Conceptual Site Model, Environmental Setting and Site Design Report

Radlett SRFI Area 2

September 2023

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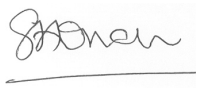

Comments

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1. Introduction

1.1 The Brief

Waterman Infrastructure & Environment Limited ("Waterman") has been appointed to prepare an application for an Environmental Permit (EP). The EP application is to authorise the permanent deposit of waste on land as a recovery activity. The waste recovery activity is for site-derived waste to be used in the construction of landscape bunds associated with the construction of the Radlett Strategic Rail Freight Interchange (SFRI), located at North Orbital Road, Upper Colne Valley, Hertfordshire, AL2 2ET – specifically the two landscape bunds on Area 2.

SEGRO Radlett Ltd is the master developer – the party responsible for bringing the scheme to fruition. It has appointed VolkerFitzpatrick Limited (VFL) to undertake the earthworks including bund construction and other enabling activities. VFL is therefore the EP applicant and will be the EP operator.

A Conceptual Site Model and Environmental Setting and Site Design report (ESSD) is required to support the waste recovery EP application.

1.2 Context

Through the Radlett SRFI scheme SEGRO Radlett Ltd proposes to develop an intermodal terminal, with rail and road distribution units. The SRFI is located to the south of St. Albans, adjacent to the M25 and Midland Main line (MML) railway. The terminal will be serviced by a new dual track rail chord connected to the MML.

The SRFI comprises a 419-hectare (ha) development area that is sub-divided into eight plots referred to as Areas 1 to 8. The areas have the following proposed uses:

- Areas 1 (146 ha) and 2 (26 ha) – the SRFI Development Area. Area 1 will comprise an intermodal terminal and a rail and road served distribution facility consisting of several large warehouses. The rail chord connecting Area 1 to the MML will run through Area 2. Area 2 will also feature two landscape bunds (LS1 and LS2) that will help to screen the SRFI from public view and provide acoustic screening; and
- Area 3 to 8 (247 ha) – will be developed with additional works and landscaping to provide publicly accessible open land and a community forest.

The Areas are shown on plan "Different Development Phases (Areas 1 – 8) of the SRFI" (D-ESSD1A - drawings are to be found in the separate "ESSD drawings and information bundle").

To enable construction of the SRFI, earthworks are required to prepare the SRFI Development Area as summarised below:

Area 1

Earthworks material will be excavated from the northern half of Area 1 where the levels need to be lowered to enable access from the public highway to the north, to install surface water flow attenuation features and to create suitable development platform levels. The cut will be used to raise levels across the southern half of Area 1, to construct landscape bunds around the perimeter of Area 1 and to construct the landscape bunds on Area 2.

Area 2

Excavation is required in Area 2 to construct the new rail chord linking the MML and the SRFI – the rail chord needs to pass under the MML. Some of the excavation will be into historic landfill, with the waste

arising to be processed by mobile treatment EP to generate useable earthworks material (i.e. meeting the specification for the works) with the unusable waste despatched for recovery or disposal elsewhere. The waste recovered from processing the historic landfilled waste as well as restoration soils and capping material from Area 2 and excavation arisings cut from Area 1 will be used to construct the landscape bunds on Area 2.

The cut and fill locations across Areas 1 and 2 are shown on plan "Earthworks Analysis Cut and Fill Volumes" (D-ESSD4A).

Regulatory Control of Earthworks

Pre-application liaison has been undertaken with both local (Hertfordshire and North London) and national (Permitting Support Centre) EA teams, seeking to establish the waste / non-waste status of various excavation arisings and the appropriate mechanisms to regulate the use of the arisings as earthworks materials. Aspects of this liaison are not concluded at the time of writing.

The southern part of Area 1 has been subject to mineral extraction and restoration. The land is recorded in Landmark data as "EA historic landfill polygon" and "LA recorded landfill site". If the restoration material can be demonstrated to comprise overburden and interburden from the mineral extraction activity, excavation arising generated from that area will be excluded from the scope of waste. In that case, the reuse of such material will be managed under the Definition of Waste Development Industry Code of Practice (DoWCoP) in order to maintain an auditable record of the materials use within the earthworks. If the non-waste status of such material cannot be demonstrated / agreed, the arisings would be managed as waste. The local EA team has been provided with evidence to support non-landfill history of the southern part of Area 1 and the information has been passed forward to the EA team responsible for maintaining the historic landfill dataset with a request that the record is removed.

Natural soils and Made Ground will arise from excavation into the northern part of Area 1 – i.e. from land outside the historic mineral workings. Whilst natural soils excavated and able to be used in construction on the same site are excluded from the scope of waste, their use in earthworks on this scheme would be managed under the DoWCoP, as would the use of Made Ground.

The arisings from excavation into the historic landfill in Area 2 will be waste. The arisings will be treated under mobile treatment EP and the useful products of treatment will retain their waste label until their permanent deposit into earthworks, regulated by waste recovery EP. For the avoidance of doubt, the treatment will not be regulated by the site-based waste recovery EP.

Due to the unsettled status of the material to be cut from the mineral restoration area in Area 1, the waste recovery EP will include both bunds on Area 2. The permitted area boundary is limited to the areas occupied by landscape bunds LS1 and LS2 and is shown on plan "Area 2 Bunds Waste Recovery Area Boundary" (D-ESSD1C). The boundary for Area 2 is shown on plan "Site Location Plan" (D-ESSD1B).

1.3 Report Structure and Scope

The EP application requires an ESSD. This has been developed using the EA guidance[1].

Technical information prepared for the Radlett SFRI scheme has been utilised where appropriate. Including but not limited to that prepared for:

- the planning applications for the scheme;
- data and analysis from ground investigation;
- waste classification analysis of samples collected from the historic landfill area and across areas to be

[1] Landfill operators: environmental permits - What to include in your environmental setting and site design report - Guidance - GOV.UK (www.gov.uk) (accessed 31/06/2023).

excavated in Area 1; and

- specification for materials suitable for use in the earthworks.

The applicant's general and environmental management policies and procedures are in place for the SRFI construction site, and will be applied as appropriate to the permitted activities. The applicant's documents referred to are included elsewhere in the application bundle.

The ESSD will form part of the Environmental Management System (EMS) to be operated by the applicant for the lifetime of the EP. A copy of the ESSD and EMS will be kept in the VFL site office.

The now withdrawn EA ESSD template[2] has been used to structure the report, any sections that are not applicable to the activity have been included for completeness. With an explanation of why they are not relevant.

The ESSD template includes a list of anticipated drawings. Those that are relevant to this application are listed in Appendix A at the end of the ESSD and are presented in the "ESSD drawings and information bundle".

In the report's text the plans may be referred to in full or by abbreviated reference e.g. D-ESSD1A.

1.4 Limitations and Constraints

Waterman has endeavoured to assess all information provided to them during the preparation of this document. But makes no guarantees or warranties as to the accuracy or completeness of this information.

The conclusions resulting from this report are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

[2] [Withdrawn] Report template: Environmental setting and site design - GOV.UK (www.gov.uk) (accessed 15/06/2023)

2. Site details

2.1 Site Classification

The permitted activity is classified as recovery of waste on land. As such, the EA landfill location policy does not apply.

2.2 Site Location, Access and Environs

The permitted area is situated within Area 2 of the Radlett SFRI Scheme, at approximate address North Orbital Road, Upper Colne Valley, Hertfordshire, AL2 2ET, centred at approximate National Grid Reference TL 16114 03242. The waste recovery EP boundary is shown on D-ESSD1C. The Radlett SFRI development areas are shown on D-ESSD1A. The various land-uses around Area 2 including receptors potentially sensitive to emissions from the activities on Area 2, are shown on D-ESSD2A.

The northeast of Area 2 is bordered by agricultural land and the Napsbury Park residential area. To the east lies more agricultural land and the River Colne. The southern boundary is adjacent to the M25 London Orbital Motorway, further south is a mix of woodland, small lakes, grassland and a commercial / industrial business park. The western side is flanked by the Midland Main Line (MML), beyond which is an expanse of grassland (Area 1 of the SRFI).

Area 2 of the Radlett SFRI Scheme is a 26 ha, irregularly shaped area grassed area. It is currently disused and not accessible to the public. Area 2 is bisected by several watercourses draining to a further watercourse on its eastern boundary.

During construction, access to Area 2 will be via a single entrance from Area 1. Entrances to Area 1 will be strictly controlled by security staff. Access will be regulated by a web based biometric sign-in system. The permitted area will receive waste arising from elsewhere in the SFRI construction site only – no waste will be imported from outside the Radlett SFRI Scheme.

Site Layout Plans for Areas 1 and 2 showing site access and security arrangements are provided in the drawings bundle submitted in support of the EP application (D-ESSD6E and D-ESSD6F)

2.3 Former and Current Waste Management Activities

2.3.1 Historical landfill

Two historic landfills have been identified that lie wholly, or partially within Area 2 with a further four within a 500m radius. The historic Napsbury landfill is found across the northeastern and eastern extent of Area 2. The historic Old Parkbury landfill underlies the southernmost portion of Area 2. The landfill locations are shown on D-ESSD2B and D-ESSD2E. Waste is to be excavated from the Napsbury landfill to create the rail chord corridor, and the landscape bunds will be constructed over the historic landfills. Details of the landfills historical development are included in section 3.1.

The Groundsure Report (Appendix B) identifies one active environmental permit within 500m of the Site. The environmental permit (EA/EPR/DB3806HE/A001) is registered to Wylie Environmental Limited, is located 141m south west, and refers to a recycling facility.

2.4 Topography and Creating the Rail Chord and Landscape Bunds

The topography of Area 2 is predominately flat at 68m Above Ordnance Datum (AOD), until reaching the western boundary. At this point the topography slopes significantly to reach the MML railway embankment at 74m AOD.

Areas 1 and 2 will be developed into an intermodal terminal, with rail and road distribution units serviced by a new dual track rail chord. Area 1 will undergo an extensive cut fill exercise to reduce levels and create surface water flow attenuation features in the north. The soil cut from north of Area 1 will be used to raise to levels in the south to allow for suitably flat development platforms for the warehouses and associated infrastructure. The excavation arisings will also be used in the creation of landscaping bunds on Area 2 (LS1 and LS2) and on Area 1 (LS3 – 9). The excavation arisings will be transported to Area 2 from Area 1 by a new underpass that will be constructed early in the earthworks programme.

A cut exercise will also take place in Area 2 as part of the rail chord construction. This cut will include excavating waste from the historic Napsbury landfill. The landfill waste will be entirely removed from beneath the route of the new rail chord and be replaced with engineered fill prior to rail chord construction. The topsoil from the footprint of the proposed landscape bunds will be removed before bund construction commences. The historically landfilled waste will be processed within Area 2 under a separate mobile plant EP deployment, to recover material suitable for use in the earthworks. This recovered material will be used in bund construction on Area 2 along with site-derived soils from the cut in Area 1. All other bunds (around Area 1) will be constructed using site-derived natural soils and non-waste Made Ground from Area 1. The cut and fill model for Area 2 is complete, the Area 1 model is subject to detailed design. However, for information an earlier design stage cut and fill plan for the SRFI Development Area is included as D-ESSD4A.

Plans detailing the completed bunds are D-ESSD1C, D-ESSD1SD, D-ESSD4B and sections A and B on D-ESSD4C. A plan showing the topography of the wider area following the completion of the Radlett SRFI scheme is included as D-ESSD5G.

3. Source

3.1 Historical Development – Area 2

Area 2 consisted of undeveloped, assumed agricultural land, from at least 1883. This land was later subjected to sand and gravel extraction in the 1960's and 1970's. The sites of mineral extraction were then infilled using municipal and demolition waste, under two separate landfill authorisations. Both waste licences were surrendered in the 1980's. The historic landfill areas and their contents are summarised below, for further detail the see Ground Conditions Report (RAD-WAT-A2EX-XX-RP-I-003), submitted as part of the EP application[3].

3.1.1 Napsbury Tip

The Napsbury Tip (waste licence 78/48), was active from 1978 to 1984, accepting a range of commercial, household and inert waste.

The Groundsure report (Appendix B) identifies the extent of the Napsbury Tip, the extent has been further refined by ground investigation as shown on drawing D-ESSD1E.

Ground investigations recorded the waste as consisting of a black, dark grey and brown sandy gravelly clay matrix, with inclusions such as fragments of wood, rubber, plastic sheeting.

Excavation into Napsbury Tip to create the new rail chord will generate waste that will be treated to recover waste to be used in the waste recovery activity. Undisturbed historic landfill will remain under both bunds on Area 2.

3.1.2 Old Parkbury Tip

This historic landfill area (waste licence 77/20) underlies the southern part of Area 2 and extends beyond the southern boundary. Ground investigations recorded the waste as generally comprising a dark brown slightly sandy gravelly silty clay with occasional black specks and fragments of glass, paper, plastic, textiles and ceramics.

The historic Old Parkbury Tip area is not subject to the cut exercise in the construction of the rail chord. Therefore waste from this historic landfill area is not relevant to the waste recovery application. It is noted the southernmost extent of the permitted area overlies the historic Old Parkbury Tip as shown on D-ESSD1C.

3.2 Historical Development – Area 1

Historical records indicate Area 1 mainly comprised agricultural land up to around 1930 when Radlett Aerodrome was constructed. Radlett Aerodrome occupied the southern two-thirds of Area 1 until its closure in 1970.

Mineral extraction commenced in Area 1 in the early 1990s following planning approval for sand, gravel, and hoggin extraction and restoration to agriculture (planning permission ref. 5/0830-83). Mineral extraction is understood to have ceased in the late 1990s and restoration to agricultural using site-won overburden and interburden was completed in the early 2000s.

Landmark data records Area 1 as historical landfill (EAHLD12290 and PC8538). A detailed review of the Mineral Planning Authority Records available from Hertfordshire County Council and from ground investigations completed in 2016 have identified the option to complete landfilling post mineral extraction was not taken. Area 1 was instead restored with site won interburden and overburden. Landfill material is

[3] Ground Conditions report for Area 2 (Waterman RAD-WAT-A2EX-XX-RP-I-0003), dated January 2023

therefore absent on Area 1.

Excavations will be completed on Area 1 to meet the required levels under planning and form the development platform. Excavated material will include Made Ground, restoration material and Natural material which will be recovered to be used in the waste recovery activity. Landfill material will not be generated from Area 1.

3.3 Proposed Development

3.3.1 Radlett SRFI

The Radlett SFRI scheme will deliver:

- Areas 1 (146 ha) and 2 (26 ha) – the SRFI Development Area. Area 1 will comprise an intermodal terminal and a rail and road served large distribution facility consisting of several large warehouses. The rail chord connecting Area 1 to the MML will run through Area 2. Area 2 will also feature two landscape bunds that will help to screen the SRFI from public view; and
- Area 3 to 8 (247 ha) – will be developed with additional works and landscaping to provide publicly accessible open land and a community forest.

Waste Recovery Area

The permitted area comprises the two landscape bunds to be constructed in Area 2.

3.3.2 Landscape bunds

The Radlett SFRI scheme will require a total of nine landscape bunds across Area 1 (LS3-9) and Area 2 (LS1-2) to act as visual screens for the intermodal distribution facility and the railway chord. In Area 2 two bunds will be constructed, one positioned in the north of Area 2 (LS2) between the MML and the new rail chord and the other larger bund (LS1) positioned to the south and east of the rail chord extending to the south.

LS1 and LS2 will be erected to achieve a finished maximum level of 80m AOD, resulting in total heights of 7m to 9m above ground level, with an approximate maximum height of 12.0m above ground level. The bunds are shown on D-ESSD1C. The topography of the bunds is discussed in section 2.4 above.

The location, height and finish of the landscape bunds have been agreed through the planning process. Drawings D-ESSD5A and D-ESSD5B are parameter plans associated with the outline planning application. Drawings D-ESSD5C – D-ESSD5H are the further developed proposals associated with the landscape reserved matters planning application which refine the landscape masterplan and provide typical planting details. The changes between outline planning application and reserved matters application are discussed in report that accompanied the reserved matters application (included as Appendix C). Drawing D-ESSD5I has been developed recently to provide the further detail required for the wetland / pond area to be completed on Area 2.

3.3.3 Quantity of waste

The software package Civil3D is used to calculate the various quantities of earthworks material to arise and be used. Existing topographic survey data are loaded into the model to create a ground surface in 3D. The surface levels for the completed bund is then loaded into the model (which may be higher or reduced compared to existing) and the software then calculates the volume between the two surfaces.

The waste recovery area boundary is the footprint of the two bunds in Area 2 and the entirety of the earthworks material to be used to construct the bunds. A plan and cross sections for the bunds in Area 2,

are presented in D-ESSD4. The volume of fill required to complete the two bunds is 392,446m^3. Based on a conversion factor of 2.0 tonnes per m^3 for the waste to be used as fill, the maximum quantity of waste is given as 784,892 tonnes.

Based on the Plaxis 2D modelling results (discussed in the Stability Risk Assessment (SRA) (RAD-WAT-A2EX-XX-RP-I-0031)), the maximum settlement for bund LS2 (the Northern Bund) is 0.235m. The maximum settlement for bund LS1 (the Southern Bund) is 0.395m. Therefore, to allow for settlement and the required "top up" an additional volume has been allowed for in each bund volume stated above - specifically 28,507m^3 for LS1 and 4,512m^3 for LS2. The required "top up" every year will be based on the settlement patterns and rates according to the monitoring data.

3.3.4 Waste types

On the basis of recent ground investigations, it is anticipated the waste arisings from the cut into the historic Napsbury Tip landfill area will require treatment, under a separate mobile treatment EP, to render a fraction of the waste suitable for use in the construction of the two landscape bunds. The products of treatment will be coded as wastes arising from the mechanical treatment of waste (Chapter 19 of the EWC). Waste unsuitable for use in the bunds will be separated during the treatment process and sent to an appropriate permitted facility for recovery or disposal. The chemical and physical specifications the waste must meet to be suitable for use are discussed in detail in the Waste Recovery Plan and Waste Acceptance Procedures included in the EP application.

The remainder of the fill needed for the Area 2 bunds will be supplied by excavations to reduce ground levels and install surface water flow attenuation features across the northern half of Area 1 and from excavations on Area 2 outside the footprint of the historic landfills. The excavation arisings could include both natural ground and Made Ground which are acceptable for use in the earthworks without treatment and so the arisings will be coded as waste arising from construction activities (Chapter 17 of the EWC).

The waste will be limited to non-hazardous waste as set out in Table 1.

Table 1: Proposed list of site-derived wastes

EWC code	EWC description	Limitations
17 05 04	Soil and stones other than those mentioned in 17 05 03	Limited to site-derived material meeting the chemical and physical specifications for the works
17 09 04	Mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	Limited to site-derived material meeting the chemical and physical specifications for the works
19 12 09	19 12 09 minerals (for example sand, stones)	Limited to site-derived material meeting the chemical and physical specifications for the works
19 12 12	19 12 12 other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Limited to site-derived material meeting the chemical and physical specifications for the works

3.3.5 Earthworks programme

The current earthworks programme for the Radlett SFRI Scheme commences in spring 2024 and concludes in summer 2026. The construction of LS1 will occur in campaigns across the entire period, the construction of LS2 will occur in 2026.

3.3.6 Landform and after-use

The topography of the finished bunds is set out in section 2.4 above. The surface finish (planting) is set out on plans referred to from section 3.2.2 above. After-care is discussed in section 5.4.

Area 2 will not be publicly accessible, it is not intended to function as country park in the manner that Areas 3-8 will.

3.3.7 Environmental Permitting Regulation 2016 – Schedule 22 – hydrogeological risk screening

The findings of a Hydrogeological Risk Screening are presented in the Hydrogeological Risk Assessment (HRA) (RAD-WAT-A2EX-XX-RP-I-0029) included in the EP application bundle.

4. Pathway and Receptor

4.1 Geology

The geological profile across Area 2 has been established from published geological maps (British Geological Survey (BGS) – D-ESSD8) and ground investigation data. There are areas underlain by historic landfill with the remainder underlain by Made Ground and the natural strata. See D-ESSD1E which illustrates the extent of the two broad types of ground conditions. The permitted area straddles both types of ground condition. The ground conditions are summarised in Table 2 and Table 3 below.

Table 2: Area 2 geology in non-landfilled areas

Strata	Typical Thickness (Minimum – Max)	Typical Description
Topsoil	0.05m – 0.6m	Grass over greyish brown/dark brown/brown slightly gravelly sandy silt with frequent rootlets and occasional roots. Gravel is angular to rounded fine and medium flint, brick and rare glass, chalk, and concrete.
Made Ground / General Fill	0.2m – 2.95m	Silty very sandy gravel or slightly gravelly sandy silt with fragments of fine to coarse clinker, brick, flint, concrete and rare tarmacadam, coal, ash, ceramic, and glass gravel. Occasional medium subangular brick cobble content, roots and rootlets. Firm to stiff sandy gravelly clay or clayey sandy gravel. Gravel is subangular to subrounded fine to coarse flint, brick, and chalk. Occasional fragments of clinker, plastic, and concrete.
Kesgrave Catchment Subgroup	3.0m – 8.2m (Cohesive)	Firm becoming stiff orangish brown mottled light grey/dark grey, slightly sandy slightly gravelly clay. Gravel is angular to rounded fine to coarse flint and rare chalk. Occasional thin horizons (>0.5m thick) of reddish brown locally mottled grey slightly gravelly sandy clay with frequent black staining and rare remnant rootlets. Gravel is angular to rounded fine to coarse flint. Orangish brown very clayey very sandy angular to rounded fine to coarse flint gravel.
	1.8m – 13.8m (Granular)	Loose to very dense yellowish brown slightly gravelly fine and medium sand. Gravel is angular to rounded fine and medium flint and quartz. Becoming medium to very dense yellowish brown sandy subangular to rounded flint gravel with a low subrounded flint cobble content.
Chalk	0.9m – 10.3m (Structureless)	Interbedded very soft to soft off white / brown white / yellow white slightly sandy gravelly silt and silty sandy gravel with a low subangular and subrounded flint and chalk cobble content. Gravel is angular to

Strata	Typical Thickness (Minimum – Max)	Typical Description
		subrounded fine to coarse weak chalk and flint (CIRIA Grade Dc and Dm).
	>16.05m (total thickness not proven) (Structured)	Becoming extremely weak medium density white with rare black specs chalk rarely stained orangish brown. Rare bivalve shell fragments. Frequent rinded dark grey/black cobble sized flints recovered between 0.05m and 0.3m thick (predominantly CIRIA Grade B4/B3).

Table 3: Area 2 geology in landfilled areas

Strata	Typical Thickness (Minimum – Max)	Typical Description
Topsoil	0.1m – 0.4m	Grass over greyish brown/dark brown/brown slightly gravelly slightly sandy clayey silt with frequent rootlets, and occasional roots (up to 170mm diameter) and rare fragments (60x60mm) of textile. Gravel is subangular to rounded fine to coarse flint, brick, and rare concrete and chalk. Occasional pockets (up to 300mm) of stiff brown clay.
Made Ground – General Fill	0.1m – 1.85m	Soft brown/dark brown slightly gravelly slightly sandy clayey silt or slightly sandy gravelly silty clay with frequent roots (up to 250mm diameter) and rootlets. Gravel is angular to rounded fine to coarse flint, brick and concrete and rare chalk. Occasional fragments of plastic, textiles, glass, wood, and ceramic. Orangish brown/brown slightly gravelly clayey medium and coarse sand with occasional fragments of plastic. Gravel is angular to rounded fine to coarse flint and rare crystalline, chalk, brick and concrete.
Made Ground – Landfill Capping	0.1m – 2.5m	Stiff brown mottled greyish brown/orangish brown slightly sandy slightly gravelly silty clay. Gravel is subangular to rounded fine to coarse flint and rare brick, concrete, and chalk.
Made Ground – Landfill	0.2m – 5.7m	Domestic waste comprising glass, plastic, polystyrene, ceramic, metal, cables, textiles, paper, sponges, tin, newspaper (dated 1980), fragments of paper, cardboard, and book (1979) in a dark greyish brown and black sandy gravelly clay matrix. Construction-type waste including fragments of brick and masonry, concrete, and tarmacadam. Other fragments of wood, rubber, black and white plastic sheeting, electrical wires, ripped nylon sheet, wood chippings, rope, clumps of straw.

Strata	Typical Thickness (Minimum – Max)	Typical Description
Made Ground – Basal Clay Layer	0.25m – 3.0m	Soft to stiff orangish brown/brown slightly gravelly silty clay with rare fragments of wood and plastic. Gravel is subangular to rounded fine to coarse flint, chalk and rare brick. Soft to firm greenish brown and dark brown grey slightly gravelly sandy clay with rare pockets of firm orangish brown mottled bluish grey clay. Rare fragments of metal, plastic, and wood. Gravel is angular to rounded fine to coarse flint and brick.
Kesgrave Catchment Subgroup	0.8m – 9.0m (Cohesive)	Firm to stiff orangish brown and dark brown slightly gravelly sandy clay with rare pockets (up to 80x100m) of firm orangish brown mottled bluish grey clay. Gravel is angular to rounded fine to coarse flint.
	0.6m – 4.6m (Granular)	Overlying very dense brown, light brown and greenish brown slightly clayey sandy angular to rounded fine to coarse flint gravel.
Chalk	0.85m – 12.1m (Structureless)	Structureless white mottled light grey/yellow white slightly sandy slightly gravelly silt or silty sandy gravel with a low subangular and subrounded flint and cobble content. Gravel is angular to subrounded fine to coarse weak chalk and flint (CIRIA Grade Dc and Dm).
	>11.95m (total thickness not proven) (Structured)	Becoming extremely to very weak medium locally high density white mottled grey with rare black specs chalk rarely stained orangish brown. Rare bivalve shell fragments. Frequent rounded dark grey/black cobble sized flints recovered between 0.05m and 0.5m thick (CIRIA Grade A3/B3).

Further details of Area 2 geology are presented in the ground conditions report[4].

4.2 Hydrology

Area 2 currently has four ditches running broadly west to east across it, three of which discharge into a stream running broadly north to south along the eastern boundary of Area 2. As part of the works, a wetland will be created in the centre of Area 2 to provide habitat for Great Crested Newts (GCN) (see D-ESSD5I for example). Drainage from the north of Area 2 and bund LS2 will discharge to the stream at the same location as currently, and drainage from Area 1 passing through Area 2 and picking up surface water from Area 2 will pass through a culvert under bund LS1 discharging into the stream as existing. The proposed arrangements are shown on D-ESSD6A – D-ESSD6D.

Nearby surface water bodies include the Rivers Colne and Ver, to the east and southwest respectively. The EA has classified these stretches of river as the “Ver waterbody” and the “Upper Colne and Ellen Brook Water Body”, both of which have a Moderate Ecological Potential rating with the objective of achieving a Good Ecological Potential Rating. There are also several ponds / lakes that are 200m to 325m to the south. The ponds / lakes to the west are within Area 1 and will be lost as part of the works.

[4] Ground Conditions report for Area 2 (Waterman RAD-WAT-A2EX-XX-RP-I-0003), dated January 2023

Area 2 is not at risk of flooding from rivers and sea (Groundsure report page 52). According to the Groundsure report, the risk of surface water flooding across the majority of Area 2 is low and the risk of flooding from groundwater is considered moderate.

There is one active discharge consent within 500m of Area 2 recorded in the Groundsure report. The consent authorises trade discharge from mineral workings to the Colne in the south. The discharge consent was issued in April 1994 and the revocation date is not supplied. No surface water abstractions are reported in the Groundsure report.

Flood risk information is presented as D-ESSD2D.

4.3 Hydrogeology

4.3.1 Aquifer characteristics

The Chalk Formations[5] underlying Area 2 are classified as Principal aquifers and the superficial Kesgrave Catchment Subgroup are characterised as a Secondary A aquifer. Area 2 is within groundwater Source Protection Zone (SPZ) 1 (Inner Zone) and SPZ2 (Outer Zone), relating to the Principal Aquifer (Chalk Formation) and an abstraction point 1km to the south / southwest. The SPZs are shown on D-ESSD9D.

Ground investigations on Area 2 within the landfill have identified a clay basal layer and cohesive deposits. Perched water discontinuous with the Secondary A Aquifer (Kesgrave Catchment Subgroup) and Principal Aquifer (Chalk Formation) is therefore present.

4.3.2 Groundwater quality

Groundwater laboratory analysis was completed in boreholes installed during both the 2016 Capita ground investigation[6] and 2022 Waterman ground investigation[7]. The 2016 Capita Ground Contamination Assessment Report[6] and 2023 Waterman Ground Conditions Report[7] which includes the borehole installations and the laboratory results have been submitted as part of the application. Assessment of the laboratory results against both the EQS and DWS identified elevated nickel (WBH124) and zinc (WBH110) and assessment against the DWS recorded elevated nickel (WBH124) and TPH Aromatic C12 – C16 (BH52(D)). Elevated metal concentrations (nickel and zinc) were recorded in two locations; WBH110 installed in the structureless Chalk formation and WBH124 installed in the structured Chalk Formation outside the landfill. The exceedances were identified in only some of the monitoring rounds indicating a consistent significant source as being absent.

Based on a 2008 paper[8] It was also established based on the cobalt to nickel ratios of almost five that the nickel present was likely natural rather than from an anthropogenic source confirming the nickel present in the Chalk was unlikely sourced from the landfill.

An Aromatic TPH (C12 to C16 range) exceedance for DWS was reported in BH52(D) only. The remaining samples reported TPH below the laboratory limit of detection (<10µg/l). Borehole BH52 has a dual installation with the shallow installation having a response zone between 1.0 to 5.0mbgl, and deep response zone between 9.0mbgl and 15.0mbgl, leaving a 4.0m gap between the two installations. Given the absence of elevated petroleum hydrocarbons aside from those recorded in BH52 suggests the seal between the shallow and deep installation is not functioning as it should, therefore groundwater samples from BH52(D) are unlikely to be representative of the Chalk Formation.

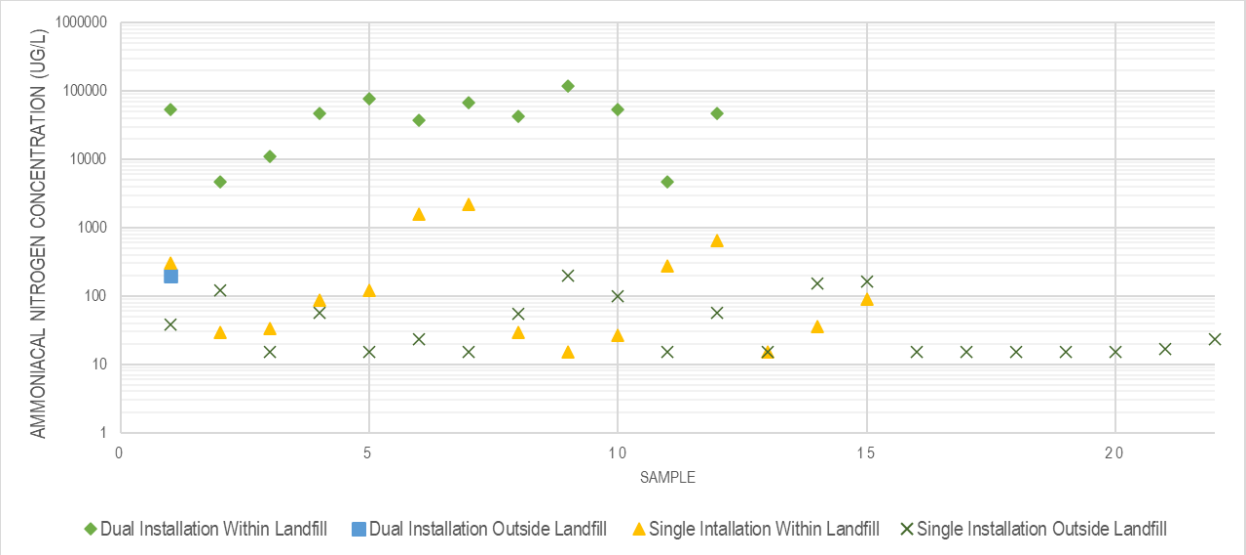
[5] The Lewes Nodular Chalk Formation and Seaford Chalk Formation.
[6] Capita, October 2016, Ground Contamination Assessment and Remediation Strategy, CS-07051-PE-16-143-R
[7] Waterman, January 2023, Ground Conditions Report, RAD-WAT-A2EX-XX-RP-I-0003
[8] 2008 Shahour, Origin of nickel in water solution of the chalk aquifer in the north of France and influence of geochemical factors.

Concentrations of PAHs, VOCs an SVOCs were all below the laboratory limit of detection (excluding BH52 where a dual installation is assumed not to be functioning as intended).

Ammoniacal nitrogen was identified as a key contaminant of concern given the relatively high proportion of organic matter likely to have been deposited in its capacity accepting domestic waste. As part of the 2022 Waterman ground investigation a robust assessment of the migration to and impact on the Principal Aquifer in the structured Chalk Formation was undertaken. A key part in this assessment was to establish whether the dual response zone monitoring wells installed as part of the 2016 Capita ground investigation were reliably recording concentrations in the structured Chalk Formation or were creating preferential pathways with groundwater results instead representative of concentrations in water located within the landfill. The subsequent groundwater laboratory analysis completed by Waterman has identified the monitoring completed by Capita as being flawed. The 2016 dual installation monitoring wells have resulted in a preferential pathway being formed between the shallow and deep installations causing elevated contaminant concentrations being recorded in the Chalk Formation which are not representative of the Chalk groundwater contamination status.

Figure 1 details the ammoniacal nitrogen concentrations recorded in wells with a response zone in the Chalk Formation during both the 2016 Capita and 2022 Waterman GIs, split into concentrations recorded within and outside the landfill material, and with a single or dual installation.

Figure 1: Ammoniacal Nitrogen Concentrations Within/Outside Landfill, and with a Single/Dual Installation



Note: Values on the x axis relate to presenting the data in graph format and do not carry any significance.

Figure 1 identifies ammoniacal nitrogen concentrations in boreholes in the landfill and with a dual installation as having far higher concentrations than those in boreholes in the landfill with a single installation. The data indicates therefore for dual installation boreholes the seal between installations is not functioning as intended. The ammoniacal nitrogen concentrations therefore recorded in boreholes with a dual installation are not representative of the contamination status of groundwater in the Chalk Formation.

Removing the unrepresentative wells (dual installations) records ammoniacal nitrogen concentrations between <15 and 2,200µg/l in boreholes located in the landfill with a response zone in the Chalk Formation, and concentrations between <15 and 200µg/l in boreholes located outside the landfill with a response zone in the Chalk Formation.

Groundwater laboratory analysis for PFAS and 1,4 Dioxane recorded concentrations below the laboratory limit of detection.

4.4 Man-made Subsurface Pathways

There are existing watercourses flowing west to east across the north and centre of Area 2. They will be culverted beneath the new rail chord (see D-EDDS6A) and bund LS1 (see D-ESSD-6B) as part of the works. The culverts will be a subsurface pathway within the permitted area.

Outside of the permitted area there will be other man-made subsurface pathways within Area 2 including for utilities associated with the rail chord and boreholes for monitoring ground gas and groundwater. Additionally, an existing 600mm diameter surface water drainage pipe which passes below the MML from Area 1 to Area 2, is to be retained.

4.5 Receptors and Compliance Points

4.5.1 Groundwater

Consistent with the monitoring required under the approved under planning 2019 Bradbrook Consulting Remediation Contingency Plan the Principal Aquifer within the Chalk Formation beneath and immediately surrounding the permitted is the sensitive receptor. Assessment of the Principal Aquifer (Chalk Formation) will include assessment of the impact and risk to the groundwater abstraction well system (Netherwild Pumping Station 1.2km south west).

A series of groundwater monitoring wells are positioned on site (located upgradient and down gradient of the landscaping bunds) these will be monitored prior to commencement of construction of the bunds, during their construction and following bund completion. Concentrations in the down gradient wells will be assessed to determine if changes are significant and if they pose a risk to identified receptors. Upgradient and downgradient wells are set out in the Monitoring Plan and CQA Plan (RAD-WAT-A2EX-XX-RP-I-0035).

4.5.2 Surface water

Surface water receptors at risk from the works proposed under the EP have not been identified as assessed in the HRA included as part of the EP application.

4.5.3 Protected Species

Ecological surveys conducted in Area 2 in 2023 identified Great Crested Newts (GCN) as present in Area 2. Earlier survey works identified foraging and commuting bats around Area 2 and birds.

The ponds and hibernacula to be located in the centre of Area 2, as shown on plan D-ESSD5I will provide habitat for GCN. The ponds will be used to translocate GCN found in Area 1. The ponds will be secured using herpetofauna fencing to prevent the GCN from escaping into the wider Area 2. Management plans will take into consideration control measures to prevent pollution risks towards this sensitive receptor located within Area 2. The GCN works summarised here are and will be subject to Natural England licensing controls.

Regarding badgers, no setts or other evidence was identified in Area 2 or within 30m of the permitted area. Considering this, general mitigation measures will be adopted during works throughout Area 2. These measures will include regard to potential new sett creation and measures to prevent badgers being trapped in excavations. If badgers or badger setts are discovered any works will take place at appropriate distances away and be supervised by an appropriately licensed individual.

For further information regarding ecological avoidance and related mitigation measures refer to the Ecology Method Statement, appended to the Environmental Risk Assessment submitted as part of the EP application.

4.5.4 Amenity (nuisance and health issues)

The human and environmental receptors in the vicinity of Area 2 are shown on D-ESSD2A, D-ESSD3A, D-ESSD3B and D-ESSD3C. Receptors within 500m of Area 2, which includes the waste recovery area which are considered to be at particular risk from the permitted activities are set out in Table 4 below.

The Environmental Risk Assessment presented elsewhere in the application bundle considers the risks posed by fugitive emissions (dust, odour, litter, pests, mud and debris), noise and vibration and accidents, to relevant offsite receptors. A Dust and Emissions Management Plan is also submitted which includes for fixed PM_{10} monitoring equipment to be located on the northeast boundary of Area 2 (downwind boundary, with sensitive residential receptors beyond).

Table 4: Receptors within 500m of Area 2

Receptor type	North and north-east	East and south-east	South and south-west	West and north-west
		Human		
Residential properties	Rosmary Drive, Tamarix Crescent, Beningfield Drive, Goldring Way, Pegrum Drive and other properties extending beyond 500m	Beningfield Drive other properties extending beyond 500m	-	-
Commercial premises (hotels, offices, retail)	Orange Blossom (Wedding Planner),	-	Ventura Park (business park), Express Logistics, Pangaea Laboratories, The Flooring Hub, JMT Indisplay, DHL	-
Industrial premises	-	-		-
Public places (squares, parks, places of interest, sports and recreation)	Napsbury Park, Napsbury Pavilion (registered park and garden)	Public footpaths	Public footpaths	-
Community and health centres	-	-	-	-
Places of worship	-	-	-	-
Vulnerable populations				
Hospitals	-	-	-	-
Schools	-	-	-	-

Receptor type	North and north-east	East and south-east	South and south-west	West and north-west
Care homes	-	-	-	-
Other (childcare, convalescent, other medical facilities)	-	-	-	-
Infrastructure and utility				
Transport infrastructure: Roads; Main and arterial Local / residential routes Railways	Various local roads	London Orbital Motorway (M25),	London Orbital Motorway (M25), Midland Mainline, various local roads	Midland Mainline
Electricity; Cabling Pylons Substations	-	-	-	-
Gas; Above ground networks Gas holders	-	-	-	-
Generators, turbines	-	-	Parkbury Power	-
Sensitive built environment (solar panels, air conditioning systems, car parking areas)	-	-	Ventura Park (business park), Pangaea Laboratories, parking off Old Parkbury Lane	-
Water supply for human consumption	-	-	-	-
Ecology and arboriculture				
Bodies of water	Unnamed streams to north east	Unnamed stream on boundary; River Colne	Ponds / lakes to south of M25	Ponds in Area 1 (to be lost to the development)
Habitats (including trees to be retained)	Deciduous woodland	Deciduous woodland	Deciduous woodland	-

4.5.5 Future development on Area 1

The Gas Risk Assessment (GRA) (RAD-WAT-A2EX-XX-RP-I-0030) identifies the future development (warehouses) on Area 1 as being at low risk from lateral migration of landfill gasses arising in the undisturbed historic landfills during construction of the bunds above. A series of monitoring wells are proposed between the landscape bunds on Area 2 and the future development on Area 1 as described in detail in the Monitoring Plan.

5. Pollution Control Measures

5.1 Site Engineering

5.1.1 Basal and side slope engineering

Neither basal or side slope engineering is required to protect the environment or human health.

5.1.2 Capping

The landscape bunds will be finished with subsoil and topsoil to provide a growing medium for the approved planting scheme. The soil layer severs potential pollutant linkages between the waste and future human receptors. Cross sections through the landscape bunds are included on plan D-ESSD1C.

5.1.3 Outline engineering plan

The topsoil and subsoil layer cover layer will comprise 450mm topsoil underlain by 550mm subsoil. The purpose of the cover layer is to ensure future human health receptors will not come into direct contact with the landfill material, albeit the Site will not be accessible by the general public with landscaping bunds accessed infrequently by maintenance workers. The cover layer from a human health perspective is required to be a minimum thickness of 300mm. To demonstrate this minimum thickness is achieved periodic levels will be taken at the commencement of the subsoil and at the top of the topsoil.

A CQA Plan for landfill gas and groundwater monitoring boreholes is included in the Monitoring Plan and CQA Plan (RAD-WAT-A2EX-XX-RP-I-0035) submitted as part of the EP application.

5.2 Restoration

There is no restoration scheme as such, the waste being used in a deposit for recovery to create landscape bunds to provide screening for the Radlett SRFI scheme.

The nature of the waste type and civil engineering nature of the activity mean that there is a negligible risk of significant settlement. Localised settlement of the bunds due to the underlying ground conditions is recognised as likely and is discussed in the SRA. Allowance has been made in the quantity of waste to be used as explained in section 3.3.3 above. Pre-settlement contours are not proposed. The final permitted levels for the waste deposit being as indicated on the plans and sections – D-ESSD1C and D-ESSD4B.

Neither an agricultural nor ecological benefit statement are relevant to this application. Whilst site derived topsoil is to be placed across the bunds as a growing medium to support the approved planting scheme, the topsoil is anticipated to not require improvement first.

5.3 Surface Water Management

As part of the construction of the bunds, a combination of filter trenches and swales will be installed around the base of each bund to intercept overland water flows from the bunds and Area 2 more generally. Collectively these features will slow the flow and reduce the particulate load of surface waters before discharge to the existing stream on the eastern boundary of Area 2. All drainage features are to be lined to prevent infiltration. For further information refer to the proposed landscaping bund surface water drainage plans (D-ESSD6A to D-ESSD6D).

5.4 Post Closure Controls (Aftercare)

As a deposit for recovery, there is no closure plan / closure process as there would be for a disposal (landfill) EP.

The proposed after-use for the permitted area and the wider Area 2 has been described in section 3.2.6 above and in the associated plans, in particular D-ESSD5C and D-ESSD5H.

Following completion of waste deposit there will be period of ground gas monitoring of out of waste boreholes in order to confirm ground gas conditions, and a period of groundwater and surface water monitoring to identify any impacts to controlled waters in Area 2. For further details refer to the Monitoring Plan.

Conditions of the landscape reserved matters planning application Decision Notice (5/17/1995) set out when planting must be completed by and that trees and plants that die must be replaced for a period of 5 years. For further detail regarding the distribution and types of planting proposed in Area 2, refer to D-ESSD5C.

It is not proposed for Area 2 to open to the public upon completion of works, and it is not proposed to have a public park function.

5.4.1 Completion Criteria

Controlled waters

During earthworks, the waste placement activities will be managed to prevent contamination of controlled water receptors. The active management of leachate during the earthworks or in the completed Development would not be required. Completion criteria relevant to leachate will therefore not be required.

Groundwater monitoring will be undertaken prior to, during, and post development completion to understand the groundwater quality throughout the works identifying any deterioration or alteration to the currently understood hydrogeological CSM. The completion criteria for identified sensitive controlled water receptors (Principal Aquifer Chalk Formation) will therefore be set as no deterioration of alteration to the currently understood hydrogeological CSM. This will include assessment of the groundwater results during and post works completion against the baseline conditions as set out in HRA and Monitoring Plan included as part of the EP application.

A series of contingency actions have been set out within the HRA and Monitoring Plan detailing the required measures and actions should a deterioration to groundwater quality or alteration to the hydrogeological CSM be identified.

Landfill gas

Two sets of completion criteria are provided in the regulatory guidance[9];

- Criteria 1 – Gas concentration
  - Methane concentration within the waste mass is less than or equal to 1.5%v/v, and
  - Carbon dioxide concentration within the waste mass is less than or equal to 5%v/v
- Criteria 2 – Flow Monitoring
  - The site will meet gas completion criteria where the maximum landfill gas flow rate (Qhgs) as defined by BS8485:2015:

[9] Environment Agency, March 2022, Landfill and Deposit for Recovery: Aftercare and Permit Surrender, Landfill and deposit for recovery: aftercare and permit surrender - GOV.UK (www.gov.uk) Accessed 13/07/2023)

- In in-waste monitoring boreholes is less than 0.07l/hr, and
- Recorded in any individual in-waste borehole less than 70l/hr.

Both Criteria 1 and Criteria 2 relate to boreholes installed within the waste. As assessed in the GRA the landscape bunds will be located above ground, where ground gases are generated, they will disperse to the atmosphere. A plausible pathway to identified receptors are absent and a low risk is assigned to material used to construct the landscape bunds.

The monitoring detailed in the Monitoring Plan includes monitoring wells installed between the landscaping bunds and the closest receptor identified as the future warehouses on Area 1. The purpose of the monitoring will be to establish whether the construction of the landscaping bunds results in the increased lateral migration of ground gases from the historic landfills remaining in situ below the landscape bunds.

The current ground gas regime on Area 1 is set at Characteristic Situation 1 (CS1) in which ground gas protection measures would not be required. The completion criteria will therefore be set as a landfill gas flow rate of not greater then 0.07l/hr which is the Gas Screening Value (GSV) for which a Characteristic Situation 2 (CS2) classification should be considered.

The completion criteria in addition will allow for further and detailed assessment to understand whether based on ground gas concentrations and flow rates a risk exists to developments on Area 1 such ground gas protection measures consistent with a CS2 classification would be required.

Stability

In consideration of Environment Agency guidance[10] the specific completion criteria for settlement of the bunds are detailed in the Earthworks Specification (RAD-WAT-A2EX-XX-SP-0023). Settlement monitoring will comprise the use of vibrating wire piezometers and rod and plate monitors during construction and rod and plate, surface pins and surface triaxial tiltmeter sensors or laser survey targets to monitor post construction settlement.

During construction the contractor will also record the following;

- Any evidence of instability in the slopes surrounding the works area;
- Any evidence of potential instability within completed sections of slope;
- The consistency of ground conditions exposed through the course of the works against those assumed in design / shown on design drawings;
- General groundwater observations and the presence of any localised seepages;
- Prevailing weather conditions including short and long-range forecasts, with works to stop during period of high rainfall or forecast high winds.

Settlement Trigger Values during construction as well as close out monitoring criteria are provided in the Earthworks Specification.

Settlement monitoring to support surrender of the EP will be not more than 30mm of settlement of the surface pins for a period of 2 years (assuming weekly monitoring) and no slope movement (beyond the limit of equipment accuracy) for a period of 2 years (assuming weekly monitoring).

[10] Environment Agency, March 2022,Landfill and deposit for recovery: Aftercare and permit surrender, Landfill and deposit for recovery: aftercare and permit surrender - GOV.UK (www.gov.uk) (accessed 14.07.2023)

6. Monitoring

6.1 Weather

The applicant notes local weather conditions (qualitative assessment of wind speed and direction, recent or forecast rainfall) in order to proactively manage Area 2 activities. In addition wind speed and direction data will be recorded continuously in order to interpret particulate monitoring data from the fixed particulate monitor (see Dust and Emissions Management Plan).

6.2 Groundwater and Surface Water Monitoring

Controlled waters monitoring is set out in the Monitoring Plan.

6.3 Dust and Other Amenity Monitoring

Dust monitoring using fixed monitors and visual observations is set out in the Dust and Emissions Management Plan.

6.4 Gas Monitoring Infrastructure

Landfill gas control measures are not required given the wastes low ground gas generation potential.

Additional monitoring wells will be positioned outside the footprints of the landscape bunds and monitored during the period the waste is deposited and afterwards to quantify lateral ground gas migration.

The locations of gas monitoring wells are included in ESSD7A and ESSD7B.

6.5 Gas Monitoring

Ground gas monitoring is discussed in detail in the Monitoring Plan.

6.6 Earthworks Monitoring

The details of earthworks monitoring are provided in the Earthworks Specification

7. Site Condition Report

The waste recovery EP boundary does not include any additional land. Therefore, there is no requirement to complete a site condition report for this application. The further subsections of the ESSD template have therefore not been completed.

APPENDICES

A. Plans and Information

The graphical information sought by the ESSD template is provided using a combination of:

- plans included in the planning applications;
- further plans developed as the detailed design has progressed post planning;
- figures extracted from reports; and
- figures included as part of a Groundsure environmental data search (“Groundsure report").

As set out in the table below. The information is provided as a separate electronic folder. The EAs stated scale has not been used unless the available plans are already at that scale.

Each item of information has been given a short form reference e.g. D-ESSD1A. These references are also used in other documents submitted as part of the EP application.

Drawing (Guidance from ESSD template)	Information location (or reason for exclusion)
D-ESSD1, Scale: 50,000, Title: Site location Site location in relation to surrounding features	Different Development Phases (Area 1 to 8) of the SRFI (Waterman RAD-WAT-A2EX-XX-PL-I-0001) (“D-ESSD1A”) Site Location Plan (Waterman RAD-WAT-A2EX-XX-DP-I-0002) (“D-ESSD1B”) Area 2 Bunds Waste Recovery Area Boundary (Waterman RAD-WAT-A2EX-XX-DR-C-0027) (“D-ESSD1C”) Area 2 Bunds Cut & Fill (Waterman RAD-WAT-A2EX-XX-DR-C-0007) (“D-ESSD1D”) Approximate Landfill Footprint as Confirmed by Ground Investigation (Waterman RAD-WAT-A2EX-XX-DP-I-0005) (“D-ESSD1E”)
D-ESSD2, Scale: 10,000, Title: Environmental Site Setting Site boundary, residential areas, schools, hospitals, care homes etc., recreational areas, waterways, water bodies, agricultural areas, urban sites, flood risk map overlay, roads, railways, safeguarded aerodromes	Sensitive Receptors Map 500m – Area 2 (Waterman WIE18710-105_GIS_WPA2_1B) (“D-ESSD2A“) EA Historical Landfill Data (Waterman 18710-100_GIS_INFO_1A) (“D-ESSD2B”) Surface water flooding (page 55 of the Groundsure report for Area 2) (“D-ESSD2C”) Groundwater flooding (page 57 of the Groundsure report for Area 2) (“D-ESSD2D”) Waste and landfill (page 22 of the Groundsure report for Area 2) (“D-ESSD2E”)
D-ESSD3, Scale: 25,000, Title: Cultural and Natural Heritage Natural heritage, SSSIs, AONBs, National Parks, SACs, SPAs, Ramsar sites, cultural heritage, listed buildings, scheduled ancient monuments	Environmental designations (page 58 of the Groundsure report for Area 2) - includes SSSIs, Ramsar sites, SPAs, local nature reserves, ancient woodland (“D-ESSD3A”) EA pre-application screening report and maps (“D-ESSD3B”) Visual and cultural designations (page 65 of the Groundsure report for Area 2) (“D-ESSD3C”)

Drawing (Guidance from ESSD template)	Information location (or reason for exclusion)
D-ESSD4, Scale: 2,500, Title: Site Layout and Waste Deposition Cell layout, filled areas, pre-settlement contours	Earthworks Analysis Cut and Fill Volumes (Capita 018844-CA-0-GF-DR-S-422) (“D-ESSD4A”) Area 2 Bunds Long Section (Waterman RAD-WAT-A2EX-XX-DS-C-0003) (“D-ESSD4B”) Area 1 & 2 Site Sections 1 of 2 (Capita 063533-L-451B) (“D-ESSD4C”) Area 2 Bund Monitoring Locations (Waterman RAD-WAT-A2EX-XX-DR-C-0028) (“D-ESSD4D”) Indicative Railway Works Corridor Plan & Cross Sections (Waterman RAD-WATA2EX-XX-DS-C-0001) (“D-ESSD4E”)
D-ESSD5, Scale: 2,500, Title: Restoration Post settlement contours, topography to include 500m from the site boundary, landscape planting proposals, aftercare proposals	Key Parameters Plan (Capita Lovejoy 394503-DSD-002a) (“D-ESSD5A”) Landscape Masterplan (Capita Lovejoy 394503-DSD-003) (“D-ESSD5B”) Country Park – AREA 2 Landscape Masterplan (Capita 063533-L-202C) (“D-ESSD5C”) Typical Soft Landscape Details: Bund and PROW Route Planting (Capita 063533-L-402) (“D-ESSD5D”) Typical Soft Landscape Details: Tree Planting (Capita 063533-L-400) (“D-ESSD5E”) Typical Soft Landscape Details: Ornamental and Native Planting (Capita 063533-L-401A) (“D-ESSD5F”) Area 1 and 2 Topography Plan (Capita 063533-L-016) (“D-ESSD5G”) Area 1 and 2 – Landscape Masterplan (Capita 063533-L-121L) (“D-ESSD5H”) Area 2 Ponds (Waterman RAD-WAT-A2EX-XX-DR-C-0006) (“D-ESSD5I”) (Lines of section are on plan presented in D-ESSD4)
D-ESSD6, Scale: 2,500, Title: Site design Summary of engineering details on a cell by cell basis (possibly in a table on the drawing), accompanied by schematic cross sections of the proposed layout. More than one drawing may be necessary e.g. DESID6A, DESID6B etc., security infrastructure (gates and fencing), groundwater control, surface water management features, infrastructure (e.g. tanks, hard surfacing, quarantine areas)	Proposed Landscaping Bund Surface Water Drainage Layout Area 2 Northern Bund (Waterman RAD-WAT-A2EX-XX-DR-D-0002) ("D-ESSD6A”) Proposed Landscaping Bund Surface Water Drainage Layout Area 2 Southern Bund - Sheet 1 of 2 (Waterman RAD-WAT-A2EX-XX-DR-D-0003) ("D-ESSD6B”) Proposed Landscaping Bund Surface Water Drainage Layout Area 2 Southern Bund - Sheet 2 of 2 (Waterman RAD-WAT-A2EX-XX-DR-D-0004) ("D-ESSD6C”) Proposed Landscaping Bund Surface Water Drainage Typical Cross Sections (Waterman RAD-WAT-A2EX-XX-DR-D-0015) ("D-ESSD6D”) Area 2 Security and Access Arrangements (“D-ESSD6E”)

Drawing (Guidance from ESSD template)	Information location (or reason for exclusion)
	Area 1 Security and Access Arrangements (“D-ESSD6F”) Area 2 Compound Layout (Waterman RAD-WAT-A2EX-XX-DR-C-0030) (“D-ESSD6G”) Area 1 Compound Layout Plan (“D-ESSD6H”)
D-ESSD7, Scale: 2,500, Title: Gas Monitoring In waste monitoring points, perimeter / external monitoring points	Monitoring point location plan(s) (“D-ESSD7”) Area 1 Exploratory Hole Location Plan (Waterman RAD-WAT-A1EX-XX-DP-I-0010) (“D-ESSD7A”) Area 1 Replacement Gas Monitoring Borehole Locations (Waterman RAD-WAT-A1EX-XX-DP-I-0018) (“D-ESSD7B”)
D-ESSD8, Scale: 50,000, Title: Regional Geology Regional geology (taken from BGS Geological Map), any appropriate regional cross sections	Superficial and bedrock geology stated (no plan) (page 34 of the Groundsure report for Area 2) ("D-ESSD8")
D-ESSD9, Scale: 12,500, Title: Regional Hydrogeology Aquifer classification, SPZs, licensed and private abstractions from ground and surface water, springs, regional groundwater contours (for each ground water body), groundwater vulnerability, off-site groundwater monitoring points (e.g. relevant EA observation wells etc.)	Hydrogeology- superficial aquifer (page 35 of the Groundsure report for Area 2) ("D-ESSD9A") Bedrock aquifer (page 37 of the Groundsure report for Area 2) (“D-ESSD9B”) Groundwater vulnerability (page 38 of the Groundsure report for Area 2) (“D-ESSD9C”) Abstractions and Source Protection Zones (41 of the Groundsure report for Area 2) (“D-ESSD9D”)
D-ESSD10, Scale: 2,500, Title: Local Hydrogeology and Hydrology Groundwater monitoring points, groundwater contours (for each ground water body), local springs, surface water monitoring points	Hydrology (page 48 of the Groundsure report for Area 2) (“D-ESSD10A”) Groundwater Monitoring location plan: (Waterman RAD-WAT-A2EX-XX-DP-I-0010) (“D-ESSD10B”)
D-ESSD11, Scale: 2,500, Title: Hydrogeological Cross Sections Groundwater levels (for each groundwater body), groundwater flow to discharge points, Inter-relationship between; site (base and sides) and groundwater, groundwater levels and relevant surface water features	None presented, considered inapplicable to this development (groundwater management not required, leachate management not required).

B. Groundsure Report

Groundsure
LOCATION INTELLIGENCE

Enviro
Insight

LAND FORMING PART OF FORMER RADLETT ST ALBANS, AL2 2DB

Order Details

Date: 12/05/2023

Your ref: WIE18710-105_REQ122721

Our Ref: WTM1-X49-YT5-B4I-KZS

Site Details

Location: 515952 202861

Area: 23.09 ha

Authority: St Albans City and District Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
10 >	1.1 >	Historical industrial land uses >	4	5	8	46	-
13 >	1.2 >	Historical tanks >	0	1	1	8	-
14 >	1.3 >	Historical energy features >	0	0	0	1	-
14 >	1.4 >	Historical petrol stations >	0	0	0	0	-
14 >	1.5 >	Historical garages >	0	0	0	0	-
15 >	1.6 >	Historical military land >	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
16 >	2.1 >	Historical industrial land uses >	4	5	9	53	-
19 >	2.2 >	Historical tanks >	0	1	3	17	-
20 >	2.3 >	Historical energy features >	0	0	0	2	-
21 >	2.4 >	Historical petrol stations >	0	0	0	0	-
21 >	2.5 >	Historical garages >	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
22 >	3.1 >	Active or recent landfill >	0	0	0	0	-
22 >	3.2 >	Historical landfill (BGS records) >	0	0	0	0	-
23 >	3.3 >	Historical landfill (LA/mapping records) >	1	0	0	0	-
23 >	3.4 >	Historical landfill (EA/NRW records) >	2	1	0	3	-
24 >	3.5 >	Historical waste sites >	0	0	0	0	-
25 >	3.6 >	Licensed waste sites >	0	0	2	0	-
25 >	3.7 >	Waste exemptions >	0	0	3	2	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
27 >	4.1 >	Recent industrial land uses >	1	0	2	-	-
28 >	4.2 >	Current or recent petrol stations >	0	0	0	0	-
28 >	4.3 >	Electricity cables >	0	0	0	0	-
28 >	4.4 >	Gas pipelines >	0	0	0	0	-
28 >	4.5 >	Sites determined as Contaminated Land >	0	0	0	0	-

28 >	4.6 >	Control of Major Accident Hazards (COMAH) >	0	0	0	0	-
29 >	4.7 >	Regulated explosive sites >	0	0	0	0	-
29 >	4.8 >	Hazardous substance storage/usage >	0	0	0	0	-
29 >	4.9 >	Historical licensed industrial activities (IPC) >	0	0	0	0	-
29 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	0	4	-
30 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	0	0	-
30 >	4.12 >	Radioactive Substance Authorisations >	0	0	0	0	-
30 >	4.13 >	Licensed Discharges to controlled waters >	0	0	0	5	-
31 >	4.14 >	Pollutant release to surface waters (Red List) >	0	0	0	0	-
31 >	4.15 >	Pollutant release to public sewer >	0	0	0	0	-
32 >	4.16 >	List 1 Dangerous Substances >	0	0	0	0	-
32 >	4.17 >	List 2 Dangerous Substances >	0	0	0	0	-
32 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	0	1	-
32 >	4.19 >	Pollution inventory substances >	0	0	0	0	-
33 >	4.20 >	Pollution inventory waste transfers >	0	0	0	0	-
33 >	4.21 >	Pollution inventory radioactive waste >	0	0	0	0	-

Page	Section	Geology (basic) >					
34 >	5.1 >	Superficial geology (625k) >	Identified (within 500m)				
34 >	5.2 >	Bedrock geology (625k) >	Identified (within 500m)				

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
35 >	6.1 >	Superficial aquifer >	Identified (within 500m)				
37 >	6.2 >	Bedrock aquifer >	Identified (within 500m)				
38 >	6.3 >	Groundwater vulnerability >	Identified (within 50m)				
39 >	6.4 >	Groundwater vulnerability- soluble rock risk >	Identified (within 0m)				
40 >	6.5 >	Groundwater vulnerability- local information >	None (within 0m)				
41 >	6.6 >	Groundwater abstractions >	0	0	0	1	19
46 >	6.7 >	Surface water abstractions >	0	0	0	0	0
46 >	6.8 >	Potable abstractions >	0	0	0	0	2
47 >	6.9 >	Source Protection Zones >	2	0	0	0	-

47 >	6.10 >	Source Protection Zones (confined aquifer) >	0	0	0	0	-
Page	Section	**Hydrology** >	On site	0-50m	50-250m	250-500m	500-2000m
48 >	7.1 >	Water Network (OS MasterMap) >	10	0	4	-	-
50 >	7.2 >	Surface water features >	1	0	6	-	-
50 >	7.3 >	WFD Surface water body catchments >	1	-	-	-	-
50 >	7.4 >	WFD Surface water bodies >	0	0	0	-	-
51 >	7.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	**River and coastal flooding** >	On site	0-50m	50-250m	250-500m	500-2000m
52 >	8.1 >	Risk of flooding from rivers and the sea >	None (within 50m)				
52 >	8.2 >	Historical Flood Events >	0	0	0	-	-
52 >	8.3 >	Flood Defences >	0	0	0	-	-
53 >	8.4 >	Areas Benefiting from Flood Defences >	0	0	0	-	-
53 >	8.5 >	Flood Storage Areas >	0	0	0	-	-
54 >	8.6 >	Flood Zone 2 >	None (within 50m)				
54 >	8.7 >	Flood Zone 3 >	None (within 50m)				
Page	Section	**Surface water flooding** >					
55 >	9.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	**Groundwater flooding** >					
57 >	10.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	**Environmental designations** >	On site	0-50m	50-250m	250-500m	500-2000m
58 >	11.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
59 >	11.2 >	Conserved wetland sites (Ramsar sites) >	0	0	0	0	0
59 >	11.3 >	Special Areas of Conservation (SAC) >	0	0	0	0	0
59 >	11.4 >	Special Protection Areas (SPA) >	0	0	0	0	0
59 >	11.5 >	National Nature Reserves (NNR) >	0	0	0	0	0
60 >	11.6 >	Local Nature Reserves (LNR) >	0	0	0	0	0
60 >	11.7 >	Designated Ancient Woodland >	0	0	0	0	1
60 >	11.8 >	Biosphere Reserves >	0	0	0	0	0
60 >	11.9 >	Forest Parks >	0	0	0	0	0

61 >	11.10 >	Marine Conservation Zones >	0	0	0	0	0
61 >	11.11 >	Green Belt >	1	0	0	0	1
61 >	11.12 >	Proposed Ramsar sites >	0	0	0	0	0
61 >	11.13 >	Possible Special Areas of Conservation (pSAC) >	0	0	0	0	0
62 >	11.14 >	Potential Special Protection Areas (pSPA) >	0	0	0	0	0
62 >	11.15 >	Nitrate Sensitive Areas >	0	0	0	0	0
62 >	11.16 >	Nitrate Vulnerable Zones >	0	0	0	0	0
63 >	11.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
64 >	11.18 >	SSSI Units >	0	0	0	0	1
Page	Section	**Visual and cultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
65 >	12.1 >	World Heritage Sites >	0	0	0	-	-
66 >	12.2 >	Area of Outstanding Natural Beauty >	0	0	0	-	-
66 >	12.3 >	National Parks >	0	0	0	-	-
66 >	12.4 >	Listed Buildings >	0	0	0	-	-
66 >	12.5 >	Conservation Areas >	0	0	1	-	-
67 >	12.6 >	Scheduled Ancient Monuments >	0	0	0	-	-
67 >	12.7 >	Registered Parks and Gardens >	0	0	1	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
68 >	13.1 >	Agricultural Land Classification >	Non Agricultural (within 250m)				
69 >	13.2 >	Open Access Land >	0	0	0	-	-
69 >	13.3 >	Tree Felling Licences >	2	3	9	-	-
70 >	13.4 >	Environmental Stewardship Schemes >	0	1	0	-	-
70 >	13.5 >	Countryside Stewardship Schemes >	0	0	2	-	-
Page	Section	**Habitat designations >**	On site	0-50m	50-250m	250-500m	500-2000m
71 >	14.1 >	Priority Habitat Inventory >	0	3	6	-	-
72 >	14.2 >	Habitat Networks >	0	0	0	-	-
72 >	14.3 >	Open Mosaic Habitat >	0	0	0	-	-
72 >	14.4 >	Limestone Pavement Orders >	0	0	0	-	-

Recent aerial photograph

Capture Date: 29/06/2019

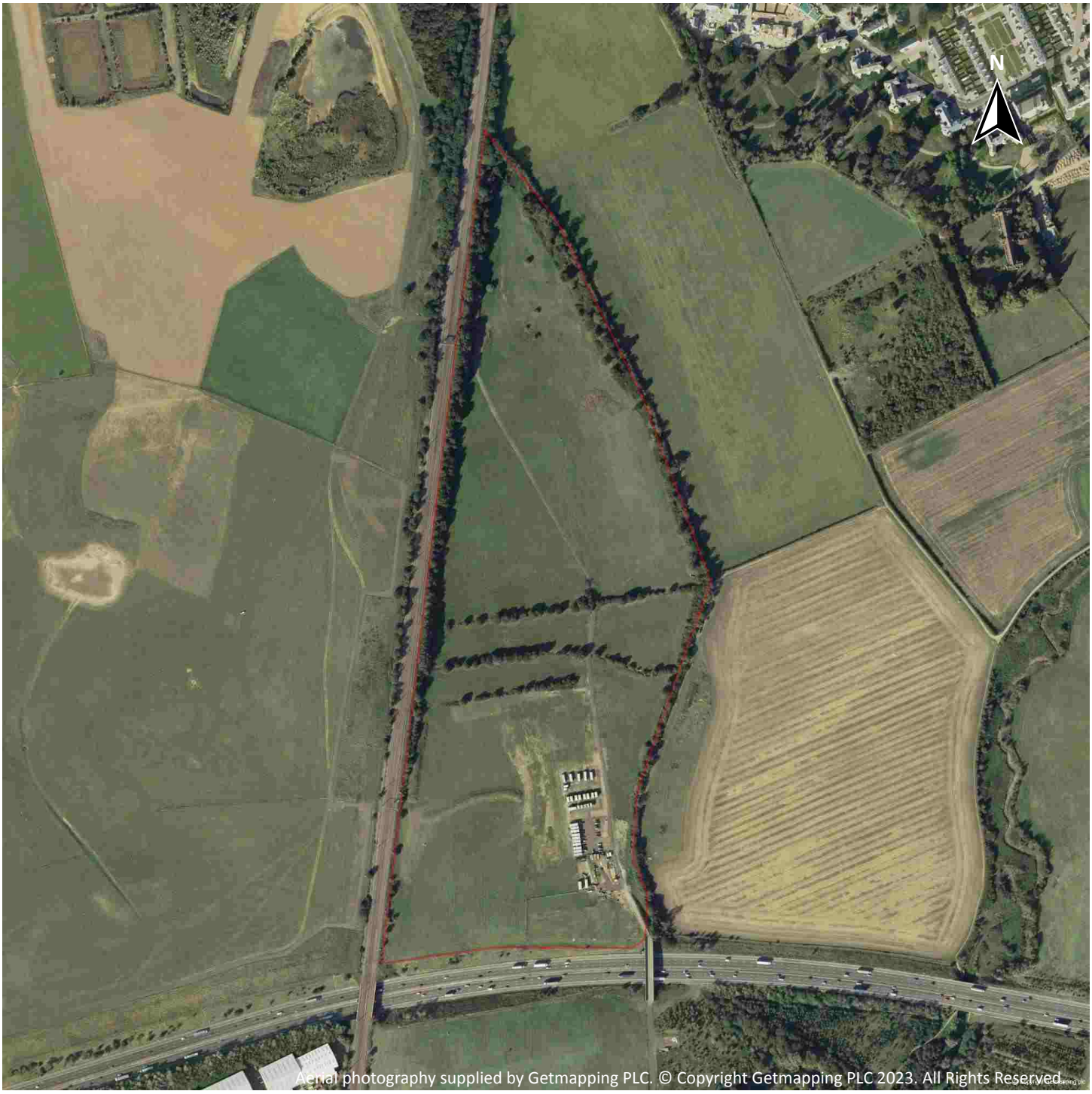
Site Area: 23.09ha

Recent site history - 2016 aerial photograph

Capture Date: 12/08/2016

Site Area: 23.09ha

Recent site history - 2006 aerial photograph



Capture Date: 21/09/2006

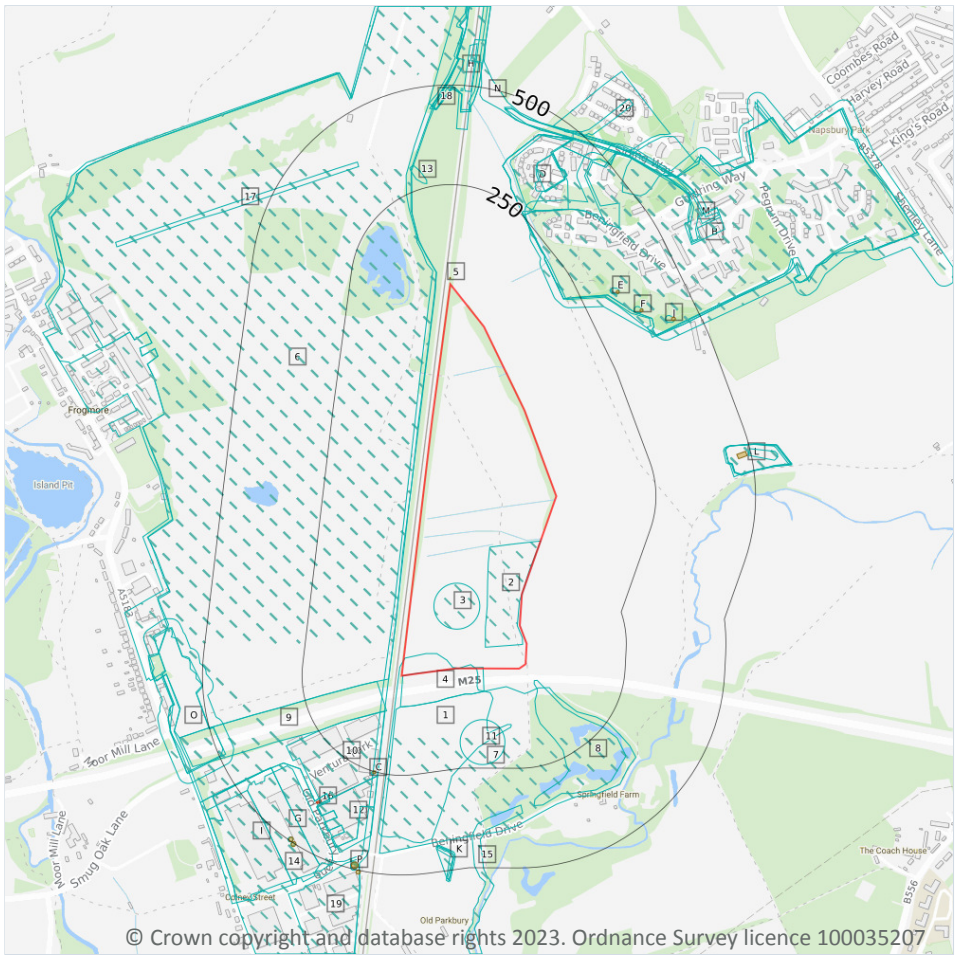
Site Area: 23.09ha

Recent site history - 1999 aerial photograph

Capture Date: 27/05/1999

Site Area: 23.09ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	63

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 10 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Gravel Pit**	**1955**	**2055409**

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Gravel Pit**	**1971**	**2055417**
3	**On site**	**Gravel Pit**	**1989**	**2055416**
4	**On site**	**Cuttings**	**1989**	**2061262**
6	30m SW	Aerodrome	1989	2099785
A	31m SW	Aerodrome	1971	2112913
A	39m SW	Aerodrome	1955	2094433
7	45m S	Unspecified Disused Workings	1989	2056162
8	46m S	Gravel Pit	1955	2055411
9	64m SW	Cuttings	1989	2061256
10	98m SW	Unspecified Warehouse	1989	2062849
11	128m S	Unspecified Disused Pit	1971	2042555
B	191m N	Mental Hospital	1922	2108465
B	210m NE	Hospital	1971	2066678
B	210m NE	Hospital	1955	2083329
B	210m NE	Hospital	1989	2120784
B	216m NE	Mental Hospital	1938	2122522
C	251m S	Unspecified Tank	1989	2043815
D	252m N	Isolation Hospital	1955	2100022
12	258m S	Unspecified Warehouses	1989	2058537
13	259m N	Unspecified Pit	1955	2040176
D	273m N	Isolation Hospital	1938	2090205
D	319m N	Isolation Hospital	1938	2072120
E	324m NE	Unspecified Tank	1938 - 1955	2067115
D	332m N	Isolation Hospital	1922	2083500
14	337m S	Unspecified Works	1971	2089176
15	342m S	Railway Sidings	1955	2062164
F	357m NE	Unspecified Tank	1938 - 1955	2113198
G	361m SW	Unspecified Warehouses	1989	2058534

ID	Location	Land use	Dates present	Group ID
17	374m N	Cuttings	1938	2061258
H	390m N	Railway Sidings	1955	2090394
I	401m SW	Unspecified Commercial/Industrial	1955	2058201
J	418m NE	Unspecified Tank	1938 - 1955	2122797
H	433m N	Railway Sidings	1938	2082589
H	433m N	Railway Sidings	1922	2090571
K	434m S	Unspecified Ground Workings	1896	2059980
L	434m E	Unspecified Works	1955	2046141
K	435m S	Unspecified Pit	1938	2091942
K	435m S	Unspecified Pit	1938	2097252
L	439m E	Sewage Works	1922	2120679
H	439m N	Railway Sidings	1897	2068536
L	440m E	Sewage Works	1938	2085589
18	440m N	Cuttings	1878	2061263
L	440m E	Sewage Works	1938	2094644
M	443m N	Railway Sidings	1938	2084572
N	444m N	Disused Railway Sidings	1971	2049654
M	445m N	Railway Sidings	1922	2110911
O	458m SW	Unspecified Pit	1938	2095631
19	472m S	Unspecified Works	1989	2106454
20	474m N	Unspecified Commercial/Industrial	1955	2058199
21	477m N	Railway Sidings	1955	2077586
N	478m N	Railway Building	1955	2051353
I	482m SW	Unspecified Depot	1989	2047816
P	483m S	Unspecified Tank	1989	2089285
O	484m SW	Unspecified Pit	1938	2072212
O	484m SW	Unspecified Ground Workings	1922	2059982
H	486m N	Railway Building	1897	2051354

ID	Location	Land use	Dates present	Group ID
H	486m N	Cuttings	1878	2061265
H	487m N	Cuttings	1878	2061264
P	487m S	Unspecified Tank	1971	2117236
G	491m SW	Unspecified Tank	1989	2043813
L	492m E	Unspecified Tanks	1955	2095303
G	499m SW	Unspecified Tank	1989	2043814

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**10**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 10 >**

ID	Location	Land use	Dates present	Group ID
5	14m N	Unspecified Tank	1879	342437
C	248m S	Unspecified Tank	1978 - 1988	357057
E	336m NE	Unspecified Tank	1924 - 1938	357446
F	370m NE	Unspecified Tank	1924 - 1938	352205
J	432m NE	Unspecified Tank	1924 - 1938	356251
L	465m E	Unspecified Tank	1938	342438
P	482m S	Unspecified Tank	1968 - 1993	356321
G	490m SW	Unspecified Tank	1978 - 1993	351306
G	496m SW	Unspecified Tank	1978 - 1993	352005
P	499m S	Unspecified Tank	1978 - 1993	351359

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	1

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 10 >**

ID	Location	Land use	Dates present	Group ID
16	373m SW	Electricity Substation	1978 - 1993	232351

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

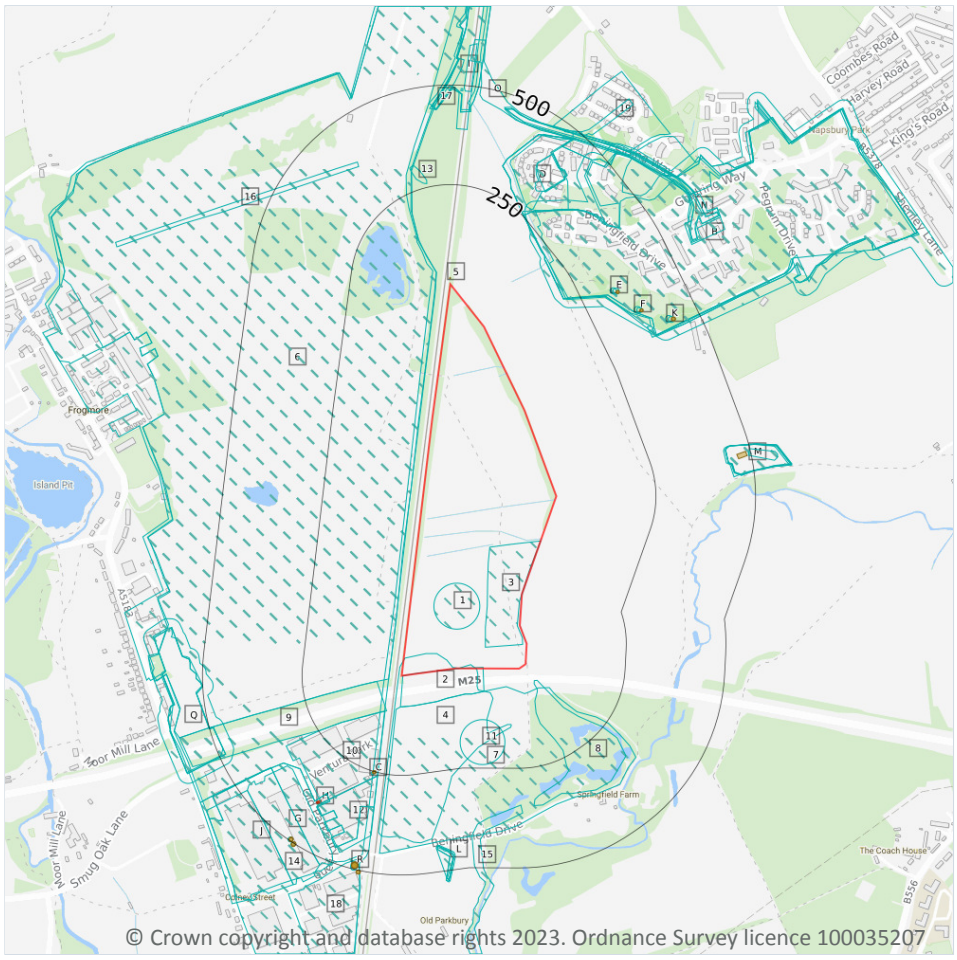
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	71

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 16 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Gravel Pit**	**1989**	**2055416**
2	**On site**	**Cuttings**	**1989**	**2061262**
3	**On site**	**Gravel Pit**	**1971**	**2055417**

ID	Location	Land Use	Date	Group ID
4	**On site**	**Gravel Pit**	**1955**	**2055409**
6	30m SW	Aerodrome	1989	2099785
A	31m SW	Aerodrome	1971	2112913
A	39m SW	Aerodrome	1955	2094433
7	45m S	Unspecified Disused Workings	1989	2056162
8	46m S	Gravel Pit	1955	2055411
9	64m SW	Cuttings	1989	2061256
10	98m SW	Unspecified Warehouse	1989	2062849
11	128m S	Unspecified Disused Pit	1971	2042555
B	191m N	Mental Hospital	1922	2108465
B	210m NE	Hospital	1989	2120784
B	210m NE	Hospital	1971	2066678
B	210m NE	Hospital	1955	2083329
B	216m NE	Mental Hospital	1938	2122522
B	220m N	Mental Hospital	1938	2122522
C	251m S	Unspecified Tank	1989	2043815
D	252m N	Isolation Hospital	1955	2100022
12	258m S	Unspecified Warehouses	1989	2058537
13	259m N	Unspecified Pit	1955	2040176
D	273m N	Isolation Hospital	1938	2090205
D	319m N	Isolation Hospital	1938	2072120
E	324m NE	Unspecified Tank	1955	2067115
E	330m NE	Unspecified Tank	1938	2067115
D	332m N	Isolation Hospital	1922	2083500
14	337m S	Unspecified Works	1971	2089176
15	342m S	Railway Sidings	1955	2062164
F	357m NE	Unspecified Tank	1955	2113198
G	361m SW	Unspecified Warehouses	1989	2058534

ID	Location	Land Use	Date	Group ID
F	363m NE	Unspecified Tank	1938	2113198
16	374m N	Cuttings	1938	2061258
I	390m N	Railway Sidings	1955	2090394
J	401m SW	Unspecified Commercial/Industrial	1955	2058201
K	418m NE	Unspecified Tank	1955	2122797
K	424m NE	Unspecified Tank	1938	2122797
I	433m N	Railway Sidings	1938	2082589
I	433m N	Railway Sidings	1922	2090571
L	434m S	Unspecified Ground Workings	1896	2059980
M	434m E	Unspecified Works	1955	2046141
L	435m S	Unspecified Pit	1938	2091942
L	435m S	Unspecified Pit	1938	2097252
L	435m S	Unspecified Pit	1938	2097252
M	439m E	Sewage Works	1922	2120679
I	439m N	Railway Sidings	1897	2068536
M	440m E	Sewage Works	1938	2085589
M	440m E	Sewage Works	1938	2085589
17	440m N	Cuttings	1878	2061263
M	440m E	Sewage Works	1938	2094644
N	443m N	Railway Sidings	1938	2084572
O	444m N	Disused Railway Sidings	1971	2049654
N	445m N	Railway Sidings	1922	2110911
P	448m N	Railway Sidings	1938	2084572
Q	458m SW	Unspecified Pit	1938	2095631
18	472m S	Unspecified Works	1989	2106454
19	474m N	Unspecified Commercial/Industrial	1955	2058199
P	477m N	Railway Sidings	1955	2077586
O	478m N	Railway Building	1955	2051353

ID	Location	Land Use	Date	Group ID
J	482m SW	Unspecified Depot	1989	2047816
R	483m S	Unspecified Tank	1989	2089285
Q	484m SW	Unspecified Pit	1938	2072212
Q	484m SW	Unspecified Pit	1938	2072212
Q	484m SW	Unspecified Ground Workings	1922	2059982
I	486m N	Railway Building	1897	2051354
I	486m N	Cuttings	1878	2061265
I	487m N	Cuttings	1878	2061264
R	487m S	Unspecified Tank	1971	2117236
G	491m SW	Unspecified Tank	1989	2043813
M	492m E	Unspecified Tanks	1955	2095303
G	499m SW	Unspecified Tank	1989	2043814

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m **21**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 16 >**

ID	Location	Land Use	Date	Group ID
5	14m N	Unspecified Tank	1879	342437
C	248m S	Unspecified Tank	1978	357057
C	248m S	Unspecified Tank	1988	357057
C	248m S	Unspecified Tank	1988	357057
E	336m NE	Unspecified Tank	1924	357446
E	336m NE	Unspecified Tank	1938	357446
F	370m NE	Unspecified Tank	1924	352205
F	370m NE	Unspecified Tank	1938	352205

ID	Location	Land Use	Date	Group ID
K	432m NE	Unspecified Tank	1924	356251
K	432m NE	Unspecified Tank	1938	356251
M	465m E	Unspecified Tank	1938	342438
R	482m S	Unspecified Tank	1968	356321
R	482m S	Unspecified Tank	1978	356321
R	482m S	Unspecified Tank	1969	356321
R	483m S	Unspecified Tank	1993	356321
G	490m SW	Unspecified Tank	1978	351306
G	492m SW	Unspecified Tank	1993	351306
G	496m SW	Unspecified Tank	1978	352005
G	498m SW	Unspecified Tank	1993	352005
R	499m S	Unspecified Tank	1978	351359
R	500m S	Unspecified Tank	1993	351359

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**2**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 16 >**

ID	Location	Land Use	Date	Group ID
H	373m SW	Electricity Substation	1978	232351
H	374m SW	Electricity Substation	1993	232351

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

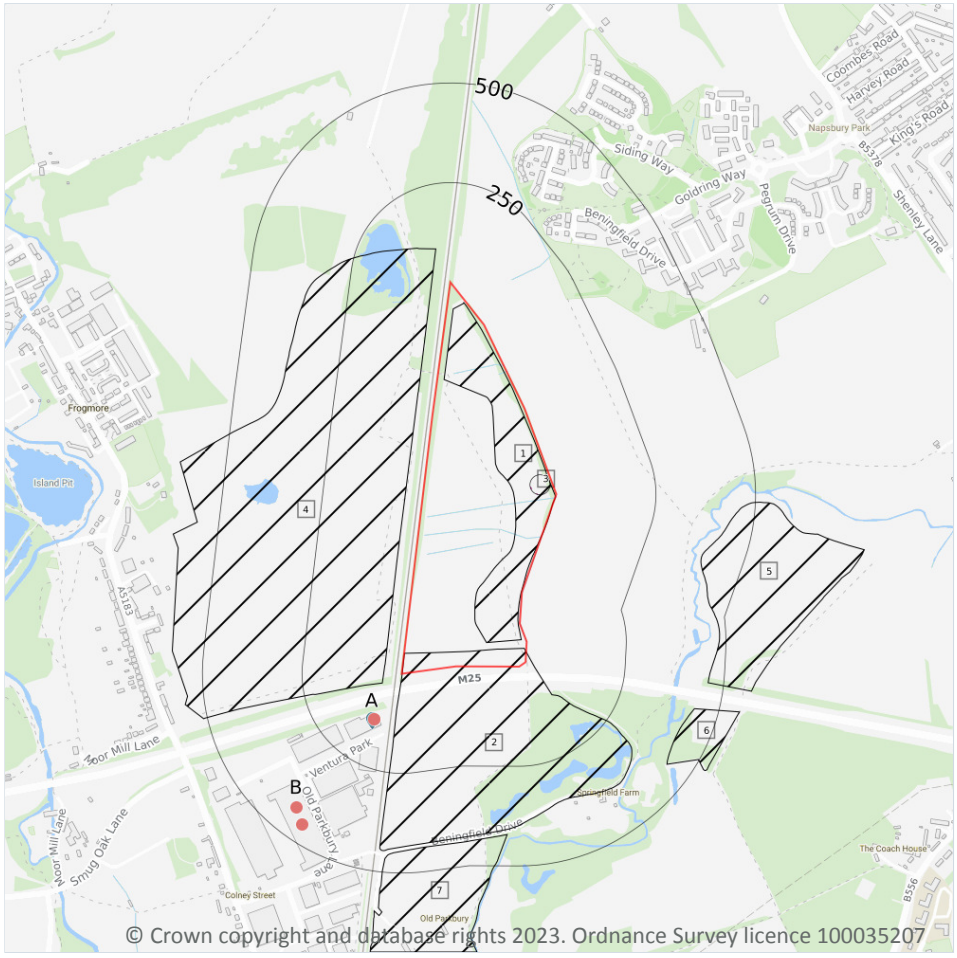
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Historical landfill (LA/OS)

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	1

Landfill sites identified from Local Authority records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Site address	Source	Data type
3	**On site**	**Napsbury Tip**	**St Albans City and District Council**	**Point**

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	6

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details		
1	**On site**	**Site Address: Napsbury, London Colney** **Licence Holder Address: Estate Office, Woolmer Green, Knebworth, Hertfordshire**	**Waste Licence: Yes** **Site Reference: 78/48** **Waste Type: Inert, Commercial, Household** **Environmental Permitting Regulations (Waste) Reference: -** **Licence Issue: 23/03/1978** **Licence Surrender: 20/02/1984**	**Operator: Redland Aggregates Limited** **Licence Holder: Redland Aggregates Limited** **First Recorded 23/03/1978** **Last Recorded: 12/10/1981**
2	**On site**	**Site Address: Old Parkbury, Harper Lane Quarry Harper Lane, Near Radlett, Hertfordshire** **Licence Holder Address: -**	**Waste Licence: Yes** **Site Reference: 77/20, HCC/064, HCC/203** **Waste Type: Inert, Commercial, Household** **Environmental Permitting Regulations (Waste) Reference: -** **Licence Issue: 01/06/1977** **Licence Surrender: 28/10/1983**	**Operator: -** **Licence Holder: Redland Aggregates Limited** **First Recorded 16/08/1954** **Last Recorded: 18/10/1983**

ID	Location	Details		
4	42m NW	Site Address: Disused Workings, Frogmore Licence Holder Address: -	Waste Licence: - Site Reference: PC8538 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -
5	396m E	Site Address: Harper Lane Quarry, Harper Lane, Near Radlett, Hertfordshire Licence Holder Address: -	Waste Licence: Yes Site Reference: 82/147 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 07/12/1982 Licence Surrender: 19/03/1993	Operator: - Licence Holder: Redland Aggregates Limited First Recorded 16/05/1983 Last Recorded: 21/02/1986
6	420m SE	Site Address: Harper Lane Quarry, Harper Lane, Near Radlett, Hertfordshire Licence Holder Address: Estate Office, Woolmer Green, Knebworth, Hertfordshire	Waste Licence: Yes Site Reference: 85/197 Waste Type: Inert, Industrial, Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 02/12/1985 Licence Surrender: 31/12/1990	Operator: - Licence Holder: Redland Aggregates Limited First Recorded 01/01/1980 Last Recorded: 14/04/1989
7	421m S	Site Address: Harper Lane Quarry, Harper Lane, Near Radlett, Hertfordshire Licence Holder Address: -	Waste Licence: Yes Site Reference: 90/246 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 09/07/1990 Licence Surrender: 19/03/1993	Operator: - Licence Holder: Redland Aggregates First Recorded 17/02/1975 Last Recorded: 31/10/1991

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	**0**

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	2

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details		
A	141m SW	Site Name: Unit D Site Address: Unit D, Ventura Park, Old Parkbury Lane, Radlett, Hertfordshire, AL2 2DB Correspondence Address: -	Type of Site: 75kte Materials Recycling Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WYL002 EPR reference: EA/EPR/DB3806HE/A001 Operator: Wylie Environmental Limited Waste Management licence No: 403066 Annual Tonnage: 74999	Issue Date: 13/04/2016 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired
A	141m SW	Site Name: Unit D Site Address: Unit D, Ventura Park, Old Parkbury Lane, Radlett, Hertfordshire, AL2 2DB Correspondence Address: -	Type of Site: 75kte Materials Recycling Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WYL002 EPR reference: EA/EPR/DB3806HE/A001 Operator: Wylie Environmental Limited Waste Management licence No: 403066 Annual Tonnage: 74999	Issue Date: 13/04/2016 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	5

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	135m SW	Unit D Old Parkbury Lane St. Albans Hertfordshire AL2 2DB	EPR/EF0809EP/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
A	135m SW	Unit D Old Parkbury Lane St. Albans Hertfordshire AL2 2DB	EPR/EF0809EP/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting mixed waste
A	135m SW	Unit D Old Parkbury Lane St. Albans Hertfordshire AL2 2DB	EPR/EF0809EP/A001	Treating waste exemption	Non-Agricultural Waste Only	Preparatory treatments (baling, sorting, shredding etc)
B	429m SW	B&Q Unit 7 Old Parkway Lane Herts AL2 2DZ	EPR/HH0217RU/A001	Treating waste exemption	Non-Agricultural Waste Only	Crushing waste fluorescent tubes
B	455m SW	B & Q, Unit 7, Old Parkway, Radlett, Herts, AL2 2DZ	WEX049232	Treating waste exemption	Not on a farm	Crushing waste fluorescent tubes

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use

Site Outline

Search buffers in metres (m)

Recent industrial land uses

Part A(1) industrial activities

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 27 >**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Gantry**	**Hertfordshire, AL2**	**Travelling Cranes and Gantries**	**Industrial Features**
A	143m SW	Express Logistics Harrow Ltd	Unit D Ventura Park, Old Parkbury Lane, Colney Street, St Albans, Hertfordshire, AL2 2DB	Distribution and Haulage	Transport, Storage and Delivery

ID	Location	Company	Address	Activity	Category
A	181m SW	Malibu Health Products Ltd	Unit C Ventura Park, Old Parkbury Lane, Colney Street, St Albans, Hertfordshire, AL2 2DB	Cosmetics, Toiletries and Perfumes	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	4

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 27 >**

ID	Location	Details	
D	457m S	Operator: Urban Reserve (AssetCo) Limited Installation Name: Parkbury Power EPRRP3102PR Process: NEW MEDIUM COMBUSTION PLANT Permit Number: RP3102PR Original Permit Number: RP3102PR	EPR Reference: - Issue Date: 25/07/2019 Effective Date: 25/07/2019 Last date noted as effective: 21/03/2023 Status: Superceded
D	457m S	Operator: Urban Reserve (AssetCo) Limited Installation Name: Parkbury Power EPRRP3102PR Process: TRANCHE B SG PERMITTING DATE 1ST JANUARY 2019 Permit Number: RP3102PR Original Permit Number: RP3102PR	EPR Reference: - Issue Date: 25/07/2019 Effective Date: 25/07/2019 Last date noted as effective: 21/03/2023 Status: Superceded

ID	Location	Details	
D	457m S	Operator: Urban Reserve (AssetCo) Limited Installation Name: Parkbury Power EPRRP3102PR Process: NEW MEDIUM COMBUSTION PLANT Permit Number: CP3109BM Original Permit Number: RP3102PR	EPR Reference: - Issue Date: 25/02/2020 Effective Date: 25/02/2020 Last date noted as effective: 21/03/2023 Status: Effective
D	457m S	Operator: Urban Reserve (AssetCo) Limited Installation Name: Parkbury Power EPRRP3102PR Process: TRANCHE B SG PERMITTING DATE 1ST JANUARY 2019 Permit Number: CP3109BM Original Permit Number: RP3102PR	EPR Reference: - Issue Date: 25/02/2020 Effective Date: 25/02/2020 Last date noted as effective: 21/03/2023 Status: Effective

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	5

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 27 >**

ID	Location	Address	Details	
B	401m E	NAPSBURY HOSPITAL, SHENLEY LANE, ST, NAPSBURY HOSPITAL, SHENLEY LANE, ST ALBANS, HERTFORDSHIRE	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: CTCP.0553 Permit Version: 1 Receiving Water: R COLNE	Status: REVOKED - UNSPECIFIED Issue date: 15/11/1966 Effective Date: 15/11/1966 Revocation Date: 06/04/1994

ID	Location	Address	Details	
B	401m E	NAPSBURY HOSPITAL, SHENLEY LANE, ST, NAPSBURY HOSPITAL, SHENLEY LANE, ST ALBANS, HERTFORDSHIRE	Effluent Type: TRADE DISCHARGES - BOILER BLOWDOWN EFFLUENT Permit Number: CNTM.1351 Permit Version: 1 Receiving Water: RIVER COLNE	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/04/1994 Effective Date: 07/04/1994 Revocation Date: 22/09/2004
3	421m SE	QUEENS PUMPING STATION, QUEENS WAY, SHENLEY, HERTFORDSHIRE, WD7 9DQ	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: NPSWQD007867 Permit Version: 1 Receiving Water: THE RIVER COLNE	Status: SURRENDERED UNDER EPR 2010 Issue date: 27/08/2009 Effective Date: 27/08/2009 Revocation Date: 28/05/2021
C	431m S	HARPER LANE QUARRY, HARPER LANE, CO, HARPER LANE QUARRY, HARPER LANE, COLNEY STREET, ST ALBANS, HERTFORDSHIRE, WD7 7HX	Effluent Type: TRADE DISCHARGES - MINERAL WORKINGS Permit Number: CNTM.1364 Permit Version: 1 Receiving Water: RIVER COLNE	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 07/04/1994 Effective Date: 07/04/1994 Revocation Date: -
C	431m S	REDLAND AGGREGATES, HARPER LANE, CO, REDLAND AGGREGATES, HARPER LANE, COLNEY STREET, ST ALBANS, HERTF, ORDSHIRE	Effluent Type: TRADE DISCHARGES - MINERAL WORKINGS Permit Number: CTWC.3265 Permit Version: 1 Receiving Water: RIVER COLNE	Status: REVOKED - UNSPECIFIED Issue date: 20/04/1989 Effective Date: 20/04/1989 Revocation Date: 07/04/1994

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 27 >**

ID	Location	Details	
2	374m SE	Incident Date: 28/09/2004 Incident Identification: 269066 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Geology (basic)

5.1 Superficial geology (625k)

Records within 500m	3

Generalised geology data based on BGS's published poster maps of the UK (North and South). Superficial related themes digitised from 1977 first edition Quaternary map (North and South).

Location	Lex code	Description	Rock type
On site	**TILL-DMTN**	**TILL**	**DIAMICTON**
On site	**GSG-SAGR**	**GLACIAL SAND AND GRAVEL**	**SAND AND GRAVEL**
299m SE	ALV-CLSS	ALLUVIUM	CLAY, SILT AND SAND

This data is sourced from the British Geological Survey.

5.2 Bedrock geology (625k)

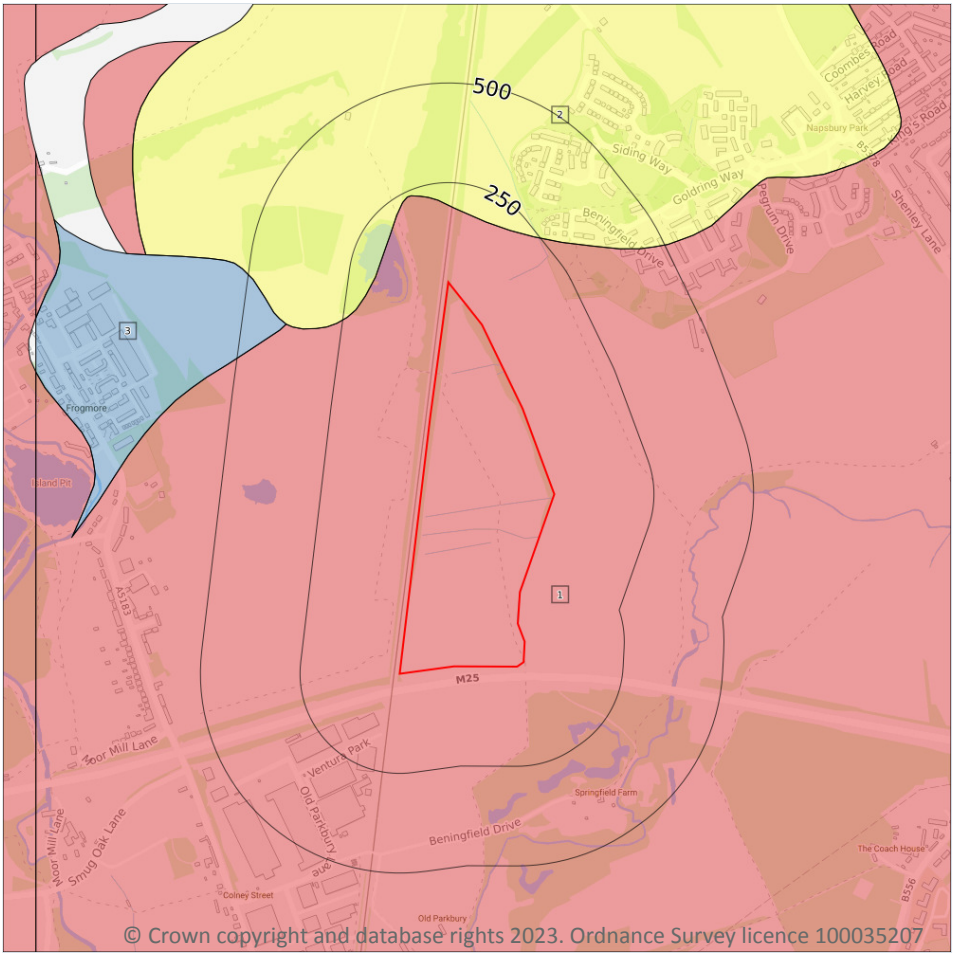
Records within 500m	1

Generalised geology data based on BGS's published poster maps of the UK (North and South). Bedrock related themes created through generalisation of 1:50,000 data.

Location	Lex code	Description	Rock type
On site	**WHCK-CHLK**	**WHITE CHALK SUBGROUP**	**CHALK**

This data is sourced from the British Geological Survey.

6 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

6.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

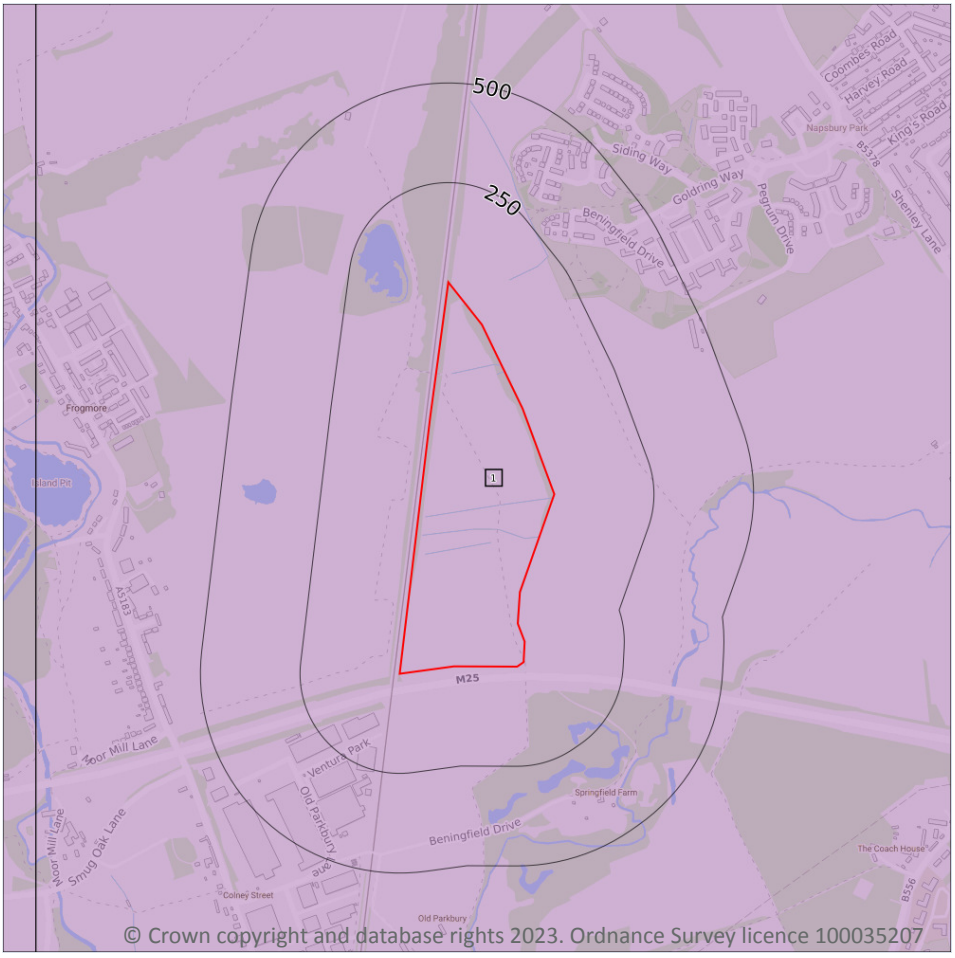
Features are displayed on the Hydrogeology map on **page 35 >**

ID	Location	Designation	Description
1	**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	176m N	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	389m NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

6.2 Bedrock aquifer

Records within 500m	1

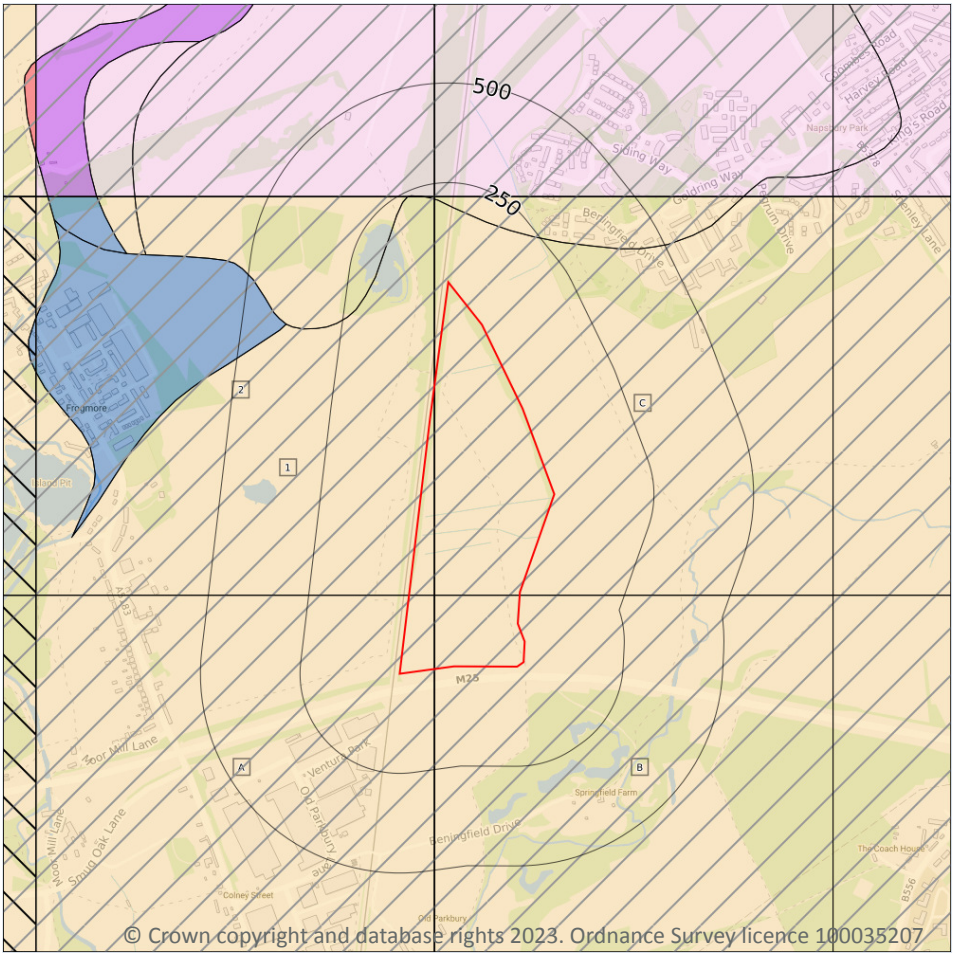
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 37 >**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

6.3 Groundwater vulnerability

Records within 50m	4

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 38 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures
A	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures
B	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Principal Flow mechanism: Well connected fractures
C	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

6.4 Groundwater vulnerability- soluble rock risk

Records on site	4

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
2	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	1.0%

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**11.0%**
B	**Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.**	**12.0%**
C	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**54.0%**

This data is sourced from the British Geological Survey and the Environment Agency.

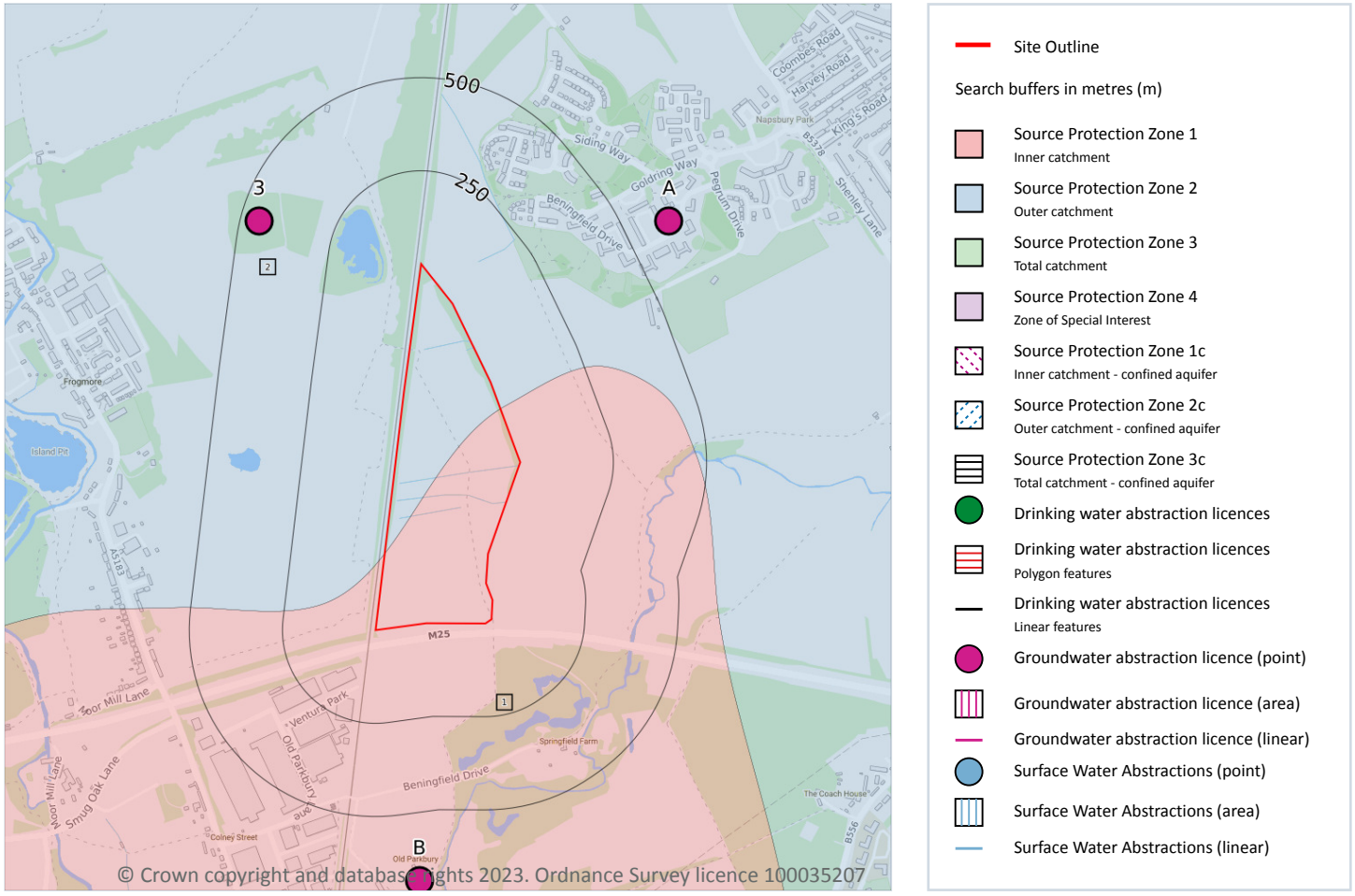
6.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



6.6 Groundwater abstractions

Records within 2000m	20

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 41 >**

ID	Location	Details	
3	449m NW	Status: Historical Licence No: 28/39/28/0512 Details: Make-Up or Top Up Water Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT RADLETT PIT, PARK STREET, HERTS. Data Type: Point Name: LAFARGE REDLAND READYMIX LIMITED Easting: 515600 Northing: 203900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/11/1992 Expiry Date: 31/12/2002 Issue No: 100 Version Start Date: 01/06/1998 Version End Date: -
A	619m NE	Status: Historical Licence No: 28/39/28/0506 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT NAPSBURY HOSPITAL, LONDON COLNEY Data Type: Point Name: BARNET COMM. HEALTHCARE TRUST Easting: 516700 Northing: 203900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 25/07/1996 Version End Date: -
B	682m S	Status: Historical Licence No: 28/39/28/0110 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BORHOLE AT OLD PARKBURY FARM, ST. ALBANS Data Type: Point Name: LAFARGE AGGREGATES LIMITED Easting: 516030 Northing: 202130	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/06/1966 Expiry Date: - Issue No: 101 Version Start Date: 19/10/2001 Version End Date: -
-	708m S	Status: Historical Licence No: 28/39/28/0110 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BORHOLE AT OLD PARKBURY FARM, ST. ALBANS Data Type: Point Name: LAFARGE REDLAND AGGREGATES LIMITED Easting: 516000 Northing: 202100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/06/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/06/1998 Version End Date: -

ID	Location	Details	
-	881m N	Status: Historical Licence No: 28/39/28/0418 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT HEDGES FARM, NORTH ORBITAL ROAD, ST. ALBANS Data Type: Point Name: WOOLLATT Easting: 515700 Northing: 204600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/04/1975 Expiry Date: - Issue No: 100 Version Start Date: 18/04/1975 Version End Date: -
-	960m S	Status: Historical Licence No: 28/39/28/0567 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: BOREHOLE A AT HARPER LANE, RADLETT, HERTS. Data Type: Point Name: LAFARGE AGGREGATES LIMITED Easting: 516190 Northing: 201860	Annual Volume (m^3): 340950 Max Daily Volume (m^3): 1136.5 Original Application No: - Original Start Date: 05/02/2002 Expiry Date: 31/03/2014 Issue No: 1 Version Start Date: 05/02/2002 Version End Date: -
-	960m S	Status: Historical Licence No: 28/39/28/0567 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: BOREHOLE A AT HARPER LANE, RADLETT, HERTS. Data Type: Point Name: LAFARGE AGGREGATES LIMITED Easting: 516190 Northing: 201860	Annual Volume (m^3): 340950 Max Daily Volume (m^3): 1136.5 Original Application No: - Original Start Date: 05/02/2002 Expiry Date: 31/03/2014 Issue No: 1 Version Start Date: 05/02/2002 Version End Date: -
-	960m S	Status: Historical Licence No: 28/39/28/0567 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: LAFARGE AGGREGATES LIMITED Easting: 516190 Northing: 201860	Annual Volume (m^3): 340950 Max Daily Volume (m^3): 1136.5 Original Application No: - Original Start Date: 05/02/2002 Expiry Date: 31/03/2014 Issue No: 3 Version Start Date: 26/09/2013 Version End Date: -

ID	Location	Details	
-	960m S	Status: Historical Licence No: 28/39/28/0567 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: LAFARGE AGGREGATES LIMITED Easting: 516190 Northing: 201860	Annual Volume (m^3): 340950 Max Daily Volume (m^3): 1136.5 Original Application No: - Original Start Date: 05/02/2002 Expiry Date: 31/03/2014 Issue No: 3 Version Start Date: 26/09/2013 Version End Date: -
-	960m S	Status: Historical Licence No: 28/39/28/0567/R01 Details: Dust Suppression Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: Tarmac Aggregates Limited Easting: 516190 Northing: 201860	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 250 Original Application No: - Original Start Date: 12/05/2014 Expiry Date: 31/03/2020 Issue No: 2 Version Start Date: 26/10/2015 Version End Date: -
-	960m S	Status: Historical Licence No: 28/39/28/0567/R01 Details: General Use Relating To Secondary Category (High Loss) Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: Tarmac Aggregates Limited Easting: 516190 Northing: 201860	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 250 Original Application No: - Original Start Date: 12/05/2014 Expiry Date: 31/03/2020 Issue No: 2 Version Start Date: 26/10/2015 Version End Date: -
-	960m S	Status: Active Licence No: 28/39/28/0567/R02 Details: Dust Suppression Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: Tarmac Aggregates Limited Easting: 516190 Northing: 201860	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 120 Original Application No: NPS/WR/030423 Original Start Date: 01/04/2020 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 01/04/2020 Version End Date: -
-	960m S	Status: Active Licence No: 28/39/28/0567/R02 Details: General Use Relating To Secondary Category (High Loss) Direct Source: THAMES GROUNDWATER Point: HARPER LANE, RADLETT, HERTS-BOREHOLE. Data Type: Point Name: Tarmac Aggregates Limited Easting: 516190 Northing: 201860	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 120 Original Application No: NPS/WR/030423 Original Start Date: 01/04/2020 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 01/04/2020 Version End Date: -

ID	Location	Details	
-	1018m S	Status: Historical Licence No: 28/39/28/0503 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT HARPER LANE, RADLETT Data Type: Point Name: LAFARGE REDLAND AGGREGATES LIMITED Easting: 516100 Northing: 201800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/01/1992 Expiry Date: 31/12/2001 Issue No: 101 Version Start Date: 07/08/2000 Version End Date: -
-	1018m S	Status: Historical Licence No: 28/39/28/0503 Details: Process water Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT HARPER LANE, RADLETT Data Type: Point Name: LAFARGE REDLAND AGGREGATES LIMITED Easting: 516100 Northing: 201800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/01/1992 Expiry Date: 31/12/2001 Issue No: 101 Version Start Date: 07/08/2000 Version End Date: -
-	1274m NW	Status: Active Licence No: 28/39/28/0186 Details: Fish Farm/Cress Pond Throughflow Direct Source: THAMES GROUNDWATER Point: ARTESIAN BOREHOLES AT BURYDELL LANE, PARK STREET - A Data Type: Point Name: PARKER Easting: 514800 Northing: 204100	Annual Volume (m^3): 454600 Max Daily Volume (m^3): 1245 Original Application No: - Original Start Date: 10/10/1966 Expiry Date: - Issue No: 101 Version Start Date: 07/04/2008 Version End Date: -
-	1302m NW	Status: Active Licence No: 28/39/28/0186 Details: Fish Farm/Cress Pond Throughflow Direct Source: THAMES GROUNDWATER Point: ARTESIAN BOREHOLES AT BURYDELL LANE, PARK STREET - B Data Type: Point Name: PARKER Easting: 514800 Northing: 204200	Annual Volume (m^3): 454600 Max Daily Volume (m^3): 1245 Original Application No: - Original Start Date: 10/10/1966 Expiry Date: - Issue No: 101 Version Start Date: 07/04/2008 Version End Date: -
-	1350m SW	Status: Active Licence No: 28/39/28/0336 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: NETHERWILD PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 515300 Northing: 201600	Annual Volume (m^3): 43260641 Max Daily Volume (m^3): 286404 Original Application No: NPS/WR/011805 Original Start Date: 12/06/1967 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -

ID	Location	Details	
-	1363m SE	Status: Historical Licence No: 28/39/28/0599 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: HARPERBURY HOSPITAL, SHENLEY-BOREHOLE B Data Type: Point Name: HERTFORDSHIRE PARTNERSHIP NHS TRUST Easting: 517180 Northing: 201860	Annual Volume (m^3): 63115 Max Daily Volume (m^3): 172.8 Original Application No: - Original Start Date: 16/08/2005 Expiry Date: 31/03/2014 Issue No: 1 Version Start Date: 16/08/2005 Version End Date: -
-	1363m SE	Status: Historical Licence No: 28/39/28/0599 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: HARPERBURY HOSPITAL, SHENLEY-BOREHOLE A Data Type: Point Name: HERTFORDSHIRE PARTNERSHIP NHS TRUST Easting: 517170 Northing: 201850	Annual Volume (m^3): 63115 Max Daily Volume (m^3): 172.8 Original Application No: - Original Start Date: 16/08/2005 Expiry Date: 31/03/2014 Issue No: 1 Version Start Date: 16/08/2005 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

6.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

6.8 Potable abstractions

Records within 2000m	**2**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 41 >**

ID	Location	Details	
A	619m NE	Status: Historical Licence No: 28/39/28/0506 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT NAPSBURY HOSPITAL, LONDON COLNEY Data Type: Point Name: BARNET COMM. HEALTHCARE TRUST Easting: 516700 Northing: 203900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 25/07/1996 Version End Date: -
-	1350m SW	Status: Active Licence No: 28/39/28/0336 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: NETHERWILD PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 515300 Northing: 201600	Annual Volume (m^3): 43260641 Max Daily Volume (m^3): 286404 Original Application No: NPS/WR/011805 Original Start Date: 12/06/1967 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

6.9 Source Protection Zones

Records within 500m	**2**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 41 >**

ID	Location	Type	Description
1	**On site**	**1**	**Inner catchment**
2	**On site**	**2**	**Outer catchment**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.10 Source Protection Zones (confined aquifer)

Records within 500m	**0**

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

7.1 Water Network (OS MasterMap)

Records within 250m	**14**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 48 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
3	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
D	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
E	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
F	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
G	124m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	214m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	231m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	236m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

7.2 Surface water features

Records within 250m	7

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 48 >**

This data is sourced from the Ordnance Survey.

7.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 48 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
4	**On site**	**River**	**Upper Colne and Ellen Brook**	**GB106039029820**	**Colne**	**Colne**

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 48 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
17	373m E	River	Upper Colne and Ellen Brook	GB106039029820 ↗	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 WFD Groundwater bodies

Records on site	1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 48 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
5	**On site**	**Mid-Chilterns Chalk**	**GB40601G601200** ↗	**Poor**	**Poor**	**Poor**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 River and coastal flooding

8.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

8.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

8.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

8.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

8.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

8.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

9 Surface water flooding

Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

9.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 55 >**

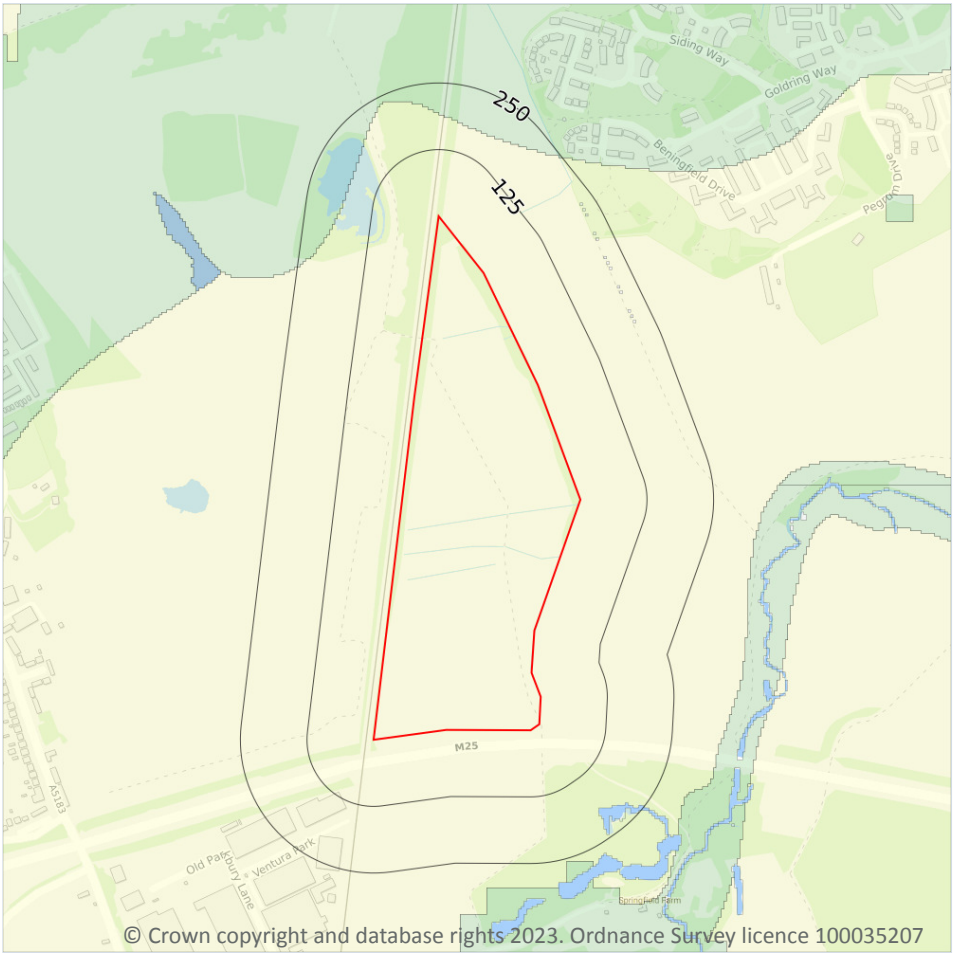
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

10 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

10.1 Groundwater flooding

Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 57 >**

This data is sourced from Ambiental Risk Analytics.

11 Environmental designations

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Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Designated Ancient Woodland

Green Belt

11.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 58 >**

ID	Location	Name	Data source
-	1829m W	Moor Mill Quarry, West	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.7 Designated Ancient Woodland

Records within 2000m	1

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 58 >**

ID	Location	Name	Woodland Type
-	1491m S	Hounds Wood	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

11.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.11 Green Belt

Records within 2000m	2

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 58 >**

ID	Location	Name	Local Authority name
1	**On site**	**London**	**St Albans**
2	971m S	London	Hertsmere

This data is sourced from the Ministry of Housing, Communities and Local Government.

11.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

11.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

11.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

11.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

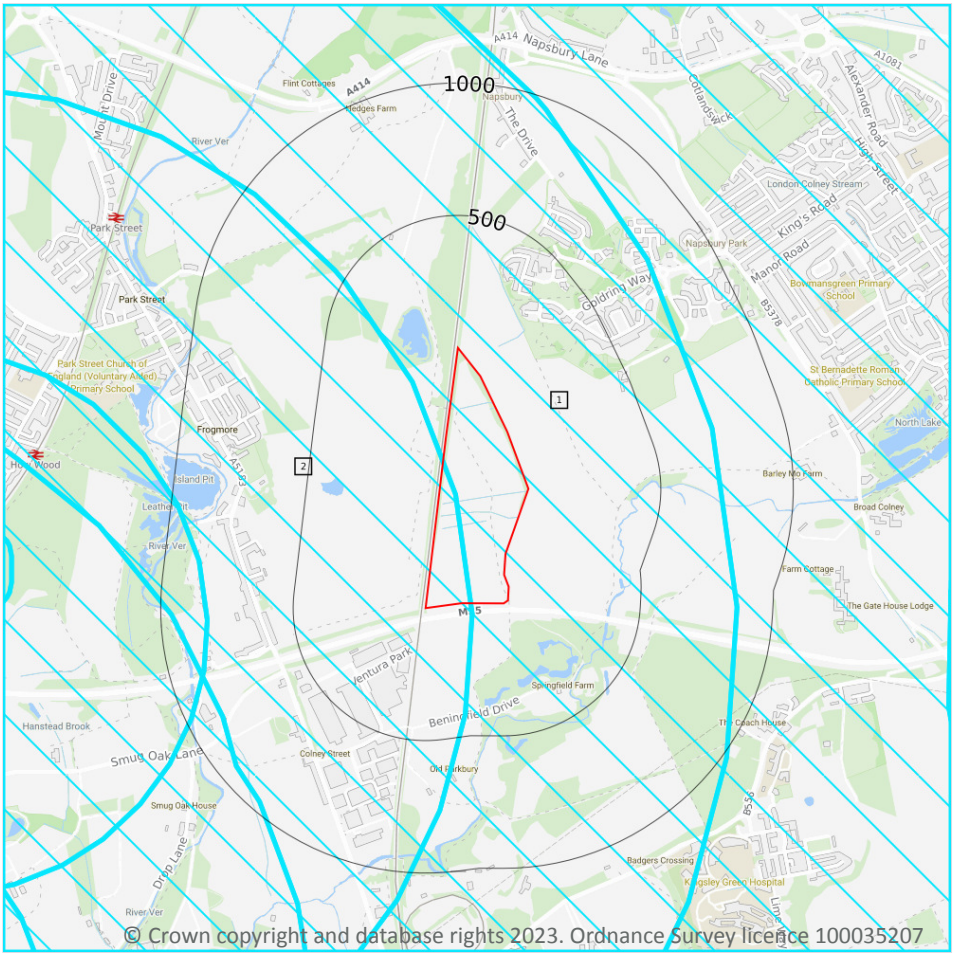
11.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

11.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 63 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t.**

ID	Location	Type of developments requiring consultation
2	**On site**	**Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Waste - Landfill. incl: inert landfill, non-hazardous landfill, hazardous landfill. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

This data is sourced from Natural England.

11.18 SSSI Units

Records within 2000m	**1**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

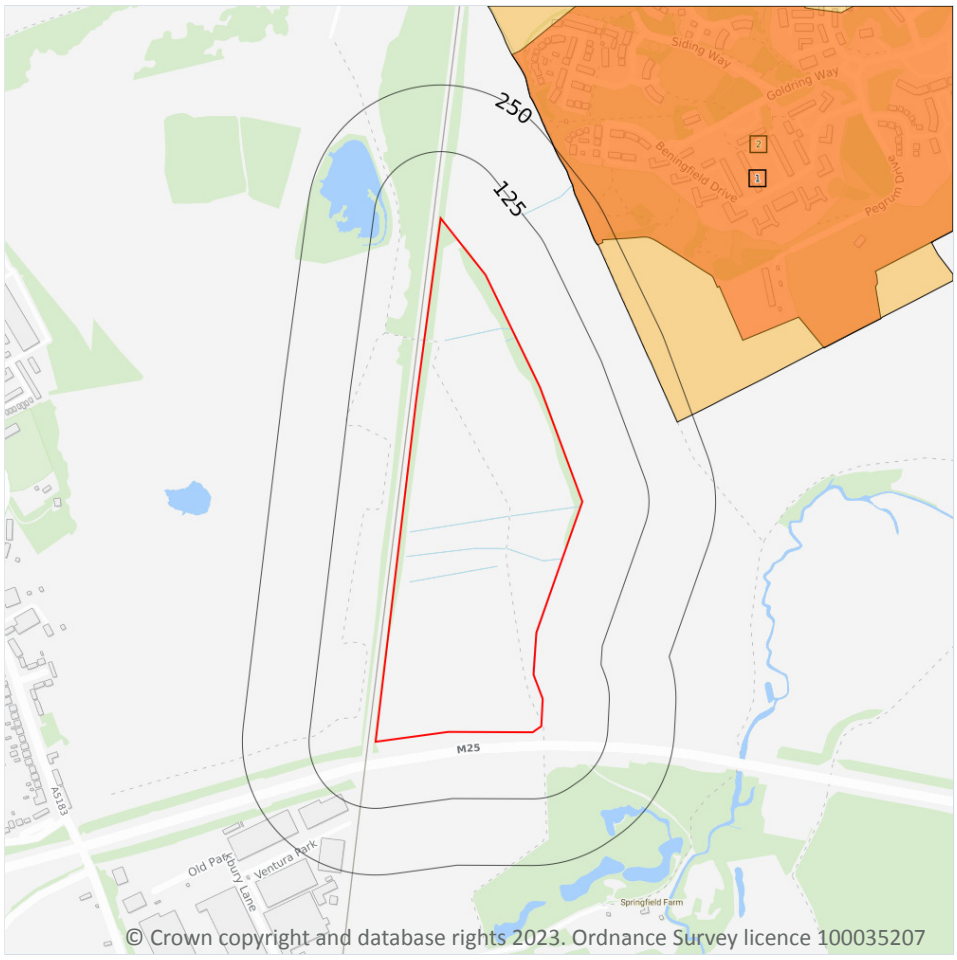
Features are displayed on the SSSI Impact Zones and Units map on **page 63 >**

ID: -
Location: 1829m W
SSSI name: Moor Mill Quarry, West
Unit name: Whole Site
Broad habitat: Earth Heritage
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
FB - Quaternary of the Thames	Unfavourable - No change	12/02/2009

This data is sourced from Natural England and Natural Resources Wales.

12 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

12.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

12.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

12.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.5 Conservation Areas

Records within 250m	1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 65 >**

ID	Location	Name	District	Date of designation
2	212m NE	Napsbury	St. Albans	04/01/1996

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.6 Scheduled Ancient Monuments

Records within 250m	**0**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.7 Registered Parks and Gardens

Records within 250m	**1**

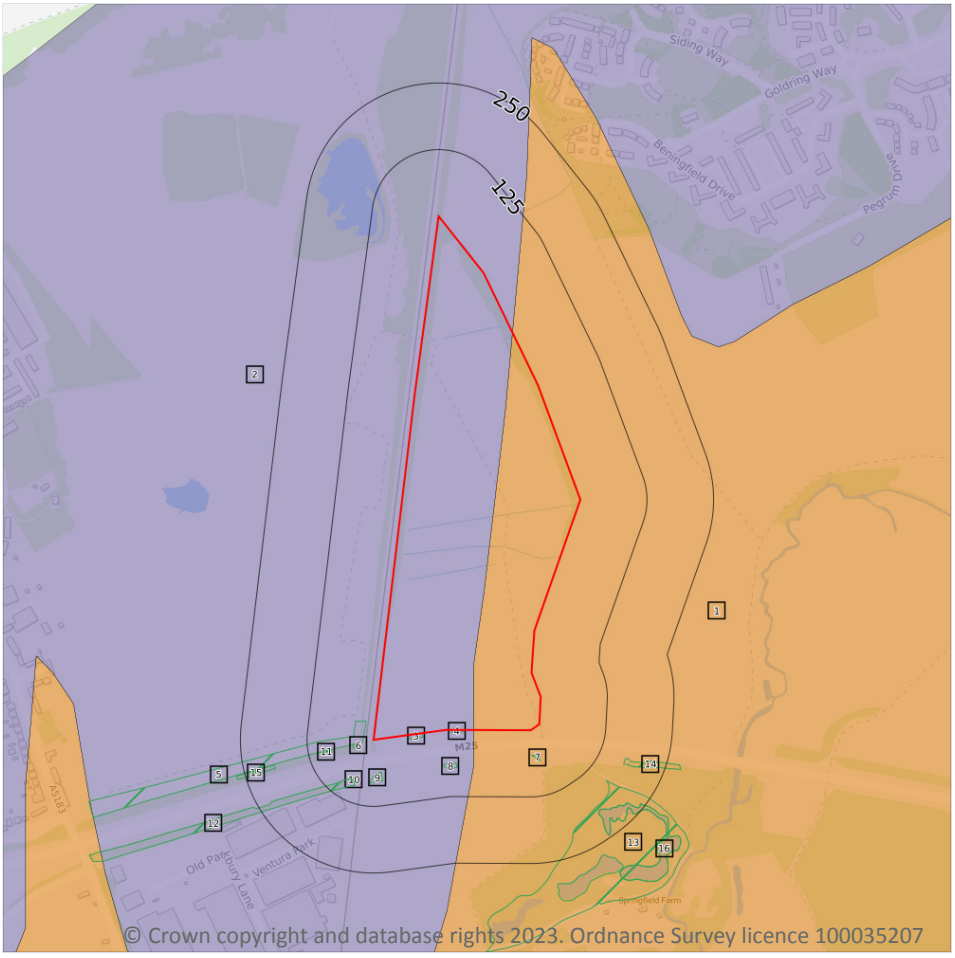
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

Features are displayed on the Visual and cultural designations map on **page 65 >**

ID	Location	Name	Grade
1	209m NE	Napsbury Hospital	II

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

13 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

13.1 Agricultural Land Classification

Records within 250m	2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 68 >**

ID	Location	Classification	Description
1	On site	Grade 3	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**

ID	Location	Classification	Description
2	**On site**	**Non Agricultural**	-

This data is sourced from Natural England.

13.2 Open Access Land

Records within 250m	**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

13.3 Tree Felling Licences

Records within 250m	**14**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

Features are displayed on the Agricultural designations map on **page 68 >**

ID	Location	Description	Reference	Application date
3	**On site**	**Selective Fell/Thin (Unconditional)**	**018/366/15-16**	**-**
4	**On site**	**Selective Fell/Thin (Unconditional)**	**018/366/15-16**	**-**
5	18m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
6	27m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
7	47m S	Selective Fell/Thin (Unconditional)	018/366/15-16	-
8	62m S	Selective Fell/Thin (Unconditional)	018/366/15-16	-
9	62m S	Selective Fell/Thin (Unconditional)	018/366/15-16	-
10	79m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
11	82m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
12	84m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
13	165m SE	Selective Fell/Thin (Unconditional)	018/366/15-16	-

ID	Location	Description	Reference	Application date
14	174m SE	Selective Fell/Thin (Unconditional)	018/366/15-16	-
15	192m SW	Selective Fell/Thin (Unconditional)	018/366/15-16	-
16	197m SE	Selective Fell/Thin (Unconditional)	018/366/15-16	-

This data is sourced from the Forestry Commission.

13.4 Environmental Stewardship Schemes

Records within 250m	**1**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

Location	Reference	Scheme	Start Date	End date
1m SE	AG00384040	Higher Level Stewardship	01/10/2011	30/09/2021

This data is sourced from Natural England.

13.5 Countryside Stewardship Schemes

Records within 250m	**2**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
214m NE	643971	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023
223m NE	643971	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023

This data is sourced from Natural England.

14 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

14.1 Priority Habitat Inventory

Records within 250m	9

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 71 >**

ID	Location	Main Habitat	Other habitats
A	21m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	44m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
1	49m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	66m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
3	70m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	100m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	151m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	213m NE	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
7	233m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

14.2 Habitat Networks

Records within 250m	**0**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

14.3 Open Mosaic Habitat

Records within 250m	**0**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

14.4 Limestone Pavement Orders

Records within 250m	**0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-april-2023/ ↗.

C. Landscape RMA Submission Report

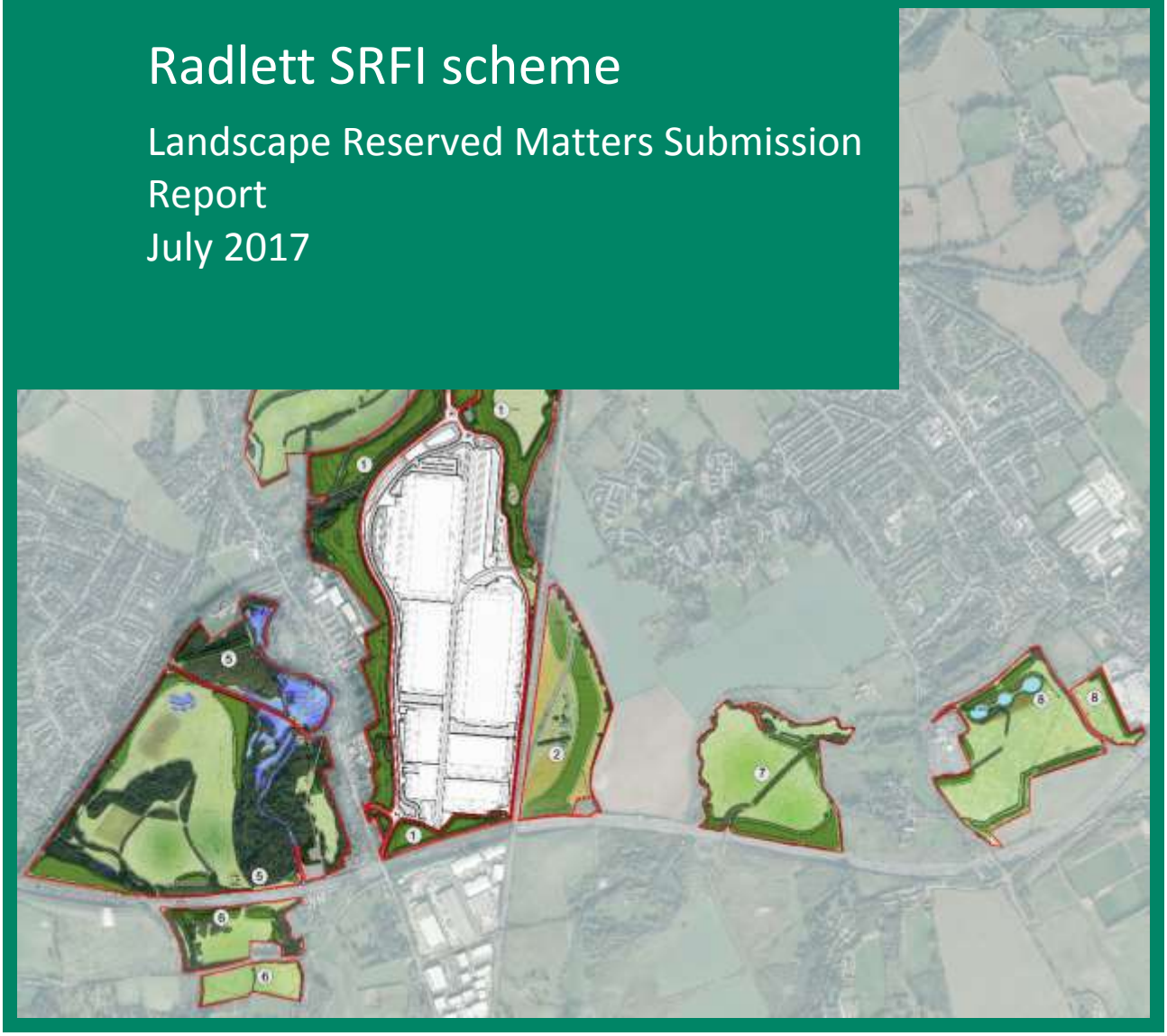
- Radlett SRFI Landscape RMA Submission Report (Capita 063533-RT-001)

CAPITA

Radlett SRFI scheme

Landscape Reserved Matters Submission Report

July 2017



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Contents

1. Executive Summary

1.1 Landscape Justification

The following report sets out the rationale for the Landscape Reserved Matters Submission arising from the detailed design process in comparison with the outline application. The Landscape proposals for the Radlett SRFI and Country Park has evolved to coordinate with detailed Highways layouts, New building footprint, Ecology requirements, Farming requirements, greater site investigation works, improved and updated site survey data, revised rail design, consultation with statutory bodies, consultation with interest groups, surface water and engineering requirements, audial mitigation to meet Condition 25, whilst meeting the parameters and principles of the Landscape proposals and the Landscape and Visual Impact Assessment.

The 2009 ES concluded that while the landscape and visual impact of the SRFI in isolation would be adverse, there are limited locations from where the SRFI may be visible because of the screening effects of existing buildings, vegetation and topography and in the long-term the proposed earth modelling and planting would screen the proposal from the majority of viewpoints. Furthermore the 2009 Environmental Statement concluded that, the impacts of the improvements brought about by the Country Park would be significantly beneficial and outweigh the adverse effects.

Whilst the baseline is largely consistent with the 2009 EIA, there have been minor changes to the landscaping for the current scheme being submitted under the reserved matters. Despite this, the scheme remains compliant with the key parameters, subject to the matters referred to below.

Site earthworks have been designed to provide a balance of cut and fill across the site as well as creating visual and acoustic buffers to the development. The height of all the earthworks and largely the extents of the earthworks comply with the site parameters as identified on the Parameters Plan. Minor differences to the earthworks have resulted from the availability of further information including updated topographical and ground investigative surveys. Slight variations to the extents have also been necessary to; accommodate previously unknown elements such as existing below ground infrastructure, retain existing tree and hedge planting and to enable an earthworks proposal that would be deliverable based upon the information available regarding material quality. The mounds have been designed to 1:3 gradients in accordance with the advice of the project's engineering team, based on their analysis of the quality and stability of the existing material. Berms have been built into the mounds to provide additional stability and structural strength.

The location and extent of the proposed woodland planting is largely in accordance with the Parameters Plan. The updated Topographical Survey provided greater information on the location and extent of existing trees and vegetation across the site, which revealed that more existing vegetation will be removed to facilitate the

development within the centre of the site. This has been balanced with greater retention adjacent to Bury Dell. The proposed planting in Area 1 has been increased/ strengthened along the bunds/ perimeter of the site to compensate the additional losses and provide the visual mitigation. There has also been a slight increase in planting in Area 2 to compensate for minor reductions in Areas 3-8 to protect better quality grazing land and land of high ecological importance. All earthworks feature extensive woodland planting in accordance with the Parameters Plan. A variety of Woodland planting typologies are proposed to include Broadleaf Woodland and Wet Woodland. These interventions will provide additional screening to the SRFI as well as softening the appearance of the earthworks. The Woodland planting will contribute to the Watling Chase Community Forest Green Infrastructure Strategy.

The LVIA assessed the SRFI A1: Development Site as defined on the Parameters Plan, as opposed to the individual building configuration. Whilst the configuration of the SRFI building plots has changed in comparison to the 2009 Illustrative Layout (which was not defined by the key parameters), the A1: Development Site is still enclosed by the earthworks and structural tree and woodland planting. Whilst the ancillary substation and new access bridge to Hedges Farm are positioned outside the A1: Development Site, these modest additions will also be enclosed by earthworks and structural planting. As stated in the LVIA, a consistent mitigation feature of each plot is contextual landscape treatment of Native and Ornamental Tree and Shrub planting with localised mounding to each plot. In addition, the relief road will be lined with trees which will also provide very near visual mitigation.

The proposals for the Country Park Areas 3-8 are for overall environmental mitigation and enhancement and do not directly affect the LVIA for the SRFI. The structural planting proposals for Country Park areas 3-8 have been adjusted in accordance with the findings of the updated ecological surveys and ground investigation works that have made recommendations on where planting would be allowed and should be avoided.

Acoustic fencing was included within the OPA submission to mitigate for general noise impacts associated with the development and bypass. Further acoustic mitigation has been subsequently identified by the LPA to mitigate individual discrete events (dropped containers within the SRFI for example) in some sensitive areas for specific properties identified by the Acousticians (Refer to Condition 25 submission for further details). The Parameter Plan restricted increasing the heights of bunds to mitigate these events. To ensure the bunds could be provided within the constraints of the parameters and still provide appropriate visual and acoustic mitigation, additional acoustic fences have been provided. All acoustic fencing will be located within new woodland planting areas and will be installed first. Initially woodland planting will soften their appearance visually before ultimately concealing them once the vegetation matures and establishes.

The proposed earthworks to Areas 1 and 2 achieve the objective of enclosing the SRFI Site and comply with the Parameters Plan, subject to the minor variations discussed above. Structural woodland planting will be provided in all of these locations in

accordance with the Parameter Plans to achieve the principles of the LVIA. On the basis that all proposals conform to the approved LVIA and methodology, it is not considered appropriate or necessary to update the LVIA.

2. Review of Landscape Revisions by Drawing.

2.1 063533-L-015/016 Topography Plan and Area 1 and 2 Topography Plan

All bunds have maintained the ultimate heights set out by the Parameters Plan. To meet Condition 25 there has been a requirement to increase acoustic screening to mitigate individual discrete events in some sensitive areas. This has necessitated increasing acoustic fence heights as the bund heights were restricted via the Parameter Plans.

- North Eastern (Napsbury) Bund has been designed to reach 92m AOD via a 1:3 profile whilst accommodating berms, substation, revised highways layout and Hedges Farm access. The increased footprint required by the estate roads and the grade of the fill material has narrowed the bund to the south requiring the introduction of retaining structures and a 2m high acoustic fence to meet the 88m height previously achieved within the Outline Planning Application (OPA). The fencing is located within woodland planting which will initially soften its appearance and ultimately conceal it in the future once the woodland has established.
- Area 2 bunds – these have been slightly realigned to accommodate the revised rail chord but fundamentally retain the same purpose and heights and will continue to feature woodland planting.
- M25 Bund – A traverser unit and increased track length imposed by Rail Legislation has required a slight revision to this bund but not one that affects its function as heights and planting are maintained. An offset from the M25 boundary of 10m for woodland planting has been accommodated.
- South West Bund – The extents have been revised to accommodate the revised bypass alignment and inclusion of internal estate road. Bund height has been maintained. Acoustic fencing continues to be provided to provide audio mitigation.
- Western Bund (South) – Following detailed design there is a larger extent of bund that meets the 82m parameters height than within the OPA. Acoustic fencing has been provided for residential mitigation and is located within woodland planting which will initially soften its appearance and ultimately conceal it in the future once the woodland has established.
- Western bund (Central) – this bund maintains the 80m AOD from the Parameter Plan. Increased acoustic screening has been provided to mitigate individual properties from individual discrete noise events. The bund previously joined the Western bund (North) but to meet utilities requirements on cover levels for foul sewers, a valley has been required to be introduced, this results in a greater proportion of existing vegetation to be retained.

- Western bund (North) – The parameter levels for the proposed bund are retained and meets the existing topographies level of 89m AOD. The OPA did not identify the existing spot level of 89m this has been picked up from the updated topographical survey.

2.2 063533-L-021 Country Park Area 1 and 2 Existing

This plan uses the updated Topographical Survey 2015/2016 to supersede 394503-LV-041.

2.3 063533-L-121H Areas 1 and 2 Landscape Masterplan/ 063533-L-131C Fence Plan and 063533-L-032 Hard Landscape Plan

Reserved Matters Landscape Masterplan submission, these drawings incorporate detailed Highways layouts, New building footprint, Ecology requirements, Farming requirements, greater site investigation works, improved and updated site survey data, revised rail design, consultation with statutory bodies, consultation with interest groups, surface water and engineering requirements, audial mitigation to meet Condition 25, whilst meeting the parameters and principles of the Landscape proposals and the Landscape and Visual Impact Assessment.

- Revised A414 Roundabout, bypass and adoptable highways.
- Revised building/ plot layout.
- Revised layout and access to Hedges Farm.
- Proposed Visitor Interpretation Centre to be located adjacent to Hedges Farm with supporting facilities and infrastructure.
- Revised Rights of Way and finishes following consultation with HCC. Includes a variety of surfaced and unsurfaced routes.
- Revised woodland planting – refer to detailed comments above relating to the topography plan and planting. In summary, Woodland Planting has been revised to be removed from the Highways Adoption area (in consultation with HCC), redesigned to create more favourable ecological conditions and farming areas across the Country Park adjacent to Hedges Farm and provide greater perimeter coverage to the SRFI. Areas 3-8 of the Country Park have seen reduction in woodland planting to promote the landscape for ecological purposes such as ground nesting birds and for more substantial areas for agricultural grazing. The Country Park proposals are for a net gain of 74ha of woodland to meet the Watling Chase agenda and more of this has been concentrated in Areas 1 and 2.
- SRFI Plot landscaping has been revised in coordination with the new building layout. Contextual landscaping with a treatment of Native and Ornamental Tree and Shrub planting with localised mounding to each plot. In addition, the relief road will be lined with trees and native hedgerow.

- Two multi use access routes are provided from Bury Dell and Park Street into the SRFI site as well as footways around the SRFI and those associated with the bypass access roads.
- To meet Condition 25 there has been a requirement to increase acoustic screening to mitigate individual discrete events in some sensitive areas. This has necessitated increasing acoustic fence heights as the bund heights were restricted via the Parameter Plans see previous comments.
- The rail chord has been realigned by approximately 30m within Area 2 following detailed design with resulting revisions to the bunds and woodland planting locations, care has been given to ensure mitigation has been retained. To achieve a geometric alignment which can achieve appropriate speeds for trains to exit/enter the terminal based on calculated entry and exit speeds, it was necessary to shift the curvature of the rail chord as indicated on the parameters plan. This is deemed appropriate as this was not based on the same level of detailed rail engineering and would represent a sub optimum alignment.
- Surface water drainage measures have been designed across the SRFI and have resulted in revisions to the Landscaping proposals to include swales and attenuation basins.
- The fence plan indicates the variety of fence types proposed across Areas 1 and 2.
- The Hard landscape plan details the proposed hard material finishes across the SRFI. The country park finishes are provided within the Hedges Farm and Visitor Centre Plans. Details of rights of way finishes are provided within the Rights of Way Plan.
- Area 2 has developed the extent/ area of newt ponds this to meet Natural England requirements.

2.4 063533-L-200 – 208 Country Park Masterplans

These drawings illustrate the Country Park masterplans for the overall scheme with detailed plans for areas 1-8 indicating finishes and forms.

- 063533-L-201 Area 1 – See comments above.
- 063533-L-202 Area 2 – See comments above.
- 063533-L-203 Area 3 – Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Rights of Way have been realigned following HCC consultation.
- 063533-L-204 Area 4 - Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Proposed woodland reduced to perimeters to promote ecological principles. Rights of Way have been realigned following HCC consultation.
- 063533-L-205 Area 5 - Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Proposed woodland reduced to perimeters to promote ecological principles for ground nesting birds and grazing. Rights of Way have been realigned following HCC consultation. Informal sports/ health provision and play areas added to replace formal sports provision.

- 063533-L-206 Area 6 - Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Proposed woodland reduced to perimeters to promote ecological and grazing principles. Rights of Way have been realigned following HCC consultation.
- 063533-L-207 Area 7 - Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Proposed woodland reduced to perimeters to promote ecological principles such as ground nesting birds and grazing. Rights of Way have been added following HCC consultation.
- 063533-L-208 Area 8- Existing vegetation has been plotted from recent Aerial photography and assessed by Arboricultural Consultant. Proposed woodland reduced to perimeters to promote ecological principles for ground nesting and wading birds and grazing. Rights of Way have been realigned following HCC consultation. Informal sports/ health provision and play areas added to replace formal sports provision.

2.5 063533-L-210 Area 1 and 2 Comparison Plan

Plan overlays the RM Landscape Masterplan with the OPA submission and explains the differences as detailed above.

2.6 063533-L-231 Hedges Farm – Existing Aerial highlighting buildings to be retained / removed

Plan illustrates the buildings that will be necessary to be removed to facilitate the development. Changes resulting from detailed design of the A414 junction, visibility splays and mitigating level changes between Hedges Farm and surroundings.

2.7 063533-L-233A Hedges Farm Proposed Layout and 063533-L-234A Visitor Interpretation Centre Point

The RM submission proposes a separate VIC from Hedges Farm to better safeguard the long-term success of each and certainly provide greater flexibility to the future running of the farm.

- 063533-L-233 - Indicates the proposed finishes, arrangements and car parking to Hedges Farm as well as access to Area 3 (and 4) across the bypass bridge.
- 063533-L-234 - the plan shows the current proposals for the VIC following consultation with several parties including HCC, SADC, British Horse Society and Herts and Middlesex Wildlife Trust. The plan indicates finishes, car parking and facilities associated with the VIC.

2.8 063533-L-400/ 401/ 402/ 410/ 411/412/ 413 and 415 Typical Details

These drawings demonstrate the proposed details to deliver the hard and soft landscaping proposals across the SRFI and Country Park including fencing, gates and site furniture.

2.9 063533-L-451 and 452 Site Sections

Sections demonstrate the topography/ landforms across Areas 1 and 2.

2.10 063533-L-453 and 454 OPA and RM Comparison Sections

OPA sections overlaid with RM sections in the same locations. Where changes have occurred, these are explained in the adjoining notes (063533-L-455).

2.11 063533-L-500-519 Tree Survey Areas 1 and 2

BS5837:2012 Tree Survey by Tree and Woodland Consultancy for Areas 1 and 2. Tree Survey based upon the updated Topographical Survey.

2.12 063533-L-700 – 705 Country Park Area 1 and 2 Planting Plans

Plans detailing the proposed soft landscaping across the Country Park within areas 1 and 2. Detailing woodland planting and grasslands.

2.13 063533-L-706-715 SRFI Planting Plans

Plans detailing all aspects of the soft landscape associated with the SRFI including bypass, estate roads and contextual landscape treatments.

2.14 063533-L-716 Newt Ponds Planting Plan

Planting plans for the newt ponds within area 2 of the Country Park

2.15 063533-L-717 VIC Planting Plan

Planting plan detailing the contextual landscape to the Visitor Interpretation Centre.

2.16 063533-L-800 – 819 Area 1 and 2 Tree Retention and Removal Plan

Plans indicating existing trees to be retained and removed across Areas 1 and 2 in accordance with the BS5837:2012 Tree Survey and to facilitate the development.

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