clarkebond

Environmental and Utilities Preliminary Assessment Report

Gatwick Green

B05268-CLK-RP

26-02-2020

The Wilky Group

clarkebond

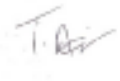
MULTIDISCIPLINARY ENGINEERING CONSULTANTS

Report No.	Date
B05268-CLK-RP	26/02/20

Project
Gatwick Green Environmental and Utilities Preliminary Assessment Report

Client Name
The Wilky Group

Issue Date	Number	Status	Description of Amendments
23-12-2019	P1	S2 Draft	
06-02-2020	P2	S2 Draft	Text & formatting changes following review by Savills
26-02-2020	P3	S2 Final	Further changes following review by Savills

Report Prepared by:	
Toby Adair **Graduate Engineer (Hydrology and Flood Risk)**	

Approved for Issue by:	
Seymour D'Oyley **Associate Director (Hydrology and Flood Risk)**	

Issuing Office	
X	The Cocoa House, 129 Cumberland Road, Bristol, BS1 6UY Tel: +44 (0)117 929 2244
	GF Suite, Bickleigh House, Park Five Business Centre, Exeter, EX2 7HU Tel: +44 (0)1392 369098
	7 Hatchers Mews, Bermondsey Street, London, SE1 3GS Tel: +44(0)20 7939 0959

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Abbreviations

AAP	Area Action Plan
ANIS	Aircraft Noise Index Study
AOD	Above Ordnance Datum
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BREEAM	Building Research Establishment Environmental Assessment Method
BREW	Business Resource Efficiency and Waste
CAZ	Clean Air Zone
CBC	Crawley Borough Council
CC	Climate Change
CEH	UK Centre for Ecology and Hydrology
CFMP	Catchment Flood Management Plan
CHP	Combined Heat Power
CNG	Compressed Natural Gas
CP	Communications Provider
C2C	Coast to Capital
DEFRA	Department for Environment, Food and Rural Affairs
DTM	Digital Terrain Model
EA	Environment Agency
EASA	European Aviation Safety Agency
EFW	Energy from Waste
EV	Electric Vehicle
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment

GAL	Gatwick Airport Limited
GEA	Gross External Area
GSHPs	Ground Source Heat Pumps
GVA	Gross Value Added
HBP	Horley Business Park
HV	High Voltage
LAQM	Local Air Quality Management
L_{eq}/LA_{eq}	Equivalent Continuous Sound Pressure Level
LDF	Local Development Framework
LEP	Local Enterprise Partnerships
LiDAR	Light Detection and Ranging
LP	Local Plan
MUSCO	Multi Utility Supply Company
NGR	National Grid Reference
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
OS	Ordinance Survey
PPG	Pollution Prevention Guidance
PSZ	Public Safety Zone
RBMP	River Basement Management Plan
RMP	Resource Management Plan
SAC	Special Area of Conservation
SELEP	South East LEP
SFRA	Strategic Flood Risk Assessment
SGN	Southern Gas Network
SoNA	Survey of Noise Attitudes

SPA	Special Protection Area
SPOSH	Significant Possibility of Significant Harm
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TRBMP	Thames River Basin Management Plan
TWG	The Wilky Group
WFD	Water Framework Directive
WPZ	Water Protection Zone

Executive Summary

Site Location & Development Proposal	The Proposed Gatwick Green Site is a predominantly undeveloped greenfield site, located approximately 800m east of Gatwick Airport train station and by National Grid Reference (NGR) TQ 29992 41345. The proposed Gatwick Green development is envisaged to be an exemplar sustainable development, delivering high quality business, logistics, hotel and education facilities, designed as an integrated business community with staff facilities/amenities. The Gatwick Green development concept includes 4 to 5 storey buildings clustered to create attractive urban spaces, which is a stark contrast to the past generation of business park 'campus' models. The proposed land use mix will require excellent transport access with sustainable networks. The development concept has fully considered the relevant regulatory objectives and targets established for the sustainable management of the environment, taking into full account sensitive receivers, protected zones and areas, and Crawley Borough Council carbon neutral commitment.
Purpose	The purpose of this report is to update the previous 2009 ARUP Environmental Conditions Assessment report for the Gatwick Green Project by satisfying the following objectives: • To provide and take account of the current planning policy and requirements. • To assess and establish the existing environmental baseline conditions for the engineering disciplines contained in the original report. The technical assessments are to focus on flood risk, surface & foul drainage, air quality, noise, land contamination, sustainability considerations and utilities (gas, power, telecoms, water supply etc.). • To provide a preliminary assessment of the utilities-infrastructure opportunities, considerations and potential requirements, and the potential avoidance of mitigation requirements. • To provide preliminary conclusions on the deliverability of the proposals.
Approach	The assessment approach comprises the following key activities and steps: • Review of available information, previous environmental studies and public information and databases. • Consideration of building regulations and recent and relevant local, regional and national planning policies, guidelines and legislation relevant to the assessment of the natural and built environments. • Consideration of relevant regulatory objectives and targets established for the sustainable management of the environment, fully considering sensitive receivers and protected zones and areas. • Consultation with statutory and non-statutory bodies. • Identification of the sensitive receivers in the environment (locally and regionally). • Identification of impact-causing factors. • Assessment of the background environmental conditions and baseline setting of the study area using established and best practice assessment methodologies and criteria.

	• Establishment of baseline conditions. • Evaluation of impacts of the proposed Project on the local and regional environment considering the constraints and opportunities that exist. • Demonstration of the deliverability of Project; identifying options for mitigation to ensure deliverability of the scheme where necessary. • Reporting – preparation of a technical report.
Extent of Investigations	The extent of the investigations covers land within the site boundary and the immediate surroundings (i.e. areas envisaged to be within the zone of influence of the proposed development). The assessments have been carried out using both qualitative and quantitative assessment methods via a desk study. The report documents the baseline conditions and key issues relating to the site.
Summary of Findings	**Flood Risk** Several open drainage ditches and drains exist within the northern part of the site and along the M23 to the north and adjacent to the northern end of Balcombe Road to the east. There are also several small water bodies in the form of ponds located near the western and southern boundaries of the site. The site is located within Flood Zone 1, meaning that it has an annual probability of flooding of less than 0.1% from both fluvial and tidal sources. Most of the site is at very low risk of surface water flooding (i.e. less than 0.1% annual probability of occurrence). Despite this, there are several pockets of low risk (0.1 – 1% annual probability), medium risk (1 – 3.3% annual probability) and high risk (>3.3% annual probability) to the western and northern borders. The north-west of the site is indicated by the EA map to fall within an area at risk of flooding from the possible failure of existing upland reservoirs. However, upon closer investigation the CEH FEH webservice catchment finder indicates that the site falls outside of the drainage catchment of this watercourse and consequently suggests that any flows resulting from the failure of the headwater reservoirs would not impact site. In addition, this 'flood risk' is also indicated by the EA map to cover Gatwick Airport's operational area, so is not considered to be an impediment to development at the site. **Surface Water and Foul Water Drainage** The asset records show that there are no existing surface water sewers located on site. There are 2 separate gravity foul sewers which are located on Peeks Brook Lane, which subsequently enter the site and drain into the pump station located adjacent to the eastern boundary. The pump station discharges the foul water, via a rising main, to the south western corner of the site, near Rose Cottage. An easement of 6.5m is currently assumed for the rising main. However, this will need to be confirmed with Thames Water. Foul discharge from the proposed development will not be able to connect to the foul rising main. The drainage strategy will need to identify suitable manhole locations within the existing gravity-based public network for off-site foul discharge.

Any development of the site should be drained by independent, dedicated foul and surface water systems in accordance with the relevant policy & guidance.

SuDS should be incorporated to the design of the Gatwick Green scheme where opportunities exist – the scale and design of any SUDS cannot be determined at this stage, but it will require areas of land to be set aside for swales and buffers. The use of surface water attenuation ponds is unlikely to be acceptable to Gatwick Airport (due to the risk of birds-strike), so alternative options may have to be considered.

Air Quality

There are no significant industrial or waste management sources that are likely to affect the air quality at the proposed development. Existing PM_{10} levels will not exceed the objectives within the study area.

Annual mean nitrogen dioxide concentrations have remained well below the objective at all relevant automatic and diffusion tube sites in all years since 2014.

The most sensitive receptors within the proposed development will be those associated with educational uses. Therefore, consideration should be given to locating these uses as far as possible from pollution sources such as busy roads and the airport. Locations towards the centre of the site and development blocks would be more appropriate.

Air quality at the proposed development site would be expected to be acceptable for commercial and educational uses.

It will be essential to include measures to minimise emissions from the development if it is to be considered an exemplar of sustainable development.

The site is located approximately 800m northeast of Crawley Treatment Sewage Works, indicating that there may be issues in terms of odour. However, given the reasonable distance, significant 'shielding' from trees and the fact that there are existing residential properties located closer to the works than the proposed Gatwick Green development, it is possible that odours won't be an issue. An Odour Impact Assessment may be required if Thames water have not already conducted a modelling study within the area.

Noise

Aircraft Noise

Noise levels within the vicinity of the site decreased slightly between 2003-2009. The site sits within the 60dB $L_{Aeq,16hours}$ noise contour during the day, and within the 54dB $L_{Aeq,8hours}$ noise contour during the night. The site is therefore likely to be exposed to aircraft noise of at least these levels.

Road Traffic Noise

Most of the site is above 60dB L_{Aeq},16 hours during the daytime, with the edges of the site close to the M23 (north of the site) subject to noise levels between 65 and 70dB

L_{Aeq},16hrs. Most of the site is below 60dB L_{night} during the night-time, with the edges of the site closest to the M23 are subject to noise levels between 60 and 65dB L_{night}.

Industrial and Commercial Noise
There are several industrial and commercial premises in and around the site that have the potential to create noise, that may affect the proposed uses at the site, including Elliott Metals, United Grab Hire and MSL Heat Treatment.

The most sensitive receptors within the proposed development will be those associated with educational uses. Therefore, consideration should be given to locating these uses as far as possible from sources of noise such as busy roads, the airport and existing industrial uses. Locations towards the centre of the site and development blocks would be more appropriate.

It is likely that offices will require windows to be closed to achieve suitable internal sound levels, although that does not necessarily mean that the windows should be sealed. Whether this requires mechanical ventilation or can be achieved through a natural system will depend of the detail of exactly where the office is, its design and the ability to incorporate sound into a natural ventilation system.

Noise levels at the proposed development site would be expected to be acceptable for commercial and educational uses.

Land Contamination
Surface water features in the vicinity of the site comprise of several drainage ditches. The potential sensitivity of these receptors is deemed to be high.

A large above ground oil storage tank was observed to the north of Fernhill Lane. The integrity of the tank is unknown and therefore it may have leaked into the underlying soil. Several other, domestic size oil storage tanks were observed across the site. There is the potential of hydrocarbon impact from fuel oils/lubricant leakage from the land uses on site.

The risk associated with land contamination arising from the dumping of fuel shortly after take-off or during an emergency landing is considered low. Under normal circumstances aircraft will dump excess fuel at altitudes above 3000 feet, where the volatile nature of the fuel results in evaporation and dispersion of the fuel before it reaches ground. Emergency dumping of fuel at lower altitudes only occurs in an emergency, which are by their nature rare and unpredictable, particularly given the safety regime associated with aircraft.

While the risk of aviation fuel residues is low it would be prudent to include assessment for fuel residues during any routine assessment of soil quality below the flight path.

It's possible that the made ground beneath the site might be contaminated by asbestos and other materials. Areas of present and historical land use may have elevated levels of residual pesticides, herbicides and insecticides. The site and

environs are predominately considered as Very Low to Low risk with respect to contamination, with this increasing to Moderate in areas that have previously been developed.

A Phase II intrusive investigation to assess potential geo-environmental risks is recommended. It would be recommended to scope the investigation to provide geotechnical design data as part of the ground investigation to inform detailed design.

Sustainability and Energy

Sustainability Strategy

As a demonstration of the commitment to sustainable design and construction, the business campus with (B8, B1, C1 and D1) spaces will be designed to achieve a BREEAM 2018 'Excellent' rating (fully fitted). The conference/hotel spaces (C1) and education spaces (D1) will be designed to achieve a BREEAM 2018 'Very Good' rating as a minimum, considering the limitations due to the speculative nature of these shell only spaces. An Excellent rating could be achieved if the future tenants undertake a further BREEAM Assessment of the Fit Out.

Management

The project delivery stakeholders will meet to identify and define roles, responsibilities for each of the key phases of project delivery.

Health and Wellbeing

The development will be designed to encourage a healthy and safe internal and external environment. To ensure daylighting, artificial internal and external lighting and occupant controls will be considered at the design stage.

Transportation and Connectivity

The site is bounded and interspersed by a network of footways and POS that offer connection to a range of local features, amenities, bus links, train network and other and public transport facilities.

Water

Reducing the consumption of potable water will be a significant constraint in the design process.

Waste

A pre-demolition audit will be undertaken to maximise the recovery of materials from demolition for subsequent high grade / value applications. The principal contractor will develop a Resource Management Plan (RMP) covering non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication generated by building's design and construction. A commitment to achieving a reduction in construction waste per 100m2 (GIA) will be made.

Energy

Some of the options that can be considered for the Gatwick Green development are:

- Low carbon heating via district heat networks; off-gas grid homes; hydrogen injection into the natural gas grid; new-build homes on hydrogen grid.
- Energy saving and efficiency via off-gas grid homes; energy efficiency in homes.
- Renewable generation: Solar and microgrid; car parks - solar potential; Biofuel.
- Smart Energy System: Solar and microgrid; Housing and community microgrids; EV charging & hydrogen-fuelling infrastructure; supporting CO2 capture.
- Transport Revolution: EV charging & hydrogen-fuelling infrastructure; Compressed natural gas (CNG) fleet fuelling.

Solar panels can also provide a cost-effective way of reducing the environmental impact and increasing the sustainability of the proposed development by reducing its carbon footprint. Energy from Waste can also significantly reduce the carbon footprint of the development. Ground source heat pumps can also provide a cost-effective and environmentally friendly option for the development and can also be used for cooling, reducing the need for air conditioning systems.

All the above measures, actions and remediations are manageable and feasible for the development concept envisaged.

Utilities

Power

There is enough power within the strategic power network to supply the proposed development. Upgrades to the local EDF HV network would be needed as part of the construction network.

Gas Network

There is enough capacity in the gas network to ensure the sites gas requirements can be met without the need for any off-site works.

ICT Infrastructure

The fixed telecoms requirements for the development can be met as required. The installation of all telecom's ducts shall be coordinated as a single entity to minimise the number of trenches and draw pits required. There are various options available to the developer for the installation of the ducting infrastructure and associated fibre cabling; of which some may result in a revenue stream.

The challenge for developers is to plan during a long-term development project for new technologies that are also likely to emerge.

Water Supply

The water service for the proposed development area is provided by SES Water. Consultation with SES water will be essential in order to ensure enough water can be supplied to meet the demands of the proposed development.

Multiple Distribution, Trunk and Abandoned mains run parallel to the west and east borders of the site, adjacent to the B2036 and Peeks Brook Lane respectively, as well as bisecting the site though Fernhill Road.

Introduction

1.1 Overview

Gatwick Green is a proposal to develop an integrated business, logistics and education hub on circa 59ha of land east of Gatwick Airport, as proposed by the "The Wilky Group Ltd." (TWG).

1.2 The Proposed Development/Concept

The proposed Gatwick Green development is envisaged to be an exemplar sustainable development, delivering high quality business, new generation logistics, hotel, employee amenity and education facilities as an integrated destination in a highly accessible location to be served by a network of sustainable transport modes. **Figure 1.2.1** displays the site boundary.

Gatwick Green is a proposed integrated mixed-use development and co-ordinated infrastructure solution to deliver the 59 ha (146 acre) site which currently forms part of the land that is identified for an Area Action Plan (AAP) under Policy SD3 of the Draft Crawley Borough Council Local Plan (CBLP) 2020-2035 (2020).

The Gatwick Green concept includes 4 to 5 storey buildings arranged to create an attractive urban environment contained within a network of green corridors offering a net biodiversity gain across the site. The development will be in contrast to the older-generation business park 'campus' model upon which many of the UK's employment areas are based. The proposed land use mix will require excellent transport access and suitable parking provision.

The total floorspace for the development has been calculated to be circa 2-8m sq. ft.

Figure 1.2.1: Site Boundary

1.3 The Gatwick Airport Master Plan

In the adopted Crawley Borough Local Plan (2015), all the land for the proposed development is included within the 523ha of land that is 'safeguarded' for a second runway at Gatwick Airport and falls within an Area of Search for a strategic employment location. This acknowledges the potential of the land for employment use[1].

The Gatwick Airport Masterplan retains safeguarding but acknowledges that a second runway has no policy backing and accordingly Gatwick Airport is no longer actively pursuing plans for an additional runway.

1.4 Limitations

The information, views and conclusions drawn concerning the site are based, in part, on information supplied to Clarkebond by other parties. Clarkebond has proceeded in good faith on the assumption that this information is accurate. Clarkebond accepts no liability for any conclusions, assumptions or actions taken resulting from any inaccuracies contained in information supplied to Clarkebond from other parties.

[1] Crawley Borough Council (2015) *Crawley Borough Local Plan 2015 - 2030,* P.52, Available at: http://www.crawley.gov.uk/pw/web/PUB271853

2 Site Description and Land Use

2.1 Overview

The Proposed Gatwick Green Site is situated on predominantly undeveloped Greenfield land, located approximately 800m east of Gatwick Airport and at National Grid Reference (NGR) TQ 29992 41345. The area of the proposed development is shown in **Figure 2.1.1**.

There are several small businesses located within the site boundary including Elliott Metals scrap metal merchants on Fernhill Road, MSL Heat Treatment along Balcombe Road and United Grab Hire landscaping supplier situated on Antlands Lane:

- Elliott Metals is a scrap metal processor, with a large commercial building and external stock bays to the north. Aerial imagery suggests that much of the processing occurs internally with the storage of metals being external.
- United Grab Hire is a grab hire, topsoil & aggregates, concrete, and building utilities company. The premises comprise several buildings and shelters as well as external stock bays and possible external aggregate machinery.
- MSL Heat Treatment is a heat and vacuum treatment company. The premises comprise two buildings, with a small yard area; this suggests that most of the work takes place internally, although aerial imagery suggests that there is a plant at the rear of one building.

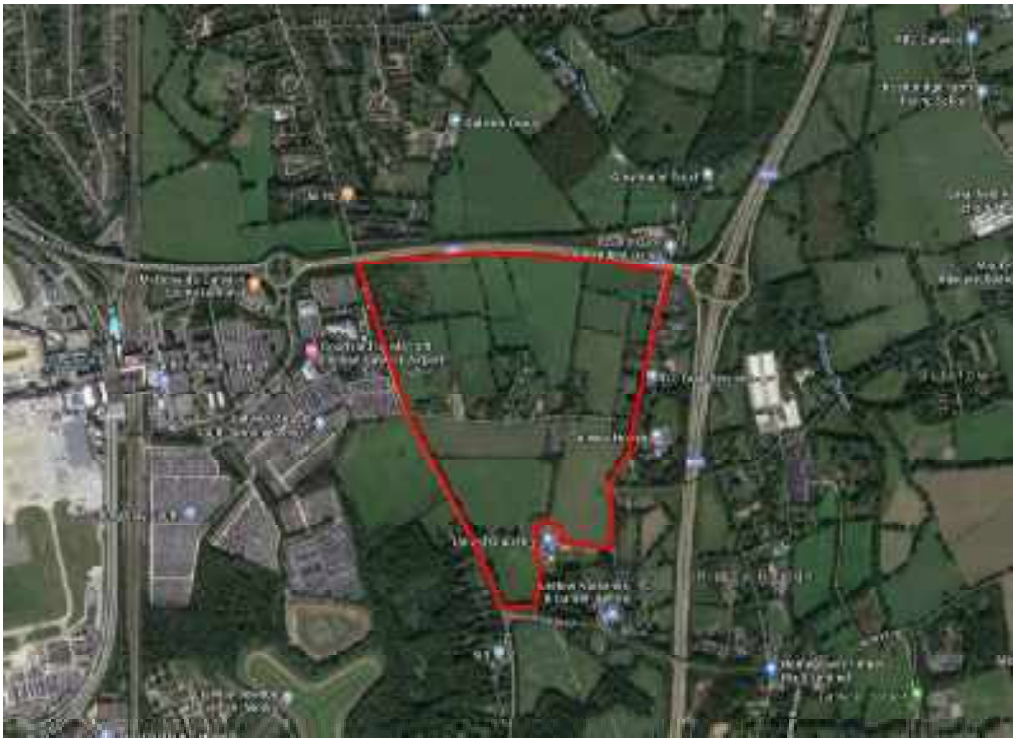

Figure 2.1.1: Aerial View of the Site

The site is bounded immediately to the west by Balcombe Road, beyond which is Gatwick Airport South Terminal Long Stay car park, Gatwick Airport train station and other Gatwick Airport support facilities. Gatwick Airport South Terminal is located approximately 1000m west of the site. The Gatwick Stream is located approximately 800m west of the site. Crawley Sewage Treatment Works is also located approximately 935m south west of the southern boundary of the Site.

The northern boundary is the M23 spur road between junctions 9 and 9a. North of the spur road lies the residential area of Horley, with the Burstow Stream and further Greenfield land located to the north-east. The east of the site is bounded by Peaks Brook Lane, beyond which are a mix of residences on larger plots and some small businesses. The M23 is situated approximately 180m east of the site. The south of the site is bounded by further greenfield land.

Geographically, the town of Crawley is approximately 3.5km south-west of the site, the town of Horley is situated approximately 1.7km north-west of the site, and the village of Copthorne located approximately 1.7km to the south-east.

The site itself is mainly undeveloped agricultural (grazing) land, and includes a small number of low-rise residential, commercial, industrial and possibly agricultural buildings. The site is bounded to the north by the M23 and bisected by a minor road (Fernhill Road) near the centre of the site.

2.2 Profile of the Proposed Development Concept for Gatwick Green

Whilst still at an early stage, it is anticipated that the development could comprise of the following:

- About 160,000 sqm Gross External Area (GEA) of B8, warehousing, distribution and logistics.
- About 52,500 sqm GEA of B1 office / R&D / light industry.
- About 52,500 sqm GEA of hotel use.
- Supporting education uses for apprenticeships & staff training.
- An integrated amenity centre including ancillary shopping, leisure, dining and community uses.
- High quality open space with mobility interchange hub.
- Sustainable mobility at the heart of the masterplan design, with dedicated public transport, pedestrian and cycle infrastructure.
- Ancillary car parking with Electric Vehicle Charging facilities.

2.3 Topography, Landscape and Geology

2.3.1 Topographic Elevation

Topographic data for the site was gathered from the LiDAR composite Digital Terrain Model (DTM), produced by the Environment Agency at a spatial resolution of 1m. LiDAR is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. Up to 500,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated. The results are presented in **Figure 2.3.1**.

Displayed in **Figure 2.3.1**, 0.5m contours were added to the DTM to indicate the gradient of the site and to illustrate the shape and topography. Watercourse data was added from Ordinance Survey, displaying the proximity of 2 watercourses which border the site, one of which is to the north-east, with another to the west.

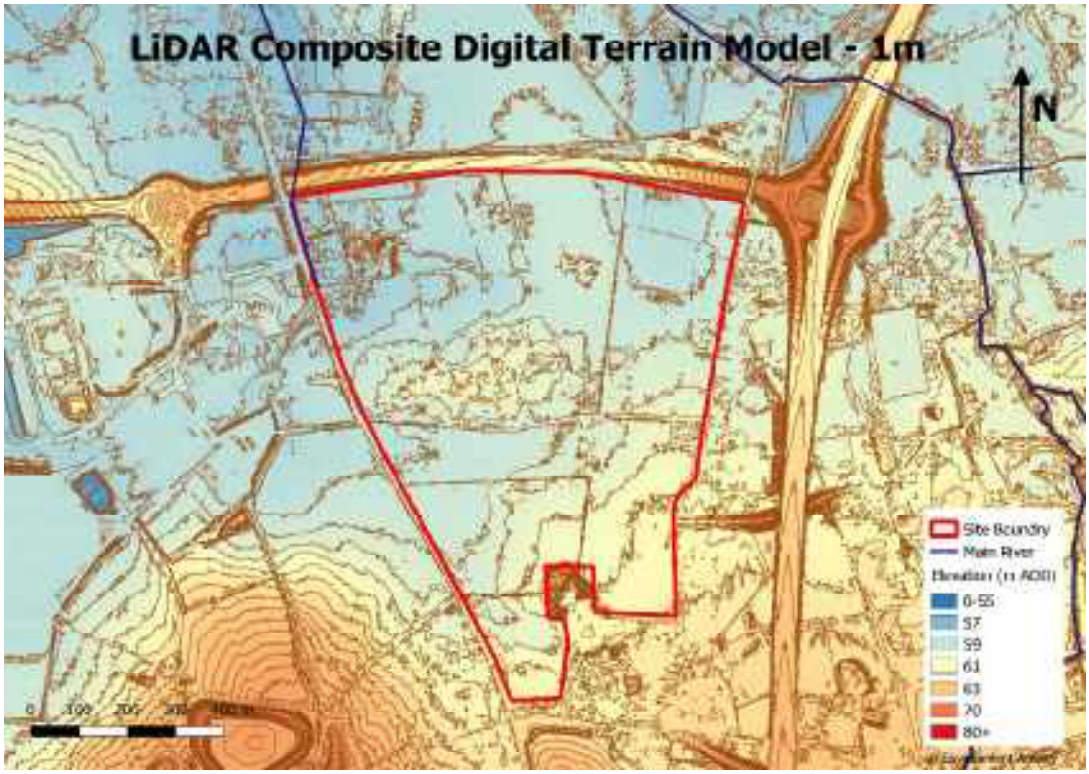

Figure 2.3.1: Site Elevation

As indicated by **Figure 2.3.1**, the lowest levels on site are in the north-west, adjacent to Balcombe Road, at approximately 57.1m AOD. The highest level on site can be found near the centre, adjacent to Fernhill road with an average level of approximately 62.8m AOD.

Figure 2.3.1 indicates that levels generally increase from north-west to south-east by approximately 5.6m. It also indicates that levels generally decrease towards the 'main rivers' in the north-west and north-east – both tributaries of the Burstow Stream. This also indicates the general direction of flow which surface water may take. Gatwick Stream is approximately 800m west of the site and flows in a northerly to north-westerly direction alongside the A23 London Road.

It should be noted that the 1m spatial resolution of LiDAR to assess the site levels would not be as accurate as a full topographic survey of the site. The interpretation of LiDAR data into a DTM requires a degree of interpolation and assumptions from the EA (to remove surface objects and identify the true ground level). This may explain the shape of the high levels in the centre of the site, where there are currently a significantly higher concentration of vegetation and buildings than the rest of the site. It is possible the true topography, including the small isolated areas of higher levels, may follow a similar pattern to as the surrounding topography, but the levels may have been incorrectly interpolated or assumed incorrectly. Therefore, the DTM should only be used to gain a general idea of the ground levels.

2.3.2 Landscape Characteristics

Wider views to and from the site are largely obstructed by trees and hedgerows located on the site boundary as well as within the site. Where views are not obstructed, they range from being predominantly rural in nature (e.g. looking south-west from the site), to those of the surrounding roads (e.g. looking north from the site), to the surface parking and other support facilities at Gatwick Airport (e.g. looking west and north-west from the site).

Designations

The Site does not fall within a Site of Specific Scientific Interest (SSSI). The closest SSSI from the site is situated approximately 4.7km south-east of the site (Hedgecourt SSSI); it is also approximately 6km west of the site (Glover Wood SSSI). The site is not situated on, or near, any Special Areas of Conservation (SAC) or Special Protection Areas (SPA). Furthermore, no groundwater or surface water nitrate issues have been found and there are no critical drainage areas mentioned in the Council's Strategic Flood Risk Assessment (SFRA).

2.3.3 Soils and Geology

According to LandIS 'Soilscapes', most of the Site is underlain by 'Soilscape 22: Loamy Soils with naturally high groundwater'[2]. The drainage is described as 'naturally wet', where in low lying sites, permeable soils are often affected by high groundwater that has drained from the surrounding landscape.

The anticipated geology at the Site, identified by the British Geological Survey (BGS)[3], can be summarised as follows:

Superficial Deposits

- River Terrace Deposits - Sand and Gravel.

Bedrock

- Most of the site below Fernhill Road, as well as the north-eastern areas, is primarily underlain by the Weald Clay Formation – Mudstone. The remainder of the site comprises of clay-ironstone, also from the Weald Clay Formation.

Regarding groundwater vulnerability, according to the Department for Environment, Food and Rural Affairs (DEFRA) live interactive 'MAGIC Maps' the site is classified as 'unproductive strata' as of December 2019[4]. This refers to rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The site does not fall within a Source Protection Zone (SPZ).

[2] Cranfield University, *LandIS Soilscapes*, Available at: http://www.landis.org.uk/soilscapes/
[3] British Geological Survey, *Geology of Britain Viewer*, Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
[4] Department for Environment, Food and Rural Affairs, *Magic Maps*, Available at: https://magic.defra.gov.uk/MagicMap.aspx

3 Planning Policy & Airport Safeguards

3.1 Crawley Borough Local Plan (2015)[5]

3.1.1 Introduction

The following paragraphs set out the relevant policies from the adopted Crawley Borough Local Plan (CBLP, 2015) that are relevant to the matters addressed in this report. Where these policies contain a spatial dimension, reference is made to how this affects the site.

3.1.2 Relevant Policies from the Local Plan

Policy CH3: Normal Requirements of all New Development
All proposals for development in Crawley will be required to:

a. "Be based on a thorough understanding of the significance and distinctiveness of the site and its immediate and wider context and demonstrate how attractive or important features which make a positive contribution to the area would be integrated, protected and enhanced. These features include views, landmarks, footpaths, rights of way, trees, green spaces, hedges, other historic landscape features or nature conservation assets, walls and buildings;
b. "Be of high quality in terms of their urban, landscape and architectural design and relate sympathetically to their surroundings in terms of scale, density, height, massing, orientation, views, landscape, layout, details and materials. Proposals must be supported by a future management and maintenance plan for all shared hard and soft landscaping, semi-public or semi-private areas to ensure these areas become well-established. Contributions towards street scene improvements, public art and CCTV will be sought in accordance with council guidance;
c. "Provide or retain a good standard of amenity for all existing and future occupants of land and buildings, including compliance with internal standards for new dwellings as set out in Policy CH5, and not cause unreasonable harm to the amenity of the surrounding area by way of overlooking, dominance or overshadowing, traffic generation and general activity, for example noise, smells and/or vibration;
d. "Retain existing individual or groups of trees that contribute positively to the area and allow enough space for trees to reach maturity. Enough space should also be provided in private gardens that would not be overshadowed by tree canopies; and proposals should ensure that rooms within buildings would receive adequate daylight. Where a development is proposed or where trees would be lost to development, tree planting should accord with the standards set out in Policy CH6;
e. "Demonstrate how 'Secure by Design' principles and guidance set out in 'Secured by Design' design guide (as amended) have been incorporated into development proposals to reduce crime, the fear of crime, anti-social behaviour and disorder. For all development, the potential impact on community safety must be carefully considered at

[5] Crawley Borough Council (2015) *Crawley Borough Local Plan 2015 - 2030,* P.29, Available at: http://www.crawley.gov.uk/pw/web/PUB271853

the earliest opportunity to ensure that measures are integrated into proposals without compromising other objectives;

f. "Meet the requirements necessary for their safe and proper use, regarding access, circulation and manoeuvring, vehicle and cycle parking, loading and unloading, and the storage and collection of waste/recycling"; and
g. "In respect of residential schemes, demonstrate how the Building for Life 12 criteria (as amended) for the evaluation of the design quality of residential proposals have been considered and would be delivered through the scheme".

Policy ENV6: Sustainable Design and Construction
Proposals for new non-domestic buildings should achieve BREEAM Excellent (for water and energy credits) where technically and financially viable.

Policy ENV7: District Energy Networks
Any major development should demonstrate how they have considered the hierarchy relating to connection to an existing District Energy Network, and where one is not yet in place, consider developing its own system including communal energy systems, and be "network ready" to connect to a District Energy Network at some point after construction. Alternatively, securing decentralised low carbon energy may be justified.

Policy ENV9: Tackling Water Stress
New development should be BREEAM Excellent rating where possible, including addressing maximum water efficiencies under the mandatory water credits. Should BREEAM be replaced, this requirement will also be replaced by any tighter standard approach to an area of water stress. This must be demonstrated through the Sustainability Statement.

Policy ENV10: Pollution Management and Land Contamination
To prevent unacceptable risks from environmental pollution and land contamination, development, including extensions and intensification of existing uses, will be permitted where the proposed use:

a. would not lead to a significant increase (including cumulative increase) in levels of pollution or hazards, or where impacts can be appropriately mitigated to ensure impacts are controlled, and as far as possible reduced; and
b. is appropriate to its location in that it would not result in unacceptable disturbance or nuisance to the amenity of adjacent land uses and occupiers.

Where a site is known or suspected to be at risk from contaminants or materials that present a hazard to health, information must be provided detailing the methodology through which risks will be addressed and ensuring the treatment and/or removal of all such contaminants and materials prior to the commencement of development.

Policy ENV11: Development and Noise
Development should be sensitive to noise, and development that will expose future users to unacceptable noise levels will not be permitted. Proposals will need to demonstrate that they are acceptable in noise terms and required to mitigate noise impacts through planning, layout and design. A Noise Impact Assessment will be required to support applications where noise sensitive uses are likely to be exposed.

Policy ENV12: Air Quality
Development that does not result in a material negative impact on air quality will not be permitted. Air quality impact will need to be supported by evidence and appropriately mitigated. Development that may reasonably be considered to impact on air quality will be expected to contribute towards achieving a reduction in levels of air pollution.

Policy IN1: Infrastructure Provision
Development will be permitted where it is supported by infrastructure on and off site and if mitigation can be provided to avoid any significant cumulative effects on the existing infrastructure services.

Policy IN2: Strategic Delivery of Telecommunications Infrastructure
All proposals for residential, employment and commercial development of one unit or more must be designed to be connected to high quality communications infrastructure to ensure that fibre optic or other cabling does not need to be retrofitted.

Policy GAT2: Safeguarded Land
The Local Plan Map in **Figure 3.1.1** identifies land which will be safeguarded from development (532ha) which would be incompatible with expansion of the airport to accommodate the construction of an additional wide spaced runway (if required by national policy) together with a commensurate increase in facilities that contribute to the safe and efficient operation of the expanded airport. Minor development within this area, such as changes of use and small-scale building works, such as residential extensions, will normally be acceptable. Where appropriate, planning permission may be granted on a temporary basis. The airport operator will be consulted on all planning applications within the safeguarded area.

Figure 3.1.1: Gatwick Safeguarded Land

Policy EC1: Sustainable Economic Growth

Policy EC1 confirms Crawley's role as an economic driver of the Gatwick Diamond area; identifies Manor Royal and the town centre as key areas for business and economic growth; identifies 23ha for employment development, and identifies an Area of Search for future Strategic Employment Locations (SELs) south and east of Gatwick Airport and covering most of the Safeguarded Land for a second runway, including this site.

3.2 Submission Crawley Local Plan 2020 – 2035 (2019)[6]

The Council released the Crawley local (CLP) in January 2020 for public consultation. The CLP removes the Safeguarded Land designation and Policy GAT2 from the CBLP. The Area of Search for Strategic Employment Locations (SELs) has also been deleted from adopted Policy EC1.

The CLP contains a new approach to planning for this area, contained in Policy SD3, which identifies the previously safeguarded land as an area to be subject to an Area Action Plan (AAP) to be advanced following the adoption of the CLP. The AAP will address the need for strategic employment land, housing, infrastructure and community uses as well as any identifiable long-term needs of the Airport. Other relevant policies of the CLP address development management matters and are broadly aligned with the equivalent policies in the CBLP.

[6] Crawley Borough Council (2019) *Crawley Borough Local Plan 2020 - 2035,* Available at: http://www.crawley.gov.uk/pw/web/PUB353176

3.3 Airport Safeguards

3.3.1 Gatwick Airport Masterplan (2018)[7]

The Gatwick Airport Masterplan acknowledges the potential of the land for employment use. It retains safeguarding but acknowledges that a second runway currently has no airport policy backing. Despite this, Gatwick Airport has retained its plans for an additional runway that may be required in the future. The safeguarded land is identified as needed for the second runway itself and for possible ancillary activities. Gatwick Airport Limited (GAL) is consulted on planning applications within the Safeguarded Land in accordance with policy GAT2 of the CLBP.

Public Safety Zones are areas of land at the end of the runways at the busiest airports, within which development is restricted in order to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take-off or landing.

The 1:100,000 Public Safety Zone (PSZ) for the existing Gatwick Airport runway bisects the site, displayed in **Figure 3.3.1**. The PSZ policy objective is that there should be no increase in the number of people living, working or congregating in PSZs and that, over time, the number should be reduced as circumstances allow.

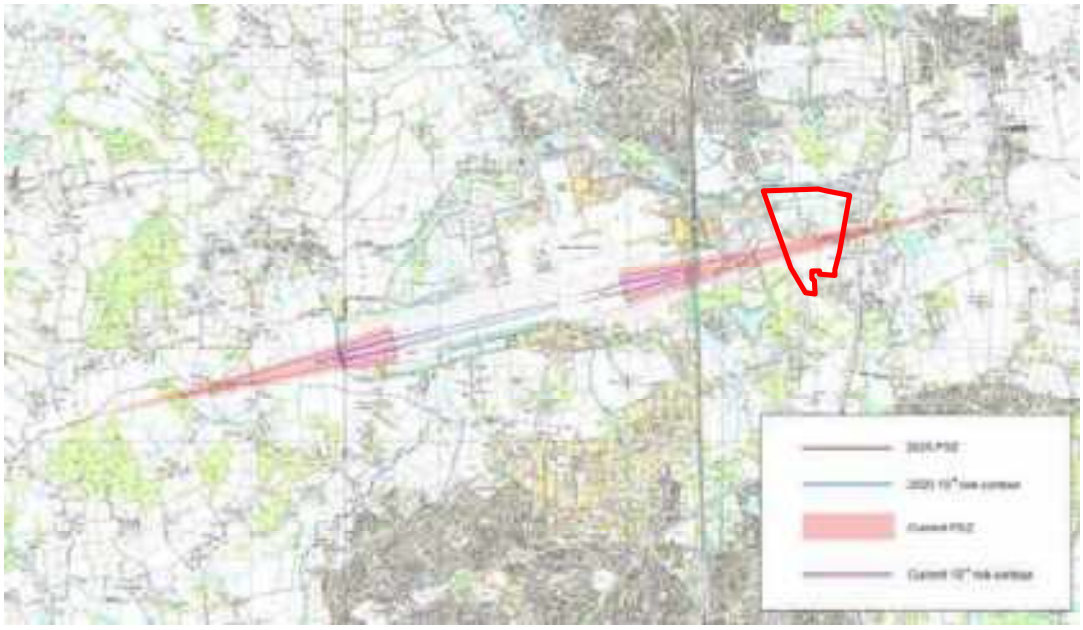

Figure 3.3.1: Gatwick Airport Public Safety Zone

[7] Gatwick Airport (2018) *Gatwick Airport draft master plan*, Available at: https://www.gatwickairport.com/globalassets/business--community/growing-gatwick/gatwick-draft-master-plan-final.pdf

3.3.2 Aerodrome Safeguarding

Requirements and controls related to development on or near major airports are contained in documents produced by the Civil Aviation Authority. These set out a range of limitations relating to building height, solar glare, water bodies, land uses and radar installations etc. Proposals at Gatwick Green must, and will be, designed to meet all the requirements in these documents.

GAL is currently required under European Aviation Safety Agency (EASA) rules to reduce the attractiveness of the area to birds and wildlife on and in the vicinity of the airport in order to minimise the risk of aircraft damage. Local planning Authorities (LPAs) are required to consult Gatwick Airport on proposed development within a 13km circle of the airport and have the potential to increase the bird strike risk[8].

[8] Gatwick Airport, *Aerodrome Safeguarding*, Available at: https://business.gatwickairport.com/b2b/airside-operations/aerodrome-safeguarding/

4 Environmental Baseline Conditions

4.1 Flood Risk

4.1.1 Policy Context and Relevant Guidance

National Policy

National Planning Policy Framework (2019)

National policy on flood risk is set out in paragraphs 155 to 165 of the NPPF (2019)[9] which is also supplemented by National Planning Practice Guidance (NPPG) for flood risk and coastal change. The overarching aim of the NPPF is to ensure inappropriate development in areas at risk of flooding are avoided, which is achieved via application of the Sequential Test.

In summary this test aims to highlight the areas at lowest probability of flooding (Flood Zone 1) and steer new development to these areas. If the location of the low risk area is not suitable due to wider sustainability objectives then progressively higher risk areas (Flood Zone 2/Flood Zone 3) can be considered, provided the development will be suitably safe from flooding and does not increase flood risk to other areas.

After undertaking the Sequential Test, the vulnerability of development to flooding must be considered so that more vulnerable uses are given priority for lower risk land. This exercise is undertaken by referring to Table 2 (Paragraph 066) of NPPG which shows the vulnerability classifications of various land use types and Table 3 (Paragraph 067) of NPPG which shows the compatibility of the different vulnerability categories with the Flood Zones and requirements for the Exception Test[10].

Local Policy

Local planning policy provides more specific detail on development requirements based on the flood risk in the local county or borough. Although these policies will broadly be in line with national policy, where additional requirements are required this will take precedence.

A list of relevant planning policy documents that were consulted include:

- Crawley Borough Council Strategic Flood Risk Assessment (2014)
- Crawley Borough Council Local Plan (2015)
- Thames Catchment Flood Management Plan (2009)
- Thames River Basin Management Plan (2015)

[9] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework,* P.45-47, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf
[10] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Guidance: Flood Risk and Coastal Change,* Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change

Crawley Borough Council Local Plan (2015)
Policy ENV8: Development and Flood Risk[11]
Development proposals must avoid areas which are exposed to an unacceptable risk from flooding and must not increase the risk of flooding elsewhere. To achieve this, development will:

- Reduce peak surface water run-off rates and annual volumes of run-off for development through the effective implementation, use and maintenance of SuDS, unless it can be demonstrated that these are not technically feasible or financially viable.

Policy ENV9: Tackling Water Stress[12]
Crawley is situated within an area of serious water stress, and development should, therefore, plan positively to minimise its impact on water resources and promote water efficiency. New dwellings should where viable and technically feasible, meet the Building Regulations optional requirement for tighter water efficiency.

Thames Catchment Flood Management Plan (CFMP) (2009)[13]
Policy Option 6: Areas of low to moderate flood risk will act with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits. This is indicative of our vision of managing run-off, safeguarding open space and potential flood storage.

4.1.2 Assessment Method/Criteria

The assessment undertaken involved:

- Identifying the flood risk areas at Gatwick Green from flood risk zones designation plans and critical drainage area maps etc., and from other publicly available reports, assessments and modelling information such as SFRAs etc.;
- Identifying sensitive surface water and ground water receivers and habitats in the water environment (locally and regionally), such as Water Protection Zones (WPZs), drinking water safeguard zones, SACs, SPAs etc.;
- Reviewing historical flood risk data from the Environment Agency, from Crawley Borough Council and Reigate and Banstead Borough Council, and from the provider of sewerage services (Thames Water);
- Reviewing relevant regulatory objectives and targets established for the sustainable management of the water environment by the EA, Local Authorities and Water Companies.
- Identifying the potential hydrological and hydraulic impacts which should be considered as part of a detailed flood risk assessment and hydrological impact assessment to support a planning application for the development of the site;

[11] Crawley Borough Council (2015) *Crawley Borough Local Plan 2015 - 2030,* P. 104, Available at: http://www.crawley.gov.uk/pw/web/PUB271853
[12] Crawley Borough Council (2015) *Crawley Borough Local Plan 2015 - 2030,* P. 107, Available at: http://www.crawley.gov.uk/pw/web/PUB271853
[13] Environment Agency (2009) *Thames Catchment Flood Management Plan,* P.12 Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/29390

- Identifying whether any mitigation measures may be necessary to allow the development of the site.

Under the Water Framework Directive (WFD) assessment guidance for surface waters, objectives are set for ecological and chemical status. For artificial or heavily modified water bodies, objectives are set for ecological potential and chemical status. For groundwater, objectives are set for quantitative and chemical status. Water body objectives consist of 2 pieces of information: the status (for example, good) and the date by which that status is planned to be achieved.

The status part of an objective is based on a prediction of the future status that would be achieved if technically feasible measures are implemented and, when implemented, would produce more benefits than they cost. The objective also considers the requirement to prevent deterioration and achieving protected area objectives.

In terms of activities with the potential to impact flood risk, under the Environment Agency WFD assessment guidance, an assessment is required to decide whether the proposed Scheme supports the objectives of the Thames River Basin Management Plan (TRBMP).

4.1.3 Baseline Conditions

Description of Character and Sensitivity

According to the EA's 'Main Rivers Map' and 'Catchment Data Explorer', the Site is located within the catchment of a main river, the River Mole[14]. The north-west of the site appears to be bounded by a tributary of the Burstow Stream, which falls within the operational catchment of the Mole Upper Tributary. A second minor tributary of the Burstow Brook is located approximately 100m to the east of the eastern Site boundary. A main river refers to those watercourses under the jurisdiction of the EA. Refer to **Figure 4.1.1.**

[14] Environment Agency, *Catchment data Explorer,* Available at: https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3495

Figure 4.1.1:Showing Hydrological Setting

The section of the Site north of Fernhill Road and south of the M23 has several drainage ditches.

The Site is located within Flood Zone 1, which means that it has annual probability of flooding of less than 0.1% (1 in 1000-year return period) from both fluvial and tidal sources.

Most of the Site is at very low risk of surface water flooding, which represents a less than 0.1% annual probability of occurrence. A proportion of the proposed development site is within an area at risk of flooding from failure of existing artificial infrastructure. **Figure 4.1.4** indicates the extent of flooding that would inundate primarily the north-west corner of the Site, with a small area in the west also suggested to be affected.

The risk of groundwater flooding is typically highly variable and heavily dependent upon local conditions at any time. The site is located within 50m of an area recorded to be susceptible to groundwater flooding. The susceptibility relates to superficial flooding and the BGS confidence in this susceptibility is high.

The River Mole (Horley to Hersham) located downstream of the site has an overall classification within the Thames River Basin Management Plan (TRBMP) of **Moderate** in 2016[15].

The reasons for not achieving good status and reasons for deterioration are as follows:

[15] Environment Agency *Catchment data Explorer,* Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039017621

- Poor Nutrient Management
- Sewage Discharge
- Poor Livestock management
- Poor Soil Management
- Private Sewage Treatment
- North American Signal Crayfish
- Pollution from rural areas
- Pollution from wastewater

The site falls within the catchment of the Burstow Stream, which has an overall classification within the TRBMP of **Bad** in 2016[16].

The reasons for not achieving good status and reasons for deterioration are as follows:

- Barriers – Ecological discontinuity
- Land Drainage – Operational Management
- Low Flow (not drought)
- Urban development
- Riparian/in-river activities
- Sewage discharge
- Reservoir/impoundment
- Pollution from wastewater
- Physical Modifications

Several habitat-types present within the site are listed as priority habitats within the Sussex Biodiversity Action Plan (BAP), including:

- Arable land
- Hedgerows
- Woodland
- Standing fresh water

No groundwater or surface water nitrate issues have been found at the Site and there are no critical drainage areas mentioned in the Council's SFRA.

Key issues

The Thames River Basin Management Plan (2015)[17] identifies that the key priority issues in the River Mole catchment are:

[16] Environment Agency, *Catchment data Explorer,* Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039017520
[17] Department for Environment, Food and Rural Affairs (2015) *Thames river basin district river basin management plan,* P. 81, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7183

- Man-made modifications in the river
- Pollution from wastewater
- Diffuse pollution from farmland

Vulnerability Classification of the Proposal

According to Table 2 of National Planning Practice Guidance (NPPG), the education component of the Scheme is classed as a 'less vulnerable' development. However, if the proposed scheme were to include medical facilities, such as a GP surgery etc., these would then be be classified as a 'more vulnerable' development[18]. Please refer **Table 4.1.1** for a summary of the vulnerability classification for the proposed land uses at Gatwick Green based on the profile of the development concept described in **Section 2.2**.

Table 4.1.1: Summary of Vulnerability Classification

Land Use Component	Vulnerability Class
B8 – Warehousing, distribution and logistics	Less Vulnerable
B1 – Office / R&D / light industry	Less Vulnerable
Hotel use	More Vulnerable
Supporting education uses for apprenticeships & staff training.	Less Vulnerable
An integrated amenity centre including ancillary shopping, leisure, dining and community uses.	Less Vulnerable
High quality open space with mobility interchange hub.	Less Vulnerable
Sustainable mobility at the heart of the masterplan design, with dedicated public transport, pedestrian and cycle infrastructure.	Less Vulnerable/Essential Infrastructure
Ancillary car parking with Electric Vehicle Charging facilities	Less Vulnerable and Essential Infrastructure

Fluvial Flooding

The EA's 'Flood Map for Planning' shows that the Site is located within Flood Zone 1 (**Figure 4.1.2**). Flood Zone 1 (FZ1) refers to land having a less than 1 in 1,000 annual probability of river or sea flooding, (shown as 'clear' on the EA's "Flood Map for Planning").

Despite this, there is land north of the M23 spur road (i.e. outside of the site's red line boundary and "downstream" of the site's drainage catchment boundary), which falls within Flood Zone 2 (FZ2) and Flood Zone 3 (FZ3). Flood Zone 2 is land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding and Flood Zone 3 is land having a 1 in 100 or greater annual probability of river flooding respectively.

[18] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Guidance: Flood Risk and Coastal Change*, Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change

In relation to the effects of climate change, the resulting flood extent of the 1 in 100 year + 25% allowance for the effects of climate change (i.e. the 'Design Flood') may increase in the area surrounding the site, but the location of the M23 spur means that these future flood zones are unlikely to extend into the site.

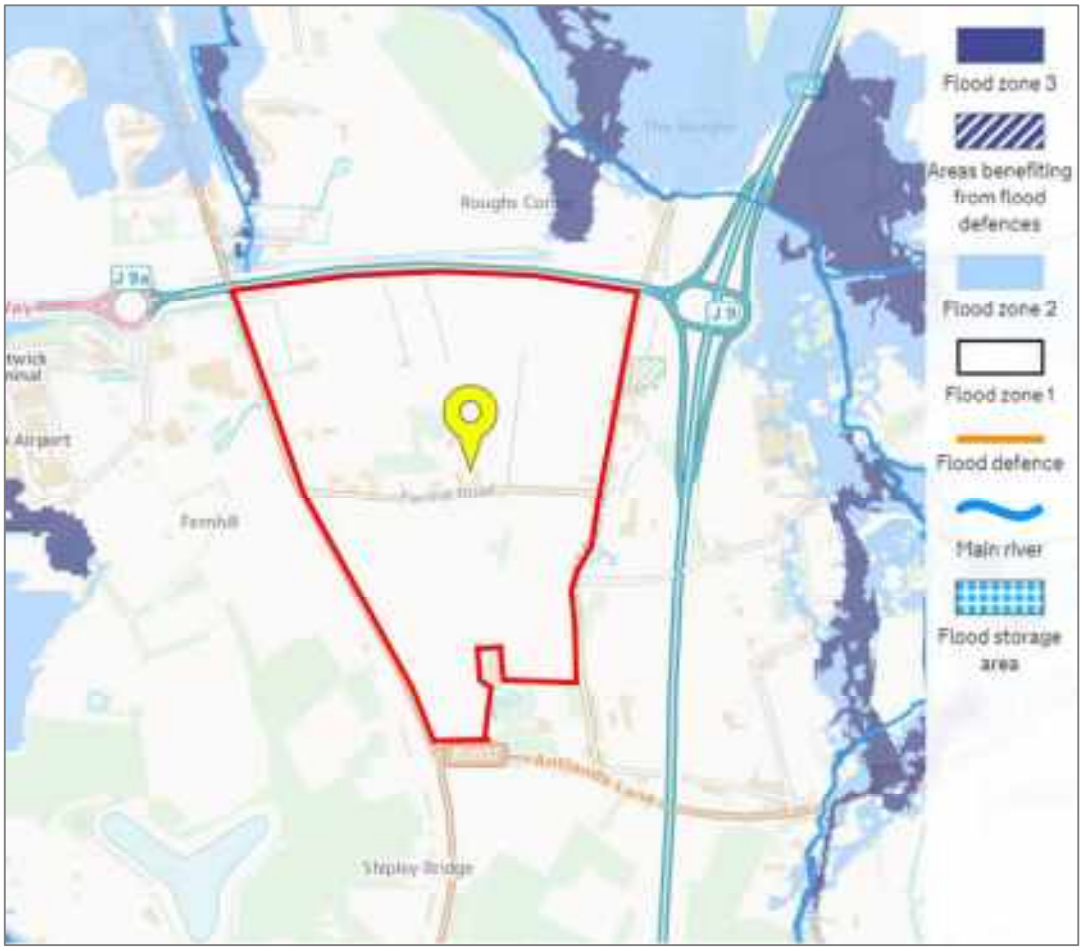

Figure 4.1.2: EA Flood Map for Planning

Climate Change Considerations

According to the latest National Guidance on climate change (updated 15th March 2019), the climate change allowance to apply to a site is determined by the following factors:

- The river catchment where the site is located.
- The vulnerability classification of the development (most sensitive aspects).
- The projected lifetime of the development.
- Flood risk probability (or flood zones of the areas at highest risk)

Based on the the profile of the development concept described in **Section 2.2**, the following conclusions can be drawn:

- Total site area is in FZ1
- Vulnerability classification is "more vulnerable development" for most sensitive aspects
- Project lifetime assumed to be 100yrs (for key elements)
- Thames river catchment

Based on the above information and National guidance, the climate change allowance should be 25% – **central category** (for FZ1), 35% - **higher central category** (for FZ2), and 70% - **upper end category** for (FZ3a). Therefore, an allowance for a 25% increase in peak fluvial flows for watercourses near the site will need to be undertaken to determine the peak design (i.e. 1% annual probability) fluvial flood level.

The resulting flood extent of the 1 in 100 year + 25% allowance for the effects of climate change (i.e. the 'Design Flood') may increase in the area surrounding the site, but the location of the M23 spur, which in effect is a physical barrier means that future increases in flood extents are unlikely to extend into the site.

Surface Water Flooding

As can be seen from the EA surface water flood map (**Figure 4.1.3**), most of the Site is at very low risk of surface water flooding (i.e. less than 0.1% annual probability of occurrence). Despite this, there are several pockets of low risk (0.1 – 1% annual probability), medium risk (1 – 3.3% annual probability) and high risk (>3.3% annual probability) on the west and north parts of the site.

The presence of areas of surface water flooding and ponding also exist to the east of Gatwick South Terminal, which GAL currently effectively manage to prevent the risk of bird-strike. Similar methods of bird-strike risk management can be effectively used at Gatwick Green where these areas of ponding occur.

Figure 4.1.3: EA Surface Water Flooding (Extent)

Risk of Flooding from Off-site Sources

The proximity of the site to Gatwick Airport means that there is a large impermeable surface area just to the west of the site. There is a need for flood risk to be managed at Gatwick Airport particularly in times of heavy rainfall and balancing ponds are used to regulate the rate at which rainfall is discharged into the River Mole and other watercourses, in accordance with the EA discharge consent. As can be seen from **Figure 4.1.4**, this does not pose a risk of surface water flooding to Gatwick Green because the drainage catchment area for Gatwick Airport is toward the Gatwick Stream which flows in a direction well away from the Gatwick Green site.

Flooding from Failure of Existing Artificial Infrastructure

According to the EA 'Long Term Flood Risk Map for England', a proportion of the proposed Site is within an area at risk of flooding from failure of existing artificial infrastructure. **Figure 4.1.5** indicates the extent of flooding that would inundate primarily the north-west corner of the site,

with a small area in the west also suggested to be affected. The exact source of the artificial infrastructure which poses a flood risk is unclear; however, it is possible to identify a likely upstream source, which is the Ifield and Duster Ponds approximately 7.25km south-west of the site.

The flood depth is shown to be extensive by the EA Flood Map, at a depth of between 0.3-2.0m for most of the affected area. The flood speed is indicated to be below 0.5m/s for the entire affected area, suggesting that the water would pond in these areas.

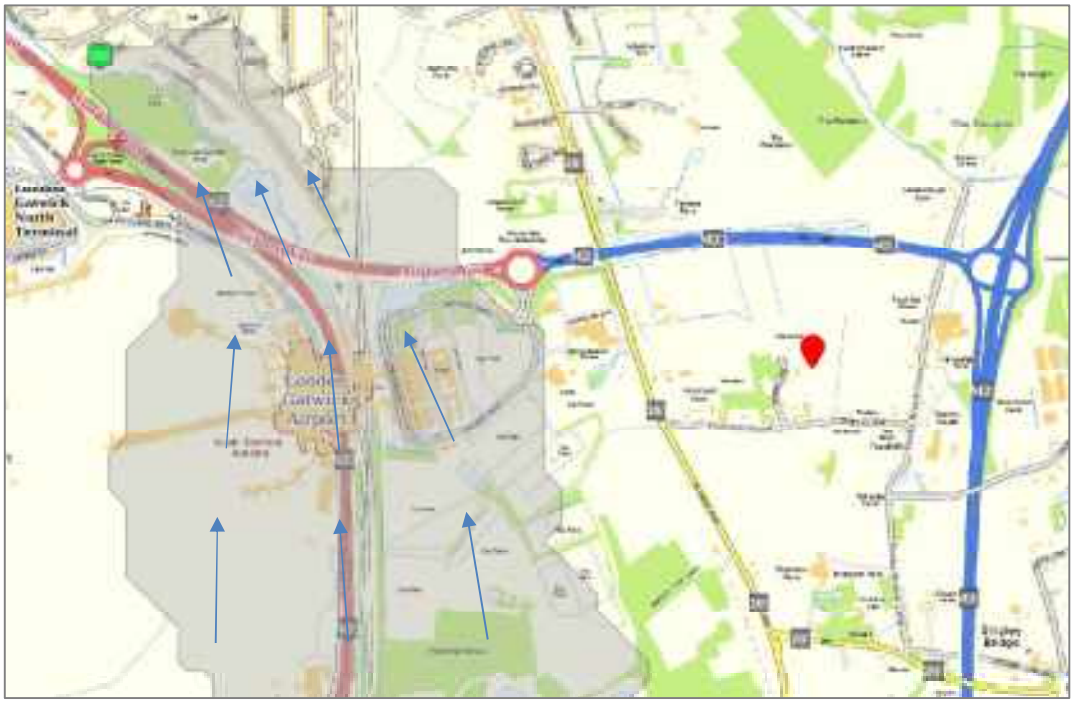

Figure 4.1.4: Drainage Catchment Area of Gatwick Airport

Figure 4.1.5: Risk of Flooding from Artificial Infrastructure

Further investigations using the Centre for Ecology and Hydrology (CEH) FEH (Flood Estimation Handbook) Web Service indicate that the outflows from these reservoirs feed into the Ifield Brook and eventually into the River Mole. The FEH Web Service indicates that the Gatwick Green site falls outside of the catchment for these water bodies, and consequently suggests that any flooding resulting from the failure of the reservoirs would not reach the site (refer to **Figure 4.1.4**).

Furthermore, all reservoir operators throughout the UK are required to appoint an inspecting engineer to carry out an inspection at least once every 10 years. The inspecting engineer needs to identify any safety measures that need to be carried out, and set a deadline, as well as certify that the recommended safety measures have been carried out. In addition, this 'flood risk' also covers the airports operational area, so is not considered to be an impediment to development at the site.

For the reasons above, and the relationship between probability and impact, the baseline risk to the site from artificial infrastructure flooding is determined to be negligible.

4.1.4 Considerations and Opportunities

All the forms of development proposed in **Section 2.2** are compatible in Flood Zone 1 in accordance with **Table 4.1.2** (taken from Table 3 of the NPPG)[19]. Therefore, the proposed development-mix for the site automatically passes the Sequential Test and is not required to undertake an Exception Test.

Table 4.1.2: Flood Risk Vulnerability and Flood Zone 'Compatibility' (Extracted from Table 3 of NPPG)

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zones	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	X	Exception Test required	✓
	Zone 3b	Exception Test required	✓	X	X	X

*Where ✓ means the development is appropriate and **X** means the development should not be permitted*

When considering the effects of climate change, the areas of Flood Zone 2 and Flood Zone 3 to the north of the site may increase in size. The ground levels of the land which is both adjacent to and north of the M23 spur range from 57.8m AOD to 58.8m AOD whereas the level of the M23 spur road at the northern boundary of the site range from 60.2m AOD to 66.4m AOD (refer to **Figure 2.3.1** showing topographic elevations from LIDAR). The M23 Spur acts as a physical flood barrier which would likely prevent the resulting flood extents from extending to the Gatwick Green site.

Any part of the development which may be sensitive to surface water flooding should avoid these areas. To address the risks from surface water flooding, appropriate sustainable drainage systems (SuDS) should be implemented to appropriately mitigate, and where possible reduce, the risks.

There may be a need to include off-sets and buffer strips along existing drainage ditches, which themselves will need to be improved, to mitigate flood risk from surface water. The existing

[19] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Guidance: Flood Risk and Coastal Change,* Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change

watercourses discharge into the Burstow Stream north of the site via the outfalls of an unnamed tributary at NGR TQ 29628 42898.

4.1.5 Scheme Deliverability

The baseline conditions assessment undertaken has not uncovered any prohibitive flood risk considerations that could render the proposed development undeliverable as currently conceptualised. Where flood risk considerations have been identified, these can be adequately dealt with by incorporating appropriate flood mitigation measures as noted above into the design and layout of the Scheme.

4.1.6 Further Assessment and Next Steps

Flood Risk Assessment Requirements

Footnote 50 of the NPPF[20] states that a site-specific FRA is required for certain types of development. The criteria for a development requiring an FRA are listed below. An FRA will be needed for Gatwick Green at the planning application stage.

- Development site is in Flood Zone 2 or 3;
- Development site is more than 1 hectare (ha) in Flood Zone 1;
- Site is in an area which has critical drainage problems as notified by the Environment Agency;
- Land identified in a strategic flood risk assessment as being at increased flood risk in the future; or
- Could be affected by sources of flooding other than rivers and the sea (e.g. surface water drains, reservoirs) where a development will introduce a more vulnerable use.

[20] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework,* P. 49, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810

4.2 Surface Water and Foul Water Drainage

4.2.1 Policy context and Relevant Guidance

General Overview

Current policy and best practice dictate that surface water drainage systems need to be developed in line with sustainable development techniques collectively referred to as Sustainable Drainage Systems (SuDS). The objective of SuDS is to minimise the impact of the development on the quantity and quality of site runoff and maximise amenity and biodiversity opportunities. Surface water sustainable drainage systems should be designed and installed in accordance with the National Planning Policy Framework 2019 (NPPF).

Surface Water Runoff Disposal Hierarchy

Surface water drainage from the proposed development must be dealt with in accordance with the following hierarchy taken from Paragraph 080 of NPPG[21]:

1. Infiltration to the ground using a soakaway or other suitable sustainable drainage system.
2. If this is not feasible, discharge to a watercourse or river; generally, at a controlled rate unless it does not affect flood risk e.g. if to the sea or an estuary.
3. Discharge at a controlled rate to a surface water sewer or drain.
4. Discharge at a controlled rate to a combined sewer system – this will only be considered if the above have all been investigated and it has been proved that none of these options are suitable. The approval for this can only be given by the Water Authority.

Guidance on how surface water runoff should be managed, notably the discharge rate with which is can leave a development site, is taken from the 'Non-Statutory Technical Standards for Sustainable Drainage Systems' (2015).

Part H of the Building Regulations (2015) states a hierarchy of how surface water disposal should be managed. Infiltration to groundwater by the use of soakaways as a method of surface water disposal should be considered in preference to discharging to watercourses or public sewers as stated in the Building Regulations (2015) Part H. Building Regulations (BRE Digest No. 365) require a minimum of 5m clearance between any building/structure and a soakaway[22].

Relevant Local Planning Policies

Local planning policy provides more specific detail on development requirements based on the flood risk in the local county or borough. Although these policies will broadly be in line with national policy, where additional requirements are required this will take precedence.

[21] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Guidance: Flood Risk and Coastal Change,* Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change
[22] HM Government (2015) *The buildings regulations 2010: drainage and waste disposal - H,* P.44 Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/442889

Crawley Borough Council Local Plan (2015)
Policy ENV8: Development and Flood Risk
Development proposals must avoid areas which are exposed to an unacceptable risk from flooding and must not increase the risk of flooding elsewhere. To achieve this, development will:

- Reduce peak surface water run-off rates and annual volumes of run-off for development through the effective implementation, use and maintenance of SuDS, unless it can be demonstrated that these are not technically feasible or financially viable.

Policy ENV9: Tackling Water Stress
Crawley is situated within an area of serious water stress, and development should, therefore, plan positively to minimise its impact on water resources and promote water efficiency. New dwellings should where viable and technically feasible, meet the Building Regulations optional requirement for tighter water efficiency.

Thames Catchment Flood Management Plan (CFMP) (2009)
Policy option 6
Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits, is indicative of our vision of managing run-off, safeguarding open space and potential flood storage.

4.2.2 Assessment Method/Criteria

The assessment undertaken involved:

- Obtaining up-to-date records of assets in the area;
- Consulting with statutory and non-statutory bodies to confirm their requirements;
- Establishing the location of the public sewers in relation to the site; establishing the location and condition of on-site gullies, local ditches, field drains etc.;
- Establishing: the existing below-ground-drainage infrastructure on or near the site for surface and foul water; the location of sewerage treatment works near the site; where local watercourses are located which can be used for off-site surface water discharge;
- Identifying site constraints associated with the location of the existing sewer network (surface water and foul);
- Identifying opportunities to implement SuDS within the Gatwick Green Project;
- Identifying whether any mitigation measures may be necessary to allow the development of the site.

The CBLP concludes that there are at present no environmental constraints (i.e. the capacity of receiving water to receive treated effluent – both in terms of quality and quantity) from a potential development. It is however acknowledged that the Environment Agency may in the

future wish to tighten existing discharge consents if Water Framework Directive (water quality) requirements are to be met[23].

4.2.3 Baseline Conditions

Description of Character and Sensitivity (Below Ground Drainage)

Asset Records have been obtained from Thames Water on the 25th November 2019 which indicate the existing surface and foul water assets and water bodies within and around the site.

Existing Surface Water

The asset records show that there are no existing surface water sewers located on site. Several open drainage channels are shown within the adjacent vicinity, including along the M23 to the north and adjacent to the northern end of Balcombe Road to the east. A further open drainage channel is located within the north eastern corner of the site.

A walkover survey conducted on 4th December 2019 on the periphery of the site, along public highways, found there was also standing water in the fields in the north of the site.

There are also several water bodies in the form of ponds located near the site. These are:

- To the south of United Grab Hire;
- On the eastern side of Peeks Brook Lane, just south of Gable Cottage; and
- On the western side of Balcombe Road south of Buckingham Gate.

It is assumed that the existing properties all discharge via soakaway. However, it is recommended soakaway testing to BRE365 standard is undertaken to confirm the viability of soakaways and drainage via infiltration.

According to LandIS 'Soilscapes', most of the Site is underlain by 'Soilscape 22: Loamy Soils with naturally high groundwater'. The drainage is described as 'naturally wet', where in low lying sites, permeable soils are often affected by high groundwater that has drained from the surrounding landscape. The water table is indicated to be high. The south-west corner of the site is underlain by 'Soilscape 'Soilscape 18: slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils'. This area is known to have impeded drainage and is likely to drain to a stream network, rather than groundwater. Impeded drainage refers to soils with a tight, compact deep subsoil that impedes downward water movement; after heavy rainfall, particularly during the winter, the subsoil becomes waterlogged resulting in very wet ground conditions.

[23] Crawley Borough Council (2008) *Local Development Framework Core Strategy,* P. 25, Available at: http://crawley.gov.uk/pw/web/int136669

Existing Foul Water

There are 2 separate gravity foul sewers which are located on Peeks Brook Lane, which subsequently enter the site and flow into the pumping station located just south of Fernhill Road, adjacent to the eastern boundary.

The pump station discharges the foul water, via a rising main, to the south western corner of the site, near Rose Cottage. Here it is joined, at TWMH8702, by a connection from United Grab Hire and Kearsey and Rose Cottages.

TWMH8702 has a cover level of 60.57m, an invert level of 57.51m and a depth to invert of 3.06m based upon the Thames Water asset records.

4.2.4 Considerations and Opportunities

The development should be drained by independent, dedicated foul and surface water systems designed in accordance with the following documents:

- Building Regulations - Approved document H;
- BS EN 752: Drain and Sewer Systems outside buildings;
- BS EN 1610: 1998 – Construction and Testing of Drains and Sewers;
- BS EN 12056: Parts 1-5: Gravity Drainage Systems Inside Buildings (applies only to above ground drainage);
- BS 8000-14: Workmanship on Building Sites: Code of Practice for Below Ground Drainage;
- Sustainable Drainage Systems - Design manual for England and Wales (CIRIA);
- Sewers for Adoption - 7th edition;
- Environment Agency Pollution Prevention Guidance (PPG3).

Consideration should also be given to:

- Surrey County Council requirements;
- Environment Agency requirements; and
- Thames Water requirements.

The rising main will have an associated easement. It is currently assumed the easement requirement will be a maximum of 6.5m, in-line with the Sewers for Adoption 7th Edition. However, this will need to be confirmed with Thames Water. Foul discharge on site cannot be connected to the foul rising main, therefore the proposed drainage strategy will need to identify suitable manhole locations on the existing public network to connect to.

In accordance with the NPPF and Defra guidance, development on existing Greenfield sites should restrict runoff to Greenfield rates to ensure the increased impermeable area as a result of development does not have a negative impact on the downstream drainage network.

The capacity of the existing drainage ditches on site will not be enough to effectively drain surface water from the entire site. Therefore, these ditches will have to be upgraded and supported by the development of a drainage network on site.

As indicated by the BGS 'Geology of Britain Viewer', the site is underlain by mudstone. This indicates that while the ground conditions are not ideal for drainage via infiltration, such as soakaways, there may be areas on site which are suitable. A Phase 2 ground investigation is therefore recommended which should include soakaway testing (BRE365 standard) to confirm the viability of soakaways and drainage via infiltration.

There are various SuDS measures which can be adopted and designed for surface runoff infiltration and thereby reduce the overall volume of water leaving a site (Option 1 in drainage hierarchy) and/or attenuate (slow) runoff in order to reduce peak flows in a receiving watercourse/sewer (Options 2, 3 and 4 in drainage hierarchy).

Below is **Table 4.2.1** providing examples of commonly used components in a SuDS system. It is recommended that the proposed drainage strategy for the site make use of the relevant components where possible, whilst considering the various site constraints and design objectives.

Table 4.2.1: Examples of Sustainable Drainage Systems

SuDS Measure	Description	Source/Site Control?
Infiltration/attenuation basins, ponds and wetlands	Depressions in the ground that are utilised for surface runoff storage and provide high potential for ecological, aesthetic and amenity benefits.	Site control
Swales	Vegetated channels used to convey rainwater, which remove pollutants and may permit infiltration in permeable soils.	Site control
Infiltration trenches	Gravel-filled channel which conveys flows, sometimes with a perforated pipe at the base to outfall to a receiving waterbody.	Site control
Soakaway	Gravel-filled pit which water is piped into, so it drains slowly out into the surrounding permeable soil	Source control
Soft Landscaping	Planted vegetation and green space used to increase the permeable area of the site and promote infiltration and interception of rainfall.	Source control
Filter strips	Vegetated areas of gently sloping ground alongside impermeable areas which remove pollutants and promote infiltration/evaporation.	Site control

Permeable paving	Paving that allows infiltration of rainwater either to the underlying soil (permeable sites) or permeable sub-base (impermeable sites).	Source or site control depending on design
Green roofs	Vegetated roofs that reduce the volume and rate of runoff entering downpipes and remove pollution.	Source control
Blue Roofs	The roof of a building which is designed explicitly to provide initial temporary water storage, followed by the gradual release of the stored water.	Source control
Brown/Biodiverse Roofs	A brown roof is where the substrate surface is left to self-vegetate from windblown and bird lime seed dispersal. Biodiverse roofs are where seed or plants are introduced into the substrate at the time of construction.	Source control
Rainwater Harvesting/Butts	Collects water from roof runoff for re-use in household appliances or gardens.	Source control
Attenuation tanks	Below-ground tanks used to store attenuated flows, to be gradually released into the sewer network.	Site control

N.B. This table outlines examples of SuDS which may be considered as part of a drainage strategy for any suitable Site. The examples outlined within the table are not necessarily suitable for the drainage strategy for this Site.

SuDS should be incorporated into the design of Gatwick Green scheme where the opportunities exist – the scale and design of any SUDS cannot be determined at this stage, but it will require areas of land to be set aside for swales and buffers etc. The use of surface water attenuation ponds is unlikely to be acceptable to Gatwick Airport (due to the risk of bird strike), so alternative options may have to be considered.

SuDS is critical and will need to include improved drainage ditches /outfalls, surface water attenuation, roof water recycling, permeable hardstands and other suitable measures.

4.2.5 Scheme Deliverability

The baseline conditions assessment has not identified any significant drainage considerations that could render the proposed development undeliverable. Where constraints exist, these can be adequately dealt with by incorporating appropriate easements and other mitigations into the design and layout of the Scheme. The Scheme does however provide significant opportunities to implement SuDS.

In terms of foul drainage there may be the requirement to connect to public sewerage where possible necessitating off-site upgrades of infrastructure such as public sewers, pumping stations etc.

4.2.6 Further Assessments/Next Steps

When designing the surface water drainage network, it should be assessed against the following criteria to comply with British and European Standards BS EN 752, the Environment Agency, Thames Water and Surrey County Council requirements:

- No significant surcharging (gravity flow only) for storm flows with a 1 in 1-year return period.
- No flooding for storm flows with a 1 in 30-year return period.
- No flooding for storm flows with a 1 in 100-year return period.
- An additional 40% allowance for climate change will be applied to all calculations.

Based on the above assessment, should storage be required, the volume of water to be provided should be determined using an appropriate hydraulic analysis software, such as Micro-Drainage, and based on the following input variables:

- Storm Water Return Period - 1 in 100 years + 40%;
- Site location – to determine the rainfall hydrograph characteristics;
- Pipe network volume – calculated by the automated process;
- Out flow discharge – Greenfield discharge rate which will need to be calculated but generally 5.0l/s;
- Storm durations of 15, 30, 60, 120, 240, 360, 480, 960 and 1440 minutes will be modelled.

In terms of foul drainage there may be the requirement to connect to public sewerage where possible necessitating off-site upgrades of infrastructure such as public sewers, pumping stations etc.

Foul water drainage design will be in accordance with BS EN 752: 2008 and is proposed to discharge at an unrestricted rate.

Foul water flow rates should be based on the population method and an accommodation schedule provided by the Architect. Further consideration should also be given to plant maintenance requirements, how lift pits will be drained and any future management company requirements.

For peak foul flow the maximum proportional depth should be no more than 75% of the pipe area to allow a suitable air gap.

Minimum gradients to achieve self-cleansing velocities should be in accordance with Building Regulations and BS EN 752-2:2008 cl 9.6.3 which states that a minimum of 0.75m/s should be used or that a gradient of at least 1 in the pipe diameter is specified.

4.3 Air Quality

4.3.1 Policy Context and Relevant Guidance

National Policy

National Planning Policy Framework (2019)[24]

The NPPF sets out planning policy for England. To prevent unacceptable risks from air pollution, the NPPF states that:

- "*Planning policies and decisions should contribute to and enhance the natural and local environment by…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air quality*".

More specifically for air quality, the NPPF makes clear that:

- "*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, considering the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan*"[25].

The NPPF is supported by Planning Practice Guidance (PPG), which includes guiding principles on how planning can take account of the impacts of new development on air quality. The role of the local authorities is covered by the LAQM regime, with the PPG stating that local authority Air Quality Action Plans "*identify measures that will be introduced in pursuit of the objectives*".

Regional Policy

West Sussex Transport Plan (2011)[26]

The West Sussex Transport Plan (West Sussex County Council, 2011) was adopted in February 2011 and identifies air quality as an increasing concern regarding the health of the community. Similarly, the Surrey Transport Plan Reigate and Banstead Local Transport Strategy (Surrey County

[24] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework,* P.49, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/N
[25] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework,* P.52, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/N
[26] West Sussex County Council (2011) *West Sussex Transport Plan,* Available at: https://www.westsussex.gov.uk/media/3042/west_sussex_transport_plan_2011-2026_low_res.pdf

Council 2018)[27] includes an objective to *"improve air quality where pollutants exceed recommended levels"*.

Local Policies

The Crawley Borough Local Plan (2015)
Policy ENV12: Air Quality[28]
This Policy refers to air quality specifically and states that:

"Development proposals that do not result in a material negative impact on air quality will normally be permitted. In determining whether a development will have a material negative air quality impact, the local planning authority will refer to the criteria set out in Air Quality and Emissions Mitigation Guidance for Sussex.

To ensure that development is appropriate in air quality terms:

Where identified in Air Quality and Emissions Guidance for Sussex, development will be required to be supported by evidence detailing the air quality impact of the proposed development and outlining an appropriate mitigation strategy that will be implemented to ensure that air quality is not materially worsened, and is where possible improved. This may be in the form of an Emissions Statement, Mitigation Statement, and/or Air Quality Statement, as appropriate.

Development proposals within a declared Air Quality Management Area, will demonstrate how mitigation measures will be incorporated that help address objectives identified in the relevant Air Quality Action Plan.

Development that may reasonably be considered to impact upon air quality beyond the borough boundary, will be expected to contribute towards achieving a reduction in levels of air pollution, and should demonstrate how this will be achieved through an Air Quality Assessment.

In all relevant cases, development that cannot demonstrate how material negative air quality impacts will be mitigated may be refused".

The Reigate and Banstead Local Plan (Reigate and Banstead Borough Council, 2014) was adopted in July 2014 and is relevant given the sites location and proximity to the Borough Council's boundary. It does not include any policies which specifically reference air quality.

[27] Surrey County Council (2018) *Surrey Transport Plan: Reigate & Banstead Local Transport Strategy,* Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0009/185580/Draft-Reigate-and-Banstead-LTS-November-2018-Main-Document.pdf
[28] Crawley borough Council (2015) Crawley Borough Local Plan 2015 - 2030, P.111, Available at: http://www.crawley.gov.uk/pw/web/PUB271853

Air Quality Action Plans

National Air Quality Plan (2018)

Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK (Defra, 2017)[29]; a supplement to the 2017 Plan (Defra, 2018)[30] was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ).

Local Air Quality Action Plan

Banstead and Reigate Borough Council declared an AQMA in Horley in April 2002 for exceedances of the annual mean nitrogen dioxide objective. This AQMA is located immediately to the north-west of the site. Crawley Borough Council has declared an AQMA for nitrogen dioxide that covers an area of Crawley around the Hazelwick Roundabout and nearby roads, approximately 1.9 km south of the proposed development site. West Sussex County Council have also developed a joint 'Breathing Better' plan.

4.3.2 Assessment Method/Criteria

Air Quality Assessment Method

The assessment undertaken involved:

- Identifying Air Quality Management Areas;
- Identifying relevant air quality monitoring data, including a review of Crawley and Reigate and Banstead Borough Councils' air quality Review and Assessment reports, collation of published data, as well as any unpublished data made available by the Council;
- Identifying existing sources of air pollution in the vicinity of the site;
- Identifying sensitive human and ecological receptors that could be affected by the proposed development;
- Identifying any constraints that may need to be considered in delivering commercial development at the site;
- Identifying the potential air quality impacts which should be considered as part of a detailed air quality assessment to support a planning application for the development of the site;
- Identifying whether any mitigation measures may be necessary to allow the development of the site.

[29] *Defra (2017) Air quality plan for nitrogen dioxide (NO2) in the UK,* Available at: https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017.
[30] Defra (2018) *Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations*, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746100/air-quality-no2-plan-supplement.pdf.

Air Quality Assessment Criteria

The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations and the Air Quality (England) (Amendment) Regulations.

The UK-wide objectives for nitrogen dioxide and PM_{10} (particulate matter 10 micrometres or less in diameter[31]) were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. The $PM_{2.5}$ (particulate matter 2.5 micrometres or less in diameter) objective is to be achieved by 2020. Measurements across the UK have shown that the 1-hour nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3. Therefore, 1-hour nitrogen dioxide concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3 [32].

The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance. The annual mean objectives for nitrogen dioxide and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for nitrogen dioxide applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.

The European Union has also set limit values for nitrogen dioxide, PM_{10} and $PM_{2.5}$ (European Parliament and the Council of the European Union, 2008)[33]. The limit values for nitrogen dioxide are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. The relevant air quality criteria for this assessment are provided in **Table 4.3.1**.

[31] Australian Government, *Particulate Matter (PM_{10} and $PM_{2.5}$)*, Available at: http://www.npi.gov.au/resource/particulate-matter-pm10-and-pm25
[32] Defra (2018) *Review & Assessment: Technical Guidance LAQM.TG16 February 2018 Version*, Defra, Available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf.
[33] The European Parliament and the Council of the European Union (2008) *Directive 2008/50/EC of the European Parliament and of the Council*, Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050.

Table 4.3.1: Air Quality Criteria for Nitrogen Dioxide, PM10 and PM2.5

Pollutant	Time Period	Objective
Nitrogen Dioxide	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
Fine Particles (PM_{10})	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [a]
Fine Particles ($PM_{2.5}$) [b]	Annual Mean	25 µg/m^3

[a] A proxy value of 32 µg/m^3 as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible.

[b] The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

4.3.3 Baseline Conditions

Description of Character and Sensitivity

Industrial sources: A search of the UK Pollutant Release and Transfer Register has not identified any significant industrial or waste management sources that are likely to affect the proposed development, in terms of air quality.

Air Quality Management Areas

Crawley Borough Council has investigated air quality within its area as part of its responsibilities under the LAQM regime. In July 2015 an AQMA was declared at Hazelwick Roundabout and surrounding roads for exceedances of the annual mean nitrogen dioxide objective. This AQMA is located to the south of the development site. Neighbouring Banstead and Reigate Borough Council declared an AQMA in Horley in April 2002, which was amended in December 2003, for exceedances of the annual mean nitrogen dioxide objective. This AQMA is located immediately to the north-west of the strategic development area. Reigate and Banstead Borough Council has also declared eight further AQMAs, although none near the study area. The declared AQMAs are shown in **Figure 4.3.1**.

In terms of PM_{10}, both Crawley Borough Council and Reigate and Banstead Borough Council concluded that there are no exceedances of the objectives. It is, therefore, reasonable to assume that existing PM_{10} levels will not exceed the objectives within the study area.

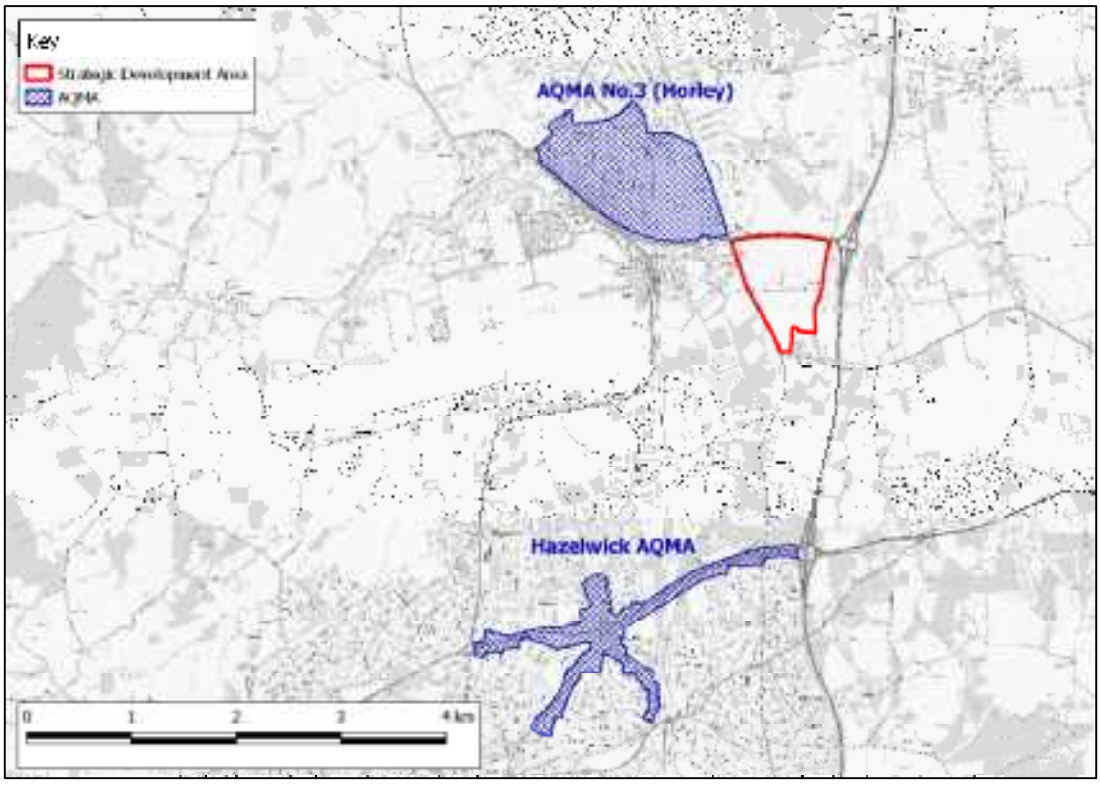

Figure 4.3.1: Declared AMQA's

Air Quality Monitoring

Crawley Borough Council operates one automatic monitoring station within its area, CA2, which is located approximately 40 m to the west of the proposed development site. The Council also operates several nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 20% TEA in water method). These include CR51, an urban background site, and CR52,53,54, a triplicate suburban industrial site, located near the western site boundary.

Reigate and Banstead Borough Council operates four automatic monitoring stations, of which three are within 1.5km of the site to the north-west (RG1 – ~1.3km, RG2 – ~850m and RG6 – ~812m in Horley. The Council also operates numerous diffusion tube nitrogen dioxide monitoring sites, analysed by Lambeth Scientific Services (using the 50% TEA in acetone method). These include several sites around the north-western extent of the proposed development site, in a residential area of Horley.

Results for the years 2014 to 2018 are summarised in **Table 4.3.2** and the monitoring locations are shown in **Figure 4.3.2**.

Table 4.3.2: Summary of Nitrogen Dioxide (NO2) Monitoring (2014-2018) [c]

Site No.	Site Type	Location	2014	2015	2016	2017	2018
Automatic Monitors - Annual Mean (µg/m³)							
CA2	Suburban Industrial	Gatwick East	31.0	25.0 [a]	29.0	28.0	25.0
RG1	Suburban	Michael Crescent, Horley	21.8	21.1	20.3	20.4	19.6
RG2	Suburban	74 The Crescent, Horley	28.5	26.4	28.7	-	-
RG6	Suburban	106 The Crescent, Horley	-	-	28.3	26.7	24.9
Objective			**40**				
Automatic Monitors - No. of Hours > 200 µg/m³							
CA2	Suburban Industrial	Gatwick East	0	0	0	0	0
RG1	Suburban	Michael Crescent, Horley	0	0	0	0	0
RG2	Suburban	74 The Crescent, Horley	0	0	0	-	-
RG6	Suburban	106 The Crescent, Horley	0	0	0	0	0
Objective			**18**				
Diffusion Tubes - Annual Mean (µg/m³)							
CR51	Urban Background	Balcombe Road	21.0	21.0	25.0	24.0	21.7
CR52,53,54 [b]	Suburban Industrial	Gatwick East	26.0	25.0	29.0	28.0	24.8
RB59	Suburban	92/94 The Crescent	26.9	25.0	28.6	28.0	27.0
RB64	Suburban	16/22 The Drive	22.8	22.8	23.6	22.0	22.0
RB74	Suburban	30 Meadowcroft Close	22.5	20.6	24.7	23.0	22.0
RB75	Suburban	The Coronet	24.0	21.6	23.6	24.0	22.0
RB76	Suburban	33 Limes Avenue	20.5	19.6	20.6	20.0	20.0
RB77	Suburban	Stafford's Place	20.6	19.2	21.0	21.0	20.0
Objective			**40**				

[a] Values taken from triplicate co-located diffusion tubes, due to fault with automatic monitor.

[b] Average of triplicate diffusion tubes.

[c] Data taken from Crawley Borough Council 2019 Air Quality Annual Status Report (Crawley Borough Council, 2019) Reigate and Banstead 2017 Air Quality Annual Status Report (Reigate and Banstead Borough Council, 2017) and email correspondence with the Environmental Health officer at Reigate and Banstead Borough Council in December 2019.

Annual mean nitrogen dioxide concentrations have remained well below the objective at all automatic and diffusion tube sites in all years since 2014. Similarly, there have been no exceedances of the 1-hour mean nitrogen dioxide objective. Over the last five years, there has

been a downward trend in annual mean nitrogen dioxide concentrations, likely due to the progressive introduction of new vehicles operating to more stringent standards, as well as other policies to improve local air quality implemented by Crawley Borough and Reigate and Banstead Borough Councils.

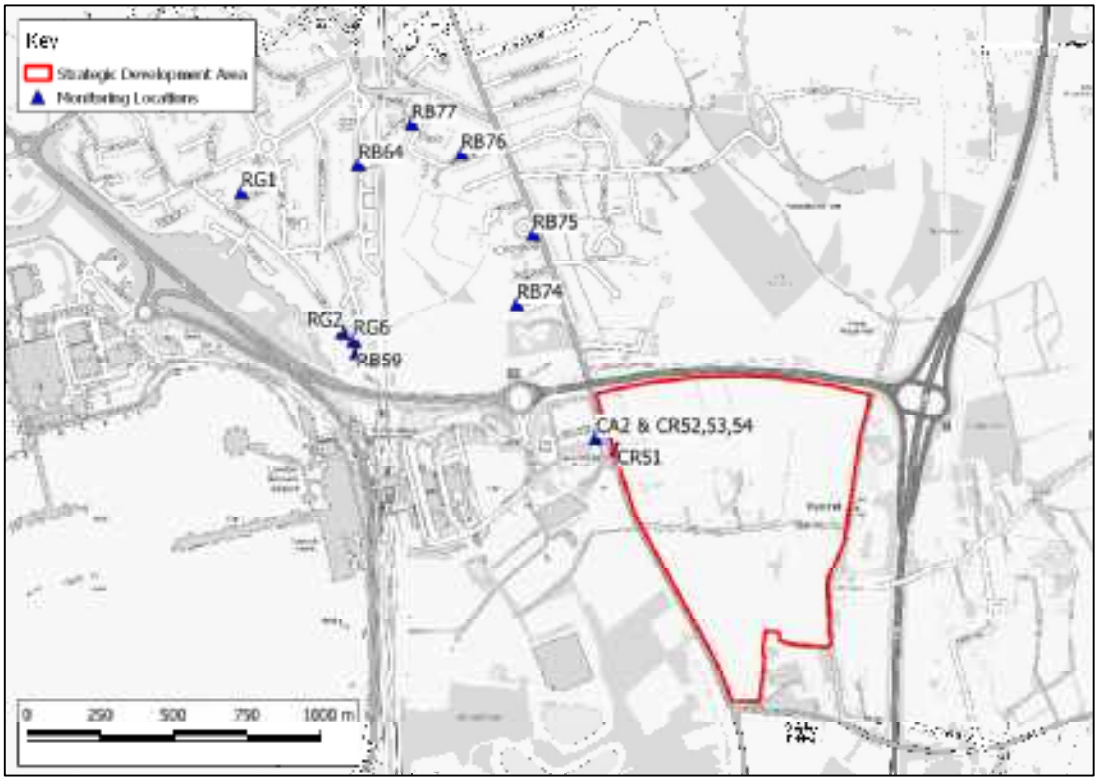

Figure 4.3.2: Monitoring Locations

The CA2 automatic monitoring station, located 40 m west of the southern portion of the proposed development site, is the closest station which measured PM10 concentrations in 2018. The RG1 automatic monitoring station is located approximately 1.4 km north-west of the proposed development site. There has been no noticeable increasing trend in PM_{10} concentrations over the last five years. Results for the years 2014 to 2018 are summarised in **Table 4.3.3**. There are no monitors measuring $PM_{2.5}$ concentrations in Crawley or Reigate and Banstead.

Table 4.3.3 Summary of PM10 Automatic Monitoring (2014-2018) [b]

Site No.	Site Type	Location	2014	2015	2016	2017	2018
PM_{10} Annual Mean (µg/m³)							
CA2	Suburban Industrial	Gatwick East	16.0	15.0	18.0	18.0	18.0
RG1	Suburban	Michael Crescent, Horley	18.7	19.2	16.6	16.2	17.1
Objective			**40**				
PM_{10} No. Days >50 µg/m³							
CA2	Suburban Industrial	Gatwick East	0	1	1	0	0
RG1	Suburban	Michael Crescent, Horley	4	3 (28.9) [a]	3	0	2
Objective			**35 (50)**				

[a] If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

[b] Data taken from Crawley Borough Council 2019 Air Quality Annual Status Report [7], Reigate and Banstead 2017 Air Quality Annual Status Report [8] and email correspondence with the Environmental Health officer at Reigate and Banstead Borough Council in December 2019.

Exceedances of EU Limit Value

The Horley AURN monitoring site lies within the study area and shows no exceedance of the annual mean nitrogen dioxide limit value in 2018 (**Table 4.3.4)**. Defra's roadside annual mean nitrogen dioxide concentrations, which are used to report exceedances of the limit value to the EU, do not identify any exceedances within the study area in 2017[34]. As such, there is no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

Background Concentrations

Estimated background concentrations in the study area have been determined for 2018 using Defra's 2017-based background maps[35]. The background concentrations are set out in **Table 4.3.4** and are all well below the objectives.

Table 4.3.4: Estimated Annual Mean Background Pollutant Concentrations in 2018 (µg/m3)

Year	NO_2	PM_{10}	$PM_{2.5}$
2018	19.0 – 32.5	14.9 – 16.9	10.1 – 11.1
Objectives	**40**	**40**	**25 [a]**

The range of values is for the different 1x1 km grid squares covering the study area.

[34] Defra (2019) *2019 NO2 projections data (2017 reference year)*, Available at: https://uk-air.defra.gov.uk/library/no2ten/2019-no2-pm-projections-from-2017-data.
[35] Defra (2019c) *Local Air Quality Management (LAQM) Support Website*, Available at: http://laqm.defra.gov.uk/.

[a] The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

4.3.4 Considerations, Opportunities and Scheme Deliverability

The proposed development lies partially within the Horley AQMA, which was designated for exceedances of the nitrogen dioxide annual mean objective. Monitoring carried out by Crawley Borough and Reigate and Banstead Borough Councils has identified ongoing exceedances of the annual mean nitrogen dioxide objective in some parts of the boroughs, although the sites in the vicinity of the proposed development site have not recorded any exceedances in the years since 2014. The CA2, RG2 and RG6 locations are considered to be particularly representative of the conditions at the proposed development site, as they are all located close to the site boundary and are also the closest of the monitoring sites to the M23/A23 and Gatwick Airport, making them the worst-case monitoring locations. All the above sites are well below the relevant air quality objectives. The proposed development site does, however, extend closer to the M23/A23 carriageway and is within 20m of the kerb in some places, meaning concentrations may be higher than at monitored locations.

The most sensitive receptors within the proposed development will be those associated with educational uses. Therefore, consideration should be given to locating these uses as far as possible from pollution sources such as busy roads and the airport. Locations towards the centre of the site and the development blocks would be more appropriate.

Due to the progressive introduction of vehicles using more stringent emissions standards on local roads over time, pollutant concentrations would be expected to have further decreased at the proposed development site by the time the proposed development is operational. Furthermore, the Mayor of London has committed to extending the London Ultra-Low Emission Zone (ULEZ) and implementing stricter emissions standards in the Low Emission Zone (LEZ) by 2021. This is expected to compound this decrease in pollutant concentrations in London, and may drive a similar improvement in surrounding areas, such as around the proposed development site. Consequently, air quality at the proposed development site would be expected to be acceptable for commercial and educational uses.

If an energy from waste (EFW) facility were to be included within the development, it may impact air quality at the site. Despite this, it is difficult to be specific about impacts at this stage, as a detailed air quality assessment would need to be carried out based on the size and location of the facility.

The proposed development may impact local air quality during both construction and operation. During construction, emissions of dust and PM_{10} have the potential to impact nearby existing properties, causing dust soiling and adverse human health effects. However, best practice mitigation measures, commensurate to the risk of impacts, would be implemented through a Construction Environmental Management Plan. With appropriate measures in place, it is

expected that air quality effects on existing properties during the construction would be not significant.

The operation of the proposed development may also generate additional traffic flows on local roads and may include on-site energy generation, emissions from which have the potential to impact existing sensitive receptors within the AQMA. The main air pollutants of concern related to operational phase emissions are NO_2, PM_{10} and $PM_{2.5}$. There are also several locally designated ecological sites in the vicinity of the site, which may be impacted by the proposed development.

It will be essential to include measures to minimise emissions from the development if it is to be considered an exemplar of sustainable development. These should include measures to minimise travel to and from the site by car and avoid the use of on-site combustion sources to provide heating and hot water.

4.3.5 Further Assessments/Next Steps

An air quality assessment is likely to be required to support any future planning application. Considering the baseline conditions and air quality considerations identified previously, and the potential impacts during construction and operation of the proposed development, it is envisaged that it will be necessary for the air quality assessment to address:

- The impacts of emissions of dust and PM_{10} during the construction phase of the proposed development;
- The impacts of emissions from additional road traffic, generated by the operation of the proposed development, on concentrations of NO_2, PM_{10} and $PM_{2.5}$ in the proposed year of opening;
- The impacts of emissions from any on-site energy / combined heat and power (CHP) centre on concentrations of NO_2 in the proposed year of opening; and
- The impacts of existing sources of emissions on future users of the proposed development itself.

It may be possible to undertake part or all the above assessment in a qualitative manner.

Measures to mitigate any significant air quality effects from the proposed development during both construction and operation should be recommended, as required.

An air quality assessment, which considers the impact of the proposed development on air quality at existing properties, as well as the impact of existing pollution sources on the proposed development itself, should be prepared to support any future planning application. This assessment should follow methodology outlined in the EPUK & IAQM Planning for Air Quality Guidance, which is summarised in **Appendix A**.

It is, however, concluded that there are unlikely to be any major air quality considerations to the proposed development of the site for commercial and educational uses.

4.3.6 Odour Issues

Air Quality Guidelines

Institute of Air Quality Management: Guidance on the assessment of odour for planning (2018)[36]

This guidance is for assessing odour impacts for planning purposes. The document outlines that odour sensitive receptors should ideally be separated from significant sources of odour. New proposals for such developments may require an odour impact assessment to be submitted, either as a stand-alone assessment or as part of an Environmental Statement, to accompany the planning application. It also outlines that it is for the Planning Authority to consider at the planning stage whether the proposed development at the site will be a suitable use of the land.

Odour Effects/Exposure

The institute of Air Quality Management state that before an adverse effect (e.g. nuisance or complaints) can occur, there must be odour exposure. For odour exposure to occur all three links in the source-pathway-receptor chain must be present:

a) An emission source - a means for the odour to get into the atmosphere.
b) A pathway - for the odour to travel through the air to locations off site, noting that:
    - Anything that increases dilution and dispersion of an odorous pollutant plume as it travels from source to receptor will reduce the concentration at the receptor, and hence reduce exposure.
    - Increasing the length of the pathway (e.g. by releasing the emissions from a high stack) will – all other things being equal – increase the dilution and dispersion.
c) The presence of receptors (people) that could experience an adverse effect, noting that people vary in their sensitivities to odour.

The impact is determined by parameters known as the FIDO factors (Frequency, Intensity, Duration and Offensiveness. The magnitude of the effect experienced is determined by the scale of exposure (FIDO) and the sensitivity of the receptor (L, denoting the location, which is often taken to be a surrogate for the sensitivity and incorporates the social and psychological factors that can be expected for a given community.) Different combinations of the FIDO factors can result in different exposures at a location. For example, odours may occur as a one-off, as frequent short bursts, or for longer, less-frequent periods, and may be said to give 'acute' or 'chronic' exposures respectively.

[36] Bull et al (2018) *IAQM Guidance on the assessment of odour for planning – version 1.1*, Institute of Air Quality Management, London, United Kingdom. Available at: http://www.iaqm.co.uk/text/guidance/odour-guidance-2014.pdf

Preliminary Assessment

The site is located approximately 800m northeast of Crawley Treatment Sewage Works, indicating that there may be issues in terms of odour. Consultation with Thames Water is currently being undertaken to determine whether they have undertaken a modelling study for the Crawley Sewage Treatment Works, and their requirements. If Thames water have not undertaken any modelling, then it is possible that dispersion modelling and sniff testing may be required.

However, given the 800m distance from the sewage treatment works, as well as the fact that there is significant 'shielding' from trees, and the that existing residential properties are located closer to the works than the development, it is possible that odours won't be an issue.

Further Assessments/Next Steps

Depending on the response from Thames Water, an Odour Impact Assessment may be required, as well as further consultation with the relevant parties.

4.4 Noise

4.4.1 Policy Context and Relevant Guidance

Overview of Guidance Documents

There are several guidance documents and British Standards (BS) that are considered to currently be relevant to the assessment of noise at the site, which are as follows:

- *National Planning Policy Framework* (NPPF, February 2019)[37], which sets out the national planning policy position for England; *Planning Practice Guidance* for noise (PPG for noise, July 2019), which provides guidance on how noise should be assessed within the planning system;
- *Professional Practice Guidance on Planning & Noise* (ProPG, May 2017)[38], which is a guidance document produced jointly by the Institute of Acoustics, the Chartered Institute of Environmental Health, and the Association of Noise Consultants, that provide more detailed guidance on how to assess noise affecting residential development;
- British Standard 8233: 2014 *Guidance on sound insulation and noise reduction for buildings*[39], which provides guidance on suitable sound levels for residential development and other sensitive uses, to facilitate consideration of the suitability of a site;
- The World Health Organisation's publications, including the 1999 *Guidelines for Community Noise*[40], the 2009 *Night Noise Guidelines for Europe*[41], and the 2018 *Environmental Noise Guidelines for the European Region*[42], all of which provide guidance on potential health effects of noise;
- The *Aircraft Noise Index Study* (ANIS)[43], which forms the basis for current aircraft noise policy in the UK.;
- *The Survey of Noise Attitudes* (SoNA) 2014[44], which is a recent study into the onset of annoyance from aircraft noise; and
- British Standard 4142: 2014+A1: 2019 *Methods for rating and assessing industrial and commercial sound*[45], which provides a method for assessing the potential impact of commercial and industrial noise affecting residential properties.

4.4.2 Assessment Method/Criteria

The assessment undertaken involved an update of the 2009 Environmental Baseline Report using:

[37] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework*, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf.
[38] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Guidance: Noise*, Available at: https://www.gov.uk/guidance/noise--2
[39] British Standards Institution (2014) *Guidance on sound insulation and noise reduction for buildings*, London, United Kingdom: BSI Standards Limited.
[40] World Health Organization (1999) *Guidelines for Community Noise*, Geneva, Switzerland: World Health Organization.
[41] Hurtley, C. and Bengs, D. (2009) *Night noise guidelines for Europe*, Copenhagen, Denmark: WHO Regional Office for Europe.
[42] World Health Organisation (2018) *Environmental noise guidelines for the European Region*, Copenhagen, Denmark: WHO Regional Office for Europe.
[43] Department for Transport (1985) *United Kingdom Aircraft Noise Index Study*, London, England: Civil Aviation Authority.
[44] Civil Aviation Authority (2014) *Survey of noise attitudes 2014: Aircraft*, Aviation House, Gatwick Airport South, West Sussex, United Kingdom: Civil Aviation Authority.
[45] British Standards institution (2014) *Methods for rating and assessing industrial and commercial sound*, London, United Kingdom: BSI Standards Limited.

- The Civil Aviation Authority (CAA) noise contours for Gatwick Airport;
- Traffic flow data for the M23 motorway and link road;

The assessment also involved consulting with the local planning authority to confirm their views and requirements.

4.4.3 Baseline Conditions

Description of Character and Sensitivity

This assessment of noise takes into account the 2003 Civil Aviation Authority (CAA) noise contours for Gatwick Airport, included in a previous assessment of the site (ARUP Gatwick Green Environmental Baseline and Utilities Report, Ref. 208208-00, 2009), noting that the site fell inside the 57dB LA_{eq} contour, but that aircraft noise would be expected to reduce in the future as each generation of aircraft would be quieter than the last. Noise from Gatwick Airport also comes from road traffic and other ground-based activities.

Aircraft Noise

The most recent Civil CAA noise contours for Gatwick Airport are presented in the ERCD report Noise Exposure Contours for Gatwick Airport 2018 (report number 1902, dated May 2019)[46]. The values quoted are the lowest levels the site is likely to be subject to. The noise assessment undertaken in this report has been based on the 2018 data.

The 2018 standard modal split L_{eq} noise contours, which represent the long-term conditions rather than the conditions on any given day, are shown in **Figure 4.4.1** for the daytime and in **Figure 4.4.2** for the night-time.

It can be seen from **Figure 4.4.1** that the site sits within the 60dB $L_{Aeq,16hours}$ noise contour during the day, and within the 54dB $L_{Aeq,8hours}$ noise contour during the night. The site is therefore likely to be exposed to aircraft noise of at least these levels, with some parts being subject to aircraft sound levels of at least 69dB during the daytime and 66dB at night.

[46] Civil Aviation Authority (2019) *Noise Exposure Contours for Gatwick Airport 2018*, CAA House, 45-59 Kingsway, London WC2B 6TE: Civil Aviation Authority.

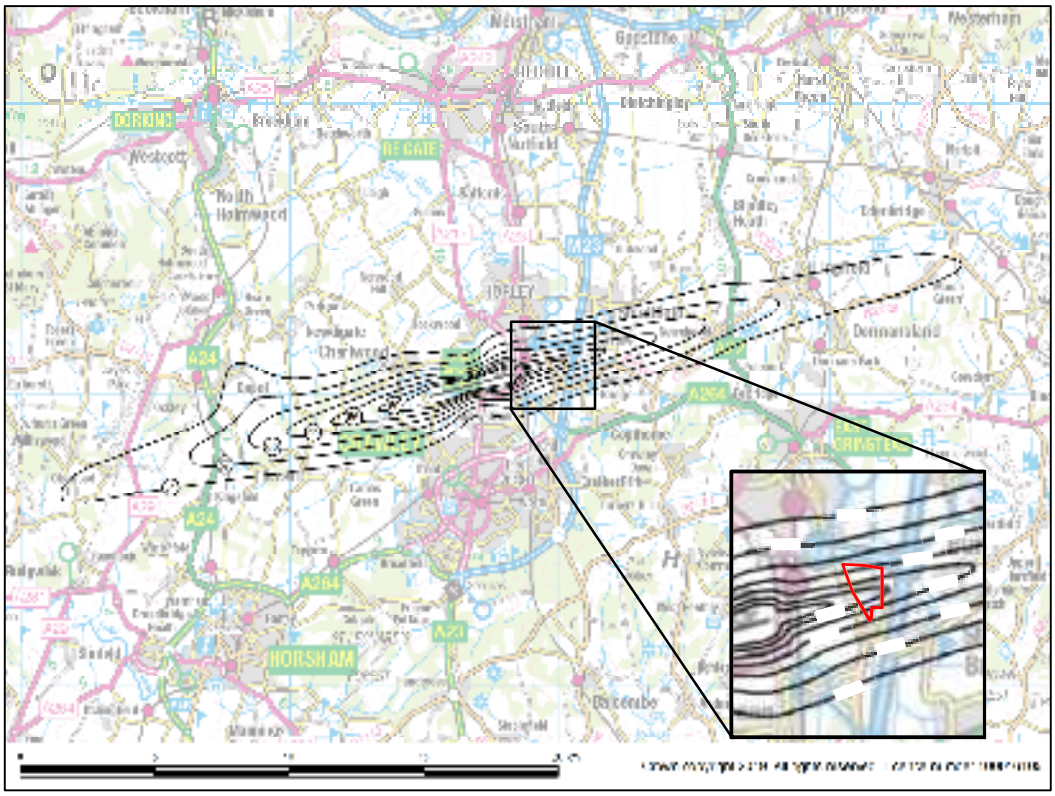

Figure 4.4.1: Gatwick 2018 summer daytime standard modal split Leq contours

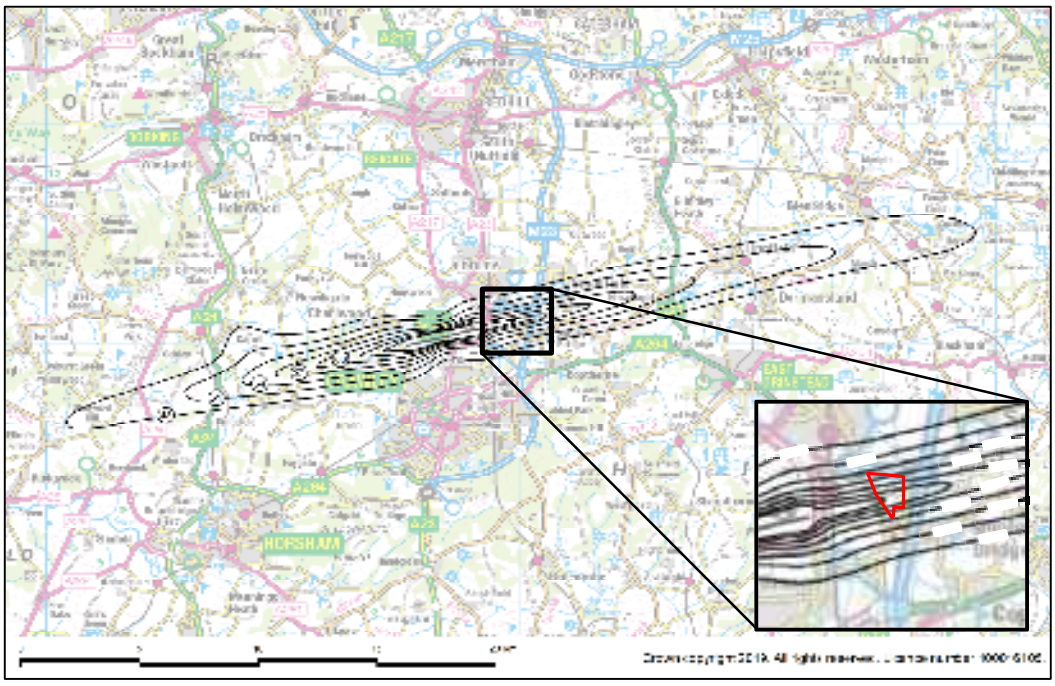

Figure 4.4.2: Gatwick 2018 summer night-time 10-year average standard modal split Leq contours

In comparison to the 2003 contours that were included when previous investigations were undertaken in 2009, the 57dB $LA_{eq,16hours}$ contour is slightly smaller, showing aircraft noise levels have decreased, as was expected at that time.

It is noted that historically the daytime 16-hour LA_{eq} contours were plotted from 57 to 72dB in 3dB steps. However, the Survey of Noise Attitudes (SoNA 2014) suggests that the degree of annoyance that was previously considered to occur at 57dB is now considered to occur at 54dB. Therefore, the 2018 contours now include the 54dB contour, which was not included in the 2003 contours.

Road Traffic Noise

Traffic data for the local major road network has been obtained from the Department for Transport (DfT)[47] for the years 2008 and 2018 to allow a comparison between the traffic flows in 2009, when previous investigations were undertaken, and the current traffic flows.

The traffic data is summarised below in **Table 4.4.1** for the M23 motorway north of the site; the vehicle flows are presented as the annual average daily flows.

Table 4.4.1: Traffic data for the M23 motorway north of the Gatwick Green Site

Year	Direction of Travel	Total Vehicle Flows	Total HGV Flow	HGV %	Change in Flow	Change %
2008	East	25,944	541	2.1	-	-
2008	West	24,914	460	1.8	-	-
2018	East	35,191	837	2.4	+9,247	+35.6
2018	West	34,368	775	2.3	+9,454	+37.9

Table 4.4.1 shows that the volume of traffic on the M23 north of the site increased between 2008 and 2018.

Table 4.4.2 shows the traffic data for the M23 motorway east of the site; again, the total traffic flows are presented as annual average daily flows.

Table 4.4.2 Traffic data for the M23 motorway east of the Gatwick Green site

Year	Direction of Travel	Total Vehicle Flows	Total HGV Flow	HGV %	Change in Flow	Change %
2008	North	53,175	3,233	6.1	-	-
2008	South	59,663	2,938	4.9	-	-
2018	North	47,202	2,909	6.2	-5,973	-11.2
2018	South	46,394	2,681	5.8	-13,269	-22.2

[47] Department for Transport, *Road traffic statistics map*, Available at: https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints

Table 4.4.2 shows that the volume of traffic on the M23 motorway east of the site decreased in both directions between 2008 and 2018.

Defra noise mapping has been reviewed to establish the most recent noise levels at the site; the daytime $L_{Aeq,16hr}$ noise levels shown in **Figure 4.4.3**, and the night-time L_{night} noise levels are shown in **Figure 4.4.4.** The noise mapping was obtained from the Extrium website. It is understood that the noise maps were produced in 2017 for Round 3 of Defra's commitments under the Environmental Noise (England) Regulations 2006 (as amended).

It can be seen from **Figure 4.4.3** that most of the site is above 60dB $L_{Aeq,16hours}$ during the daytime, with the edges of the site close to the M23 (north of the site) subject to noise levels between 65 and 70dB $L_{Aeq,16hrs}$.

Figure 4.4.3: DEFRA daytime noise map, LAeq,16 hours contours

Figure 4.4.4 shows that most of the site is below 60dB L_{night} during the night-time, with the edges of the site closest to the M23 are subject to noise levels between 60 and 65dB L_{night}.

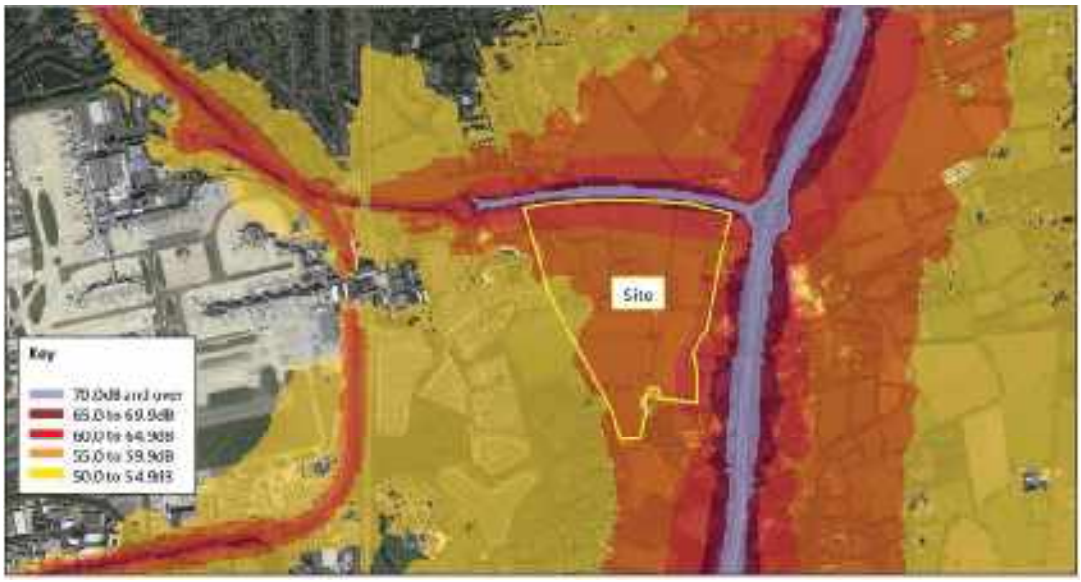

Figure 4.4.4: DEFRA night-time noise map, Lnight contours

Comparing the 2008 night-time noise map with **Figure 4.4.4** in this report, the current sound levels at the site are lower, with the area subject to noise levels above 60dB L_{night} being smaller.

Industrial and Commercial Noise

There are several industrial and commercial premises in and around the site that have the potential to create noise, that may affect the proposed uses at the site.

The closest businesses that have the potential to create noise at the site are:

- Elliott Metals, off Fernhill Road;
- United Grab Hire, off Peaks Brook Lane; and
- MSL Heat Treatment, off Balcombe Road.

A desktop review of the companies suggests the following:

- Elliott Metals is a scrap metal processor, with a large commercial building and external stock bays to the north. Aerial imagery suggests that much of the processing occurs internally with the storage of metals being external. The movement and processing of materials and delivery vehicles at the premises may create noise at the site.
- United Grab Hire is a grab hire, topsoil and aggregates, concrete, and building utilities company. The premises comprise of several buildings and shelters as well as external stock bays and possible external aggregate machinery. The operation of the machinery, the movement of stock and more general vehicle movements have the potential to create noise.
- MSL Heat Treatment is a heat and vacuum treatment company. The premises comprise two buildings, with a small yard area; this suggests that most of the work takes place

internally, although aerial imagery suggests that there is some plant to the rear of one building. The internal processes and plant may create noise at the site.

The industrial and commercial premises that have the potential to create noise at the site may require assessment using the methodology set out in BS4142: 2014+A1:2019.

4.4.4 Considerations, Opportunities and Scheme Deliverability

The most sensitive receptors within the proposed development will be those associated with educational uses. Therefore, consideration should be given to locating these uses as far as possible from sources of noise such as busy roads and the airport. Locations towards the centre of the site and the development blocks would be more appropriate.

Due to the progressive introduction of aircraft and vehicles with higher noise standards and producing lover noise levels over time, particularly the increasing use of electric vehicles, noise levels would be expected to have further decreased at the proposed development site by the time the proposed development is operational. Consequently, noise levels at the proposed development site would be expected to be acceptable for commercial and educational uses.

Whether non-openable windows are required for offices or workspaces is a matter for more detailed consideration. The aircraft and road traffic noise contours are not based on the actual topography of the site and area, just on theoretical propagation over flat ground. The actual sound levels at any particular location will vary according to specific local conditions. Based on the information gathered to date, it is likely that offices will require windows to be closed to achieve suitable internal sound levels, although that does not necessarily mean that the windows should be sealed.

Similarly, whether the mechanical ventilation is needed is also a consideration beyond the level of detail analysed at this stage. However, given the broad opinion that windows are likely to need to be closed to achieve suitable internal levels, it follows a means of ventilating an office would need to be considered. However, whether this requires mechanical ventilation or can be achieved through a natural system will depend of the detail of exactly where the office is, its design and the ability to incorporate sound into a natural ventilation system.

The proposed development may impact local noise levels during construction; however, best practice mitigation measures, commensurate to the risk of impacts, would be implemented through a Construction Environmental Management Plan. With appropriate measures in place, it is expected that the effects of noise on existing properties during the construction would be not significant.

It is possible the option of an EFW facility requires setbacks for noise in terms of mitigation. However, this is a matter for more detailed consideration that would require measurement of the

background sound levels, plans showing likely proximity to receptors, proposed layout plans, and information on noise emissions.

4.4.5 Further Assessments/Next Steps

This assessment has identified gaps, which will need to be addressed by undertaking a survey at and around the site to better establish the existing noise levels. The survey will use a combination of attended and unattended measurements and we anticipate measuring at the following positions:

- at the northern boundary of the site, adjacent to the M23 motorway link road;
- at two locations along the eastern boundary of the site, close to the main M23 motorway;
- at the western boundary of the site, close to Balcombe Road; and
- a position somewhere towards the centre of the site.

A noise model will be built to calculate the sound levels across the site, based on the measured sound levels. The modelled sound levels can be used for both the broad zoning of the site for particular uses, and the calculation of detailed aspects, such as sound reduction performance requirements for specific buildings. Reference will be made to appropriate guidance on suitable sound levels for each use.

It is possible the option of an EFW facility requires setbacks for noise in terms of mitigation. However, this is a matter for more detailed consideration that would require measurement of the background sound levels, plans showing likely proximity to receptors, proposed layout plans, and information on noise emissions.

4.5 Land Contamination

4.5.1 Policy Context and Relevant Guidance

National Policy

Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012)[48]

This document establishes a legal framework for dealing with contaminated land in England. This Guidance is intended to explain how local authorities should implement the regime, including how they should go about deciding whether land is contaminated land in the legal sense of the term.

Part 2A provides a means of dealing with risks posed by land contamination to human health and the environment, as well as enforcing authorities to find and deal with such land. The document explains that the starting point should be that "land is not contaminated land unless there is reason to consider otherwise". It also mentions that only land where "unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with this Guidance, should be considered as meeting the Part 2A definition of contaminated land".

CLR11: Model Procedures for the Management of Land Contamination[49]

The Model Procedures for the Management of Land Contamination provide the "technical framework for structured decision-making about land contamination". The process can be adapted to apply in a variety of regulatory and management contexts. The Model Procedures are intended to assist all the players regarding the land, particularly landowners, developers, industry, professional advisers, financial service providers, planners and regulators.

4.5.2 Assessment method/Criteria

The assessment undertaken involved:

- A review of historic Ordnance Survey mapping and an environmental database that contains data for Environment Agency records, British Geological Survey records, and records of current and former industrial land use;
- A walkover of the site to allow for inspection of any obviously contaminated areas, basic geomorphological assessment, and constraints that could affect access for Phase 2 investigation plant;
- Producing a conceptual site model to highlight the possibilities of contaminated land and associated liabilities;
- Identifying whether any mitigation measures may be necessary to allow the development of the site and recommend for Phase 2 intrusive investigation of the site and outline any possible abnormal development issues or constraints, including geotechnical elements;

[48] Department for Environment, Food and Rural Affairs (2012) *Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance*, London, United Kingdom: The Stationery Office Limited. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/223705/pb13735cont-land-guidance.pdf

[49] Environment Agency (2004) *Contaminated Land Report 11: Model Procedures for the Management of Land Contamination*, Rio House Waterside Drive, Aztec West Almondsbury, Bristol: Environment Agency. Available at: http://www.tunbridgewells.gov.uk/__data/assets/pdf_file/0019/52039/CRL11_EA_model_procedures_881483.pdf

4.5.3 Baseline Conditions

Observations from Site Walkover

A walkover survey was conducted on the 4th December 2019 on the periphery, along public highways. Typical photos of the site are included in **Appendix B**. Some parts of the site were privately occupied at the time of the walkover and therefore not accessible.

The walkover concluded the following:

- The site is irregular in shape and covers an area of approximately 66ha.
- The site is generally level with site levels are around 60m AOD.
- The site is predominantly undeveloped greenfield site, used for agricultural grazing. There were several small businesses located on site including a scrap metal merchants, farms and riding schools along Fernhill Road, a metal heat treating works along Balcombe Road, a plant and landscaping supplier in the south of the site. There were also some low rise residential, commercial and agricultural properties. There was a yard approximately halfway along Fernhill Road which included several caravans, thought to be occupied by the van dwelling community. To the east of the metal merchants on Fernhill Road, several low-rise brick-built walls were present, representing former structures.
- A large above ground storage tank was observed to be present in the vicinity of the former brick structures. Several domestic size fuel tanks, of green plastic modern construction, were also observed to be present on the site. Within the yard occupied by van dwellers many storage drums were observed, stored on gravel standing.
- Anecdotal evidence indicates the van dwelling yard was the site of a large plane crash in 1969.
- Two electrical sub-stations were observed onsite, appearing to be well maintained.
- Drainage ditches were present alongside the highways and field boundaries. There was also standing water in the fields in the north of the site.
- A large fly-tip yard was observed to be present adjacent to the north east of the site, off Peeks Brook Lane, as well as a yard storing broken vehicles. Evidence of minor fly tipping was also observed elsewhere on site. A vehicle repair and MOT workshop was present off site to the southeast.
- Several mature trees were observed on-site.
- Japanese Knotweed was not identified on site, but it should be noted that some parts of the site were not accessible at the time of the walkover.

Description of Character and Sensitivity

The site is bounded as follows:

Table 4.5.1: Site Surroundings

North	M23 airport spur beyond which is agricultural land along with some small commercial and residential properties.
East	Peeks Brook Lane, with the M23 approximately 200m beyond.
South	B2037.
West	B2036 beyond which are Gatwick Airport long stay carparks to the north west.

British Geological Survey Digital Geological Mapping indicates that the western half of the site is underlain by superficial deposits comprising clay, silt, sand and gravel, whilst river terrace deposits of sands and gravels underly the northern and eastern thirds of the site.

Underlying the superficial deposits across the entire site is the Weald Clay Formation; there is a small channel of the Weald Clay Ironstone trending approximately east west across the centre of the site.

Historical exploratory borehole records available from the BGS show that there are several borehole records on site, mostly drilled to inform the construction of M23. The boreholes typically encountered up to 3m of Made Ground comprising orange grey reworked clay of the Weald Clay Formation. This was underlain by firm to stiff, green grey to brown silty clay to 6m.

Surface water features in the vicinity of the site comprise of several drainage ditches, as well as the Burstow Stream to the north-east. The potential sensitivity of these receptors is deemed to be high.

Guidance from the Environment Agency indicates that the superficial strata are designated as Secondary (A) Aquifers and the Weald Clay as unproductive strata. As such the groundwater sensitivity is regarded as **medium**.

The nearest licensed groundwater abstraction lies on site at Fernhill Nursery and is for general farming and domestic use.

The site is not located within or near to a groundwater Source Protection Zone (SPZ).

The site is located within 50m of an area recorded to be susceptible to **groundwater** flooding. The susceptibility relates to superficial flooding and the BGS confidence in this susceptibility is high.

Environmental Database

Environmental data reports were commissioned to provide an indication of the site history and surrounding land uses available on the public registers. The reports provide data from several

service providers, including the British Geological Survey, Environment Agency and Natural England. The reports are included in **Appendix C**.

The location of data point references is provided relative to the site boundary and the search radius extends 1km from it.

Table 4.5.2 provides a summary of which data reference points are considered significant, together with an indication of the potential hazard type.

Table 4.5.2: Environment Data Review

Data Type	Distance from site	Potentially Significant Hazard
Discharge consents	On site	Contaminated surface water from Marubeni-Komatsu Ltd discharged to tributary of Burstow Stream. Consent revoked 14/07/2014. Number of sewage discharges from Forders Cottages, Yew Tree Cottage, Fernhill Road, Church Lane, Broadbridge Lane to tributaries of Burstow Stream. All consents revoked.
Water Abstractions	On site	Groundwater abstraction at Fernhill Nursery for general farming and domestic use.
Groundwater vulnerability	On site	Minor aquifer but high leaching potential. Soil vulnerability category H1; soils that readily transmit liquid discharges because they are either shallow, or susceptible to rapid flow.
Extreme flooding from rivers or sea without defences.	On site	High risk – The site itself is within a flood zone 1 however much of the neighbouring land to the north and east is within flood zones 2 and 3.
Licensed Waste Management Facilities	On site	Fern Court Farm scrap metal storage Rivington Farm – treatment of waste to produce soil
Registered Landfill sites		None recorded within 500m
Registered Waste Transfer Site	On site	Fern Court Farm
Shallow Mining Hazard		None recorded
Potential Ground Stability Risks		Low to Negligible
Contemporary Trade Directory Entries		Engineering Services on Balcombe Road – adjacent to the east of the site. Car body repairs in Antlands Lane - approximately 200m southwest of the site.
Fuel Station Entries		None recorded within 500m
Environmentally Sensitive Areas		None recorded within 500m

Radon Affected Areas	On site	No radon protection measures are required on site.
Ground Workings		None recorded on site
Historical Mining		None recorded
Coal Mining		None Recorded
Other mining records		None recorded
Mining cavities and natural cavities		None Recorded

Site History

Historical maps of the site area have been obtained via Groundsure. Pertinent information determined from review of these maps, as well as other publicly available aerial imagery, is set out in **Table 4.5.3**.

Table 4.5.3: Historical Mapping

 **1871:** The site was largely vacant, comprising agricultural land. Ferncourt Farm was labelled off Fernhill Road which dissected the centre of the site from east to west. A small pond was present in the southwest of the site.	 **1897:** A number of additional small buiding are present off the north of Fernhill Road.
 **1961:** Some unlabelled, presumed light industrial or commercial buildings were present off the B2036, in the east of the site. Additional buildings were present in the centre of the site off Fernhill Road labelled as a nursery.	 **1973:** The M23 airport spur road had been constructed, bounding the north of the site. Some small additional buildings were present off the B2036 in the east of the site. Two of the nursery buildings were no longer present. The site largely resembled its present form.

Preliminary Conceptual Model

The site characterisation attempts to identify potential sources of contamination, both historic and existing, and both on and off site. A conceptual model is formed, that identifies sources likely to cause harm, due to pathways existing by which contaminants can reach critical receptors. The conceptual model is therefore based on several identified source-pathway-receptor scenarios. For land to potentially pose risks, or be at risk, significant pollutant linkages will need to be identified which will include each source/pathway/receptor component of the conceptual model. The absence or removal of a source, or interception of a pathway, will 'break' the pollutant linkage.

The conceptual model is characterised by identification of the following:

- **On-site** sources, which may impact **on-site** receptors via plausible pathways.
- **On-site** sources, which may impact **off-site** receptors via plausible pathways.
- **Off-site** sources, which may impact **on-site** receptors via plausible pathways.

In the event of a change of land use, the planning regime and the National Planning Policy Framework (NPPF) require assessment of the new site development layout within the context of the sources of risk and the potential introduction of new exposure pathways. The assessment is also used to determine if the site contains such significant risks that it would class as "contaminated land" under the definition provided by the Part 2A of the Environment Act 1990 as defined in the Environment Protection Act 1995, i.e. significant possibility of significant harm (SPOSH). Once developed, land should not be capable of being classed as "contaminated land" under Part 2A.

The method used for risk evaluation is qualitative based on interpretation of the available Geo-Environmental data in order to provide an overall impression of the potential risks present at the site. This is described in terms of two variables as follows:

- **"Probability"** – being the likelihood that a hazard is present on site or in the surroundings.
- **"Consequence" –** being the potential outcome of the hazard.

The combination of these is used to define the risk. Clearly if a hazard is not present there can be no consequence. Similarly hazards that are potentially present will have different degrees of potential consequence. The combination of the presence of a hazard, and the potential severity of outcome of such a hazard within any event, can be used to manage the approach to management of the risk.

The **probability** (likelihood) of an event can be classified on a four-point system using the following terms and definitions based on CIRIA C552[50]:

[50] Rudland, D.J., Lancefield, R.M. and Ma Yell, P.N. (2001) Contaminated land risk assessment: a guide to good practice (C552), 6 Storey's Gate, Westminster, London, United Kingdom: CIRIA.

- **Highly likely**: The event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely**: It is probable that an event will occur, or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood**: Circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur, and it is less likely in the short term;
- **Unlikely**: Circumstances are such that it is improbable the event would occur even in the long term.

The **consequence** (severity) can be classified using a similar system, also based on CIRIA C552. The terms and definitions relating to consequence are:

- **Severe**: Short term (acute) risk to human health likely to result in 'significant harm'. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short term risk to an ecosystem or organism forming part of that ecosystem;
- **Medium**: Chronic damage to human health ('significant harm'), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem;
- **Mild**: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings, structures or the environment; and
- **Minor**: Harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

The term 'significant harm' is as defined in Defra Circular on 'Contaminated Land', EPA 1990 Part 2a"[51], 01/2006, September 2006.

Once the probability of an event occurring and its consequence have been classified, a risk category can be assigned as **Table 4.5.4**.

The term 'significant harm' is as defined in Defra Circular on 'Contaminated Land', EPA 1990 Part 2a", 01/2006, September 2006.

[51] Department for Environment, Food and Rural Affairs, (2012) *Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance*, London, United Kingdom: The Stationery Office Limited.

Once the probability of an event occurring and its consequence have been classified, a risk category can be assigned as shown in **Table 4.5.4**.

Table 4.5.4: Risk Classification System (CIRIA 552)

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**Highly likely**	Very high	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low likelihood	Moderate	Moderate/Low	Low	Very Low
	Unlikely	Moderate/Low	Low	Very Low	Very Low

Risk Level	Action
Low to Very Low	None
Moderate to Moderate/Low	Undertake appropriate mitigation measures to reduce the risk level by appropriate on-site practice at little additional cost.
High to Very High	Designers should take such risks into account and avoid or reduce risk level to acceptable levels. Additional resources required.

Contamination Considerations

Please refer to site photographs in **Appendix B** which show some of the observations made below.

- A large above ground oil storage tank was observed to the north of Fernhill Lane. The integrity of the tank is unknown and therefore it may have leaked into the underlying soil. Several other, domestic size oil storage tanks were observed across the site.
- Current land uses on site include metal merchants and light industrial works. There is the potential of hydrocarbon impact from fuel oils/lubricant leakage from the land uses on site.
- It's possible that the made ground beneath the site might be contaminated by asbestos and other materials.
- Areas of present and historical land use may have elevated levels of residual pesticides, herbicides and insecticides.

The general risk of significant contamination is **low**. The potential impact to the groundwater and local environment should be assessed by appropriate analysis of the soils and groundwater together with a risk assessment based on the site-specific criteria.

Other Key Issues

Table 4.5.5 provides a Preliminary Conceptual Model showing the hazard (source), pathway and receptor, then probability and consequence and corresponding degree of risk

The hazard, consequence and degree of risk all remain as '**potential**' until assessed by intrusive investigation.

Table 4.5.5: Source – Pathway – Receptor Model

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments
Unrecorded Made Ground on-site containing hazardous materials derived from former land use	Ingestion, inhalation or direct dermal contact	End users/Site preparation workers	Likely	Medium	Moderate	Ground investigation recommended to include near soil and groundwater sampling to allow potential sources to be quantified and risk to be assessed, also to enable the geochemical nature of these materials to be established. Cohesive strata anticipated below site which are likely to constrain any historic spillage. Area of possible contamination restricted to discrete areas of the wider site. Assessment of groundwater quality recommended as part of routine ground investigation.
Herbicides/ Pesticides/ Insecticides	Ingestion of and dermal contact with soil	End users/Site preparation workers	Low	Mild	Low	
Fuel and solvent residue on-site arising from former use of the land/buildings	Ingestion, inhalation or direct dermal contact	End users/Site preparation workers	Low	Mild	Low	
Naturally occurring contaminants within shallow weathered soils	Ingestion, inhalation or direct dermal contact	End users/Site preparation workers	Low	Mild	Low	
Ground gas derived from natural soils	Inhalation of outdoor air (only)	End users	Low	Medium	Low	Hazardous ground gas conditions not anticipated from known site history. To be reviewed as part of wider ground investigation.
Radon	Inhalation of outdoor air (only)	End users	No Linkage	No Linkage	No Risk	Site lies above Geology not known to present radon risk. BGS data indicated no protection required.

Tables 4.5.5 and **4.5.6** indicate that the site and environs are predominately considered as **Very Low to Low** risk with respect to contamination, this increasing to **Moderate** in areas that have previously been developed. In summary the potentially significant sources of risk are:

Table 4.5.6: Potential Risks and Contaminants of Concern

Source of Risk	Contaminants of Concern
General Made Ground in area of historic development	Heavy metals, TPH, PAHs
Asbestos in soils (made ground)	Asbestos
Above-ground tanks	TPH, PAHs
Metal Merchants	Solvents, TPH, PAHs
Agricultural Land	Pesticides, herbicides and insecticides
Ground gases from organic material within the Made Ground and hydrocarbons	Methane, carbon dioxide and volatiles

4.5.4 Further Assessments/Next Steps

Recommendation for Further Investigation

A Phase II intrusive investigation to assess potential geo-environmental risks is recommended. It would be recommended to scope the investigation to provide geotechnical design data as part of the ground investigation to inform detailed design. The investigation should be tailored to suit the development proposals, but may be anticipated to include the following elements for a typical development:

- Cable percussion boreholes.
- Window sampling including in situ strength testing.
- Trial pitting.
- Installation of gas/groundwater monitoring wells and subsequent monitoring.
- Geotechnical laboratory testing that is recommended includes pH and water-soluble sulphate, Atterberg limits, gradings and natural moisture content.
- Contaminated land testing to include a general indicator suite, speciated Total Petroleum and Polyaromatic Hydrocarbons.
- Groundwater should be tested for similar contaminants.
- Also localised soils to be tested for asbestos, pesticides and herbicides.

The risk associated with land contamination arising from the dumping of fuel shortly after take-off or during an emergency landing is considered low. Under normal circumstances aircraft will dump excess fuel at altitudes above 3000 feet, where the volatile nature of the fuel results in evaporation and dispersion of the fuel before it reaches ground. Emergency dumping of fuel at lower altitudes only occurs in an emergency, which are by their nature rare and unpredictable, particularly given the safety regime associated with aircraft.

While the risk of aviation fuel residues is low it would be prudent to include assessment for fuel residues during any routine assessment of soil quality below the flight path.

4.6 Sustainability and Energy

4.6.1 Policy Context and Relevant Guidance

National Policy

National Planning Policy Framework (2019)

Section 2, Paragraph 8[52]: To contribute to protecting and enhancing our natural, built and historic environment; making effective use of land; helping to improve biodiversity; using natural resources prudently; minimising waste and pollution; and mitigating and adapting to climate change, including moving to a low carbon economy.

Section 14, Paragraph 151[53]: To help increase the use and supply of renewable and low carbon energy and heat; plans should identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

Local Policy

Crawley Borough Council Local Plan (2015)

Policy SD1: Presumption in Favour of Sustainable Development[54]

Development will be supported where it meets the following strategic objective:

- Progress towards Crawley's commitment to being carbon neutral by 2050 and adapt to climate change.

Policy ENV6: Sustainable Design and Construction

In order to maximise carbon efficiency, all homes are required to meet the strengthened on-site energy performance standards of building regulations.

Proposals for new non-domestic buildings should achieve BREEAM Excellent (for water and energy credits) where technically and financially viable.

All development, including the alteration and extension of existing buildings, should consider how it may achieve the following sustainability objectives:

- Take an active approach to reducing its need to consume energy;
- Utilise renewable and low carbon energy where appropriate;
- Minimise the amount of carbon emitted throughout the implementation and construction process and ensure any existing embedded carbon onsite is retained;

[52] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework*, P.5, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf.
[53] Ministry of Housing, Communities & Local Government (2019) National Planning Policy Framework, P.44, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf.
[54] Crawley borough Council (2015) Crawley Borough Local Plan 2015 - 2030, P.23 Available at: http://www.crawley.gov.uk/pw/web/PUB271853

- Consider the establishment of district energy networks within heat priority areas or near potential sources of waste energy and consider connection or futureproofing developments for connection

As the development contains over 100m^2 of internal floorspace, a Sustainability Statement should be submitted, demonstrating how the sustainability objectives above have been addressed during the design and construction process. Further details on how these objectives can be address can be found in the Planning and Climate Change SPD.

Local Energy Strategy[55]

Coast to Capital, Enterprise M3 and South East Local Enterprise Partnerships

This local energy strategy was developed by three LEPs - Coast to Capital (C2C), Enterprise M3 (EM3) and South East LEP (SELEP) – and covers a geographic area from Essex to Hampshire, representing a large swathe of the south east of England. It has been developed to enable the Coast to Capital, Enterprise M3 and South East Local Enterprise Partnerships (LEPs) of England to achieve clean growth from now until 2050 in energy across the power, heat and transport sectors. Clean growth is about growing the local economy - creating jobs and building sustainable income streams – while cutting greenhouse gases. Delivering clean growth is at the heart of the UK's Industrial Strategy, whilst continuing to provide an affordable, sustainable and secure energy supply for businesses and consumers, which is key to what the LEPS want to achieve.

This local energy strategy has two main goals: the first is that the tri-LEP region will play a leading role in the United Kingdom's decarbonisation efforts by making targeted interventions to reduce emissions in the electricity, heat and transport sectors. The second is that we will foster 'clean growth' by supporting public and private sector investments in novel low carbon technologies to take advantage of the opportunities presented by the emerging low carbon economy.

The shared vision for energy in the tri-LEP region is "to become a leader for sustainable energy production within the UK, powering innovative, decarbonised and clean economic growth".

In the context of the opportunities and challenges confronting the tri-LEP region, this strategy has identified five priority themes against which Project Models have been developed:

- Low Carbon Heating – to build heat networks and move away from carbon fuels.
- Renewable Generation – to drive clean generation with renewables and biofuels.
- Energy Saving and Efficiency – intelligent consumption and efficient use of energy.
- Smart Energy System – new and Smart technologies for managing the energy networks.
- Transport Revolution – enabling a transport revolution

[55] Local Enterprise Partnerships (2019) *Local energy strategy*

BREEAM

Context and Relevant Guidance

BREEAM (Building Research Establishment Environmental Assessment Method) is a sustainability assessment method that is used to masterplan projects, infrastructure and buildings. It is part of The Code for a Sustainable Built Environment which is a strategic international framework for sustainability assessment of the built environment.

BREEAM sets the standard for best practice in sustainable building design, construction and operation and has become one of the most comprehensive and widely recognised measures of a building's environmental performance.

The UK Government's Construction Strategy makes it clear that an environmental assessment should be carried out on all public projects with the aim of achieving an Excellent rating in BREEAM (or equivalent if an alternative system is used).

BREEAM assessment evaluates the procurement, design, construction and operation of a development against a range of targets based on performance benchmarks. It focuses on sustainable value across range of categories:

- Energy
- Land use and ecology
- Water
- Health and wellbeing
- Pollution
- Transport
- Materials
- Waste
- Management

Each category focusses on the most influential factors, including reduced carbon emissions, low impact design, adaption to climate change, ecological value and biodiversity protection.

Two assessment/certification stages are carried out (a design stage assessment which results in an interim certificate, and a post-construction assessment resulting in a final certificate being issued and a rating awarded).

Developments are rated and certified on a scale of Unclassified (<30%), Pass (>30%), Good (>45%), Very Good (>55%), Excellent (>70%) and Outstanding (>85%).

The BREEAM rating benchmark levels enable a client or other stakeholder to compare an individual building's performance with other BREEAM rated buildings and the typical sustainability performance of new non-domestic buildings in the UK.

4.6.2 Assessment Method/Criteria

Consideration of relevant regulatory objectives and targets established for the sustainable management of the environment taking into full account sensitive receivers and protected zones and areas such as Crawley Borough Council carbon neutral commitment.

Seeking to incorporate within the conceptual development strategy, an energy strategy as well as design and operational features/measures to achieve sustainability.

4.6.3 Considerations, Opportunities and Scheme Deliverability

Sustainability Strategy

The conceptual development will implement sustainable measures by taking a holistic approach to sustainability. Matters ranging from management, energy and water savings, sourcing of materials, waste management, transport and more will be addressed in the proposed development at Gatwick Green.

The development (based on the current conceptual framework and philosophy) will include sustainable measures relating to landscaping, pedestrian links, cycling, disabled parking, electric car charging and parking, health features which will not only improve people's health, local biodiversity and adaptation to climate change but also help implement the international Sustainable Development goals which the UK Government has endorsed.

These Goals are required to be implemented at the local level and this includes the Gatwick Green Site. The goals aim to improve everyone's health, strengthen and adapt communities, reduce poverty.

As a demonstration of the commitment to sustainable design and construction, the business campus with (B8, B1, C1 and D1) spaces will be designed to achieve a BREEAM 2018 'Excellent' rating (fully fitted). The conference/hotel spaces (C1) and education spaces (D1) will be designed to achieve a BREEAM 2018 'Very Good' rating as a minimum, considering the limitations due to the speculative nature of these shell only spaces (refer to **Figure 1.2.2** and **Table 1.2.1**). An Excellent rating could be achieved if the future tenants undertake a further BREEAM Assessment of the Fit Out.

The target is to achieve reduction in carbon emissions in line with Local Plans, alongside achieving compliance with the requirements for water consumption in line with Building Regulations Part G. The following headings are a summary of the key sustainability issues which form the overall strategy for the project.

Management

To encourage an integrated design process, the project delivery stakeholders will meet to identify and define roles, responsibilities for each of the key phases of project delivery. In addition, all

relevant third-party stakeholders will be consulted by the design team to influence concept design. This will also focus on community involvement.

Health and Wellbeing

The development will be designed to encourage a healthy and safe internal and external environment. To ensure daylighting, artificial internal and external lighting and occupant controls will be considered at the design stage to ensure best practice in visual performance and comfort for building occupants.

The buildings acoustic performance will meet the appropriate standards for the type of buildings assessed as defined in Part E of the Building Regulations.

Transportation and Connectivity

The site is bounded and interspersed by a network of footways and POS that offer connection to a range of local features, amenities, bus links, train network and other public transport facilities. The Gatwick Green area is within a sustainable location with access to Gatwick Airport (1.2km), train stations and existing bus provision.

Secure, covered cycle spaces will be provided within the development, which will encourage the use of more sustainable alternative means of transport, such as public transport and cycling.

Water

Reducing the consumption of potable water will be a significant constraint in the design process. Water use will be reduced as much as possible mainly through the specification of efficient sanitary ware and water efficient fittings. The use of greywater for toilets is one example of how this can be achieved.

Waste

A pre-demolition audit will be undertaken to maximise the recovery of materials from demolition for subsequent high grade / value applications. The principal contractor will develop a Resource Management Plan (RMP) covering non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication generated by a building's design and construction. A commitment to achieving a reduction in construction waste per 100m^2 (GIA) will be made.

West Sussex County Council operates the Business Resource Efficiency and Waste (BREW) programme providing commercial waste recycling services. The BREW service collects mixed paper and cardboard from companies across West Sussex under the collective name of 'The Recycling Partnership' and the West Sussex Sustainable Business Partnership offers recycling advice to companies looking to recycle more than just paper and cardboard (e.g. glass). Several waste management companies operate in the area surrounding the Gatwick green site, amongst which are reuse, recycling, recovery and disposal facilities.

4.6.4 Energy

In terms of the five priority themes identified in the local energy strategy developed by three LEPs, there are opportunities at the Gatwick Green scheme for low carbon heating, renewable generation, energy saving and efficiency, smart energy systems and the enabling of a transport revolution.

Some of the options that can be considered are:

1. Low carbon heating via district heat networks; off-gas grid spaces; hydrogen injection into the natural gas grid; new-build spaces on hydrogen grid.
2. Energy saving and efficiency via off-gas grid spaces; energy efficiency in built spaces.
3. Renewable generation: Solar and microgrid; car parks - solar potential; Biofuel.
4. Smart Energy System: Solar and microgrid; built spaces and community microgrids; EV charging & hydrogen-fuelling infrastructure; supporting CO2 capture.
5. Transport Revolution: EV charging & hydrogen-fuelling infrastructure; Compressed natural gas (CNG) fleet fuelling.

Heat Network

If CHP or CCHP is identified as viable (technically or commercially) a district heat network would be required to distribute heat around the development. Typically, the network consists of insulated steel flow and return pipework buried within the highway.

There may be potential to share heat with the local airport facilities. If this was to be undertaken, it would require the heating pipework to be located within the existing roads, which is more complex than laying them as part of a new development. Further work would be required to determine feasibility of this, and Gatwick Airport's interest in using the heat.

Renewable Options

Commercial solar panel electricity offers a range of benefits for businesses. Customers are increasingly looking to businesses with an environmental conscience. Solar panels can also provide a cost-effective way of reducing the environmental impact and increasing the sustainability of the proposed development by reducing its carbon footprint.

- **Renewable Heat Incentive** – An incentive which provides financial support for businesses looking to install their own renewable heat system.
- **Enhanced Capital Allowances** – The businesses can write off their cost against its taxable profit with a 100% first-year capital allowance.
- **Power Purchase Agreement –** This allows private funders to buy energy generated at a set price. They'll also own the renewable energy system and claim subsidy rewards, while the development benefits from producing its own energy

Energy from waste turns waste into a useable form of energy. This can include electricity, heat and transport fuels. Incineration is the most well-known. Well managed facilities are clean and safe, with a track record of reliability and efficiency. The process is a form of energy recovery and benefits the environment through reducing greenhouse emissions, as well as landfill. Despite this, an energy from waste facility has a poor (and outdated) public image of 'dirty' that conflicts with the high-quality image of a business hub. Furthermore, it can have a negative impact visually on the landscape and may give off emissions, both of which can be very unpopular with locals.

Ground source heat pumps (GSHPs) extract heat from the ground using underground buried pipes, which is subsequently used to heat hot water, underfloor, radiators and warm air systems. A mixture of water and antifreeze is circulated through a loop of buried pipes. Heat from the ground is absorbed into the fluid and then passes through a heat exchanger into the heat pump. Installation costs may be higher than installing conventional central heating, however running costs will be significantly lower. Furthermore, businesses are eligible for the government's Non-Domestic Renewable Heat Incentive, which gives payments quarterly over the course of 20 years. GSHPs reduce emissions and can also be used for cooling, reducing the need for air conditioning systems.

4.6.5 Further Assessments/Next Steps

As the development contains over 100m^2 of internal floorspace, a Sustainability Statement should be submitted, demonstrating how the sustainability objectives above have been addressed during the design and construction process.

A typical Energy Statement would be expected to:

- Show baseline 'standard' case CO_2 emissions and energy costs
- Demonstrate improvements to fabric efficiency beyond building regs standards
- Highlight improvements to HVAC and lighting efficiency beyond building regs standards
- Evidence how the development will meet CO_2 reductions with renewable technology
- Provide a feasibility study for renewable technologies
- Document how the development will meet local energy plans and policies
- Address how the development will make use of heat networks
- Calculate how the development will address zero carbon requirements in Crawley

A certificated BREEAM assessment by a licensed organisation should be undertaken to inform the development of the masterplan, using assessors trained under a UKAS accredited competent person scheme, to consider various stages of a building's life cycle.

5 Utilities

5.1 Introduction

5.1.1 Overview

This report assesses the potential constraints presented by the existing utility infrastructure both within the boundary and in the vicinity of the search area (refer to **Figure 5.1.1**), also outlined in the appendices for each separate utility (**Appendices D-G**). The report is based on the information provided by the client about the location of the search area and the information provided by the utilities about their existing plant and networks. The information contained in this report is based on desk research only.

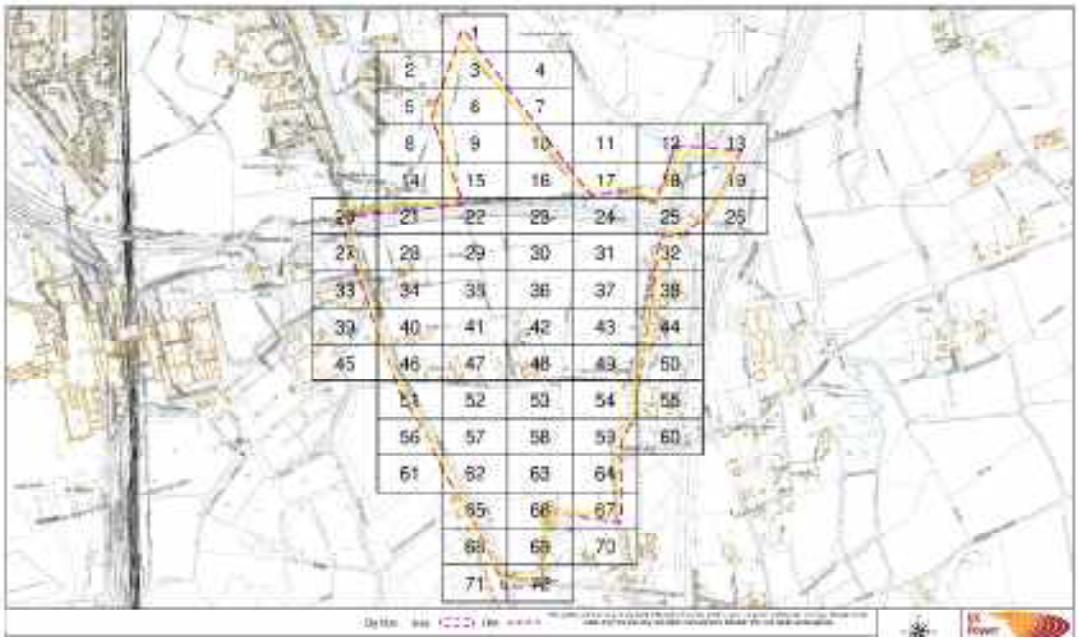

Figure 5.1.1: Search Area for Utilities

The term constraints indicate that there may be limitations or prohibitions on designs and planned works due to the presence of utility apparatus. To overcome these can be costly and time-consuming.

As well as constraints, this section of the report identifies the potential key infrastructure requirements of the report.

A preliminary assessment of these issues has been undertaken, which is covered in this report. More detailed studies will be required to progress these issues further, including additional consultation with the relevant authorities.

Clarkebond is in the process of liaising with utility suppliers to confirm whether previous capacities and infrastructure requirements indicated have remained unchanged or need to be updated. If the status has changed then these will be updated in the next issue of this report.

5.1.2 Methodology

To undertake this appraisal, the following approach has been undertaken:

- Establish the baseline for Gatwick Green (e.g. define the existing situation).
- Determine the utility demands for Gatwick Green, based on likely development options.
- Review utility supply options with the relevant statutory undertakers, if possible.
- Develop a high-level strategy for utilities based on the above.
- Undertake an initial desk study assessment of potential contamination issues

5.2 Power

Premier energy identifies that constraints exist on site due to the presence of utility apparatus.

5.2.1 Existing network

The site is covered by UK Power networks, which covers the East of England, South East England and London. EDF Energy Networks then managed the electricity distribution network across London, the South East and East of England until 2010 when they were acquired by the CK Group and renamed UK Power Networks. This network is supplied by National Grid's 400kV transmission system, the closest grid connection point at 400kV being located at Bolney, 20km south of the site.

Grid Connections

The closest UK Power Networks grid substation (275kV to 132kV) is in Smallfield, 3km north-east of the site. This supplied Gatwick Airport and Horley with 33kV high voltage (HV) supplies. The HV cables from Smallfield run to the north of the site boundary. A second UK Power Networks grid substation is located at Three Bridges, 6km south of the site. This substation supplies Crawley and provides an alternative 33kV power supply to Gatwick airport.

High Voltage Network

Multiple 33kV primary distribution cable routes intersect the site boundary in the north. 11kV underground and over-ground cables run within the site are assumed to supply 4 HV'LV substations, where a low voltage (LV) network serves local properties via underground and over-ground service lines. LV underground cables and overhead lines are also present within the site boundary, commonly running towards or adjacent to properties. Service overhead lines are present on site, connecting properties to LV overhead lines. '2 Duct way' cable ducts enter the in the south-east and enter an assumed HV/LV substation.

Refer to **Appendix D** for an illustration of the local power network.

5.2.2 Power Demand

Peak power demands for the site have been estimated as 12MW (megawatts), for 2.84m sq. ft. of B8, B1 and Hotel development. This is an initial assessment based on standard building regulation compliant development.

Potentially, the peak demands might be less than this, which can be confirmed once the building designs are developed and the sustainability designs are defined. However, for the purposes of establishing the initial grid capacity the figure quoted above is recommended.

Using sustainable energy technology, a significant proportion of power may be taken from de-centralised sources (e.g. generated on site). However, a resilient power supply is essential for commercial purposes, so it is recommended that the off-site connection is based on the full peak power demand for the site. This would provide a more resilient power network.

High specification business developments sometimes require a diverse grid connection that the development would be connected using 2 independent power supplies. These may need to be sized at 70% to 100% of the peak demand, depending of the level of resilience required. A diverse grid connection may also reduce the requirements for on-site back-up generators. Alternatively, on-site generation may be considered adequate to serve as the second source of supply.

5.2.3 Network Capacity

UK Power Network was previously contacted (Formally EDF at the time of contact) to determine network capacity. Informally, EDF has confirmed the following:

- There is insufficient capacity in the existing HV network at present.
- Gatwick Green would need to be fed from diverse 33kV lines, most notably from the Smallfield sub-station and Three Bridges Sub-Station.
- The electricity transmission lines could be ducted along roads to the site.
- A new sub-station would be required on site and would occupy at least 40m^2. It is expected that this would be a 33kV/11kV substation
- To separate transformers would be installed to maintain diverse supply to the site.
- Estimated ball-park costs for all works to get the supply to the site (including cost of the substation) is approximately **£6m**.

5.2.4 On Site Electricity Network

EDF noted that a 33kV/11kV substation might be required on site. From this substation, 11kV cables would run through the site. At appropriate locations, either within buildings or within landscaping, 11kV substations would be provided to step-down the voltage to LV for use within buildings.

There might be opportunities for selling any excess power generated on the site, back to the grid. There are several technical issues which would need to be overcome for this to be feasible. As a result, early discussions with UK Power Network would establish the infrastructure requirements for undertaking this.

5.2.5 Summary

There is enough power within the strategic power network to supply the proposed development. Upgrades to the local EDF HV network would be needed as part of the construction network.

5.3 Gas Network

It is acknowledged that gas is being phased out of future developments due to climate change environmental and sustainability requirements. An assessment of this utility has however been undertaken to ensure due diligence.
Premier energy has also identified that site constraints exist due to the presence of utility apparatus.

5.3.1 Existing Network

Southern Gas Networks (SGN) owns and operates the gas main network in the area of the site. Several of its gas mains are located close to or within the site.

An 18'' medium pressure main runs to the west and south of the site. This is a significant piece of infrastructure which should be avoided where possible. Because it is located beneath a public highway, it is unlikely to be directly affected by the development although careful consideration of its location should be made when planning and constructing road junctions.

A 125mm low pressure main is located within the existing east-west road that crosses the site This is a relatively small main that might need to be diverted as a result of the proposed development.

No other licenced gas networks or oil pipes run across or next to the site.

Refer to **Appendix E** for an illustration of the local gas network.

5.3.2 Gas Demand

Peak gas demand for the development, if a conventional energy strategy is adopted has been estimated to be 8MW, based on typical assumptions about heating and cooling technologies and assumed grid power supply. Diversity between land uses has been factored into this figure.

Certain sustainable energy technologies can have the effect of increasing gas demands, such as gas-fired, combined heat and power (CHP). This is because the gas is used to generate electricity on the site, whilst the heat is used to heat (and potentially cool) nearby buildings. This could increase gas demands by up to 60%, depending on the type and purpose of the units, although typically the increase is closer to 30-40%. Peak gas demands in this scenario could therefore increase to 13MW, which is therefore assumed to be the likely maximum peak gas demand for the development.

5.3.3 Network Capacity

SGN has been provided with the estimated gas demands for Gatwick Green Phase I. The company has confirmed that the MP gas main located to the west of the site has enough capacity to supply the development based on the likely gas demand. SGN has also confirmed that if this was to increase further (up to 20MW), there would still be capacity available. As a result, it is not

envisaged that there will be a requirement of an upgrade of the medium pressure or low-pressure gas network.

5.3.4 On-Site Gas Network

The extent of the on-site gas network would be determined by the proposed energy strategy. If a centralised or distributed CHP plant is proposed, either a medium pressure or low-pressure connection would be required. From this a district heating network would provide heating to individual buildings. In this scenario, a low-pressure network would run within the on-site highways.

5.3.5 Summary

There is enough capacity in the gas network to ensure the sites gas requirements can be met without the need for any off-site works.

5.4 ICT Infrastructure

Premier Energy identify Openreach, Virgin Media, and comms Vodafone, Instalcom and mast Data as constraints to the site due to the presence of utility apparatus. Sky Telecommunications is highlighted as a possible constraint due to the proximity of utility apparatus. Colt, KPN, Verizon, SOTA, KCOM, TeliaSonera (Telent), euNetworks, SSE Telecoms and CityFibre are not indicated to pose constraints to the development, as identified by Premier Energy.

5.4.1 Introduction

Information, Communication and Technology (ICT) are fundamental parts of everyday life for individuals, businesses and government. Gatwick Green's occupiers will require a complex array of ICT systems and services for it to run effectively. Moreover, ICT can also help towards delivering the sustainability, economic and social objectives of the development.

5.4.2 Fixed Telecoms

The requirement for telecoms infrastructure derives from users demand for services, and from the characteristics of the networks that will be installed to provide the services.

These requirements can be grouped together both by requirement and by the phase in which they arise. **Figure 5.4.1** below gives a visual representation of the logical model created, where the sectors and users are consolidated into a layer referred to as 'User Demand'. Users access services via networks of some form (fixed or wireless, public or private), identified in the diagram as the 'Networks and Connectivity' layer. These networks run over passive media (Copper, Fibre Radio etc.), which in turn required infrastructure in the form of ducts, locations (street furniture and masts), space in equipment rooms (to support active equipment supporting / running the network) and power, cooling and other associated services to support equipment rooms.

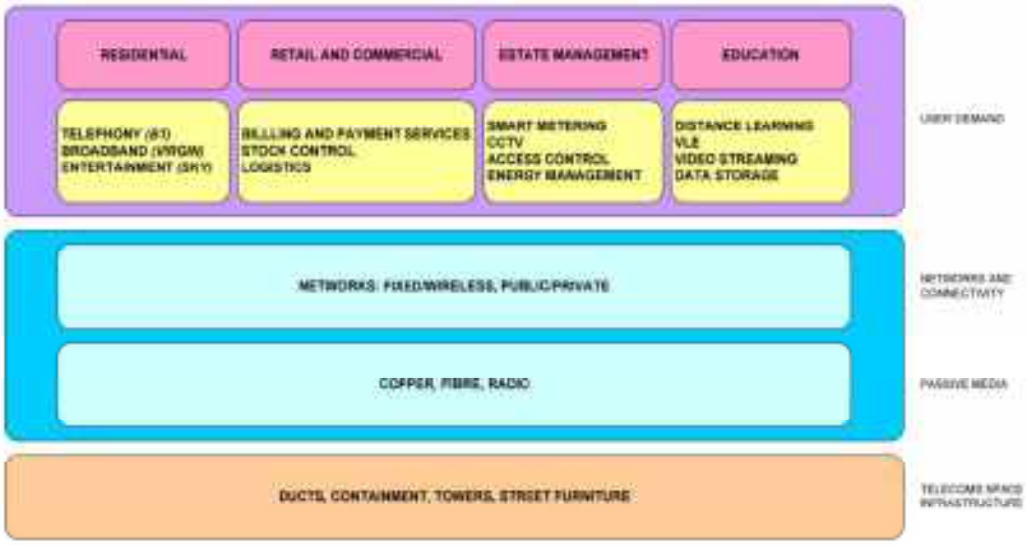

Figure 5.4.1: Logical ICT Model

The services and networks at the Gatwick Green development will be both public and private and will operate on much the same basis as elsewhere in the South East. As the developer of the site, TWG's principal task is to ensure adequate provision of space and duct routes for the operators.

An initial statutory search indicates that there is a choice of Communications Providers (CP) within the vicinity of the site: BT, Virgin Media and Cable & Wireless/Thus being the significant CPs.

5.4.2.1 Requirements for Commercial Developments

Customers in the commercial market typically prefer to access telecoms services via direct connections. They also like the ability to choose from a wide range of providers, to encourage choice and competition. Commercial customers will often take services from multiple providers to ensure the provision of resilient telecoms services.

It is therefore standard practice on development of this scale to plan for multiple telecoms ducting infrastructure to support the different telecoms operators in the local area.

There are typically 2 approaches to the provision of telecoms ducting to support multiple operators.

The traditional approach would be to identify requirements for all operators and incorporate these individually within the utility corridor designs. The disadvantage of this approach is the resultant high number of draw pits jointing chambers in carriageway required to support each CP individually.

It is therefore now more common to adopt an approach of shared ducting infrastructure; whereby multiple ducts are installed in a single trench and then presented into shared draw pits and drawing chambers.

The cost associated with the installation of copper and fibre cables and associated networking equipment is generally met by the operators themselves. Typically, the cost of connections of new ducting infrastructure is also met by the operators themselves.

5.4.2.2 Summary

The fixed telecoms requirements for the development can be met as required. Liaison will be required with the relevant telecoms providers to ensure that a timely supply is provided. As part of utilities infrastructure development, it is common for develops to make provision for a shared telecom ducting infrastructure to support the operator's requirements. This ensures that the requirements of multiple operators can be accommodated in an efficient manner in terms of space required within the utilities corridors. This is the minimum provision that should be made.

The installation of all telecoms ducts shall be coordinated as a single entity, to minimise the number of trenches and draw pits required. There are various options available to the developer

for the installation of the ducting infrastructure and associated fibre cabling; of which some may result in a revenue stream.

5.4.3 Wireless Telecoms

There are currently three broadband technologies to be considered under wireless telecoms. These are cellular (e.g. Vodafone and O_2, 5 operators in total), Operational radio (Private Mobile Radio including Airwave) and Public Access Wi-Fi. Public Access Wi-Fi is the broad term used to define wireless provision to support the general public and other users, either in hotspots (e.g. cafes) or as blanket coverage across the whole site.

According to the Draft CBLP 2020 – 2035 (2020), the planning system is required by the government to 'support the expansion of telecommunications systems and increase coverage of gigabit-capable full fibre infrastructure, which can support future technologies such as 5G, by prioritising full fibre connections to existing and new developments'. It is also stated that the area lacks the fibre density to ensure that local business have the infrastructure needed to increase the pace of economic growth, adding that 'Increased speeds and data transmission and the demands of future technologies such as 5G will rely on higher frequencies, greater bandwidth and network densification'.

Gatwick 360°[56] identifies the need to for 5G connectivity to be rolled out to the wider Brighton & Hove area, and then subsequently to other key locations such as Gatwick Airport, as well as leading efforts for a wider roll-out of 5G technology.

On a development of this scale, consideration of the infrastructure requirements to support wireless, particularly towers and masts, is a key requirement of the planning process.

These services can be provided to meet the scheme's requirements through liaison with the relevant suppliers.

5.4.3.1 Cellular

There are 2 approaches for dealing with the requirements of cellular operators to provide coverage and capacity in new development areas.

The first is to liaise with all 5 operators individually and plan for infrastructure, typically in the form of masts, antennas and space to house cellular equipment, to accommodate their specific requirements. The developer's role in this case would be to provide space and infrastructure only, with support during the planning process to gain approval for the installation of masts and/or towers.

[56] Coast to Capital, *Gatwick 360°* (2018) *Strategic Economic Plan 2018-2030*, available at: https://www.coast2capital.org.uk/storage/downloads/coast_to_capital_strategic_economic_plan_2018-2030_pdf-1535099447.pdf

The alternative approach is to coordinate and aggregate the requirements of all 5 operators by appointing a single infrastructure provider. In this case, a single agreement would be reached between the developer and an infrastructure provider who would then liaise with all 5 operators to ensure their requirements are met using common (shared) infrastructure. The coordinated approach typically results in the sharing of masts, towers and equipment room spaces/cabins between 5 operators.

Any one of the 5 operators could potentially become the infrastructure provider on a project of this type. There are also neutral host providers who specialise in provision of this type of infrastructure, including Arqiva, national Grid Wireless and BT Wholesale.

5.4.3.2 Wi-Fi

There is a trend with both private and public sector developments to make provision for infrastructure to support public access Wi-Fi. Examples include the Corporation of London, City of Westminster, Canary Wharf and other large mixed used development projects. The decision for its use will be based on further review of the development.

5.4.3.3 Summary

The wireless technologies identified above are those that are currently licenced, known and understood. The challenge for developers is to plan during a long-term development project for new technologies that are also likely to emerge.

Every new wireless technology has a physical impact on the built environment, as it requires mounting points for antennas with connections to power and fixed telecoms services. Mounting points can include dedicated towers and masts, external mountings on building facades and roofs and street furniture such as lighting posts and information points.

5.5 Other Utilities

5.5.1 Utility Constraints

Premier Energy undertook a search and completed a report in December 2019 to determine the location of utilities located within the site boundary.

In addition to the electricity and gas networks identified earlier, the following utility networks were identified:

- Portable water mains (SES Water)
- Storm and Foul Sewers (Thames Water)
- Telecoms cables (BT/Openreach, Virgin Media, Cable & Wireless)

Drawings of the water network are illustrated in **Appendix F,** of this report, with the Thames Sewer Maps located in **Appendix G**.

Some of these utilities are located within the site boundary, therefore it would be expected that diversions may be needed. Diversion of telecoms cables can potentially have significant associated costs, particularly if the cables are fibre optic. The costs mainly relate to long lengths of cable relaying, often up to 2km. In addition, diversion of telecoms cables can have long lead-in times. Based on the available information, the cost of diverting utilities would be within the range that could be accommodated by a development of this scale and value.

5.5.2 Water Supply

The CBLP (2015) states that LPAs are expected to work with the relevant authorities and providers (in this case SES Water) to assess the quality and capacity of infrastructure for water supply.

The water service for the proposed development area is provided by SES Water. SES Water has a supply area of 835 sq. km in East Surrey, and parts of West Sussex, west Kent and south London.

Appendix F displays the SES water supply network within the site boundary and the immediate surrounding area. Distribution mains border the site to the west and the east, running parallel with the B2036 and Peaks Brook Lane respectively, as well as bisecting the site through Fernhill Road. Multiple distribution mains extend away from the site in the south-west, as well as west towards Gatwick Airport and North towards Horley. Trunk mains also bisect the site through Fernhill Road, as well as running parallel with Peeks Brook Lane to the north-east of the site. A series of abandoned mains run parallel with the west and east borders of the site, adjacent to the B2036 and Peeks Brook lane respectively, also bisecting the site at Fernhill Road.

Consultation with SES water is being undertaken to ensure enough water can be supplied to meet the demands of the proposed development.

5.5.3 Heat Network

If CHP or CCHP is identified as viable (technically or commercially) a district heat network would be required to distribute heat around the development. Typically, the network consists of insulated steel flow and return pipework buried within the highway.

There may be potential to share heat with the local airport facilities. If this was to be undertaken, it would require the heating pipework to be located within the existing roads, which is more complex than laying them as part of a new development. Further work would be required to determine feasibility of this, as well as Gatwick Airport Limited's interest in using the heat.

5.5.4 Procurement

The conventional approach to utility procurement is for each incumbent supplier (such as UK Power Networks) to design, install and operate the onsite network. The developer would pay for most of the costs of the on and off-site works,

However, as a result of competition within the utilities market, there are now opportunities for a contractor either to 'self-lay' the utilities and hand them to the utility company for adoption, or for them to design, install and operate a publicly licenced networks within the site. This could be undertaken as a series of appointments or as a single Multi Utility Supply Company (MUSCO).

The utility supply company could install the network at their cost. The viability of this approach is increased for large developments (such as Gatwick Green), and where district heat networks are proposed.

6 Conclusions and Recommendations

The topics outlined and examined within this report indicate that there is no significant and preventable constraints to the development.

6.1 Approach

The extent of the investigations covers land within the site boundary and the immediate surrounding area (i.e. areas envisaged to be within the zone of influence of the proposed development). The assessments have been carried out using both qualitative and quantitative assessment methods via a desk study. The report documents the baseline conditions and key issues relating to the site.

The assessment approach comprises the following key activities and steps:

- Review of available information, previous environmental studies and public information and databases.
- Consideration of building regulations and recent and relevant local, regional and national planning policies, guidelines and legislation relevant to the assessment of the natural and built environments.
- Consideration of relevant regulatory objectives and targets established for the sustainable management of the environment, fully considering sensitive receivers and protected zones and areas.
- Consultation with statutory and non-statutory bodies.
- Identification of the sensitive receivers in the environment (locally and regionally).
- Identification of impact-causing factors.
- Assessment of the background environmental conditions and baseline setting of the study area using established and best practice assessment methodologies and criteria.
- Establishment of baseline conditions.
- Evaluation of impacts of the proposed Project on the local and regional environment considering the constraints and opportunities that exist.
- Demonstration of the deliverability of Project; identifying options for mitigation to ensure deliverability of the scheme where necessary.
- Reporting – preparation of technical report.

6.2 Flood Risk

- The Site is located within Flood Zone 1, meaning that it has an annual probability of fluvial flooding of less than 0.1% from both fluvial and tidal sources.
- Several open drainage ditches and drains exist within the northern part of the Site and along the M23 to the north and adjacent to the northern end of Balcombe Road to the east. There are also several small water bodies in the form of ponds located near the western and southern boundaries of the Site.
- Most of the Site is at very low risk of surface water flooding (i.e. less than 0.1% annual probability of occurrence). There are also several pockets of low risk (0.1 – 1% annual

probability), medium risk (1 – 3.3% annual probability) and high risk (>3.3% annual probability) to the western and northern borders.

- The north-west of the Site is indicated by the EA to fall within an area at risk of flooding from the possible failure of existing reservoirs, however this area also covers the airports operational area, so is not considered to be an impediment to development at the site.
- Any development of the Site should avoid areas sensitive to surface water flooding. Furthermore, appropriate sustainable drainage systems (SuDS) should be incorporated into the development to appropriately mitigate, and where possible reduce, this risk.

6.3 Surface Water and Foul Water Drainage

- Asset records show that there are no existing surface water sewers located on site. There are 2 separate gravity foul sewers located on Peeks Brook Lane, which subsequently enter the site and drain into the pump station located adjacent to the eastern boundary. The pump station discharges the foul water, via a rising main, to the south western corner of the site, near Rose Cottage.
- It is currently assumed the easement of the rising main be a maximum of 6.5m. This will need to be confirmed with Thames Water.
- Foul discharge on site cannot be connected to the foul rising main. The drainage strategy will need to identify suitable manhole locations on the gravity based network of the public sewers.
- Any development of the Site should be drained by independent, dedicated foul and surface water systems in accordance with the relevant policy & guidance.

6.4 Air Quality

- There are no significant industrial or waste management sources that are likely to affect the air quality at the proposed development.
- Existing PM_{10} levels will not exceed the objectives within the study area. Annual mean nitrogen dioxide concentrations have remained well below the objective at all relevant automatic and diffusion tube sites in all years since 2014.
- The most sensitive receptors within the proposed development will be those associated with educational uses. Consideration should be given to locating these uses as far as possible from pollution sources such as busy roads and the airport. Air quality at the proposed development site would be expected to be acceptable for commercial and educational uses.
- It will be essential to include measures to minimise emissions if it is to be considered an exemplar of sustainable development. These should include measures to minimise travel to and from the site by car and avoid the use of on-site combustion sources to provide heating and hot water.
- The site is located approximately 800m northeast of Crawley Treatment Sewage Works. However, given the reasonable distance, significant 'shielding' from trees and there are existing residential properties are located closer to the works than the development, it is

possible that odours won't be an issue. An Odour Impact Assessment may be required if Thames water have not conducted a modelling study within the area.

6.5 Noise

Aircraft Noise

- Noise levels within the vicinity of the site decreased slightly between 2003-2009.
- The site sits within the 60dB $L_{Aeq,16hours}$ noise contour during the day, and within the 54dB $L_{Aeq,8hours}$ noise contour during the night. It is therefore likely to be exposed to aircraft noise of at least these levels.

Road Traffic Noise

- Most of the site is above 60dB $L_{Aeq,16\ hours}$ during the daytime, with the edges of the site close to the M23 (north of the site) subject to noise levels between 65 and 70dB $L_{Aeq,16hours}$.
- Most of the site is below 60dB L_{night} during the night-time, with the edges of the site closest to the M23 are subject to noise levels between 60 and 65dB L_{night}.

Industrial and Commercial Noise

- There are several industrial and commercial premises in and around the site that have the potential to create noise, that may affect the proposed uses at the site, including Elliott Metals, United Grab Hire and MSL Heat Treatment.
- The most sensitive receptors within the proposed development will be those associated with educational uses. Consideration should be given to locating these uses as far as possible from sources of noise such as busy roads and the airport.
- Noise levels at the proposed development site would be expected to be acceptable for commercial and educational uses.

It is likely that offices will require windows to be closed to achieve suitable internal sound levels, although that does not necessarily mean that the windows should be sealed. Whether this requires mechanical ventilation or can be achieved through a natural system will depend of the detail of exactly where the office is, its design and the ability to incorporate sound into a natural ventilation system.

6.6 Land Contamination

- Surface water features in the vicinity of the site comprise of several drainage ditches. The potential sensitivity of these receptors is deemed to be high.
- A large above ground oil storage tank was observed to the north of Fernhill Lane. The integrity of the tank is unknown and therefore it may have leaked into the underlying soil. Several other, domestic size oil storage tanks were observed across the site.
- There is the potential of hydrocarbon impact from fuel oils/lubricant leakage from the land uses on site. Additionally, it's possible that the Made Ground beneath the site might be contaminated by asbestos and other materials. Areas of present and historical land use may have elevated levels of residual pesticides, herbicides and insecticides.

- The site and environs are predominately considered as Very Low to Low risk with respect to contamination, with this increasing to Moderate in areas that have previously been developed.
- A Phase II intrusive investigation to assess potential geo-environmental risks is recommended. It would be recommended to scope the investigation to provide geotechnical design data as part of the ground investigation to inform detailed design.

6.7 Sustainability and Energy

Sustainability Strategy

- As a demonstration of the commitment to sustainable design and construction, the business campus with (B8, B1, C1 and D1) spaces will be designed to achieve a BREEAM 2018 'Excellent' rating (fully fitted).
- The conference/hotel spaces (C1) and education spaces (D1) will be designed to achieve a BREEAM 2018 'Very Good' rating as a minimum, considering the limitations due to the speculative nature of these shell only spaces.
- An Excellent rating could be achieved if the future tenants undertake a further BREEAM Assessment of the Fit Out.

Management

- The project delivery stakeholders will meet to identify and define roles, responsibilities for each of the key phases of project delivery.

Health and Wellbeing

- The development will be designed to encourage a healthy and safe internal and external environment. To ensure daylighting, artificial internal and external lighting and occupant controls will be considered at the design stage.

Transportation and Connectivity

- The site is bounded and interspersed by a network of footways and POS that offer connection to a range of local features, amenities, bus links, train network and other and public transport facilities.

Water

- Reducing the consumption of potable water will be a significant constraint in the design process. Water use will be reduced as much as possible mainly through the specification of efficient sanitary ware and water efficient fittings.

Waste

- A pre-demolition audit will be undertaken to maximise the recovery of materials from demolition for subsequent high grade / value applications. The principal contractor will develop a Resource Management Plan (RMP) covering non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication generated by

building's design and construction. A commitment to achieving a reduction in construction waste per 100m2 (GIA) will be made.

Energy

Some of the options that can be considered for the Gatwick Green development are:

- Low carbon heating via district heat networks; off-gas grid homes; hydrogen injection into the natural gas grid; new-build homes on hydrogen grid.
- Energy saving and efficiency via off-gas grid homes; energy efficiency in homes.
- Renewable generation: Solar and microgrid; car parks - solar potential; Biofuel.
- Smart Energy System: Solar and microgrid; Housing and community microgrids; EV charging & hydrogen-fuelling infrastructure; supporting CO2 capture.
- Transport Revolution: EV charging & hydrogen-fuelling infrastructure; Compressed natural gas (CNG) fleet fuelling.

6.8 Utilities

Power

- There is enough power within the strategic power network to supply the proposed development. Upgrades to the local EDF HV network would be needed as part of the construction network.

Gas Network

- Several its SGN gas mains are located close to or within the site.
- Peak gas demand for the development, if a conventional energy strategy is adopted has been estimated to be 8MW.
- Certain sustainable energy technologies can have the effect of increasing gas demands, such as gas-fired, combined heat and power (CHP), which could see the peak gas demand increase to 13MW.
- SGN has confirmed its network has the capacity to supply up to 20MW.
- There is enough capacity in the gas network to ensure the sites gas requirements can be met without the need for any off-site works.

ICT Infrastructure

- The services and networks at the Gatwick Green development will be both public and private and will operate on much the same basis as elsewhere in the South East.
- The fixed telecoms requirements for the development can be met as required. Liaison will be required with the relevant telecoms providers to ensure that a timely supply is provided.
- Provision for a shared telecom ducting infrastructure to support the operator's requirements ensures that the requirements of multiple operators can be accommodated in an efficient manner in terms of space required within the utilities corridors.
- There are various options available to the developer for the installation of the ducting infrastructure and associated fibre cabling; of which some may result in a revenue stream.

- On a development of this scale, consideration of the infrastructure requirements to support wireless, particularly towers and masts, is a key requirement of the planning process.

Water Supply

- The water service for the proposed development area is provided by SES Water.
- Multiple Distribution, Trunk and Abandoned mains run parallel to the west and east borders of the site, adjacent to the B2036 and Peeks Brook Lane respectively, as well as bisecting the site though Fernhill Road.
- At this early stage in the development planning process, it is unclear on the exact demand in terms of volume in which the proposed development will have on water supply.
- Consultation with SES water will be essential in order to ensure enough water can be supplied to meet the demands of the proposed development.

Appendix A – EPUK & IAQM Planning for Air Quality Guidance

A1.1 The guidance issued by EPUK and IAQM [11] is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

"Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- *the severity of the impacts on air quality;*
- *the air quality in the area surrounding the proposed development;*
- *the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and*
- *the positive benefits provided through other material considerations".*

Recommended Best Practice

A1.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

"The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions".

A1.3 The guidance sets out several good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m^2 of commercial floorspace;
- are carried out on land of 1 ha or more.

A1.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new "street canyon", as this inhibits pollution dispersion;

- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;
- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000 m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNOx/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
    - Spark ignition engine: 250 mgNOx/Nm^3;
    - Compression ignition engine: 400 mgNOx/Nm^3;
    - Gas turbine: 50 mgNOx/Nm^3.
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNOx/Nm^3 and 25 mgPM/Nm^3.

A1.5 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

"It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential".

A1.6 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;

- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

Impacts of the Local Area on the Development

"There may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should consider:

- *the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;*
- *the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;*
- *the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular nitrogen dioxide), that would cause unacceptably high exposure for users of the new development; and*
- *the presence of a source of odour and/or dust that may affect amenity for future occupants of the development".*

Impacts of the Development on the Local Area

A1.7 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.

A1.8 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A1.9 If the above, do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage

2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of roads (i.e. changing the proximity of receptors to traffic lanes) where the change is 5m or more and the road is within an AQMA;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;
- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A1.10 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A1.11 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

"Typically, any combustion plant where the single or combined NOx emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30kW CHP unit operating at <95mg/Nm^3.

In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".

A1.12 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

"The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realized in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality".

A1.13 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

"The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer".

A1.14 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Appendix B – Site Photos

Plate 1: Metal merchants off Fernhill Road

Plate 2: Large tank off Fernhill Road

Plate 3: Farm off Fernhill Road

Plate 4: Storage drums in yard off Fernhill Road

Plate 5: Standing water on site	*Plate 6: Domestic oil tanks on site*

Plate 7: Metal heat treatment works off Balcombe Road	*Plate 8: Substation*

Plate 9: Fly tip yard, off site to the north east	*Plate 10: Vehicle repair workshop, offsite to the south east*

Appendix C – Environmental Data Reports

clarkebond

Clarkebond UK Limited

The Cocoa House, 129 Cumberland Road,
Bristol, BS1 6UY

Report Reference: EMS-CB-580364_778883

Your Reference: EMS_580364_778883

Report Date 28 Nov 2019

Report Delivery Method: Email - pdf

Geo Insight

Address: GatwickGreen,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000 quoting the above Groundsure reference number.

Yours faithfully,

Clarkebond (UK) Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**GatwickGreen,**
Date:	**28 Nov 2019**
Reference:	**EMS-CB-580364_778883**
Client:	**Clarkebond UK Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	08-May-2018
Grid Reference:	529921,141392
Site Size:	87.0051ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	14	23	31	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	1	0	0	1

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	2	0	0	0	1
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

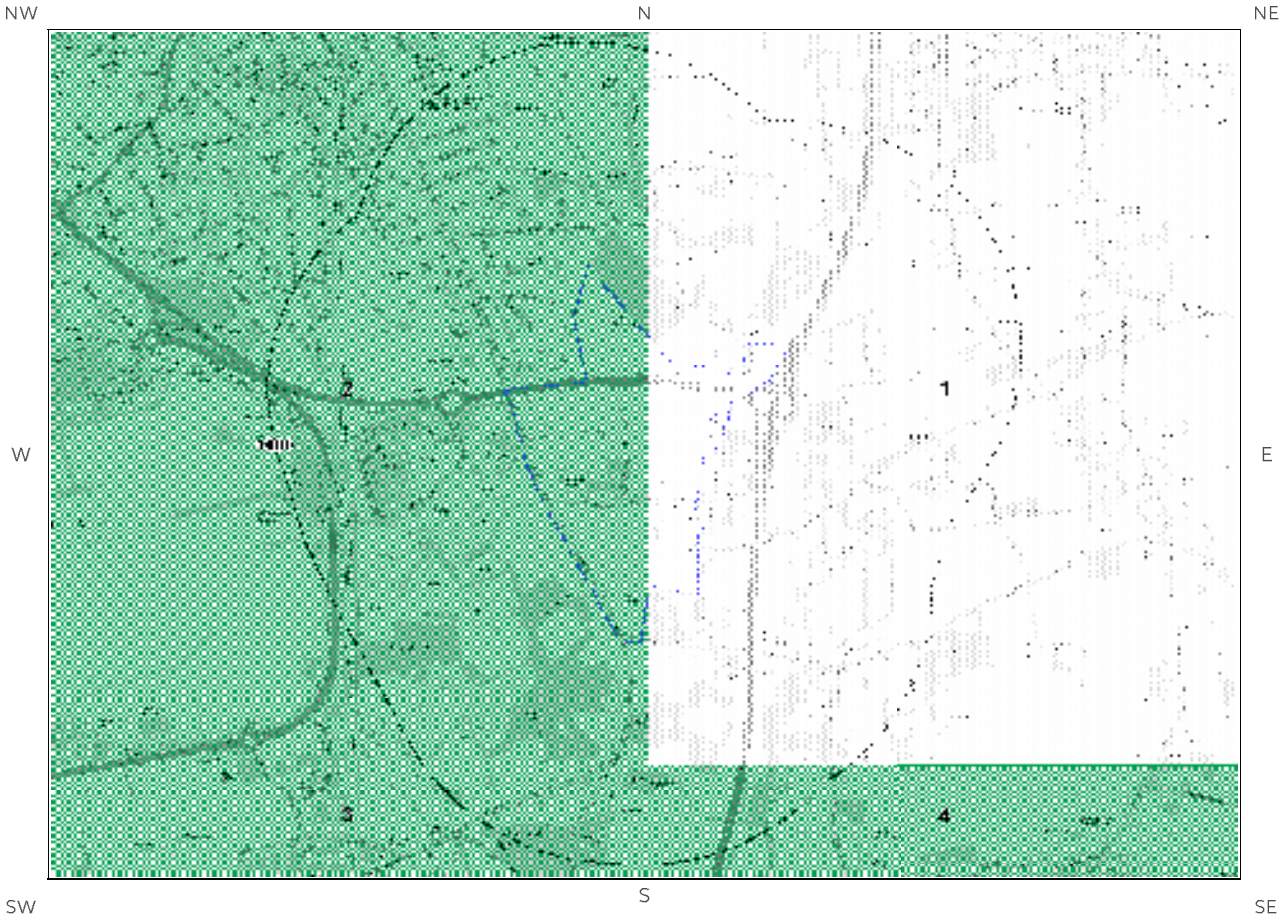
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	28	15	36

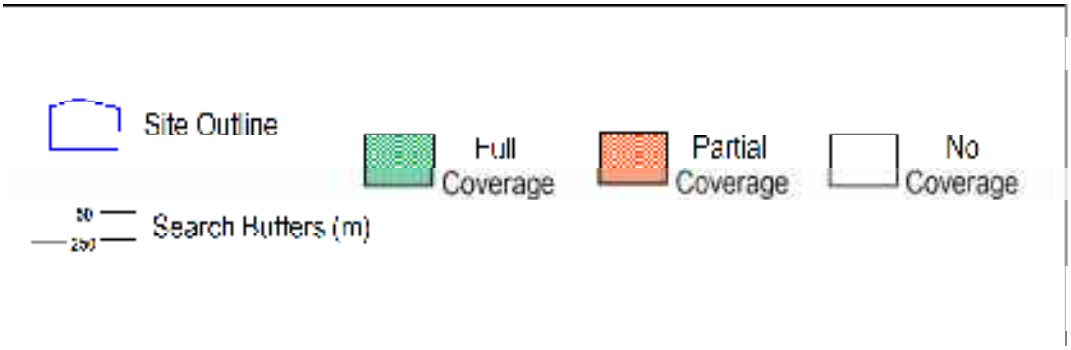
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	35	6	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend



Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage
2	0.0	Some deposits are mapped	Full	Full	No coverage
3	553.0	Some deposits are mapped	Full	Full	No coverage
4	554.0	No deposits are mapped	Full	Full	No coverage

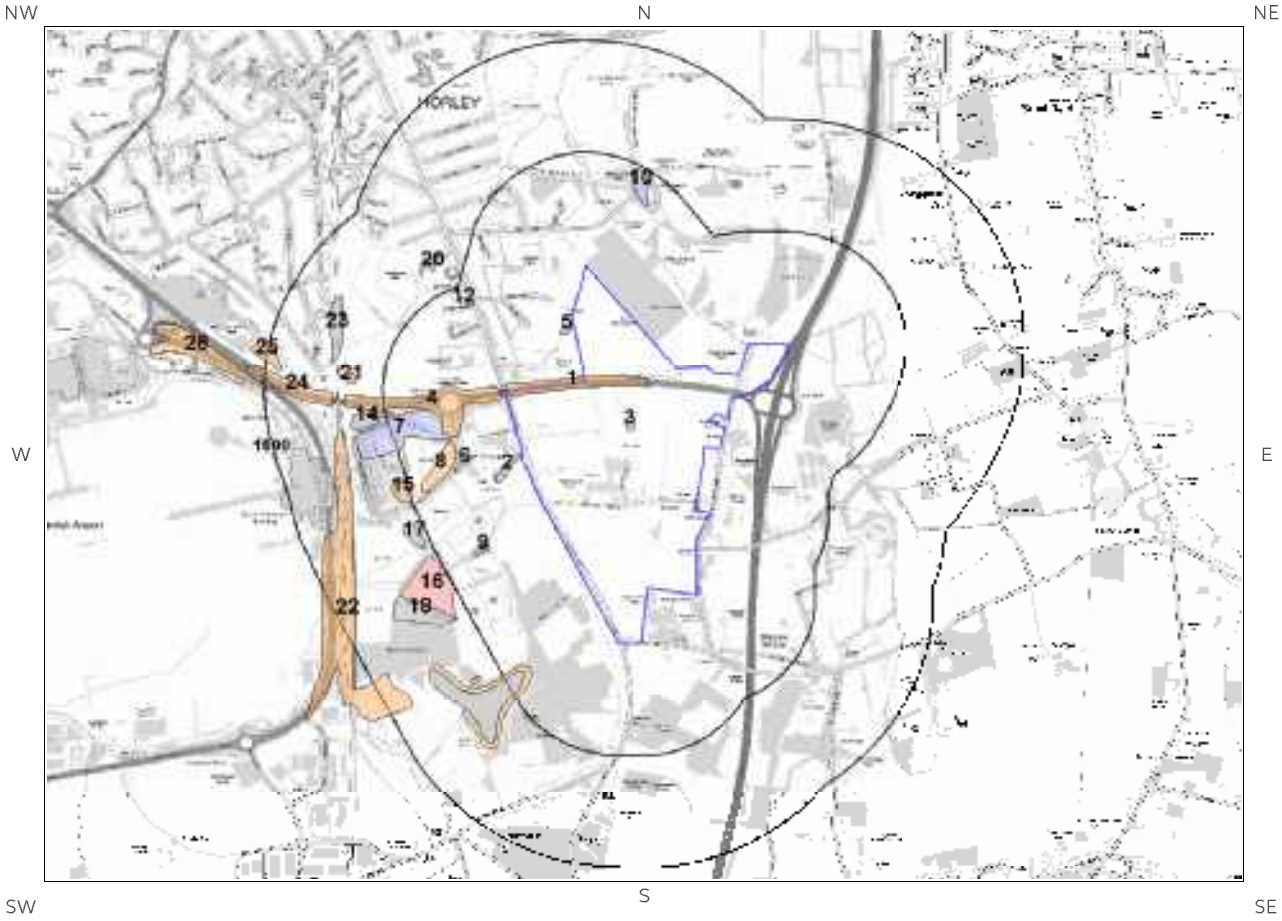
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

Site Outline

Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

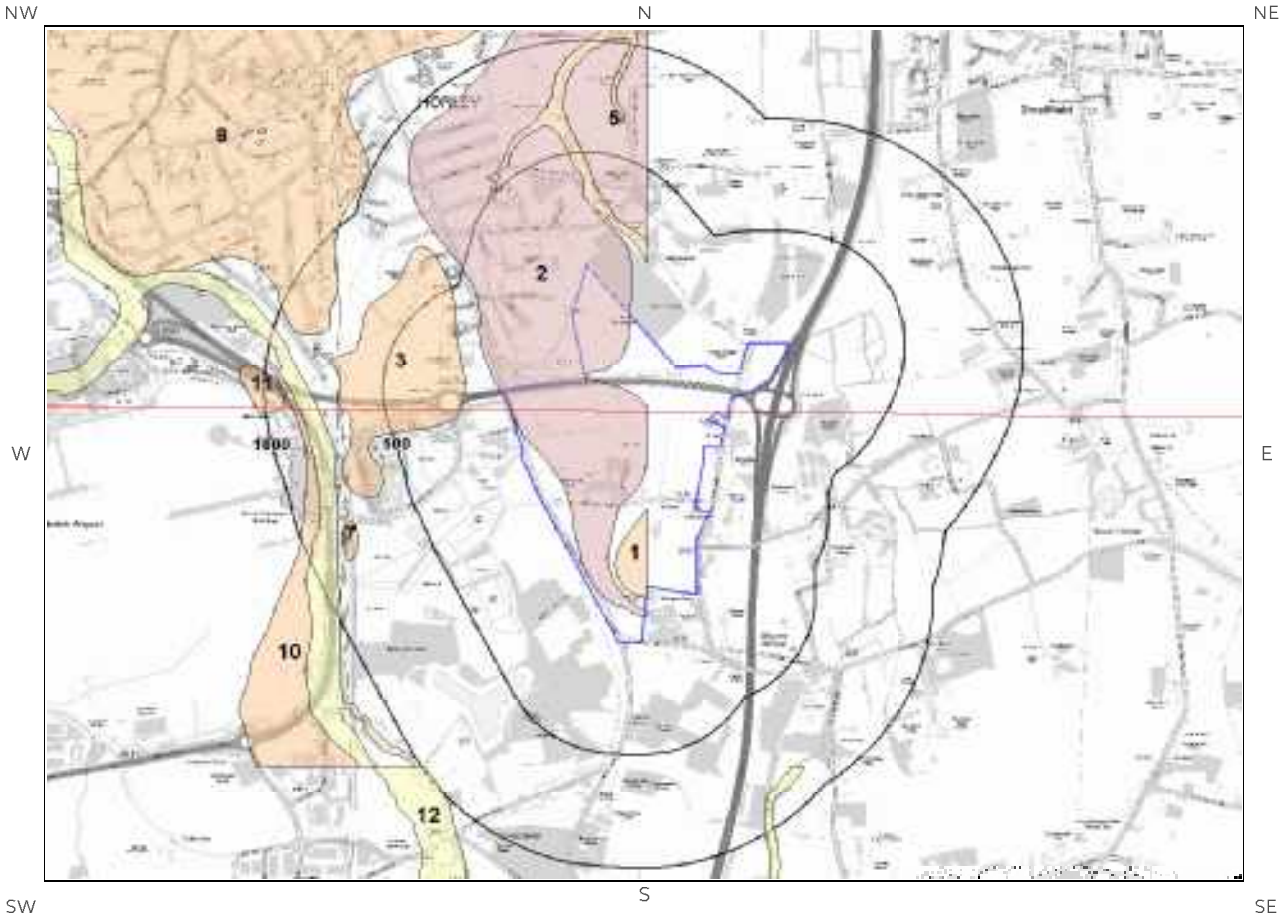
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	0.0	On Site	WGR-VOID	Worked Ground (Undivided)	Void
3	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	12.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	12.0	W	WGR-VOID	Worked Ground (Undivided)	Void
6	193.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	255.0	W	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
8	264.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	287.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	367.0	NE	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
11A	385.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
12	402.0	N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13A	414.0	SW	WGR-VOID	Worked Ground (Undivided)	Void
14	465.0	W	WGR-VOID	Worked Ground (Undivided)	Void
15	487.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

Site Outline

Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
2	0.0	On Site	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	154.0	W	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
4	208.0	NE	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
5	238.0	NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

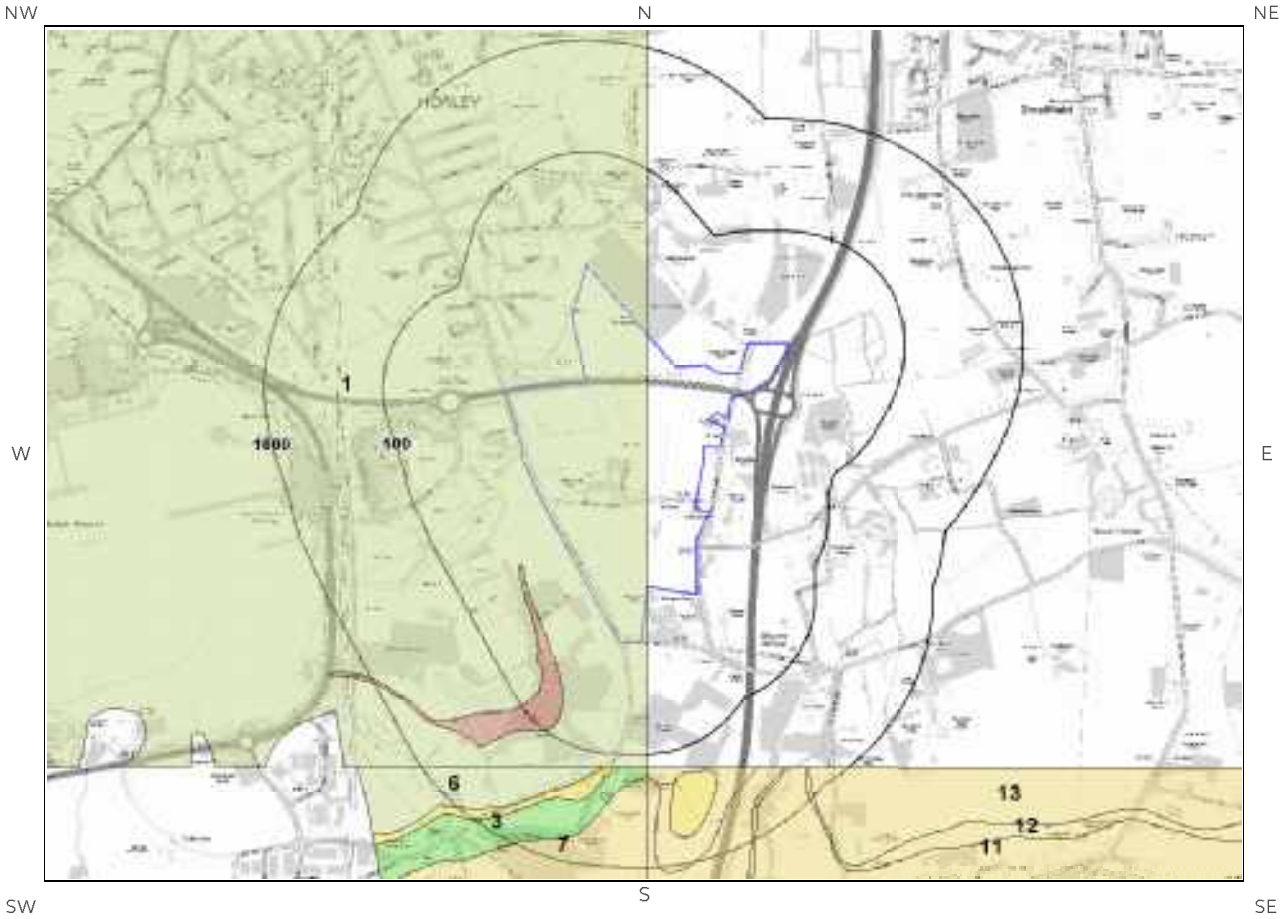
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

Site Outline

Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	WC-MDST	Weald Clay Formation - Mudstone	Barremian Age - Hauterivian Age
2	203.0	SW	WC-FESTC	Weald Clay Formation - Clay-ironstone	Barremian Age - Hauterivian Age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

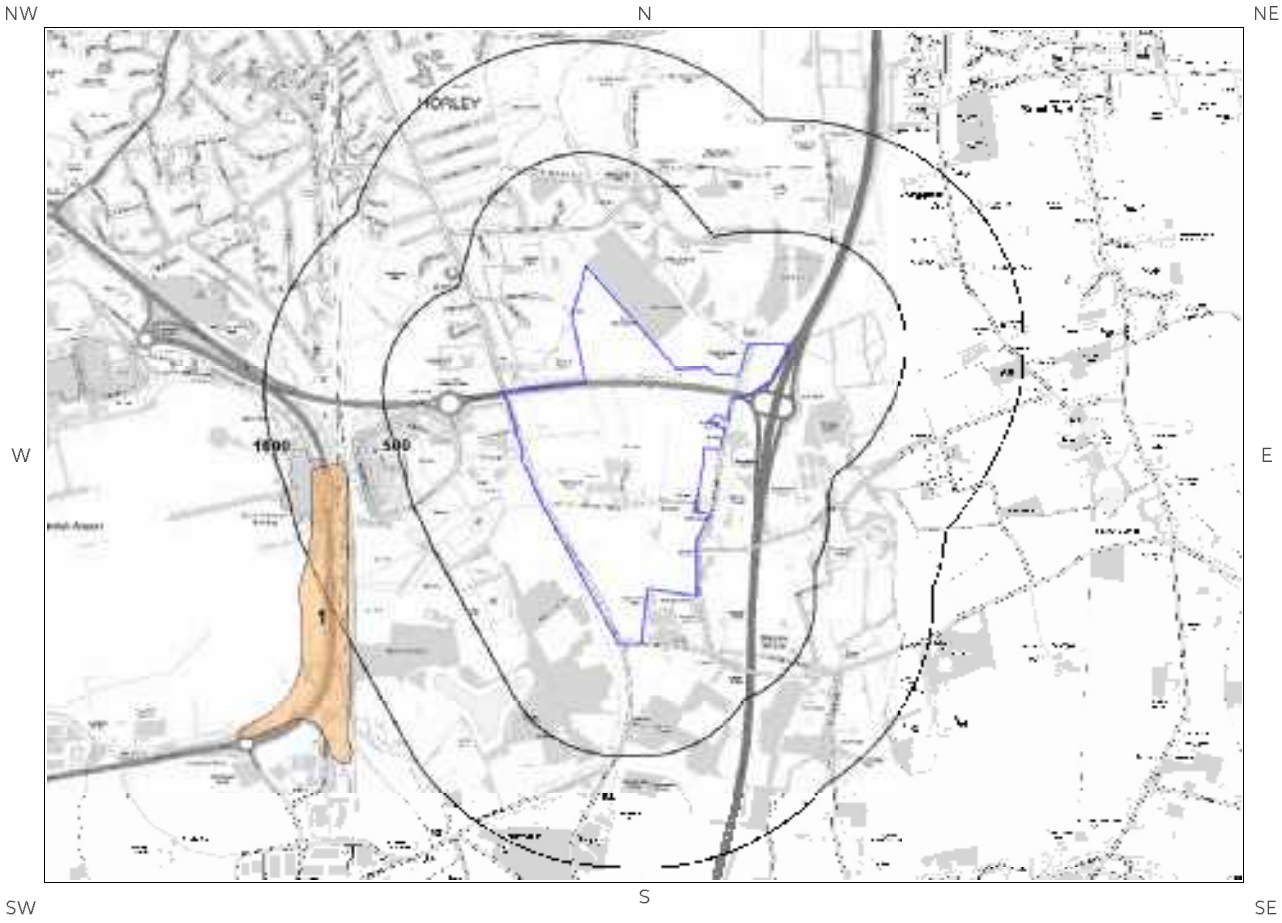
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 302

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

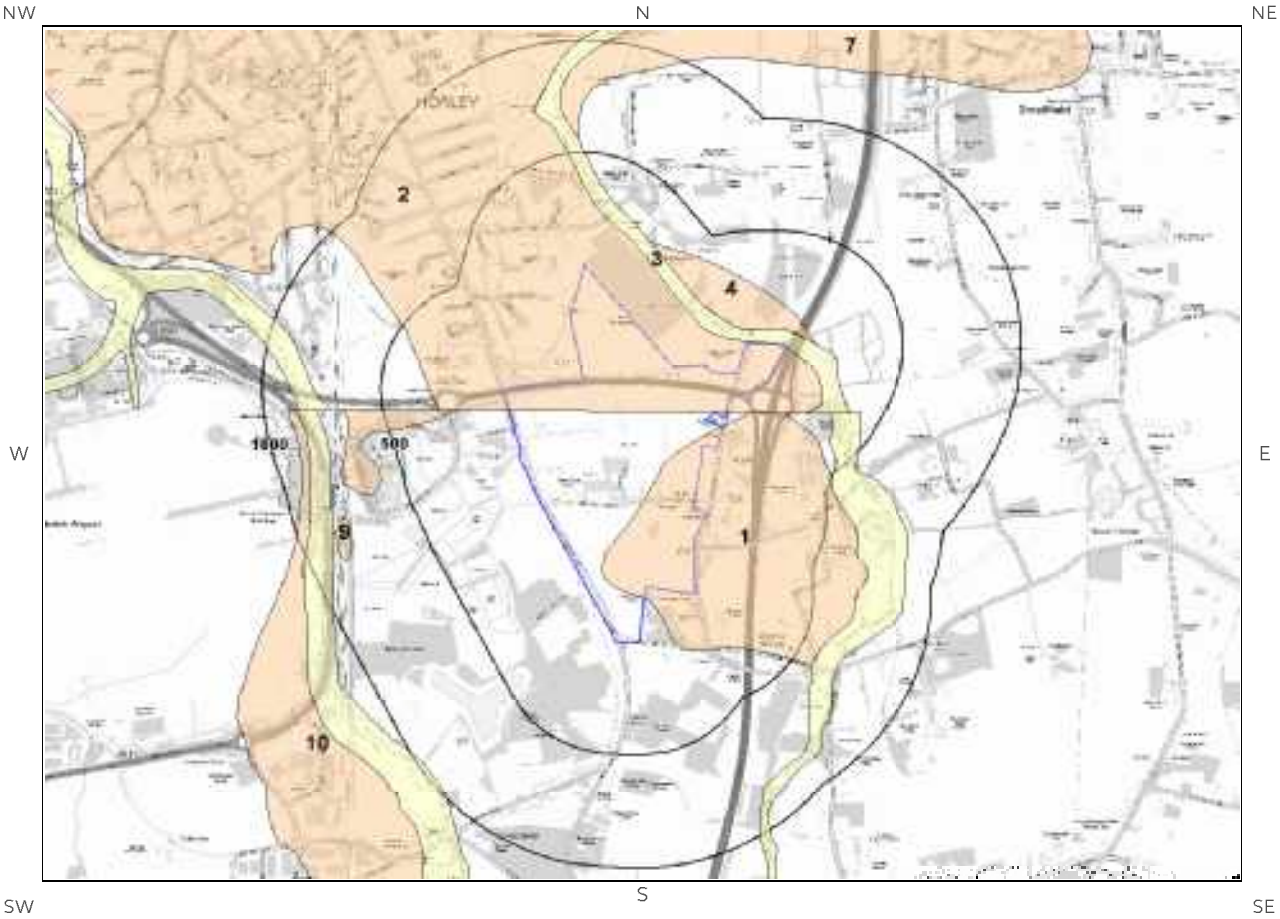
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



Site Outline

Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MO1-XSV	RIVER TERRACE DEPOSITS, 1 (MOLE)	SAND AND GRAVEL
2	0.0	On Site	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
3	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
4	58.0	NE	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
5	223.0	SW	MO2-XSV	RIVER TERRACE DEPOSITS, 2 (MOLE)	SAND AND GRAVEL
6	302.0	SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	High	Very Low
0.0	On Site	Intergranular	Very High	High
0.0	On Site	Intergranular	Very High	High
0.0	On Site	Intergranular	Very High	High
0.0	On Site	Intergranular	Very High	High

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

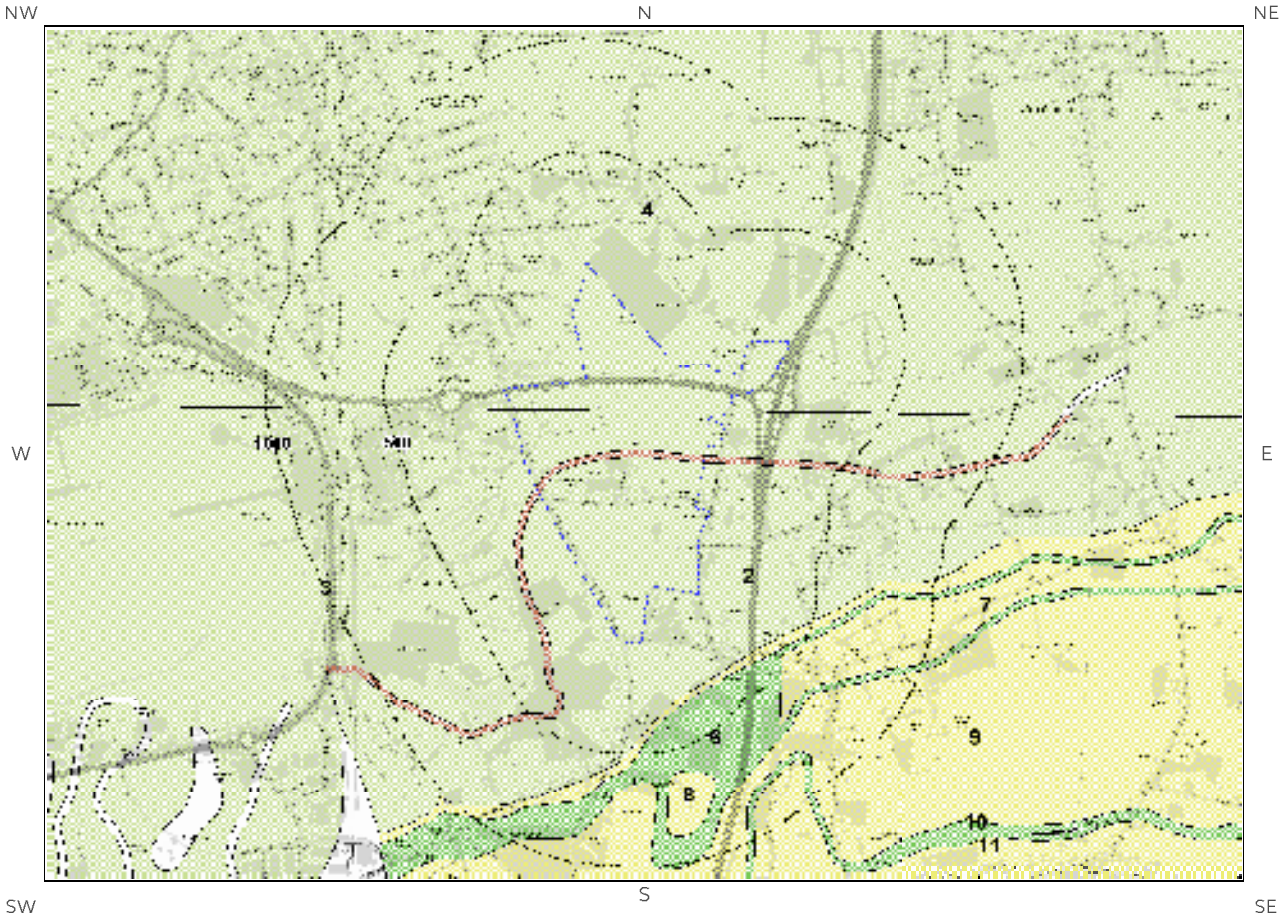
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



Site Outline

Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 302

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	WC-FESTC	WEALD CLAY FORMATION - CLAY-IRONSTONE	HAUTERIVIAN
2	0.0	On Site	WC-MDST	WEALD CLAY FORMATION - MUDSTONE	HAUTERIVIAN
3	0.0	On Site	WC-MDST	WEALD CLAY FORMATION - MUDSTONE	HAUTERIVIAN
4	0.0	On Site	WC-MDST	WEALD CLAY FORMATION - MUDSTONE	HAUTERIVIAN
5	292.0	SE	UTW-STMD	UPPER TUNBRIDGE WELLS SAND - SANDSTONE AND MUDSTONE	VALANGINIAN
6	325.0	SE	UTW-MDST	UPPER TUNBRIDGE WELLS SAND - MUDSTONE	VALANGINIAN
7	447.0	SE	UTW-SDSL	UPPER TUNBRIDGE WELLS SAND - SANDSTONE AND SILTSTONE, INTERBEDDED	VALANGINIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Low	Low
0.0	On Site	Fracture	Low	Very Low
0.0	On Site	Fracture	Low	Very Low
0.0	On Site	Fracture	Low	Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

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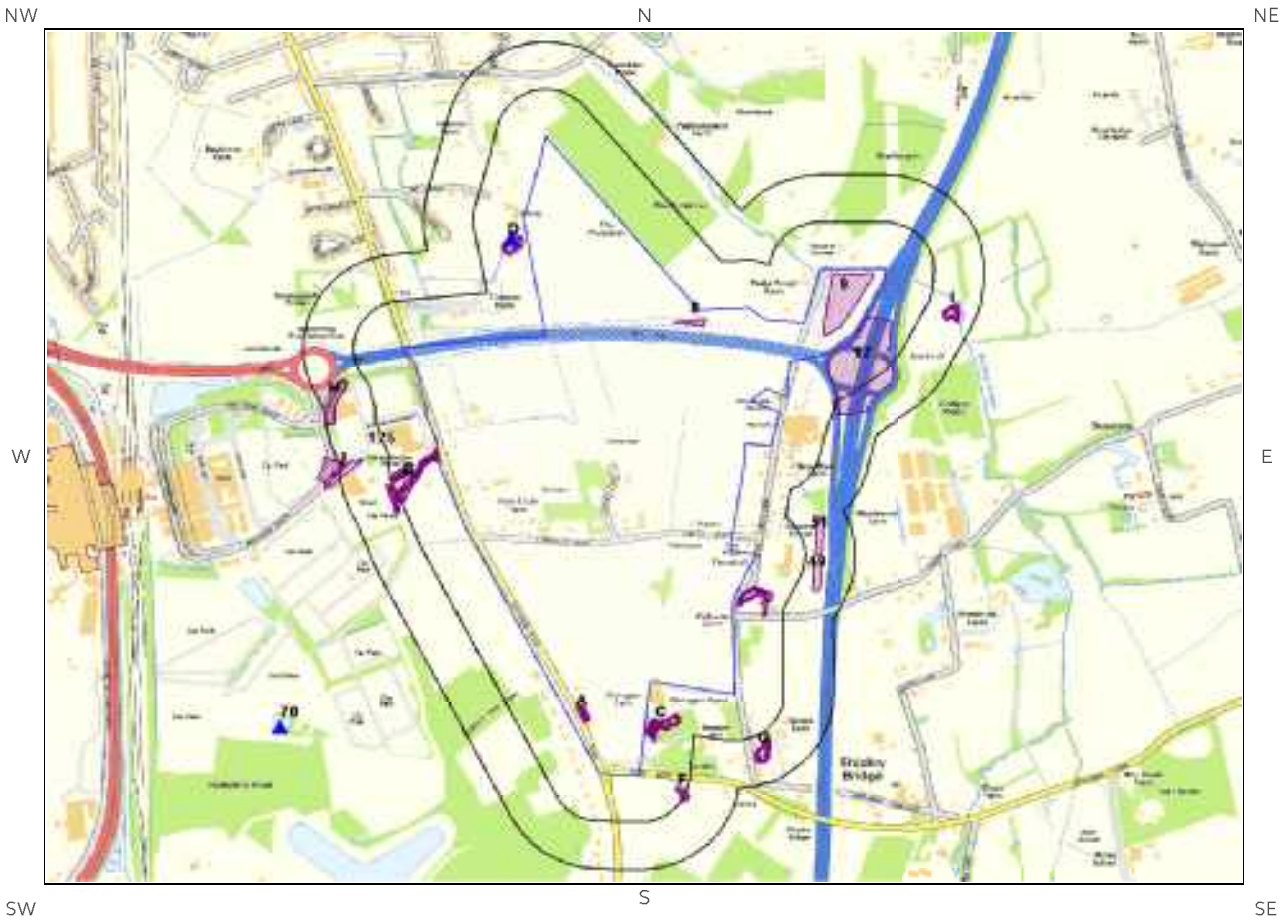
4 Ground Workings map



Ground Workings Legend

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	529829 140712	Pond	1914
2A	0.0	On Site	529829 140712	Pond	1896
3A	0.0	On Site	529836 140718	Pond	1933
4A	0.0	On Site	529836 140718	Pond	1933
5B	0.0	On Site	529410 141332	Water Body	1914
6B	0.0	On Site	529410 141332	Water Body	1896
7A	0.0	On Site	529839 140715	Pond	1870
8	0.0	On Site	530101 141752	Pond	1978
9	0.0	On Site	530500 141798	Pond	1978
10B	0.0	On Site	529420 141341	Pond	1987
11B	0.0	On Site	529412 141338	Pond	1870
12B	0.0	On Site	529420 141341	Pond	1989
13A	0.0	On Site	529842 140715	Pond	1914
14B	0.0	W	529397 141331	Water Body	1976
15C	2.0	E	529994 140673	Pond	1896
16C	2.0	E	529994 140673	Pond	1914
17	4.0	SE	530532 141637	Cuttings	1978
18C	8.0	E	530036 140684	Pond	1870
19D	9.0	W	529660 141960	Pond	1987
20D	9.0	W	529660 141960	Pond	1989
21D	9.0	W	529662 141951	Pond	1976

ID	Distance (m)	Direction	NGR	Use	Date
22C	9.0	E	530037 140679	Pond	1933
23C	9.0	E	530037 140679	Pond	1909
24C	9.0	E	530037 140679	Pond	1933
25C	9.0	E	530037 140679	Pond	1896
26E	10.0	E	530228 141008	Pond	1896
27C	11.0	E	530035 140681	Pond	1955
28C	11.0	E	530039 140685	Pond	1914
29E	13.0	E	530248 141026	Pond	1870
30C	13.0	E	530040 140683	Pond	1978
31E	18.0	SE	530253 141034	Pond	1914
32D	18.0	W	529656 141955	Pond	1977
33E	20.0	SE	530271 141033	Pond	1914
34E	20.0	SE	530253 141030	Pond	1955
35D	20.0	W	529654 141956	Clay Pit	1896
36E	21.0	SE	530254 141031	Pond	1978
37B	37.0	W	529408 141332	Pond	1977
38B	79.0	W	529377 141347	Pond	1896
39B	79.0	W	529377 141347	Pond	1914
40B	81.0	W	529376 141343	Pond	1870
41B	83.0	W	529378 141345	Pond	1987
42B	83.0	W	529378 141345	Pond	1989
43B	83.0	W	529378 141345	Pond	1977
44B	85.0	W	529369 141349	Pond	1976
45B	87.0	W	529368 141349	Pond	1961
46F	99.0	E	530082 140502	Pond	1914
47F	99.0	E	530082 140502	Pond	1896
48F	106.0	E	530088 140502	Pond	1978
49	148.0	E	530421 141080	Unspecified Heap	1978
50G	149.0	SE	530287 140617	Pond	1870

ID	Distance (m)	Direction	NGR	Use	Date
51	150.0	E	530428 141186	Unspecified Heap	1978
52G	150.0	SE	530288 140620	Pond	1914
53G	155.0	SE	530283 140610	Pond	1955
54G	155.0	SE	530281 140610	Pond	1896
55G	155.0	SE	530281 140610	Pond	1914
56G	159.0	SE	530288 140611	Pond	1933
57G	159.0	SE	530288 140611	Pond	1909
58G	159.0	SE	530288 140611	Pond	1933
59G	159.0	SE	530288 140611	Pond	1896
60H	166.0	SW	529215 141542	Unspecified Heap	1976
61I	168.0	SE	530761 141779	Pond	1914
62H	169.0	SW	529214 141537	Unspecified Heap	1977
63I	169.0	SE	530758 141775	Pond	1896
64I	170.0	SE	530758 141770	Pond	1955
65I	170.0	SE	530762 141778	Pond	1914
66J	189.0	W	529236 141351	Unspecified Heap	1977
67J	231.0	W	529206 141359	Cuttings	1987
68J	231.0	W	529206 141359	Cuttings	1989

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

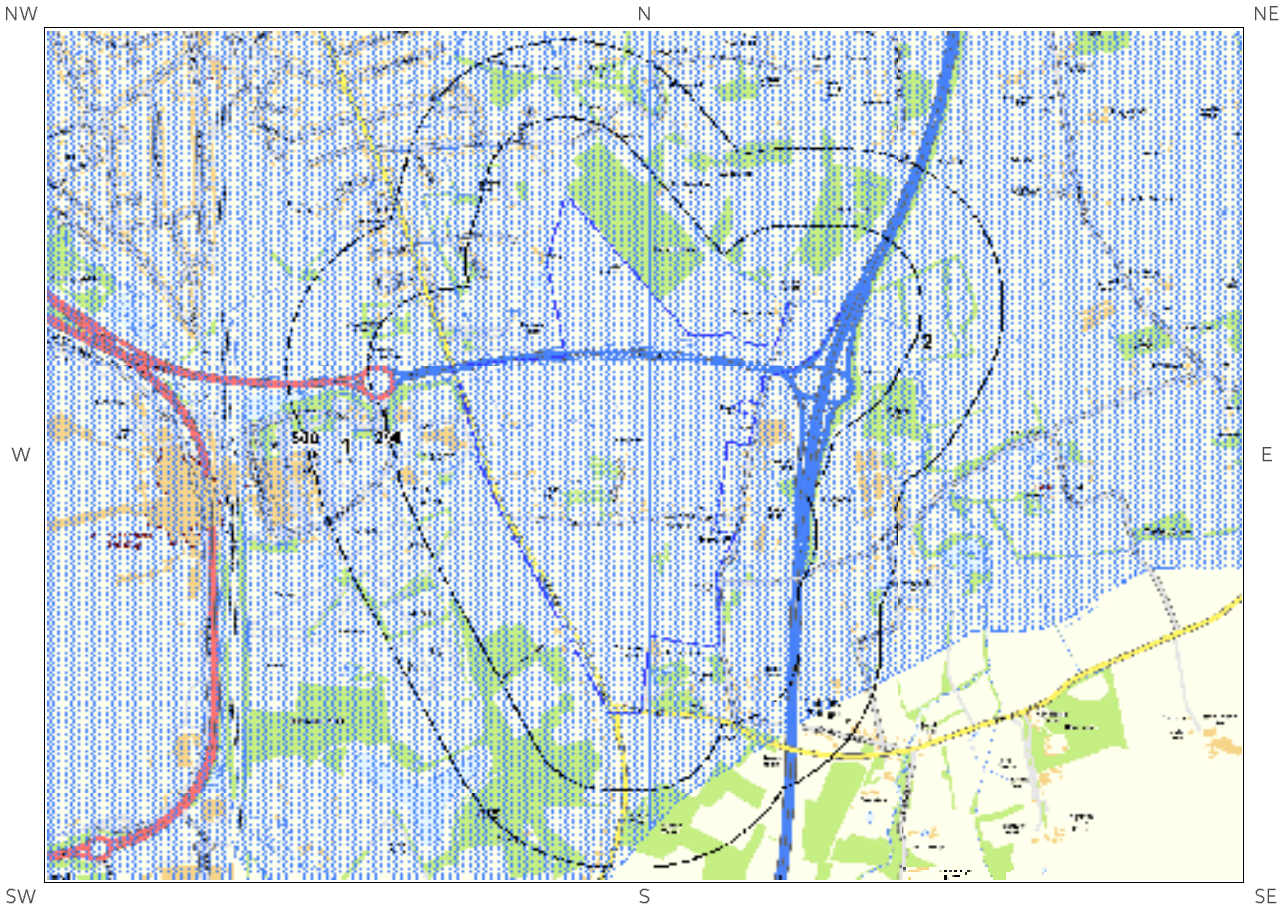
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
69D	40.0	W	529653 141972	Clay & Shale	Yewtree Cottage Clay Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
70	657.0	SW	529075 140680	Clay & Shale	Lamb's Brickworks	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Iron Ore	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
2	0.0	On Site	Not available	Iron Ore	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
Not shown	556.0	S	Not available	Iron Ore	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

Shrink Swell Clay Legend

6.2 Landslides map

Landslides Legend

Site Outline

Search Buffers (m)

No Data / Null

Negligible

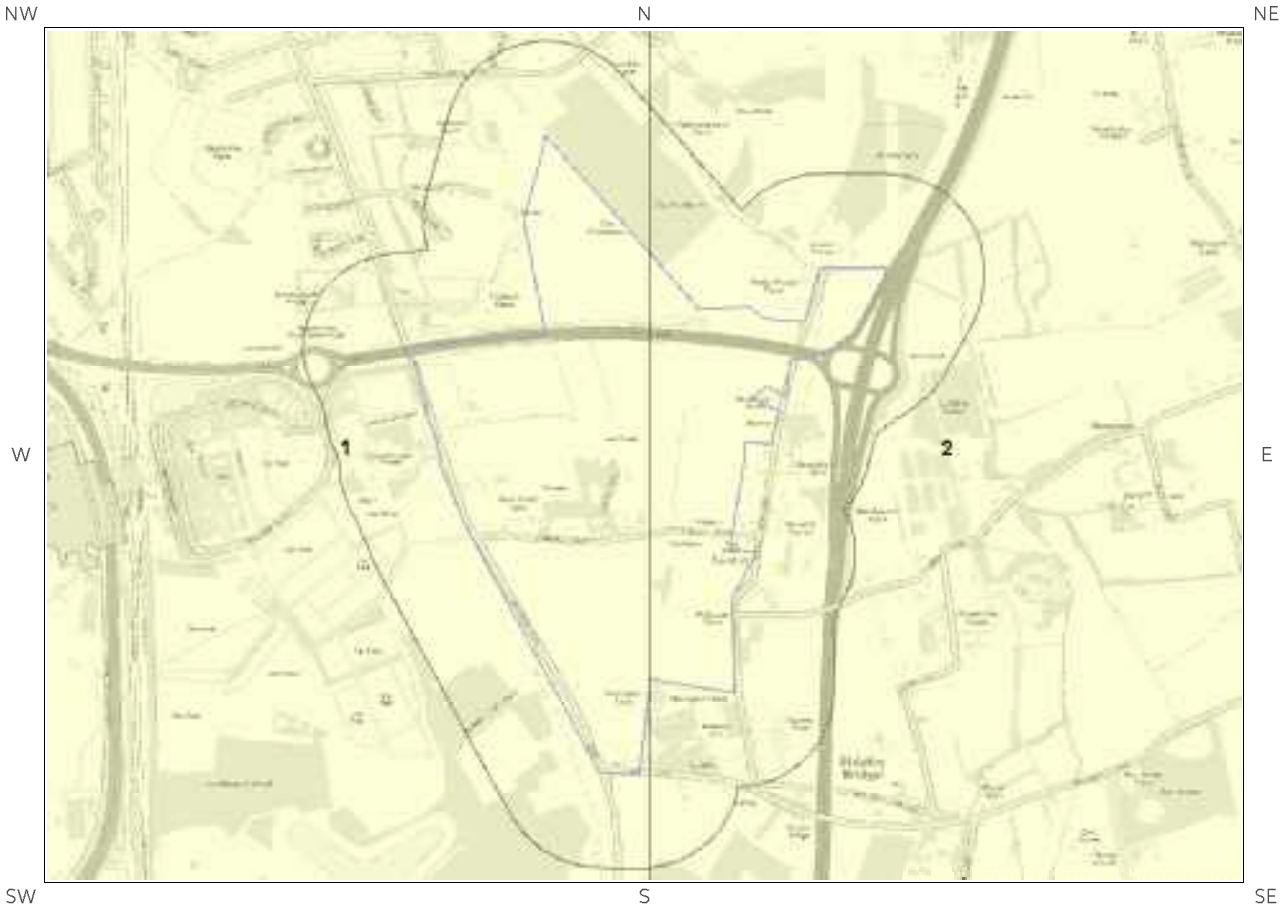
Very Low

Low

Moderate

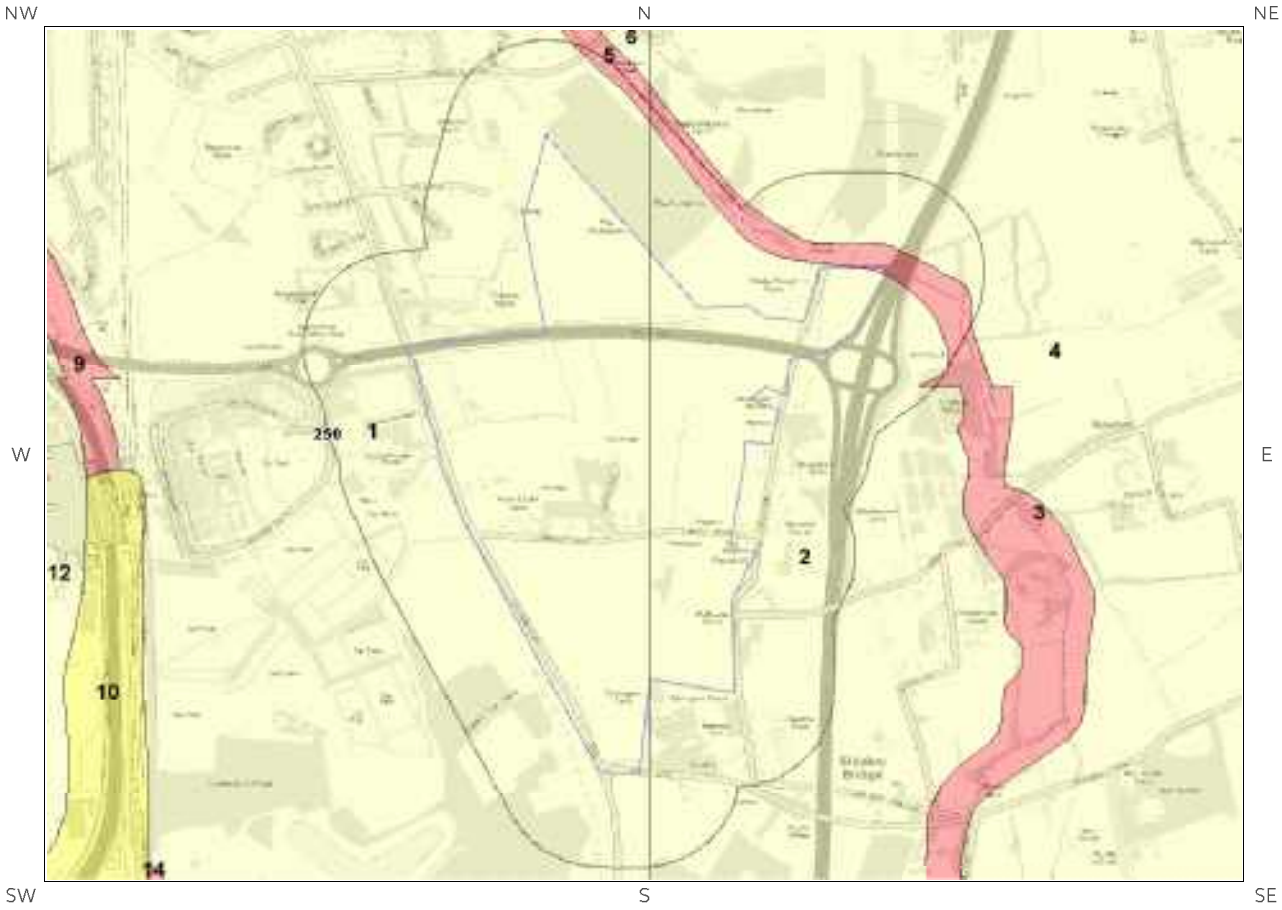
High

6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map



Compressible Deposits Legend

Site Outline

Search Buffers (m)

No Data / Null

Negligible

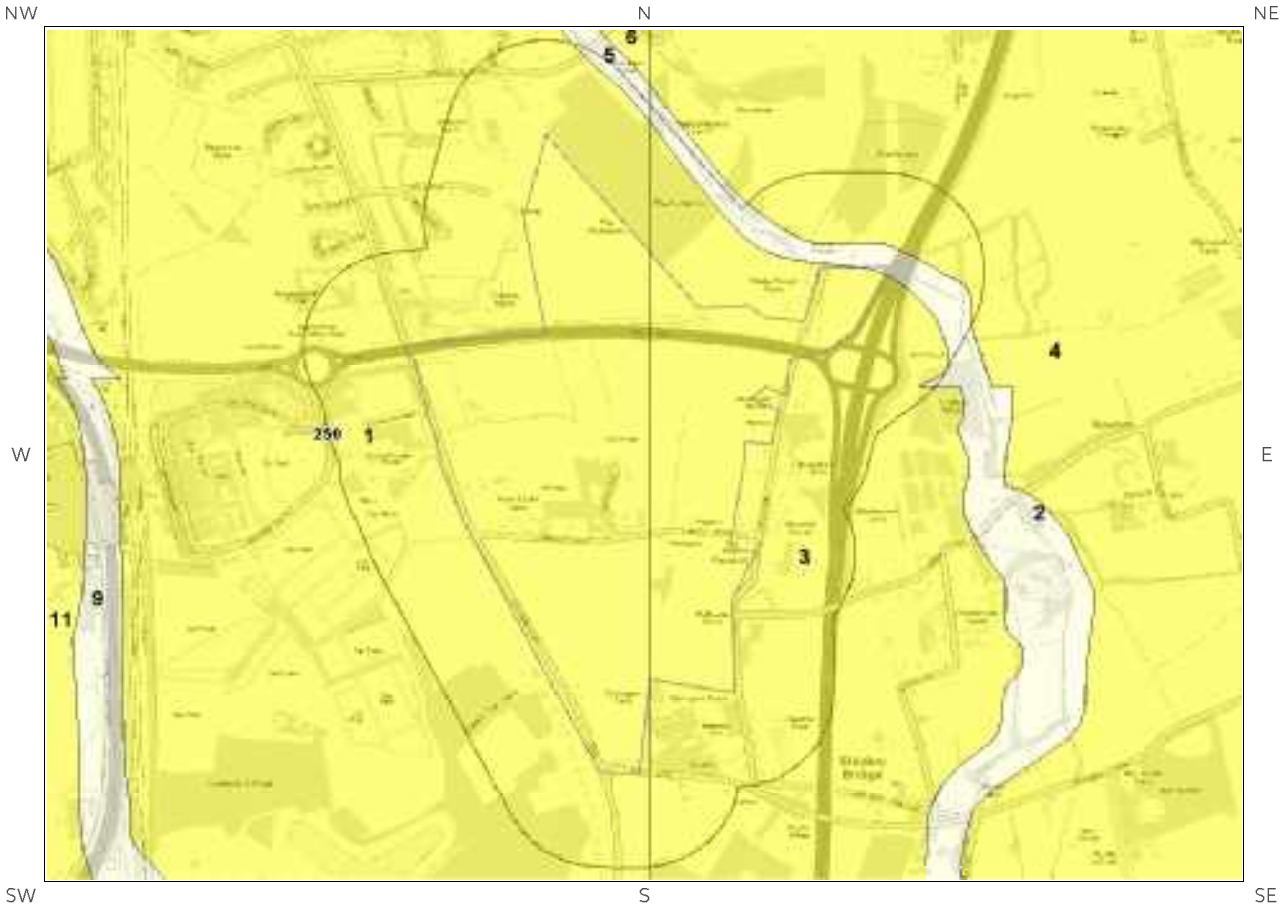
Very Low

Low

Moderate

High

6.5 Collapsible Deposits map



Collapsible Deposits Legend

Site Outline

Search Buffers (m)

No Data / Null

Negligible

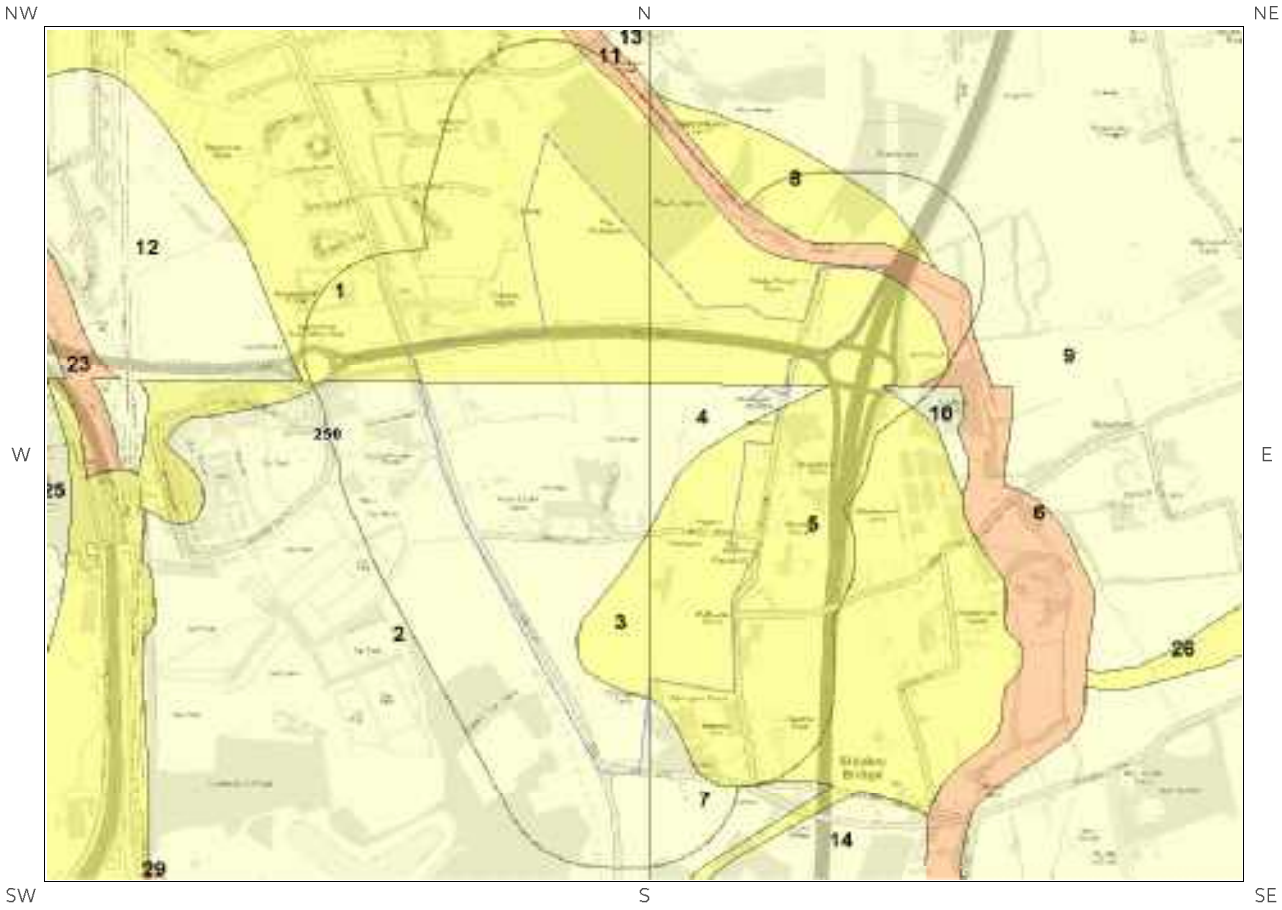
Very Low

Low

Moderate

High

6.6 Running Sand map



Running Sand Legend

Site Outline

Search Buffers (m)

No Data / Null

Negligible

Very Low

Low

Moderate

High

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
3	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.
4	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
5	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

* This includes an automatically generated 50m buffer zone around the site

ID	Distance (m)	Direction	Hazard Rating	Details
6	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
2	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
3	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
3	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

ID	Distance (m)	Direction	Hazard Rating	Details
3	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
4	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
5	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
6	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
7	3.0	E	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map

Borehole Records Legend

Site Outline

Borehole Locations

125

Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 79

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1A	0.0	On Site	529509 141682	TQ24SE89	6	M23 PREVENTATIVE MEASURES WS5-7
2A	0.0	On Site	529510 141677	TQ24SE90	3	M23 PREVENTATIVE MEASURES WS5-8
3A	0.0	On Site	529480 141676	TQ24SE91	5	M23 PREVENTATIVE MEASURES WS5-9
4B	0.0	On Site	529573 141689	TQ24SE86	3	M23 PREVENTATIVE MEASURES WS5-4
5A	0.0	On Site	529480 141672	TQ24SE81	3	M23 PREVENTATIVE MEASURES WS5-10
6D	0.0	On Site	530290 141690	TQ34SW53	20.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
7C	0.0	On Site	529445 141671	TQ24SE82	5	M23 PREVENTATIVE MEASURES WS5-11
8B	0.0	On Site	529578 141691	TQ24SE92	1	M23 PREVENTATIVE MEASURES TP5-1
9B	0.0	On Site	529573 141691	TQ24SE85	5	M23 PREVENTATIVE MEASURES WS5-3
10B	0.0	On Site	529593 141694	TQ24SE80	4.5	M23 PREVENTATIVE MEASURES WS5-1
11C	0.0	On Site	529445 141666	TQ24SE83	3	M23 PREVENTATIVE MEASURES WS5-12
12D	0.0	On Site	530270 141700	TQ34SW71	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
13E	0.0	On Site	530350 141650	TQ34SW51	20	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
14	0.0	On Site	529820 141220	TQ24SE44	No details	FERNHILL NURSERY
15A	0.0	On Site	529528 141682	TQ24SE88	3	M23 PREVENTATIVE MEASURES WS5-6
16A	0.0	On Site	529528 141685	TQ24SE87	5	M23 PREVENTATIVE MEASURES WS5-5
17B	0.0	On Site	529593 141690	TQ24SE84	3	M23 PREVENTATIVE MEASURES WS5-2
18E	0.0	On Site	530330 141650	TQ34SW67	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
19F	0.0	On Site	530440 141690	TQ34SW55	10.1	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
20D	0.0	On Site	530260 141660	TQ34SW68	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
21	0.0	On Site	530210 141670	TQ34SW52	10	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
22F	0.0	On Site	530460 141700	TQ34SW72	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
23	0.0	On Site	530120 141710	TQ34SW69	2.75	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
24E	0.0	On Site	530360 141680	TQ34SW54	21	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
25E	0.0	On Site	530380 141690	TQ34SW24	12.19	LONDON-CRAWLEY M23 BH331
26D	0.0	On Site	530270 141700	TQ34SW70	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
27G	0.0	On Site	530530 141760	TQ34SW128	2	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
28	0.0	On Site	529850 141760	TQ24SE1	6.7	LONDON-CRAWLEY M23 BH332 HORLEY
29C	5.0	N	529400 141690	TQ24SE2	12.2	LONDON-CRAWLEY M23 BH333 HORLEY
30G	7.0	SE	530530 141730	TQ34SW96	12.3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
31F	7.0	SE	530480 141690	TQ34SW73	2.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
32	8.0	SW	529390 141660	TQ24SE3	12	LONDON-CRAWLEY M23 BH334 HORLEY
33I	9.0	E	530600 141870	TQ34SW126	1.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
34F	11.0	SE	530460 141670	TQ34SW56	18	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
35E	11.0	S	530370 141640	TQ34SW66	1.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
36G	20.0	SE	530540 141720	TQ34SW95	11.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
37H	27.0	SE	530580 141780	TQ34SW20	12.19	LONDON-CRAWLEY M23 BH329
38K	30.0	S	530410 141630	TQ34SW65	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
39H	33.0	SE	530570 141750	TQ34SW127	2.7	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
40G	37.0	SE	530570 141740	TQ34SW21	12.19	LONDON-CRAWLEY M23 BH330
41I	39.0	E	530630 141870	TQ34SW43	6.09	LONDON-CRAWLEY M23 BH532
42J	41.0	SE	530550 141700	TQ34SW97	7.55	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
43J	49.0	SE	530510 141660	TQ34SW74	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
44K	75.0	S	530440 141590	TQ34SW49	18.5	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
45L	77.0	SE	530610 141730	TQ34SW22	6.55	LONDON-CRAWLEY M23 BH78
46	83.0	S	530430 141580	TQ34SW50	9	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
47L	87.0	SE	530600 141690	TQ34SW129	2.4	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
48	89.0	SE	530550 141640	TQ34SW23/A-B	6.7	LONDON-CRAWLEY M23 BH330A,330B
49N	92.0	W	529360 141460	TQ24SE66	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH6
50	93.0	W	529380 141380	TQ24SE61	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH1
51L	99.0	SE	530650 141760	TQ34SW19	12.19	LONDON-CRAWLEY M23 BH328
52M	99.0	E	530440 141530	TQ34SW64	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
53	101.0	SE	530490 141580	TQ34SW62	2.8	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
54L	114.0	SE	530630 141690	TQ34SW94	12.7	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
55	114.0	NE	530690 141950	TQ34SW93	10	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
56M	119.0	E	530460 141530	TQ34SW63	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
57N	131.0	W	529330 141430	TQ24SE63	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH3
58O	137.0	E	530460 141480	TQ34SW60	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
59Q	144.0	SE	530370 141020	TQ34SW27	1.52	LONDON-CRAWLEY M23 HA.10
60R	152.0	W	529300 141450	TQ24SE65	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH5
61	154.0	W	529320 141370	TQ24SE62	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH2
62P	154.0	SE	530640 141630	TQ34SW57	3.1	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
63O	160.0	SE	530490 141490	TQ34SW61	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
64	161.0	E	530460 141380	TQ34SW48	8.25	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
65P	171.0	SE	530620 141590	TQ34SW46	17	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
66Q	179.0	SE	530420 141040	TQ34SW28	12.19	LONDON-CRAWLEY M23 BH339
67R	182.0	W	529280 141420	TQ24SE64	5	GATWICK AIRPORT PROPOSED OFFICE BLOCK BH4
68	187.0	SE	530580 141540	TQ34SW58	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
69	190.0	NE	530710 142040	TQ34SW18	5.79	LONDON-CRAWLEY M23 BH326
70Q	193.0	SE	530410 140990	TQ34SW40	4.57	LONDON-CRAWLEY M23 BH534
71	193.0	W	529500 142080	TQ24SE43	36	31 THE CLOSE HORLEY SURREY
72S	195.0	E	530510 141440	TQ34SW25	6.09	LONDON-CRAWLEY M23 BH337
73	205.0	E	530470 141170	TQ34SW26	6.09	LONDON-CRAWLEY M23 BH337A
74T	211.0	SE	530440 141010	TQ34SW29	12.49	LONDON-CRAWLEY M23 BH339A
75	212.0	SE	530450 141270	TQ34SW59	3	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
76	220.0	N	530660 142100	TQ34SW125	2	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I.CONTRACT 2
77S	227.0	SE	530550 141460	TQ34SW47	15	M23 IMPROVEMENTS JUNCTIONS 8-9 G.I. CONTRACT 3
78	228.0	E	530440 140760	TQ34SW31	4.87	LONDON-CRAWLEY M23 BH339B
79T	238.0	SE	530470 141010	TQ34SW30	9.53	LONDON-CRAWLEY M23 BH79

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1A: scans.bgs.ac.uk/sobi_scans/boreholes/18897480
#2A: scans.bgs.ac.uk/sobi_scans/boreholes/18897481
#3A: scans.bgs.ac.uk/sobi_scans/boreholes/18897482
#4B: scans.bgs.ac.uk/sobi_scans/boreholes/18897477
#5A: scans.bgs.ac.uk/sobi_scans/boreholes/18897472
#6D: scans.bgs.ac.uk/sobi_scans/boreholes/595045
#7C: scans.bgs.ac.uk/sobi_scans/boreholes/18897473
#8B: scans.bgs.ac.uk/sobi_scans/boreholes/18897483
#9B: scans.bgs.ac.uk/sobi_scans/boreholes/18897476
#10B: scans.bgs.ac.uk/sobi_scans/boreholes/18897471
#11C: scans.bgs.ac.uk/sobi_scans/boreholes/18897474
#12D: scans.bgs.ac.uk/sobi_scans/boreholes/595063
#13E: scans.bgs.ac.uk/sobi_scans/boreholes/595043
#14: scans.bgs.ac.uk/sobi_scans/boreholes/584910
#15A: scans.bgs.ac.uk/sobi_scans/boreholes/18897479
#16A: scans.bgs.ac.uk/sobi_scans/boreholes/18897478
#17B: scans.bgs.ac.uk/sobi_scans/boreholes/18897475
#18E: scans.bgs.ac.uk/sobi_scans/boreholes/595059
#19F: scans.bgs.ac.uk/sobi_scans/boreholes/595047
#20D: scans.bgs.ac.uk/sobi_scans/boreholes/595060
#21: scans.bgs.ac.uk/sobi_scans/boreholes/595044
#22F: scans.bgs.ac.uk/sobi_scans/boreholes/595064
#23: scans.bgs.ac.uk/sobi_scans/boreholes/595061
#24E: scans.bgs.ac.uk/sobi_scans/boreholes/595046
#25E: scans.bgs.ac.uk/sobi_scans/boreholes/595016
#26D: scans.bgs.ac.uk/sobi_scans/boreholes/595062
#27G: scans.bgs.ac.uk/sobi_scans/boreholes/595120
#28: scans.bgs.ac.uk/sobi_scans/boreholes/584867
#29C: scans.bgs.ac.uk/sobi_scans/boreholes/584868
#30G: scans.bgs.ac.uk/sobi_scans/boreholes/595088
#31F: scans.bgs.ac.uk/sobi_scans/boreholes/595065
#32: scans.bgs.ac.uk/sobi_scans/boreholes/584869
#33I: scans.bgs.ac.uk/sobi_scans/boreholes/595118
#34F: scans.bgs.ac.uk/sobi_scans/boreholes/595048
#35E: scans.bgs.ac.uk/sobi_scans/boreholes/595058
#36G: scans.bgs.ac.uk/sobi_scans/boreholes/595087
#37H: scans.bgs.ac.uk/sobi_scans/boreholes/595012
#38K: scans.bgs.ac.uk/sobi_scans/boreholes/595057
#39H: scans.bgs.ac.uk/sobi_scans/boreholes/595119
#40G: scans.bgs.ac.uk/sobi_scans/boreholes/595013
#41I: scans.bgs.ac.uk/sobi_scans/boreholes/595035
#42J: scans.bgs.ac.uk/sobi_scans/boreholes/595089
#43J: scans.bgs.ac.uk/sobi_scans/boreholes/595066
#44K: scans.bgs.ac.uk/sobi_scans/boreholes/595041
#45L: scans.bgs.ac.uk/sobi_scans/boreholes/595014
#46: scans.bgs.ac.uk/sobi_scans/boreholes/595042
#47L: scans.bgs.ac.uk/sobi_scans/boreholes/595121
#48: scans.bgs.ac.uk/sobi_scans/boreholes/595015
#49N: scans.bgs.ac.uk/sobi_scans/boreholes/584932
#50: scans.bgs.ac.uk/sobi_scans/boreholes/584927
#51L: scans.bgs.ac.uk/sobi_scans/boreholes/595011
#52M: scans.bgs.ac.uk/sobi_scans/boreholes/595056
#53: scans.bgs.ac.uk/sobi_scans/boreholes/595054
#54L: scans.bgs.ac.uk/sobi_scans/boreholes/595086
#55: scans.bgs.ac.uk/sobi_scans/boreholes/595085
#56M: scans.bgs.ac.uk/sobi_scans/boreholes/595055

#57N: scans.bgs.ac.uk/sobi_scans/boreholes/584929
#58O: scans.bgs.ac.uk/sobi_scans/boreholes/595052
#59Q: scans.bgs.ac.uk/sobi_scans/boreholes/595019
#60R: scans.bgs.ac.uk/sobi_scans/boreholes/584931
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#63O: scans.bgs.ac.uk/sobi_scans/boreholes/595053
#64: scans.bgs.ac.uk/sobi_scans/boreholes/595040
#65P: scans.bgs.ac.uk/sobi_scans/boreholes/595038
#66Q: scans.bgs.ac.uk/sobi_scans/boreholes/595020
#67R: scans.bgs.ac.uk/sobi_scans/boreholes/584930
#68: scans.bgs.ac.uk/sobi_scans/boreholes/595050
#69: scans.bgs.ac.uk/sobi_scans/boreholes/595010
#70Q: scans.bgs.ac.uk/sobi_scans/boreholes/595032
#71: scans.bgs.ac.uk/sobi_scans/boreholes/584909
#72S: scans.bgs.ac.uk/sobi_scans/boreholes/595017
#73: scans.bgs.ac.uk/sobi_scans/boreholes/595018
#74T: scans.bgs.ac.uk/sobi_scans/boreholes/595021
#75: scans.bgs.ac.uk/sobi_scans/boreholes/595051
#76: scans.bgs.ac.uk/sobi_scans/boreholes/595117
#77S: scans.bgs.ac.uk/sobi_scans/boreholes/595039
#78: scans.bgs.ac.uk/sobi_scans/boreholes/595023
#79T: scans.bgs.ac.uk/sobi_scans/boreholes/595022

8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary: 41

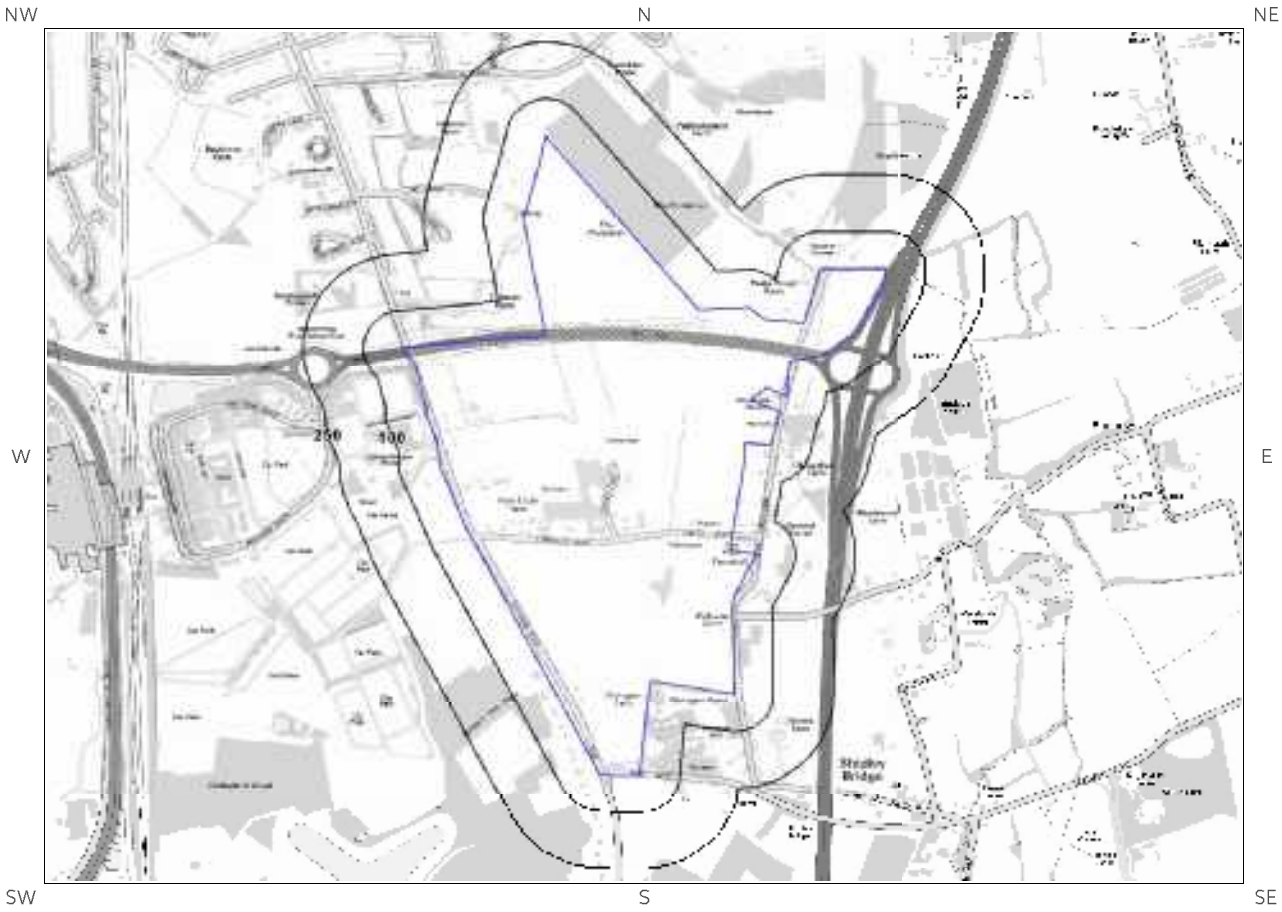
For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
3.0	E	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
3.0	E	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
4.0	N	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
42.0	W	Sediment	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
43.0	NE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

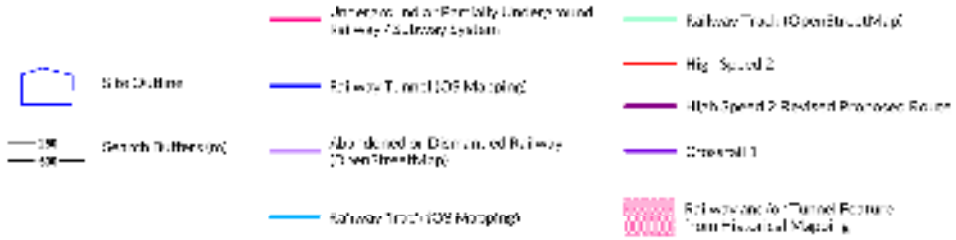
Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
43.0	NE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend



9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary?	No
Have any underground railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary?	No
Have any other railway tunnels been identified within 250m of the site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary?	No
Have any historical railway or tunnel features been identified within 250m of the study site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary?	No
Have any historical railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary?	No
Have any active railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

Clarkebond (UK) Limited
Telephone: 01179 292 244
bristol@clarkebond.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum
British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

Johnson Poole & Bloomer Limited
Harris and Pearson Building, Brettel Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email:**enquiries.gs@jpb.co.uk**
Website: **www.jpb.co.uk**

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS

Tel: 08456 050505
Website: http://www.ordnancesurvey.co.uk/

Getmapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website:**http://www1.getmapping.com/**

Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-feb11-2019

clarkebond

Clarkebond UK Limited

The Cocoa House, 129 Cumberland Road,
Bristol, BS1 6UY

Groundsure Reference:	EMS-CB-580364_778884
Your Reference:	EMS_580364_778884
Report Date	28 Nov 2019
Report Delivery Method:	Email - pdf

Enviro Insight

Address: GatwickGreen,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000 quoting the above Groundsure reference number.

Yours faithfully,

Clarkebond (UK) Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**GatwickGreen,**
Date:	**28 Nov 2019**
Reference:	**EMS-CB-580364_778884**
Client:	**Clarkebond UK Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	08-May-2018
Grid Reference:	529921,141392
Site Size:	87.0051ha

Report Reference: EMS-CB-580364_778884
Client Reference: EMS_580364_778884

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	11	3	13	13
1.2 Additional Information – Historical Tank Database	0	0	2	5
1.3 Additional Information – Historical Energy Features Database	3	2	1	3
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	2	3
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	14	23	31	30

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	1
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	2
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	1
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	10	3	7	5
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	3	4
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	3	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	2	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	6	3	0	1	4	1

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	7	7	17	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	1	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	3	1	1	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	74	62	74	190	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	6	3	10	20
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	4	0	0	0	1	3

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Moderate
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

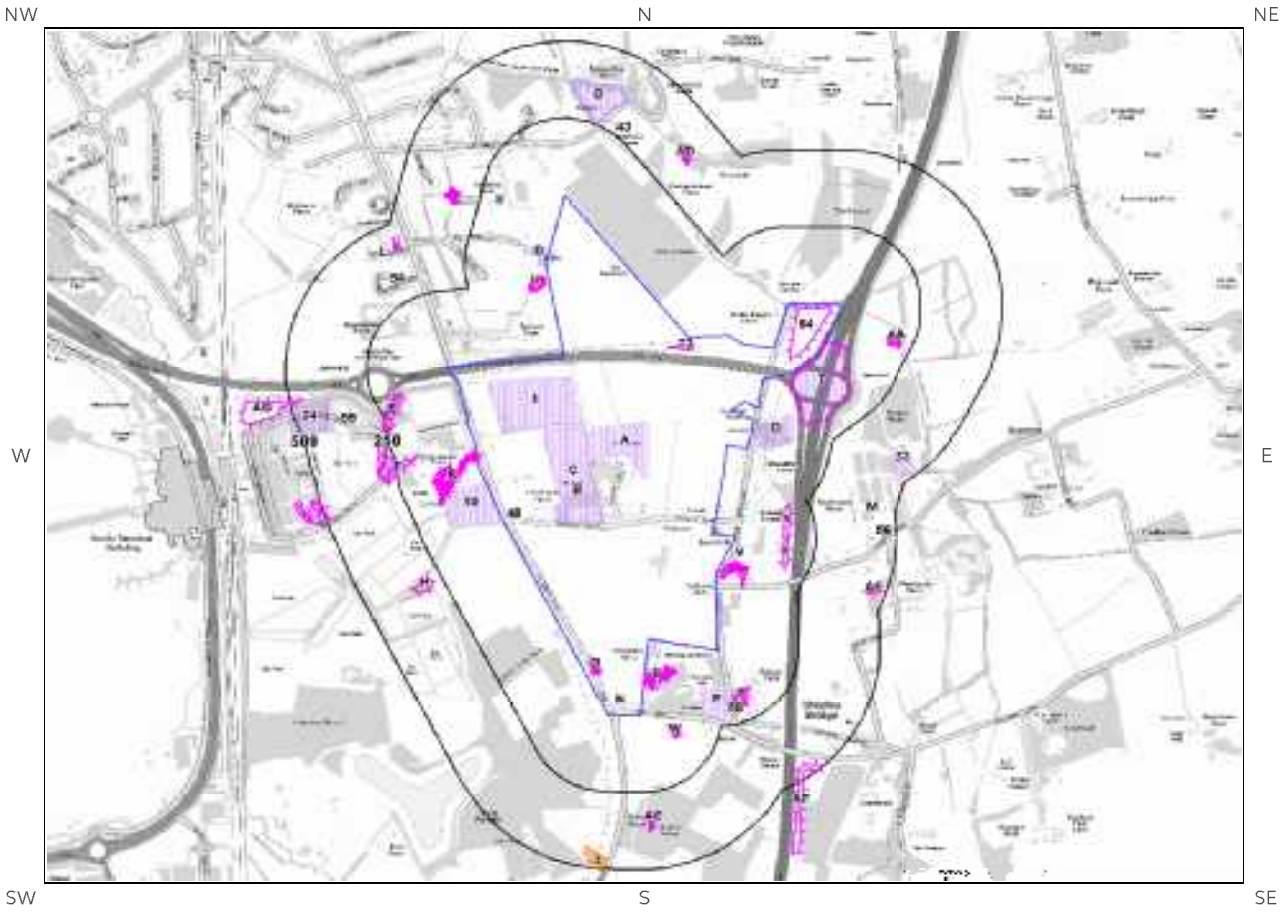
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 40

ID	Distance [m]	Direction	Use	Date
1	0	On Site	Nurseries	1977
2A	0	On Site	Nurseries	1987
3D	0	On Site	Unspecified Works	1987
4A	0	On Site	Nurseries	1989
5C	0	On Site	Nursery	1976
6B	0	On Site	Nursery	1989
7B	0	On Site	Nursery	1977
8B	0	On Site	Nursery	1987
9C	0	On Site	Nursery	1961
10	0	On Site	Nursery	1977
11D	0	On Site	Unspecified Works	1989
12T	4	SE	Cuttings	1978
13O	9	E	Nursery	1978
14U	20	W	Clay Pit	1896
15P	117	S	Nursery	1978
16X	148	E	Unspecified Heap	1978
17Y	150	E	Unspecified Heap	1978
18E	166	SW	Unspecified Heap	1976
19E	169	SW	Unspecified Heap	1977
20F	189	W	Unspecified Heap	1977
21E	191	W	Electric Substation	1989
22E	191	W	Electric Substation	1987
23F	231	W	Cuttings	1989
24F	231	W	Cuttings	1987
25G	247	NE	Nursery	1987
26G	247	NE	Nursery	1989
27G	247	NE	Nursery	1977
28G	262	NE	Nursery	1961
29F	263	W	Unspecified Heap	1977
30G	263	NE	Nursery	1976
31H	283	SW	Unspecified Heap	1989
32H	283	SW	Unspecified Heap	1987
33	377	SE	Unspecified Disused Works	1978

34	379	W	Nursery	1896
35AF	462	SE	Unspecified Heap	1978
36I	471	S	Garage	1987
37I	471	S	Garage	1989
38J	488	W	Unspecified Heap	1977
39J	491	W	Unspecified Heap	1987
40J	491	W	Unspecified Heap	1989

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 7

ID	Distance (m)	Direction	Use	Date
41K	187	W	Unspecified Tank	1896
42K	188	W	Unspecified Tank	1913
43	277	NE	Tank or Trough	1870
44L	417	NW	Unspecified Tank	1913
45L	426	N	Unspecified Tank	1913
46M	430	E	Tanks	1978
47M	436	E	Tanks	1978

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 9

ID	Distance (m)	Direction	Use	Date
48	0	On Site	Electricity Substation	1972
49N	0	On Site	Electricity Substation	1993
50N	0	On Site	Electricity Substation	1988
51O	9	E	Electricity Substation	1978
52V	39	SE	Electricity Substation	1978
53E	193	W	Electricity Substation	1987
54	317	NW	Electricity Substation	1987
55	347	SW	Electricity Substation	1987
56	456	E	Electricity Substation	1978

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 5

ID	Distance (m)	Direction	Use	Date
57P	189	S	Garage	1993
58	204	S	Garage	1974
59I	431	S	Garage	1972
60I	432	S	Garage	1988
61I	434	S	Garage	1993

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 98

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

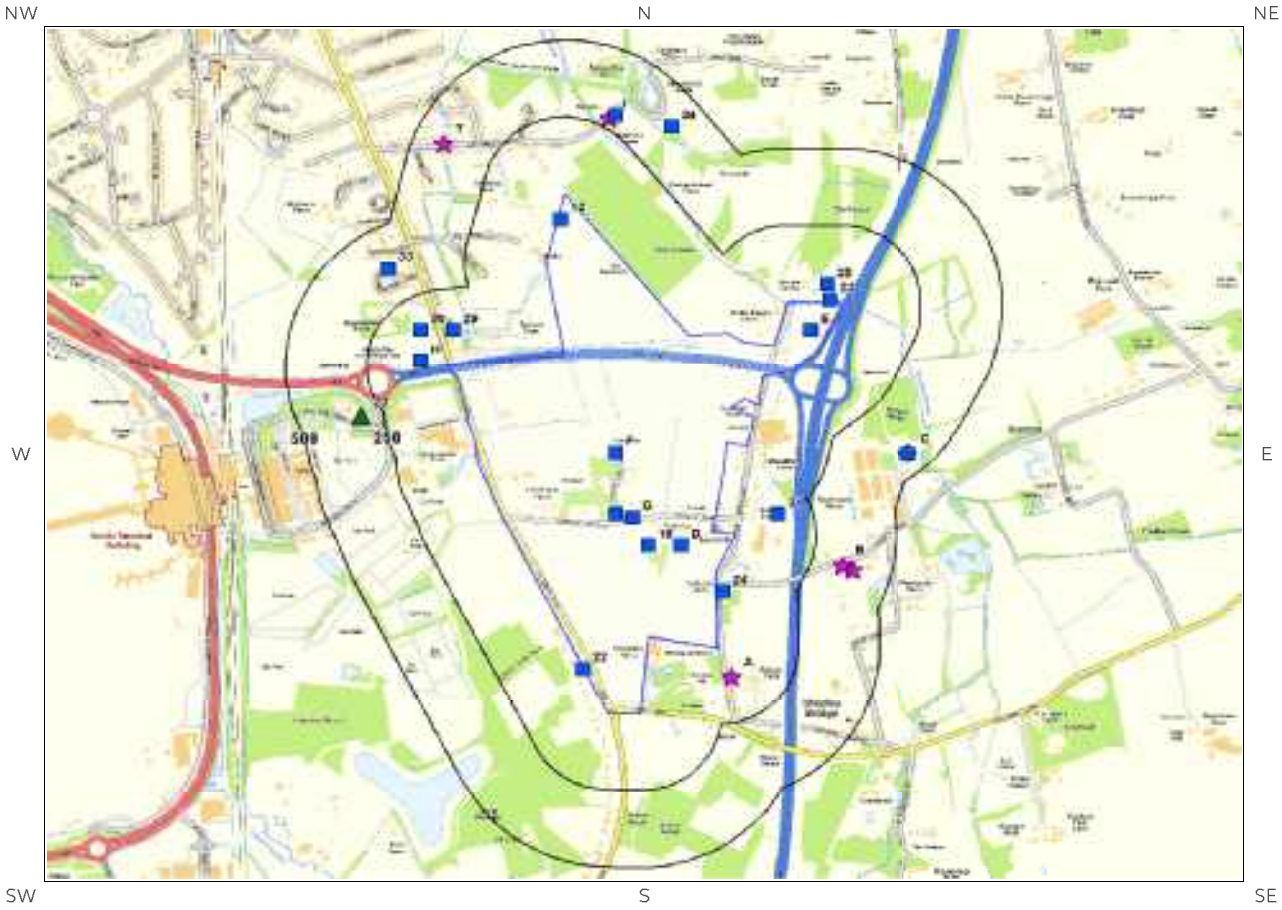
ID	Distance(m)	Direction	Use	Date
62Q	0	On Site	Pond	1870
63Q	0	On Site	Pond	1933
64	0	On Site	Pond	1978
65Q	0	On Site	Pond	1933

66Q	0	On Site	Pond	1896
67Q	0	On Site	Pond	1914
68R	0	On Site	Water Body	1914
69R	0	On Site	Water Body	1896
70R	0	On Site	Pond	1870
71R	0	On Site	Pond	1987
72R	0	On Site	Pond	1989
73	0	On Site	Pond	1978
74Q	0	On Site	Pond	1914
75R	0	W	Water Body	1976
76S	2	E	Pond	1896
77S	2	E	Pond	1914
78T	4	SE	Cuttings	1978
79S	8	E	Pond	1870
80U	9	W	Pond	1989
81U	9	W	Pond	1987
82U	9	W	Pond	1976
83S	9	E	Pond	1909
84S	9	E	Pond	1933
85S	9	E	Pond	1896
86S	9	E	Pond	1933
87	10	E	Pond	1896
88S	11	E	Pond	1955
89S	11	E	Pond	1914
90V	13	E	Pond	1870
91S	13	E	Pond	1978
92V	18	SE	Pond	1914
93U	18	W	Pond	1977
94V	20	SE	Pond	1914
95V	20	SE	Pond	1955
96U	20	W	Clay Pit	1896
97V	21	SE	Pond	1978
98R	37	W	Pond	1977
99R	79	W	Pond	1914
100R	79	W	Pond	1896
101R	81	W	Pond	1870
102R	83	W	Pond	1989
103R	83	W	Pond	1987
104R	83	W	Pond	1977
105R	85	W	Pond	1976
106R	87	W	Pond	1961
107W	99	E	Pond	1914
108W	99	E	Pond	1896
109W	106	E	Pond	1978
110X	148	E	Unspecified Heap	1978
111Z	149	SE	Pond	1870

112Y	150	E	Unspecified Heap	1978
113Z	150	SE	Pond	1914
114Z	155	SE	Pond	1955
115Z	155	SE	Pond	1896
116Z	155	SE	Pond	1914
117Z	159	SE	Pond	1909
118Z	159	SE	Pond	1933
119Z	159	SE	Pond	1896
120Z	159	SE	Pond	1933
121E	166	SW	Unspecified Heap	1976
122AA	168	SE	Pond	1914
123E	169	SW	Unspecified Heap	1977
124AA	169	SE	Pond	1896
125AA	170	SE	Pond	1955
126AA	170	SE	Pond	1914
127F	189	W	Unspecified Heap	1977
128F	231	W	Cuttings	1989
129F	231	W	Cuttings	1987
130F	263	W	Unspecified Heap	1977
131H	283	SW	Unspecified Heap	1989
132H	283	SW	Unspecified Heap	1987
133AB	316	W	Ponds	1896
134AB	317	W	Pond	1870
135AB	319	W	Pond	1914
136AB	321	W	Pond	1976
137AC	326	S	Pond	1933
138AC	326	S	Pond	1933
139AC	329	S	Pond	1955
140AC	330	S	Pond	1914
141AC	330	S	Pond	1978
142AD	355	NE	Pond	1955
143AD	359	NE	Pond	1914
144AD	359	NE	Pond	1870
145AD	361	NE	Pond	1914
146AD	362	NE	Pond	1978
147L	411	N	Pond	1896
148AE	444	SE	Pond	1955
149AE	445	SE	Pond	1914
150AE	445	SE	Pond	1914
151AE	445	SE	Pond	1896
152AE	452	SE	Pond	1978
153AF	462	SE	Unspecified Heap	1978
154AG	465	W	Pond	1989
155AG	465	W	Pond	1987
156AG	465	W	Pond	1977
157J	488	W	Unspecified Heap	1977

158J	491	W	Unspecified Heap	1989
159J	491	W	Unspecified Heap	1987

2. Environmental Permits, Incidents and Registers Map



Site Outline

Search Buffers (m)

Recorded Pollution Incident

Dangerous Substances (List 1)

Dangerous Substances (List 2)

Water Industry Referrals

Licenced Discharge Consents

Red List Discharge Consents

RAS 3 & 4 Authorisations

Part A(1) Authorised Processes and Historic IPC Authorisations

Part A(2) and Part B Authorised Processes

COMAH / NIHHS Sites

Sites Determined as Contaminated Land

Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

1

The following Red List Discharge Consent records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
11C	431	SE	530800 141400	Address: BLUE PRINCE MUSHROOMS LTD., A MUSHROOM FARM, CHURCH LANE, BURST, A MUSHROOM FARM, CHURCH LANE, BU, RSTOW, HORLEY, SURREY, RH6 9RG Permit Number: CATM.3195 Permit Version: 1 Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88)	Discharge Type: Horticult. Est. Nursery Gdns. Effluent Type: TRADE DISCHARGES - UNSPECIFIED Catchment: - Approval Date: 14-Apr-1998

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

2

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
8C	431	SE	530800 141400	Name: Blue Prince Mushrooms, Burstow Status: Active Receiving Water: -	Authorised Substances: -
9C	431	SE	530800 141400	Name: Blue Prince Mushrooms, Burstow Status: Active Receiving Water: Burstow Stream, Mole	Authorised Substances: Hexachlorocyclohexane

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
10C	431	SE	530800 141400	Name: Blue Prince Mushrooms T/e, Burstow Status: Active Receiving Water: Burstow StreamMole	Authorised Substances: Copper, Zinc

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
37	319	SW	529115 141512	Address: BP Gatwick South (formerly Texaco), Ring Road North, Gatwick, Crawley, RH6 0NN Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

25

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
12	0	On Site	529730 142160	Address: MARUBENI-KOMATSU LTD, WOODSIDE WORKS, THE CLOSE, OFF BALCOMBE ROAD, HORLEY, SURREY, RH6 9EB Effluent Type: TRADE DISCHARGES - SITE DRAINAGE (CONTAM SURFACE WATER, NOT WASTE SIT Permit Number: CASM.1128 Permit Version: 1	Receiving Water: TRIBUTARY OF BURSTOW STREAM Status: SURRENDERED UNDER EPR 2010 Issue date: 23/09/2004 Effective Date: 23-Aug-2004 Revocation Date: 14/07/2014
13F	0	On Site	529900 141400	Address: 1 FORDERS COTTAGES, DONKEY LANE, FERNHILL Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.1316 Permit Version: 1	Receiving Water: DITCH TRIBUTARY BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 16/08/2005 Effective Date: 09-Aug-2005 Revocation Date:
14G	0	On Site	529950 141190	Address: YEW TREE COTTAGE, FERN HILL ROAD, HORLEY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.0667 Permit Version: 1	Receiving Water: TRIB. OF BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 25/06/2002 Effective Date: 18-Jun-2002 Revocation Date:
15	0	On Site	530000 141100	Address: Fernhill Road Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0963 Permit Version: 1	Receiving Water: BURSTOW STREAM Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 25/11/1997
16D	0	On Site	530100 141100	Address: Church Lane Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0679 Permit Version: 1	Receiving Water: BURSTOW STREAM Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 02/09/2010
17D	0	On Site	530100 141100	Address: Church Lane Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0679 Permit Version: 2	Receiving Water: Burstow Stream Status: SURRENDERED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 19/08/2014
18E	0	On Site	530500 141800	Address: Broadbridge Lane Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TEMP.0535	Receiving Water: Burstow Stream Status: SURRENDERED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 19/08/2014

ID	Distance (m)	Direction	NGR	Details	
				Permit Version: 2	
19E	0	On Site	530500 141800	Address: Broadbridge Lane Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0535 Permit Version: 1	Receiving Water: BURSTOW STREAM Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 02/09/2010
20F	0	On Site	529900 141400	Address: 2 FORDERS COTAGES, DONKEY LANE, FERNHILL Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.1330 Permit Version: 1	Receiving Water: DITCH TRIBUTARY BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 16/08/2005 Effective Date: 09-Aug-2005 Revocation Date:
21G	0	On Site	529900 141200	Address: NEW OFFICE, FERNHILL HOUSE, FERNHIL, NEW OFFICE, FERNHILL HOUSE, FERN, HILL ROAD, CRAWLEY, WEST SUSSEX Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CATM.2993 Permit Version: 1	Receiving Water: TRIBUTARY OFTHE BURSTOWSTREAM Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 15/08/1997 Effective Date: 15-Aug-1997 Revocation Date:
22	4	SW	529800 140700	Address: Balcome Road Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0383 Permit Version: 1	Receiving Water: GATWICK STREAM Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 25/11/1997
23	9	N	530560 141900	Address: DOG KENNELS, PEEKS BROOK LANE, HORLEY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRKB3897NE Permit Version: 1	Receiving Water: BURSTOW STREAM Status: NEW ISSUED UNDER EPR 2010 Issue date: 24/09/2018 Effective Date: 24-Sep-2018 Revocation Date:
24	19	E	530230 140950	Address: 1 & 2 PULCOTTS COTTAGE, PEEKS BROOK, 1 & 2 PULCOTTS COTTAGE, PEEKS BR, OOK LANE, BURSTOW, SURREY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.0511 Permit Version: 1	Receiving Water: TERRACE GRAVEL / WEALD CLAY Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 06/01/1986 Effective Date: 06-Jan-1986 Revocation Date: 01/10/1996
25	59	N	530550 141950	Address: BROOKSIDE, PEEKBROOK LANE, BURSTOW, BROOKSIDE, PEEKBROOK LANE, BURST, OW, SURREY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1191 Permit Version: 1	Receiving Water: RIVER TERRACE DEPOSITS Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 10/09/1986 Effective Date: 10-Sep-1986 Revocation Date: 01/10/1996
26H	85	W	529300 141700	Address: STW AT TANNERS FARM, BALCOMBE RD, HORLEY, SURREY, RH6 9EF Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCP.0088 Permit Version: 3	Receiving Water: TRIB OF BURSTOW STREAM Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 18/03/1963 Effective Date: 23-May-1991 Revocation Date:
27H	85	W	529300 141700	Address: STW AT TANNERS FARM, BALCOMBE RD, HORLEY, SURREY, RH6 9EF Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY	Receiving Water: TRIB OF BURSTOW STREAM Status: REVOKED - UNSPECIFIED Issue date: 18/03/1963 Effective Date: 22-May-1991

ID	Distance (m)	Direction	NGR	Details	
				Permit Number: CTCP.0088 Permit Version: 2	Revocation Date: 22/05/1991
28H	85	W	529300 141700	Address: STW AT TANNERS FARM, BALCOMBE RD, HORLEY, SURREY, RH6 9EF Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCP.0088 Permit Version: 1	Receiving Water: TRIB OF BURSTOW STREAM Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 18/03/1963 Effective Date: 18-Mar-1963 Revocation Date: 21/05/1991
29	115	N	529400 141800	Address: BREVION, 275 BALCOMBE ROAD, HORLEY, SURREY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.0145 Permit Version: 1	Receiving Water: TRIB. OF BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 17/05/2000 Effective Date: 07-Oct-1999 Revocation Date:
30	144	NW	529300 141800	Address: MEADOWCROFT LODGE, BALCOMBE ROAD, HORLEY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.0922 Permit Version: 1	Receiving Water: A TRIB OF THE GATWICK STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 08/08/2003 Effective Date: 29-Jul-2003 Revocation Date:
31	147	NE	530400 141200	Address: GATWICK HOUSE. PEEKS BROOK LANE, HO, GATWICK HOUSE. PEEKS BROOK LANE, HORLEY, SURREY RH6 9SU Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.0581 Permit Version: 1	Receiving Water: DITCH TRIB OF THE BURSTOW STRM Status: TRANSFERRED FROM COPA 1974 Issue date: 09/01/1986 Effective Date: 09-Jan-1986 Revocation Date:
32I	302	NE	529900 142500	Address: WOODY NOOK, HAROLDSLEA DRIVE, HORLEY, SURREY, UK, RH6 9PH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CATM.3688 Permit Version: 1	Receiving Water: TRIB OF THE BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/04/1999 Effective Date: 31-Mar-1999 Revocation Date:
33	366	NW	529200 142000	Address: Meadowcroft Close Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.1488 Permit Version: 1	Receiving Water: GATWICK STREAM Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 25/11/1997
34	391	NE	530070 142460	Address: SEYMOUR, HAROLDSLEA, HORLEY Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CASM.0753 Permit Version: 1	Receiving Water: DITCH TRIB OF BURSTOW STREAM Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/06/2003 Effective Date: 11-Jun-2003 Revocation Date:
35C	432	SE	530800 141400	Address: BLUE PRINCE MUSHROOMS, CHURCH ROAD, BLUE PRINCE MUSHROOMS, CHURCH RO, AD, BRIDGES WOOD, BURSTOW, SURRE, Y, RH6 9TH Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTWC.3350 Permit Version: 1	Receiving Water: TRIBUTARY OFBURSTOW STREAM Status: REVOKED - UNSPECIFIED Issue date: 16/06/1989 Effective Date: 16-Jun-1989 Revocation Date: 13/04/1998
36C	432	SE	530800 141400	Address: A MUSHROOM FARM, CHURCH LANE, BURST, A MUSHROOM FARM,	Receiving Water: BURSTOW STREAM Status: REVOKED (WRA 91, S88 & SCHED

ID	Distance (m)	Direction	NGR	Details	
				CHURCH LANE, BU, RSTOW, HORLEY, SURREY, RH6 9RG Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: CATM.3195 Permit Version: 1	10 AS AMENDED BY ENV ACT 1995) Issue date: 14/04/1998 Effective Date: 14-Apr-1998 Revocation Date: 10/05/2005

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

7

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	104	SE	530255.0 140673.0	Incident Date: 01-Aug-2016 Incident Identification: 1458102.0 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
2A	104	SE	530255.0 140673.0	Incident Date: 01-Sep-2016 Incident Identification: 1467569.0 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
3A	104	SE	530255.0	Incident Date: 01-Sep-2016	Water Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
			140673.0	Incident Identification: 1467569.0 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
4I	284	NE	529880.0 142490.0	Incident Date: 18-Jul-2003 Incident Identification: 174812.0 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5B	345	E	530598.0 141036.0	Incident Date: 12-Mar-2002 Incident Identification: 63396.0 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6B	379	E	530629.0 141022.0	Incident Date: 22-Sep-2003 Incident Identification: 191598.0 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
7	407	NW	529369.0 142406.0	Incident Date: 10-Apr-2015 Incident Identification: 1327550.0 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map

EA/NRW Active Landfill

Historic and Planned Waste Sites

EA/NRW Historic Landfill

EA/NRW Licensed Waste Site

BGS / DoE Survey Landfill

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

4

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
3	826	N		Site Address: Perrylands Farm, PerryfieldsLane, Smallfield Waste Licence: - Site Reference: RB21 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	855	S		Site Address: Blackcomer Wood, Tinsley Green, Crawley, West Sussex Waste Licence: Yes Site Reference: WD27/79 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 01-Jan-1976 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1980 Last Recorded: 31-Dec-1980
Not shown	877	SE		Site Address: The Oaks, Shipley Bridge Lane, Burstow Waste Licence: - Site Reference: S/218, TA/56/LU, TA/49 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: R Mends Esquire First Recorded: 31-Dec-1982 Last Recorded: 31-Dec-1984
Not shown	1400	S		Site Address: Heathy Ground Wood, Wakehams Green Farm, Copthorne Road, Worth, West Sussex Waste Licence: Yes Site Reference: WD27/72, WP 37-82, 4/CN/87, 4/CG/86, WD27/72/WD13/50 Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 11-Nov-1982 Licence Surrendered: 10-Nov-1989 Licence Holder Address: Delamere Road, Cheshunt, Waltham Cross, Hertfordshire Operator: - Licence Holder: Hales Containers Limited First Recorded: 11-Nov-1982 Last Recorded: 10-Nov-1989

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

2

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1A	0	On Site	529702 141224	Type of Site: Waste Disposal& Storage Extension Site Address: Fern Court Farm,Fernhill Road, Tinsley Green, HORLEY, Surrey, RH6 9SY	Planning Application Reference: CR/2006/0101/CON Date: -	Further Details: Scheme comprises construction of new attached building of 768sqm to set of buildings for the disposal and storage of waste materials in connection with a scrap metal business. Construction - block, timber cladding walls; metal cladding, pitched roof;oflight windows; portal, steel frame. An application (ref: CR/2006/0101/CON) for Detailed Planning permission was granted by Crawley B.C. Programme details to be finalised. Work has completed Data Source: Historic Planning Application Data Type: Point
2A	0	On Site	529703 141225	Type of Site: Waste Transfer Station Site Address: Fern Court Farm, Fernhill Road, HORLEY, Surrey, RH6 9SY	Planning Application Reference: CR/2008/0501/CON Date: -	Further Details: Scheme comprises consultation from west sussex county council on an application for construction of new detached building to set of building for the disposal and storage of materials in connection with scrap metal business- variations to previous approd scheme cr/101/06. An application (ref: CR/2008/0501/CON) for

ID	Distance (m)	Direction	NGR	Details	
					detailed planning permission was granted by Crawley B.C. Planning decision obtained Data Source: Historic Planning Application Data Type: Point

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

15

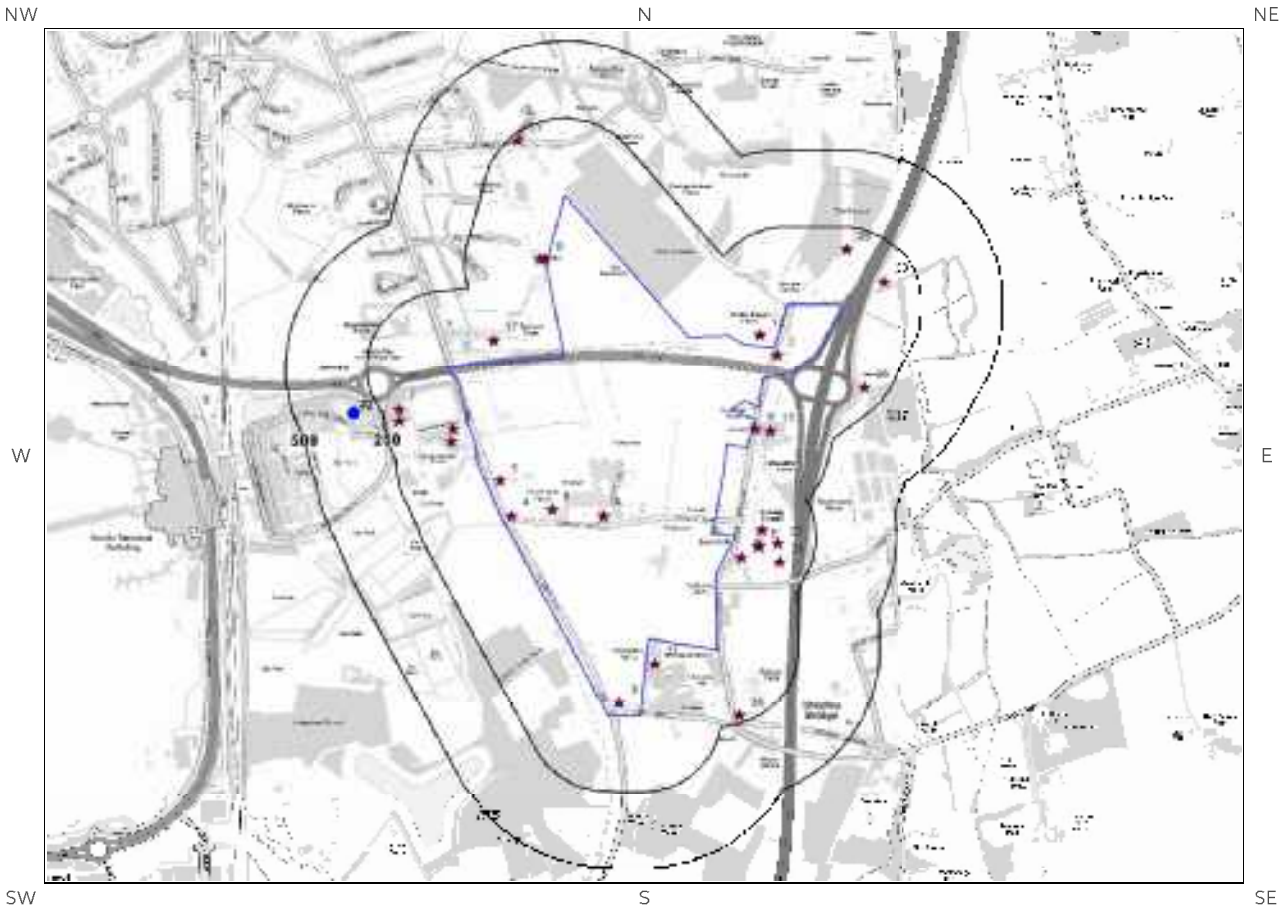
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
7C	0	On Site	529719 141198	Site Address: Donald Richard Thomas Simmonds, Fern Court Farm, Fernhill Road, Horley, Surrey, RH6 9SY Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM002 EPR reference: EA/EPR/DP3793EW/V002 Operator: Simmonds Donald Richard Thomas Waste Management licence No: 83157 Annual Tonnage: 2000.0	Issue Date: 19/01/1994 Effective Date: - Modified: 25/06/1997 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Fern Court Farm, Horley, Rh6 Correspondence Address: -
8B	0	On Site	530041 140798	Site Address: Rivington Farm, Peeksbrooke Lane, Burstow, Horley, Surrey, RH6 9SR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: UNI575 EPR reference: EA/EPR/CB3102LD/T001 Operator: United Grab Hire Limited Waste Management licence No: 400201 Annual Tonnage: 74999.0	Issue Date: 10/06/2013 Effective Date: 31/10/2014 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Juppy's Correspondence Address: -
9B	0	On Site	530041 140798	Site Address: Rivington Farm, Peeksbrooke Lane, Burstow, Horley, Surrey, RH6 9SR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DMC006 EPR reference: EA/EPR/AB3803XJ/T001 Operator: D And M Concrete And Grab Services Limited Waste Management licence No: 400201 Annual Tonnage: 74999.0	Issue Date: 10/06/2013 Effective Date: 08/11/2013 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Rivington Farm Correspondence Address: -
10B	0	On Site	530041 140798	Site Address: Rivington Farm, Peeksbrooke Lane, Burstow, Horley, RH6 9SR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JUP001 EPR reference: EA/EPR/PB3532RS/A001	Issue Date: 10/06/2013 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: P J Jupp

ID	Distance (m)	Direction	NGR	Details	
				Operator: Jupp Peter Waste Management licence No: 400201 Annual Tonnage: 74999.0	Correspondence Address: -
11C	0	On Site	529719 141198	Site Address: Donald Richard Thomas Simmonds, Ferncourt Farm, Fernhill Road, Horley, Surrey, RH6 9SY Type: Metal Recycling Site <25000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM002 EPR reference: EA/EPR/DP3793EW/V003 Operator: Mr Donald Simmonds & Mr Craig Simmods Waste Management licence No: 83157 Annual Tonnage: 24999.0	Issue Date: 19/01/1994 Effective Date: - Modified: 12/04/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Elliott Metals Correspondence Address: -
12C	0	On Site	529719 141198	Site Address: Donald Richard Thomas Simmonds, Fern Court Farm, Fernhill Road, Horley, Surrey, RH6 9SY Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM002 EPR reference: EA/EPR/DP3793EW/V002 Operator: Donald Richard Thomas Simmonds Waste Management licence No: 83157 Annual Tonnage: 2000.0	Issue Date: 19/01/1994 Effective Date: - Modified: 25/06/1997 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Fern Court Farm, Horley, Rh6 Correspondence Address: -
13D	12	S	530089 140777	Site Address: Rivington Farm, Peeksbrook Lane, Burstow, Surrey, RH6 9SR Type: Physical Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: UNI575 EPR reference: EA/EPR/CB3102LD/V002 Operator: United Grab Hire Limited Waste Management licence No: 400201 Annual Tonnage: 74999.0	Issue Date: 10/06/2013 Effective Date: 31/10/2014 Modified: 08/12/2017 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: United Yard Correspondence Address: -
14D	12	S	530089 140777	Site Address: Rivington Farm, Peeksbrook Lane, Burstow, Surrey, RH6 9SR Type: Physical Treatment Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: UNI575 EPR reference: EA/EPR/CB3102LD/V002 Operator: United Grab Hire Limited Waste Management licence No: 400201 Annual Tonnage: 74999.0	Issue Date: 10/06/2013 Effective Date: 31/10/2014 Modified: 08/12/2017 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: United Yard Correspondence Address: -
15	18	N	530313 141776	Site Address: Ellerton Yard, Peeks Brook Lane, Horley, Surrey, RH6 9ST Type: Physical Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DJG003 EPR reference: EA/EPR/DB3004KJ/A001 Operator: D J Grab Services Ltd Waste Management licence No: 402432 Annual Tonnage: 750000.0	Issue Date: 05/02/2016 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Ellerton Yard Correspondence Address: -
16	475	SE	530739 141231	Site Address: Meadow View, Normans Corner, Chapel Road, Horley, Surrey, RH6 9JH Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FIS003	Issue Date: 27/09/2018 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Fisher Recycling Ltd

ID	Distance (m)	Direction	NGR	Details	
				EPR reference: EA/EPR/WE1014AA/A001 Operator: Fisher Recycling Ltd Waste Management licence No: 120003 Annual Tonnage: 0.0	Correspondence Address: -
17	794	SW	528809 140903	Site Address: Elms Vale Road, Dover, Kent Type: Landfill taking Non-Biodegradeable Wastes Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHU001 EPR reference: - Operator: J R Huggins Waste Management licence No: 19450 Annual Tonnage: 0.0	Issue Date: 24/07/1978 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Austins Land Correspondence Address: Channel Plant Hire, 6-16, Canterbury Road, Lydden, Near Dover, Kent, CT15 7ET
Not shown	980	N	530881 142828	Site Address: 2, Perrylands Lane, Smallfield, Horley, Surrey, RH6 9PR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FUL002 EPR reference: EA/EPR/EB3802UY/T001 Operator: Fuller Grab Hire Ltd Waste Management licence No: 103661 Annual Tonnage: 74999.0	Issue Date: 23/11/2012 Effective Date: 19/01/2017 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: 2 Perrylands Lane Correspondence Address: -
Not shown	980	N	530881 142828	Site Address: 2, Perrylands Lane, Smallfield, Horley, Surrey, RH6 9PR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BLO020 EPR reference: EA/EPR/DB3733RD/A001 Operator: Blockade Services Ltd Waste Management licence No: 103661 Annual Tonnage: 74999.0	Issue Date: 23/11/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: 2 Perrylands Lane Correspondence Address: -
Not shown	980	N	530881 142828	Site Address: 2, Perrylands Lane, Smallfield, Horley, Surrey, RH6 9PR Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MOT005 EPR reference: EA/EPR/HB3105HL/T001 Operator: Motion Hire Limited Waste Management licence No: 103661 Annual Tonnage: 74999.0	Issue Date: 23/11/2012 Effective Date: 20/02/2019 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: 2 Perrylands Lane Correspondence Address: -
21	1030	SW	528960 140090	Site Address: Crawley Sewage Treatment Works, Radford Road, Tinsley Green, Crawley, West Sussex, RH10 2NW Type: Landfill Gas Engine (<3 mW) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: THW096 EPR reference: EA/EPR/HP3632TS/V003 Operator: Thames Water Utilities Limited Waste Management licence No: 400022 Annual Tonnage: 0.0	Issue Date: 03/04/2013 Effective Date: - Modified: 19/09/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Crawley C H P Plant Correspondence Address: -

4. Current Land Use Map



Site Outline

Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 31

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Elliott Metals	529703 141225	Fern Court Farm, Fernhill, Horley, West Sussex, RH6 9SY	Scrap Metal Merchants	Recycling Services
2	0	On Site	Retro Services	530395 141727	The Yard, Peeks Brook Lane, Horley, Surrey, RH6 9ST	Vehicle Repair, Testing and Servicing	Repair and Servicing
3	0	On Site	Electricity Sub Station	529912 140599	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
4	0	On Site	Electricity Sub Station	529577 141205	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
5	0	On Site	M S L Heat Treatment Ltd	529542 141317	Hunters Lodge, Balcombe Road, Horley, West Sussex, RH6 9SJ	Industrial Coatings and Finishings	Industrial Products
6A	0	On Site	SATA International	529862 141204	Flight House, Fernhill, Horley, West Sussex, RH6 9SY	Airlines and Airline Services	Transport, Storage and Delivery
7A	0	On Site	Copa Airlines	529862 141204	Flight House, Fernhill, Horley, West Sussex, RH6 9SY	Airlines and Airline Services	Transport, Storage and Delivery
8B	9	W	Works	529680 142039	Surrey, RH6	Unspecified Works Or Factories	Industrial Features
9	10	E	Electricity Sub Station	530331 141485	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
10B	23	W	Gatwick Group	529665 142040	Woodside Works, The Close, Horley, Surrey, RH6 9EB	Construction and Tool Hire	Hire Services
11	27	E	United Grab Hire	530021 140726	Rivington Farm House, Antlands Lane, Shipley Bridge, Horley, West Sussex, RH6 9SR	Concrete Products	Industrial Products
12	37	N	D J Grab Services	530343 141791	Ellerton Yard, Peeks Brook Lane, Horley, Surrey, RH6 9ST	Distribution and Haulage	Transport, Storage and Delivery
13C	45	W	Electricity Sub Station	529401 141484	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
14D	48	SE	Electricity Sub Station	530288 141070	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
15	55	E	All Skips	530376 141480	Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Construction and Tool Hire	Hire Services
16C	66	W	Cameron a Schlumberge	529394 141446	Schlumberger House, Buckingham Gate, London	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
			r Company		Gatwick Airport, Gatwick, West Sussex, RH6 0NZ		
17	78	N	Marlborough Communications	529522 141775	Dovenby Hall, Balcombe Road, Horley, Surrey, RH6 9UU	Radar and Telecommunications Equipment	Industrial Products
18D	80	E	Le Lien Ltd	530341 141106	Suite 7 Gatwick House, Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Fish, Meat and Poultry Products	Foodstuffs
19E	80	E	Wavetronix	530341 141106	Suite 4b Gatwick House, Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Electronic Equipment	Industrial Products
20E	80	E	Tourvest Inflight Retail Services	530342 141106	Suite 6f Gatwick House, Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Airlines and Airline Services	Transport, Storage and Delivery
21	86	E	Flight Directors Alternative Airlines	530350 141159	Gatwick House, Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Airlines and Airline Services	Transport, Storage and Delivery
22	133	E	Garuda Indonesia	530399 141115	Unit 3 Ael Building, Peeks Brook Lane, Crawley, West Sussex, RH6 9ST	Airlines and Airline Services	Transport, Storage and Delivery
23	152	NE	Pylon	530726 141964	Surrey, RH6	Electrical Features	Infrastructure and Facilities
24	158	SE	Rwandair Reservation	530404 141055	Suite 9a Gatwick House, Peeks Brook Lane, Horley, West Sussex, RH6 9ST	Airlines and Airline Services	Transport, Storage and Delivery
25	180	SE	Pylon	530666 141621	Surrey, RH6	Electrical Features	Infrastructure and Facilities
26	182	N	Pylon	530611 142072	Surrey, RH6	Electrical Features	Infrastructure and Facilities
27F	197	W	Electricity Sub Station	529233 141549	West Sussex, RH6	Electrical Features	Infrastructure and Facilities
28F	205	W	Pest Solutions Ltd	529233 141511	First Point, Buckingham Gate, London Gatwick Airport, Gatwick, West Sussex, RH6 0NT	Pest and Vermin Control	Contract Services
29F	205	W	247 Gatwick Airport Transfer	529233 141511	First Point, Buckingham Gate, London Gatwick Airport, Gatwick, West Sussex, RH6 0NT	Airlines and Airline Services	Transport, Storage and Delivery
30	223	S	Tradeatractor	530281 140556	Sun View, Antlands Lane, Shipley Bridge, Horley, West Sussex, RH6 9TE	Agricultural Machinery and Goods	Industrial Products
31	231	NW	Electricity Sub Station	529599 142423	Surrey, RH6	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
32	328	SW	529091 141534	BP	Ring Road North, Gatwick Airport, Horley, West Sussex, RH6 0NN	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MO1-XSV	RIVER TERRACE DEPOSITS, 1 (MOLE)	SAND AND GRAVEL
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

5.3 Bedrock and Solid Geology

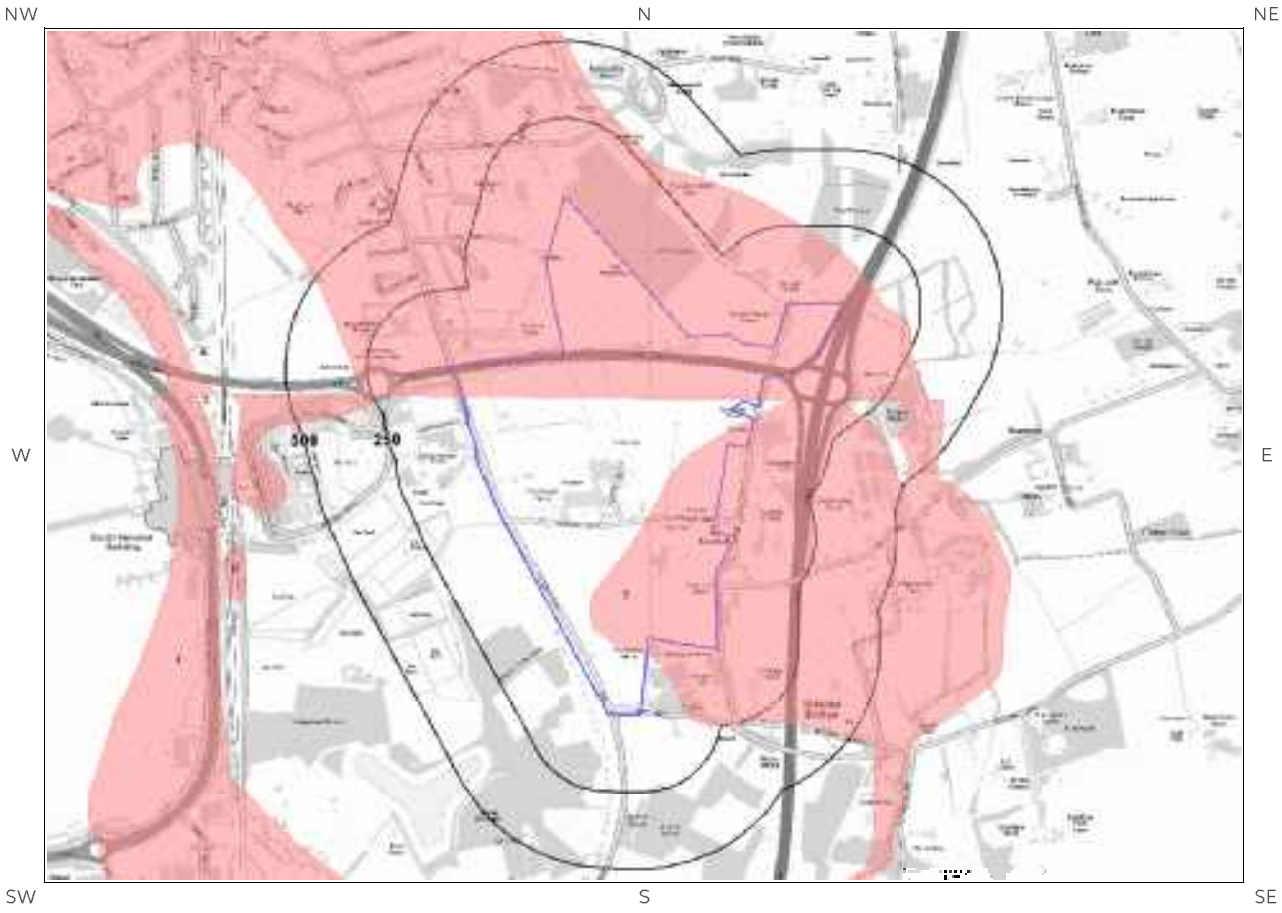
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
WC-FESTC	WEALD CLAY FORMATION	CLAY-IRONSTONE
WC-MDST	WEALD CLAY FORMATION	MUDSTONE
WC-MDST	WEALD CLAY FORMATION	MUDSTONE
WC-MDST	WEALD CLAY FORMATION	MUDSTONE

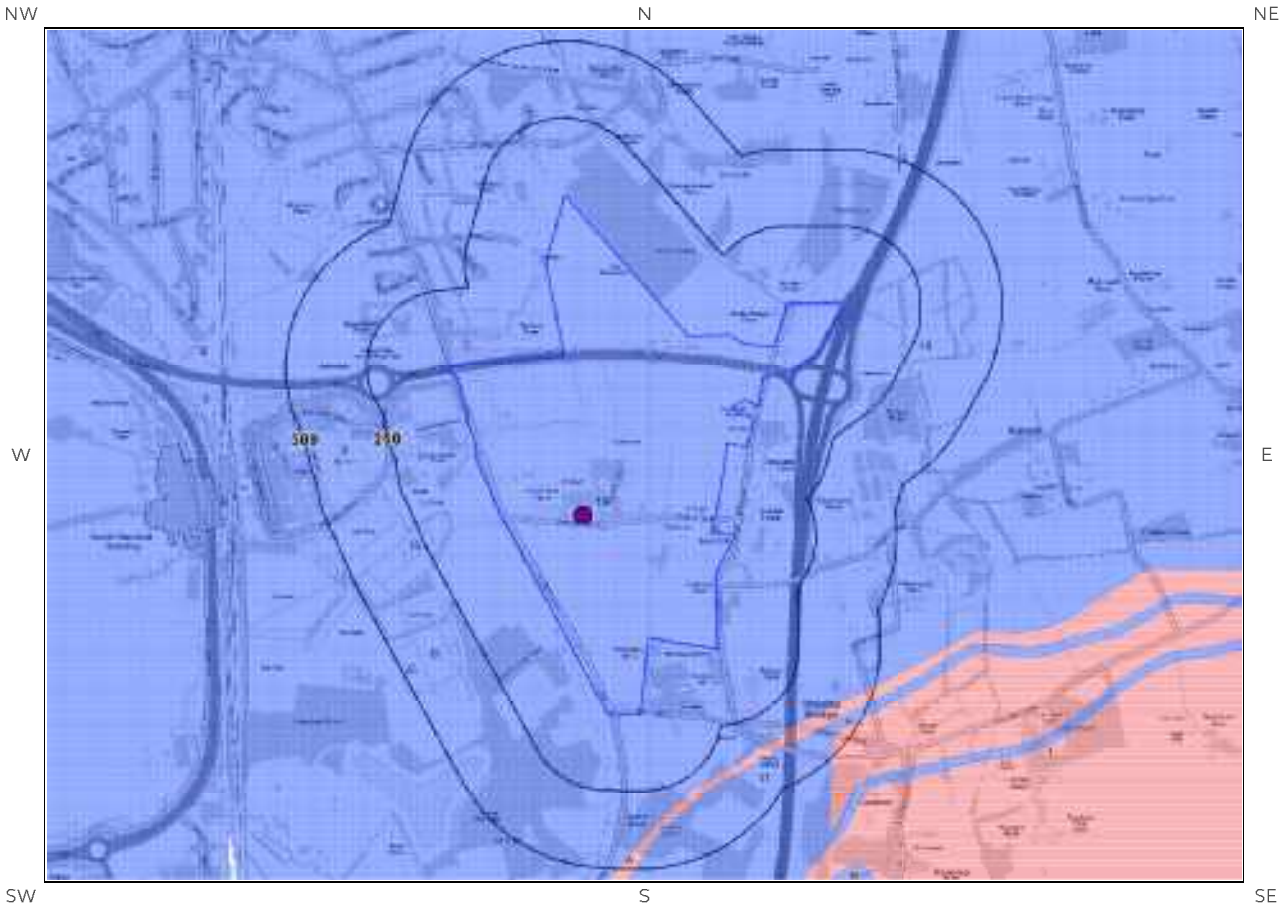
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

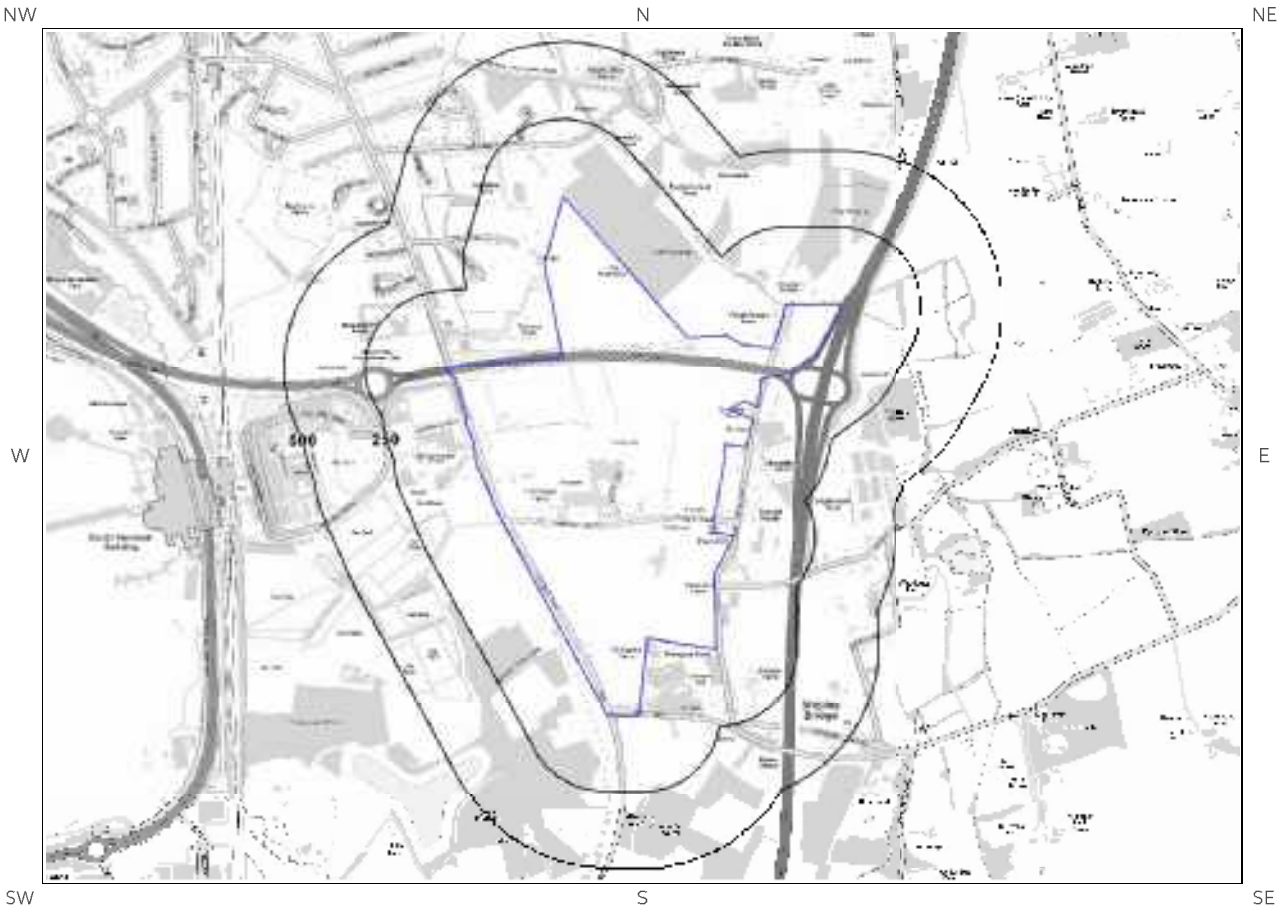
6a. Aquifer Within Superficial Geology



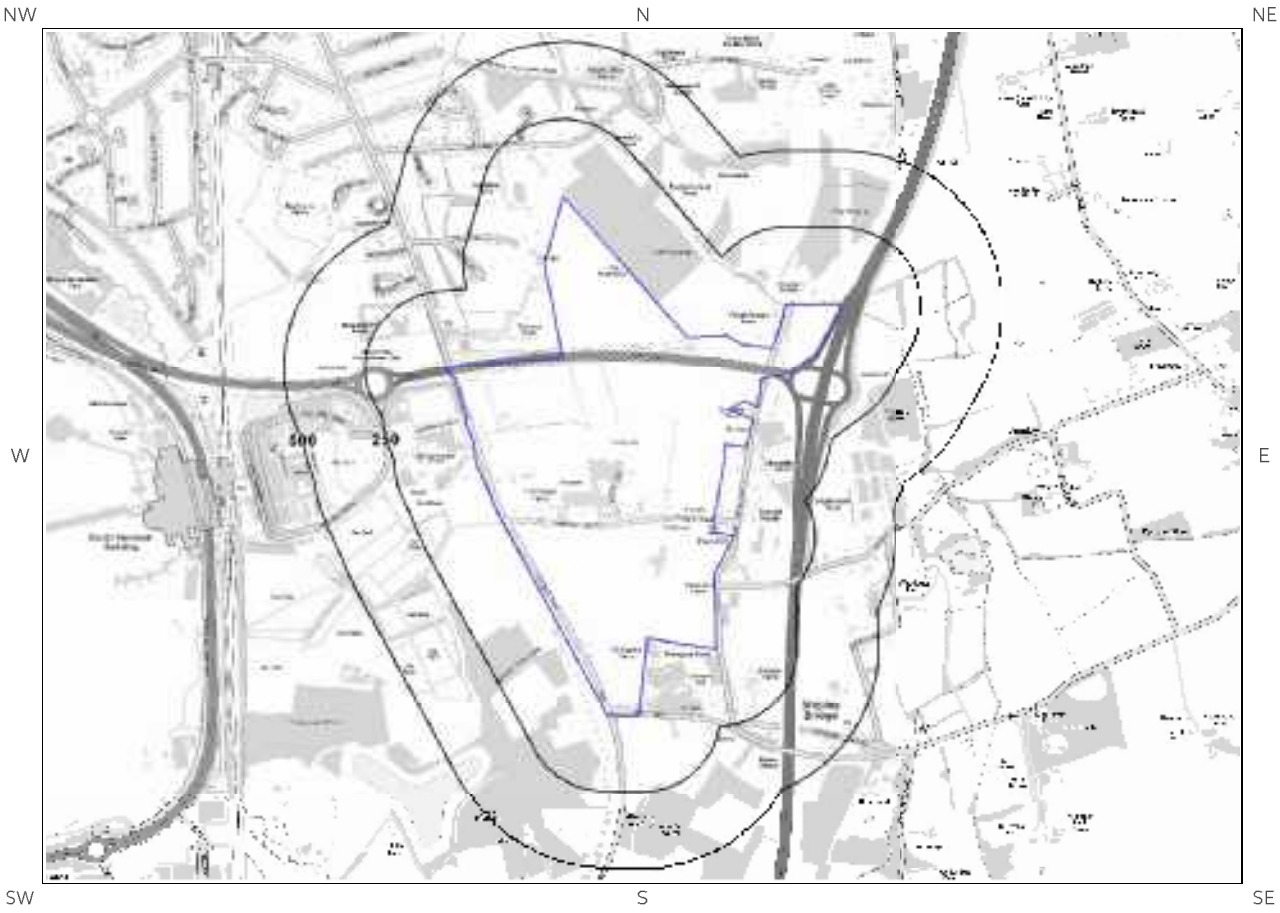
6b. Aquifer Within Bedrock Geology and Abstraction Licences

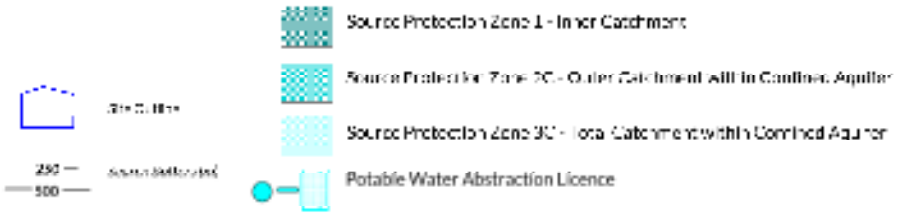


6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



6d. Hydrogeology – Source Protection Zones within confined aquifer



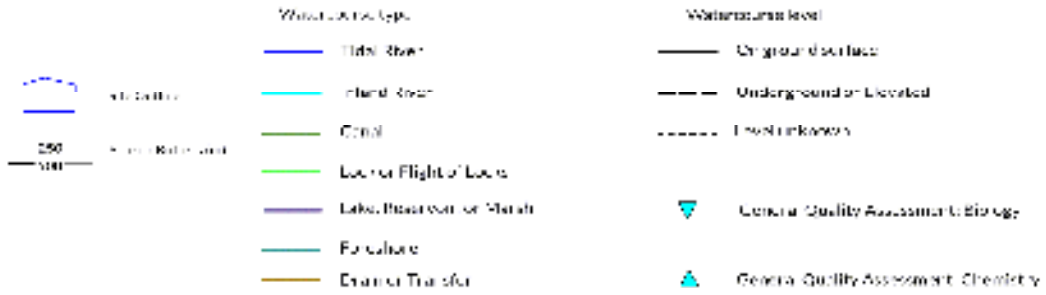


6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
9	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
10	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
1	292	SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
11	325	SE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2A	384	S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
12A	432	S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
19	0	On Site	529800 141200	Status: Historical Licence No: 28/39/32/0023 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: GRAVEL AT FERNHILL NURSERY, HORLEY, SURREY Data Type: Point Name: JEALS NURSERIES (FERNHILL) LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/11/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/03/1968 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
34	N	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
223	W	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
397	SE	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
201B	1121	SW	528800 140200	River Name: Gatwick Stream Reach: Crawley Stw - Gatwick Pond E End/Start of Stretch: Start of Stretch NGR	C	D	D	D	D
202A	1165	SW	528700 140300	River Name: Gatwick Stream Reach: Gatwick Pond E - Mole End/Start of Stretch: Start of Stretch NGR	C	E	D	D	D
203A	1165	SW	528700 140300	River Name: Gatwick Stream Reach: Crawley Stw - Gatwick Pond E End/Start of Stretch: End of Stretch NGR	C	D	D	D	D

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
204B	1121	SW	528800 140200	River Name: Gatwick Stream Reach: Peas Pottage - Crawley Stw End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
205B	1121	SW	528800 140200	River Name: Gatwick Stream Reach: Crawley Stw - Gatwick Pond E End/Start of Stretch: Start of Stretch NGR	C	C	C	C	C
Not shown	1144	SW	529130 139690	River Name: Gatwick Stream Reach: Peas Pottage - Crawley Stw End/Start of Stretch: Sample Point NGR	B	B	B	B	B
207A	1165	SW	528700 140300	River Name: Gatwick Stream Reach: Crawley Stw - Gatwick Pond E End/Start of Stretch: End of Stretch NGR	C	C	C	C	C
208A	1165	SW	528700 140300	River Name: Gatwick Stream Reach: Gatwick Pond E - Mole End/Start of Stretch: Start of Stretch NGR	C	C	C	C	C
209A	1178	SW	528690 140290	River Name: Gatwick Stream Reach: Crawley Stw - Gatwick Pond E End/Start of Stretch: Sample Point NGR	C	C	C	C	C
210	1288	W	528184 142152	River Name: Gatwick Stream Reach: Gatwick Pond E - Mole End/Start of Stretch: Sample Point NGR	C	C	C	C	C

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	On Site			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
2	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
3	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
4	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
14	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
16	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
17	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
18	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
19	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.9
20	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
24	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
26	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
28	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
32	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
33	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
35	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
36	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
37	0 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	0	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	On Site			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
57	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
58	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
59	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
61	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
62	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
63	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
64	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
65	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
67	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
68	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
69	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
71	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
73	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.9
75	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
80	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
81	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
82	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
83	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
85	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
86	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
87	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
88	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
89	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
90	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
91	0 On Site	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
92	0 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
38	4	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
93	4 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	7 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	7 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
41	7 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
94	7 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
95	7 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
96	7 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	8 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.3
43	8 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
97	8 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.3
98	8 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
44	9 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
99	9 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	14 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
100	14 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
46	15 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	15 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
101	15 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
102	15 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	20 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	20 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
103	20 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
104	20 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	21 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
51	21 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
105	21 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
106	21 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	24 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
53	24 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
107	24 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
108	24 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	26 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
109	26 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	27 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	27 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
57	27 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
110	27	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
111	27 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
112	27 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
58	28 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
113	28 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	35 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
60	35 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
114	35 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
115	35 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
61	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
62	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
63	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
64	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
116	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
117	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
118	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
119	41 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
65	42 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	42 W	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
120	42 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
121	42 W	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
67	47 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
122	47 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
68	48 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
123	48 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
69	51 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	51 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
124	51 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
125	51 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
71	54 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
72	54 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
126	54 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
127	54 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
73	57 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
128	57 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	65 E	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
129	65 E	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
75	67	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.4
130	67 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.4
76	68 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
131	68 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	72 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	72 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
132	72 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
133	72 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	83 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
134	83 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
80	91 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
135	91 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	102 W	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.1
136	102 W	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
82	107 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
137	107 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	108 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	108 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
138	108 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
139	108 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
85	122 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
140	122 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
86	124 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	124 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
141	124 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
142	124 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
88	125 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
143	125 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
89	129 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
90	129 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
144	129 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
145	129 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
91	136 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
146	136 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	138 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
147	138 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
93	140 SE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
148	140	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.4
94	144 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
149	144 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
95	146 SE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
96	146 SE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
150	146 SE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
151	146 SE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
97	149 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
152	149 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
98	154 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
153	154 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	157 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
154	157 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
100	180 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
155	180 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
101	231 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
102	231 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
103	231 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
156	231 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
157	231 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
158	231 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.0
104	235 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.7
159	235 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.7
105	247 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
160	247 NE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
106	258 SE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
107	258 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
161	258 SE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
162	258 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
108	261 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
163	261 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
109	266 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
164	266 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
110	272 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
165	272 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
111	278 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
166	278 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
112	284	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
167	284 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
113	286 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
168	286 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
114	289 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
115	289 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
169	289 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
170	289 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
116	293 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
171	293 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
117	294 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
172	294 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
118	297 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.2
173	297 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
119	298 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
174	298 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
120	299 SW	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
175	299 SW	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
121	302 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
176	302 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
122	305 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
123	305 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
177	305 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
178	305 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
124	306 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
179	306 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
125	307 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
180	307 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
126	310 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
181	310 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
127	313 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
182	313 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
128	316 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
183	316 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
129	317 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
184	317 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
130	321 E	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
185	321	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	E			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
131	322 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
186	322 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
132	324 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
187	324 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
133	327 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
134	327 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
188	327 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
189	327 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
135	328 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
136	328 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
190	328 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
191	328 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
137	329 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
192	329 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
138	330 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
193	330 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
139	333 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
194	333 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
140	338 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
195	338 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
141	339 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
142	339 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
196	339 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
197	339 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
143	341 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
144	341 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
198	341 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
199	341 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
145	343 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
146	343 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
200	343 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
201	343 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
147	351 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
202	351 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
148	354 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
149	354 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
203	354	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
204	354 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
150	357 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
205	357 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
151	358 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
206	358 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
152	361 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
207	361 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
153	363 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
208	363 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
154	367 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
209	367 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
155	368 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 5.3
156	368 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
157	368 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
210	368 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
211	368 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
212	368 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
158	369 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
159	369 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.0
160	369 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
213	369 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
214	369 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.0
215	369 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.3
161	370 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
216	370 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
162	373 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
163	373 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
164	373 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
217	373 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
218	373 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
219	373 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
165	374 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
166	374 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
167	374 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
Not shown	374 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	374 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	374	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
168	375 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	375 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
169	376 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
224	376 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
170	382 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	382 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
171	387 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
Not shown	387 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
172	389 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
227	389 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
173	390 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
174	390 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
228	390 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	390 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
175	391 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
Not shown	391 N	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
176	395 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
231	395 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
177	401 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	401 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
178	402 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
179	402 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
233	402 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
234	402 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
180	403 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.2
Not shown	403 NE	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.2
181	410 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
236	410 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
182	413 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	413 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
183	419 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
184	419 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
185	419 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
238	419 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
239	419 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
240	419 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
186	422	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
241	422 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
187	431 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
242	431 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
188	437 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
243	437 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
189	443 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
190	443 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
244	443 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
245	443 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
191	446 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
246	446 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
192	463 SE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 3.4
247	463 SE	Burstow Stream Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
193	467 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	467 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
194	469 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
249	469 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
195	471 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
196	471 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	471 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
251	471 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
197	477 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
198	477 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
252	477 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
253	477 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
199	491 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	491 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
200	493 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	493 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

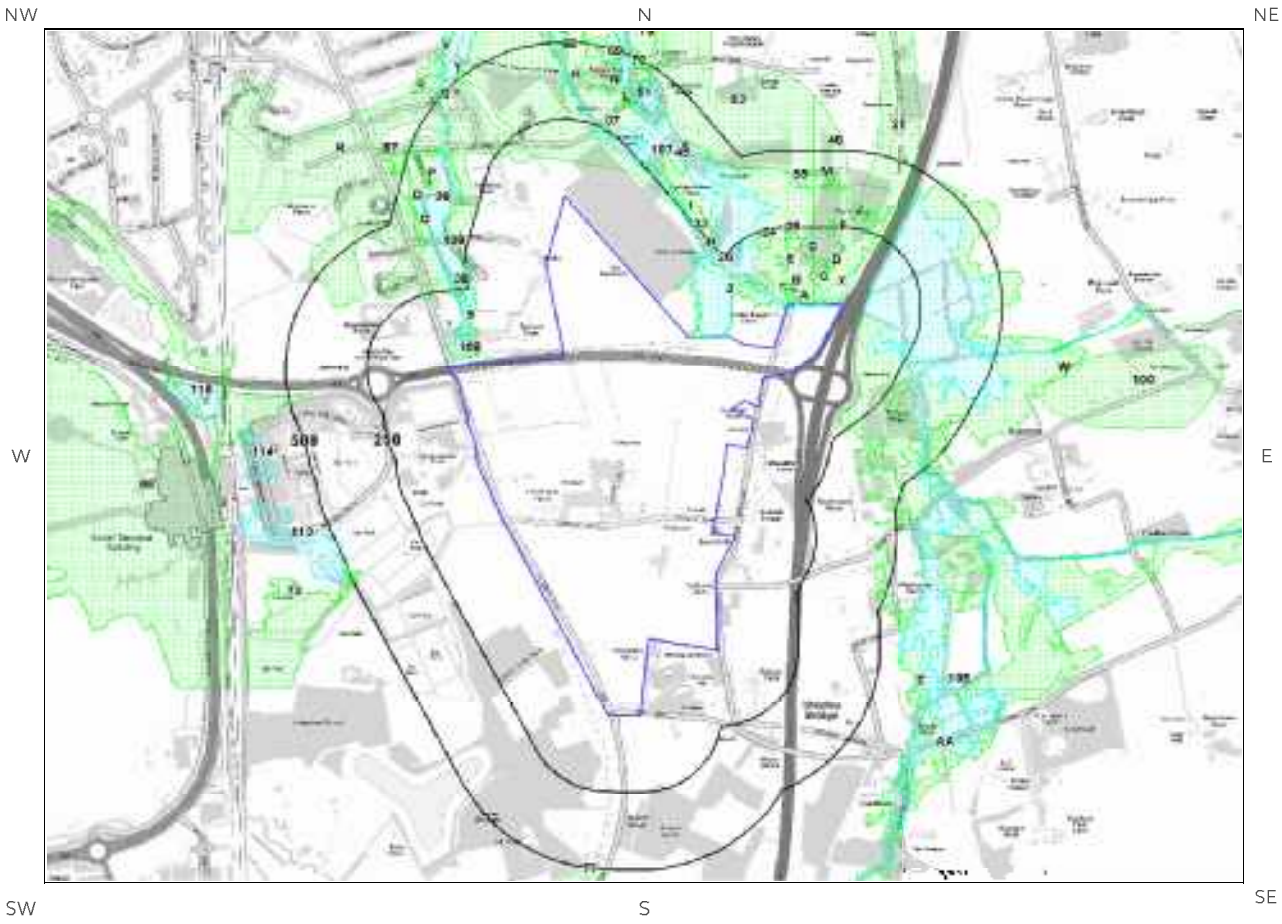
Surface water features within 250m of the study site	Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
3	N
3	W
4	NW
7	SW
9	W
12	E
12	W
15	SW
20	N
20	N
20	SE
21	SW
24	N
26	W
27	N
33	N
34	N
47	E
48	N
50	E
68	NE
72	N

Distance (m)	Direction
81	E
82	W
89	SE
102	N
107	N
115	N
119	N
124	N
124	N
144	W
154	W
157	SW
231	E
234	NE
235	NW
247	NE
248	W

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

Search Buffers (m)

Zone 2 Floodplain

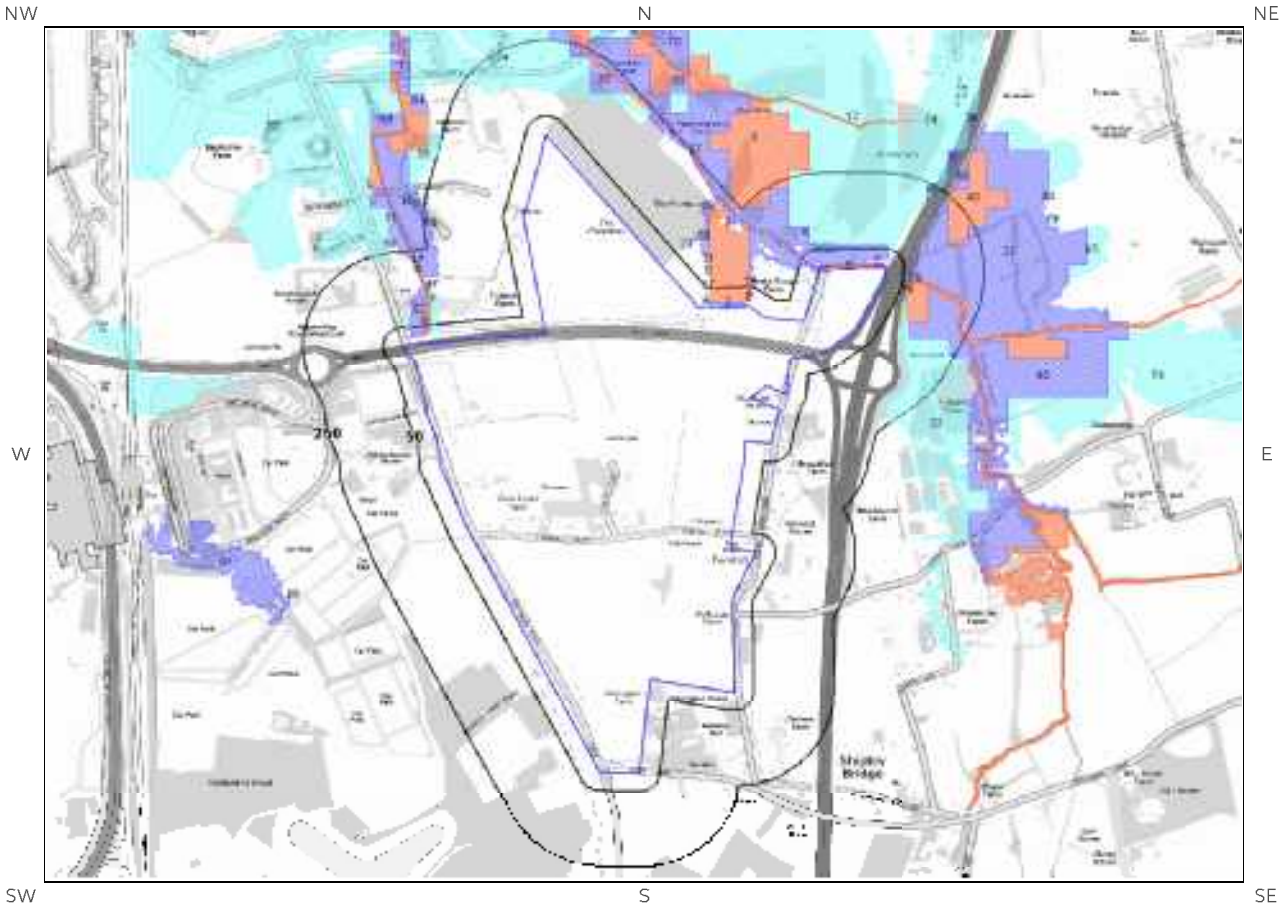
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



Site Outline

Search Buffers (m)

RoFRaS Rating

Very Low

Low

Medium

High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
2X	0	On Site	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
3	0	On Site	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
4	0	On Site	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
5A	0	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
6A	1	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
7A	4	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
8F	9	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
9	21	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
10B	29	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
11C	52	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
12	63	E	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
13B	71	NW	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
14C	74	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
15D	87	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
16E	104	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
17R	115	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
18D	117	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
19E	126	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)

20G	149	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
21	157	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
22F	169	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
23G	172	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
24	193	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
25	202	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
26	213	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
27H	214	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
28F	219	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
29H	222	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
30H	223	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
31H	224	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
32H	225	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
33	227	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
34I	232	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
35I	232	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
36	237	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
37	237	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
38	241	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
39I	247	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	19-Nov-2019	Zone 3 - (Fluvial Models)
2X	0	On Site	19-Nov-2019	Zone 3 - (Fluvial Models)

3	24	N	19-Nov-2019	Zone 3 - (Fluvial Models)
4	53	N	19-Nov-2019	Zone 3 - (Fluvial Models)
5A	69	E	19-Nov-2019	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — High

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a High (1 in 30 or greater) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1A	0.0	On Site	Low
2	0.0	On Site	Medium
3	0.0	On Site	Medium
4	0.0	On Site	Medium
5	0.0	On Site	Medium
6	0.0	On Site	High
7	9.0	N	Medium
8B	15.0	N	Medium
9A	20.0	N	Low
10D	21.0	N	Medium
11B	22.0	N	Medium
12	26.0	N	Low
13C	27.0	N	Medium
14	30.0	N	Medium
15C	31.0	N	Low
16D	42.0	N	Low

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site	None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site	None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site	Identified
Clearwater Flooding or Superficial Deposits Flooding	Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

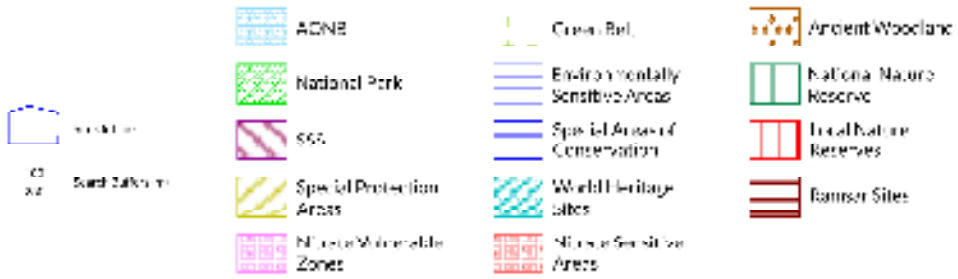
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result	High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

39

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
1	100	SW	Unknown	Ancient & Semi-Natural Woodland
2	122	N	Unknown	Ancient & Semi-Natural Woodland
3	187	SE	Unknown	Ancient & Semi-Natural Woodland
4	203	SE	Unknown	Ancient & Semi-Natural Woodland
5	227	S	Unknown	Ancient & Semi-Natural Woodland
6	235	N	Unknown	Ancient & Semi-Natural Woodland
7	388	S	Unknown	Ancient & Semi-Natural Woodland
8	423	S	Unknown	Ancient & Semi-Natural Woodland
9	457	S	Unknown	Ancient & Semi-Natural Woodland
10	562	S	black corner wood	Ancient & Semi-Natural Woodland
11	578	SW	Unknown	Ancient & Semi-Natural Woodland
12	584	SW	Unknown	Ancient & Semi-Natural Woodland
13	659	S	black corner wood	Ancient & Semi-Natural Woodland
14	760	SE	Unknown	Ancient & Semi-Natural Woodland
15	815	S	black corner wood	Ancient & Semi-Natural Woodland
16	841	E	Unknown	Ancient & Semi-Natural Woodland
17	902	S	black corner wood	Ancient & Semi-Natural Woodland
18	954	E	Unknown	Ancient & Semi-Natural Woodland
19	988	S	WELLFIELD COPSE	Ancient & Semi-Natural Woodland
20	1095	E	Unknown	Ancient & Semi-Natural Woodland
21A	1104	NE	Unknown	Ancient Replanted Woodland
22A	1107	NE	Unknown	Ancient Replanted Woodland
23	1113	E	Unknown	Ancient & Semi-Natural Woodland
24	1118	SE	Unknown	Ancient & Semi-Natural Woodland
25B	1121	NE	Unknown	Ancient & Semi-Natural Woodland
26B	1151	NE	Unknown	Ancient & Semi-Natural Woodland
Not shown	1162	S	titchmeres wood	Ancient & Semi-Natural Woodland
Not	1244	N	Unknown	Ancient & Semi-Natural

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
shown				Woodland
Not shown	1448	SE	BRIDGELANDS SHAW	Ancient & Semi-Natural Woodland
30	1501	SE	SHIPLEY BRIDGE WOOD	Ancient & Semi-Natural Woodland
Not shown	1545	S	forge wood, three acre plantation, the birches	Ancient & Semi-Natural Woodland
32	1581	SE	SHIPLEY BRIDGE WOOD	Ancient & Semi-Natural Woodland
33	1615	SW	Unknown	Ancient & Semi-Natural Woodland
Not shown	1615	N	Unknown	Ancient & Semi-Natural Woodland
Not shown	1766	S	Unknown	Ancient & Semi-Natural Woodland
Not shown	1778	S	Unknown	Ancient & Semi-Natural Woodland
37	1938	E	Unknown	Ancient & Semi-Natural Woodland
Not shown	1946	S	Unknown	Ancient & Semi-Natural Woodland
Not shown	1960	S	HEATHYGROUND WOOD	Ancient & Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

8

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
40	0	On Site	London Area Greenbelt	Reigate and Banstead District (B)
41	0	On Site	London Area Greenbelt	Reigate and Banstead District (B)
42	0	On Site	London Area Greenbelt	Reigate and Banstead District (B)
43	0	On Site	London Area Greenbelt	Tandridge
44	715	SE	London Area Greenbelt	Tandridge
45	1460	SE	London Area Greenbelt	Mid Sussex District
Not shown	1537	N	London Area Greenbelt	Reigate and Banstead District (B)
47	1954	W	London Area Greenbelt	Mole Valley District

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell*[*] hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand* hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Iron Ore	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
0.0	On Site	Not available	Iron Ore	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

Past underground mine workings may occur. The rock types present in these areas are such that small mineral veins may be present on which it is possible that small scale mining has been undertaken and/or it is possible that limited underground extraction of other materials may have occurred. All such occurrences are likely to be of minor localised extent and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified

Guidance: No Guidance Required.

Contact Details

Clarkebond (UK) Limited
Telephone: 01179 292 244
bristol@clarkebond.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard: **020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Crawley Borough Council
Phone: 01293 438 000
Web: http://www.crawley.gov.uk/
Address: Town Hall, The Boulevard, Crawley, West Sussex, RH10 1UZ

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

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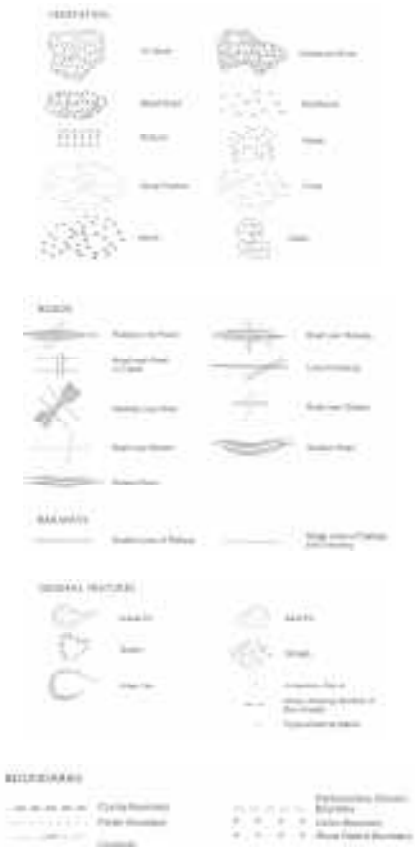

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Technical Helpline

Tel 08444159000

groundsureinsight@groundsure.com

www.groundsure.com

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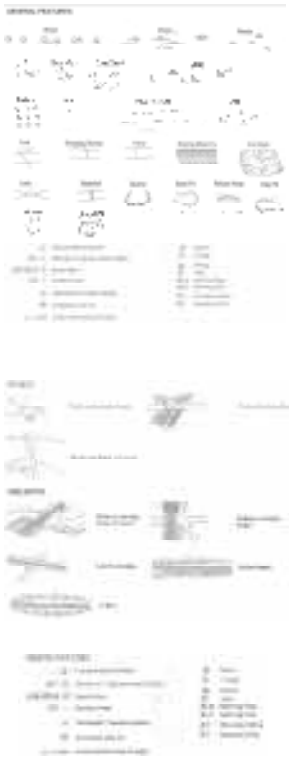

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County Series

1:1,250 scale

~

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Appendix D – Local Power network

Appendix E – Local Gas Network

Appendix F – SES Water Network

Appendix G – Thames Sewer Maps