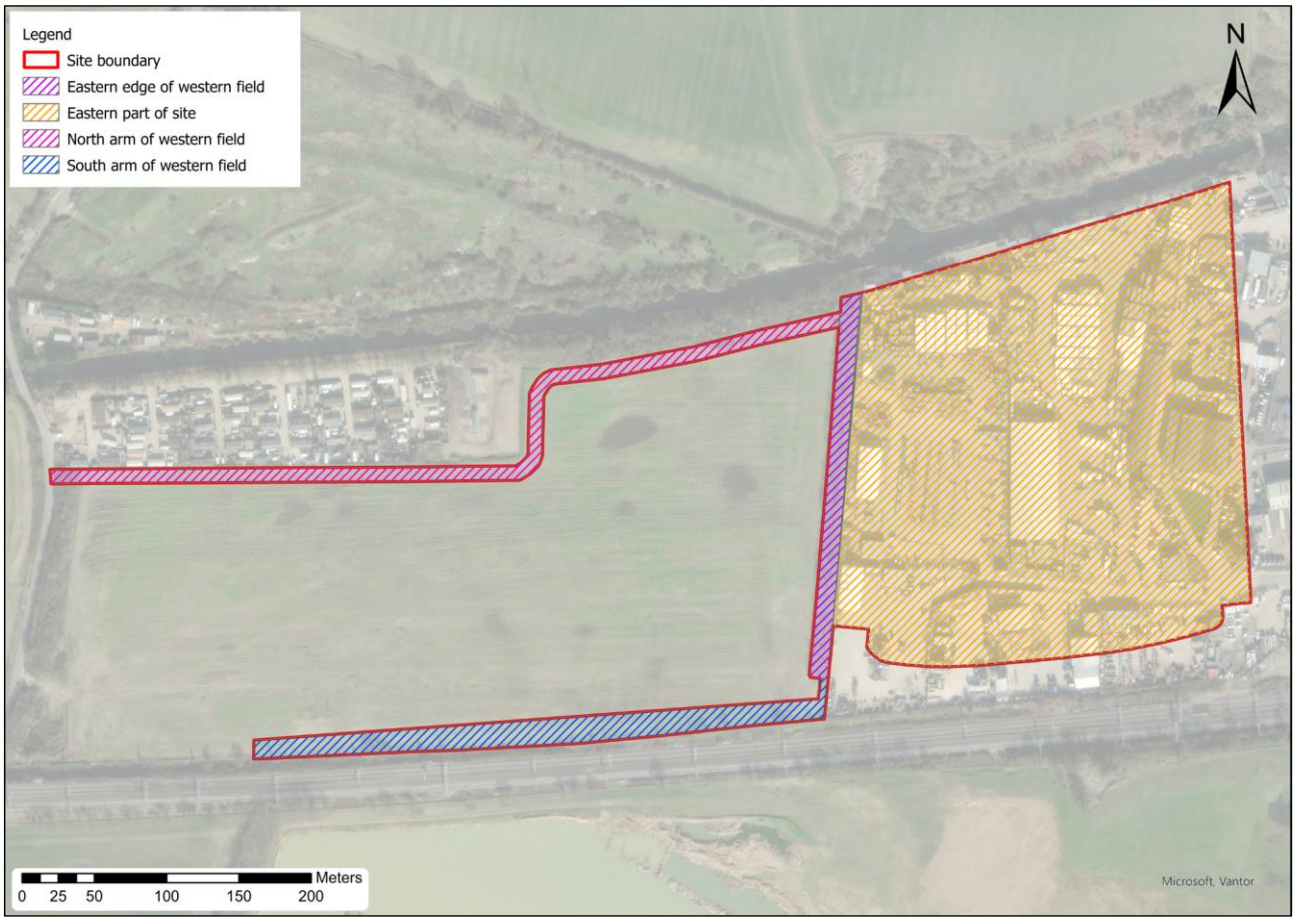
2.2 Site description and current site use

The site is divided several parts as shown on Figure 2. The eastern part of the site (orange) lies within western end of Thorney Business Park, previously a mixed commercial and industrial complex occupied by multiple tenants split between several different storage yards, as well as temporary offices, a concrete batching plant, fuel points, and storage of filming support and accommodation trailers. The business park is now vacant. Bounding the site to the north of the business park a vegetated embankment and the towpath for the adjacent canal are present.

The western part of the site includes strips along the northern (pink), southern (dark blue) and eastern (purple) boundaries of an open agricultural field which is also mostly occupied by a closed and restored landfill.

The site is bounded by the Slough arm of the Grand Union Canal to the north, a traveller's community compound to the northwest, the Great Western Main Line railway to the south, the wider Thorney Lane Business Park to the east, and the agricultural field and Masion Lane to the west.

Figure 2 Current land uses

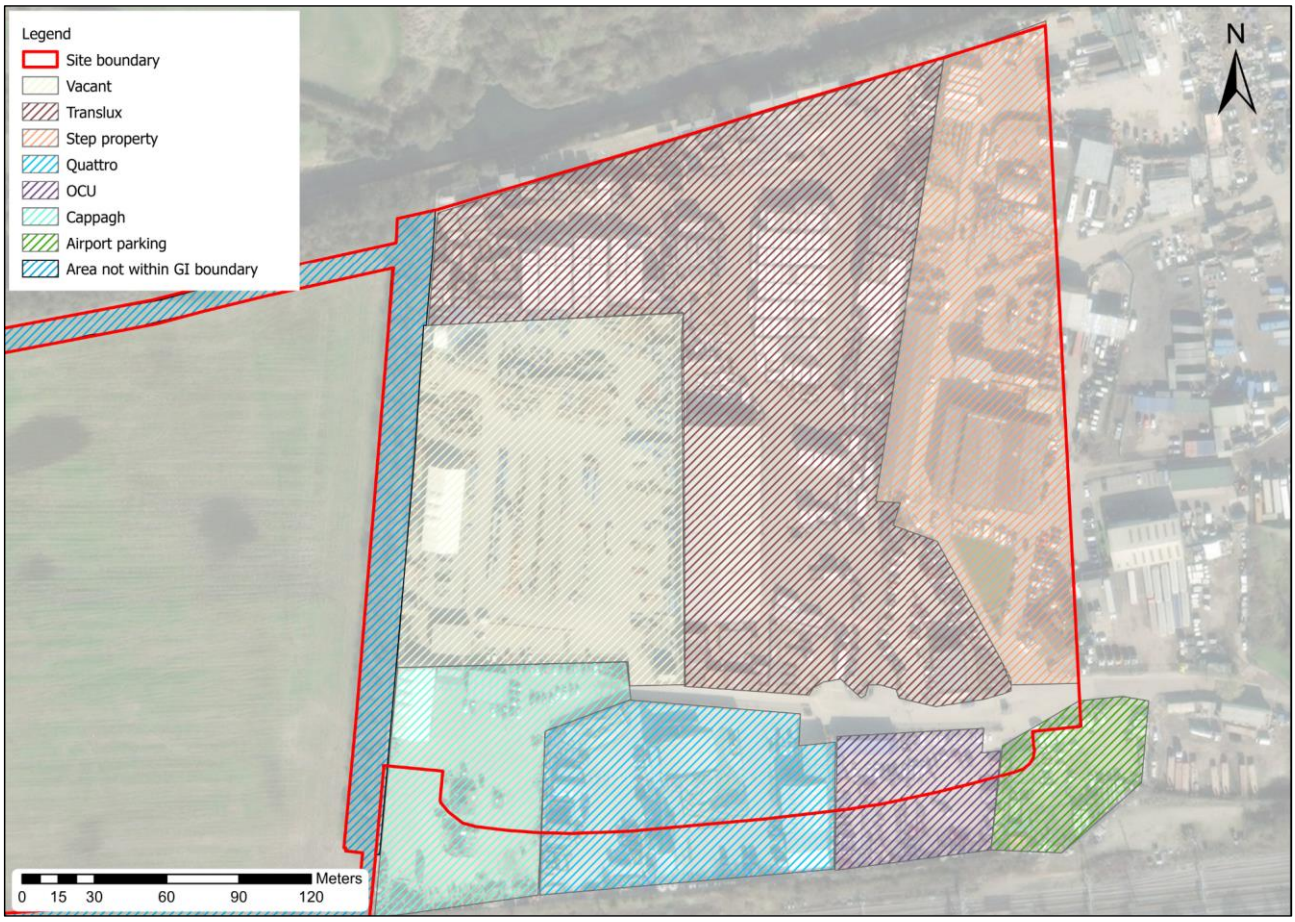


A summary of the previous site uses in the main site within Thorney Business Park (orange) is provided in Table 1 and Figure 3.

Table 1 Summary of previous site uses and features within Thorney Business Park

Area of site	Land-use
Quattro	A concrete batching plant and storage yard. It is understood from the site manager of this area that the concrete plant is not in regular use and is a backup for other plants. The site is predominantly used for overnight storage and maintenance of lorries. Three large sheds are present along the east of this area which are used as garages and fuel storage.
Cappagh	Used as a storage depot for vehicles and materials. There is a temporary unit in the north which is being used as offices. The remainder of the site is used for the storage of materials, aggregate and certain chemicals including petroleum-based lubricants. Fuel tanks are present within the centre of the site and are used for refuelling Cappagh lorries and onsite plant.
Translux and Vacant plot	The vacant plot and north of the Translux plot are used for the storage and servicing of trailer units for film industry set support. The southern half of the Translux area includes their former servicing sheds and is temporarily used for the storage of Quattro cement lorries. The eastern areas of this plot have recently been cleared as part of the site preparation works. A pumping station and old substation are also present in this area.
Step Property	This area was formerly occupied by numerous small units and two large buildings. These have recently been cleared to ground level for the site preparation works.
Airport Parking	Area used for offsite airport car parking.
OCU	This area was formerly used for storage but has been vacated and is temporarily used by Quattro for offices, parking and material storage.

Figure 3 Previous site uses and features within Thorney Business Park



2.3 Surrounding area

To the east of the site is the rest of Thorney Business Park with further industrial and commercial units, while to the west are further arable fields. The wider surrounding area is primarily a mix of fields and industrial land uses including Ridgeway Industrial Estate to the northwest and a gravel extraction to the southwest.

There is a traveller's community compound located immediately north of the western field, which is approximately 280m from the main site area. There are further residential properties in the surrounding area with the closest properties located approximately 200m southeast of the site.

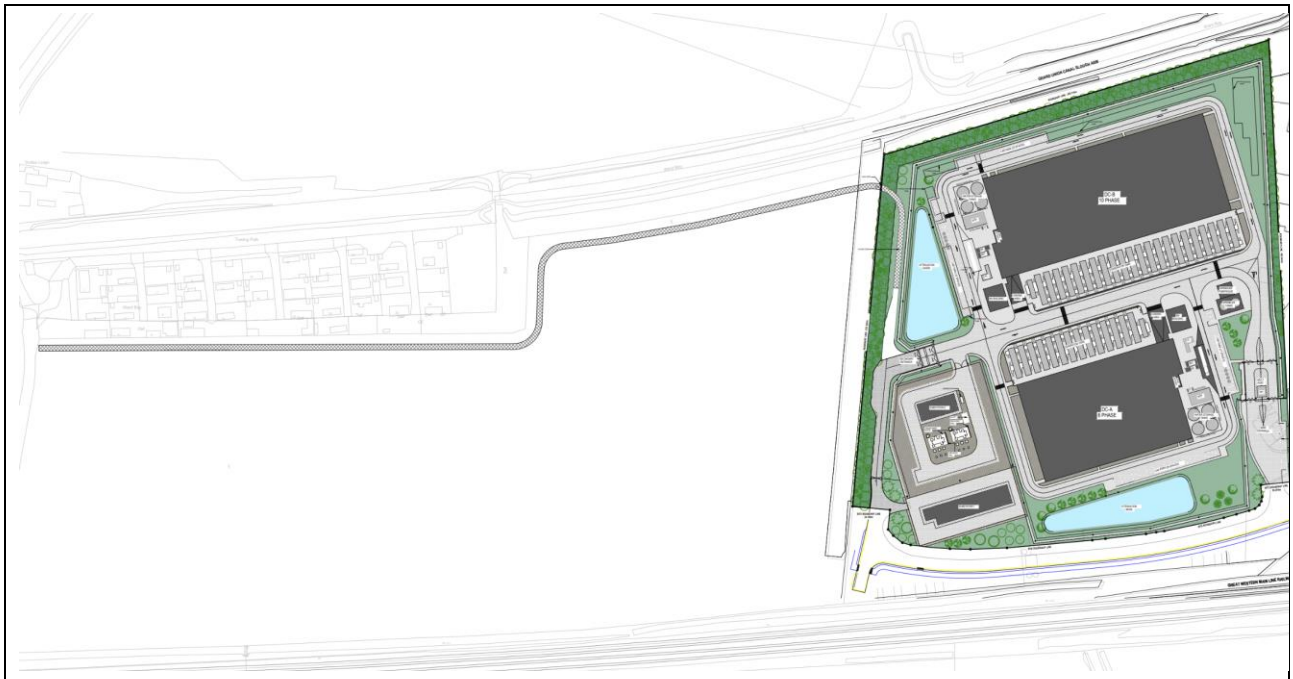
2.4 Proposed development

The proposed development will comprise the construction of two data centre buildings and ancillary offices, plant, emergency backup generators and associated fuel storage, landscaping, sustainable drainage systems, an emergency access route, and parking and ancillary works. The main development area will be in the eastern part of the site.

Development in the western part of the site will be limited to an emergency access road (northern strip) and utilities connections (southern strip). In addition, ownership will be retained by the current landowner, the future site operator will have access to construct and use the infrastructure in the west of the site.

The proposed development plan for the site is shown below as Figure 4. It is noted that this plan only shows the above ground elements and therefore doesn't show the works in the southern parts of the western area of the site.

Figure 4 Proposed development plan



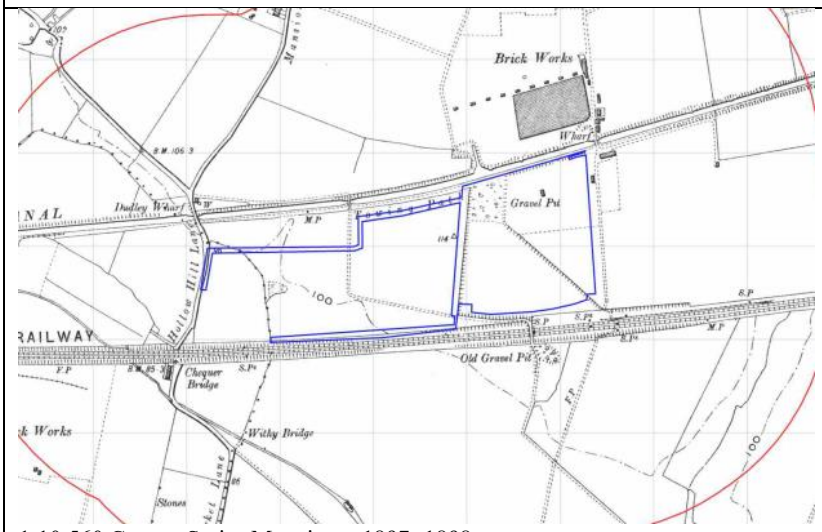
Extract from AECOM Drawing ACM-00-XX-DR-C-00010 (December 2025)

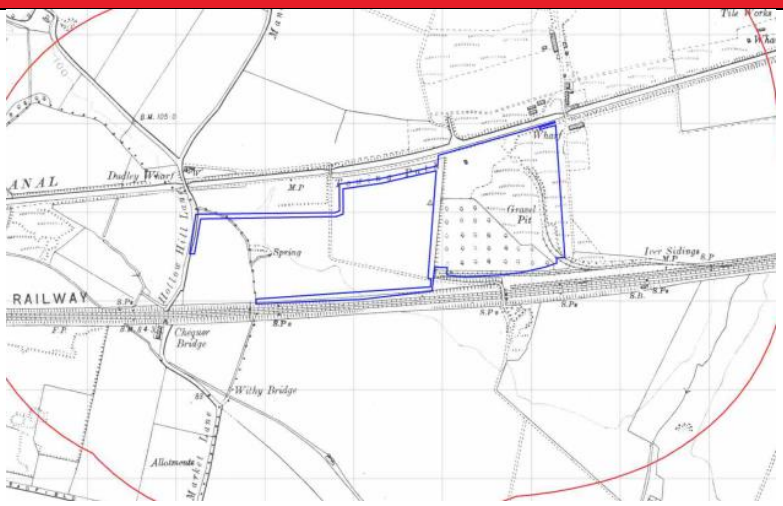
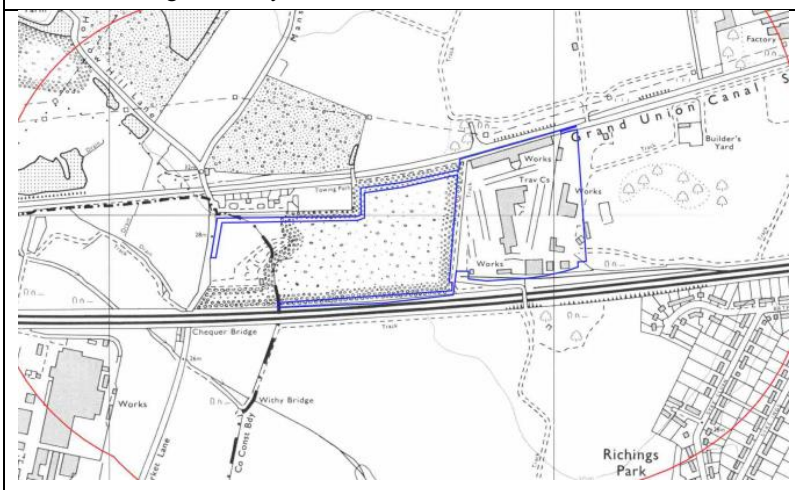
3. Historical land uses

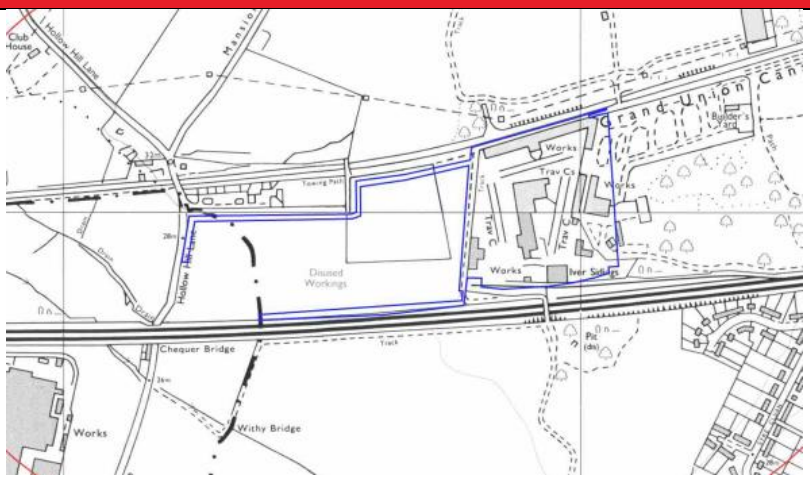
3.1 Site history

A review of historical maps and plans from the in the Groundsure reports [8] [9] has been undertaken. In addition, reference to the Arup ground contamination reports for the eastern [1] and western [2] site areas has also been used. The previous phases of assessment and ground investigation are assessed in detail within the two Arup GQRAs and therefore have not been assessed in detail in this PRA.

Table 2 Summary of historical land uses

Dates	Land-use / activity	Potential contamination
Up to Circa (c.) 1897	A gravel pit was present in the northwest of the main site. A change in ground level is indicated running northwest-southeast through the main site area and may indicate quarrying had already occurred in the western part of this area. The rest of the site is shown as undeveloped open fields. The Great Western Railway line and Grand Union Canal (Slough Branch) were already present by 1897 to the south and north of the site respectively. The railway line was constructed on a raised embankment for the section adjacent to the site while the canal was at a lower-level cutting. In the wider area a brick works is shown directly north of the main site of the far side of the canal. An old gravel pit is indicated to the south of the site immediately beyond the railway line. .  1:10,560 County Series Mapping – 1897 -1898	Limited given age and limited site activity.
c. 1884 - 1945	The gravel extraction expanded over time spreading eastwards over the eastern site area. A railway siding connected the gravel pit to the main railway line to the south. By c.1923 the pit had been partially restored to the western and southern boundaries dominated by vegetation. By 1924, the brickworks to the north had been demolished.	Unknown Made Ground associated with infilled gravel pits.

Dates	Land-use / activity	Potential contamination
	 1:10,560 County Series Mapping - 1923	
1945 - 1974	Within the main (eastern) site the quarrying appears to have finished in the late 1940s with the excavation face moving east of the site area. Quarrying to the east of the site appears to have been completed by the mid-1960s based on aerial imagery showing this area had been backfilled. The main site area was redeveloped in the late 1960s/early 1970s as a concrete works and engineering works operated by Bison Concrete Limited. The historical mapping shows various travelling cranes, workshops, engineering works and electrical substation within the site area. Above ground tanks are identified in two areas, which are most likely associated with fuel oil storage. It is likely that some degree of earthworks and infilling was undertaken for the redevelopment give the uneven ground surface shown on the previous mapping. By 1970, the area to the east of the site is shown as vegetation and a builder's yard which indicated that restoration (and possible landfilling) had occurred. Mapping from c.1974 shows gravel extraction covering the field to the west. The excavation edges are very close to the boundaries of the western area of the site.  1:10,000 National Grid Mapping - 1974	Moderate potential, mainly from fuel oils, with metals, other hydrocarbons/organic compounds and asbestos and placement of fill of unknown origin prior to construction.
1974 to 1990	The main site area remained relatively unchanged from the 1970s until the mid-1990s with some additional buildings constructed on site and expansion of the business park to the east of the site. Mapping from 1988, shows the western field labelled as 'disused workings and appears to have been infilled. This area is recorded as a local authority landfill. The records are limited as it predates the main regulation of landfills in the 1990s but there are some records which indicate it accepted domestic waste up until c.1990. Further details on the landfill are included in Section 3.2.	Moderate potential on the main site mainly from fuel oils, with metals, other hydrocarbons/organic compounds and asbestos.

Dates	Land-use / activity	Potential contamination
	 1:10,000 National Grid Mapping – 1987-1988	Landfill leachate in addition to the above.
1990 - 2015	In 2002, Bison Concrete Limited was granted planning for the construction of a waste transfer station (Ref: 02/08203/CM). From c.2005, an area of the site (at Unit 13) was used by Cappagh Public Works Ltd for the material recycling. A successful appeal was made in 2007 against an enforcement notice served by the County Council in 2005 that alleged that there was a material change from a builder's yard to a waste transfer, storage and processing. A variation to the existing planning application was made (Ref: 09/01533/CM), where the Environment Agency requested a site investigation which resulted in three boreholes being drilled with groundwater sampling. The report was found to be satisfactory and the relevant condition discharged. On 02/05/2007 there was an oil/fuel pollution incident at the eastern site boundary which resulted in Significant (Category 2) impacts to water and land. No further detail is provided. By 2008, the concrete works had closed, and aerial photos indicate that the laydown areas for concrete products had been cleared. By 2010, most of the site had been demolished (except adjacent to the eastern site boundary including the Speedy Fuels building) and there were large stockpiles of demolition material present on site. It is possible that some of this material was placed as part of the earthworks to create a construction platform. From 2010, part of the site was used as a vehicle dismantling yard. In 2011, a planning application (Ref: 11/00150/FUL) was granted for the redevelopment of the site to provide storage and maintenance compound incorporating office and maintenance buildings. In April 2010, a large fire badly damaged a building in the northeast of the site (refer to eastern area GQRA [1] for location and details). The building was clad in asbestos cement sheeting. There were reports of explosions possibly from gas cylinders in one of the units used as a car parts body workshop. In 2015, a further planning application was granted for a wood recycling facility (Ref: CM/00252/CM). In April 2015, the Maidenhead Advertiser reported that as many as 60 tyres were dumped on open ground and set alight near the Thorney Business Park. It is not clear where this fire occurred, although it appears to be located offsite. Various other licensed waste licences were granted for the site between 2013 and 2015, including Quattro (UK) Limited for material recycling and the treatment of waste and a vehicle 'depollution' facility.	Moderate potential, mainly from fuel oils, with metals, other hydrocarbons/organic compounds and asbestos and placement of fill of unknown origin prior to construction and from recycling operations. Landfill leachate in addition to the above. Contamination from the fire, including spread of asbestos fibres and PFAS from firefighting foams.

Dates	Land-use / activity	Potential contamination
	 Aerial imagery – 2013	
c.2016 to present	The eastern site area was part of the wider Thorney Business Park and remained relatively unchanged until the recent demolition works in 2024/2025. Trade directory entries list a wide variety of activities on site including car breakers and dismantlers, concrete manufacturers and distributors, garage services, oil fuel distributors (Speedy Fuels), packaging supplies and road haulage. There are also several waste exempt activities such as storage and treating of waste, use of waste in construction, screening and blending of waste, treatment of waste wood and waste plant matter and recovery of scrap metal. The western area of the site appears to have remained unchanged as part of an agricultural field. Access roads remain largely unchanged. Google earth images from circa 2018 show earthworks at the location of the current traveller's community compound. Subsequent images from 2019 to 2021 appear to show stockpiles of assorted (waste) materials. Later images (also 2021) show further earthworks in progress followed by the introduction of trailer / caravan units and possible scrap vehicles along the western site boundary.	Moderate potential, mainly from fuel oils, with metals, other hydrocarbons/organic compounds. Landfill leachate in addition to the above.
	 Aerial Imagery - 2022	

Notes:

The redline boundaries within Table 2 are extracts from the Groundsure report acquired early 2025 and vary slightly to the updated redline boundary as of December 2025. These minor changes do not impact the site history.

3.2 Historical industrial land uses

The Groundsure report identifies various industrial land uses both onsite and offsite described in Section 3.1. In addition to those identified on the maps, potentially contaminative historical land uses in the surrounding area (within 100m) include:

Onsite:

- Gravel pitting, unspecified heaps associated with the gravel quarry on the main site and associated cutting and backfilling of material.
- Refuse heap and unspecified disused workings associated with the Iver landfill within the western field and associated cutting and backfilling of landfill material.
- Railway sidings within the southern boundary of the main site during the gravel quarrying.
- Electrical substations present between 1970-1992.
- Five unspecified above ground tanks between 1970-1992 most likely associated with fuel oil storage associated with travelling cranes, workshops, engineering works and electrical substation.

Offsite:

- Cuttings associated with the historical railway sidings, connecting to the main railway line 25m to the south.
- Gravel pitting 90m to the north and historical brick works located 15m north of the main site boundary.
- Unspecified pitting and refuse heaping (Mansion Land Landfill) located 40m north of the proposed northern access road c.1974.
- Electrical substation located 40m to the north.

Petrol stations or garages

There are no historical petrol stations within 500m of the site, and the closest historical garage is located c.485m east of the site boundary dated 1987.

Landfills (recent or historical)

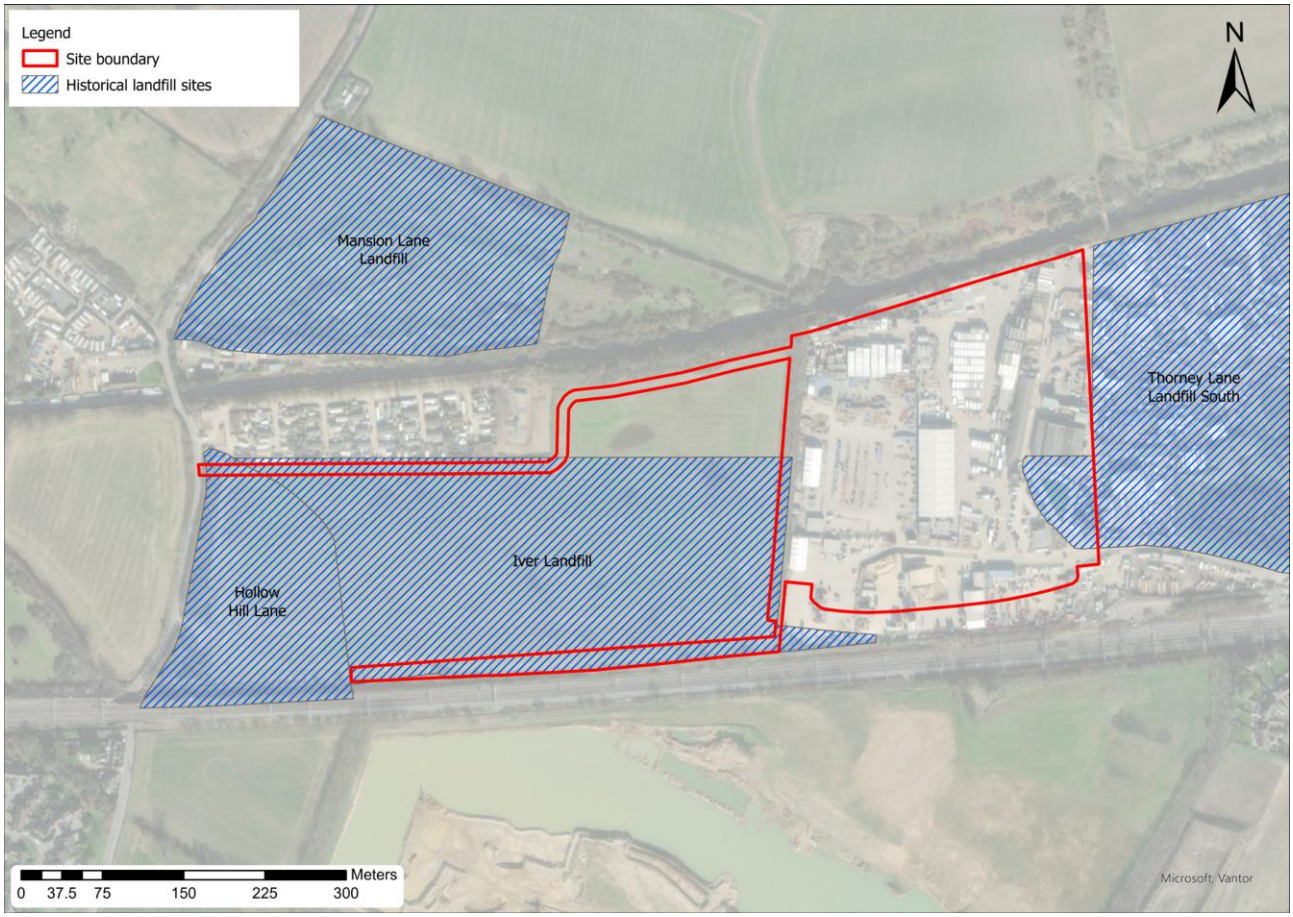
No active or recent landfill is recorded within the site or surrounding area however, historical landfills have been identified both offsite and onsite. A summary of the records is as follows:

- Iver Landfill (site reference: WD10904): occupies the majority of the arable field that the western site area is part of. The Environment Agency does not list any other details for the landfill such as date of operation or accepted waste types however based on the investigations by Richard Jackson Ltd in 2008 [22], CC Ground investigation Ltd. in 2018 [23] and Lucion Group in 2024 [21] it appears to have included domestic refuse. The dates of the backfilling are unknown, based on the aerial imagery and Ordnance Survey mapping it appears to have been backfilled by the late 1980s, possibly into the early 1990s.
- Hollow Hill Land Landfill (site reference: 309, SLO12): located at the western end of the arable field the western site area is part of. The landfill is recorded to have accepted inert and industrial waste between 1st January 1960 and 31st December 1969.
- Thorney Lane Landfill South (site reference: WD/1558/33): primarily located to the east of the site across the wider area of Thorney Business Park and adjacent scrub land. A small section is shown extending into the southeast corner of the site area. Though the extent of records shown for these historical landfills are estimated and not always accurate. The Environment Agency do not list any other details for the landfill such as date of operation or accepted waste types. Landfill material has not been encountered in the previous ground investigations within the Thorney Business Park either on site or in the areas to the east. The fill material appears to be general mixed Made Ground soils with various anthropogenic inclusions but no domestic waste.

- Mansion Lane Landfill (Site reference WD/1558/15, WD10904): located around 45m northwest of the western site area on the far side of the canal. The Environment Agency records indicate it was active between 1940 and 1966 and accepted a mix of inert, industrial, commercial and household waste.

The location of these landfills is shown in Figure 5 based on the recorded extents of these historical landfills from Environment Agency records [27].

Figure 5 Historical landfills



Historical and licenced waste sites

Identified on 2002 mapping, one historical waste site (Bison Concrete Waste Transfer Station) occupies the main site within Thorney Business Park.

In addition, seven waste licences occupy the main site, these include:

- Three licenses relating to Unit 16 of Thorney Business Park – operated as a 75kte Vehicle Depollution facility. The licenses range between 2,500 annual tonnes to 7,4999 annual tonnes.
- Three licences by Quattro (UK) Limited, - operated as a material recycling treatment facility. Generating an annual tonnage of 400,000 tonnes. One license was issued in 2013 and modified in 2014. The license was surrendered in July 2023.
- One license held by Esken Renewables – operated as a treatment of wood site. The nature of the site generated '0' tonnage of waste according to the Groundsure.

In addition to the above, 26 no. waste exemptions are also occupied within the main site within Thorney Business Park for various uses.

Environmental records

Within 250m of the site boundary, there is one licensed discharge into controlled waters. This relates to the discharge of miscellaneous effluent into the Grand Union Canal from Mansion Lane, at the traveller's community compound.

3.3 Planning records and regulatory information

The following historical planning applications were available on the Buckinghamshire Council planning portal.

3.3.1 PL/22/1775/FA (29 May 2024)

As noted previously, there is an existing planning permission granted for the redevelopment of Thorney Business Park for data centre use. The approved scheme comprised a hybrid application delivered in multiple phases and included the following elements:

- Demolition of existing buildings and preliminary site clearance.
- A detailed application for the construction of commercial premises, including data centres, ancillary offices, associated plant, emergency backup generators, fuel storage facilities, landscaping, sustainable drainage systems (SuDS), car parking, a new vehicular access from Thorney Lane South, and an emergency access link to Hollow Hill Lane.
- An outline planning application (reserving all matters save for access) for the construction of additional commercial buildings for data centre use, inclusive of office space, associated infrastructure, car parking, landscaping, and pedestrian routes.

The following contaminated land conditions were placed on both the detailed and outline planning permissions:

Assessment and Remediation of Ground Conditions

Condition 8 and Condition 44. Prior to the commencement of development (excluding demolition) hereby approved, the following components of a scheme to deal with the risks associated with contamination of the site shall be submitted to and approved, in writing, by the local planning authority:

i) A supplementary investigation, based on the Geo-Environmental Assessment prepared by Delta-Simons (Report ref. 21-0054.05, April 2022, to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site. This should include an assessment of the potential risks to: human health, property (existing or proposed) including buildings, crops, pests, woodland and service lines and pipes, adjoining land, ground waters and surface waters, ecological systems, archaeological sites and ancient monuments.

ii) The site investigation results and the detailed risk assessment (i) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.

iii) A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in (ii) are complete and identifying any requirements for longer term monitoring of pollutant linkages, maintenance and arrangements for contingency action. Any changes to these components require the express consent of the local planning authority. The scheme shall be implemented as approved.

Reason: To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.

Verification of Ground Conditions

Condition 21 and Condition 51. Following completion of measures identified in the approved remediation scheme and prior to the first use or occupation of the development, a verification report that demonstrates the effectiveness of the remediation carried out must be produced together with any necessary monitoring and maintenance programme and copies of any waste transfer notes relating to exported soils and details relating to imported soils shall be submitted to the Local Planning Authority for approval.

The approved monitoring and maintenance programme shall be implemented.

Reason: To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors. The above must be undertaken in accordance with the Environment Agency's 'Land contamination risk management (LCRM)' guidance, available online at https://www.gov.uk/government/publications/landcontamination-risk-management-lcr

Unsuspected Contaminated Land

Condition 30 and Condition 61. In the event that unexpected contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of condition 8, and where remediation is necessary a remediation scheme must be prepared in accordance with the requirements of condition 8, which is subject to the approval in writing of the Local Planning Authority. Following completion of measures identified in the approved remediation scheme a verification report must be prepared, which is subject to the approval in writing of the Local Planning Authority in accordance with condition 21.

Reason: To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.

It is expected that a similar approach will be applied to the new application for this site.

3.3.2 PL/22/1710/FA

This planning permission covered the redevelopment of the access road to the Thorney Business Park required for the proposed data centre developments (PL/22/1775/FA) and was granted in May 2024. The permission included Condition 8 which required a phased contamination risk assessment from desk study, site investigation, detailed risk assessment and verification plan. Condition 8 was partially discharged on 25 April 2025 (PL/25/0529/CONDA) with respect to the requirement for the phases risk assessment, and remediation strategy but the requirement for a verification plan remained in place.

The planning permission also included Condition 13 which required completion and validation of the remedial strategy prior to first use of the site, and Condition 16 which covered requirement for assessment of any unexpected contamination.

3.3.3 PL/24/3523/OA

This outline planning application covers the adjacent area of Thorney Business Park to the east of the site which is also proposed to be redeveloped. The application was submitted in October 2024 and is pending determination currently.

3.4 Unexploded ordnance

A detailed unexploded ordnance (UXO) risk assessment [24] was undertaken for the main site in July 2024 as well as the eastern area. The assessment recorded a medium risk from UXO from both World War II bombing and air defence batteries. Although the assessment did not cover the western field area the conclusions are considered to be applicable for this area as well given the proximity and similar site uses.

A summary of the key findings from the UXO assessment are as follows:

- During World War II, the site was located in an area of generally low bomb density, though nearby strategic sites such as Langley Airfield attracted several Luftwaffe attacks. Multiple high explosive (HE) and incendiary bombs (IBs) were dropped in and near the site, particularly around the railway and the neighbouring Britannia Cable Works.
- Aerial photographs revealed possible bomb craters, but extensive quarrying and vegetation have obscured evidence of damage and made it difficult to detect unexploded ordnance (UXO). Due to the challenging ground conditions and limited wartime inspection access, the site is considered to have a Medium Risk for the presence of bombing related UXO. While precautionary risk mitigation is advised, such measures are only deemed necessary for works that penetrate below the post-war fill and into the original wartime ground level.
- The site is assessed to present a Low Risk for the presence from Allied unexploded ordnance (UXO). Historical records and wartime aerial photography confirm the site's proximity to key defensive installations, including a searchlight battery to the north and a barrage balloon site to the south, both of which formed part of the protective infrastructure surrounding Langley Airfield. However, no direct evidence has been identified to suggest that the site was subject to military activity or ordnance deployment. The nearest Heavy Anti-Aircraft (HAA) battery was situated approximately 800 metres to the east, near Iver.

4. Environmental setting

4.1 Ground conditions

A detailed discussion of the geological strata encountered is provided within the Arup GQRAs [1] [2] which are to be submitted alongside this report for the planning application. Therefore, the detailed assessment has not been duplicated in this report to avoid repetition as these reports have been produced in tandem. A summary of the ground conditions at the site is presented in Table 3.

Table 3 Summary of ground conditions

Stratum	Range of elevation of top (mOD)	Depth to top (m bgl)	Thickness (m)
Topsoil [1]	+31.72 to +29.12 (where present)	Ground level (where present)	0 to 0.4
Made Ground	+32.53 to 28.19	Ground level to 0.2	0 to 7.0
Landfill [1]	+31.63 to +27.89 (where present)	0.3 to 2.5 (where present)	0 to 6.6
Langley Silt [1]	+29.96 to +26.69 (where present)	0.40 to 3.8 (where present)	0 to 5.6
Lynch Hill Gravel Member	+33.25 to +22.59 (where present)	0.30 to 6.0 (where present)	0 to >7.5
London Clay Formation	+30.67 to +20.52	0.9 to 8.6	11.7 to >28.6
Harwich Formation	+9.28 to +5.09	20.0 to 26.0	0.5 to 3.2
Lambeth Group	+6.08 to +3.27	23.2 to 27.0	24.5
Chalk Group [4]	-16.00 to -19.48	48.6 to 49.7	Not proven

Notes:

1. Encountered only within the western area.
2. Including 'landfill' material in the south arm of the western area .
3. Lynch Hill Gravel Member average thickness does not account for the areas where the depth was unproven.
4. The base of the Lambeth Group or top of chalk were not encountered in the 2024 ground investigations; this data is taken from the BGS borehole data [10] for a location located 25m southeast of the site boundary from 1935.

Ground conditions encountered along, or close to, the northern arm of western area by Jackson drilling in 2008 have also been reviewed and confirm a general sequence of topsoil, over Made Ground over gravels. The results have not been tabulated due to the absence of level data but are discussed in the GQRA for the western area [2].

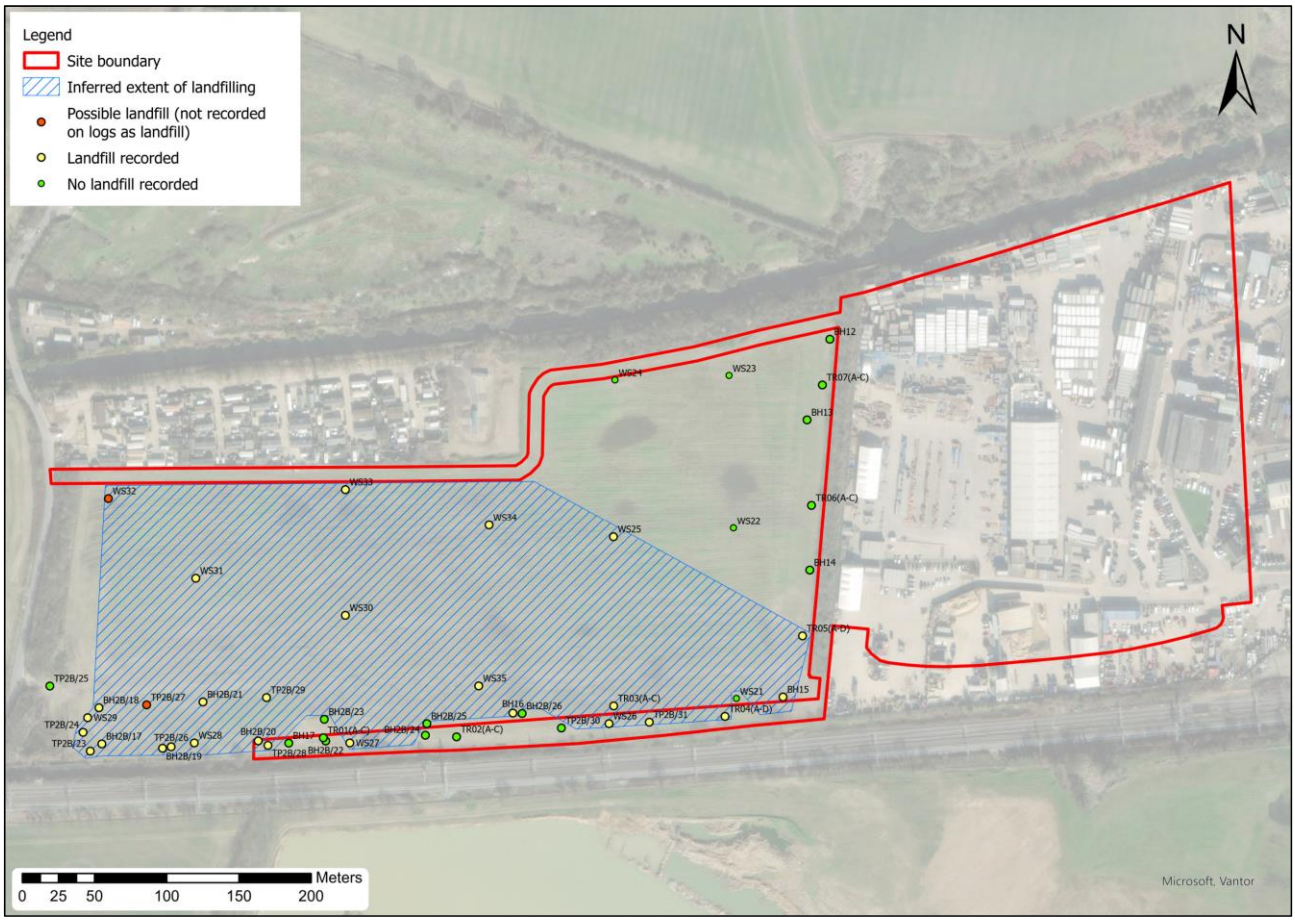
4.1.1 Made Ground

Within the main (eastern) site area Made Ground underlies majority of the site comprising of sandy clayey gravel to sandy and gravelly clay to variable depths of up to 3m below ground level (m bgl). The variable thickness relates to the historic quarrying and backfilling and thins towards the edges of the site where the former gravel workings would have tapered out.

Within the western site area, historical ground investigation reports recorded made ground in most of the exploratory locations. Its composition highly variable including gravelly sands silts and clays and sandy gravels containing variable proportions of anthropogenic material, mainly masonry materials but also including wood, paper and plastic.

Landfill material including domestic refuse has been identified in nine out of 28 investigations located along the southern arm, in one out of fourteen along the eastern edge and in one of four locations along the northern arm of the western field (Refer to Section 4.1.3 of the Arup GQRA [3]). The estimated extent of the landfill based on these detections is shown below as Based on the historical exploratory by Jackson, CCGI and Lucion, logs plastic and fabric typically comprise 50% or more of the deposited materials with paper, wood, metal, masonry and soil also occurring frequently. No evidence of an engineered containment system, either capping or liner, was encountered with landfill material present at shallow depths of 0.35m in some locations.

Figure 6 Inferred extent of landfill material in western site



4.1.2 Superficial deposits

The superficial deposits at the site comprise the Lynch Hill Gravel Member with Langley Silt also present in the west of the site.

Descriptions of the Langley Silt suggest high variability, but commonly include brown or grey, sandy and gravelly Clay or clayey Silt. Notably this stratum is absent from the main site and thicknesses tend to increase towards the west. It should be noted that investigations conducted by both Richard Jackson and Lucion Group did not confirm the presence of the Langley Silt Member within nearby exploratory boreholes. Historical records indicate that extensive gravel quarrying was carried out across the majority of the western field (refer to Table 2) followed by partial backfilling of the area with landfill material.

It is plausible that the highly variable composition attributed to the Langley Silt Member, as encountered during the CCGI, may represent Made Ground or Infilled Ground resulting from subsequent historical land use activities.

The Lynch Hill Gravel Member was encountered across most exploratory holes and typically consist of yellowish brown or blue grey or black gravelly sand (occasionally sandy gravel) with the gravel comprising of flint. The thickness of this stratum is highly variable, ranging from 0 (absent) to >7m due to the impacts of the historical mineral extraction across the site.

4.1.3 Bedrock geology

London Clay Formation has been encountered beneath the Lynch Hill Gravel Member or below the Made Ground where the Lynch Hill Gravel Member was absent.

The London Clay Formation was underlain by the Harwich Formation, Lambeth Group and Chalk (Seaford and Newhaven Chalk Formation) at depth.

4.2 Hydrogeology and hydrology

Superficial aquifer

The Lynch Hill Gravel Member is designated as a principal aquifer regionally. Principal aquifers are defined as geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. The groundwater within the principal aquifer is also of high vulnerability relating to fast pollutant travel times.

Bedrock aquifer

The underlying London Clay Formation is designated as unproductive and of low permeability and vulnerability. Low productivity relates to low permeability and negligible significance for water supply or river base flow.

The deeper Chalk is designated as a Principal aquifer while the Harwich and Lambeth Group are classed as Secondary Aquifers, denoting permeable layers that can provide local water supplies and may be an important source of base flow to rivers. These three strata can be connected and in places form a singular groundwater body / aquifer referred to as the Chalk – Basal Sands Aquifer.

Source protection zones (SPZ) and licensed water abstractions

The site does not lie within a source protection zone (SPZ). The closest SPZ is a Type 3 (Total Catchment) located 230m west of the site boundary, in addition, no potable abstractions are within 2km of the site. There is one active non-potable abstraction license within 500m of the site relating to spray irrigation at Iver golf course 440m northwest of the site boundary.

Groundwater monitoring

The details of the groundwater monitoring undertaken for the site are set out in Arup GQRAs [1], [2]). Groundwater is present in the Lynch Hill Gravel member at levels of around 28.2m OD to 31.3mOD. Water is also widely present in the Made Ground and appeared to be at similar levels to the Lynch Hill Gravel Member. Therefore, it appears there may be a degree of connectivity between the shallow groundwater and Made Ground perched water. This is to be expected given the significant disruption to the shallow ground conditions from the gravel extraction which has truncated the superficial deposits across large parts of the site.

During the 2024 monitoring on the main site, several installations purged dry, while during the 2025 monitoring only two locations purged dry. This together with the variability in the recorded thickness of the Lynch Hill Gravel Member, suggests there may be areas where the shallow groundwater aquifer may be locally discontinuous rather than a continuous unit with high conductivity.

The groundwater monitoring data suggested groundwater flow is in a southerly direction. There is an active quarry 100m to the south of the site which is excavating the Lynch Hill Gravel Member. Aerial imagery shows water ponded in the excavations, so some localised pumping is likely, which may be drawing groundwater to the south. There is an active abstraction licence located 500m south of the site boundary in the quarry for process washing. The record does not list which aquifer the abstraction is from though does mention freshwater lagoon in the name, which supports the potential for pumping from the lagoons / ponds on site.

There is likely an element of groundwater flow from the landfill in the western field onto the main site, which has the potential to impact the groundwater quality especially the southwest area of the main site.

There is limited groundwater monitoring results available for the western site area. Groundwater strikes were recorded in the Made Ground at depths below 4mbgl (approximately 31mAOD) and Lynch Hill Gravel around 8mbgl (26.5m OD). A groundwater level was recorded in the landfill material at approximately 3.3mbgl (29.2m OD). At this location ‘landfill’ directly overlies the London Clay, the gravels presumably having been removed following mineral extraction. Groundwater was also recorded in the Lynch Hill Gravels in the southwest of the western area at approximately 24m OD.

Groundwater is expected to be present in the deeper Chalk aquifer. Groundwater has been recorded in both the London Clay and Lambeth Group during monitoring in the eastern and western sites though at depths of around 26m to 30m OD.

Surface water courses and features

The site is within the Horton brook water body catchment. While no surface water courses are present on site, the following water courses are within proximity (within 100m to the site).

- Grand Union Canal (Slough Arm) – 5m north running parallel to the site from east to west.
- Drainage ditch 43m and 44m south running roughly parallel to the rail embankment. This joins a main river to the southwest of the site at which point the ditch invert is known to be 25.9m OD, which is comfortably higher than the groundwater levels measured in the Lynch Hill Gravels (measured at approximately 24m OD at the western end of the southern arm). The ditch provides drainage for the railway embankment to the south of the site discharging to the west into the main river. The ditch construction and level are not confirmed to the south of the main site but it is not expected to be in continuity with groundwater in the Lynch Hill Gravels based on comparison of levels in the west and due to its design purpose.
- Attenuation ponds associated with Cemex Langley - approximately 75m south.

The Slough arm of the Grand Union Canal is present adjacent north of the site. It appears that the canal was constructed in a cutting in the vicinity of the site and opened in 1882. The canal was used for the transport of goods to and from London and to take London's rubbish to landfills along the canal, with the last commercial trade on the canal in 1960. The canal was reopened in 1975 and may have been dredged since 2014. The canal is not considered to be in connectivity with the shallow groundwater. It is unclear if the canal is lined but the water level in the canal is at a higher elevation that the shallow groundwater on site groundwater on site [1] and therefore groundwater would not be expected to flow into the canal.

The surface drainage system for Thorney Business Park (including the eastern site area) currently drains to an attenuation pond to the east of the site which has a storm overflow to the canal. This is permitted under a discharge consent with the Canals and River Trust. The current drainage on site, and the network to the east including the attenuation pond, is expected to be decommissioned, and replaced with new infrastructure including a new surface drainage discharge to the unnamed ditch south of the railway line in the west of the site.

4.3 Sensitive environmental land uses

Based on the Groundsure [8] [9] the site does not lie within or in proximity to any environmental designations. The main site does lie within a priority habitat for deciduous woodland, referred to as an open mosaic habitat. The area is located within the southeastern corner of the main site, and previously Thorney Landfill South, a historical landfill site.

4.4 Radon

The site is in a lower probability radon area, less than 1% of homes are expected to be above the action level of 200Bq/m^3, averaged over three months, and radon protection measures are not considered to be required for the development.

Any basements need to be considered as at higher risk from radon, irrespective of the underlying geology. However, it is understood there are no basements in the proposed development plan and therefore this does not need to be considered for the site.

5. Previous ground investigation and monitoring

5.1 Introduction

Extensive ground investigation has been undertaken for the site to date. A summary of previous ground investigations is provided in Table 4.

Table 4 Summary of ground investigation phases

Contractor	Date	Scope	Location
Richard Jackson	2008	Four and three window samples on or close to the proposed northern and southern arms of the western field respectively. A further five window samples advanced off-site within more central areas of the field.	Western site area
CC Ground Investigation Ltd	2018	Seven boreholes and three trial pits situated along or close to the route of the southern arm. Further positions to the west out of the site area	Western site area –south arm only
Lucion Group	2024	Three boreholes and three trial pits advanced along or close to the boundary between the western and easter parts of the site. Three further boreholes and four trial pits advanced along the route of the proposed southern strip.	Eastern edge and southern arm of western site area.
Environ	2015	Five boreholes including soil and groundwater sampling and groundwater and gas monitoring. Six trial pits to investigate ground conditions.	Eastern site area (and wider Thorney Business Park)
ESI	2018	25no. trial pits, 5no. boreholes and 16no. Window samples including geochemical soil and groundwater testing site wide across the business park.	
Delta Simons	2021/ 2022	Six cable percussive boreholes for geotechnical and geochemical sampling. 21no. dynamic sampler boreholes to 5m bgl targeting potential sources of contamination site wide across the business park.	
	2024	Phase 1: five trial pits, three cable percussive boreholes to 35m bgl and a further five dynamic sampling boreholes to 5m bgl. Phase 2: Additional eight trial pits, one cable percussive borehole to 40m bgl and five dynamic sampling boreholes to 5m bgl site wide across the business park.	
Concept	2024	10 no. Cable Percussion Boreholes to a maximum depth of 33m bgl and eight dynamic sampling boreholes to 5m bgl site wide across the business park. Includes geoenvironmental sampling and monitoring of the soil and groundwater.	
	2025	Included five cable percussion boreholes and 18no. dynamic sampling boreholes. Both including soil and ground water sampling and gas and groundwater monitoring site wide across the business park.	

5.2 Contamination assessments

Details of the contamination data collected from the various phases of investigation will be provided separately within the GQRAs for the eastern and western areas [1] [2] and are not duplicated within this report.

6. Preliminary risk assessment

6.1 Risk classification methodology

A preliminary risk assessment has been undertaken, based on the desk study information summarised in Sections 2 to 4.

The method of risk evaluation has been based on a qualitative assessment, taking into consideration the magnitude of the potential severity of the risk as well as the probability of the risk occurring. The definition of risk and risk characterisations are summarised in Appendix B, which sets out the risk assessment methodology.

6.2 Potential sources

Potential current and historical sources of contamination onsite and offsite have been identified and are presented in Table 5. The Department of the Environment (DoE) industry profiles [11] have been reviewed to identify potential contaminants associated with industrial land uses at the site.

Table 5 Summary of potential sources

Source ID	Source	Potential contaminants of concern	Comments
Onsite			
S1	Made Ground associated in eastern site area from the backfilling of the gravel extraction works and construction of concrete works and Thorney Business Park.	Range of potential contaminants including metals and metalloids, polyaromatic hydrocarbons (PAH), petroleum hydrocarbons, asbestos and ground gas (methane and carbon dioxide).	The site has undergone several phases of redevelopment since c.1800s. Ground investigation across the main site identifies made ground to be present across the site (up to 3.0m thick). The Made Ground across the site is largely free of waste material within the eastern site area. Fragments of anthropogenic material were observed such as metals, plastic, ceramic, clinker, brick, concrete and ash. Ceramic fragments may have been lead-glazed, and it is relatively common for this, as well as the presence of ash and clinker, to cause elevated concentrations in soil test results. Isolated asbestos contamination which may be present as both fragments and free fibres.
S2	Industrial activity during operation of the concrete works including: • fuel storage • materials and chemical storage • Concrete production (cement and clinker)	Primarily fuel and lubricant based hydrocarbons and to a lesser degree metals, PAH, solvents and PCBs. Asbestos is also likely to have been present in building fabrics.	The concrete works in the eastern site area operated for over 50 years, with a significant expansion in the 1960s/1970s. There are likely have been a number of point sources associated with fuel tanks, the substation and various works. Raw materials including fuels and lubricant oils will have been stored and used on site. The process produced ash and clinker which may have been disposed of on site. Potential more diffuse sources are from dusts (metals) and potential infiltration through hardstanding and leaks from drainage. Main potential source of contamination is from the use and storage of fuel oil such as diesel. It is possible that small volumes of solvents were used as part of maintenance activities.
S3	Activity during the operation of Thorney Business Park including: • Demolished buildings	Fuel oils, with metals, other hydrocarbons/organic compounds and asbestos and placement of fill of unknown origin prior to	The eastern site area has been occupied by multiple industries since 2000. There is potential for contamination associated with these uses. e.g. due to chemical or fuel storage, spillage, leakage or waste disposal.

	• Material and aggregate storage • Fuel storage • Vehicle storage and maintenance • Substation	construction and from recycling operations.	
S4	Contamination from historical fire in northeast of site.	Contamination from the fire, including spread of asbestos fibres and PFAS (if firefighting foams were used). To a lesser extent metals, PAH and hydrocarbons from fire damaged materials.	In April 2010, a large fire badly damaged a building in the northeast of the eastern site area. The building was clad in asbestos cement sheeting and the fire may have distributed fibres in the surrounding area. The use of firefighting foams has not been confirmed nor discounted and therefore PFAS remains a potential contaminant of concern.
S5	Historical landfill (onsite in the western field) and offsite to the west and east	Landfill leachate, metals, PAHs, hydrocarbons, asbestos and PFAS. Ground gases including methane, carbon dioxide, hydrogen sulfide.	The western field is known to contain landfill material including domestic waste. Based on the age of the infilling and the available ground investigation records there does not appear to be an engineered containment system. Infilled ground present to the east of the site but does not appear to include landfill material in proximity to the site.
Offsite			
S6	Various previous current and former offsite (within 250m): • Distribution and haulage facility • Disused pit from unspecified quarrying or mining • Electrical substation • Railway lines	Petroleum hydrocarbons, PAH, PCB, creosote, herbicides and sulphates	Several historical land uses within the vicinity of the site which may be associated with offsite sources of contamination.

6.3 Potential receptors

Table 6 Summary of potential receptors

Receptor ID	Potential receptor	Sensitivity
Human Health		
R1	Site workers and visitors	Construction workers (particularly groundworkers) will come into direct contact with soil during the earthworks excavations. Majority of risks during construction should be managed through appropriate controls, such as use of protective equipment and working methodologies.
R2	Offsite neighbours (residential)	There are potential adjacent offsite residential receptors at the traveller's community compound to the northwest of the site. Though these will primarily be potentially impacted by works in the western site area and less sensitive to activities in the east of the site. The other residential receptors in the surrounding area are 300m away or greater and are separated from the site by the canal and railway line, or by the wider Thorney Business Park, therefore are considered to have limited sensitivity. Offsite commercial neighbours in the wider Thorney Business Park are present and are regarded as having lower sensitivity compared to the residential receptors. Potential risks are higher during construction due to increased exposure pathways during the ground disturbance such as dust generation. Potential risks are lower during site operation when potential exposure pathways are more limited. Potential risks during construction should be managed through appropriate controls, such as dust suppression.
R3	Future site users	Future commercial end-users are low sensitivity.
R4	Maintenance / utility workers	Future site maintenance / utility workers are low sensitivity. Potential for exposure during any maintenance workers that would require excavation such as repairs to services. Such activities are likely to be infrequent and localised.
Controlled Waters		
R5	Principal aquifer with shallow groundwater in Lynch Hill Gravel Member	High regional sensitivity, though much of the receptor has been removed from the site. The local sensitivity is considered to be reduced by the proximity of several landfills and limited residual aquifer thickness. Not considered to be viable as a drinking water source. Therefore, risk is driven by downgradient controlled waters receptors (e.g. ponds, Colne Brook and Colne River) as well as the regional groundwater quality. Due to the distance from the site and general lack of significant contamination sources at the site, these surface water features have not been assessed as separate receptors in the CSM. If/where required, an appropriate compliance point will be considered in any further detailed risk assessment.
R6	Secondary Aquifer in Lambeth Group and Harwich	Low to moderate sensitivity considering the largely clayey nature of the deposits. The upper beds of the Lambeth Group and intervening London Clay Formation will act as an aquitard, restricting the downwards migration of shallow groundwater. This receptor has the potential to be impacted due to the creation of preferential pathways, primarily through deep piled foundation that penetrate the London Clay. However, the foundation details of previous or proposed structures are not known. It is likely that the future datacentres will be piled, and this will require a foundation works risk assessment.
R7	Principal Aquifer in Chalk	High sensitivity, however, as the chalk is around 50m below ground level and protected by the overlying low permeability strata. Not considered to be plausible receptor except where there would be creation of preferential pathways.
R8	Slough Arm of the Grand Union Canal	The canal is a potential receptor primarily through the discharge of the surface water drainage [via an attenuation pond] to the canal. It is understood that the surface water drainage system will be replaced as part of the proposed development, and this may also include the discharge to the canal. The canal is not considered to have a significant connectivity with the shallow groundwater due to the resting levels of the groundwater and canal.
Other		
R9	Onsite building materials and services	Building material, e.g. below ground contact, and utilities, e.g. potable water supply pipes, will come into direct contact with soil.

Receptor ID	Potential receptor	Sensitivity
R10	Planting in soft landscaping areas	The potential risk is normally mitigated through the selection of appropriate planting to suit the ground conditions.

6.4 Potential pathways

Table 7 Summary of potential contaminant pathways

Pathway ID	Potential contaminant pathway	Presence of pathway
P1	Ingestion of soil or dust. Inhalation of dust, vapours or fibres. Dermal contact with soil or dust.	During construction: potential exposure of site workers, especially during bulk earthworks and excavation, including stockpiling and materials movement. During operation: most of the site will be covered with hardstanding with limited areas of soft landscaping (mostly trees and shrubs).
P2	Migration of hazardous ground gas and vapours and accumulation in confined spaces. Inhalation of ground gases or vapours.	Migration, including by diffusion, dissolution from shallow groundwater and along any preferential pathways (such as utility trenches) and accumulation in confined spaces, such as excavations (during construction) or future buildings. Potential inhalation of landfill gases (e.g. carbon dioxide and methane) and depleted oxygen levels (in excavations). Potential explosive risk (from methane) very unlikely based on available data and age of the landfill in the location of the northern and southern access roads. Ground gas regime is deemed a CS1 within the main site based on the 2024/2025 Concept GI ground gas monitoring.
P3	Rainwater infiltration and leaching of contaminants and lateral groundwater migration.	During construction: As part of the removal of hardcover, there may be some localised disturbance and mobilisation of contamination. Any dewatering required as part of earthworks also has the potential to cause increased migration and mobilisation of contaminant sources. Due to the significant thickness of London Clay, a direct pathway (e.g. via drainage under gravity) from shallow soils and groundwater contamination to the Harwich Formation/Lambeth Group is unlikely . During operation: Infiltration SuDS drainage is not permitted due to the potential to mobilise contamination. Therefore, this has not been considered as a potential pollutant pathway. Much of the site will also be covered with buildings and hardcover.
P4	Creation of preferential pathways during construction (piling).	It does not appear that there has been an historical abstraction well on the site. It is possible that piled foundations were previously used; although unlikely, these could have resulted in a preferential pathway towards the Harwich Formation/Lambeth Group. A foundation works risk assessment will be prepared prior to any deep piling as part of the proposed development which identify potential risks and mitigation to minimise the potential creation of preferential pathways.
P5	Via existing drainage.	The current drainage discharges off site to the east to an attenuation pond from where it has the potential to enter the canal via a stormwater overflow. It is understood that this system will be decommissioned and that the new development will be serviced by new drainage that discharges into the drainage ditch to the southwest of the site. There is potential for sections of the existing on-site drainage to be retained.
P6	Direct contact of concrete and services with contaminated soils or groundwater.	Direct contact of aggressive ground with concrete and permeation of plastic potable water pipes by organic contaminants.
P7	Plant uptake.	Plant uptake of phytotoxic contaminants from shallow soil and groundwater

6.5 Preliminary conceptual site model

Table 8 Preliminary conceptual site model

Potential Contaminant Linkage (PCL)				Classification / Risk Estimation (without mitigation)		
Ref.	**Source**	**Pathway**	**Receptor**	**Probability**	**Consequence**	**Risk**
During construction						
PCL1a	S1 to S4 and S6	P1: Ingestion of soil or dust Inhalation of dust or fibres Dermal contact with soil or dust Exposure to contaminated groundwater	R1: Site workers and visitors	Low likelihood	Medium to severe	Moderate to moderate / low
PCL1b			R2: Offsite neighbours (residential)	Low likelihood	Medium	Moderate / Low
PCL2	S1, S2, S4 and S6	P2: Migration of hazardous ground gas and vapours and accumulation in confined spaces Inhalation of ground gases or vapours	R1: Site workers and visitors (during excavations)	Low likelihood	Medium to severe	Moderate to moderate / low
PCL3a	Source S5	P1: Ingestion of soil or dust Inhalation of dust or fibres Dermal contact with soil or dust Exposure to contaminated groundwater	R1: Site workers and visitors	Low likelihood	Medium to severe	Moderate to moderate / low
PCL3b			R2: Offsite neighbours (residential)	Low likelihood	Medium to severe	Moderate to moderate / low
PCL4a	Source S5	P2: Migration of hazardous ground gas and vapours and accumulation in confined spaces Inhalation of ground gases or vapours	R1: Site workers and visitors	Low likelihood	Medium to severe	Moderate to moderate / low
PCL4b			R2: Offsite neighbours (residential)	Unlikely to low likelihood	Medium to severe	Moderate to moderate / low
During operation						
PCL5a	Sources S1 to S4 and S6	P1: Ingestion of soil or dust Inhalation of dust or fibres Dermal contact with soil or dust Exposure to contaminated groundwater	R3: Future site users	Low likelihood	Medium to severe	Moderate to moderate / low
PCL5b			R4: Maintenance / utility workers	Low likelihood	Severe	Moderate
PCL5c			R2: Offsite neighbours (residential)	Unlikely	Medium to severe	Moderate / low to low

Potential Contaminant Linkage (PCL)				Classification / Risk Estimation (without mitigation)		
Ref.	**Source**	**Pathway**	**Receptor**	**Probability**	**Consequence**	**Risk**
PCL6a	Source S5	P1: Ingestion of soil or dust Inhalation of dust or fibres Dermal contact with soil or dust Exposure to contaminated groundwater	R3: Future site users	Unlikely	Medium to severe	Moderate / low to low
PCL6b			R4: Maintenance / utility workers	Low likelihood	Medium to severe	Moderate to moderate / low
PCL6c			R2: Offsite neighbours (residential)	Low likelihood	Medium to severe	Moderate to moderate / low
PCL7a	Sources S1, S2, S4 and S6	P2: Migration of hazardous ground gas and vapours and accumulation in confined spaces Inhalation of ground gases or vapours	R3: Future site users and R4: Maintenance / utility worker	Low likelihood	Medium to Severe	Moderate to moderate / low
PCL7b			R2: Offsite neighbours (residential)	Unlikely	Medium to Severe	Moderate / low to low
PCL8	Source S5	P2: Migration of hazardous ground gas and vapours and accumulation in confined spaces Inhalation of ground gases or vapours	R3: Future site users and R4: Maintenance / utility worker	Low likelihood	Medium to severe	Moderate to moderate / low
PCL9			R2: Offsite neighbours (residential)	Unlikely to low likelihood	Medium to severe	Moderate to moderate / low
PCL10	Source S1 to S6	P6: Direct contact of concrete and services with contaminated soils or groundwater.	R9: Building materials and services	Likely	Mild	Moderate / low
PCL11	Sources S1 to S6	P7: Plant uptake of phytotoxic contaminants	R10: Planting in areas of soft landscaping	Low likelihood	Mild	Low
During construction and operation						
PCL12a	Sources S1 to S6	P3: Rainwater infiltration, leaching and lateral groundwater migration	R5: Principal aquifer in shallow Lynch Hill Gravel Member aquifer	Low likelihood to likely	Medium	Moderate to moderate / low
PCL12b			R6: Unproductive aquifer associated with the Harwich Formation and Lambeth Group	Unlikely	Medium	Low
PCL12c			R7: Principal aquifer in deeper Chalk Aquifer	Unlikely	Medium to severe	Moderate / low

Potential Contaminant Linkage (PCL)				Classification / Risk Estimation (without mitigation)		
Ref.	**Source**	**Pathway**	**Receptor**	**Probability**	**Consequence**	**Risk**
PCL13a	Sources S1 to S6	P4: Via preferential pathways such as piled foundations	R5: Principal aquifer in shallow Lynch Hill Gravel Member aquifer	Unlikely	Medium	Low
PCL13b			R6: Unproductive aquifer associated with the Harwich Formation and Lambeth Group	Unlikely	Medium	Very low
PCL13c			R7: Principal aquifer in deeper Chalk Aquifer	Unlikely	Medium to severe	Moderate / Low to Moderate
PCL14	S1 to S4	P5: Via existing drainage	R8: Slough Arm of the Grand Union Canal	Likely	Medium	Moderate

7. Conclusions and recommendations

7.1 Conclusions

This report presents a preliminary risk assessment for the site based on the available environmental and historical records. These have been used to prepare a preliminary conceptual site model considering potential sources, pathways and receptors in accordance with the requirements of the LCRM guidance.

The site has been significantly impacted by past industrial activity with nearly all the site quarried for mineral extraction and backfilled in the mid to late 1900s. The eastern part of the site was quarried from the late 1800s to around the late 1940s as part of a larger works that extended to the east into the rest of the Thorney Business Park. The eastern area appears to have been backfilled gradually as the workings progressed with general Made Ground fill. No evidence of landfill material or domestic waste has been recorded during the investigation in this area of the site. The east of the site was subsequently redeveloped in the 1960s to 1970s as a concrete and engineering works. Based on the mapping and aerial images this appears to have included earthworks to create a level development platform and likely required import of further fill. The concrete works closed around 2008, and the site was redeveloped again as part of the wider Thorney Business Park which remained relatively unchanged until the site clearance works in 2024. During this period there have been a variety of different industrial and light commercial uses, particularly in the small units in the northeast of the site which have the potential for a wide range of potentially contaminative processes.

The western part of the site was open fields until it was also quarried in the 1960s to 1990s, The area was then landfilled including domestic waste. Based on the historical logs the landfilling may not have extended to the northeast areas of the western site area. The western site area has remained as a part of the wider open field following the completion of the landfilling around 2000.

The eastern area of the site has undergone several phases of investigation including works to support the current proposed development which includes geoenvironmental analysis of the soil, groundwater and ground gas. There have been several phases of investigation in the western area of the site though coverage is more limited, and these were targeted investigations to support the current development plans.

Based on the desk study key sources of contamination at the site include site wide Made Ground including landfill with domestic refuse in the western area, land use in the east associated with multiple commercial premises at Thorney Business Park and previous industrial land uses. A former fire in the northeast of the main site that badly damaged a building with an asbestos has been identified as a potential point source for both asbestos fibres and PFAS.

A preliminary risk assessment has been undertaken based on the desk-based assessment. A summary of the preliminary risk assessment findings is set out below in Table 9.

Table 9 Summary of preliminary risk assessment

Description	Risk assessment (without mitigation)
Environmental sensitivity	Moderate
Development sensitivity	Low
Potential for significant contamination	Eastern area – Low to moderate Western area - Moderate
Risk of harm to human health (workers and site visitors) during construction	Eastern area – Low to moderate Western area - Moderate
Risk of harm to human health (neighbouring site users) during construction	Eastern area – Low to moderate Western area - Moderate
Risk of harm to human health (future site users) during operation	Low to Moderate

Description	Risk assessment (without mitigation)
Risk of harm to human health (maintenance workers) during operation	Moderate
Risk of pollution to groundwater (principal Lynch Hill Gravel aquifer)	Moderate
Risk of pollution to groundwater (secondary Lambeth and Harwich aquifer)	Low
Risk of pollution to groundwater (principal Chalk aquifer)	Moderate / low to moderate
Risk to onsite building materials and services	Low
Risk to planting in future soft landscaping areas	Low

The preliminary risk assessment has identified generally moderate potential risks to both human health and controlled waters receptors at the site. These are primarily associated with the west of the site where there is very shallow landfill material which has a greater potential to impact on both the adjacent residential receptor and controlled waters receptors. It is noted that there is only limited part of the landfill within the site area with the majority offsite in the rest of the field to the west. Remediation of the small areas that are to be affected by the current development proposals is not considered to be effective or practicable given the majority of any contamination source would remain in the offsite area. This is considered further as part of the GQRA [2].

7.2 Recommendations

This preliminary risk assessment has identified potential pollutant linkages. A quantitative assessment is provided in the separate GQRA reports for the eastern [1] and western areas [2]. These reports use available ground investigation data to provide an updated conceptual site model and risk assessment. Where data gaps remain following completion of the GQRAs further ground investigation will be required to refine the understanding of contamination risks.

If residual contamination risks require more complex evaluation to determine if, or how much, remediation is required, detailed quantitative risk assessment (DQRA) may also be required. Ultimately the contamination risk assessments will be used to develop a remediation strategy for the site to set out the required measures to mitigate and manage the identified contamination risks. The Remediation strategy with a verification plan will be submitted to and agreed with the Local Authority prior to implementation.

A verification report will need to be prepared to demonstrate that remediation has been implemented in accordance with the remediation strategy.

A Foundation Works Risk Assessment (FWRA) is anticipated to be required in accordance with EA guidance. The FWRA will set out an assessment of the potential contamination risks associated with the foundation solution, primarily the potential for creation of preferential pathways.

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Appendix C

Risk assessment methodology

C.1.1 Risk assessment methodology

The potential risks to human health and environmental receptors have been considered in accordance with the current UK approach to contaminated land assessment, taking into consideration the available information on the construction and operational phases of the development.

The method for risk evaluation takes into consideration the magnitude of the potential severity of the risk, as well as the probability of the risk occurring. The risk characterisations have been assessed based on the qualitative method of interpretation set out in CIRIA guidance C552 [28].

The method for risk evaluation involves the classification of the:

- magnitude of the potential consequence (severity) of the risk occurring (refer to Table 10); and
- magnitude of the probability (likelihood) of the risk occurring (refer to Table 11).

Table 10 Classification of consequence

Classification	Definition
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part IIA. Short-term risk of pollution of a sensitive water resource. Catastrophic damage to buildings or property. A short-term risk to an ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to human health. Pollution of a sensitive water resource. A significant change to an ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of a non-sensitive water resource, such as non-classified groundwater. Damage to buildings, structures and services.
Minor	Harm, which may result in a financial loss, or expenditure to resolve. Non-permanent effects to human health, which could easily be prevented by means such as personal protective clothing. Easily repairable effects of damage to buildings, structures and services.

Table 11 Classification of probability

Classification	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long-term, or there is evidence at the receptor level of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible over the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is not certain that such an event would take place.
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Table 12 presents the risk assessment matrix and Table 13 defines the risk classifications.

Table 12 Comparison of consequence against probability

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**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

Table 13 Risk classifications

Risk classification	Description of risk
Very high	There is a high probability that severe harm could arise to a designated receptor from an identified pollutant linkage at the site without appropriate remediation action. OR there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in substantial liability.
High	Harm is likely to arise to a designated receptor from an identified pollutant linkage at the site without appropriate remediation action. Realisation of the risk is likely to present a substantial liability.
Moderate	It is possible that without appropriate remediation action, harm could arise to a designated receptor from an identified pollutant linkage. It is relatively unlikely that any such harm would be severe, and if any harm were to occur, it is more likely that such harm would be relatively mild.
Low	It is possible that harm could arise to a designated receptor from an identified pollutant linkage. It is likely that if any harm was realised, at worst any effects would be mild.
Very low	The presence of an identified pollutant linkage does not give rise to the potential to cause harm to a designated receptor.