Appendix 3.2

EIA SCOPING REPORT (FEBRUARY 2023)

Quod

EIA Scoping Report

Hillingdon Water Sports Facility and Activity Centre

February 2023

Q220454

Contents

1 Introduction

Purpose

1.1 The purpose of this report is to inform a request for an Environmental Impact Assessment (EIA) Scoping Opinion from the London Borough of Hillingdon ('LBH') in relation to development proposals at Broadwater Lake, Moorhall Road, Harefield, Uxbridge UB9 6PE (the 'Site'). The Site is located wholly/partly within the Mid Colne Valley Site of Special Scientific Interest (SSSI). LBH will also be the applicant for the planning application ('Applicant').

1.2 The development proposals are emerging, although detailed planning permission is likely to be sought for the construction of buildings and structures to accommodate sailing/rowing facilities and outdoor activities centres adjacent to Broadwater Lake, including additional car parking, external boat storage and access within the Site ('Development'). The proposals are likely to include modifications to Broadwater Lake to facilitate water-based recreation uses (e.g. sailing and rowing), including some dredging, creation of new land and islands and new habitats. The Broadwater Sailing Club (BSC) which is currently based at Broadwater Lake would remain although its facilities would be relocated elsewhere within the Site as part of the Development. The proposals are to be known as the 'Hillingdon Water Sports Facility and Activity Centre'.

1.3 This report sets out the findings of an EIA scoping study and accompanies a request for an EIA Scoping Opinion submitted to LBH in accordance with Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (as amended)[2], ('EIA Regulations'). In line with the EIA Regulations, this report identifies the Site location, provides a brief description of the nature and purpose of the Development and an explanation of the likely significant effects of the Development on the environment. The report also outlines the proposed content, approach, and scope of the ES to be submitted with the planning application.

1.4 Figures 1.1 and 1.2 show the Site's location and the likely extent of the planning application. Brief descriptions of the Site and the Development are provided within Sections 2 and 3, respectively.

[1] Her Majesty's Stationary Office (HMSO), 2017. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The Stationary Office. May 2017.
[2] HMSO, 2018. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018. The Stationary Office. October 2018.

Figure 1.1: Site Location Plan

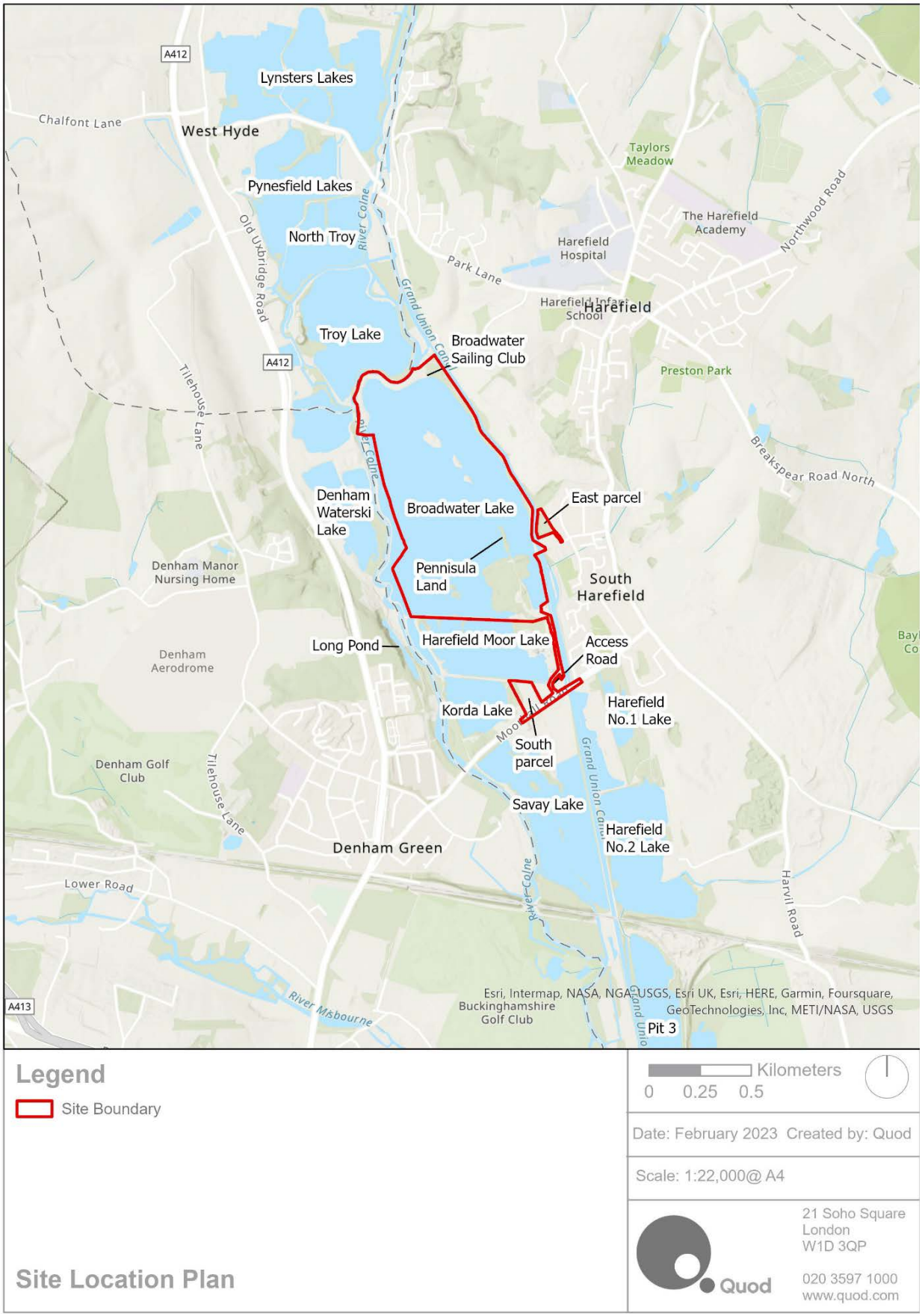
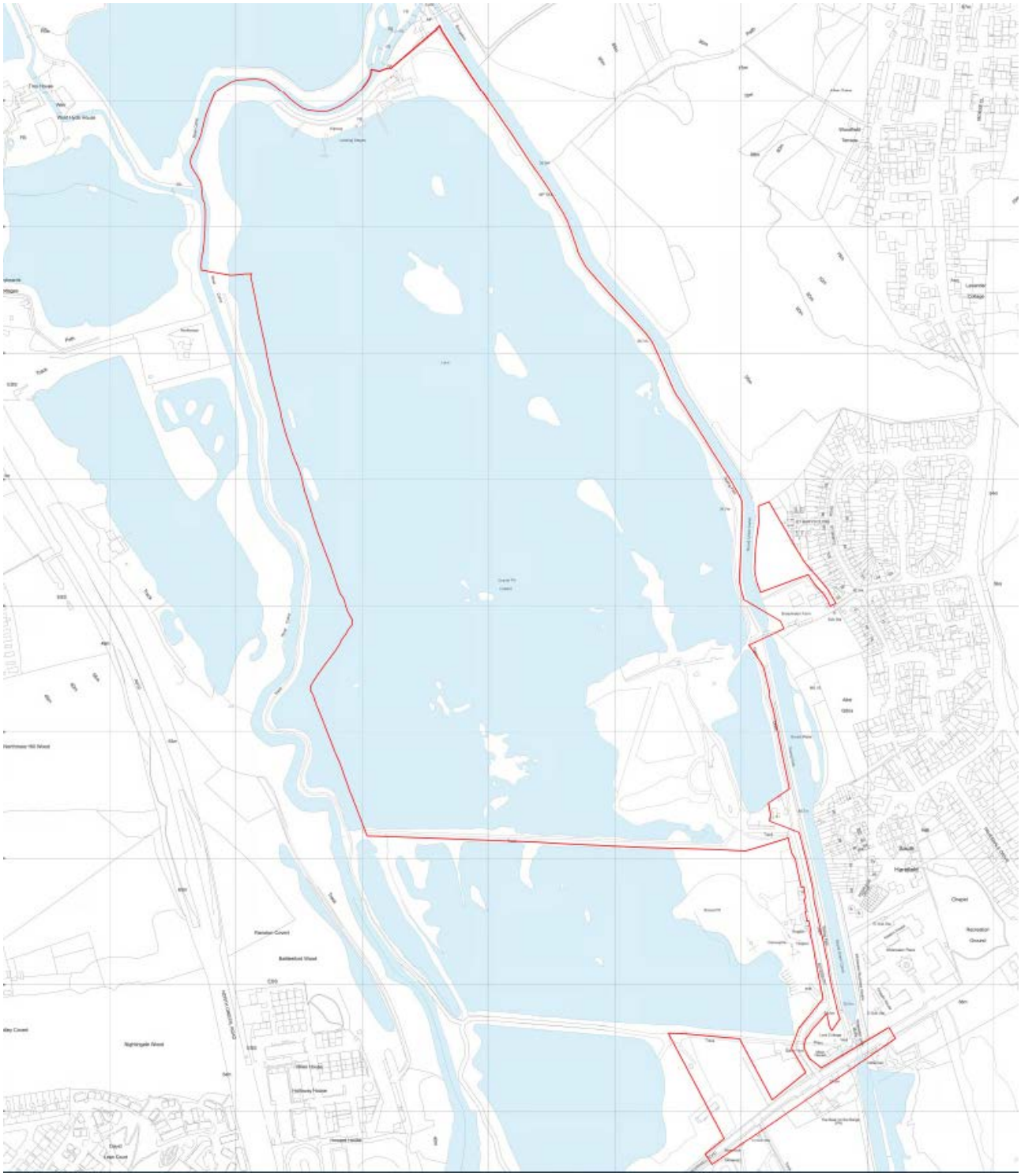


Figure 1.2: Indicative Planning Application Site Boundary



Background to the Project and EIA Context

1.5 The Development will be delivered by LBH and funded by High Speed 2 (HS2). The Hillingdon Outdoor Activity Centre (HOAC) and BSC will be the main tenants of the facility.

1.6 The Hillingdon Outdoor Activity Centre (HOAC) is a registered Youth Educational Charity providing outdoor and environmental education for the whole community but with priority given to young people and those who are disadvantaged or disabled. Until recently, HOAC operated at a 45 acre site in Dews Lane, UB9 6JN within the LBH and approximately 1.5 kilometres south of the Site at Broadwater Lake. HOAC had more than 40,000 visitors per year, of which the majority were local groups like schools, colleges, community groups and local businesses. The centre provided a range of land and water based activities and was a valuable community resource.

1.7 The HOAC closed in October 2020 due to the construction of HS2 Phase 1, the new high speed rail line connecting London, Birmingham and Crewe. The Dews Lane HOAC site is now under full control of HS2. The High-Speed Rail (London – West Midlands) Act 2017 "the HS2 Act" includes a requirement for HS2 to fund relocation of the HOAC to an alternative site which is suitable for their needs. Over the past 12 months, a long list and short list of sites throughout the Borough of Hillingdon have been reviewed by the Applicant thoroughly against the necessary criteria required for a water sports and activity centre. The site at Broadwater Lake was concluded as the only option which is suitable, deliverable and meets the necessary criteria for water sports and outdoor activities, particularly the technical requirements required for sailing. The Applicant is planning for the centre to be operational for the 2024 season.

1.8 Due to the location of the Development within a "sensitive area" (i.e. land notified under section 28(1) (sites of special scientific interest) of the Wildlife and Countryside Act 1981), the Applicant has voluntarily commissioned an Environmental Impact Assessment (EIA) process. An Environmental Statement (ES) will therefore accompany the planning application. EIA is a systematic process that aims to prevent, reduce or offset the significant adverse environmental effects of development proposals and enhance beneficial effects. It ensures that planning decisions are made considering the likely significant environmental effects and with engagement from statutory bodies and other stakeholders including the public. The Scoping Report sets out the proposed approach to the EIA and content of the ES.

1.9 Under the EIA Regulations, the ES will be required to be "based on" the Scoping Opinion provided by the LBH and will be prepared by competent experts (see below).

Project Team

1.10 In accordance with Regulation 18(5) of the EIA Regulations, the EIA will be undertaken by competent experts from the organisations listed in Table 1.1 who have also contributed to this Scoping Report. These competent experts will also undertake the EIA process and prepare chapters of the ES, where required. Their relevant expertise and qualifications will be stated within the ES.

Table 1.1: EIA Project Team

Organisation	Role
LBH	Applicant
Quod	Planning Consultants; EIA Coordinators
Mace	Project Managers
Space + Place	Architects
Greengage	Ecology (Terrestrial Ecology (including breeding and wintering birds) and Biodiversity Net Gain)
John Associates	Water Resources and Flood Risk, Aquatic Ecology
Colour	Landscape Architect
Robert West	Transport and Access
Noise Consultants Ltd	Noise and Vibration
Air Quality Consultants Ltd	Air Quality
Furness Partnership	Drainage Strategy; Mechanical & Electrical Engineers
RPS	Heritage
Tree Survey and Arboricultural Impact Assessment	RSK
To be confirmed	Energy and Sustainability; Lighting

1.11 Quod will be the lead editor of the ES and author of non-technical chapters. Quod is a member of the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark Scheme, an accreditation scheme which sets high standards for EIA practice and demonstrates a commitment to excellence in EIA activities.

2 Site and Setting

Site Location, Extent and Description

2.1 Figures 1.1 and 1.2 show the Site's location and likely extent of the planning application. The Site is located in the London Borough of Hillingdon, approximately 5km north of Uxbridge town, within the Colne Valley Regional Park. South Harefield village lies to the east of the Site, immediately beyond the Grand Union Canal. The Site extends to approximately 80 hectares (ha). The Site is also within the Metropolitan Green Belt.

2.2 The Site is located within the administrative area of LBH and is in close proximity to the boundaries of Buckinghamshire Council (adjacent to west boundary of the Site) and Three Rivers District Council ('TRDC') (adjacent to the northern boundary of the Site).

2.3 The Site comprises Broadwater Lake (approximately 62 ha), is a large body of water with a number of small islands bordered by trees and scrub. The lake was created after the Site was used as a quarry for sand and gravel extraction between the 1960s and the 1980s. Broadwater Lake is the largest of four lakes within the Mid Colne Valley Site of Special Scientific Interest (SSSI).

2.4 The south of the lake includes an area of peninsula land ('the peninsula') formerly utilised as a gravel washing / processing plant with a silt lagoon and a tip for inert quarry wastes. Since the quarry was decommissioned the silt lagoon, peninsula edges and small areas of remaining natural ground have colonised with native broadleaf woodland comprised of pioneer and wetland species (alder, silver birch, willows). Areas of gravel hardstanding have mostly colonised with buddleia which is classified as an invasive species within Greater London.

2.5 There is also an area of separate standing open water (referred to as the 'lagoon') to the east of the peninsula within the Site.

2.6 As a consequence of the Site's former use as a working quarry, various structures remain on-site at the peninsula and in the surrounding area relating to aggregate extraction including a weighbridge, aggregate hoppers and pad foundations.

2.7 A single carriageway unnamed road provides access from Moorhall Road to the south to the Site. This access road is shared by existing uses on Site (BSC and Gerrards Cross & Uxbridge District Angling Society and British Carp Study Group) and adjacent uses including GRS Bagging, a construction material wholesaler, Harleyford Aggregates, a sand and gravel supplier, and a small number of residential properties located off the road.

2.8 The Site includes several small buildings including a single storey club house which is currently used as a clubhouse by BSC and by the Broadwater Rowing club in the mornings and evenings on an ad hoc basis. BSC has space for approximately 260 boats with three concrete slipways each providing access to the water. The Site also includes a single carriageway brick and iron bridge across the Grand Union Canal.

2.9 The Site includes a small parcel of land immediately north of Moorhall Road ('south parcel') comprising a mixture of grassland, shrub, hedgerows and scattered trees, and a parcel of land to the east ('east parcel') comprising woodland, and the bridge providing access to Harefield in the east.

2.10 The Site is bound as follows: to the east by the London Loop/Colne Valley trail and Grand Union Canal; to the north and east by the River Colne and to the south by another water body - Harefield Moor Lake.

2.11 The section of the Site that contains the access road is bound by hedgerow, the London Loop to the east and GRS Bagging and Harleyford Aggregates sites to the west. The southern most part of the Site (that includes a section of Moorhall Road) is bound by the Moorhall Road carriageway to the east and west and The River Garden pub to the south. The east parcel is bound by the Grand Union Canal to the west, a logistics site to the south and residential properties in Harefield to the east. The south parcel is bound by Moorhall Road to the south, Harefield Moor Lake to the north and Korda Lake to the west; the HS2 construction site is also located to the west.

Existing Site Uses

2.12 BSC currently operates from a club house and facilities located at the northern end of the lake and accommodates approximately 180 family members. BSC hold sailing regattas on Sundays throughout the year, and an additional six are held on various Saturdays. BSC also use the lake for Wednesday morning and evening events May to August and on ad hoc days, one hour after dawn and one hour before dusk, throughout the year.

2.13 The Broadwater Rowing Club uses the lake on ad hoc mornings and evenings up to twice a week throughout the year.

2.14 The lake is also used for angling by the Gerrards Cross & Uxbridge District Angling Society and British Carp Study Group. The west of Broadwater Lake is managed by Herts and Middlesex Wildlife Trust.

Surrounding Context

Existing Land Uses

2.15 The Site is located in a semi-rural area comprising a mixture of residential, commercial and agricultural uses. To the north of Broadwater Lake is Troy Lake which is used by Rickmansworth Sailing Club, to the west is Denham Waterski Lake which is used by Denham Water-ski Club and to the south is Korda Lake which (together with a section of Broadwater Lake) form part of the Broadwater Lake Nature Reserve managed by Hertsmere and Middlesex Wildlife Trust.

2.16 All the lakes within the Broadwater Lake nature reserve are used for angling by British Carp Study Group. Although not a designated right of way, there is public access along the east bank of the river via a footpath from Moorhall Road.

2.17 Two residential properties (bungalows) are located to the south of the peninsular land, and further two properties are located adjacent to the access road along with a number of caravans. Canal boats moor in the Grand Union Canal to the east of the Site.

2.18 Other residential receptors are located within South Harefield less than 100m to the east of the Site, Harefield village 900m to the north-east of the Site and Denham Garden Village 900m south-west of the Site. Jack's Mill Bed and Breakfast and Swan Cottage are located approximately 100m north of the northern Site boundary.

2.19 Approximately 700m southwest of the Site boundary is Denham Aerodrome, this includes one landing/taking off strip and aeroplane parking. The aerodrome is the base for private use and many aviation related businesses including flight training, aerial filming and helicopter charter.

2.20 Approximately 500m west of the Site boundary adjacent to the Northmoor Hill Nature Reserve is the Wyatts Covert Caravan and Motorhome Club Campsite. This includes 50 pitches, reception, and associated hardstanding.

2.21 Land to the south of the Site, immediately west of the access road is used by GRS Bagging, a construction material wholesaler, and Harleyford Aggregates, a sand and gravel supplier.

Future Uses

2.22 Land adjacent to the western boundary of the Site is currently subject to construction works associated with the planned HS2 development. This involves the construction of the Colne Valley viaduct, a railway bridge stretching more than 3.4km across the lakes between Hillingdon and the M25. The viaduct will be around 10m above the surface of the lakes, River Colne and Grand Union Canal will have a series of arches up to 80m long. Construction of the viaduct commenced in 2021.

2.23 The viaduct will cross the south-western corner of the Mid-Colne Valley SSSI. There will be major disruption to Korda Lake and Long Lake during construction and it is likely that fishing will have to cease. There is also likely to be significant disturbance to waterfowl and breeding birds during construction, including to the bird refuge area on Broadwater Lake. In addition to this, there may be long term disturbance effects. Woodland will be cleared along the viaduct corridor to enable construction. Following construction, HS2 have committed to areas of wetland and woodland planting to compensate for the loss of habitat within the SSSI and to help integrate the viaduct into the landscape.

2.24 Parliament's High Speed Rail House of Commons' Select Committee enacting the HS2 Hybrid Bill backed the creation of a panel to lead the development and implementation of an 'Additional Mitigation Plan' which includes Broadwater Lake[3]. To that end following construction, HS2 have committed to areas of wetland and woodland creation including land reclamation to compensate for the loss of habitat within the SSSI and to help integrate the viaduct into the landscape.

[3]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661180/5368_colne_valley_amp_report_final.pdf

2.25 The Applicant is in discussion with HS2 to co-ordinate habitat mitigation measures with the proposed Development project to better compensate changes to the habitat and coordinate improvements within the SSSI.

Access

2.26 Vehicular access to the Site is gained in the south via Moorhall Road. There is currently no pedestrian provision on the access road. The Site can also be accessed by vehicles from north of the Site via a second access road off Park Lane. The London Loop and Colne Valley Trail are a public right of way that follow the Grand Union Canal towpath along the west of the Site.

2.27 The closest bus stops are approximately 450m south of the Site and provide regular services between Harefield and Uxbridge. Denham Railway Station is situated 1.4km south of the Site boundary.

Environmental Sensitivities

2.28 Figures 2.1 a and b identifies the key environmental sensitivities within and in close proximity to the Site.

2.29 The Site is set within the landscape context of the Colne Valley Regional Park, which is a mosaic of farmland, woodland and water with 200 km of rivers, canals and over 60 lakes.

2.30 The entire Site forms a component part of the Mid Colne Valley SSSI, designated for breeding and over-wintering water birds. A number of nationally and regionally important statutory designated wildlife sites are present within 2km, as detailed in Chapter 5. The site is also designated as a Site of Importance for Nature Conservation (SINC) of Metropolitan importance.

2.31 Part of the Site is within the Broadwater Lake Nature Reserve managed by Hertsmere and Middlesex Wildlife Trust, and Northmoor Hill Wood Local Nature Reserve is located approximately 300m west of the Site boundary.

2.32 Priority habitat is present onsite and in the adjacent surrounds, comprising deciduous woodland. Parts of the woodland adjacent to the west of the Site are designated as Ancient Woodland.

2.33 The Site is adjacent to the Widewater Lock Conservation Area (CA) in the south-east and Black Jacks and Copper Mill Lock (CA) in the north-east. The Site is also 250m from the Harefield Village CA in the east. Broadwater Park Registered Park and Garden is located approximately 400m southwest of the Site boundary.

2.34 A number of listed buildings (Grade I – II) are located to the north and south of the Site boundary, the closest being Widewater Lock Cottage (Grade II) adjacent to the south-east of the Site boundary on the access road and Denham Film Studios being less than100m south west. There are two locally listed buildings within close proximity to the site boundary, Black Jack Cottage is adjacent to the north east of the site and Mayling Transport Yard is adjacent to the east of the site boundary across the Grand Union Canal.

2.35 The Site is located adjacent to an Archaeological Priority Area (APA) in the east designated within the LBH Local Plan.

2.36 A Public Right of Way (U74) runs adjacent to the eastern Site which also forms part of the Colne Valley Trail and London Loop.

2.37 The majority of the Site is in Flood Zone 2 (between 1 0.1 – 1% chance of flooding) and Flood Zone 3 (greater than 1% chance of annual flooding). The Site is also located within a groundwater Source Protection Zone.

2.38 The Site is not located within or in the vicinity of any statutorily designated or locally (non-statutorily) designated views.

2.39 The Site is not located within an Air Quality Management Area (AQMA), the closest is the Hillingdon AQMA which is approximately 1.2km south of the Site boundary.

Current and Future Development

2.40 Historic planning applications associated with the Site are set out below:

- **November 1986 -** Planning permission (ref. 2382/X/85/739) granted for the retention of planning permission (ref. 02382/820098(P)). This permission allowed the continued use of northern part of the lake for sailing. This application was subject to 6no. conditions.
- **November 1986 -** Planning permission (ref. 2382Z/Y/86/1291) granted for the relocation of sailing club shore facilities involving erection of clubhouse and dinghy enclosure with associated parking and access road at north end of Broadwater Lake. This application was subject to 5no. conditions.
- **May 1992 -** Planning permission (ref. 2382/AL/92/0464) granted for the excavation of minerals by surface working.
- **June 1993 -** Planning permission (ref. 2382/AK/92/0872) for the renewal of planning permission (ref. 2382/Y/86/739).
- **August 1999 -** Planning permission (ref. 2382/AM/98/2306) for the erection of single storey extension to clubhouse.
- **October 1999 -** Planning permission (ref. 2382/AN/99/0609) for the renewal on a permanent basis of planning permission ref. 2382/AK/92/0872.

2.41 Further details of existing and approved developments that will be considered in the EIA are provided in Section 9.

Figure 2.1a: Environmental Sensitivities

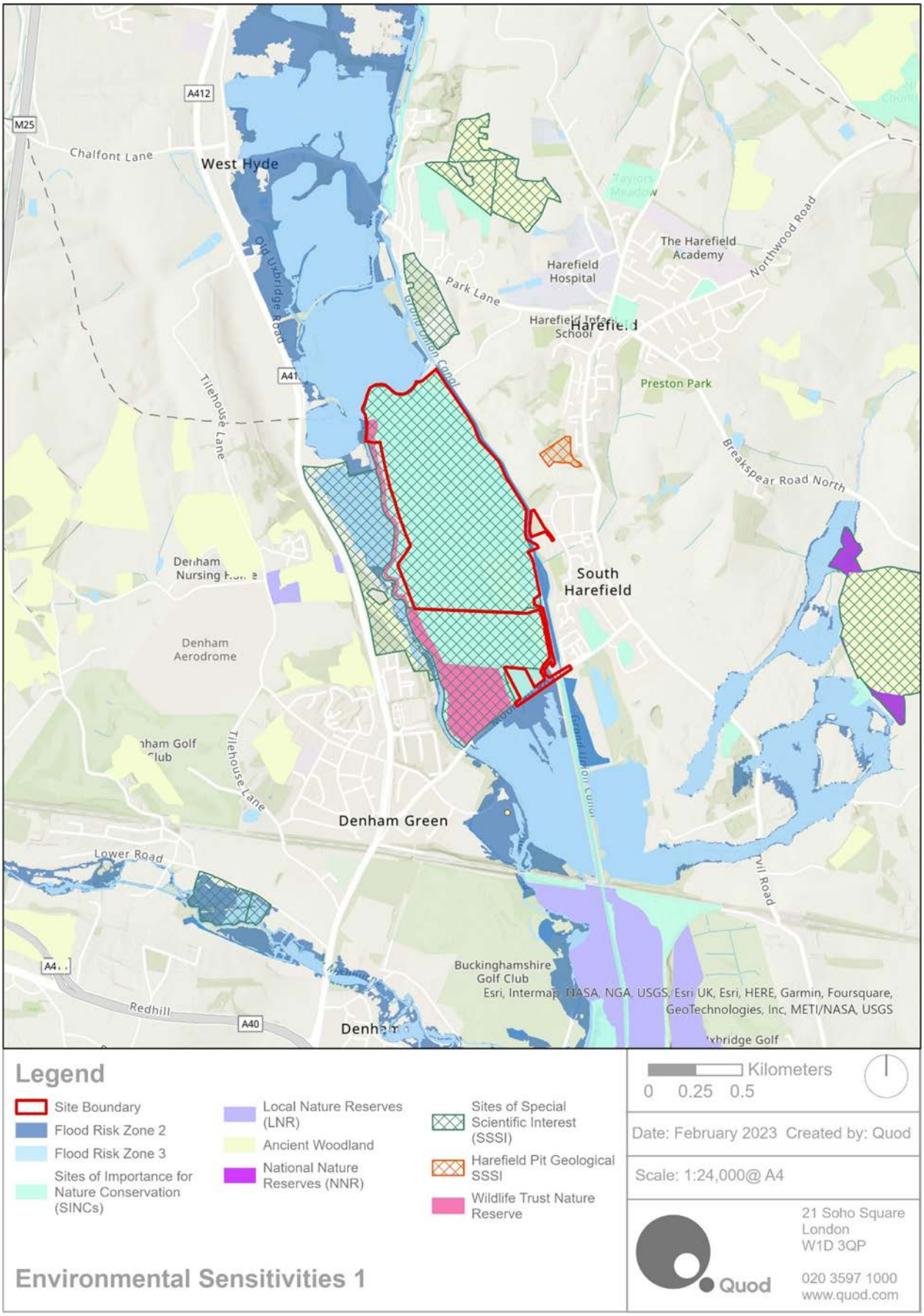
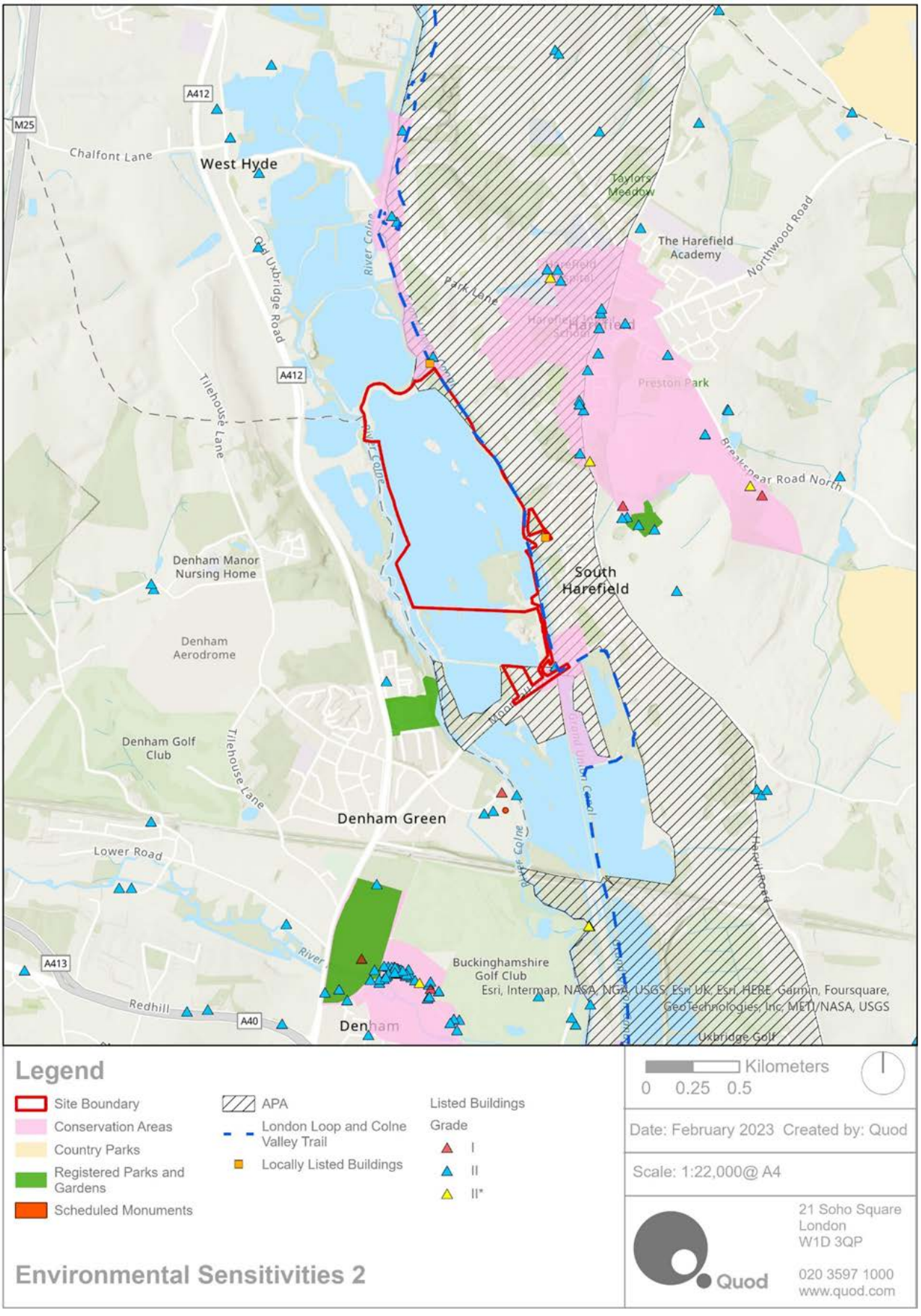


Figure 2.1b: Environmental Sensitivities



3 Description of the Development

Overview of the Application

3.1 The Development proposals are at an early stage of design and will be developed following further technical analysis as part of the EIA process and in consultation with LBH and other stakeholders.

3.2 The planning application will be submitted as a full, or detailed, application. For the purposes of the EIA, the Development will be defined by a suite of detailed planning drawings accompanied by the design principles set out in a Design and Access Statement and other supporting technical information.

3.3 The Development will provide new a new water sports facility and activities centre that will be a new base for HOAC, BSC and the Broadwater Rowing Club. The facilities will be fenced off from the surrounding uses around the Site. The centre will be used year-round by the public and private members of the BSC, which will be relocated from the northern part of the lake, and their existing club house demolished.

3.4 The Development will also involve physical works to Broadwater Lake including some localised dredging to facilitate sailing uses and the creation of new habitats such as islands. The Applicant is also committed to the long-term management of Broadwater Lake to preserve and enhance its wildlife interest.

Peninsula and Lakeside Features

3.5 Figure 3.1 presents an indicative layout of the land-side elements of the Development proposals which will be located on the peninsula area of the Site. The peninsula land may be extended in the north-west corner to avoid loss of existing terrestrial habitat. The key components of the Development will include:

- The largest building (up to two storeys in height), which will accommodate BSC and HOAC, located in the north-western corner of the peninsula. Staff accommodation will be included and used April to September.
- Up to 3no. pontoons proposed in the lake to the north of the main building.
- A rowing boat shed located in the north of the peninsula.
- Boat parking areas (for up to 400 spaces) located across in the north and east of the peninsula.
- A workshop for the maintenance, repair and storage of equipment, boats and vehicles in the east of the peninsula. This will be used all year round.
- An open activity area, camping ground and areas for activities such as high ropes, low ropes, zip wire and other woodland based activities in the south of the peninsula. This area will be used from April to September. A total of seven open sided, steel framed, covered activity shelters will be provided to support land activities.

- Up to 150 vehicle parking spaces located and coach parking will be located at the southern extent of the peninsula to minimise large vehicle movements through the Site.
- A stand-alone hut with facilities for anglers will be provided comprising accessible WC in the south of the peninsula.
- An Energy Centre will be located in the east of the peninsula and will include all central plant associated with the M&E services. Utilities services will enter the Energy Centre and services will be distributed to the sub-plantrooms across the Site. Electricity supplies will provided be via an existing 6.6kV electricity sub-station in the north-east corner of the peninsula.
- Photo-voltaic panels will be located both at ground and rooftop locations of to satisfy energy saving and sustainability demands of the London Plan and associated Net Zero Requirements.
- Demolition of the existing BSC club house and removal of associated single-storage buildings at the north of the site.

Access

3.6 Access to the Development will be from an existing access from Moorhall Road in the south of the Site. The existing access and access road will be subject to improvements so that it is brought to adoptable standards and used by emergency vehicles, service vehicles, coaches and disabled users as well as cars, cycles and other vehicles. The improved access road will be two way with a parallel pedestrian footpath from the entrance car park to the primary facilities. The road will be extended through the east side of the peninsula and will split off in the north to the east and west.

3.7 Junction improvements from Moorhall Road will take the form of an enhanced T-junction. This junction is intended to serve the existing aggregate works and residential properties along the length of the access road together with the proposed facilities for the Development.

3.8 The horizontal steel section of the bridge over the Grand Union Canal will be removed, and refurbished (if possible) off-site. Although a complete replacement may be necessary. The brick abutments will be retained. The bridge will be used for routing services only (including 6.6kv cable). There will be no other use and it will not be open for pedestrian or vehicular access.

Works to Broadwater Lake

- Creation of extension to peninsula, islands and other modifications to lakeside habitats.
- Up to three pontoons will be provided adjacent to the northern shore of the peninsula to provide access to the water;
- Localised dredging of the lake will be required to increase the lake depth in order to facilitate sailing from the launch locations; and

Proposed Uses

3.9 The proposed indicative uses at the Site are presented in Table 3-1. Broadwater Sailing Club, Rowing Club, Gerrards Cross & Uxbridge District Angling Society and British Carp Study Group will continue to use the lake as before. The additional use of the lake will be from activities associated with HOAC. The numbers presented represent a ‘worse case’ for the purposes of EIA scoping and will be refined as part of the design development.

Table 3-1 Indicative Proposed Uses

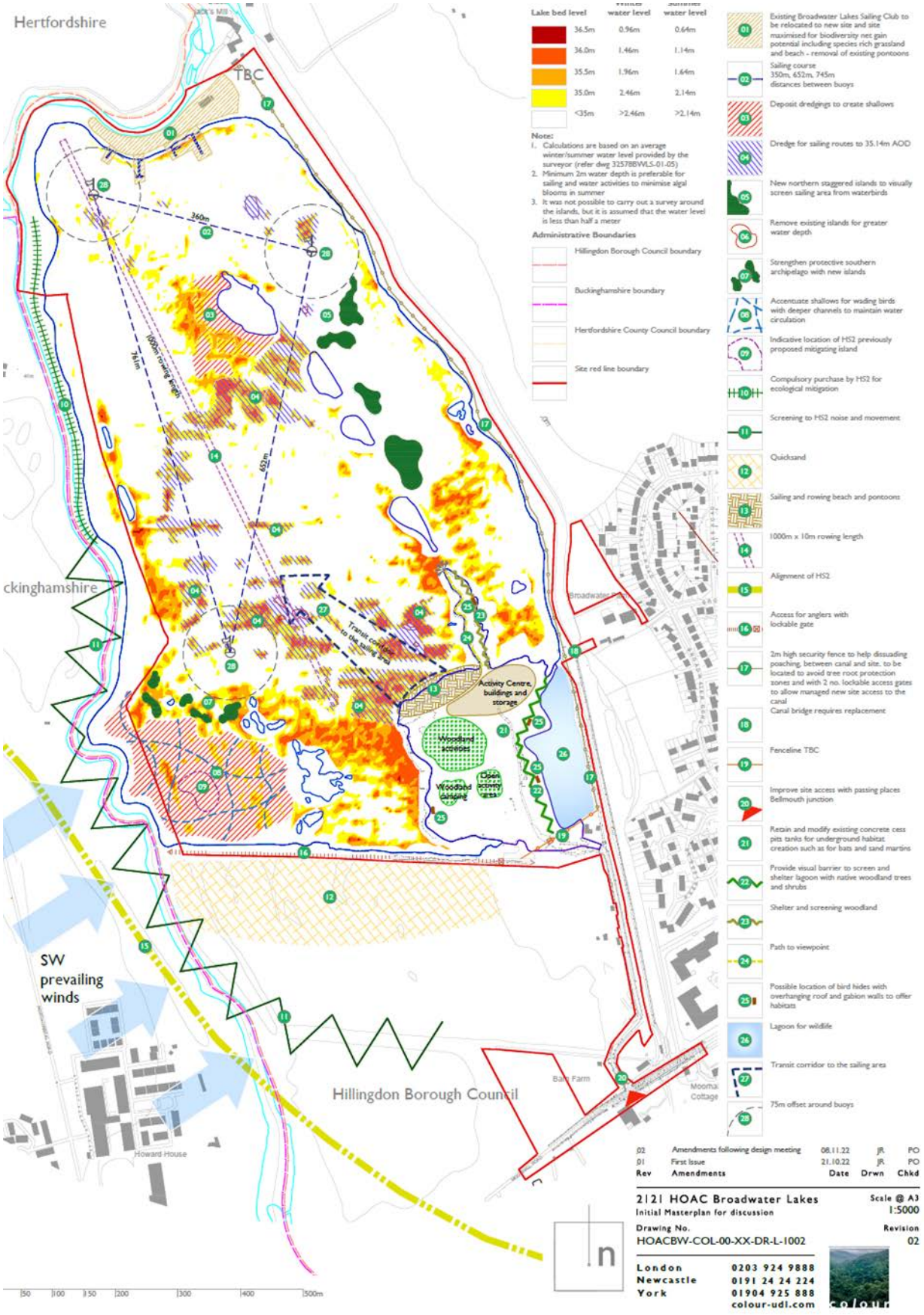
Activity			Month											
User	Activity	Numbers per day	January	February	March	April	May	June	July	August	September	October	November	December
Broadwater Sailing Club	Regatta/Races All year -Sunday morning and afternoon with six Regattas held on Saturdays throughout the year	50 boats/2-3 people per boat	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays	each Sunday/ some Saturdays
Broadwater Sailing Club	Wednesday morning and evening events	15 Boats/2-3 people per boat					Weds morning & evening	Weds morning & evening	Weds morning & evening	Weds morning & evening				
Broadwater Sailing Club	1 hour after dawn and 1 hour before dusk	1-3 boats (approx.)	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc
HOAC	Waterside Activities (sailing (Inc. disabled), kayaking, paddleboarding, rafting, canoeing).	100 student				Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday			
HOAC	Use of Landside Activities (high ropes, low ropes, above ground caving, camping, team building exercises, archery, peddle carting)	100 students				Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday	Monday to Friday			
HOAC	Intermittent use by Private Members, but in line with management plan (to be confirmed)	1-3	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc	Ad Hoc
Rowing Club	Ad hoc morning and evening	2 boats / 16 rowers (max)	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week	Twice a week

Ecological Mitigation and Management

3.10 A landscaping and ecological mitigation, enhancement and long term management (minimum 30 (years) plan will be implemented across the Site. The initial suggested principles that would inform the creation of a detailed Mitigation Enhancement and Management Plan (MEMP) are set out below:

- Design and operational management of all recreational waterside and landside activities in a way which avoids disturbance and conflict with the reasons for notification of the Mid-Colne Valley SSSI, including its significant ornithological interest;
- Avoidance of terrestrial habitat loss, with enhancement of retained habitat and creation of new habitat of value for nature conservation;
- Increase the amount and quality of lacustrine habitat of potential value to breeding and wintering birds, providing screened areas to act as refuges from visual disturbance, and with increased nesting opportunities;
- Enhancement of food webs within the SSSI, with the ultimate goal of supporting increased numbers and diversity of breeding and wintering birds; and
- Address existing and future threats to the value of the SSSI through design and ongoing management. Such threats include climate change, invasive species, water quality, contamination, unauthorised site uses, and recreational pressure from an increased population.

Figure 3.1: Indicative Development Masterplan



Construction

3.11 Construction of the Development is expected to commence in Q3 2023, with construction expected to be complete in Q4 2024. This represents a build out period of approximately 18 months.

3.12 The Applicant has committed to undertaking construction works in line with a Construction Environmental Management Plan (CEMP) as a means of avoiding, reducing or mitigating potential adverse effects of construction on the environment and local community. The CEMP will address construction s works on land and in the lake. The CEMP will be subject to approval by LBH and Natural England and secured through an appropriate planning condition.

4 EIA Methodology

Introduction

4.1 The ES will be prepared in compliance with the EIA Regulations. Reference will also be made to current EIA good practice guidance. This section outlines the general approach to the EIA process.

Consultation and Scoping Opinion

4.2 A programme of consultation with key stakeholders will be undertaken with statutory and non-statutory consultees throughout the Development design and in the lead up to the planning application. Key stakeholders include:

- LBH;
- Three Rivers District Council;
- Buckinghamshire Council;
- Natural England;
- HS2;
- Environment Agency;
- Civil Aviation Authority;
- Historic England;
- Herts and Middlesex Wildlife Trust;
- Canal & River Trust;
- Utility providers;
- Broadwater Sailing Club;
- Local community including residents, businesses;
- Gerrards Cross & Uxbridge District Angling Society; and

  British Carp Study Group.

4.3 In line with the EIA Regulations, the ES will be 'based on' the Scoping Opinion provided by LBH. Each ES topic chapter will set out key points made during scoping correspondence between the project team and stakeholders and will explain how these have been addressed by the EIA process.

Alternatives

4.4 In accordance with the EIA Regulations, the ES will provide *"a description of the reasonable alternatives…. relevant to the proposed project and its specific characteristics which have been considered by the Applicant and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects"*.

4.5 The ES will describe the reasonable alternatives to the Development which have been considered by the Applicant, including:

- Alternative sites – the planning application will be accompanied by an Alternative Sites Assessment which will objectively assess in planning terms the most suitable site within LBH for the relocation of HOAC. The overall purpose of the ASA will be to rate the identified alternative sites against a set of criteria; and
- Alternative designs – for example, alternative locations within the Site for the activity centre, ecological mitigation and landscape strategies, location of buildings within the Site, alternative uses.

EIA Methodology

Significant Effects and Scope of the EIA

4.6 As highlighted by the UK Government Online Planning Practice Guidance

4.7 [4] (PPG), where considering the scope of EIAs, local planning authorities *"should limit the scope of the assessment to those aspects of the environment that are likely to be significantly affected"*.

4.8 With respect to identifying the likely significant environmental effects associated with the Development, consideration is given to potential effects associated with the construction phase and completed Development. These effects could be both beneficial and adverse and could deemed to be 'significant' on the basis of:

- The value / importance of the resources and receptors that could be affected;
- The predicted magnitude of environmental change and / or impact experienced by these resources and receptors, accounting for their size, duration and spatial extent;
- The susceptibility or sensitivity of resources / receptors; and,
- Options for avoiding, reducing, offsetting or compensating for any potentially significant adverse effects and the likely effectiveness of such mitigation measures.

4.9 The proposed scope of the EIA has been defined through desktop studies, site surveys, review of the emerging Development proposals and is based on the professional judgement of specialists in the project team (as listed in Table 1.1). In addition, the environmental information associated with the previous planning applications neighbouring the Site (i.e. HS2) has been reviewed to support any conclusions reached, where applicable.

4.10 Sections 5 to 6 set out those aspects of the environment that are likely to be significantly affected by the Development, namely Biodiversity and Water Environment and Flood Risk. Potential effects deemed to be non-significant within topics are also set out within these sections.

[4] Ministry of Housing, Communities and Local Government (2018). Planning Practice Guidance: Environmental Impact Assessment. Available online: https://www.gov.uk/government/collections/planning-practice-guidance [Accessed: 16th October 2018].

4.11 Section 8 sets out aspects of the environment that are unlikely to be significant and are therefore proposed to be scoped out of the ES.

4.12 Table 4.2 provides a summary of the scoping exercise. In accordance with the EIA Regulations, all assessments will be prepared by consultants considered to have competent expertise in their discipline.

Table 4.1: EIA Scoping Summary

Technical Topics	Potential Construction Effects	Potential Operational Effects	Comments
Biodiversity	✓ - T/P	✓ - T/P	ES Chapters to be prepared
Water Resources and Flood Risk	✓ - T/P	✓ - T/P	
Ground Conditions and Contamination	✓ - T/P	✓ - T/P	
Socio-Economics	x	x	Topics scoped out of the ES
Cultural Heritage	x	x	
Agricultural Land & Soil Resources	x	x	
Landscape and Visual	x	x	
Transport and Access	x	x	
Noise and Vibration	x	x	
Air Quality	x	x	
Climate Change and Greenhouse Gases	x	x	
Wind Microclimate	x	x	
Vulnerability to Major Accidents and Disasters	x	x	
Energy and Sustainability	x	x	
Utilities	x	x	
Light Pollution	x	x	
Daylight, Sunlight, Overshadowing and Solar Glare	x	x	
Telecommunications	x	x	
Aviation	x	x	
Electromagnetic Fields	x	x	

Key: ✓ Likely Significant Effect / x No Likely Significant Effect. T – Temporary Effect / P – Permanent Effect

Determining the Significance of Effects

4.13 Determining the significance of environmental effects is intended to inform decision making. The significance of effects will be determined by specialists with reference to generic assessment criteria or subject-specific criteria for each environmental topic being considered. These criteria will apply a common terminology, classifying whether the effects are major, moderate or minor, as well as, adverse, negligible or beneficial, temporary or permanent, in line with standard practice.

Study Area

4.14 The study area for each topic will be based on the geographical scope of the potential for significant effects relevant to the topic or the information required to assess the likely effects, as well as topic-specific guidance and consultation with stakeholders. Further detail is provided in the technical sections (Sections 5 and 6).

Baseline and Future Baseline Conditions

4.15 Baseline environmental conditions need to be established to enable an accurate assessment of potential changes to such conditions that may occur and to assess the likely significant environmental effects of the Development. Understanding baseline conditions is also important for the identification of the most appropriate mitigation which could be employed to reduce any likely significant adverse effects.

4.16 Baseline conditions for the EIA will be taken as the current conditions on the Site and how the Site is currently used by Broadwater Sailing Club and other exiting users (including type of use, duration and frequency). Baseline information is already being gathered through desk-based research and Site surveys in 2022 and 2023 to define and describe the existing environmental characteristics and receptors for each environmental topic that will be provided within the ES. Where environmental information and data is not available for 2022/2023, it will be necessary to use data which pre-dates 2022/2023. The ES will set out what year the baseline data is sourced from.

4.17 In addition to the current baseline conditions, the EIA Regulations require an outline of the likely evolution of the baseline condition without implementation of the Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (i.e. the 'future baseline'). The future baseline will also take into account other developments that will be built out that may affect the Site. The future baseline conditions will be described in each chapter of the ES.

4.18 The main approved development scheme that will influence the future baseline conditions is HS2. The Colne Valley Viaduct is currently under construction and is due to be completed by mid-2025.

Construction Assessment

4.19 An indicative construction programme for the Development will be presented in the ES. This will include all aspects of the construction phase including demolition, works to the lake, access road, site preparation, construction, fit-out and landscaping.

4.20 The ES will outline the main activities associated with the construction works, together with the likely duration of each activity. Topics which have identified likely significant effects from construction activities are outlined in the following sections. The Applicant has committed to a CEMP, which will be subject to approval by LBH and secured through an appropriate planning condition. Mitigation measures for inclusion in the CEMP will be set out in the ES to avoid, reduce or mitigate potential adverse effects.

4.21 In line with Institute of Environmental Management and Assessment ('IEMA') best practice[5], the CEMP can be defined as 'tertiary' mitigation which is defined as that which *"will be required regardless of any EIA assessment, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices. For example, considerate contractor practices that manage activities which have potential nuisance effects"*. As such, the CEMP is considered to be standard practice in the management of the demolition and construction works of the Development. The CEMP will be taken into account and form the basis of the assessment of likely significant effects. As such, any effects that might have arisen without this mitigation will not be identified as 'likely effects', as there should be no potential for them to arise. This should result in a simpler and more proportionate ES.

4.22 The assessment of construction effects will be based on an assumed 'peak year' of construction activity as a reasonable worst case, when volumes of construction vehicles and on-site activities are likely to be at their highest. At this stage, this assumed to be 2024 although this may be subject to change.

Completed Development Assessment

4.23 The likely significant effects of the completed and operational Development will be assessed within the ES. Based on a delivery programme of approximately 18 months this is expected to be the end of 2024. Even if full operation does not occur until later, this is unlikely to affect the likely significance of effects.

Assessments of the completed Development will be based on the detailed planning drawings and Design and Access Statement submitted alongside the planning application. Assessments will also be based on a series of worst-case assumptions about the how the Water Sports Facility and Activity Centre will be used, for example the types of uses (water and land-based), their nature, location, frequency, duration, timing and intensity (e.g. numbers of people).

Cumulative Effects Assessment

4.24 The EIA Regulations specify the information to be included in an ES (Schedule 4) and require that in assessing the effects of a particular development, consideration should be given to cumulative effects. Potential cumulative effects can be categorised into two types:

- **Effect interactions** - occur when two or more different environmental effects from the Development (e.g. dust, noise, traffic) act together to produce a different level of effect/ impact experienced by a particular receptor. These combined effects (or 'Intra-Project')

[5] IEMA, 2016. Environmental Impact Assessment Guide to: Delivering Quality Development, July 2016. IEMA.

can be additive or synergistic such that the sum of the impacts can be less or more than the individual impacts (i.e. because they may exacerbate or neutralise one another).

- **Cumulative effects** - are those that accrue over time and space from a number of different development activities and projects in geographical proximity to one another, which individually might be insignificant, but when considered together, could create a significant cumulative effect (also referred to as 'Inter-project' effects).

Effect Interactions

4.25 The effects interactions assessment focusses on individual receptors that have the potential to be affected by multiple impacts addressed under more than one specialist topic in the EIA as a result of the Development.

4.26 There is no consistent guidance or standardised approach to the assessment of effect interactions. However, it is recognised that the Development has the potential to give rise to a variety of impacts upon a number of different receptors some of which may combine to become significant effects.

4.27 The assessment of combined effects is inherent to the biodiversity assessment as it will consider multiple impacts on single receptors (such as the Mid-Colne Valley SSSI) e.g. combined impacts from physical disturbance and changes to lighting, noise, water quality and air quality.

4.28 No other combined effects (or effect interactions) would occur as a result of the Development.

Cumulative Effects Assessment

4.29 The cumulative assessment is important to ensure that the combined effects of other schemes with the Development are understood appropriately for decision making. The cumulative effects of the Development and cumulative schemes in the local area will be considered on a topic-by-topic basis with the cumulative assessment methodologies and the cumulative effects reported in a subsection of each ES chapter, along with mitigation measures where necessary.

4.30 A set of screening criteria has been developed to identify which cumulative schemes in the area should be subject to assessment, as follows:

- Expected to be built-out at the same time as the Development and with a defined planning and construction programme;
- Spatially linked to the development (within 1km of the Site boundary);
- Considered an EIA development and for which an ES has been submitted with the planning application;
- Those which have received planning consent from the planning authority (granted or resolution to grant) and / or,
- Introduces sensitive receptors near to the Site (but are not EIA development).

4.31 A planning search was undertaken considering the above criteria and the cumulative schemes identified are outlined within Appendix A.

Structure of the ES Technical Chapters

4.32 Each environmental topic scoped into the ES will be structured as set out in Appendix B.

5 Biodiversity

Baseline Conditions

5.1 An ecological data search for the Site and surrounding land was provided by EcoRecord, HERC and BMERC for a 2km radius and supplemented with a further data search using the MAGIC database (for European and national designated sites up to 10km from the Site). A Preliminary Ecological Appraisal has been prepared by Greengage Environmental Ltd and is appended to the scoping report (see Appendix C).

Designated Sites

5.2 There is one European and Nature Site Network site within 10km of the Site, the Burnham Beeches Special Area of Conservation (SAC) and National Nature Reserve (NNR). Burnham Beeches is designated for its Atlantic acidophilous beech forests and not for any protected species (such as bats or birds). There are no other European sites (such as Ramsar sites or Special Protection Areas (SPA)) within 10km of the Site.

5.3 The majority of the Site lies within the Mid Colne Valley Site of Special Scientific Interest (SSSI) and there are five other sites with SSSI statutory designation within 2km and four Local Nature Reserves (LNR) (and shown in figures in Appendix C):

- Harefield Pit SSSI (214m north-east) - designated for its geological interest only;
- Northmoor Hill Wood LNR (280m west) – ancient woodland (birds and bats not mentioned);
- Denham Country Park LNR (940m south) – river, wetland, meadow and woodland habitats (birds and bats not mentioned);
- Denham Quarry Park LNR (945m south) – wet meadows (bats and birds not mentioned);
- Old Park Wood SSSI (875m north) – designated for its woodland and has a good variety of birds particularly in winter (bats not mentioned);
- Frays Valley LNR (1.1km south) – wetland and grassland habitats including wildfowl (birds);
- Ruislip Woods National Nature Reserve (NNR) and SSSI (1.45km east) – designated for its woodland, invertebrates, and includes mention of its diverse range of breeding birds characteristic of woodland habitat and being particularly suitable for less common breeding species such as woodcock and hawfinch (bats not mentioned); and
- Old Rectory Meadows SSSI (1.7km southwest) – grasslands of botanical interest.

5.4 The Mid Colne Valley SSSI is designated for a breeding bird assemblage (wetland and woodland) of over 70 species, and wintering bird assemblage of over 80 species. Local and national planning policy also affords significant protection to this water dependent site. The SSSI is considered to be unusual in the local area because of its large number of wooded islands. The last condition assessment carried out by Natural England (2012) identified the lake to be in Favourable condition.

5.5 Other water dependent habitats are associated with the lake margins, wet woodlands, and the adjacent River Colne and Grand Union Canal. The lake and water dependent habitats are likely to support a wide range of other flora and fauna (including invertebrates, fish, amphibians, grass snake, small mammals, potentially otter, water vole is present in the local area as well as foraging bats).

5.6 Within 10km there are several other SSSI sites however, only four have mention of wintering or woodland birds, or bats, mentioned in their designation. These are:

- Sarratt Bottom SSSI (8.6km north) - alluvial meadow designated for damp species rich neutral grassland, that supports a variety of wetland birds and wide range of invertebrates;
- Hodgemoor Wood SSSI (7.3km north west) – ancient and semi-natural broadleaf woodland supporting many woodland bird species;
- Whippendell Wood SSSI (7.8km north east) – ancient woodland with mention of a diverse woodland bird community; and
- Black Park SSSI (5.4km south west)– variety of habitats including woodland and heathland, with mention of a wide variety of breeding and wintering birds.

5.7 The GiGL search returned details of 16 Sites of Interest for Nature Conservation (SINCs) within 2km of the Site. SINCs are non-statutory designations with *de facto* protection through the planning process. There are three tiers of sites: Metropolitan importance, Borough importance (borough I and borough II) and Local importance.

5.8 The Site is within the Mid Colne Valley SINC of Metropolitan importance. The following SINCs are within 2km of the Site: London's Canals, Ruislip Woods and Poor's Field, Old Park Wood, Coppermill Down, Harefield Chalk Pit, Harefield Churchyard and Wood, Shepherd's Hill Woods and Fields, Dew's Dell, Newyears Green, Medipark Site, The Dairy Farm Harefield, Knightscote Farm Ponds, Harefield Green Pond, Breakspear House Wood, Harefield Hospital Ponds and the Old Orchard.

5.9 There are priority habitats onsite, namely woodland, Broadwater Lake and ponds within woodland at the peninsula (standing water bodies) and the River Colne (rivers and streams). An area of woodland 110m west of the Site is included in the Ancient Woodland Inventory.

Habitats

5.10 A Preliminary Ecological Appraisal (PEA) was undertaken of the Peninsula in August 2021 by CGO Ecology Ltd, with a site walkover in June 2021 utilising the JNCC Phase 1 methodology. An update site walkover was undertaken of the whole Site by Greengage in November and December 2022 to verify the broad habitats mapped and update the classification to the UKHab system. The results are presented in the PEA in Appendix C.

5.11 For ease of reference in the PEA, the Site has been split into the peninsula (the location of the proposed buildings), the lake itself, the islands, the access road, the lake margins, and the sailing club. There are also two offsite areas in the same ownership, the field to the south accessed from Moorhall Road and a woodland to the east (see PEA in Appendix C). (see figures in Appendix C).

5.12 The peninsula was utilised as a mineral processing site until the 1970s with roads, sub-stations, tank rooms and plant rooms, a workshop, a weighbridge and other concrete and breezeblock structures. The substrate of the peninsula is almost entirely artificial, with only small areas of natural ground (mainly access routes) which were not quarried. Some structures have been demolished leaving demolition rubble, while others remain in a dilapidated state. Pioneer habitats have colonised the majority of the previously bare substrates over the intervening years, although some areas remain relatively bare / sparsely colonised.

5.13 The peninsula's habitats currently comprise sealed (concrete) and unsealed (gravel) hardstanding, buildings, introduced shrub (buddleia scrub), lowland mixed deciduous woodland including *Alnus glutinosa-Betula pendula* woodland, and wet *Alnus glutinosa-Salix sp* woodland. Buddleia scrub was found to be more extensive than per the 2021 PEA; this had encroached further into woodland habitats and become the dominant habitat type in some areas. There was also an area of standing open water (referred to as the lagoon) surrounded by buddleia scrubs and willows growing at the margins and hanging out to a distance of 10m or more over the open water of the lagoon. Buddleia is an invasive species in London. Removal of all the buddleia at the peninsula was underway at the time of writing (February 2023); beneath much of the buddleia lies gravel hardstanding rather than natural ground and hence the ecological baseline has been presented as gravel hardstanding.

5.14 Invasive non-native species (INNS) recorded onsite included Japanese knotweed along the shoreline of the peninsula (under treatment), and giant knotweed near the entrance to the peninsula.

5.15 Broad habitats around the periphery of the lake comprised tree lines, modified grassland, semi-natural broadleaf woodland, with components of mixed scrub and ruderal / ephemeral plant species.

5.16 At the existing BSC there is one single-storey building of non-standard construction and a number of metal storage containers, along with modified grassland, bare ground, and sealed and unsealed hardstanding. Within these broad classifications were small areas of other habitats too small to map, mainly scattered scrub and scattered trees.

5.17 The islands have not been accessed directly to classify the habitats present; however these appear to comprise broadleaf woodland or modified grassland with some bare ground (unsealed surface).

5.18 Both the wet woodland and deciduous woodland at the Site are classified as Habitats of Principal Importance under Section 41 of the NERC Act. Broadwater Lake and the lagoon, as bodies of open standing water, are also Habitats of Principal Importance. The only plant species of Principal Importance at the Site is native black poplar *Populus nigra*.

Protected and Notable Species

5.19 The site has presence and / or suitability for a range of species, as assessed through desk study and surveys in 2021, 2022, and ongoing in 2023. This potential is summarised in Table 5-1 below.

Table 5.1: Species Presence/ Potential

Receptors	Presence / Potential
Bats - foraging	Present
Bats - roosting	Likely absent
Badgers - foraging	Present
Badgers - setts	Low / moderate
Otter	Present - Borough importance
Water vole	Present – National importance
Hazel dormouse	Present – Borough / Regional importance
Great Crested Newts	Absent
Reptiles	Low potential for transient individual grass snakes
Woodland breeding birds	Likely Absent
Wintering birds (lake)	Likely Absent from the peninsula Absent from the Broadwater Lake Sailing Club area Low potential to be present elsewhere onsite on lake banks.
Breeding birds (lake)	Assumed present - couches / foraging Low potential for holts
Terrestrial invertebrates	5 species present; low populations
Fish	Very limited habitat present
Aquatic invertebrates	Present; diverse moderate populations. None scarce / notable
Aquatic Plants	Present at peninsula: 10 national status species, 39 local value moths Low potential for stag beetle Absence of Desmoulin's whorl snail.

5.20 Bat species known to be utilising the Site and wider Colne Valley[6] for foraging and commuting are common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), Nathusius's pipistrelle (*P. nathusii*), brown long-eared bat (*Plecotus auritus*), Daubenton's bat (*Myotis daubentonii*) and Natterer's bat (*M. nattereri*). The following species are recorded within 2km and may also be present: noctule (*Nyctalus noctula*), whiskered bat (*M. mystacinus*), Brandt's bat (*M. brandtii*), barbastelle bat (*Barbastella barbastellus*), Leisler's bat (*N. leisleri*), and serotine (*Eptesicus serotinus*).

5.21 There are only a small number of Potential Roost Features (PRFs) suitable for roosting bats across the peninsula where the Development will occur. The woodland onsite is very young, less than 50 years old (with growth commencing once quarrying activities ceased at the site) – the trees onsite would therefore be classed as semi-mature. The majority of native woodland tree species will not develop until 70+ years old; the exceptions being birch trees which develop fibrous rot features at 50+ years, and trees that have been wounded, such as through limbs

[6] HS2 European Protected Species Mitigation Licence for the Colne Valley, Method Statement, 2020.

falling (e.g. crack willow), or by extreme weather conditions (e.g. high winds, lightning) or vandalism. Emergence and re-entry surveys for any trees with PRFs to be affected by the Development proposals (i.e. within 20m) will be required in 2023.

5.22 Radio-tracking studies for HS2 in the Colne Valley in 2019 found that bats were utilising the open water habitats and wet woodlands for foraging, but typically preferred to roost in land-locked woodlands at significant distance away from open water, or within buildings. This contextualises the Site as having high value for foraging and commuting bats, and likely low or moderate value for roosting bats.

5.23 The 2019 HS2 radio-tracking study identified two roosts onsite, a likely maternity roost for Daubenton's bat within the other broadleaf woodland on the peninsula (NGR 504599, 189253), and a Natterer's day roost within an area of buddleia scrub near the lagoon (NGR 504823, 189316), likely within a willow tree within this area.

5.24 Bat activity transect surveys and bat fixed point automated surveys were conducted during August-October 2021 and April-July 2022. The results from both survey methodologies suggested moderate bat activity levels are typical for the Site. The 2021 transect surveys recorded soprano and common pipistrelle, noctule, Daubenton's, Myotis sp,. and Nathusius's pipistrelle, with Leisler's and brown long-eared making single bat passes. The majority of activity was recorded along the water's edge of the western end of the peninsula. The static detector surveys corroborated the walked transects; pipistrelles comprised >75% of bat recordings at the peninsula along with a similar species assemblage; serotine was additionally recorded at the Site, at approximately the same activity levels as noctule. 2022 bat activity levels were much higher than 2021 and confirmed presence of at least nine species (moderate diversity) of foraging bats mainly along shorelines around the peninsula; overall moderate activity levels; dominant species are soprano andcommon pipistrelle.

5.25 A breeding bird survey was undertaken by Greengage in March to July 2022 (Appendix C) at the peninsula and adjacent lake. 18 species of woodland birds were confirmed breeding of which dunnock and song thrush are Amber listed species, and Cetti's warbler is a Schedule 1 species. . The survey also recorded at least six species of breeding waterbirds; of particular note are breeding pochard which is a Red listed species, and breeding mallard which is an Amber list species.

5.26 A wintering bird survey is currently being undertaken (November 2022 – March 2023). The winter surveys have so far confirmed presence of 12 duck and grebe species, with three goose species and four gull species. Initial headline results suggest that the lake supports wintering bird populations with importance at the National level for pochard (a Red List species) and shoveler (Amber List), along with important numbers of gulls.

5.27 A great crested newt (GCN) eDNA survey was undertaken on 20 April 2022 (see Appendix C) at the lagoon and ponds on the peninsula. The results show that GCN are not currently present on the peninsula and are therefore unlikely to be present within the working area. No further surveys are recommended for GCN on site and no licence is required.

5.28 The following surveys have been undertaken at the Site and are appended to the PEA:

- Reptile presence/likely absence surveys were conducted at the Site during September 2021 and continued in May and June 2022 by Ecology By Design;
- Hazel dormouse nest tube checks were conducted during September-November 2021, and May-August 2022 by Ecology By Design;
- Otter and water vole surveys were conducted in May and August 2022 by Ecology By Design;
- Badger walkover survey undertaken in May 2022 and updated in December 2022 by Ecology By Design;
- Terrestrial invertebrate and fauna survey undertaken between June and September 2022 by Ecology By Design;
- Aquatic macro-invertebrates survey undertaken by Five Rivers in October 2022 by Five Rivers Environmental Contracting Ltd; and
- Fish Surveys undertaken by Five Rivers Environmental Contracting Ltd in October 2022.

5.29 There was no evidence of reptiles, hazel dormice or water vole identified at the peninsula. Evidence of otter (spraints) was discovered along the adjacent Grand Union Canal and in the north of the peninsula. One badger latrine was discovered within woodland in the north of the Site in 2021.

5.30 Terrestrial invertebrate fauna of the peninsula were sampled on five occasions between June and September 2022. 447 terrestrial invertebrate species were recorded, of which 10 have some level of national conservation status. Thirty-nine further moth species are classed as 'Local' importance. The Site has some habitats that have moderate value for terrestrial invertebrates. Desmoulin's snail was not identified during the surveys; its required habitat was not found to be present at the Site.

5.31 Aquatic macro-invertebrate surveys have been undertaken by Five Rivers Ltd in 2022 (Appendix C). It concludes that macro-invertebrate communities were relatively diverse and were indicative of moderate water quality. No protected species were found in the samples.

5.32 Fish surveys were undertaken by Five Rivers in October 2022 (Appendix C). A total of five fish species were recorded during the fish surveys across all methods used: pike (*Esox Lucius*), perch (*Perca fluviatilis*), tench (*Tinca tinca*), common carp (*Cyprinus carpio*) and three-spined stickleback (*Gasterostreus aculeatus*). Perch were the most abundant species present, while pike had the highest biomass. Fish populations appeared to be low.

5.33 During these surveys, the non-native and invasive signal crayfish (*Pacifastacus leniusculus)* was recorded.

Future Baseline

5.34 In the absence of the Development, and assuming current land use continues, the baseline conditions within the Site are expected to remain relatively constant in the future (over a 20-year period). The habitats within the Site will continue to slowly succeed, with wet woodland expected to show signs of drying over time, and the lagoon will likely silt up and become a wet woodland. Encroachment of buddleia if uncontrolled may result in a reduction in biodiversity.

5.35 Habitat creation is proposed within Broadwater Lake to compensate for habitat loss as a result of HS2.

5.36 Beyond this time period, the impacts of climate change will start to be more perceptible, with a change in species composition to reflect warmer dryer conditions, drying of wet woodland, a reduction in levels of the lake itself, and loss of areas of vulnerable habitat to drought such as on the islands.

5.37 Pressures from an increased population are also considered to be likely in the future, with increased incidences of trespassing, poaching, camping, fly tipping and other current non-authorised uses of the Site.

Assessment Scope

Potential Significant Effects

Construction

5.38 The assessment of construction phase effects includes consideration of the flora and fauna to be directly and / or indirectly affected by the Development. The construction phase of the Development is taken to include preparatory works, including habitat clearance and modifications to the lake including localised dredging, land reclamation and habitat creation. Construction of the Development will involve works to the lake and its habitats as well as terrestrial areas.

5.39 The majority of effects during the construction stage are likely to be largely confined to the Site and its immediate vicinity including the Mid Colne Valley SSSI and SINC, although indirect effects from potential displacement of wide-ranging bird species to likely receptor sites in the wider surrounds will also be considered. The assessment will consider the following potential effects during the construction phase:

- Habitat loss and degradation;
- Direct impacts on faunal populations on and in the vicinity of the Site such as loss of breeding and resting sites as a result of the Development;
- Indirect impacts to habitats and faunal populations within the zone of influence of construction activities from dust, lighting, noise, emissions from construction traffic, etc.;
- Fragmentation of ‘dispersal corridors’ utilised by faunal populations;
- Indirect disturbance of bird populations on adjacent designated/protected sites or habitats caused by displacement of bird species from the Site; and
- Hydrological and water quality effects on sensitive habitats and species.

Completed Development

5.40 A review of the sensitive ecological receptors will be undertaken to assess the potential impacts of the completed Development with the proposed and retained habitats in place. The assessment will consider the following potential effects:

- Degradation of retained and created habitats from activities associated with the completed, operational Development;

- Effect of air quality emissions from Development-generated traffic on designated sites and ancient woodland;
- Disturbance to faunal species / populations from unintentional mismanagement and timing of management works;
- Disturbance to habitats and fauna species due to an increase in recreational pressure;
- Indirect disturbance to faunal populations from lighting and noise associated with the completed Development;
- Hydrological and water quality effects on sensitive habitats and designated sites from the completed Development including on hydrologically linked / water dependent habitats off site; and
- Effects associated invasive species including Signal crayfish and biosecurity threats from the creation of new habitats as part of the proposed mitigation and enhancement strategy.

5.41 The overarching goal of the proposed development is to deliver public benefits associated with the HSWFAC without adverse effects to the Mid-Colne Valley SSSI and to secure its long-term conservation and enhancement through a commitment to long term management.

5.42 The initial suggested principles that would inform the creation of a detailed Mitigation Enhancement and Management Plan (MEMP) are set out below:

- Design and operational management of all recreational waterside and landside activities in a way which avoids disturbance and conflict with the reasons for notification of the Mid-Colne Valley SSSI, including its significant ornithological interest;
- Avoidance of terrestrial habitat loss, with enhancement of retained habitat and creation of new habitat of value for nature conservation;
- Increase the amount and quality of lacustrine habitat of potential value to breeding and wintering birds, providing screened areas to act as refuges from visual disturbance, and with increased nesting opportunities;
- Enhancement of food webs within the SSSI, with the ultimate goal of supporting increased numbers and diversity of breeding and wintering birds; and
- Address existing and future threats to the value of the SSSI through design and ongoing management. Such threats include climate change, invasive species, water quality, contamination, unauthorised site uses, and recreational pressure from an increased population.

5.43 Once the principles and detailed objectives have been agreed with stakeholders, measurable goals for each objective would be formulated and a monitoring regime designed. Detailed method statements with management prescriptions would then be produced in due course. The information would be presented within a MEMP which would cover a period of 30 years initially, to secure the biodiversity gains.

5.44 An assessment will also be made using the Defra 3.1 Biodiversity Net Gain Metric to quantify the biodiversity net gain provided by the Development. This will be presented in a BNG Statement that will accompany the planning application.

Cumulative Assessment

5.45 The assessment of cumulative ecological effects will, subject to further engagement with LBH, consider the cumulative schemes identified in Appendix A of this Scoping Report. The cumulative assessment will consider the same potential likely significant effects (where possible and where the necessary information is available) as identified for the Development. This assessment will be informed by a review of the planning application documentation for each cumulative scheme.

5.46 The assessment of effect interactions is inherent to the assessment as it will consider multiple impacts on single receptors e.g. combined impacts from physical disturbance, lighting, noise, water quality and air quality.

Non-Significant Effects

5.47 The baseline assessment has shown that significant effects on the following receptors are not likely and as such, they would not be considered further in the assessment:

- SPAs, SACs, and Ramsars on account of their spatial separation and removal from the Site, and which are not designated for wintering or breeding birds;
- Hazel dormouse and harvest mouse due to a considered lack of presence;
- Amphibians due to lack of Great Crested Newt presence and common status of other amphibian species likely to be present of little conservation concern.

Assessment Methodology

Study Area and Spatial Scope

5.48 The extent of the desk study is 10km for European and national designated sites, and 2km surrounding the Site for local designated sites and records of protected and priority species. In respect of air quality, namely from traffic (both from construction and the completed Development), potential sensitive receptors (e.g. SSSIs, LWSs and ancient woodland) within 200 metres of roads will be considered within 10km of the Site. Further information on designated sites and habitat of interest (such as ancient woodland) was secured through analysis of MAGIC.

Key Receptors

5.49 The key receptors in respect of ecology and biodiversity are identified as follows:

- Mid Colne Valley SSSI and SINC (on-Site);
- Other statutory and non-statutory designated sites within 2km of the Site;
- Priority habitats (woodland, water habitats) and species (black poplar) within the Site;
- Badgers;
- Bats (roosting, foraging and commuting);
- Breeding birds;
- Wintering birds;
- Reptiles;

- Water vole;
- Otter;
- Fish; and
- Rare and notable terrestrial and aquatic invertebrates.

Baseline Assessment

5.50 Habitat and protected species surveys have been undertaken at the peninsula and adjacent surrounds in 2021 and 2022. Wintering bird surveys are currently ongoing and due for completion in March 2023.

5.51 A small number of further surveys have been recommended in 2023 to encompass the margins of the lake where impacts may reasonably occur. The recommended further surveys and justification for the survey scope is set out in the PEA. In brief the recommended 2023 ecology surveys include a highly precautionary check for badger setts and otter holts once buddleia cleared from the Site, further surveys for bats (see below), further breeding bird survey of the lake and its islands, plus a survey to map and record aquatic and emergent vegetation within the lake.

5.52 At this stage a Preliminary Roost Appraisal (PRA) and identification of Potential Roost Features (PRFs) has not been undertaken to date across the whole Site, although this work has been undertaken for existing buildings and structures . To ensure a robust baseline the following further surveys for bats are to be undertaken in 2023 to inform mitigation and enhancement:

- Preliminary Roost Appraisal (PRA) of all trees within 20m of the Development to identify Potential Roost Features (PRFs);
- Climbed endoscopic inspections of PRFs within the identified trees, to discover roosts, assess the potential to support high conservation value roosts and inform the further survey effort required;
- Emergence and re-entry surveys for any trees and structures with PRFs within 20m of the Development, in accordance with best practice guidance (BCT, 2016); and
- Emergence and re-entry surveys for any trees and structures with PRFs within 20m of the Development, in accordance with best practice guidance (BCT, 2016).

5.53 The requirement for further surveys for otter and water vole around the rest of the Site away from the peninsula should be discussed and agreed with relevant stakeholders including consultation with Natural England. Impacts around the lake margins will relate mainly to construction / provision of ecological mitigation and enhancement measures, which are yet to be fully designed.

5.54 An Arboricultural survey and INNS survey of the entire Site will be undertaken in 2023, the results of which will be fed into the ecological assessment.

5.55 The Water Environment chapter of the ES will assess effects associated with the Development in relation to lake sediment and water quality, and will cross-refer and signpost to the Biodiversity Chapter in terms of impact assessment on aquatic ecological receptors.

Assessment Approach

5.56 The approach to the assessment of habitat and species value will have regard to published guidelines and currently accepted best practice. The ES would assess the impact of the Development proposals on the ecological receptors as set out above.

5.57 The methodology for the ecological impact assessment would follow relevant guidelines and assessment criteria issued by the Chartered Institute of Ecology and Environmental Management (CIEEM)[7]. This is the current industry guidance for ecological assessment. It is not considered to be prescriptive but provides guidance to practitioners for refining their own methodologies.

5.58 The impact assessment process involves:

- Identifying the importance / sensitivity of a feature;
- Identifying and characterising impacts on species / habitats;
- Incorporating measures to avoid and reduce (mitigate) these impacts;
- Assessing the significance of any likely residual effects after mitigation;
- Identifying appropriate compensation measures to address significant residual effects; and
- Identifying opportunities for ecological enhancement.

5.59 The assessment would describe those impacts that are relevant to understanding the significant ecological effects and determining their significance. The CIEEM Guidance describes the concept of ecological significance and how this relates to the ability to deliver biodiversity conservation objectives for a given feature.

5.60 The effects of noise on bird behaviour has been the subject of various research projects, one example of which is the IECS (Institute of Estuarine and Costal Studies) report “Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance”[8]. This report is widely referenced in assessing the impact of construction noise on bird behaviour and will be considered in this assessment.

5.61 The assessment would be informed by detailed plans and details relating to vegetation loss/habitat creation, lighting and drainage.

5.62 A Mitigation Enhancement and Management Plan (MEMP) would also be prepared in collaboration with Natural England and other relevant stakeholders which would set out the principles that would be adopted to ensure the protection and enhancement of the ecology and biodiversity, on and around the Site.

5.63 Mitigation measures would be ‘embedded’ within the Development scheme through the timing, intensity and frequency of the proposed uses and retention of key existing habitats or features of value (wherever possible), built development layout, as well as carefully defined design

[7] https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/
[8] Report titled “Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance”, by the Institute of Estuarine and Coastal Studies, University of Hull, February 2009.

principles of green/blue infrastructure, landscaping, habitat creation, lighting, drainage and access.

5.64 The ES would include an assessment of Biodiversity Net Gain (BNG) which would be undertaken in accordance with the latest Defra metric (v,3.1) and Natural England guidance published in 2021[9]. The Development would seek to achieve net gains in biodiversity through a combination of on and off-site measures. On site measures will include the enhancement of retained habitats, and the establishment of new habitats.

[9] *The Biodiversity Metric 3.1, Auditing and Accounting for Biodiversity, Technical Supplement,* Natural England Joint Publication JP039.

6 Water Environment and Flood Risk

Baseline Conditions

6.1 The majority of the Site comprises a water body (Broadwater Lake) within the River Colne floodplain that extends over circa 80ha. Formed as a result of gravel extraction, it is one of over 60 such waterbodies throughout the wider Mid-Colne Valley that together form a complex of wetland features and as such, many of these are likely to be in hydrological continuity with one another.

6.2 Broadwater Lake is bordered to the west and north by the River Colne (Main River) and the Grand Union Canal is located to the east. Other former gravel pits/sand pits are located immediately to the north and south, with a narrow terrestrial perimeter forming the lake/river shore and canal embankment. A larger area of land is located adjacent to the south east corner of the lake and is currently characterised by wet woodland, broadleaved woodland and standing water ('the peninsula').

6.3 A review of data obtained from a Groundsure Insight report (dated 13/12/22 see Appendix E) confirms the following characteristics about Broadwater Lake.

6.4 The 1865 County Series Ordnance Survey (OS) map shows the Site as part of an area referred to as Harefield Moor and of a series of field parcels separated by ditches and sluices, with the River Colne to the west and Grand Union Canal to the east. The 1974-1976 OS 1:10,000 maps shows the first phase of sand and gravel extraction extending across some two thirds of the Site. By 2001, the OS 1:10,000 map shows the majority of the Site (Broadwater Lake area) having been worked for sand and gravel (now completed), flooded and the lake being present, together with 30 islands of varying sizes.

6.5 Broadwater Lake is a surface water body (Lake) under the Water Framework Directive (WFD) reference GB30641907. It is located adjacent to the River Colne (Confluence with Chess to the River Thames) WFD reference GB106039023090 and the Grand Union Canal, a Canal under the WFD reference GB70610252. Broadwater Lake is associated with the Thames Basin River Basin District. The most recent data from the Environment Agency (EA) from 2019 shows that their overall WFD rating is Moderate, Chemical rating is Fail and Ecology rating is Moderate. The chemical failure rating is as a result of perfluorooctane Sulphonate (PFOS), and polybrominated diphenyl ethers (PBDE).

6.6 Broadwater Lake is located over, and likely is in continuity with the Mid-Chilterns Chalk Groundwater Body reference GB40601G601200. Its most recent (2019) Overall Rating is Poor, Chemical rating is Poor and Quantity rating is Poor.

6.7 Data provided by Groundsure and from the EA (flood map for planning[10]) identify that Broadwater Lake and land within 50m is at High risk of fluvial flooding (with the exception of the raised peninsula in the south-east corner of the lake). Most of the lake within Site is in

[10] https://flood-map-for-planning.service.gov.uk (accessed 13/12/22)

Flood Zone 3. The peninsula is typically in Flood Zone 1 and the access to Moorhall Road is in Flood Zone 2. The extent of Flood Zones is shown in Figure 6.1 and 6.2.

Figure 6.1: Broadwater Lake and Environment Agency Fluvial Flood Zones

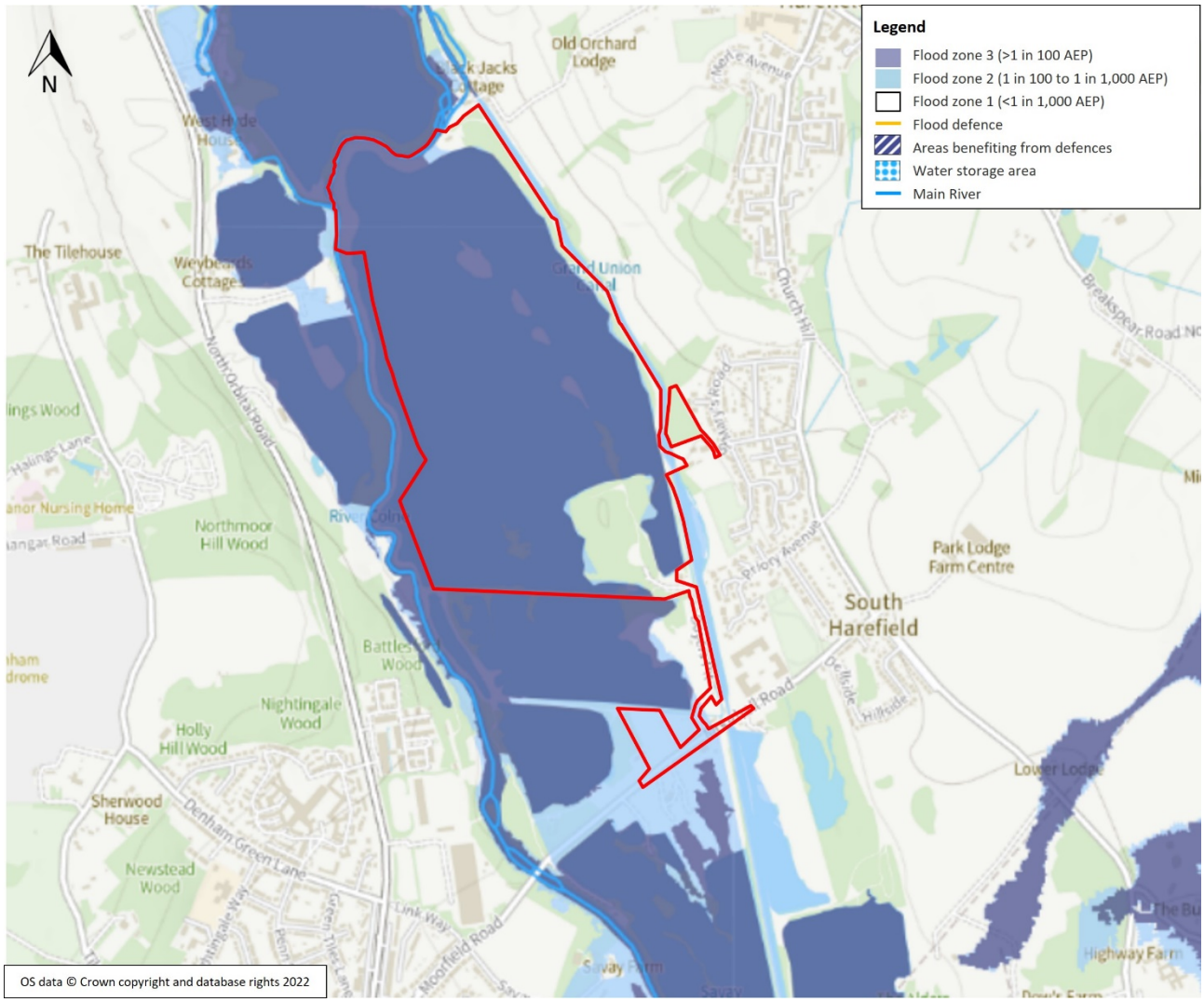
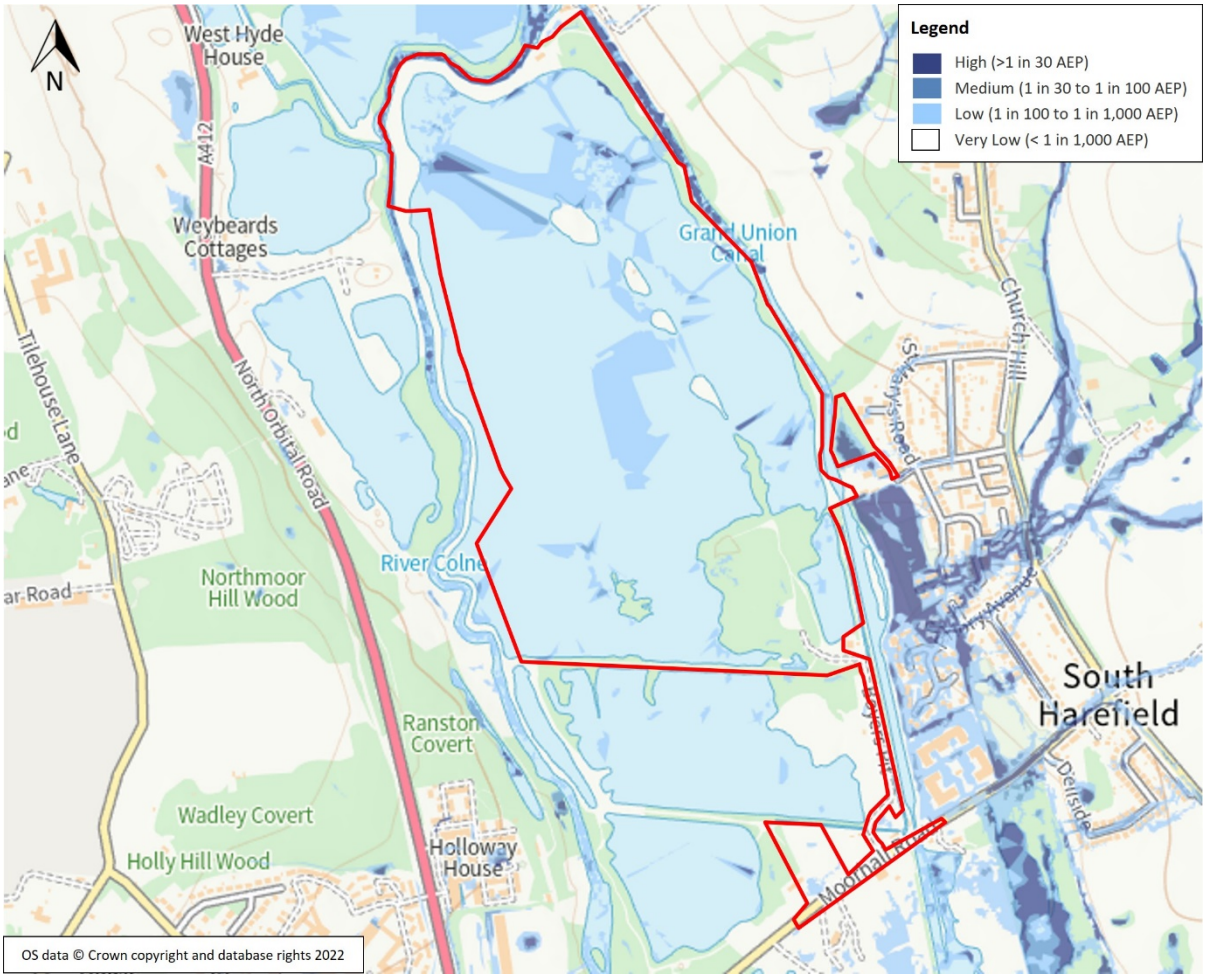


Figure 6.2: Broadwater Lake and Environment Agency Surface Water Flood Zones



6.8 No areas that would benefit from flood defences or flood storage areas are present within 250m. This highest risk of surface water flooding is from a 1 in 30 year flood and between 0.1 to 0.3m, only small areas in the south east of the Site are within this category. The peninsula and certain islands in the lake are at High risk of groundwater flooding, based on a 1 in 100 year flood event and 5m Digital; Terrain Model.

6.9 The past use of the land associated with the current Broadwater Lake, together with potential for contamination from nearby agricultural/industrial activity may have resulted in the deposition of sediment associated with potential pollutants. A review of the historic mapping from Groundsure (see Appendix E) identifies the presence of a gravel and sand plant on the raised area of ground to the south east, although a cement, lime and brick works was present to the east of the Site, beyond the Grand Union Canal. The nearest tank was located more than 50m away beyond other water bodies. A historic landfill was located to the north east but beyond the River Colne and to the east, beyond the Grand Union Canal. A historic landfill is shown located in the far south east of the Site, part associated with the water body and part associated with the raised ground. The Groundsure data highlights one historic offsite pollution events in the past. There is the potential for offsite pollution to migrate via groundwater to Broadwater Lake.

6.10 Broadwater Lake is associated with a Secondary A aquifer, which are 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. The bedrock is associated with a Principal aquifer, where the geology is of high intergranular and/or fracture permeability, providing a high level of water storage and may support water supply/river base flow on a strategic scale. Broadwater Lake is associated with the outer and inner catchment of a Source Protection Zone. Both aquifer types are considered to be productive and both are considered to have a high groundwater vulnerability to pollution.

6.11 Two active water abstraction licences are present on-site associated with Gravel Pit A and B abstractions by Tarmac Aggregates Ltd and associated with mineral washing activity on the raised area of ground in the south east of the lake. A number of other abstractions are present in the wider area. A single borehole (to 30m) is present on site and is associated with Affinity Water.

6.12 Recent bathymetric surveys completed by Survey Solutions in 2021 show that much of the lake is over 2m in depth, with areas of shallower water and islands present.

6.13 Recent water quality sampling (for microbial and certain water quality parameters relating to use for water sport activity) taken from the south east lake margins by GEA Ltd in 2022 (see Appendix D) show that the results were generally found to meet the EC Bathing Water Directive (76/160/EEC and 2006/7/EC), with the exception of the concentration of *Entercocci* within the sample collected from Location No 1, which was classified as 'Poor (fail)'. None of the samples were found to contain salmonella, and all six samples were found to meet the requirements of the EC Bathing Water Directive (76/160/EEC and 2006/7/EC), with the exception of the concentration of *Entercocci* within the sample collected from Location No 1, which was classified as 'Poor (fail)'. All six samples were found to meet the World Health Organisation (WHO) guidance values with respect to blue-green algae (cyanobateria). The concentration of *Clostridium perfringens* recorded in one sample is considered to be elevated with respect to the adopted threshold for faecal coliforms, of 200 colony-forming units per 100ml.

6.14 The Environment Agency and the Department for Environment and Rural Affairs (DEFRA) Online Water Quality Archive indicates a sampling location within Broadwater Lake, at National Grid Reference (NGR): 504591, 189093. 6No. Samples have been collected 30th October 2019 – 26th April 2022, with 8No. Chemical determinants measured (colour, conductivity, alkalinity, phosphorus, chlorophyll, nitrogen, orthophosphate and nitrogen total oxidised).

Future Baseline

6.15 In the absence of the Development, and assuming current land/water use continues, the baseline conditions within the Site are expected to remain relatively constant in the short-term (e.g. a 5 year period). Beyond this time period, the impacts of climate change will start to be more perceptible, to reflect warmer and dryer conditions, drying of wet woodland and other water dependant habitats, a reduction in levels of the lake during periods of drought and potentially an increase in the presence of fluvial, surface water and groundwater flood water during periods of elevated rainfall.

6.16 In addition, the location and rate of surface and groundwater abstractions in the area could vary over time, leading to changes in groundwater levels (influencing river flows and flood risk), aquifer status and SPZ designations.

Assessment Scope

Potential Significant Effects

Construction

6.17 Construction phase effects (including enabling /preparatory works) includes consideration of those elements of the associated water environment (both on Site, downstream and in hydrological continuity) that could be directly or indirectly affected by the Development.

6.18 The assessment will consider the following potential effects:

- Increase in runoff and associated flood risk from construction activity;
- Flood risk to construction activity from fluvial and surface water sources;
- Accidental pollution and contamination of surface water, lake sediment and connected groundwater from construction activities;
- Change in lake water quality associated with works to re-distribute lake sediment and form more optimal bathymetry for both the SSSI features of interest and the wider lake ecology;
- Change in surface water flow paths from construction and the construction of new infiltration features and lake dredging could introduce new pathways from the surface water environment to groundwater and vice versa; and
- Change in lake volume and bathymetry and associated implications for water resources (including on water-dependant ecology).

Completed Development

6.19 The assessment of the completed Development will consider a range of potential operational effects on the sensitive receptors as set out below:

- Changes in site runoff and the risk of increasing flood risk on Site and to downstream receptors; and
- Changes in the risk of on-site flooding associated with fluvial, surface water and groundwater sources.

Cumulative Assessment

6.20 The cumulative assessment of the water environment will, subject to further engagement with LBH, consider the cumulative schemes identified in Appendix A of this Scoping Report. The cumulative assessment will consider the same potential likely significant effects (where possible and where the necessary information is available) as identified for the Development. This assessment will be informed by a review of the planning application documentation for each cumulative scheme.

Non-Significant Effects

6.21 The following potential non-significant effects would be scoped out from the EIA taking into account best practice control measures that would be implemented through the implementation of an Operational Management Plan and Lake Management Plan:

- Potential for human health related aspects of water quality from the proposed use of the lake for certain outdoor activities;
- Demand on potable water supply resulting from the Development;
- The quantity of foul water runoff from the Development;
- Potential physical/water quality impacts to the Grand Union Canal as a result of works to the bridge;
- Potential for water pollution from accidental release of hydrocarbons/lubricants from vehicles and any limited use of chemicals used for the operation of the proposed facility; and
- Hydrological and water quality effects on sensitive habitats and designated sites from the completed and operational Development.

Assessment Methodology

Study Area and Spatial Scope

6.22 The hydrological zone of influence of the Development has been defined by the WFD waterbody units in which the Broadwater Lake is situated. This is on the basis that there are direct pathways from the Site into these catchments. The water body units provide a through definition of the potential zone of influence linking sources within the development area, via flow pathways. These are:

- Broadwater Lake GB30641907;
- River Colne (Confluence with Chess to the River Thames) GB106039023090; and
- The Grand Union Canal GB70610252.

6.23 The hydrogeological zone of influence has been defined as the Principal Aquifer beneath the Site. It includes the area beneath the Site and extends to groundwater abstraction at West Hyde Pumping Station 'G1 operated by Affinity Water some 1280m NW. The groundwater body provides a thorough definition of the potential zone of influence linking sources within the development area, via flow pathways to potential receptors situated downstream and off-site.

Key Receptors

6.24 Key receptors are: Broadwater Lake (WFD water body and SSSI – which would considered in the ES Ecology Chapter), River Colne WFD water body, Grand Union Canal WFD Water Body, the underlying Mid-Chilterns Chalk WFD Groundwater Body and aquifer, the Site itself and terrestrial areas associated with the Development and terrestrial and wetland areas downstream which may be associated with any increase in flood risk.

Baseline Assessment

6.25 The water environment baseline will be further developed through the following means:

- Sediment sampling, analysis of samples;
- Water quality (lake chemistry associated with nutrients, metals, hydrocarbons, pesticides etc) sampling and analysis;

- Hydromorphological analysis;
- Groundwater risk assessment;
- Flood Risk Assessment (including calculation of surface water runoff and associated attenuation requirements and allowances for climate change); and
- Engagement with stakeholders (Natural England, EA, LLFA, Canal & River Trust).

Assessment Approach

6.26 In terms of the surface water environment the EIA will be largely based on professional judgement, based on experience and the use of best practice guidance (such as that published by CIRIA, Defra, the Environment Agency and the Lead Local Flood Authority).

6.27 The assessment would be informed by detailed plans and details relating to the water environment. A Flood Risk Assessment, groundwater risk assessment, Water Framework Directive risk assessment, Drainage Strategy, Outline CEMP and Operational Management Plan and Lake Management Plan would also be prepared which would set out the principles to be adopted to ensure the protection and enhancement of the water environment (including water dependant ecology), on and around the Site.

6.28 Mitigation measures would be 'embedded' within the Development scheme (wherever possible), built development layout, as well as carefully defined design principles of green/blue infrastructure, landscaping, sustainable drainage and access.

6.29 A Flood Risk Assessment (FRA) will be prepared in accordance with LLFA, NPPF and EA requirements and will assess all relevant sources of flood risk. The assessment related to flood risk will draw upon the studies and conclusions made within the FRA which will be appended to the ES.

6.30 The FRA will be informed by a bespoke hydrological and hydraulic modelling study of the ordinary watercourses which cross the Site and the main river. This study will determine whether the Development will be impacted by flooding and whether, in turn, adjacent properties will be impacted during a flood event. It also provides recommendations for mitigating measures to alleviate the impact of flooding. The modelling study will also be used to inform the proposed ground levels across the Development.

6.31 The assessment will be based on existing water quality and flow data provided by the EA and LLFA.

6.32 Future baseline conditions will be predicted, taking into account the likely impacts of climate change on river flows and flood levels.

6.33 A groundwater risk assessment will be undertaken to inform the assessment of effects within the water environment chapter of the ES. This will consider the potential that connected groundwater (inc. aquifers and abstractions) are connected via the underlying gravels at Broadwater Lake and whether the construction phase activities could mobilise contaminants to these receptors and/or cause a change in water levels in the lake / aquifer recharge if bed impermeable layers are breached or other surface flow paths modified. This will be informed by a review of relevant data and the proposed lake/sediment monitoring.

6.34 There is no standard guidance in place for the assessment of the potentially significant effects on the water environment from developments of this type. Based on professional judgement and experience of other similar schemes a qualitative assessment of the potential effects on surface and ground water quality and water resources will be undertaken.

6.35 The significance of effects will be determined using the guidance and criteria set out in the Design Manual for Roads and Bridges (DMRB) LA113 Road Drainage and the Water Environment (Highways England, 2020)[11] (henceforth referred to as HD45/09). Although developed for road infrastructure projects, this method is suitable for use on any development project and provides a robust and well tested method by which to predict the significance of effects.

6.36 Under this approach, the importance of the receptor and the magnitude of impact are determined independently from each other and are then used to determine the overall significance of effects. Where significant adverse effects are predicted, options for mitigation will be considered and secured where possible.

6.37 With reference to best practice (e.g. CIRIA guides) mitigation measures will be identified to manage and control works during construction. Water related licences / consents / permits that may be required for construction and operation of the Development will also be set out.

6.38 The requirement for a Water Framework Directive (WFD) assessment will be confirmed through consultation with the EA. Should this be required then it would be included as part of the EIA. The WFD assessment will include an assessment of the effects of the Development on various water body WFD quality criteria in relation to the main river that borders the Site.

[11] https://www.standardsforhighways.co.uk/prod/attachments/d6388f5f-2694-4986-ac46-b17b62c21727

7 Ground Conditions and Contamination

Baseline Conditions

7.1 A Phase 1 Geo-environmental Assessment has been undertaken by Geo-Integrity and this is available in Appendix E.

7.2 The Site was formerly occupied as sand and gravel works and Broadwater Lake was formed by excavation and extraction of superficial granular deposits.

7.3 Harefield Pit SSSI (224m east of the Site boundary) is a small conserved section of one of the large chalk quarries adjacent to the Colne River. It is an important Tertiary site in the London Basin, which displays a sequence through the Upper Chalk, Reading Beds and London Clay.

Geology

7.4 Reference to the British Geological Survey website and Sheet 255; Beaconsfield 2005, indicates that the Site is underlain by Worked Out Ground, Alluvium, Shepperton Gravel Chalk. Alluvium is ground associated with the nearby River Colne and would consist of interbedded clays, silts, sands and gravels, with localised peat, associated with flooding events and the meandering of the river across the valley floor. Shepperton Gravel Member is of Devensian age from the last Ice Age River Terrace Gravels, which means it is formed as valley, produced as the dissected remnants of earlier abandoned floodplain. It generally consists of sand and gravel, locally with lenses of silt, clay or peat removed across the majority of the Site area. The Newhaven Chalk formerly the Upper Chalk Survey as a smooth white chalk with numerous marl seams and flint bands.

7.5 There are no available records of geotechnical investigation within the Site, however there are two historical boreholes, that were put down by Affinity Water in 2013. Both found Alluvium and Shepperton Gravel to depths ranging from 3.50m bgl to 6.0m bgl with Chalk beneath that to a maximum depth of 76.50m below ground level. Groundwater depth in both 1.80m bgl. This is consistent with superficial deposits as detailed in BGS record maps as discussed above.

Historical Uses

7.6 Historically the Site has been drained marsh land adjacent to the River Colne until the 1960's when it started to be exploited for its underlying sand and gravel deposits. Processing of this material occurred towards the southeast of the Site. Extraction continued until the end of the 1990's.

7.7 Reference to records from the BGS, the Environment Agency and the Local Authority indicates that there is a historic landfill within the south-eastern part of the Site on the eastern side of the peninsula.

Hydrology and Hydrogeology

7.8 Chapter 6 of this Scoping Report provides an overview of the hydrological and hydrogeological baseline conditions at the Site and surroundings.

Ground Gases

7.9 Information from the BGS and the National Geoscience Information Service indicated that the Site lies within an area where less than 1% of homes exceed the action level of 200Bq/m^2 for radon gas. Therefore, no radon protection measures are necessary in the development of the Site.

7.10 Given the location of the historic landfill on-site the risk of ground gas is considered high and therefore protection measures may be required.

Geotechnical Risk

7.11 The desk study information (included at Appendix E) identified that the Site does not lie within an area likely to be affected by significant natural cavities, coal mining or coal-mining activities.

7.12 The peninsula has been used for processing aggregate and as such it is anticipated the underlying soil profile will consists of thick Made Ground with some concrete obstructions, Shepperton Gravel with Chalk strata at approximately 6m below ground level. Groundwater is likely to be between 1m to 2m below ground level.

7.13 A large area of land to the south of the peninsula is marked as dangerous due to quicksand which is likely to be due to the infilling of a sand and gravel pit by silt wastes. In addition, the land areas on the Site have been highly reworked and used as a landfill site in the past. As such, deep thicknesses of Made Ground should be anticipated across the whole Site. Groundwater will also be within a metre or two of existing ground level.

7.14 The south parcel is underlain by Alluvium overlying Shepperton Gravel. The Alluvium is likely to be made up of peat and water saturated sandy clays however no structures are proposed in this area.

Contamination Risk

7.15 The main risk of potential contaminant sources comes from its industrial history as a gravel pit between the 1960's and 1990's, and the landfilling that occurred on the Site between 1993 and 2004. The following contaminants should be expected and these could be concentrated around the structures on the peninsula:

- Metals and Inorganic Substances;
- Speciated Polyaromatic Hydrocarbons (PAH);
- Benzene, Toluene, Ethylbenzene and Xyle;
- Total Petroleum Hydrocarbons (TPH);
- Asbestos Identification and Quantification;
- Semi Volatile and Volatile Organic Substances; and
- Polychlorinated biphenyl (PCB).

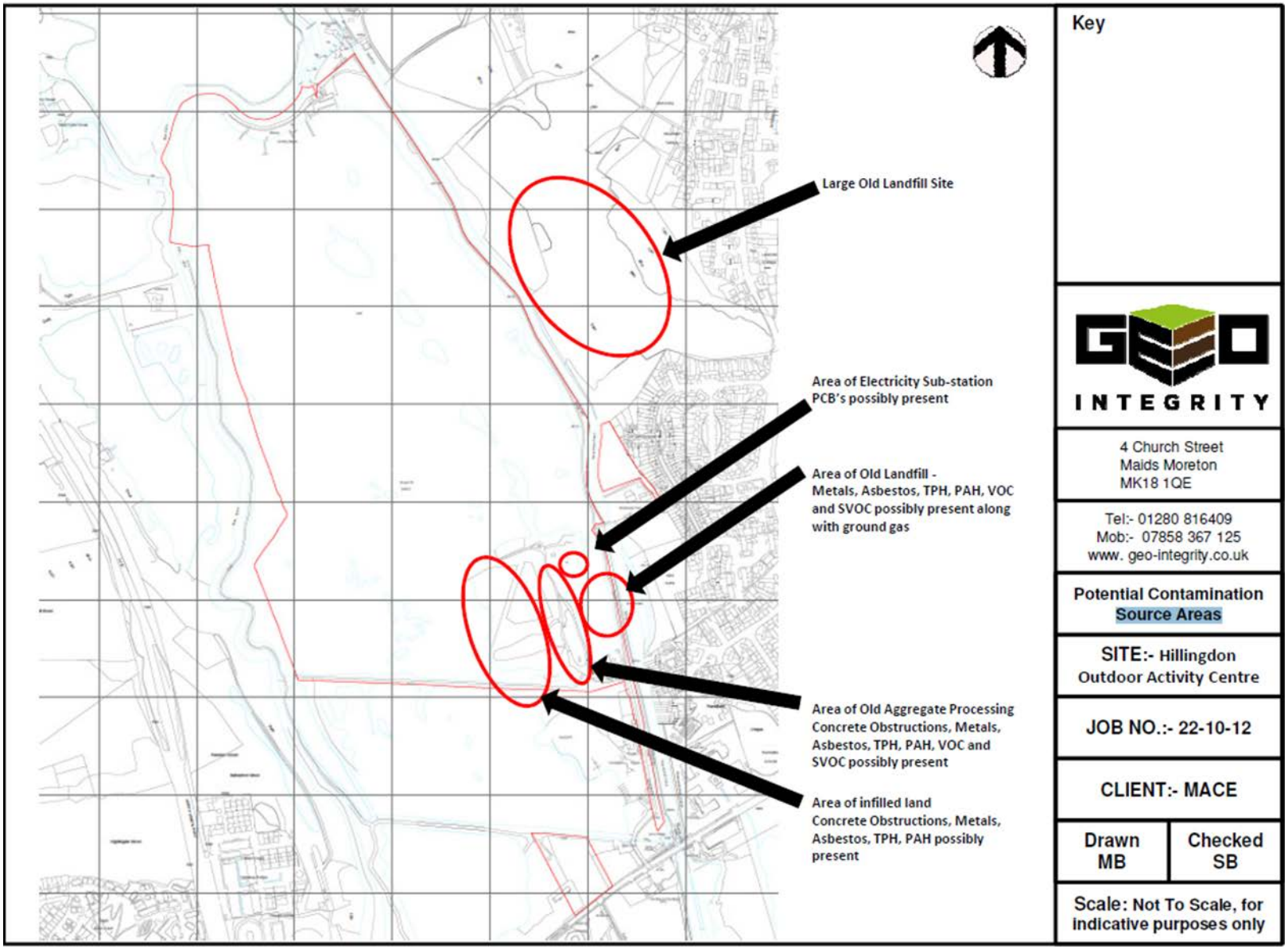
7.16 Given the proposed Development of the Site as a commercial end usage, it is considered that there is a low to moderate risk to end users. However, the risk of encountered localised pockets of contamination is considered to be moderate to high. There is a perceived moderate risk of contamination sources that may be affecting the Principal groundwater Aquifer beneath the

Site and as the Site is in a Source Protection Zone. This would be considered as part of the Development.

7.17 The surrounding uses of the Site generally poses no risk of contamination. There is a large historic landfill to the east of the Site, beyond Grand Union Canal, that could present a source of landfill gases.

7.18 Figure 7.1 sets out the potential contamination source areas identified in the Phase 1 Report:

Figure 7.1 Potential Contamination Source Areas



Unexploded Ordnance

7.19 Reference to an online Unexploded Ordnance (UXO) risk map produced by Zetica indicates that the Ste is located in an area where there is a low risk of unexploded ordnance (i.e. density of less than 15 bombs per 1000 acres or less).

7.20 A Stage 1 Preliminary UXO Risk Assessment (Appendix F) undertaken at the peninsula in June 2021 reported the following conclusion:

Although Uxbridge was never the subject of a large-scale concentrated air raid, the surrounding area experienced numerous smaller scale attacks, largely due to its vulnerable position within 20km of central London, the Luftwaffe's aiming point for indiscriminate bombing. Consequently, the district experienced an elevated bombing density. The majority of bombing in the area can largely be attributed to 'tip and run' raids when bomber crews jettisoned any remaining bombs over targets of opportunity, such as an RAF airfield to the west of the Site. NB: such incidents were commonplace throughout the region. No known Luftwaffe targets were present in the immediate vicinity. However, anecdotal accounts suggest that at least four bombing incidents occurred in the Site's surrounds. Therefore, it is quite possible that wayward bombs (potential UXBs) were dropped in the immediate vicinity of the Site.

As an area of agricultural land, any UXB strike(s) occurring on Site could have gone unnoticed and the resulting entry hole could have been overlooked / obscured by vegetation.As most of the Site has only experienced minimal post-WWII intrusive works, it is entirely possible that a UXB may remain in-situ in previously undisturbed areas / depths beneath previous post-WWII intrusive works.

A Stage 2 Detailed Risk Assessment is recommended to elucidate the risk to the proposed works.

Future Baseline

7.21 If the Development does not proceed, it is envisaged that the Site will remain in its existing use and baseline conditions will be unchanged.

Assessment Scope

Potential Significant Effects

Construction Phase

7.22 The assessment will consider the following potential effects during the construction phase:

Human Health

- Potential for generation of contaminated dusts, including asbestos fibres (if soils are allowed to dry and are trafficked/disturbed to air); and
- Potential for direct contact with contaminated soils.

Controlled Waters

- Silt/contamination pollution to surface water (Broadwater Lake) and groundwater (Secondary A Superficial Aquifer and Principal Bedrock Aquifer).

Ground Gas

- Lateral migration of ground gas from the former landfill consequent of ground changes, human health asphyxiant and explosive risk.

Completed Development

7.23 The assessment will consider the following potential effects for the completed Development:

Human Health

- Potential for generation of contaminated dusts, if soils are allowed to dry and are then trafficked; and
- Potential for direct contact with contaminated soils.

Controlled Waters

- Silt/contamination pollution to surface water (Broadwater Lake) and groundwater (Secondary A Superficial Aquifer and Principal Bedrock Aquifer), from site surface water run-off including from site roads.

Ground gases

- Lateral migration of ground gas from the former landfill consequent of ground changes, human health asphyxiant and explosive risk.

Geotechnical

- Settlement – potential damage to future structures/infrastructure.
- Low Bearing Capacities – potential damage to future structures/infrastructure.
- Risks / Hazards – potential risks/hazards due to structures, presence of quicksand, unexploded ordnance etc.

Cumulative Assessment

7.24 No existing or approved developments have been identified which are of scale that are likely to lead to cumulative effects.

Assessment Methodology

Study Area and Spatial Scope

7.25 A search radius of 250m would be used to identify potential sources-pathway-receptors in accordance with best practice.

Key Receptors

- Construction workers (Human Health – Contamination)
- Future users of the Site (Human Health – Contamination);
- Ecological receptors (Terrestrial and Aquatic Ecology - Contamination);
- Surface Water and Groundwater (Controlled Waters); and
- New Structures (Ground gas/Geotechnical).

Baseline Assessment

7.26 An intrusive geo-environmental site investigation is proposed to be undertaken at the Site to obtain further information about the ground conditions. Due to the Site's location within a SSSI, an application for permission to undertake this investigation on the Peninsula has been made to Natural England in January 2023. The purpose of the site investigation is to obtain further information about the geo-environmental and geotechnical conditions of the Site which will inform the detailed proposals.

7.27 Contamination testing will be undertaken as part of the intrusive site investigation to identify the presence of hazardous materials or pollutants within the ground. This will include laboratory testing of soil and groundwater samples along with site monitoring of ground gases.

7.28 A Stage 2 Detailed UXO Risk Assessment will also be undertaken.

Assessment Approach

7.29 The approach adopted for the land contamination risk assessment (potential impacts) would be based on guidance document Land Contamination Risk Management (LCRM)[12] and CIRIA C552[13]. These key guidance documents provide a technical framework for the application of a risk management process. The risk assessment applies the principles given in the NHBC and Environment Agency report R&D Publication 66[14], which provides guidance on the development and application of the consequence and probability matrix for contaminated land risk assessment.

7.30 The land contamination impact assessment would be based on the change of risk between the baseline and the different phases of the Development (i.e. construction and Completed Development). The calculated increase or decrease in risk identifies the significance of effect, however professional judgement would be used in instances where a receptor is not present during every phase of the Development.

7.31 The risk assessments would also be used to inform the design of the Development and any remedial or geotechnical measures that may be required.

[12] Environment Agency (2019). Land Contamination: Risk Management. https://www.gov.uk/guidance/landcontamination-how-to-manage-the-risks.
[13] CIRIA (2001). Contaminated Land Risk Assessment. A Guide to Good Practice (C552).
[14] NHB and Environment Agency (2008). Guidance for the Safe Development of Housing on Land Affected by Contamination R&D Publication 66: 2008 Volume 1.

8 Non-Significant Topics

Introduction

8.1 As stated within the EIA Regulations, an ES is required to identify only the 'likely significant environmental effects' of a development.

8.2 The rationale for this scoping exercise has been guided by the current National Planning Practice Guidance on EIA, which highlights the expectation that the ES should focus on the 'main' or 'significant' environmental effects only. The Guidance states:

"Whilst every Environmental Statement should provide a full factual description of the development, the emphasis should be on the "main" or "significant" environmental effects to which a development is likely to give rise. The Environmental Statement should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered."

8.3 The following topics are considered to be those where 'significant' effects are unlikely to arise as a consequence of the Development. As such, these issues would not be assessed in detail through the EIA process and would not be reported as chapters in the ES. Non-significant issues have also been identified within the previous topics sections where relevant.

Rationale of Scoping Out Technical Topics from ES

Landscape and Visual Impact

8.4 The Site is not located within or in proximity to any areas designated for landscape value. The Site is wholly within the Green Belt, although this is not a landscape designation, it affords the landscape some protection from development in line NPPF (i.e. the five purposes of the Green Belt).

8.5 Landscape character reference documents which are applicable to the Site include:

- London Borough of Hillingdon : Landscape Character Assessment (2012)[15];
- Natural England : 'National Character Area Profile 115 : Thames Valley' (2015); and
- Colne Valley Landscape Partnership : 'Colne Valley Landscape Character Assessment' (2017).

15 https://modgov.hillingdon.gov.uk/documents/s14133/Hillingdon%20Landscape%20Character%20Assessment%20very%20large%20file%2045MB.pdf

8.6 The Site is located within Natural England's National Character Area (NCA) 115 – Thames Valley. NCAs cover large areas that share similar landscape characteristics which are too broad for assessment purposes.

8.7 At a local level, the landscape character areas and their guidelines, as defined in the 'Colne Valley Landscape Character Assessment', represent the most recent and relevant landscape appraisal information to the Site. The Site is located in the 'Valley Floor' landscape character area category which is described as: "*Flat, low lying valley floors supporting a predominately pastoral land use, associated with notable watercourses/rivers. Generally unsettled, with areas of carr woodland, gravel extraction lakes, and meadows. Dense scattering of trees, scrub, poplar and willow trees resulting in a sense of enclosure and limited views. A generally unsettled landscape although there are occasional mill buildings and features associated with canals. Some urban encroachment onto the valley floor occurs in places. The presence of water and limited settlement often creates a tranquil/rural landscape particularly where mineral extraction has ceased and landscape has been restored."*

8.8 The majority of the Site comprises open water (Broadwater Lake) with surrounding woodland and scrub. A single storey building, storage containers, car and boat parking areas are currently present in the northern part of the Site, associated with the BSC. The visual baseline includes human activity associated with small sailing vessels periodically on the water, variably controlled fishing from banks, boat storage, vehicular access and buildings associated with BSC.

8.9 There are no Public Rights of Way within the Site, although the London Loop is immediately adjacent to the eastern boundary along the Grand Union Canal. The topography of the Site is relatively flat, comprising mainly the lake and adjacent areas.

8.10 Overall, the landscape character is assessed as having moderate sensitivity as the Site is in an area with a clearly defined sense of place in moderate condition. Visual receptors are assessed as having a moderate sensitivity as there is a moderate interest in the visual environment.

8.11 Potential effects on landscape character and visual amenity would vary during the construction stage dependent on the nature and timing of the works and would largely relate to the introduction of construction equipment and site hoarding. There may be changes in views experienced by local receptors, however effects resulting from the construction phase are anticipated to be short term, temporary and not significant. Some landscape features at the Site would be removed to facilitate the Development (e.g. scrub vegetation, existing BSC buildings), although any removal could be offset by the proposed landscape scheme.

8.12 A 3km radius Zone of Theoretical Visibility (ZTV) study has been undertaken to establish where views or part views of elements of the main building within the Development may be experienced from (see Figure 8-1). This study (which has not been tested in the field) is based on the following parameters:

- The main building would be the principal source of view, has been assumed to be located in the northern part of the Peninsula and 6.2m tall at its highest point; and
- Existing tree groups have been mapped with heights interpolated at the lower end of the scale so as to provide a 'worst case' through the least screening.

8.13 The Site is not accessible to the general public and is located on the broad valley floor of the River Colne, heavily enclosed by woodland with no open views in or out. Figure 8-1 demonstrates that the main building would be largely screened from its surroundings. Views of the main building would be available from parts of the lake. Views would also be available from longer distances, including a location to the east of the Site on the valley side and north west of the Site. These locations are not within settlements or other sensitive areas and would be from distances of between 1.5-3 km from the Site. From these locations, the main building, which is modest in size and designed to be visually sensitive is therefore likely to be difficult to discern.

8.14 During operation there would be a limited degree of change to landscape character and visual baseline given the presence of the existing BSC and associated activity. Landscape and visual impacts from the additional structures on-site and the increased level of activity would be mitigated through significant landscape enhancements, timing of uses and sensitive design and layout. The following mitigation would be embedded in the Development:

- Vegetation and sensitive habitats would be retained where possible;
- Ecologically beneficial landscape treatment;
- Invasive scrub would be replaced with planting with high ecological value;
- Loss of existing restoration woodland would be compensated with a greater area of woodland proposed to be planted;
- Small scale buildings would be sensitively located within the existing landscape using a sequential process that prioritises existing hard standing with lowest value landscape;
- Light would sensitively designed in line with the current ILP guidance to avoid light pollution and minimise visual impacts[16]; and
- Vertical structures associated with HOAC, such as high ropes and zip wire, would be sensitively located within woodland to minimise their visibility.

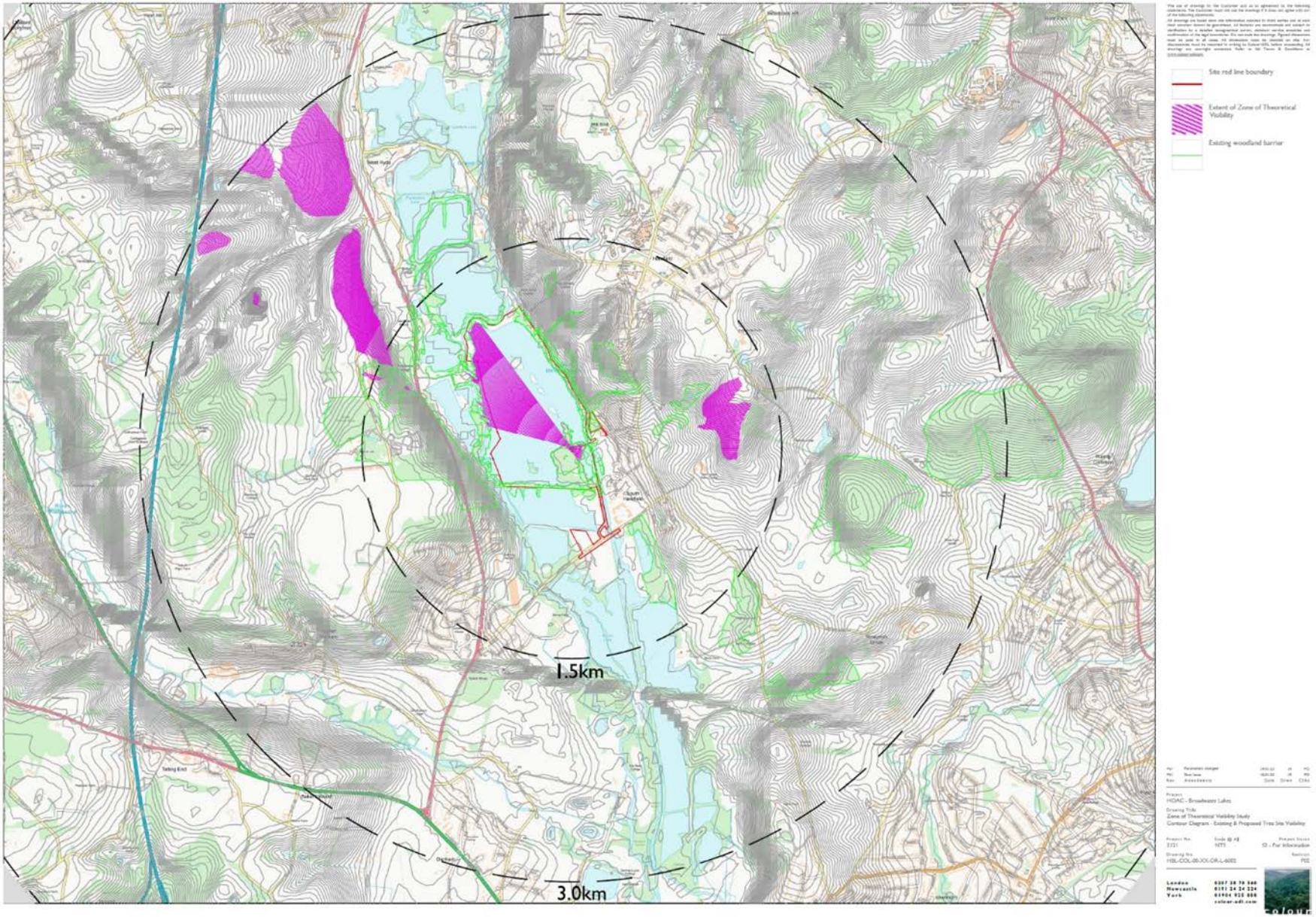
8.15 Considering the above and given that the Site lies within a highly enclosed landscape with minimal public views the landscape and visual effects are not considered to be significant.

8.16 The most significant change to the landscape and visual baseline in the study area would be from the HS2 Colne Valley Viaduct. The Development would not be expected to change the significance of the cumulative effect in combination with HS2.

8.17 For the reasons explained above, it is proposed that LVIA is scoped out, however a Landscape & Visual Appraisal (LVA) would be included within the planning application to inform the landscape design.

[16] https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/

Figure 8.1 Zone of Theoretical Visibility



Socio-economics

8.18 The Development would provide new recreational and educational facilities at the Site which would be available for the local community and interest groups including the relocated HOAC, BSC and Broadwater Rowing Club. The Development would provide some short-term, seasonal accommodation for staff at the Site. Due to the nature of the Development there would no potential adverse impacts on housing delivery or social and community infrastructure (e.g. education, healthcare and existing community facilities). Existing uses at Broadwater Lake including BSC and the Gerrards Cross & Uxbridge District Angling Society and British Carp Study Group, would continue albeit with improved facilities.

8.19 The Development would not have any significant effects on recreational, leisure or tourism uses, such as users of the adjacent Grand Union Canal, adjacent lakes or Jacks Mill B&B. The Development is likely to have a minor beneficial impact on job creation associated with the operational use of HOAC and reprovision of a community facility which has been closed since 2020. The local public house on Moorhall Road, Jacks Mill B&B and other local businesses may also benefit from visitors using the Development. However, these impacts are not considered to be significant in EIA terms.

Noise and Vibration

8.20 Background noise surveys at the Site have been completed by Noise Consultants Ltd.

8.21 The noise monitoring locations were chosen to capture existing noise conditions on the site, including the contribution of HS2 construction noise, Harleyford aggregate plant and road traffic noise from the M25 and Moorhall Road. It is recognised that existing noise levels at the Site will be subject to some change once the HS2 is completed and operational. Existing sensitive residential receptors to noise and vibration include a small number of residential properties located immediately adjacent to the Site boundary (at the Peninsula), two no. properties adjacent to the access road, a property adjacent to the junction with Moorhall Road (on the northern side of Moorhall Road) and Jack's Mill Bed and Breakfast adjacent to the canal to the north of the Site. Other existing residential receptors are within 70m of the Site in South Harefield and in canal boats on the Grand Union canal.

8.22 The Development would be constructed over a relatively short term period (up to 18 months) such that any effects would be short term and intermittent. There is likely to be increased noise during the construction works, including noise resulting from construction plant and vehicles at the Site, including those using the access road. Noise effects on human receptors would be temporary and would be controlled by industry standard good practice measures including:

- Acoustic screening/site hoardings;
- The selection of appropriate construction techniques; and
- Restricted operation of certain plant and activities to agreed periods, hours or durations.

8.23 The above measures would form part of a CEMP which could be secured by planning condition and would be subject to approval by both LBH and Natural England.

8.24 Given the existing ambient noise environment, the proposed mitigation to be employed on-site, and the temporary, short-term nature of effects, it is not considered that construction works will result in significant adverse noise effects on existing sensitive receptors.

8.25 Typically, a 25% increase in road traffic is required to achieve a 1dB increase in noise levels, with a 1dB increase generally being imperceptible and assessed as a negligible impact. The volume of road traffic likely to be associated with the operational Development (i.e. additional 50 trips a day) would not increase to levels that would lead to a perceptible increase in overall traffic noise. Furthermore the proposed future activities on-site are not expected to generate any significant noise levels at existing receptors. As no significant effects are expected, noise and vibration effects will be scoped out of the ES as an assessment chapter. The Ecological Impact

8.26 Given the existing ambient noise environment, the proposed mitigation to be employed on-site, and the temporary, short-term nature of effects, it is not considered that construction works will result in significant adverse noise effects on existing sensitive receptors.

8.27 Typically, a 25% increase in road traffic is required to achieve a 1dB increase in noise levels, with a 1dB increase generally being imperceptible and assessed as a negligible impact. The volume of road traffic likely to be associated with the operational Development (i.e. additional 50 trips a day) would not increase to levels that would lead to a perceptible increase in overall traffic noise. Furthermore the proposed future activities on-site are not expected to generate any significant noise levels at existing receptors. As no significant effects are expected, noise and vibration effects will be scoped out of the ES as an assessment chapter. The Ecological Impact Assessment will however include an assessment of disturbance to ecological receptors from construction noise and vibration.

8.28 A standalone Noise Assessment will be submitted with the planning application. This will include baseline noise monitoring and will verify that the Development will not result in unacceptable levels of noise and vibration on sensitive receptors. A site suitability assessment will be conducted for the worst case future baseline scenario based on the measured baseline noise data and any predictions of HS2 construction / operational activity.

Air Quality

8.29 The Site is not located within an Air Quality Management Area (AQMA). The nearest AQMA, approximately 1.2km to the south of the Site boundary, is designated for exceedances of the annual mean nitrogen dioxide (NO_2) objective by LBH. The existing access road to Moorhall Road is subject to some vehicular use at present, including users of BSC, anglers and HGVs associated with aggregate operators adjacent to the Site.

8.30 During demolition and construction works, there is the potential for air quality effects related to annoyance due to dust soiling; harm to ecological receptors; and the risk of health effects due to a significant increase in exposure to PM_{10}. The standard assessment procedure assumes no mitigation measures are applied, except those required by legislation. However, mitigation measures will be implemented to minimise and control dust at source during construction which will be implemented as part of the CEMP. These will be detailed through the method statements and will include measures such as hoarding, water suppression, surface treatment of the access road and covering of transport vehicles. Method statements will be based on industry standard guidance published by the Greater London Authority (GLA) and the Institute of Air Quality Management (IAQM)[17], upon which the GLA's guidance is

[17] IAQM, (2014). Assessment of dust from demolition and construction.

based. Given the implementation of such measures, dust and fine particulate matter during the demolition and construction phase is not expected to give rise to significant adverse effects on sensitive receptors. The Ecological Impact Assessment included within the ES will be informed by a construction phase dust assessment which will be undertaken in line with IAQM guidance.

8.31 The main pollutants of potential concern related to road traffic emissions are NO_2 and particulate matter (PM_{10} and $PM_{2.5}$). The Development will provide up to 150 parking spaces. Due to the nature of the Development and predicted level of use, the vehicular emissions from road traffic associated with the operational Development are not likely to have a significant effect. This will be confirmed once the operational traffic data become available.

8.32 The assessment of operational effects from road traffic on the designated sites will be covered in the Biodiversity chapter of the ES. Traffic screening thresholds will be applied to determine any potential for significant effects.

8.33 The energy strategy is still to be confirmed although would not involve combustion. As such, no significant effects are predicted.

8.34 The Site is not located within an Air Quality Management Area (AQMA). The nearest AQMA, approximately 1.2km to the south of the Site boundary, is designated for exceedances of the annual mean nitrogen dioxide (NO_2) objective by LBH. The existing access road to Moorhall Road is subject to some vehicular use at present, including users of BSC, anglers and HGVs associated with aggregate operators adjacent to the Site.

8.35 During demolition and construction works, there is the potential for air quality effects related to annoyance due to dust soiling; harm to ecological receptors; and the risk of health effects due to a significant increase in exposure to PM_{10}. The standard assessment procedure assumes no mitigation measures are applied, except those required by legislation. However, mitigation measures will be implemented to minimise and control dust at source during construction which will be implemented as part of the CEMP. These will be detailed through the method statements and will include measures such as hoarding, water suppression, surface treatment of the access road and covering of transport vehicles. Method statements will be based on industry standard guidance published by the Greater London Authority (GLA) and the Institute of Air Quality Management (IAQM)[18], upon which the GLA's guidance is based. Given the implementation of such measures, dust and fine particulate matter during the demolition and construction phase is not expected to give rise to significant adverse effects on sensitive receptors. The Ecological Impact Assessment included within the ES will be informed by a construction phase dust assessment which will be undertaken in line with IAQM guidance.

8.36 The main pollutants of potential concern related to road traffic emissions are NO_2 and particulate matter (PM_{10} and $PM_{2.5}$). The Development will provide up to 150 parking spaces. Due to the nature of the Development and predicted level of use, the vehicular emissions from road traffic associated with the operational Development are not likely to have a significant effect. This will be confirmed once the operational traffic data become available.

[18] IAQM, (2014). Assessment of dust from demolition and construction.

8.37 The assessment of operational effects from road traffic on the designated sites will be covered in the Biodiversity chapter of the ES. Traffic screening thresholds will be applied to determine any potential for significant effects.

8.38 The energy strategy is still to be confirmed although would not involve combustion. As such, no significant effects are predicted.

8.39 The planning application will be accompanied by an Air Quality Assessment. The GLA's London Plan requires new developments to be at least 'Air Quality Neutral'. The air quality neutral policy is intended to minimise the cumulative impacts of many developments throughout London. The air quality neutrality of the proposed Development will, therefore, be assessed following the methodology provided in the latest GLA's London Plan guidance (Air Quality Neutral). Mitigation will be recommended, if required, to ensure that the proposed Development meets the air quality neutral requirements.

8.40 The GLA's guidance on Air Quality Positive[19] states that an Air Quality Positive statement is required for development briefs including large-scale development sites that are likely to be subject to an EIA. While the Development is subject to an EIA, air quality is to be scoped out, thus it is considered that an Air Quality Positive statement is not required and will not be included within the air quality assessment.

8.41 Notwithstanding, a standalone Air Quality Assessment will be submitted with the planning application. This will verify that the Development will not result in unacceptable levels of air quality on sensitive receptors.

Climate Change

8.42 The Development will not give rise to a significant emissions of greenhouse gases due to its scale and type of development as there would be no material uplift in road traffic associated with the Development. The Development will incorporate appropriate climate change adaption measures designed to address the potential risks associated with future climate changes, including allowance for storm events in drainage design, use of durable materials, solar shading and glazing to avoid overheating.

8.43 The development of the energy strategy will consider opportunities to utilise photovoltaic panels to produce renewable electricity and air and/or ground source heat pumps for heating and hot water generation. Material selection will focus on less carbon intensive materials, including low-carbon concrete and part of the buildings using timber as a replacement for steel and concrete where possible.

8.44 Overall, no significant increases in greenhouse gas emissions are anticipated as a result of the Development. The effects of the Development on climate change are therefore judged to be not significant as it is consistent with applicable existing and emerging policy requirements and is in line with good practice design standards.

[19] https://www.london.gov.uk/sites/default/files/air_quality_positive_lpg_-_consultation_draft_0.pdf

8.45 A Sustainability and Energy Statement will be prepared to accompany the future planning application for the Site.

Traffic and Transport

8.46 The Site is accessed from an access road via Moorhall Road to the south of the Site. The access road is shared with the adjacent land occupiers GRS Bagging, Harleyford Aggregates and a small number of residential properties. The access is a simple priority junction with no right hand turn lane present from Moorhall Road. The Development proposals include reconfiguring the existing site access and access road via Moorhall Road. The access road will be designed to a minimum width of 3.5m with passing places having a minimum width of 5.5m to accommodate two-way vehicle traffic. The Site access will be widened to allow a coach and refuse vehicle to pass each other. The access will be designed in accordance with the relevant design criteria from Manual for Streets (MfS) and the Design Manual for Roads and Bridges (DMRB). The access road will continue to be used by the adjacent businesses and residents.

8.47 The Site currently has no formal parking arrangements for any existing users. Existing informal parking occurs on hardstanding towards the south of the Site and can fit up to approximately 45 parked cars. Additional parking is also available for BSC to the north of the Site. The Development will provide approximately 150 car parking spaces and four coach parking spaces.

8.48 Two bus stops are located directly to the southwest of the access road along Moorhall Road and bus route 331 serves these stops. Denham station is the nearest rail station to the Site and is located 1.2km to the southwest. Bus route 331 provides a connection between Denham station and the Site.

8.49 A Public Right of Way (U74) runs adjacent to the eastern Site which also forms part of the Colne Valley Trail and London Loop. There is now pedestrian or cycling facilities along the access road. Although not a designated right of way, another public footpath runs along west side of Broadwater Lake.

8.50 During demolition and construction of the Development, Heavy Goods Vehicles (HGVs), mobile plant and other vehicles will need to access the Site. Construction traffic routes, movements and associated effects such as driver disruption, dust and dirt would be dealt with through standard and widely used management measures and managed through adherence to the CEMP, Construction Traffic Management Plan and Construction Logistics Plan. The level of construction traffic for the Development is not expected to be significant when compared to existing traffic flows on the surrounding highways. Whilst there may be some localised temporary effects, construction traffic effects are not expected to be significant.

8.51 Once complete and operational, up to 250 visitors per day are expected to travel to the Site to use the Development facilities during the busiest summer months. The main mode of travel for users of the Development will be by coach. Disabled visitors, sailing club users, rowing club users, HOAC full-time staff and ad-hoc users are likely to travel by car. There will also be trips generated by servicing and deliveries. It is estimated that the Development will generate an estimated 50 peak summer daily additional trips on the surrounding road network. Given the relatively small number of trip generated by the Site, it is not considered that the completed Development will lead to significant effects on traffic.

8.52 An upgraded access will be provided to the Site in line with the Manual for Streets and DMRB guidance to adoptable standards. The junction will include a pedestrian/cyclist footway, traffic calming measures and appropriate street lighting. Emergency access only will also be provided to the north of the Site.

8.53 It is not considered that the construction or operational effects of the Development would be significant.

8.54 Notwithstanding, the planning application will be supported by a Transport Assessment which will assess the existing conditions of the local area and the proposed changes brought forward by the Development. It will also take into consideration residual traffic resultant from the cumulative developments. A Travel Plan will be provided that will detail measures to promote sustainable transport use, which would reduce the number of private vehicles accessing the Development's whilst promoting walking, cycling and public transport.

Cultural Heritage - Archaeology

8.55 An Archaeological Desk Based Assessment of the Peninsula was undertaken by Border Archaeology in July 2021 (Appendix G). A full desk-based assessment of the while Site is being undertaken by RPS. The Site is located on the western fringes of (and partly within) the Colne Valley Archaeological Priority Area (see Figure 4 in Appendix G), with recognised potential for early prehistoric finds and palaeoenvironmental remains. The closest Scheduled Monument to the Site is a Mound with ditch and outer back south of Savay Farm approximately 550m south of the Site and would be unaffected by the Development.

8.56 The archaeological potential of the Peninsula is summarised below:

- **Prehistoric:** The potential for encountering evidence of buried remains of prehistoric date was assessed as Moderate. Although recorded artefactual evidence for prehistoric activity in the immediate vicinity of the Peninsula is limited to unstratified lithic finds, it may be noted that the Site is located on the western fringes of the Colne Valley Archaeological Priority Zone, with recognised potential for early prehistoric finds and palaeoenvironmental remains (including buried alluvial and peat deposits). Previous fieldwork has also identified evidence of buried peat deposits in within the Site; such deposits if encountered could contain organic material which could shed significant light on human activity and environmental changes dating back to early prehistory;
- **Romano-British**: The potential to encounter evidence for Romano-British activity was assessed as Low, reflecting the dearth of recorded evidence of activity from this period, both in the immediate vicinity of the Site and its wider environs. It is likely that the Site lay at some considerable distance from any significant focus of Romano-British settlement during this period;
- **Medieval:** The **potential** to encounter evidence of medieval activity was assessed as Low to Moderate. This assessment reflects the fact the peninsula was located within an area of sparsely settled, unenclosed wetland moor (Harefield Moor) throughout the medieval period, on the western periphery of Harefield, a settlement of pre-Conquest origin. The site of the deserted medieval settlement of Moorhall and its 13th century chapel are located c. 450m southeast of the Site; and

- **Post-Medieval:** The potential to encounter archaeological remains of post-medieval date was assessed as Low to Moderate. Historic mapping shows that the penisula lay within a large area of unenclosed moorland known as Harefield Moor until the 19th century, when enclosure and drainage of the moorland took place. There is some limited potential to encounter evidence of post-medieval drainage features. Historic mapping still shows the study area to be water meadows until the 1960s, when a sand and gravel works and associated quarries were established within and adjacent to the Site, which are likely to have disturbed sub-surface remains of earlier periods.

8.57 The overall archaeological potential of the peninsula was assessed as Moderate, with particular reference to encountering prehistoric remains, in particular stratified alluvial and peat deposits of palaeoenvironmental significance. The potential for archaeological remains of medieval and post-medieval date was assessed as Low to Moderate, while the potential for Romano-British remains is considered to be Low.

8.58 It should be noted that there is potential for significant disturbance to sub-surface deposits as a result of modern sand and gravel extraction in the vicinity of the Site; although the extent and depth of this truncation remains unclear as there has been no previous archaeological investigation within the Site.

8.59 An updated Archaeological Desk Based Assessment covering the whole Site is being prepared by RPS and will accompany the planning application.

8.60 The effects upon archaeological deposits could be mitigated by minimising or avoiding physical disturbance where possible. Where this is not possible, a programme of archaeological monitoring and recording of geotechnical investigations may be the most appropriate form of mitigation in this instance, to determine the survival of archaeological deposits within the Site. The details of this programme would be subject to agreement with the Greater London Archaeological Advisory Service (GLAAS).

8.61 With appropriate mitigation in place, it is not expected that the Development will give rise to significant effects on archaeology. As such, it will be scoped out of the ES.

Cultural Heritage – Built Heritage

8.62 The Site is adjacent to the Widewater Lock Conservation Area (CA) in the south-east. Black Jacks and Copper Mill Lock, Harefield CA is adjacent to the Site boundary in the north-east. The Site is also 250m from the Harefield Village CA in the east. Broadwater Park (Grade II) Registered Park and Garden is located approximately 400m south-west of the Site boundary and Harefield Place (Grade II) Registered Park and Garden is located approximately 525m east of the Site. The locations of these designated heritage assets are shown on Figure 2.1b.

8.63 There are two listed buildings in close proximity to the Site; less than 25m east of the access road junction on Moorhall Road is the Grade II Widewater Lock Cottage and approximately 350m southwest is the Grade II Denham Film Studios (dating from 1936). T

8.64 The bridge within the Site (Bridge 179 on Grand Union Canal) is likely to be late 19th century bridge and is likely be considered as a non-designated heritage asset. The locally Listed Black Jacks Cottage is also in close proximity to the north of the Site.

8.65 The closest designated receptor (Grade II listed Widewater Lock Cottage) already experiences an impact on its setting from vehicles using Moorhall Road and HGVs using the GRS Bagging and Harleyford Aggregates sites. The Development is not expected to adversely affect the existing setting of this listed building. Views of the new structures within the Site are unlikely to be visible from designated heritage assets, including the Registered Parks and Gardens.

8.66 The nature of the proposals are such that the setting of other designated and non-designated built heritage assets are unlikely to be adversely affected by construction or operation of the Development.

8.67 The Development will not result in any direct impacts on designated heritage assets. Upgrade and/or restoration works are currently proposed to the 19th Century canal bridge which are likely to be beneficial, although these are unlikely to be significant.

8.68 No significant direct or indirect (i.e. setting) effects on heritage assets have been identified. As such, this topic will be scoped out of the ES.

8.69 A Heritage Statement will accompany the planning application which will assess the heritage effects of the Development and be prepared in line with current policy and guidance.

Agriculture and Soils

8.70 The majority of the Site has been subject to mineral extraction for sand and gravel deposits as such the majority of the soil deposits have been removed. Provisional Agricultural Land Classification mapping for the Site is 'non-agricultural' and it is not subject to any agricultural use. Given the lack of agricultural use of the Site and lack of soils, the Development would not lead to any significant impacts in terms of soils or agricultural use. Soils at the Site would be handled in line with good practice as part of the CEMP. As such, significant effects are not expected and this topic would be scoped out of the EIA.

Light Pollution

8.71 The majority of the Site is unlit although there the ambient lighting environment is primarily influenced by road traffic lighting from Moorhall Road, night-time activities at GRS Bagging and Harleyford Aggregates to the south, night-time construction activities associated with HS2 to the west and the residential area of South Harefield to the east. As such the Site is typical of an E1 (intrinsically dark) to E2 (low district brightness) and partial E3 (medium district brightness) Environmental Zone location.

8.72 A baseline lighting survey will be undertaken at the Site which will inform the development of a lighting design scheme. The lighting baseline report will identify any known light pollution issues and will identify lighting sensitive receptors to inform the development of a lighting scheme. It is expected that operational lighting at the Site will be limited as the Development will be used primarily during day-time hours.

8.73 During construction site lighting controls will be in place as part of the CEMP to appropriately mitigate light pollution onto nearby sensitive receptors.

8.74 A modern, efficient and controlled Lighting Strategy will be submitted with the planning application that will demonstrate how a balance can be achieved between ensuring safety for pedestrians, cyclists and users of the highway whilst also ensuring that the lighting proposals would not cause an unacceptable impact on amenity, ecological receptors (including bats) or landscape and visual effects. The strategy will incorporate best practice design principles, including those from the Guidance Notes for The Reduction of Obtrusive Light[20] to avoid significant adverse effects.

8.75 A sensitively designed Lighting Strategy would ensure that the Development does not lead to significant light pollution effects. The effects of lighting disturbance on ecological receptors would be considered in the Ecological Impact Assessment.

Wind, Daylight, Sunlight and Overshadowing

8.76 The scale of buildings within the Development is limited and will not lead to any significant changes in the wind microclimate or daylight and sunlight conditions at nearby residential properties. The buildings and new pontoon structures would result inevitably result in some overshadowing of Site and surrounding area. However, any overshadowing would be of a limited scale and would not be likely to adversely affect habitats. The potential for overshadowing effects on ecological effects would however be considered further in the Ecological Impact Assessment. The proposed Development would not have any overshadowing effect on amenity spaces associated with residential properties or other receptors. As such, the issues of wind, daylight, sunlight and overshadowing effects would be scoped out of the ES.

Solar Glare and Glint

8.77 There is no specific criterion for assessing the significance of solar glare or glint and professional judgment has therefore been used in establishing whether the Development is likely to give rise to significant effects. Sensitive receptors are likely to include planes taking off and landing at Denham Aerodrome.

8.78 The emerging design of the Development does include significantly reflective components apart from a small number of photovoltaic panels on building roofs. These would be set within wooded areas and number of panels likely to be installed would be low. As such glint/glare effects are unlikely to be significant.

Human Health

8.79 Poor health outcomes could arise from construction effects such as dust or pollution from construction traffic. However, given the location and scale of Development, the duration of the construction phase, it is not considered likely that effects would be significant for human health. Mitigation measures will be implemented to minimise and control dust and noise at source during construction which will be implemented as part of the CEMP.

[20] https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/

8.80 Greater access to recreation tends to be positively correlated with good health and well being, but these effects will be uncertain and not measurable at the level of an individual site. The incidence of any such health effects is not expected to be significant at any spatial level.

8.81 Recent water quality sampling (for microbial and certain water quality parameters relating to use for water sport activity) taken from the south east lake margins by GEA Ltd in 2022 (see Appendix D) show that the results were generally found to meet the EC Bathing Water Directive (76/160/EEC and 2006/7/EC). The long-term management of hydrology and water quality in the lake will be set out in a Lake Management Plan.

8.82 Air quality and noise assessments will be undertaken to inform the emerging design of the proposals to ensure the Development does not, indirectly, have an effect on health and wellbeing. In addition, the FRA indirectly considers the Development's impact on health and wellbeing in relation to flood risk.

Materials and Waste

8.83 Waste streams arising from the construction stage of the Development would mainly comprise soil from excavation and foundation work, however it would be the intention to reuse as much material on-site as practicable in accordance with the waste hierarchy. Waste produced during construction would be subject to the 'Duty of Care' under the Environmental Protection Act and managed by the contractor in line with current legislation, guidance[21] and best practices, with construction waste materials disposed of by the contractor/s to appropriate recycling facilities or appropriately licensed landfills. Material that has been dredged form the lake will be re-sued on-site to create new islands.

8.84 The CEMP will set out roles and responsibilities such that the Site Manager will audit waste carriers and disposal facilities and maintain documentary evidence that these requirements are being met, including a register of waste carriers, disposal sites (including transfer stations) and relevant licensing details and testing for each waste stream.

8.85 Operational waste from the completed Development would only produced in small volumes and would predominately comprise waste arisings from visitors and staff that live on-site. This would predominantly be collected under waste disposal contracts with commercial operators. The Development will be designed to comply with LBH's recycling and waste requirements and ensure the provision of sufficient waste storage areas across the Development to enable occupants to segregate their waste and recyclables, building managers to manage capacity and appropriate access for refuse collection vehicles.

8.86 Given the nature and scale of the Development, volumes of waste generated during construction and operation are not expected to give rise to a significant impact on waste management infrastructure.

8.87 For the same reason the construction and operation of the Development is not expected to have a significant impact on mineral resources on any spatial scale.

[21] Including the Environment Agency's Guidance for Pollution Prevention and other relevant guidance to be followed during the handling, storage and use of such materials, including oil, chemicals, cement, cleaning materials and paint.

Vulnerability to Major Accidents and Disasters

8.88 There are no Control of Major Accident Hazards (COMAH) sites within a 5km radius of the Site.

8.89 Available guidance (IEMA Quality Mark Article 'Assessing Risks of Major Accidents / Disasters in EIA') defines major accidents and disasters as "*man-made and natural events which are considered to be likely, and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with /rectify*".

8.90 Overall, the vulnerability of the Development to risks of major accidents and /or disasters is considered to be low. Risks to fire can be assumed to be low provided the detailed design and fire strategy are developed in line with the latest fire safety guidance. The proposed use is not considered hazardous and the most likely foreseeable vulnerabilities of the Development are related to flood risk and road traffic accidents. These risks will be considered as part of the FRA and a Transport Assessment respectively.

Energy and Sustainability

8.91 Energy and Sustainability are clearly relevant to the consideration of the planning merits of the application but are not themselves factors that require assessment under Regulation 4(2) of the EIA Regulations 2017 (as amended). Neither 'energy' nor 'sustainability' are aspects of the environment in relation to which a significant effect can be assessed in this sense (i.e. there is no source/receptor/pathway relationship for 'energy' or 'sustainability').

8.92 This accords with the Department of Communities and Local Governments (DCLG) consultation paper on EIA Good Practice[22] (2006) which states:

"there is no requirement to include a sustainability appraisal within the Environmental Statement. If such an assessment is required by the Local Planning Authority, it should be provided as a separate document supporting the planning application."

8.93 The planning application will be supported by an Energy and Sustainability Strategy. This negates the need for further energy and sustainability assessments within the ES.

8.94 The main sustainability features of the Development (e.g. SuDS strategy, energy strategy) will be summarised in the description of the Development included in the ES. As such, all technical assessments will inherently test the principal sustainability design features sought as part of the planning application.

Utilities

8.95 The Development will have a relatively small demand on the grid network in relation to power and water utilities. Consultation with the relevant statutory bodies will be undertaken to ensure the existing electricity, gas and clean water networks, as well as local foul drainage, will have sufficient capacity to supply the Development.

---

[22] Department of Communities and Local Government (DCLG), 2006. Environmental Impact Assessment, EIA Good Practice, 2006.

Aviation

8.96 The Development includes buildings that will not extend more than two storeys. The Denham Aerodrome is located a sufficient distance away that significant effects are not expected.

Electromagnetic Interference

8.97 All new electrical plant will be designed in accordance with the current British Standards (e.g. BS EN 62041:2010) which set the specific limits for electro-magnetic fields.

8.98 Standard easements will be maintained for the development envelope within the vicinity of the existing underground transmissions cables that pass through the Site to avoid potential impacts on this infrastructure.

8.99 No major sources of electro-magnetic fields (such as high voltage transformers or electricity transmission line/cables) are proposed as part of the Development.

Appendix A – Cumulative Schemes

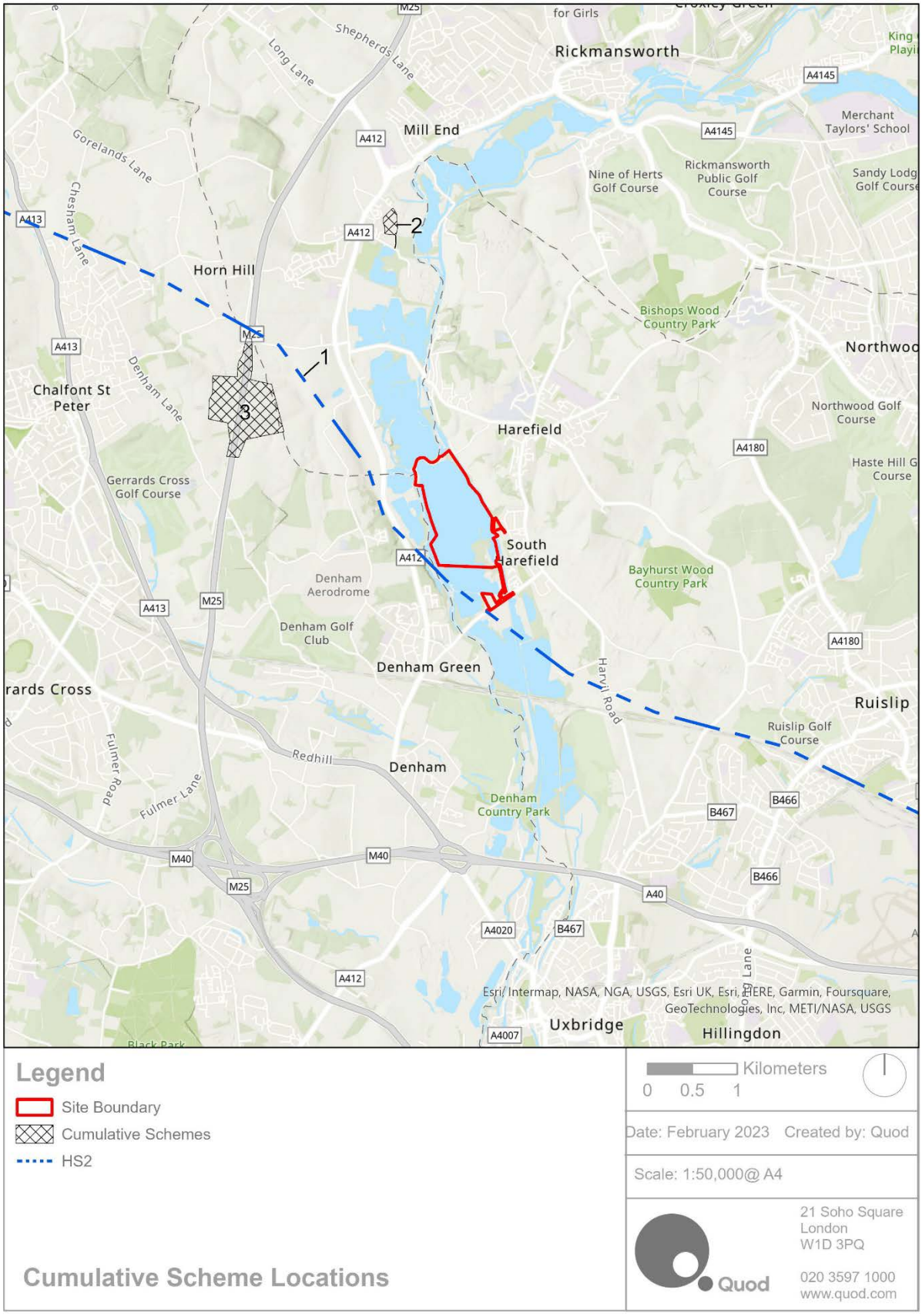
Table A1: Cumulative Schemes

Number	Reference (Local Planning Authority)	Address	Description	Approximate Distance from Site	Status
1	N/A	HS2 (Colne Valley Viaduct)	More than 3.4km (2 miles) across a series of lakes and waterways between Hillingdon and the M25, the Colne Valley Viaduct will also be the longest railway bridge in the UK. The viaduct will carry the new high-speed line across a series of lakes and waterways on the north west outskirts of London, and will be almost a kilometre longer than the Forth Rail Bridge.	100m west	Phase One of HS2, involving the construction of the proposed scheme between London and the West Midlands, is expected to take place between 2017 and 2026 (including a period of testing and commissioning). The duration, intensity and scale of construction along the route will vary over this period but passenger services will be provided by high speed trains from 2026.
2	21/0061/NONDET Three Rivers Council	Development Site Maple Lodge Maple Lodge Close Maple Cross Hertfordshire	Comprehensive redevelopment to provide 2 no. warehouse Class E(giii)/B2/B8 units comprising a total of 16,115 sqm including 1,882 sqm ancillary E(gi) office space, access, landscaping and associated works	2.8km north	Appeal allowed subject to conditions 20 May 2022

Number	Reference (Local Planning Authority)	Address	Description	Approximate Distance from Site	Status
			Original proposal was refused due to: - loss of trees and failure to demonstrate other protected trees would not be harmed. - Failure to meet requirements of policies CP1, CP8 and CP10 of the core strategy and NPFF - Failure to demonstrate that surface water run off could be adequately handled - failure to demonstrate piling and dewatering of the site would not have an adverse impact on the amount and quality of groundwater. - Application did not provide net gain for biodiversity and failed to meet policies of CP1 and CP9 of the core strategy, policy DM6 of development Management Policies LDD and NPPF. - Development would be visually intrusive and unneighbourly - development would detract from the overall appearance of the wider landscape.		
3	PL/19/0952/EIASO & PL/22/1411/OA –	Land Between Junctions 16 and 17 Of The	Outline Application for the erection of a Motorway Service Area with all matters reserved with the exception of access	1.8km north west	Scoping response received – 19 03/2019

Number	Reference (Local Planning Authority)	Address	Description	Approximate Distance from Site	Status
	Chiltern & South Bucks	M25 Chalfont Lane West Hyde Hertfordshire	from the M25, comprising a facilities building, fuel filling station, electric vehicle charging, service yard, parking facilities, vehicle circulation, landscaping, amenity spaces, Sustainable Drainage Systems (SuDS)/attenuation, retaining structures and associated mitigation, infrastructure and earthworks/enabling works		Outline application validated - 04/05/2022

Figure A.1 Cumulative Scheme Location



Appendix B – Structure of ES Technical Chapters

Introduction

The introduction will provide a brief summary of what is considered in the chapter and will state the author and/or relevant technical contributor and their competence.

Legislation, Planning Policy and Guidance

This section will summarise the relevant planning policy, legislation and guidance that form the context for the topic in bullet point form to minimise length. A detailed review of relevant planning policy, legislation and guidance will be provided as an Appendix to the chapter or within the supporting technical report within Volume II of the ES.

Assessment Methodology

The assessment methodology section in each chapter will provide an explanation of methods used in undertaking the technical assessment and the prediction of effects. Reference will be made to published standards, professional guidelines and best practice of relevance to the topic.

This section will also describe any topic-specific significance criteria applied in the assessment, particularly where these differ from common or generic criteria applied elsewhere in the ES. However, wherever possible, a common scale and language for assessing effects will be applied.

Consultation undertaken as part of the assessment to agree scope or methodology will be set out in the chapter. Where appropriate, it will describe the assumptions and limitations related to the assessment of the topic and any constraints to undertaking the assessment.

Baseline Conditions

A description of the environmental conditions that exist in the absence of the Development both now and, where relevant, those that are projected to exist in the future will be provided. The results of baseline surveys and desktop research will be summarised in this section.

Relevant receptors to the specific topic-based effects (e.g. noise, air quality) will be described, together with an indication of the relative sensitivity of these receptors to such effects. Comment will also be made on the future baseline conditions as required by the EIA Regulations.

Scheme Design and Management

This section will present the embedded design and / or management measures that will form part of the Development to avoid, prevent, reduce or offset environmental effects. These measures will be clearly defined to ensure transparency and to ensure that the impact assessment does not assess a scenario that is unrealistic in practice.

Construction

This section will present the assessment of potential effects/ impacts that are predicted to occur during the construction phase. Mitigation measures, over and above those included in the Outline CEMP will also be presented, together with residual effects.

Completed Development

This section will present the assessment of potential effects that are predicted to occur once the Development is complete and occupied together with the mitigation and residual effects.

Cumulative Effects

This section will present the assessment of potential cumulative effects with other projects in the vicinity that are predicted to occur during both the construction and completed Development phases together with the mitigation and residual effects.

Summary

This section will include a tabulated summary of the potential effects, mitigation measures and residual effects. The potential mechanisms by which the proposed mitigation measures will be implemented (e.g. CEMP, specific planning conditions or Section 106 obligations) will be specified, where appropriate.