Brookfield Riverside

Request for an EIA Scoping Opinion

June 2022

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Contents

Tables

Appendices

A. FIGURES

1. Introduction

1.1 Background

Sovereign Centros (herein the 'Applicant') is preparing to submit an outline planning application for the redevelopment of the Brookfield Riverside site in Cheshunt, Broxbourne (herein the 'Site'). The Site, which comprises a mix of brownfield and greenfield land, covers an area of approximately 25.82 hectares (ha) and falls within the administrative boundary of Broxbourne Borough Council (BBC). The location of the Site is shown on **Figure 1**.

Whilst the redevelopment (herein the proposed 'Development') is still undergoing a process of iterative design in consultation with BBC, Hertfordshire County Council (HCC) and other stakeholders, the draft description of the proposed Development is as follows:

Demolition of all buildings and structures associated with the New River Trading Estate, Turnford Household Waste Recycling Centre, Halfhide Lane Gypsy Site and Halfhide Lane Allotments for the development of retail, financial & professional services, cafes & restaurants, indoor recreation & fitness and employment floorspace (Use Class E); bars, hot food takeaways and cinema (Sui Generis); hotel (Use Class C1); civic centre with ancillary uses (Use Class E, F.1 & F.2); elderly persons' accommodation (Use Class C2); residential dwellings (Use Class C3); and associated surface and decked car parking and landscaping, together with the creation of a new link road and spine road between the Turnford Interchange and Halfhide Lane with associated cycle and pedestrian facilities including upgrades to existing routes beneath the A10; bridge crossings over New River; highways works to Halfhide Lane and The Links including improved bus stop, cycle and pedestrian facilities; new electrical substation; associated landscaping earthworks/recontouring, tree felling and boundary treatment.

The planning application will be for outline planning permission with all matters reserved except for access. The planning application boundary is shown on **Figure 2**.

The proposed Development is part of the 'Brookfield Masterplan' which includes the redevelopment of three main sites-

- Brookfield Riverside;
- Brookfield Garden Village; and
- Cheshunt Golf Course.

Three separate planning applications for the Site are to be submitted to BBC in Summer 2022.

This report has been prepared by Waterman Infrastructure & Environment Ltd (hereafter 'Waterman') and comprises a request for a scoping opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (as amended) (herein the 'EIA Regulations 2017').

1.2 Environmental Impact Assessment

The Ministry of Housing, Communities and Local Government (MHCLG)'s Planning Practice Guidelines state that the purpose of EIA is to:

"protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process."

The proposed Development is not Schedule 1 development under the EIA Regulations 2017, for which

1 HMSO (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

EIA would be mandatory. It is however a Schedule 2 development (which falls under project category 10b, *urban development projects*), for which EIA is required where a development is likely to have significant effects on the environment by virtue of factors such as its nature, size and location. The proposed Development exceeds the 150 dwelling threshold, requiring an EIA.

The Applicant intends to voluntarily submit an Environmental Statement (ES) – the product of the EIA process – alongside the planning application. As such, the Applicant has not sought an EIA screening opinion from BBC.

1.3 EIA Scoping

'Scoping' refers to the process of identifying those environmental aspects that may be significantly affected by the proposed Development. It is an important, though optional exercise that aims to focus the EIA and resulting ES on key issues – those to be 'scoped in' – and avoid unnecessary or over-complicated examination of minor or perceived issues – those to be 'scoped out'.

In accordance with Regulation 15(2) of the EIA Regulations 2017, this request for an EIA scoping opinion includes:

- a plan sufficient to identify the land;
- a brief description of the nature and purpose of the proposed Development, including its location and technical capacity; and
- an explanation of the likely significant effects of the proposed Development on the environment.

The opportunity has also been taken to provide additional information to BBC that sets out:

- the proposed approach to the EIA;
- the consultation that will be undertaken as part of the EIA; and
- the intended structure of the ES.

1.3.1 September 2020 EIA Scoping Request

A request for an EIA Scoping Opinion for the proposed Development was originally submitted to BBC in September 2020 (Ref: WIE16725-100-R.2.1.0_EIA Scoping Report, herein referred to as the 'September 2020 Scoping Opinion Request'), this was followed by an informal Scoping Opinion from BBC dated 8th December 2020 (Ref: ENQ/20/0221, herein referred to as the 'December 2020 Informal Scoping Opinion').

This revised request for an EIA Scoping Opinion, replaces the September 2020 Scoping Opinion Request, taking into consideration changes to the redline application boundary, the nature of the planning application, any changes to the proposals and the previous December 2020 Informal Scoping Opinion.

Feedback from BBC, presented in the December 2020 Informal Scoping Opinion, was mostly in agreement with the findings of the September 2020 Scoping Opinion Request apart from the following –

- Waste – consideration of the re-provision of the current household recycling facilities was requested, this will be addressed in the ES and is discussed further in **Section** Error! Reference source not f ound. of this report.
- Wind – BBC requested a wind microclimate assessment be undertaken, this will be included as part of the ES with details provided in **Section 4.15** of this report.
- Risk of Major Accidents and/or Disasters – consideration of future security threats and the presence of the 14 inch fuel pipeline was requested by BBC. This topic has been further addressed in **Section 6.1** of this report.
- The assessment of additional cumulative schemes was suggested, all of which have now been

included within the cumulative effects assessment, further detailed in **Section 4.16** of this report.

1.4 Competent Experts

Regulation 18(5) of the EIA Regulations 2017 states that:

"In order to ensure the completeness and quality of the environmental statement—

(a) the developer must ensure that the environmental statement is prepared by competent experts; and

(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts."

The ES will include details for the key contributors to the EIA/ES. **Table 1** lists the consultancies that have been appointed to undertake the technical assessments required to inform the EIA and resultant ES.

Table 1: Technical Areas and Appointed Consultants

Technical Area	Organisation
EIA Management & Coordination	Waterman
Socio-economics	CBRE
Transport & Access	Mayer Brown
Noise & Vibration	Tetra Tech
Air Quality	Tetra Tech
Greenhouse Gas Emissions and Climate Change	Hoare Lea
Ecology	Waterman
Water Resources & Flood Risk	Waterman
Ground Conditions & Contamination	Waterman
Historic Environment	Waterman
Landscape & Visual Effects	Waterman
Waste	Waterman

Waterman are registrants on the Institute of Environmental Management and Assessment (IEMA)'s EIA Quality Mark Scheme, which provides external accreditation of our environmental statements and EIA project management processes. Further information on the EIA Quality Mark scheme can be found here: https://www.iema.net/recognition/eia-quality-mark.

2. The Site and Development

2.1 Site Location, Setting and Existing Land Uses

The Site, which is approximately centred on Grid Reference TL35790458, is located to the north west of Cheshunt, Hertfordshire. It is bound to the east by the A10; to the north by open fields; to the west by Hell's Wood, a designated ancient woodland, and Cheshunt Golf Course; and, to the south by the Brookfield Centre and Brookfield Shopping Park, both retail parks comprising a number of different retail outlets, including Tesco Extra, Marks and Spencer, JD Sports and Boots, as well as surface level car parking.

The Site is bisected by the New River, which crosses the Site from east to west, with the area to the north and west being greenfield in nature and the area to the south being brownfield in nature. The New River is an open watermain, managed by Thames Water (as opposed to a natural watercourse). The indicative planning application boundary is shown in **Figure 2**.

To the north and west of the New River, the Site comprises:

- Land to the east of the A10 and west of Winnipeg Way, to accommodate a southern slip road from the Turnford Junction to the A10;
- The western arm of the Turnford Junction roundabout, to the west of the A10;
- Dense scrub, scattered trees, mature woodland (some of which is designated under Tree Protection Order), open grassland and meadow habitats including two Local Wildlife Sites on Site including Watercress Trot and Turnford Junction Meadow West;
- Several small water bodies; and
- Turnford and Wormley Brooks;

To the south and east of the New River, the Site comprises:

- Allotment gardens to the north of Halfhide Lane;
- A Gypsy site to the north of Halfhide Lane;
- The New River Trading Estate, which comprises a number of small commercial buildings and the Turnford Household Waste Recycling Centre; and
- A short section of Halfhide Lane to the west the Brookfield Centre.

2.2 Sensitive Environmental Receptors

There are a number of sensitive environmental receptors and environmental constraints which currently exist in the immediate vicinity of the Site. These include, but are not limited to:

- **Residential receptors**: The majority of these are separated from the Site by significant buffers such as mature woodland, the A10, the New River and the Cheshunt Golf Course. Residential receptors include Wormleybury Manor and other private residences to the north of the Site; the main urban conurbations of Wormley and Turnford to the East of the A10, the Halfhide Lane Caravan Park adjacent to the southern-most extent of the Site and several farms and private homes along Park Lane Paradise to the west of the Site.
- **Gypsy site**: Located within the southern boundary of the Site, off Halfhide Lane.
- **Local Facilities:**

- There are several educational facilities in proximity to the Site, including Flamstead End School and St Paul's Catholic School in Flamstead End (1.25m south west), Wormley Primary School (1.6km north east), Longlands Primary School (0.6km south east), Hertford Regional College (0.5km east), Churchfield C of E Primary School in Wormley (0.68km south east) and Turnford School (0.98km south east).
- There are three GP surgeries in close proximity to the Site in Wormley (1km north east), Turnford (0.16km east) and Flamstead End (1.4km south west).
- A retail centre including supermarket and petrol station to the immediate south of the Site with further retail facilities in Broxbourne to the north and Cheshunt to the south.
- A footpath (Public Right of Way (PROW)) starting in the south western boundary of the Site and follows the course of the New River across the Site under the A10 in the east.
- The nearest bus stop is located within the Brookfield Centre (0.2km south of the Site), with other bus stops along High Road, Turnford (the closest being 0.5km east of the Site);
- The nearest National Rail services are Cheshunt (2.2km south east) and Broxbourne Station (3km north east).

- **Heritage Features / Conservation areas:** There are two Scheduled Monuments in close proximity to the Site: Hell's Wood moated site and enclosure, and Perrior's Manor moated site and fishpond. There are also 31 Listed buildings within 1km of the Site, the closest of which is Cheshunt Park Golf Club (0.5km west), and Wormleybury Registered Park and Garden (circa 0.63km north of the Site).
- **Ecology/Biodiversity:**
  - Ancient Woodland at Hell's Wood, directly West of the Site boundary;
  - Block of mature and semi-natural woodland within the Site boundary in the west.
  - Lee Valley Special Protection Area (SPA) and RAMSAR site and the Turnford and Cheshunt Pits Site of Special Scientific Interest (SSSI) approximately 0.85km to the east of the Site boundary. This area comprises a series of wetlands and reservoirs which support a range of wintering wildfowl.

- **Surface, Groundwater and Water Resources:** There are several recognised water courses both in and adjacent to the Site. The New River crosses the closest to the centre of the Site, the Turnford Brook and Wormleybury Brook crosses the north part Site. Cheshunt Reservoir also lies 0.7km south west of the Site. The Site is located within groundwater Source Protection Zone 1.

In addition to the existing receptors set out above, there are also future residential and retail receptors proposed as part of the proposed Development.

2.3 Planning Context, Planning History and Need for Redevelopment

2.3.1 Planning Context

The Broxbourne Local Plan 2018-2033 was adopted in June 2020. The plan focuses on developing a number of strategic sites with new homes focused on suitable urban and edge of urban sites to make the best use of land and to help regenerate neighbourhoods and through the strategic release and allocation of Green Belt sites.

The Development Strategy Policy is as follows:

Policy DS1: The Development Strategy

Provision will be made for at least 7,718 homes in the period 2016-2033, as set out in the housing trajectory.

Provision will be made for between 5,000 and 6,000 net additional jobs focusing on Brookfield, Park Plaza, Cheshunt Lakeside and the town centres;

Provision will be made for approximately 24,000 square metres of new retail development and approximately 10,000 square metres of new leisure development, primarily at Brookfield Riverside.

Strategic development sites will be at Cheshunt Lakeside, Waltham Cross High Street North, Brookfield Riverside, Brookfield Garden Village, Rosedale Park, High Leigh Garden Village, and Park Plaza. Provision will be made for five new primary schools and a new secondary school, subject to the conclusions of the Secondary School Sites DPD (policy INF10).

Provision will be made for road, rail, educational and other infrastructure. The countryside, the Green Belt and the Lee Valley Regional Park will be protected and enhanced.

Brookfield Riverside is one of the main components of the Development Strategy:

"The Local Plan seeks to strengthen the identity of the Borough by expanding and improving the Brookfield centre by extending Brookfield northwards up to and beyond the Turnford junction on the A10. Centred on the New River, this retail and commercial hub will be called 'Brookfield Riverside', and will consist of a vibrant centre to complement the Borough's existing towns. It will include modern shopping and leisure facilities including a department store, cinema, cafes and restaurants, and feature a civic centre, health centre, bus station, and about 250 apartments and elderly people's accommodation within a mixed use and green environment."

Brookfield Riverside has its own specific policies, namely Policies BR1, BR3 and BR4:

Policy BR1 Brookfield Riverside

Brookfield Riverside will provide up to 19,000 square metres net comparison retail floorspace; approximately 3,500 square metres convenience floorspace; up to 10,000 square metres of leisure floorspace; approximately 12,500 square metres local office floorspace; approximately 250 new homes (40% of which should be affordable); elderly persons' accommodation; and a civic centre.*

I. *Upon implementation Brookfield Riverside will assume town centre status and ultimately be designated as a town centre in accordance with policy RTC1. Therefore, the design, layout and scale of development should ensure that the uses proposed in part I, along with the existing retail, create a new high quality town centre. This will require the following: a) a high density mix of civic uses, retail and leisure, including office and residential development above, to maximise street-level pedestrian activity and the night-time economy; b)clearly defined character areas and landmark structures to create a strong sense of identity and assist with navigation; c) creation of at least two major linked public spaces, one of which should be focused on the New River; d) car parking to meet the needs of the development; e) exceptional quality public realm including extensive planting and landscaping; f) integration with the existing retail offer, both in terms of the orientation and layout of development and in terms of connectivity and movement as set out in Policy BR5; and g) the scale and type of new retail units should complement the existing shops to create an overall mix that would ensure the vitality and viability of the proposed town centre.*

II. *Relocation sites for the Halfhide Lane allotments, Council depot and household waste recycling centre will be provided in accordance with policy BR3, and if necessary and justified a site for the relocation of the existing Halfhide Lane Traveller site will also be provided in accordance with policy BR4.*

III. *Development proposals within Brookfield Riverside must be in accordance with the requirements set out in Policies BR5, BR6, and BR7.*

**This is inclusive of 2,000 square metres net comparison retail floorspace that has been granted planning permission at Brookfield Retail Park.*

Policy BR3: Brookfield Relocations

In order to achieve the development of Brookfield Riverside, existing land uses within the proposed development area will be relocated as follows: a) the Halfhide Lane allotments will be relocated adjacent to Brookfield Garden Village north of Cheshunt Park as shown on the concept plan; b) the Council depot and the household waste recycling centre will be relocated from the New River Trading estate to a location north of the Turnford interchange as shown on the Concept Plan.

Policy BR4: Halfhide Lane Traveller Site

An assessment of options for a link road between Halfhide Lane and the Turnford Interchange to inform the masterplanning process should be undertaken. The assessment should determine whether or not an appropriate link road can be delivered, and the sustainable development of Brookfield Riverside achieved in accordance with policy BR1, without necessitating the relocation of the existing Traveller site.

I. If the assessment in part I of this policy concludes that relocation is essential, an assessment of options for a replacement site within the Garden Village should be undertaken in accordance with the following criteria:

i. Site requirements including the ability to meet the identified future accommodation needs and provision of a suitable paddock area;

ii. accessibility to services and facilities including the potential to provide safe and convenient walking and cycling connections;

iii. deliverability of the site;

iv. constraints including air quality, heritage, ecology, noise, landscape and topography, flood risk, drainage, ground conditions, and utilities provision;

v. compatibility with neighbouring uses including integration within the wider masterplan for Brookfield;

vi. impacts on the amenity of existing site residents; and

vii. vii. the ability of potential mitigations to satisfactorily address any of the above.

II. The foregoing assessments should be undertaken in consultation with the Halfhide Lane residents and other interested parties.

The following policies are also of relevance to the redevelopment of Brookfield Riverside:

Policy BR2: Brookfield Garden Village

I. Subject to meeting the requirements of policy BR6, Brookfield Garden Village is expected to provide approximately 1,250 new homes (40% of which should be affordable); elderly persons' accommodation; a primary school providing 3 forms of entry; open space for leisure and recreation; and a neighbourhood centre containing local shop(s) and facilities, as shown on the Concept Plan.

II. In accordance with policy BR3, the garden village will accommodate the relocated Halfhide Lane allotments as shown on the Concept Plan, and if necessary the relocated Halfhide Lane Traveller site in accordance with policy BR4.

III. Development proposals within Brookfield Garden Village must be in accordance with the requirements set out in Policies BR5, BR6, and BR7.

Policy BR5: Transport and movement in the Brookfield area

I. The following highway interventions require early delivery as part of the comprehensive development of Brookfield Riverside and Brookfield Garden Village:

i. construction of a Halfhide Lane to Turnford Interchange link road (the 'Turnford Link Road'),

together with provision of a new western arm at the A10 Turnford Interchange, as shown on the Concept Plan. The road design and layout will facilitate safe pedestrian and cycle crossings between the Garden Village, Riverside, Brookfield Retail Park and Brookfield Centre. The alignment of the road will be determined in accordance with Policies BR4 and BR6;

ii. The Garden Village distributor road, which should take the form of a treelined boulevard providing access to all parts of the development for buses, bicycles and private vehicles. The alignment and design of the road will ensure multiple safe crossing points for people and for wildlife at key desire lines, as well as preserving mature trees; and

II. Sustainable transport and modal shift will be facilitated through provision of the following:

i. a frequent bus service through the development connecting with Cheshunt station, Waltham Cross, and Hertford Regional College;

ii. pleasant and safe pedestrian links to ensure integration within the town centre environment, including with the existing retail park; with Brookfield Garden Village and with existing residential areas on both sides of the A10; and

iii. new cycle paths east-west under the A10 at Turnford Brook, the New River, and at Halfhide Lane; to the Garden Village; and along the New River to existing residential areas of west Cheshunt.

III. Other measures should be provided in accordance with the Broxbourne Transport Strategy and Policy INF2.

Policy BR6: The Environment and Landscape of the Brookfield Area

Natural Environment

I. Development should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks. Planning applications should demonstrate how evidence has informed the extent of the development, including the layout and design of wildlife corridors, and appropriate measures for undeveloped areas, in particular to provide for the continued occupation of active badger setts within and in the vicinity of Brookfield Garden Village.

Historic Environment

I. A heritage impact assessment will be undertaken to inform the masterplanning process for Brookfield Garden Village and road layout. This should identify the significance of all relevant heritage assets and their settings and be used to help determine the detailed extent, scale, density, layout and landscaping of development and mitigation measures necessary to prevent harm.

Landscape

I. New community woodland will mitigate any visual impacts on the wider countryside, and the valley of the Turnford Brook will form an important piece of strategic green infrastructure in accordance with policy NEB3. Natural and semi-natural greenspace will be provided through a masterplan-led approach, and should maximise benefits to the natural and historic environment.

Policy BR7: Integrated development of Brookfield

I. Brookfield will be developed as a sustainable and integrated garden suburb in accordance with the requirements set out in policies BR1, BR2, BR3, BR4, BR5, and BR6 to be incorporated within integrated master plans.

II. The Brookfield area, as shown in Figure 3, will be subject to a masterplan covering the whole area, setting out the quantum and distribution of land uses; access; sustainable high quality design and layout principles; necessary infrastructure; the relationship between the site and other adjacent and

nearby land uses; landscape, heritage and biodiversity assets; and other relevant matters.

III. In order to ensure that the area is planned and delivered comprehensively, any application for development on all/part of the Brookfield area will be assessed against its contribution to the overall comprehensive masterplan for Brookfield.

IV. If necessary, compulsory purchase will be pursued by the Council.

2.3.2 Planning History

BBC's planning portal reveals the following planning applications relevant to the Brookfield Riverside proposals:

- **07/11/0382/O**: outline planning permission for the construction of a Gypsy and Traveller Site and use of land as allotments to the south of Hell Wood as a replacement for the existing Halfhide Lane sites.
- **07/13/0065/O**: outline planning permission was granted for the construction of a link road from Halfhide Lane to the A10 Turnford Interchange roundabout.
- **07/16/0930/O**: outline planning permission was granted for the construction of a Gypsy and Traveller site and use of land as allotments to the south of Hell Wood as a replacement for the existing Halfhide Lane sites. This application was submitted to renew the permission granted under 07/11/0382/O, but was not implemented.

2.3.3 The Need for Development

The need for the proposed Development is established in the recently adopted Local Plan (June 2020) in policies DS1 and BR1-BR7, as set out in **Section 2.3.1**.

Sovereign Centros are working in partnership with the BBC and HCC to develop the Brookfield Riverside scheme.

2.4 The Development

Whilst the plans are still evolving, sufficient detail is known about the proposed Development to allow the scope of the EIA to be agreed.

The draft description of the proposed Development is as follows:

Demolition of all buildings and structures associated with the New River Trading Estate, Turnford Household Waste Recycling Centre, Halfhide Lane Gypsy Site and Halfhide Lane Allotments for the development of retail, financial & professional services, cafes & restaurants, indoor recreation & fitness and employment floorspace (Use Class E); bars, hot food takeaways and cinema (Sui Generis); hotel (Use Class C1); civic centre with ancillary uses (Use Class E, F.1 & F.2); elderly persons' accommodation (Use Class C2); residential dwellings (Use Class C3); and associated surface and decked car parking and landscaping, together with the creation of a new link road and spine road between the Turnford Interchange and Halfhide Lane with associated cycle and pedestrian facilities including upgrades to existing routes beneath the A10; bridge crossings over New River; highways works to Halfhide Lane and The Links including improved bus stop, cycle and pedestrian facilities; new electrical substation; associated landscaping earthworks/recontouring, tree felling and boundary treatment

The planning application will be for outline planning permission, with all matters reserved, except for access.

The number of residential dwellings and elderly persons' accommodation units, and the maximum floorspace for non-residential uses within each use class will be controlled through the development schedule submitted alongside the planning application. These are set out in **Table 2** and **Table 3** and will

be used for the purposes of the EIA/ES.

Table 2: Number of residential dwellings and elderly persons' accommodation units

Type	No. of Units
Residential Dwellings	250
Elderly Persons' Accommodation	130

Table 3: Maximum floorspace for non-residential uses

Use	Use Class	Max. Floorspace (sqm)
Retail (Comparison)	E	25,935
Convenience Retail	E	4,778
Leisure	D2	13,650
Restaurants	E- Sui Generis	8,153
Office	E	15,750
Hotel	C1	8,691
Civic Centre	E, F.1 & F.2	4,567
Total		**81,524**

Whilst the masterplan is still subject to an iterative design process, an illustrative masterplan showing the proposed route of the new link road and the layout of the Development is provided in **Figure 3.**

3. Consultation

Consultation with relevant bodies assists in ensuring that all relevant environmental issues are identified, together with the likely significant environmental effects of the proposed Development. This enables the EIA to operate as part of an iterative process whereby environmental issues are identified and considered as part of the design process. In this way, the proposed Development design can be refined through the incorporation of mitigation measures serving to limit its adverse effects and enhancing its beneficial effects.

Consultations have been and will continue to be undertaken as part of the design and EIA process, and will include (but not necessarily limited to) the following organisations:

- BBC – Planning;
- BBC – Environmental Health;
- BBC- Waste;
- HCC Waste;
- HCC – Highways;
- HCC – Drainage;
- HCC – Heritage;
- Natural England;
- Environment Agency;
- Historic England;
- Network Rail;
- Herts and Middlesex Wildlife Trusts;
- Hertfordshire Constabulary;
- Local residents, local landowners and local businesses; and
- A range of utility companies, including:
  - Thames Water (Water Mains and Sewers);
  - Energetics (Electricity)
  - UK Power Networks (Electricity)
  - Utility Assets Ldt (Electricity)
  - GTC (Gas)
  - Cadent Gas (Gas)
  - Mast Data (Mobile Phone Masts)
  - BskyB (Telecom)
  - BT (Telecom)
  - C.A. Telecom-Colt (Telecom)
  - City Fibre (Telecom)
  - euNetworks (Telecom)
  - Instalcom Ltd (Telecom)
  - KPN (Telecom)
  - Telent NFTS (Telecom)

- MBNL (Telecom)
- Trafficmaster (Telecom)
- Verizon (Telecom)
- Virgin Media (Telecom)
- Vodafone (Telecom)
- SSE (Telecom)
- HSE (Various)
- LinsearchbeforeUdig – BPA (Various)
- ENGIE (District Energy)
- HCC (Street Lighting)

4. What the ES Will Consider

4.1 Introduction

This section sets out the proposed content of the ES. This has been informed by baseline data collection, preliminary assessment work, consultation undertaken to date and the professional judgement and experience of the consultant team.

4.2 The Development

As required by the EIA Regulations 2017, the description of the proposed Development contained within the ES will include a factual description of the following:

- Building layout and siting illustrated within Development plots;
- Building height and massing shown using maximum parameters;
- Building façades illustrated using 'grey blocks' to provide a 'worst case';
- The quantum and distribution of different land uses, including the maximum number of residential units and quantum of non-residential floorspace (by use class), and, where appropriate, the tenure of residential units;
- Vehicular, pedestrian and cycling accesses and routes through the Site, as well as a description of any highways works required;
- Outline proposals for soft and hard landscaping (including proposals for ecological enhancements);
- Drainage strategies (both surface water and foul water);
- Waste management proposals for the completed and operational Development;
- Building services plant with an indication of emissions; and
- Sustainability measures embedded within the design.

4.2.1 Parameter Plans

The Development will be controlled through a series of parameter plans, which will be used to form the basis of the assessments contained within the ES, using the 'Rochdale Envelope' approach. This approach is employed where the nature of the Development means that some details of the whole project have not been confirmed (e.g. the exact dimensions of buildings) when the application is submitted, and where flexibility is sought to address market uncertainties etc. For example, this might include the landscape and visual impact assessment being undertaken on the basis of maximum building envelopes, with wirelines covering each of the development plots (including horizontal and vertical deviations).

It is envisaged that the following parameter plans will be submitted alongside the planning application:

- Existing Site
- Building Siting
- Block Height
- Block Uses/ Land Uses
- Public Realm Access and Means of Access and Circulation

Further parameter plans may also be produced following ongoing consultation with BBC.

4.2.2 Associated Development

The ES will also assess any 'associated development', i.e. that which is required to facilitate the redevelopment of the Site, but which falls outside the redline boundary. This might include highways improvements, utilities upgrades.

The ES will also consider the combined effect of the wider Brookfield Masterplan. A cumulative assessment of the Brookfield Riverside, Brookfield Garden Village and the Cheshunt Golf Course schemes would be undertaken, providing the in-combination environmental effects of the Brookfield Masterplan on the environment. This would be in addition to the Cumulative Effects assessment, described further in Section 4.17, which takes into consider other relevant development proposals within the study area.

4.2.3 Assessment year for the operation of the Development

Based on the indicative construction programme, the proposed Development is anticipated to be fully operational by 2026. This will be used as the 'opening year' of the scheme for the purposes of the operational assessments. The transport modelling assessment will also include a 2033 'future year' assessment, to coincide with the planned introduction of Crossrail 2 services to the local area.

4.3 Alternatives

In accordance with the EIA Regulations 2017, the ES will present a description of the reasonable alternatives to the proposed Development that were considered by the Applicant prior to selection of the final scheme. This description will include details regarding the proposed Development design, locations, size and scale of reasonably considered alternatives, and an indication of the main reasons for the selection of the chosen option, including consideration of environmental effects.

The ES will therefore include a description of the following:

- The **'do nothing' scenario:** The consequences of no development taking place. Due to the planning context of the Site (refer to **Section 2**), this scenario is considered unlikely. However, with respect to the current state of the environment (the baseline conditions) the EIA Regulations stipulate an ES must provide *"…an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed…"*; and
- **Alternative designs:** A summary of the main alternatives considered, such as alternative alignments for the link road, mixes of land-uses, alternative building layouts, alternative building scales and other design matters. The consideration of the highway alignment has been prominent in early discussions with BCC and HCC and has been the single biggest factor in the development of the masterplan to date.

The Applicant has not considered, and would not consider, any alternative sites for the proposed Development as the proposals are specific to the Site and local needs and demands. Accordingly, alternative sites will not be considered within the ES.

4.4 Demolition and Construction Works

The ES will include a description of the following aspects in relation to the demolition and construction works (herein the 'Works'):

- Programme, sequencing and indicative phasing;
- Likely methods of demolition and construction, including types of piling and foundations likely to be employed;

- Construction traffic routing; and
- Working hours.
- access and routing of construction vehicles and estimated number of demolition and construction vehicle movements; and

The ES will also consider the likely environmental effects associated with the demolition and construction works, such as dust, noise, and traffic generation. Where appropriate, mitigation measures will be outlined to offset, reduce and eliminate any significant adverse effects.

It should be noted that each technical assessment within the ES will also consider effects generated by the Works specific to the topic area being assessed.

4.4.1 Assessment Year for Construction

The Applicant currently envisages the proposed Development to be built out in a single phase, with works commencing in 2024 and finishing in 2026. The ES will use 2025 as the assessment year for construction works.

The number of construction vehicle trips has been estimated by Mayer Brown, the project transport consultants, based on the Construction Traffic Research Report[2], which provides an estimate for the number of trips per £100,000 of project value. The total number of trips derived using this methodology will be averaged over the construction period, taking into account the number of days and number of hours worked, which will be set out in **Chapter 6 Construction Strategy & Programme**.

4.4.2 Construction Environmental Management

The Applicant will require the contractor to implement a Construction Environmental Management Plan (CEMP) to manage environmental effects during construction. It is expected that the requirement for a CEMP would be secured by way of a suitably worded planning condition.

Chapter 6 Construction Strategy & Programme of the ES (Section 6) will set out the guiding principles and framework to inform the CEMP, referencing appropriate mitigation put forward by each of the technical specialists. It will be for the appointed contractor to identify the details of how construction will be managed on-Site in line with these guiding principles.

4.5 Socio-economics

4.5.1 Baseline Conditions

Population

According to 2011 Census data, the BBC had a resident population of 93,609 at that time, representing a growth of 7.3% from the 2001 Census (87,200)[3].

The proposed Development is anticipated to grow the local population by accommodating new residents on-Site once operational.

Employment

Total employment across the borough was reported to be 35,000 in 2018, of which 23,000 (67.6%) were in full-time employment and 12,000 (35.3%) were in part-time employment[4].

2 TRICS, 2008: Construction Traffic Research Report
3 Office for National Statistics, 2011. 2011 Census.
4 NOMIS (Official Labour Market Statistics), 2020. Labour Market Profile – Broxbourne.

Housing

According to 2011 Census data[3], the BBC had a total of 39,192 residential properties.

Education Facilities

Approximately 37 schools, including primary and secondary schools, are located within three miles of the Site.

Health Facilities

There are 15 GP surgeries located within three miles of the Site.

4.5.2 Likely Significant Effects

It is anticipated that the proposed Development is likely to generate the following significant effects:

- Creation of operational employment, considering the gross employment as well as net additional above any existing employment levels on-Site;
- The provision of housing including the required types and tenures, taking into consideration the existing Traveller site and the proposed elderly person's accommodation; and
- Improvements in Site safety, taking into consideration the local crime levels.

4.5.3 Likely Insignificant Effects

It is anticipated that, whilst the proposed Development is likely to generate effects that will either be mitigated sufficiently through embedded mitigation measures or will not be of an adequate scale relative to the baseline position to be significant in EIA terms, such effects will still be reported on within the ES to ensure a robust assessment. These effects include:

- The quantum and value of construction work and its anticipated direct and indirect employment generation;
- The demand for education facilities provision to accommodate the anticipated child yield;
- The demand for healthcare facilities provision to serve the proposed Development's forecast population; and
- The demand for open space and playspace to serve the proposed Development's forecast population.

4.5.4 Approach and Methodology

CBRE would undertake a socio-economic assessment of the proposed Development. The proposed methodology will include:

- A review of relevant regeneration and planning policy at national and local levels;
- A summary of the socio-economic baseline conditions at the Site and the LPA (including population, deprivation, housing, employment and economy, schools, primary healthcare facilities, open space provision) using established statistical sources such as the 2011 Census, the English Indices of Deprivation 2019, official labour market statistics from the National Online Manpower Information Service (NOMIS), Public Health England, information from the Applicant, together with consideration of existing land uses on the Site;
- Identification and assessment of impacts, using appropriate modelling techniques where necessary. This will include:
  - A numerical estimate of the Full Time Equivalent (FTE) jobs generated by the demolition and construction;

- A numerical estimate of the FTE jobs generated by the completed and operational proposed Development; and
- A numerical estimate of the future population and child yield resulting from the completed and operational proposed Development.

- An appraisal of the impacts of the proposed Development's additional population on existing primary healthcare facilities, schools, and open space (including children's play space); and
- Identification of appropriate mitigation measures should any adverse impacts be identified.

4.6 Transport and Access

4.6.1 Baseline Conditions

Road Network

The ES and Transport Assessment (TA) will provide details of the traffic surveys used to source the base flows for the transport modelling assessment. The transport modelling assessment will be conducted using Tetra Tech's network SATURN model, and the extent of the network covered in the SATURN model is set out in **Figure 4**. Tetra Tech's SATURN modelling will be supplemented by modelling of individual junctions by Mayer Brown Ltd (MBL) using LinSig and/or Junctions 9.

Tetra Tech's SATURN model utilises 2016/17 survey data at the following junctions:

- A10 Turnford Interchange roundabout
- High Road Turnford / A1170 Great Cambridge Road / Winnipeg Way four arm roundabout
- A1170 Great Cambridge Road / Halfhide Lane / A10 (S) / Marriot Hotel Access four arm roundabout
- The Links / Halfhide Lane signalised crossroads
- Brookfield Lane / Flamstead End Road / Longfield Lane

This data covers the weekday peaks. Tetra Tech will obtain Saturday traffic flows using data obtained from survey companies and data from traffic counters supplied by HCC as an evidence base for growing weekday peak hour traffic at junctions. This will be set out in the ES and TA.

Tetra Tech and Mayer Brown are currently in discussions with BBC and HCC regarding the scope of the traffic modelling work, and therefore the scope of the baseline survey data required.

Public Transport

Except for annual footfall figures at rail stations, baseline levels of public transport usage are unobtainable, as records are held by local operators only. These annual figures are unhelpful for assessing peak hour impacts on rail or bus services, and due to the COVID-19 situation which has affected transport usage and passenger levels (both have not returned to their prior capacity) it is not currently possible for a robust baseline survey to be undertaken as public transport usage.

The ES and TA will therefore set out the existing available public transport services in the proximity of the Site and the frequencies of these services but will not provide information on passenger numbers.

Figure 5 appended to this scoping report indicates the routes of the existing bus services in proximity of the Site, the 242, 310 and 410 services. **Figure 6** provides an extract from the National Rail's 'all stations' map displaying the local routes of the rail services near the Site – specifically those available from Cheshunt and Broxbourne rail stations. These figures (or similar) will be included in the ES and TA to support the information on existing bus and rail services.

Cycle Facilities

Figure 7 provides BBC's local travel map, indicating cycle routes and infrastructure in the vicinity of the Site. This information, as well as brief views of National Cycle Network routes NCN1 and NCN61 which are located within the district will be included in the ES and TA. **Figure 7** clearly indicates that there are numerous traffic-free and advisory cycle routes in close proximity to the Site.

Baseline data on the number of cyclists will be gained only through the junction surveys being commissioned by Tetra Tech. These will be summarised in a high-level view in the TA and the ES, but due to the limited environmental impact of cycles compared to motorised vehicles, will not be investigated in great depth.

Pedestrians

A key consideration of the Proposed Development has been to promote and maximise the use of walking and cycle trips to access the Site in line with the Local Plan and Transport Strategy aims. **Figure 8** provides an extract of the Public Rights of Way map local to the Site and illustrate the existing pedestrian footways in the area. Commentary on the quality of the local pedestrian infrastructure will be included in the TA and ES. This baseline will serve as a comparison for the proposed active travel infrastructure improvements to come forward alongside the proposed Development proposals.

4.6.2 Likely Significant Effects

The Guidelines for the Environmental Assessment of Road Traffic[5] (GEART, 2003) recommend assessment of road links for which the proposed Development generates an uplift in vehicle traffic greater than 30% (or 10% for specifically sensitive areas). Given the scale of the proposed Development, it is considered that this level of uplift may be seen on some road links.

The majority of the other significant and insignificant environmental effects will be assessed only on those areas for which the uplift in vehicle traffic is greater than 30% (or 10% for specifically sensitive areas).

It is anticipated that the proposed Development is likely to generate the following vehicle traffic-linked significant effects. These effects have been sourced from GEART Table 2.1:

- **Noise and vibration** – The impact of vehicle traffic on noise and vibration will be considered in a separate chapter of the ES, as part of a wider noise and vibration assessment. This will therefore not be assessed in the Transport chapter of the ES.
- **Driver delay** – This will be assessed through detailed junction and network modelling, which will be set out in detail in the TA and referred to in the ES.
- **Air pollution** – The impact of vehicle traffic on air quality will be considered in a separate chapter of the ES, as part of a wider air quality assessment. This will not be assessed in the Transport chapter of the ES.
- **Ecological impact** – The impact of vehicle traffic on ecological receptors (e.g. the ancient woodland and Lee Valley Ramsar site and Special Protection Area (SPA) will be considered in a separate chapter of the ES, as part of a wider ecology assessment. This will not be assessed in the Transport chapter of the ES.

In addition to vehicle traffic effects, the proposed Development is also expected to have a significant effect on:

- **Pedestrian amenity** – Due to the comprehensive set of improvements to the pedestrian infrastructure and the introduction of a new significant destination / town centre, pedestrian amenity is expected to increase significantly. This will be reviewed by way of description in both the TA and ES, however a

5 Guidelines for Environmental Assessment of Road Transport (GEART) (2003) (Online) Accessed 03/09/20: http://programmeofficers.co.uk/Cuadrilla2018/CD8/CD8.3.pdf

quantifiable impact assessment is not possible for this effect.

4.6.3 Likely Insignificant Effects

It is anticipated that the proposed Development is likely to generate the following vehicle traffic-linked insignificant effects:

- **Visual impact** – The impact of vehicle traffic on the landscape is not expected to be significant and the impact will be mitigated through the design of Brookfield Masterplan. This will be assessed in a separate chapter of the ES, as part of a wider landscape and visual effects assessment. This will not be assessed Transport chapter of the ES.
- **Severance and pedestrian delay** – The impact of vehicle traffic severance and pedestrian delay is not expected to be significant due to the availability of signalised pedestrian crossing points where pedestrians gain priority regardless of the level of traffic. This will be addressed in the ES and in the TA.
- **Accidents and safety** – This will be assessed in words in the TA and the ES based on the history of traffic incidents in the area but will be mitigated by the high design quality of the proposed Development and the use of road safety audits in the design and implementation stages.

The remaining effects indicated in GEART Table 2.1 column 3 are expected to be impacted to a negligible extent by the proposed Development proposals and will not be assessed. These include 'Hazardous Loads', 'Dust and Dirt' and 'Heritage and Conservation Areas'.

4.6.4 Approach and Methodology

As indicated above, in line with GEART guidance, the effects will be assessed for areas only for which the uplift in vehicle traffic is greater than 30% (or 10% for specifically sensitive areas). The exception to this is the impact on pedestrian amenity, which will cover the new pedestrian infrastructure introduced as part of the proposed Development, as well as the key pedestrian routes between the Site and local destinations (transport hubs, facilities and amenities).

For each of the effects set out above, the environmental impact will be assessed in terms of magnitude and significance. Many of these assessments will be conducted in EIA chapters other than transport, and the methodologies for these are therefore presented later in this scoping report.

- For the likely significant effect ‘Driver Delay’, the effect will be quantified by way of the transport modelling to be undertaken using SATURN, LinSig and Junctions. GEART states that *‘delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system’*. The existing operation of the local highways network will be assessed and determined through baseline traffic modelling. The scope of the Driver Delay assessment will coincide with the scope of transport modelling assessment, and will comprise the junctions and highway network identified under ‘4.6.1 Baseline Conditions - Road Network’ earlier in this report, as well as the Site access and other key local junctions and intersections.
- For the likely significant effect ‘Pedestrian Amenity’, GEART recommends that *‘a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled’*. For the most part, pedestrian amenity will be considered in relation to the new pedestrian infrastructure and addressed in words, however for those existing links with significant traffic flow changes meeting the GEART criteria, the magnitude and significance will be described in relation to the projected change in vehicle traffic and the projected change in pedestrian movements on that link.
- For the likely insignificant effects ‘Severance’ and ‘Pedestrian Delay’, GEART refers to MEA guidance

for severance which *'sets out a range of indicators for determining the significance of the relief from severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing "slight", "moderate" and "substantial" changes in severance respectively'*. It also sets out that there are not absolute thresholds for assessing pedestrian delay. It is therefore considered best to review these topics in words, relating to the 30%, 60% and 90% criteria for any major roads, but considering the impact of available pedestrian crossings, which grant pedestrians priority over vehicles.

- For the likely insignificant effect 'Accidents and Safety', GEART sets out that *'Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents, e.g. junction conflicts'*. The assessment of accidents and safety will consider the entire scoped area for which the uplift in vehicle traffic is greater than 30% (or 10% for specifically sensitive areas), but will focus primarily on points within this with a history of traffic incidents, or where there is a highly significant expected change in the character of the road. This will be primarily assessed in words and using professional judgement.

4.7 Noise & Vibration

4.7.1 Baseline Conditions

The key considerations in relation to the noise and vibration assessment are as follows:

- The existing sensitive receptors including residential properties;
- Proposed sensitive receptors within the study area;
- The baseline noise and vibration conditions in the study area; and
- Suitability of the Site for proposed noise sensitive uses.

Tetra Tech undertook a baseline noise and vibration survey in the area between Thursday 18th May and Monday 22nd May 2017. Attended short term measurements were undertaken at nine locations during the day, evening, and night-time periods with five additional locations being measured unattended over a 93-hour period and one additional location being measured over an 18-hour period. Existing ambient noise levels around the Site were dominated by road traffic noise from the A10 which is located adjacent to the east of the proposed Development. Noise was also audible from Church Lane, West End Road and Park Lane Paradise.

Consultation with BBC (dated 20th August 2020) has been undertaken to confirm the use of this 2017 baseline monitoring noise data, given that current ambient noise levels may be unrepresentative of 'normal' conditions due to the COVID-19 pandemic. We are currently awaiting a response; however, it is considered this baseline data will be acceptable and representative for use for this assessment.

The nearest sensitive receptors to the Site include:

- Residential properties along Vancouver Road;
- Residential properties along Winnipeg Way;
- Residential properties and educational premises along Park Lane;
- Residential properties along Beaumont Road;
- Residential properties along West End Road; and
- Cheshunt Marriott Hotel along Halfhide Lane.

4.7.2 Likely Significant Effects

Traffic Noise Assessment

There is a potential for noise generated from the proposed Development to impact upon sensitive receptors. Noise will likely come from road traffic generated by vehicles using the local road network.

An outline assessment will be undertaken with reference to percentage change in traffic flows in line with guidance from Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 – LA 111.

Off-site road traffic noise may cause both beneficial and adverse effects, as traffic flows have the potential to increase and decrease along road links surrounding the site. This will be quantified within the ES chapter based on 'with' and 'without' Development traffic flow data.

4.7.3 Likely Insignificant Effects

Operational Noise Assessment

The assessment of potential noise effects from the operation of the Site will take into account the baseline noise survey and be undertaken using British Standards 4142:2014 and 8233:2014 as appropriate.

Given the location of the Site and the noise sources separating it from the closest existing noise sensitive receptors, it is not anticipated that significant adverse noise effects would arise as a result of the proposed Development operations (i.e noise from proposed retail stores, public house, medical centre and sports pitches). However, effects will be mitigated through the scheme design and consented conditions, so that significant adverse effects will not occur.

The assessment will be reflective of the scheme layout and the level of detail available at the time of planning submission. Subject to evolving guidance and legislation over the proposed Development phasing, design criteria will be presented within the report. This will be appended within the technical report and will reference relevant guidance documents such as BS 8233 and BS 4142.

The proposed Development will not generate vibration once constructed and operational. It is not anticipated that the proposed Development will be subject to significant sources of vibration and therefore vibration will not be considered as part of the assessment.

Construction Noise Assessment

The most notable impacts due to increases in noise during construction would be during periods of earthworks and remediation, construction of Site infrastructure and the construction of substructures. In addition to on-site sources, increased noise may be caused by HGV movements travelling to and from the Site during construction.

As a contractor is yet to be appointed, exact details regarding the construction techniques and types of plant can only be estimated at present. As such, the potential impact of construction noise is assessed qualitatively in accordance with the British Standard 5228: 2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise. The focus will be on mitigation measures to be included in a CEMP, the framework for which will be set out within **Chapter 6 Construction Strategy & Programme.**

Given the nature of such works there is the likelihood that during certain periods of the construction phase, noise would be audible at the nearby sensitive receptors. Any impacts would be temporary in nature and adverse. The level of noise will be dependent on the location of the construction activities on the Site on a daily basis and the equipment being used, with noise levels being attenuated as the

distance between the source and receptor increases. In the unmitigated scenario, effects which could be significant, such as causing high levels of noise by undertaking construction works during the evening or night-time period, could occur. These will be controlled through the use of standard noise control measures within a suitably worded CEMP. Some examples of noise control measures which will be implemented are detailed below:

- Leaflet drops at all existing houses likely to be affected by noisy construction activities notifying them of works in advance and detailing the nature of the works and the likely duration;
- Careful selection of working methods and programme;
- Selection of quietest working equipment available (e.g. electric/battery powered equipment which is generally quieter than petrol/diesel powered equipment);
- Where appropriate, positioning equipment behind physical barriers, i.e. existing features, hoarding, etc., or provision of lined and sealed acoustic covers for equipment that could potentially contribute to a noise nuisance;
- Positioning of noise generating equipment, such as any generator plant in areas which minimise noise as far as practicable;
- Ensuring that regularly maintained and appropriately silenced equipment is used;
- Shutting down equipment when not in use, i.e. maintain a 'no idling policy';
- Switch all audible warning systems to the minimum setting required by the Health and Safety Executive;
- The use of 'White noise hazard reversing alarms on all Site vehicles;
- Restricting hours of Site operation in agreement with the Local Authority. If there is the requirement to undertake work outside of the agreed hours, further consultation should be undertaken with the Local Authority; and,
- All plant and Site vehicles should be correctly maintained to ensure that optimum running operations are maintained to reduce the likelihood of additional operational noise due to disrepair. i.e. lubricants and filters.

Therefore, noise and vibration generated during construction is unlikely to be considered significant and will not be considered within the ES chapter, rather it will be addressed in the noise impact assessment which will form a technical appendix to the ES.

4.7.4 Approach and Methodology

The change in noise levels resulting from additional traffic flows associated with the proposed Development will be predicted using CadnaA environmental noise modelling software. The magnitude of the impact will then be assessed in accordance with guidance contained in Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 – LA 111 Noise and Vibration for the following scenarios:

- Baseline year;
- Opening year (2026) without the proposed Development;
- Opening year (2026) with the proposed Development;
- Future year (2033) without the proposed Development; and
- Future year (2033) with the proposed Development.

The modelling exercise will utilise 18 hour (daytime) and 8-hour flows (night-time) for all affected roads from the Transport Assessment prepared for the proposed Development.

It is anticipated that the assessment criteria will also include the following:

- National Planning Policy Framework 2019 (NPPF)
- National Planning Policy Guidance 2019 (NPPG)
- Noise Policy Statement for England March 2010 (NPSE)
- British Standards BS7445-1:2003, BS 4142:2014+A1:20919, BS 8233:2014 and BS5228-1:2009+ A1 2014
- World Health Organisation Guidelines for Community Noise 1999
- Calculation of Road Traffic Noise (CRTN)
- Any local policy specific to the local planning authority

4.8 Air Quality

4.8.1 Baseline Conditions

Local Air Quality Management

As required under section 82 of the Environment Act 1995, BBC has conducted an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO_2 are above the relevant AQOs at a number of locations of relevant public exposure within the Borough. BBC therefore has seven designated Air Quality Management Areas (AQMAs) as outlined below;

- Extension to AQMA 1: Arlington Crescent to Abbey Road, Waltham Cross
- Broxbourne AQMA No.2: Properties no. 33-55 Teresa Gardens, Waltham Cross
- Broxbourne AQMA No.3: An area incorporating Tile Kiln Cottage on Burnt Farm Ride, North of M25
- AQMA No.4 Eleanor Cross Road/ Monarchs Way: Roundabout
- Monarchs Way/ Winston Churchill Way: Roundabout
- AQMA 6 Great Cambridge Road (A10): Junction of Great Cambridge Road and College Road in Chestnut, including the Great Cambridge Road
- AQMA 7 High Road in Wormley: High Road in Wormley (A1170)

The proposed Development Site is located alongside AQMA 6 – Great Cambridge Road and receptors will be included within the technical assessment.

Air Quality Monitoring

Monitoring of air quality within the BCC area is undertaken through non-continuous monitoring methods. These have been reviewed within the BBC 2020 Air Quality Annual Status Report in order to provide an indication of existing air quality in the area surrounding the Site.

Continuous Monitoring

The BBC did not operate any AURN sites in 2019.

Non-continuous Monitoring

BBC operated a network of 38 diffusion tubes during 2019. The closest diffusion tube to the Site is BB29, which is located in Brookfield allotments within the proposed Site boundary. The most recently available diffusion tube monitoring data is from 2019.

BB29 monitored an annual average concentration for NO_2 of 37.2 µg/m^3 in 2019.

4.8.2 Likely Significant Effects

Construction

The effects during the construction works have the potential to result in dust nuisance complaints and surface soiling from deposition, as opposed to the risk of exceeding any air quality objectives. The impacts will be direct as they occur as a result of construction activities associated with the proposed Development, temporary as they will only potentially occur during the construction works, short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine and will be reversible.

Additional vehicle movements (particularly HGV movements) associated with the construction works have the potential to generate exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local road networks. This is dependent upon the total max HGV vehicle movements during the construction phase. Where there is an increase of HGV movements greater than 25AADT, there is potential for surrounding sensitive receptors to be exposed to be a decrease in air quality.

The level of significance of each likely effect will be determined by combining the magnitude of change with the sensitivity of the receptor. **Table 4** shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect.

Completed Development

Vehicle movements associated with the proposed Development once completed and operational will generate additional exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local road network. Any likely significant changes will be a result of long-term changes in local air due to emissions from vehicles associated with the operation of the completed proposed Development.

In accordance with the Institute of Air Quality Management Guidance ‘A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites 2019’, the following ecological designated sites located within 2km of the Site boundary will be reviewed as part of the air quality assessment:

- Lee Valley (Ramsar and Special Protection Area)
- Cheshunt Pitts (Site of Special Scientific Interest)
- Cheshunt Park (Local Nature Reserve)
- Hells Wood (Ancient Woodland)
- Wormley-Hoddesdon Park Wood (Special Area of Conservation)

The level of significance of each likely effect identified above will be determined by combining the magnitude of change with the sensitivity of the receptor. **Table 4** (overleaf) shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect.

The likely significant effects identified for assessment of the Development once completed and operational are as follows:

- Long term increase in traffic related emission (NO_2, PM_{10} and $PM_{2.5}$) from the completed proposed Development from additional trips on the road network in relation to air quality on human health and ecological designated sites identified above (if required).

4.8.3 Likely Insignificant Effects

Construction Phase

The Institute of Air Quality Management (IAQM) 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction' states that "…any receptors outside of 500m are not expected to experience a significant impact from the proposed Development and the impacts considered 'negligible'".

During the construction works, only road links and receptors adjacent to road links where there is a potential increase in 25HGV and 100AADT in the AQMA or 100HGV and 500AADT outside the AQMA will be scoped into the assessment. All other road links that do not fall within the criteria determined by the IAQM Land-Use Planning and Development Control: Planning for Air Quality guidance will not require assessment.

Completed Development

The effects upon any existing or proposed sensitive receptors located outside the modelled road network, where there is not expected to be an increase in AADT of 100 HGV or 500 AADT, will not be included within the detailed air quality assessment. As stated within the IAQM's 'Land Use Planning for Development Control: Planning For Air Quality' guidance[6] those receptors along roads below the criteria above are considered to have insignificant effects to additional vehicle movements below the above criteria and, as such, will be scoped out of the ES.

Any identified ecological designated sites located beyond 2km from the proposed Development or further than 200m from an affected road network, will be scoped out of the Air Quality Technical Assessment and ES. This is in accordance with the IAQM Guide to the assessment of air quality impacts on designated nature conservation sites[7]. The air quality impacts associated with the additional vehicle emissions on Ecological receptors outside of 2km from the Site or beyond 200m from an affected road are considered non-significant.

4.8.4 Approach and Methodology

The level of significance of each likely effect will be determined by combining the magnitude of change with the sensitivity of the receptor. **Table 4** shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect. This table has been developed by Tetra Tech, but the matrix combinations and terms used correlate with the significance matrix recommended by the Land Use Planning and Development Control: Planning for Air Quality (2017) guidance. If the magnitude of change is moderate or substantial, then the change is considered to have a significant effect on the local air quality.

Table 4: Impact Significance Matrix

Sensitivity of Receptor	**Magnitude of Impact**				
	Large	Medium	Small	Imperceptible	Neutral
Very High	Substantial	Substantial	Substantial	Moderate	Negligible
High	Substantial	Substantial	Moderate	Moderate	Negligible

6 IAQM Land Use Planning for Development Control: Planning For Air Quality guidance https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

7 IAQM Guide to the assessment of air quality impacts on designated nature conservation sites https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf

Sensitivity of Receptor	Magnitude of Impact				
	Large	Medium	Small	Imperceptible	Neutral
Medium	Substantial	Moderate	Moderate	Slight	Negligible
Low	Moderate	Moderate	Slight	Negligible	Negligible
Negligible	Moderate	Slight	Negligible	Negligible	Negligible

The existing NO_2 monitoring network described above, which is undertaken by BBC, is considered sufficient for determining air quality conditions at the Site for the purposes of the air quality assessment and therefore, no independent NO_2 diffusion tube monitoring will be undertaken for the purposes of the EIA.

Construction

A semi-quantitative assessment of the air quality effects of the demolition and remediation works and construction works of the Development will be undertaken in accordance with the IAQM's 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction'. For the purposes of the demolition, remediation and construction works, a worst-case assessment will be undertaken with regard to demolition, earthworks and track out.

Appropriate Site-specific mitigation will be recommended in accordance with the IAQM. Appropriate mitigation measures in line with this guidance will be determined based on the significance of the dust generating activities. The implementation of this mitigation will ensure that the overall dust generating activities will have a negligible effect on the surrounding sensitive receptors.

Computer based modelling of the predicted changes of traffic emissions from demolition, remediation and construction traffic within the study area will be undertaken using an approved atmospheric dispersion modelling package (ADMS Roads 5.0), should the demolition, remediation and construction traffic exceed the criteria of HDV movements of greater 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere. The model will provide predicted annual average concentrations of NO_2, PM_{10} and $PM_{2.5}$ at receptors within the study area. Specifically, the air quality assessment will be undertaken with reference to the UK Air Quality Standards and will describe the significance of the air quality changes within the proposed Development with reference to non-statutory guidance.

Completed Development - Traffic Air Quality

Specific locations will be assessed along the modelled road network including the Great Cambridge Road and any additional roads where there is expected to be an increase of AADT based on the criteria above. As a worst-case assessment, locations on junctions and roads where there is expected to be an increase in AADT will be included within the model. The assessment will take into account the impact on Brookland Garden Village development, residential and educational receptors on the roads mentioned above.

A detailed traffic air quality assessment will be undertaken to assess the effects of traffic emissions upon any existing or proposed sensitive receptors located along the modelled road network. The traffic emissions will include the existing traffic (baseline), the traffic associated with the proposed Development, and approved schemes.

A traffic air quality model will be developed for the study area using ADMS Roads and will be verified to the Local Authority's monitoring data. The model will predict annual average concentrations of nitrogen dioxide and PM_{10} at proposed units and would be compared against the National Air Quality Action Limits. Risk to exposure to short term (hourly) exposure will be assessed. Appropriate mitigation will be

recommended in accordance with the significance of the effects and best practice guidance for inclusion within the submitted design.

Completed Development – Combustion Plant/Energy Centre Air Quality

If any combustion plant, for example, CHP and boiler, is likely to give rise to air quality impacts and exceeds the IAQM's indicative criteria for requiring any air quality assessment, a detailed air quality dispersion modelling assessment will be undertaken. The impact of combustion emissions will be modelled to determine the additional exposures of pollutants at key receptors and to determine the magnitude of the long and short-term impacts.

A quantitative assessment will be undertaken using the third generation Breeze AERMOD dispersion model. AERMOD is a development from the ISC3 dispersion model and incorporates improved dispersion algorithms and pre-processors to integrate the impact of meteorology and topography within the modelling output.

4.9 Greenhouse Gases and Climate Change

4.9.1 Baseline Conditions

No baseline studies/surveys have been deemed necessary for the purposes of the Climate Change ES chapter. The assessment will consider local (BBC/HCC) and regional (East) GHG emissions data as part of the review of baseline conditions, to help contextualise the emissions generated by the proposed Development and implement a proportional approach to the later evaluation of effects. GHG emissions observed at local and regional level will be sourced from UK national statistics collated by the Department for Business, Energy & Industrial Strategy (BEIS)[8].

4.9.2 Likely Effects

The following sensitive receptors have been identified and will be assessed within the ES:

- Global climate.

The following effects shown in **Table 5** have been identified and will be assessed within the EIA and reported in the ES.

Table 5: Likely Significant Effects.

Likely Significant Effect	Applicable Phase
Embodied carbon in buildings (including fuel use in construction plant & associated facilities)	Construction
Regulated / unregulated CO_2 emissions from buildings	Operation

Potential mitigation

In arriving at the significance level of the identified likely significant environmental effects, 'primary' or 'built in' mitigation measures will be taken into consideration as inherent components of the proposed Development.

8 Department for Business, Energy & Industrial Strategy (2020) Statistics UK local authority and regional carbon dioxide emissions national statistics: 2005-2018. Available at: https://bit.ly/2ZKnaiC [Accessed: 18/08/2020].

4.9.3 Approach and Methodology

The Greenhouse Gas Emissions Chapter will be prepared by Hoare Lea and will be supported by further detailed information contained within standalone Sustainability and Energy strategies submitted as part of the planning application.

There is no standard methodology for identifying and assessing the significance of GHG emissions within the EIA process. This assessment will follow the recommendations and best practice contained within the IEMA Principles Series: Climate Change Mitigation & EIA (2010)[9], IEMA (2016) Environmental Impact Assessment Guide to: Delivering Quality Development[10] and IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating Their Significance (2017). It will also review a list of key legislative instruments and national and local planning policy and related guidance to inform the approach and impact significance classification. The list includes but not is not limited to:

- Climate Change Act 2008[11];
- The Climate Change Act 2008 (2050 Target Amendment) Order[12]; and
- UK Climate Change Risk Assessment (2017)[13].

The following planning policy and guidance will also inform the assessment of effects within this Chapter:

- Part L 2013 of the Building Regulations (Conservation of fuel and power)[14];
- National Planning Policy Framework (NPPF) (2019)[15];
- National Planning Practice Guidance on Climate Change[16];
- The Fifth Carbon Budget[17];
- The Broxbourne Local Plan – A Framework for the future development of the borough (June 2020)[18];
- Sustainable Hertfordshire Strategy 2020[19]; and
- IEMA (2020) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation[20].

Embodied carbon in buildings

The assessment will include a preliminary appraisal of the likely embodied carbon of new buildings introduced as part of the proposed Development.

9 IEMA (2010) Principles Series: Climate Change Mitigation and EIA. Available at: https://bit.ly/2OCmd8v [Accessed: 29/04/2020].

10 IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development. Available at: https://bit.ly/2y1nHQ9 [Accessed: 29/04/2020].

11 Climate Change Act (2008). Available at: https://bit.ly/2H3m2kk [Accessed: 18/08/2020].

12 The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at: https://bit.ly/2LFL3Te [Accessed: 18/08/2020].

13 UK Climate Change Risk Assessment (2017). Available at: https://bit.ly/2Rg3Rwm [Accessed: 18/08/2020]

14 Ministry of Housing, Communities & Local Government (2013) Conservation of fuel and power: Approved Document L. Statutory guidance. Available at: https://bit.ly/2VcwCu5 [Accessed: 18/08/2020].

15 Ministry of Housing, Communities & Local Government (2019). Updated National Planning Policy Framework. Available at: https://bit.ly/2Pn4q2o [Accessed: 18/08/2020].

16 Ministry of Housing, Communities & Local Government (2014) Planning Practice Guidance – Climate change. Available at: https://bit.ly/2Rk6f5o [Accessed: 18/08/2020].

17 Committee on Climate Change (2015). The Fifth Carbon Budget. The next step towards a low-carbon economy. Available at https://bit.ly/2mk6SbK [Accessed: 18/08/2020].

18 Borough of Broxbourne Council (2020). The Broxbourne Local Plan – A Framework for the future development of the borough. Available at https://bit.ly/3jE4hGK [Accessed: 02/09/2020].

19 Hertfordshire County Council (2020). Sustainable Hertfordshire Strategy. Available at https://bit.ly/3bhDw82 [Accessed: 02/09/2020].

20 IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation Available at: https://bit.ly/3gR8ea0 [Accessed: 18/08/2020].

Embodied carbon is the total carbon emissions generated to produce a built asset. It is often defined as the 'carbon emissions associated with energy consumption (embodied energy) and chemical processes during the extraction, manufacture, transportation, assembly, replacement and deconstruction of construction materials or products.

Embodied carbon assessment is an area which has undergone significant development in recent years. Traditionally the greatest impact on an asset's whole life carbon has been associated with its operational phase. With the ongoing decarbonisation of the UK electricity grid, this trend is expected to shift and embodied carbon is expected to assume an ever-increasing significance in the overall carbon footprint of developments (made up of embodied and operational carbon emissions).

The embodied carbon associated with the building materials for the proposed Development (as per lifecycle stages A1-A3 construction materials) will be quantified using the general guidance provided by the Royal Institution of Chartered Surveyors (RICS) set out in the RICS 2014[21] and 2017[22] papers alongside relevant market benchmark data as deemed appropriate.

Fuel use in construction plant & associated facilities

At this stage of the project, it is likely that there will be limited information about specific plant and Site office requirements. The parameters of any equipment utilised during the construction process will depend on the selected contractor. The RICS methodology, however, provides an allowance for construction Site emissions, such as fuel use in mobile plant and equipment (as per lifecycle stage A5 (EN 15978)). In line with this and for completeness this assessment will apply a CO_2e/£100k of project value factor in order to provide a preliminary estimation of the anticipated emissions generated by the construction plant and related equipment.

Regulated/unregulated CO2 emissions from buildings

The assessment will review the estimated total operational energy of the proposed Development. This is made up of regulated components – including heating, cooling, hot water, fans, pumps and lighting – and unregulated ones, such as IT equipment, plug-in devices and catering facilities.

Regulated energy uses are inherent in the design of a building. Estimated CO_2 emissions from regulated operational energy uses of buildings will be calculated from benchmarks based on modelling undertaken in line with Part L 2013 of the Building Regulations (Conservation of fuel and power).

Unregulated carbon emissions will likewise be calculated based on Part L of the Building Regulations. Although unregulated carbon emissions are not included within Part L targets, an estimate of unregulated energy consumption is still an output produced as part of this methodology.

The consideration of significance will be informed by an evaluation of the anticipated environment within which the Development is expected to exist driven by the electricity grid decarbonisation and the country's new legally binding "net-zero" carbon target for 2050 as well as the influence and validity of any assumptions adopted when undertaking the prediction of impacts. The UKCP18 climate projections for the UK will be used to help formulate suitable and forward-looking resilience and adaptation measures for the Development.

The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of large or high, medium, small or low and negligible. A blended quantitative-qualitative approach utilising professional judgement relying on standard GHG accounting and reporting principles will be adopted in the effect categorisation.

21 RICS (2014) Methodology to calculate embodied carbon. 1st Edition. Available at https://bit.ly/2HAIFd7 [Accessed: 18/08/2020].
22 RICS (2017) Whole life carbon assessment for the built environment. 1st Edition. Available at: https://bit.ly/2NWvur6 [Accessed: 18/08/2020].

No subject-matter specific consultation has been deemed necessary at this stage prior to the issuing of a scoping opinion by BBC.

Limitations and assumptions

To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The RICS benchmark values, which are proposed to be used to calculate the anticipated embodied carbon emissions associated with the proposed Development, are based on broad building use type/size. As such they may not be wholly representative of the project at detailed design. Nonetheless, the RICS factors are considered to be appropriate for an initial analysis of the anticipated embodied carbon particularly given the nature of the scheme, i.e. it being a masterplan.
- The CO_2 emissions associated with the operational energy consumption will be estimated based on benchmark Part L data for different building types and indicative areas for different uses included in the Development. The Part L methodology uses standardised parameters, including operational profiles, ventilation rates, and heating and cooling setpoints, based on the building use, which may be different from how the buildings will operate in practice.

In line with IEMA guidance, activities which account for under 5% of the energy usage and, therefore, do not have a significant contribution to the overall energy consumption will be excluded from the assessment. These include:

- Temporary construction Site accommodation;
- Refuse collection from public bins; and
- Street lighting, traffic signals and security cameras.

4.10 Ecology

4.10.1 Baseline Conditions

The surveys and assessments that have been undertaken on Site are summarised in **Table 6**.

Table 6: Schedule of Surveys and Assessments undertaken since January 2020

Survey/Assessment	Rational	Surveys and Date Completed
Desk Study	To inform the requirement of further survey and assessment including data purchase, review of www. MAGIC.gov.uk and existing ecological survey reports for the Site are surrounding area between 2016 and 2019 completed by BSG and WYG[23].	Preliminary Ecological Appraisal (PEA) (January 2020) Designated site update January 2022
Habitats	Inform baseline and make recommendations for further Phase 2 surveys. Update baseline using UKHab including condition assessment and revised Site boundary to inform Biodiversity Net Gain (BNG)assessment.	Phase 1 Habitat Survey (PEA) January 2020 UKHab September 2021
Badgers *Meles meles*	The Site contains suitable habitat for badger foraging/commuting and sett building. Active badger setts have been previously recorded	PEA January 2020 Presence/likely

23 BSG (2016). Brookfield Riverside Ecological Assessment.
WYG (2016). Brookfield Badger Report.
WYG (2018). Brookfield Garden Village: Great Crested Newts.
WYG (2018). Brookfield Garden Village: Reptile Presence/Absence Survey.
WYG (2019). Brookfield Garden Village: Interim Bat Survey Report.

Survey/Assessment	Rational	Surveys and Date Completed
	adjacent to the Site and a single outlier sett recorded within the Site.	absence April 2020
Bats	The Site contains suitable habitat for bat foraging/commuting and roosting. Ten bat species have been previously recorded commuting and foraging within the Site.	PEA January 2020 PRA January/March 2020 Emergence/re-entry summer July – September 2020/ August 2021 (repeat of T24 only). Transect Activity Monthly April - October 2020 Static Detector surveys April – October 2020
Breeding Birds	The Site contains suitable habitat for a range of breeding bird species. Thirty-one species have been previously recorded within the Site.	PEA January 2020 Breeding birds April - June 2020
Great Crested Newts *Triturus cristatus*	The Site contains habitat suitable for breeding, foraging and hibernating GCN. Breeding GCN have been previously found in waterbodies within and adjacent to the Site.	PEA January 2020 eDNA April 2020 Presence/likely absence and population size class assessment April/May 2020
Invertebrates	The Site contains habitat of potentially high value to invertebrates. In particular, woodland, and grassland within Turnford Junction Meadow West Local Wildlife Site (LWS), is of interest. Ancient woodland habitat of high value to invertebrates is located adjacent to the Site.	PEA January 2020 Preliminary invertebrate assessment April 2020 Invertebrate community surveys July/September 2020
Reptiles	The Site contains habitat suitable for breeding, foraging and hibernating reptiles. A single grass snake *Natrix helvetica* has been previously recorded within the Site.	PEA January 2020 Presence/absence and population size class assessment April - May 2020
National Vegetation Classification	MAGIC.gov.uk identifies priority woodland habitat inventory extending into the Site that requires verification. Ancient woodland habitat occurs adjacent to the Site. Unmanaged neutral grassland also occurs within the Site. These habitats require verification as to whether they are Habitats of Principal importance (HoPI) and accurate evaluation to inform EcIA.	PEA January 2020 National Vegetation Classification survey June 2020
Modular River Survey (MoRPh) and River Condition Assessment.	To inform the River Habitats tab of BNG Assessments	March 2022

September 2020 Scoping Opinion Request

Phase 2 surveys for otter *Lutra lutra*, water vole *Arvicola amphibius* and dormouse *Muscardinus avellanarius* were scoped out in consultation with the Planning and Biodiversity manager at Herts and Middlesex Wildlife Trust in April 2020[24] and the September 2020 Scoping Opinion Request. The rationale for this was as follows:

- although a single record of otter was returned in the PEA data search, this was from Turnford and Cheshunt Pits SSSI which is significantly isolated from the Site; Site habitats are sub-optimal for supporting otters; previous recent surveys (2017/2018) related to the adjacent Brookfield Garden Village development did not find evidence for the presence of this species;
- no records of water vole from within 2 km of the Site returned in the PEA data search; Site habitats sub-optimal for supporting water vole; previous recent surveys (2018/2019) related to the adjacent Brookfield Garden Village development did not find evidence for the presence of this species;
- no records of dormouse from within 2 km of the Site returned in the PEA data search; Site habitats sub-optimal for supporting dormouse, with lack of well-developed understorey and woodland ground flora layers; previous recent surveys (2018/2019) related to the adjacent Brookfield Garden Village development did not find evidence for the presence of this species.

4.10.2 Likely Effects

Table 7 identifies the important ecological features identified through the above surveys/ assessments within the Zone of Influence (ZoI), preliminary evaluation of importance, potential effects and whether these features have been scoped in or out of the Ecological Impact Assessment (EcIA). **Figure 9** shows the ecological features of the Site.

Table 7: Schedule of Surveys and Assessments undertaken since January 2020

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
Lee Valley Special Protection Area (SPA), Lee Valley Ramsar, Wormley-Hoddesdon Park Woods Special Area of Conservation (SAC), Epping Forest SPA	The southern parcel of Wormley- Hoddesdon Park Woods SAC is ecologically connected to the Site via the corridor of Turnford Brook; Lee Valley SPA/Ramsar and Epping Forest SAC are within the potential ZoI of the site	International	Potential impacts of the Development on these statutory designated sites are described in a Habitat Regulations Assessment (HRA) Screening Report[25]	In (captured within HRA rather than EcIA)
Cheshunt Park LNR	300 m to west of the Site; good ecological connectivity	Local/County	Damage to integrity of the LNR	In
Turnford and Cheshunt Pits SSSI Top Field and	Ecologically isolated from the Site	National Local/County	N/A	Out

24 Dodds, M (hmwt). (2020) Email 'Re:Brookfield Riverside, Cheshunt – Ecology Scope Review) to Johnathon Stuttard (Waterman IE), 30 April 2020.

25 Waterman (2022). Brookfield Riverside, Cheshunt. Report to inform Habitat Regulations Assessment (HRA) Screening. WIE16725-103-1-1-4-HRA.

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
Cozens Grove LNR				
Turnford Junction Meadow West LWS	Within the Site	Local	Loss of habitat; damage to the integrity of the LWS; potential reduction in species diversity due to enhanced atmospheric nitrogen deposition from traffic; potential reduction in species diversity from increased disturbance by humans and dogs	In
Watercress Trot LWS	Partially within the Site	County	Loss of habitat within LWS; damage to the integrity of the LWS through reduction in size and loss of supporting/ connecting habitat; potential reduction in species diversity due to enhanced atmospheric nitrogen deposition from traffic; potential reduction in species diversity from increased disturbance by humans and dogs	In
Cheshunt Park LWS	300 m to west of the Site; good ecological connectivity	Local	Damage to integrity of the LWS through loss of supporting/ connecting habitat; potential reduction in species diversity due to enhanced atmospheric nitrogen deposition from traffic; potential reduction in species diversity from increased disturbance by humans and dogs	In
Wormleybury Lake LWS	0.62 km north of the Site; low ecological connectivity	Local	Damage to integrity of the LWS through loss of supporting/ connecting habitat	In
Other Non-statutory Sites	Ecologically isolated from the Site	Local/County	N/A	Out
Ancient Woodland	Present immediately adjacent to the Site (15m to the west) (Hell Wood, within Watercress Trot LWS); supports Silesian feather-moss present (Nationally Scarce)	National	Master planning has implemented a minimum 15m stand off zone from ancient woodland in line with government guidance to avoid damage to root zone[26] however development occurring within 50m of ancient	In

26 https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
			woodland results in the potential for effects as outlined in woodland trust guidance[27]. This includes potential damage to integrity of the ancient woodland through adjacent woodland habitat loss serving connectivity/buffer function resulting in edge effect and severance; potential reduction in species diversity due to enhanced atmospheric nitrogen deposition from traffic; construction of road resulting in potential changes to hydrology within ancient woodland; reduction in species diversity from increased disturbance by humans and dogs.	
Woodland (Other Broadleaved)	Woodland on Site in NVC categories comprise W8[28] (adjacent to golf course) and W10[29] woodland (western extent of Watercress Trot LWS) (NVC). The UK Hab classification of these is w1g (other broadleaved woodland). Smooth-stalked feather-moss present (nationally scarce) in the W8 woodland. It should be noted both NVC (June 2020) and UK Hab survey (September 2021) confirmed woodland does not offer '*great variety of in species composition of canopy layer and the ground flora'* a requirement for w1f (lowland mixed deciduous woodland). As such woodland on Site is not considered to be HoPI as indicated by desk study.	County (due to the presence of nationally scarce moss; partial location within LWS; habitat function in terms of connectivity and buffering to ancient woodland).	Loss of habitat; fragmentation of habitat	In

27 Woodland Trust (2019). Planning For Ancient Woodland: Planners' manual for ancient woodland and veteran trees.
28 W8 Fraxinus excelsior-Acer campestre-Mercurialis perennis woodland.
29 W10 Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland, the most widespread kind of woodland of base-poor brown acid soils in the lowlands of southern Britain.

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
Hedgerow	Hedgerow including HoPI present within the Site	Local	Loss of habitat; loss of ecological connectivity	In
Other Site habitats	Common and widespread	Site level only	Loss of habitat; fragmentation of habitat; loss of ecological connectivity	Out (included in BNG assessment)
Badgers	Site habitats suitable for foraging, commuting and Sett building; active outlier set within the Site; other setts adjacent to the Site, including a main sett	Local	Potential for a sett to be damaged/destroyed; potential for individual badgers to be injured/killed; loss of foraging/commuting habitat	In
Bats -- Roosting	No roosts recorded in either buildings or trees within the Site; However potential roost features identified providing a potential past/future roosting resource for local bat population.	Site	Losses of trees providing potential roost features for bats.	In
Bats – Foraging and Commuting	Site habitats are of high quality for commuting and foraging bats with good connectivity to the surrounding landscape. The Site supporting a diverse bat community of at least eight species recorded as foraging or commuting on site: barbastelle *Barbastella barbastellus,* serotine *Eptesicus serotinus,* Nathusius' pipistrelle *Pipistrellus nathusii*., common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus,* Myotis sp. and noctule *Nyctalus noctula.* With the exception of barbastelle, these are generally common and widespread species with, it is thought, relatively stable populations. Barbastelle, in contrast, is a rare bat in England and is the focus of considerable conservation effort. Barbastelles are strong fliers and forage widely, with a typical nightly foraging	County	Loss of foraging and commuting habitat; loss of dark space; habitat fragmentation.	In

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
	radius of 7 km . They tend to roost in crevices, mainly under bark or in cavities, in mature trees (especially oak) and are therefore strongly associated with ancient woodland-type habitat. Two passes of barbastelle were noted around T24 in 2020[30]. There is a reasonable likelihood that barbastelle roost in ancient woodland adjacent, or close, to the Site and occasionally use the Site for foraging and commuting along linear features.			
Breeding Birds	Site habitats support moderate-sized breeding populations of a relatively diverse assemblage of common and widespread bird species; no specially protected breeding species are present	Local	Loss of foraging and commuting habitat; fragmentation of habitat; damage / destruction of active nests.	In
Great Crested Newts	Site habitat supports a small-sized population of GCN but this is likely to be part of a larger, medium-sized, metapopulation in the wider local environment, and GCN in Herfordshire is severe decline[31].	County	Loss of breeding, foraging and commuting habitat; fragmentation of habitat; injury or killing of individuals.	In
Invertebrates	Site habitats support diverse invertebrate communities; saproxylic communities and communities associated with neutral grassland are of particular conservation importance; Species of Principal Importance and nationally rare / scarce species present	County	Loss of habitat; fragmentation of habitat; loss of notable species.	In
Reptiles	Site habitats support a low-sized population of grass snakes; Site habitats are well-connected to adjacent habitat areas with potential to support grass snakes	Local	Loss of foraging, commuting and breeding habitat; fragmentation of habitat; injury / killing of individuals	In
Invasive Non-	Not recorded within or	N/A	Spread of INNS plants in	In

30 2 brief passes during the dusk survey on 09-09-20
31 A Biodiversity Action Plan for Hertfordshire 19 Great Crested Newt Species Action Plan
http://www.hef.org.uk/nature/biodiversity_vision/chapter_19_gcnewt.pdf

Ecological Feature	Baseline	Conservation Importance of Ecological Feature	Potential Pathway of Impact of Development	EcIA Scoping
native Species of Plants (INNS plants)	adjacent to the Site; Japanese knotweed recorded in the wider area		the wild	

4.10.3 Approach and Methodology

A baseline ecology report presenting the findings of the above survey will be submitted as a technical appendix to the Ecology ES Chapter.

Ecological input into including landscaping will seek to implement the mitigation hierarchy as far as is possible within the ZoI (i.e. avoid, minimise, compensate) including enhancement of retained habitat. Off-site mitigation will be considered where it is not achievable on site.

The EcIA will be undertaken on the ecological features scoped in, in line with standard industry guidance (CIEEM 2018) and will be produced in accordance with objective EIA criteria. This will comprise a qualitative assessment of likely significant effects resulting from the development during construction works and once complete and operational. Residual effects on Important Ecological Features (IEFs) will be clearly stated.

Where considered necessary, a mitigation and enhancement strategy would be detailed to offset residual adverse effects to ecological features recorded.

Upon scheme fix and finalisation of associated landscape plans, a Biodiversity Net Gain (BNG) assessment will also be undertaken and submitted to support the planning application.

A collaborative approach will be adopted alongside Brookfield Garden Village and Golf Course in the assessment of in combination effects, as well as development of mitigation strategies where appropriate and development of the BNG assessment.

4.11 Water Resources and Flood Risk

4.11.1 Baseline Conditions

Baseline data relating to the Site and its surroundings have been compiled using the following sources:

- Site visit to understand the existing hydrological regime and watercourses, however, the proposed A10 slip road area and Travellers Site were not accessed at this time;
- Review of online Environment Agency (EA) data and existing hydraulic modelling, British Geological Survey (BGS) mapping and FEH hydrological data;
- Review of BBC's Strategic Flood Risk Assessment (SFRA) mapping; and
- Consultation with the Environment Agency, HCC in their role as Lead Local Flood Authority (LLFA), BBC, and Thames Water.

Watercourses

There are a number of ditches and watercourses present at the Site. To the north of the Site there are two Main Rivers, the first of which is the Turnford Brook which crosses the Site from west to east before passing under the A10 just south of the Turnford Interchange and continuing from west to east through the proposed A10 southern slip road location. The second Main River is the Wormleybury Brook, which

travels down the Site's eastern boundary until it joins the Turnford Brook just upstream of the culvert under the A10.

The Turnford Brook has several structures throughout its course across the Site, including three culverts and a weir. The Wormleybury Brook is culverted under the access road off the Turnford Interchange and a breakwater structure is present upstream of its confluence with the Turnford Brook.

To the south of the Site is the 'Central Drain', an Ordinary Watercourse that flows to the southwest until it reaches and passes under the New River via a culvert. The watercourse carries on flowing to the southwest along the boundary between the Traveller Site and the Allotment Gardens on Halfhide Lane before entering a culvert beneath the A10. The 'Golf Course Ditch' is another Ordinary Watercourse that briefly crosses the southwestern tip of the Site before entering a culvert under the New River and travelling east. The route of the culvert to the east of the New River is unconfirmed.

There are also a number of smaller ditches within the central areas of the Site, however, based on the topographic survey and observations made during the Site visit, these appear to be redundant.

Flood Risk

Due to the Site's location, inland and approximately 22km from the tidal River Thames, the risk of flooding from tidal sources is negligible. The EA's Flood Map for Planning (**Figure 10)** indicates that the Site is predominantly located within Flood Zone 1 (land defined as having less than 0.1% annual probability of fluvial flooding). However, the areas surrounding the Turnford and Wormleybury Brooks in the north of the Site are shown to be located within Flood Zone 1, Flood Zone 2 (land defined as having between 0.1% and 1% annual probability of flooding) and Flood Zone 3 (land defined as having greater than 1% annual probability of flooding). Therefore, the central and southern areas of the Site are designated at low risk of flooding from fluvial sources, and the northern areas are designated at low to high risk. It is noted that the existing EA modelling is 1D only and does not take account of floodplain levels and interactions. Therefore, this is considered to be inaccurate.

The EA's Risk of Flooding from Surface Water mapping indicates that the central area of the Site, between the Turnford Brook in the north and the New River in the south, is at 'very low' risk (less than 0.1% annual probability) of surface water flooding. The areas surrounding the Turnford and Wormleybury Brooks in the north of the Site and large parts of the southern areas (surrounding the New River, 'Central Drain' and Fairways), are shown to be at 'low' risk (between 0.1% and 1% annual probability) to 'high' risk (greater than 3.3% annual probability).

During the 'high' risk surface water event, flooding would be largely contained to the area of land on the north bank of the New River from the 'Central Drain' culvert to the A10 and would remain at depths of below 0.9m in most areas. Based on the existing ground levels in this area, it is anticipated that flood depths would remain largely between 0.3m and 0.4m. However, the area at the upstream end of the 'Central Drain' culvert under the New River is indicated to be at risk of flooding to depths of over 0.9m. Review of the existing ground levels in this area indicates that flood depths are unlikely to be greater than 0.9-1.0m The flood mechanisms in this area indicate that this flooding could in reality be associated with the 'Central Drain' and the culvert under the New River rather than an overland surface water flow route, which is likely due to the surface water modelling not taking into consideration the existing culverts. There are a number of culverts and raised embankments at the Site which are not incorporated into the modelling, therefore, the accuracy of the flood mapping in this area is uncertain.

Surface water flooding across the remainder of the Site would be contained to isolated areas to the north of the Turnford Brook, which are also anticipated to be associated with the watercourse and the lack of culverts present in the model. The areas indicated to flood within Halfhide Lane, Fairways and The Links appear to be topographically low points where surface water may pond and be unable to drain away.

Flooding in these locations would largely remain below 0.3m deep with some areas reaching up to 0.9m, however, based on the existing ground levels, flooding depths are not anticipated to rise above 0.4m surrounding Turnford Brook and 0.5m in the areas to the south.

During the 'medium' risk surface event (between 1% and 3.3% annual probability) flooding would mostly occur in the same locations, however, would be more extensive and with slightly larger areas at risk of flooding to depths of up to 0.9m. Several additional areas to the south of the New River are shown to be at risk of flooding, however these are all indicated to be isolated low spots where surface water ponding may be unable to drain away, and not part of a larger overland flow route.

Based on the EA's Risk of Flooding from Reservoirs Mapping, the Site is not shown to be located within an area at risk of being affected by an uncontrolled release of water from the Cheshunt North Reservoir. The EA have confirmed that the reservoir is operated and maintained by themselves, and overflows to the Rags Brook through three 1.2m diameter culverts. This reservoir is therefore considered to pose a low risk to the Site. The New River is a potable water supply aqueduct and bisects the Site from the A10 in the east to the Cheshunt Park Golf Centre in the west. This aqueduct is managed and maintained by Thames Water. Water levels are regulated. Therefore, it is considered that the risk of flooding from artificial sources is low.

BBC SFRA mapping indicates that the Site is between 25% and 50% susceptible to groundwater flooding. A review of the BGS Geology of Britain mapping and historical borehole records indicates that the central and southern areas of the Site are underlain by Enfield Silt Member, comprising clay and silt. The area surrounding the Turnford Brook is underlain by Alluvium, comprising clay, silt, sand and gravel, and the areas of the Site to the north of the Turnford Brook are underlain by Taplow Gravel Member comprising sands and gravels, which is designated as a Secondary A aquifer. It is therefore considered that the central and southern areas of the Site have a low risk of flooding from groundwater due to the impermeable superficial deposits of clay and silt. However, the areas surrounding and to the north of the Turnford Brook have permeable superficial deposits and therefore have the potential for elevated groundwater.

Drainage

The areas of the Site to the north of the New River are undeveloped and therefore have no existing sewer network. The existing drainage regime in this area would rely on overland flow routes into the local watercourse network. To the south of the New River, there is an existing public sewer network maintained by Thames Water and comprising foul and surface water sewers. It is anticipated that this area drains to the existing Thames Water sewer network.

Due to the large areas of the Site that are underlain by impermeable geology, it is anticipated that infiltration will not be feasible. Additionally, the Site comprises areas of historic landfill and is located within Source Protection Zone 1, as defined by the EA. Therefore, the proposed drainage system for the proposed Development would need to rely on discharging to onsite watercourses or the public sewer network.

4.11.2 Likely Significant Effects

It is anticipated that the proposed Development could have the following significant effects:

- **Displacement of floodwater from the Turnford Brook floodplain** - Due to the construction of the new access road embankments along the Site's western boundary encroaching within the Flood Zone 3 extent, it is anticipated that the proposed Development would result in a loss of floodplain storage.
- **Potential removal of culverts on the Turnford Brook** – the EA are seeking to have the culverts on the Turnford Brook removed as part of the Development proposals as part of Water Framework

Directive (WFD) requirements. This would have a positive effect on water quality and biodiversity but could potentially affect the flood mechanisms of the Brook.

- **Location of the proposed Development in relation to the existing 'Central Drain' to the south of the New River** – the proposed Development seeks to locate buildings and infrastructure at the location of the 'Central Drain', therefore this will need to be culverted or realigned.
- **Impacts on foul water drainage at the Site and in the wider public sewer network** – as the Site is largely greenfield to the north of the New River, the Development would result in a significant increase in foul water flows into the local public sewer network, likely requiring upgrade and/or reinforcement works of the existing public sewer infrastructure and/or treatment plants. Thames Water have a legal obligation to allow for a foul connection from proposed Development, and sewers will likely need to be requisitioned from south of the New River to provide a connection to the Site's central and northern areas.

Likely Insignificant Effects

The following issues have been assessed as likely insignificant effects and where necessary, mitigation has been incorporated into the scheme design:

- **Replacement of the existing watercourse structures** – as part of the proposals two structures will be replaced on the Turnford Brook in the location of the new link road in the west of the Site and the A10 slip road in the east of the Site. The existing structure on the Wormleybury Brook at the existing Site access off the A10 Interchange will also be replaced. The structures proposed to replace the existing crossings will be designed to have the same capacity as minimum so as not to have any detrimental effects on the watercourses. This issue is therefore considered to be insignificant and will not require further assessment within the ES Chapter.
- **Displacement of surface water flood flow routes** – where possible the proposed Development will be aligned to avoid surface water flood extents and flow routes. Ground floor finished floor levels will be raised above the maximum flood level to prevent internal flooding and where this can't be achieved, flood resilience measures will be incorporated to mitigate the impacts of flooding. A culvert capacity assessment will be undertaken to determine the true nature of the risk to be mitigated within the scheme design and will therefore not be subject to further assessment within the ES Chapter.
- **Impacts on quantity of surface water runoff from the Site** – the surface water drainage strategy will restrict runoff to the greenfield runoff rate for the 1 in 100 year event taking into account a 40% increase in rainfall intensity due to climate change, as per national and local policy, and best practice guidance. The effects relative to the baseline are therefore anticipated to be insignificant.
- **Impacts on quality of surface water runoff** – a surface water drainage strategy will be presented within the Flood Risk Assessment, which will be provided to support the planning application. Further assessment of drainage of surface water will therefore not be included with the ES. The drainage strategy will, however, include a variety of SuDS to provide treatment of runoff prior to discharge off Site, in line with the drainage hierarchy. The SuDS will include detention basins, permeable paving, swales, rain gardens, rainwater harvesting, and green roofs where applicable.

4.11.3 Approach and Methodology

In order to comply with the National Planning Policy Framework (NPPF) and Local Policy, a Flood Risk Assessment (FRA) and Drainage Strategy would be undertaken and appended to the ES. The relevant policy includes:

- NPPF and its Planning Practice Guidance;
- Non-statutory Technical Standards for Sustainable Drainage Systems (SuDS);
- BBC Local Plan and Strategic Flood Risk Assessment; and

- HCC LLFA SuDS Policy and Guidance.

Consultation has been undertaken with the relevant bodies such as the EA, BBC, LLFA, and Thames Water to obtain up to date flood risk and drainage information and to agree to the principles of the drainage and flood mitigation strategy.

- Assessment and mitigation of the likely significant impacts of the proposed Development, to include:
  - Floodplain compensation to mitigate the displacement of floodwater from the Turnford Brook floodplain;
  - Setting appropriate locations and finished floor levels for more vulnerable development uses;
  - Incorporation of changes to existing culverts (replacement or removal) into the hydraulic model to ascertain the potential impacts on flood risk;
  - Realignment or culverting of the Central Drain would be done in accordance with LLFA requirements; and
  - A pre-planning enquiry would be sent to Thames Water to determine the capacity in the existing public sewer network and its ability to receive additional flows from the proposed Development, such that reinforcement/upgrades can be planned as early as possible if required.

The policy compliant FRA and Drainage Strategy will include the following assessments:

- Potential sources of flooding, including recorded data of previous flood events;
- Hydraulic modelling to update and improve the accuracy of the existing EA model;
- Flood alleviation measures already in place, their state of maintenance and performance;
- Potential impacts of flooding to the Site and identification of any necessary mitigation measures;
- Residual risks after implementation of necessary mitigation measures, allowing for the future impacts of climate change;
- Liaison with the design team to ensure that watercourse crossings are designed to an appropriate capacity and meet the requirements of the EA and LLFA;
- An assessment of surface water runoff in accordance with BBC requirements, a proposed preliminary drainage strategy including SuDS and details on their management and maintenance;
- Demonstration that the proposed drainage strategy follows the drainage hierarchy, with surface water runoff restricted to as close to the greenfield runoff rate as reasonably practicable and/or infiltration into the ground; and
- Consideration of the existing and proposed foul flows from the Site.

4.12 Ground Conditions and Contamination

4.12.1 Baseline Conditions

Historic land uses within the Site were primarily for farming, nurseries and open fields. However, potentially contaminative uses have been identified from the 1870s to present, including:

- Gravel pits present until 1898;
- Agricultural use and nurseries until the 1960s;
- Allotment gardens, present to date, were denoted in 1960s in the eastern area;
- The A10 roundabout on-site and adjacent in the east was constructed in the mid-1970s;
- Industrials buildings on The Links and Fairways roads were constructed on-site in the 1980s;

- The Environment Agency's (EA) records show an inert landfill encroaches onto the western portion of Site between 1991 and 1997;
- Council depot on the eastern area, caravan park and golf course on the western area present to date were denoted on-site in 1990s; and
- A 14-inch diameter high pressure BPA oil pipeline (from Buncefield to Coryton) crosses the north of the Site from west to east.

British Geological Survey (BGS) data and information from previous desk studies and ground investigations show that the geological sequence at the Site comprises up to 0.6m of topsoil, Made Ground, unknown thickness of Landfill material (recorded at least 2.0m thick), Alluvium in places, Enfield Silt Member and Taplow Gravel Member, underlain by London Clay Formation. The Lambeth Group and Chalk at depth underly the London Clay Formation.

The EA has classified Enfield Silt Member and London Clay Formation as Unproductive Strata. The Alluvium, Taplow Gravel Member and Lambeth Group are classified as Secondary A Aquifers, while the Chalk is classified as a Principal Aquifer. The Site is in a Zone II (inner protection) Groundwater Source Protection Zone (SPZ). SPZs are areas defined by the Environment Agency where certain developments, with a greater potential to result in groundwater contamination may be restricted or where additional mitigation may be required to protect public water supply boreholes from groundwater contamination.

4.12.2 Likely Significant Effects

In consideration of the above, the likely effects to be addressed as part of the EIA will include those related to contamination (including soil and groundwater) and ground gas emissions from historical and current land uses, the potential for unforeseen contamination to be encountered during the Works and the potential for the Works to affect ground conditions. The assessment will consider effects to:

- Workers during the Works arising from potentially unforeseen contaminated soils and groundwater;
- On-site and off-site users during the Works and at the completed Development stage;
- Ground gas and vapour emissions to proposed Development in the vicinity of historic landfill and other potentially contaminated areas;
- On site and off-site controlled waters, including surface water and groundwater underlying aquifers during the Works and once the Development is complete and operational;
- Future Site users from exposure to potentially contaminated soils beneath the Site;
- Future soft landscaping from potentially contaminated shallow soils; and
- Underground infrastructure from contaminated soils and groundwater.

4.12.3 Approach and Methodology

As part of the ground conditions and contamination assessment, a Preliminary Risk Assessment (PRA) has been prepared. The PRA will be appended to the ES and will inform the assessment of likely effects as outlined above. This will be accompanied by preliminary ground investigation with an associated interpretive report to provide additional information on potential sources of contamination and pathways.

The ground conditions and contamination chapter of the ES will comprise the following:

- An explanation of the assessment methodology and significance criteria;
- A description of the baseline conditions, including a review of the Site history, geology, hydrogeology and previous environmental assessments for the Site;

- A description of the Site walkover undertaken to determine the environmental sensitivity and current potential for contamination at the Site and in the surrounding area;
- An evaluation of the potential for the historical use of the Site to present potentially contaminative uses and the likelihood of residual contamination being present in the ground or groundwater;
- A preliminary conceptual Site model to identify the potential for contaminant-pathway-receptor pollutant linkages to exist;
- An assessment of the potential effects (arising from both the Works and once the Development is complete and operational). This will consider the potential impact of (and mitigation measures for) Site users, future Site users, off-site users, buildings, controlled waters and future soft landscaping; and
- An assessment of residual effects during the Works, and once the Development is complete and operational, on a local basis, taking account of other potential nearby developments.

Recommendations for further mitigation will be outlined, if necessary, such as further intrusive ground investigation and likely remedial measures and how these measures would break identified contamination receptor linkages.

4.13 Historic Environment

4.13.1 Baseline Conditions

The following section provides an outline of the known and likely historic environment baseline present within the Site and a 1km study area surrounding it. This has been informed by the following:

- Historic England's The National Heritage List for England (NHLE) online database for designated heritage assets within the Site and its study area;
- Hertfordshire Historic Environment Record (HHER) for non-designated heritage assets within the Site and its study area.

Designated Heritage Assets

There are no World Heritage Sites, Registered Battlefields or Protected Wreck Sites within the Site or study area; however, there are 2 Scheduled Monuments, 31 Listed Buildings, 2 Conservation Areas and 1 Registered Park and Garden within the study area, as shown in **Figure 11**.

Hell Wood moated site and enclosure is located immediately adjacent to the Site's north-western corner. The monument includes a rectangular moat with additional earthworks to the north and north-east which form an enclosure. A further scheduled moated site and fishpond rectangular in shape lies circa 720m to the west of the Site.

The 31 Listed Buildings (1 Grade I, 2 Grade II* and 28 Grade II listed) are primarily located to the north, north-east, east, south-east and south of the Site at Wormleybury, Wormley and Cheshunt. Overall, the buildings range in date from 15th to 19th century and include structures such as vases, lodges, garden walls, cottages, churches and public houses.

The Conservation Areas (CA), Wormley CA and Churchgate CA, are located circa. 390m north-east of the Site and circa 900m south of the Site respectively. Wormley CA does not currently have a specific character appraisal; however, the Listed Buildings within the CA were constructed between the early 17th century and early 19th century and are of differing sizes and architectural styles denoting the development of Wormley. Similarly, Churchgate CA also does not currently have a specific appraisal, however, the built character within the CA ranges between the 17th century and mid-20th century and presents differing sizes and architectural style displaying the development of Cheshunt within the Churchgate area.

The Grade II listed Wormleybury Registered Park and Garden is located circa 300m to the north of the Site. The park, which surrounds the Grade I listed country house of the same name, was developed in the 1770s based on an earlier formal park.

Non-Designated Heritage Assets and Archaeological Areas of Significance

There are 4 known non-designated heritage assets of medieval to modern date within the Site. The western end of the Site extends into the Cheshunt or Brantingshay park, which became Cheshunt Park in the post-medieval period. The New River, constructed between 1608 and 1613 to carry fresh water between Ware and London, bisects the southern half of the Site. In addition to this, the modern line of a World War II anti-tank ditch, forming part of the eastern section of the Outer London Stop Line, is recorded as running through the northern half of the Site on an approximate east/west alignment before turning to an approximate north/south alignment at the eastern edge of the Site. It is understood that part of this line was removed by gravel quarrying immediately to the south of Hell Wood in the early 1990's[32]. Additionally, the sites of 2 pillboxes, lying upon the line of the ditch, are also noted in the north-eastern part of the Site, however, they were not visible during a Site walkover survey in January 2020.

Within the study area, other known non-designated heritage assets generally include prehistoric finds such as flint and pottery, Bronze Age to Iron Age occupation evidence, Roman occupation evidence, early medieval pits, medieval activity (including agricultural and settlement evidence) and post-medieval to modern settlement expansion evidence.

In addition to the above, there are 7 Archaeological Areas of Significance (AAS), one of which (centred on the scheduled Hell Wood site) partially falls within the Site. The remaining AAS are scattered across the study area and focus on the following features/elements:

- Medieval settlement at Wormleybury (focusing on the church of St Lawrence);
- Moated manorial site at Factory Farm;
- Cropmarks of 2 ring ditches (possibly of Neolithic to Bronze Age date);
- Earthworks of unknown date and function south-east of Wormleybury;
- Roman buildings at Cheshunt Park Farm; and
- At Cheshunt Priory and Nunnery Farm Iron Age and Roman pottery have been found.

Preliminary Research and Previous Truncation

Research from Hertfordshire Archives indicates that in 16th century, Cheshunt Park bordered Wormley and Cheshunt Woods indicating that the Site likely consisted as woodland at the time. The park appears to have remained as such until the early 19th century according to other maps from the archives; however, based on Ordnance Survey (OS) maps from 1870 onwards, much of the woodland had been lost due to conversion to agricultural land and the official boundary of Cheshunt Park now comprises a much smaller area circa 800m to the west/south-west of the Site.

The condition of the Site prior to the late 16th century is currently not understood, but it is likely that it consisted of woodland for some time prior to the late 16th century.

Generally, development to the south of the New River would have likely impacted on archaeological remains, although such impacts would have likely been limited in the area of the allotment gardens immediately to the south of the river. At Brookfield Centre, impacts may have been more substantial considering its currently built up character, however, this depends on the original construction processes and whether there are any basements on site.

32 Broxbourne Local Plan: Brookfield Area Development Options. [Accessed 29 January 2020]. Available from https://ex.broxbourne.gov.uk/sites/default/files/Documents/Planning_Policy/O2%20Brookfield%20Development%20Options%20APRIL%202016.pdf

To the north of the New River, the Site comprises agricultural fields and apart from the construction of small roads, there appears to have been little previous disturbance.

4.13.2 Likely Significant Effects

Depending on the design of the proposed Development, particularly within the area to the north of the New River, there could be likely significant effects to the settings of designated heritage receptors. Based on a walkover survey of the Site, settings impacts to Listed Buildings (not including those associated with the Registered Park and Garden) and Conservation Areas would be unlikely, due to their existing setting within primarily inward focusing areas and existing screening afforded by the landscape and topography. However, setting impacts could occur to the Hell Wood moated site and enclosure and Wormleybury Registered Park and Garden which would warrant further assessment the EIA.

As such, assessment of the Scheduled Monument and the Registered Park and Garden (including those Listed Buildings associated with it), is to be scoped into the EIA, while it is considered that assessment of other Scheduled Monuments, Listed Buildings and Conservation Areas can be scoped out.

4.13.3 Likely Insignificant Effects

Likely insignificant effects to heritage assets includes those to as yet unknown archaeological remains within the Site. While WWII structures are recorded by the HHER within the Site, based on a walkover survey and available records, these appear to have been removed, however, this has not been corroborated by archaeological investigations.

Archaeological remains within the Site would likely be of local importance and it is currently considered that the Site likely consisted of woodland between at least the late 16th to late 19th centuries. While this would likely limit the discovery of archaeological remains dating to those periods to be discovered within the Site, later prehistoric and Roman remains have been recovered circa 800m south-west of the Site within areas which would have also likely once belonged to Cheshunt Park and can therefore not be precluded. Therefore an assessment of the value and significance of archaeological remains is to be scoped into the ES with a consideration of development impacts and mitigation.

4.13.4 Approach and Methodology

It is proposed that a Historic Environment Desk-Based Assessment (HEDBA) is produced to support the ES as a technical document. The Senior Historic Environment Advisor for HCC was consulted on the scope of the HEDBA and preliminary archaeological considerations in July 2020, however, no response had been received at the time of writing this Scoping Report.

The scope of the HEDBA would be as follows (subject to consultation response form HCCs Historic Environment Advisor):

- Review of designated and non-designated heritage assets within the Site and a 1km study area via Historic England's NHLE and HHER;
- Undertake a Site walkover survey to determine potential impacts and to identify additional assets of historic features that should be considered;
- Review of national, regional and BBC heritage planning related policies;
- Review of secondary sources including historic mapping and archive material;
- Assess the significance of known heritage assets that are likely to be affected by the Development;
- Assess the likely impacts on the significance of affected heritage assets;
- Determine the potential for unknown buried archaeological remains to survive within the site;

- Consult the Historic Environment team at HCC; and
- Provide recommendations on further assessment or Site investigations as appropriate.

A viewpoint is proposed within the Registered Park & Garden under the consideration of landscape and visual effects, with this assessment and accurate visual representation being used to assist with the assessment of any effects in the setting of this asset.

4.14 Landscape & Visual Effects

4.14.1 Approach and Methodology

The aim of the landscape and visual impact assessment is to establish the following in relation to the proposed Development:

- an understanding of the Site and its wider landscape setting, identifying its character, resources, value and sensitivity to the proposed Development;
- an assessment of the composition, character and aesthetic value of views from visual receptors including views from people using amenity landscapes, and the sensitivity of views;
- the potential direct and indirect effects of the proposal on the landscape resource (i.e. key elements, features and character) and on visual receptors; and
- commentary on the residual effects on the landscape character and visual amenity in relation to the proposed Development scenario, and compliance with landscape policy.

This assessment would consider two inter-linked issues as follows:

- Landscape Effects: the effects of the proposed Development on the physical and cultural characteristics of the Site and on the surrounding landscape character; and
- Visual Effects: the effects of the proposed Development on views from visual receptors and on the amenity value of these views.

The methodology for the assessment is based on current best practice and guidance from the following sources:

- ‘Guidelines for Landscape and Visual Impact Assessment’, Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), Third Edition, 2013;
- ‘An Approach to Landscape Character Assessment’, Natural England 2014; and
- ‘Technical Guidance Note 06/19: Visual Representation of Development Proposals, Landscape Institute, 2019’

The baseline work adopted for the landscape and visual impact assessment comprises a combination of desktop and field studies to identify and record the character, elements, features and aesthetic and perceptual factors. The baseline data would be established through the following:

- a review of all relevant documents and landscape planning policy and guidance;
- Geographical Information System (GIS) analysis of the topography surrounding the Site and production of the Zone of Theoretical Visibility (ZTV);
- a Site visit to undertake an assessment of the character of the area, together with the sensitivity of the landscape to change as well as to obtain photographs of key viewpoints from around the Site; and
- identifying and describing the key features associated with the proposed Development that would alter the characteristics of the landscape and visual baseline.

4.14.2 Baseline Conditions

Existing Environment

The Site features low-lying, predominantly flat topography which is defined by the abundance of local watercourses including the New River, Turnford Brook and Wormleybury Brook. It currently comprises a mixture of greenfield and brownfield land, including areas of agricultural land within the western and north-western extent of the Site. Several groups of trees and pockets of woodland are present within the Site and along the northern and western Site boundary. The Site lies to the north-west of Cheshunt and is served by the A10 which connects with the M25 in the south.

Designations and Landscape Features

There are a limited number of designated landscape features present within the Site boundary. The Site features two areas of designated woodland, which include Spring Wood to the south-west of the Site which is an ancient semi-natural woodland and Thunderfield Grove which is partially an ancient replanted and partially an ancient semi-natural woodland. There are two schedule monuments located within the Site. There is one Public Right of Way (PRoW), the New River Path, located on the eastern bank of the New River within the Site.

National Landscape Character

The Site lies within National Character Area 111: Northern Thames Basin[33]. The key characteristics are described as follows:

- A varied landform "*with a wide plateau divided by river valleys. […] extensive tracts of flat land are found in the south";*
- *"The pattern of woodlands is varied across the area and includes considerable ancient semi-natural woodland";*
- Historic activity is reflected in the "*very varied"* field pattern; and
- There is a "*diverse range of semi-natural habitats* (which) *include ancient woodland, lowland heath and floodplain grazing marsh and provide important habitats for a wide range of species"*

Regional Landscape Character

The Broxbourne Landscape Character Assessment[34] has divided BBC into 9 landscape character areas. The Site falls within character area C2: Wormleybury and Cheshunt Park, which is described as representing the following characteristics:

- *"This landscape is contained by the predominantly rural road corridors of Park Lane and Church Lane, which are often lined by mature trees and hedgerows";*
- The area is defined by "*a mixture of current and former parkland. Several pockets of ancient oak/ hornbeam woodlands are scattered across the landscape and contribute to a varied sense of enclosure";*
- A strong sense of tranquillity *"is disturbed to the east by traffic on the main A10 road corridor";* and
- "*At the eastern edge, the corridor of the New River provides a strong division between this landscape and Hoddesdon and Cheshunt Urban Areas".*

33 Natural England (2013), National Character Area 111: Northern Thames Basin, Natural England, available at: https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles

34 Chris Blandford Associates, 2008, Broxbourne LCA, Broxbourne Borough Council, Broxbourne

4.14.3 Likely Significant Effects

The assessment of likely significant effects considers the existing baseline conditions and Site context in relation to the Development proposals. This would consider the Development during construction and during the operational phase. The Development would provide different types of land use to the area, such as commercial, office, education, leisure and residential. This would introduce new built form of varying heights and scales which would be in contrast to the current land use and landform within the Site.

Landscape Character

It is anticipated that the proposed Development would affect the local landscape character. During the construction phase the proposed Development is likely to give rise to a number of changes to the landscape character arising from Site preparation and construction activities. During the operational phase, the introduction of new built form within the currently "*tranquil"* landscape would disrupt the existing conditions. This would inherently result in a change to the existing landscape character within the Site.

Visual

Subject to a Site visit and the agreement of representative views with the local planning authority, the proposed Development is considered to have effect on the visual appearance of the local landscape and its context. Identified proposed viewpoint locations on shown in **Figure 12**, in relation to the viewpoints described in **Table 8**.

Table 8: Viewpoint selection

Viewpoint	Location	Rationale
1	Long distance view to the north-west of the Site boundary	View located on the long-distance Herefordshire Way, would give an indication of the effects of the Development on the users of the Public Right of Way.
2	Long distance view from north-west of the Site boundary	View from restricted byway looking across the study area. This would indicate potential effects of the Development on local footpaths and users of PRoW.
3	Long distance view from the north of the Site boundary.	View located on the Baas Hill bridge over the A10, next to the Baas Hill picnic area. This would indicate potential effects of the Development on the users of the PROW and local footpaths of the picnic area.
4	Mid-range view from the north-west of the Site boundary.	View is in an area of high ground and is situated at the entrance to a local PROW. This would give an indication of effects on local users of PRoW and the overall landscape character.
5	Mid-range view from north-west of the Site boundary.	The view is located near St. Lawrence Church at the start of a Public Right of Way (PRoW) No.41. This would give an indication of effects on local users of PRoW and the overall landscape character around the Church and surrounding residential properties.
6	Mid-range view from the north of the Site	View from Church Lane looking south towards the Site. This would give an indication of the effects on road users, pedestrians and the local settlement area further to the north.

Viewpoint	Location	Rationale
	boundary.	
7	Mid-range view from the north-east of the Site.	View from Nazeing Marsh looking south-west towards the Site. This would show the context of the Site and the potential effects on the landscape character.
8	Long distance view from the east of the Site.	View from Clayton Hill near to the Clayton Hill country park. This would show the context of the Site and the potential effects on users of the park and the overall landscape character.
9	Long distance view to the west of the Site boundary	View is located adjacent to a grade ll listed building. The view would give an indication of the Development's effects on the wider landscape within the study area.
10	Mid-range view to the west of the Site boundary.	View is located adjacent to Cheshunt Park Farm. This location is slightly elevated and would give an overview of the Site's location within the landscape.
11	Close-range view to the west of the Site boundary.	View is located on Candle Stick Lane and would give an indication of the Site's context within the local landscape and in relation to the settlement boundary.
12	Close-range view from the west of the Site.	View from the corner of a listed moat looking east towards the Site boundary.
13	Close-range view from the north of the Site.	View from track adjacent to Hells wood from the corner of the Site boundary. VP13 would give an indication of the Site's context within the local landscape and in relation to the settlement boundary.
14	Long-distance view from the east of the Site.	This view is located on PRoW. It would give an indication of the effects of the Development on users of PRoW and the local landscape.
15	Long-distance view from the south-west.	View from Sports ground off Andrew's Lane looking north-east towards the Site. This view would show the Site's context in the wider landscape and potential effects on users of the sports ground and the local settlement.
16	Close range view from the south of the Site.	View from Brookfield Lane Footbridge looking north towards the Site. This view would give an indication of potential effects on the local settlement and residential properties.
17	Long distance view to the south-east of the Site boundary.	View from lane in Holyfield. This would give an indication of potential effects on pedestrians and road users on their way to Lee Valley Park.

A ZTV (Zone of Theoretical Visibility) has been prepared based on the current design proposals which has informed the viewpoint locations. During the construction phase, construction work including increased traffic to and from the Site would be visually intrusive upon the local area. During the operational phase, it is anticipated that the new built form would become visible from the surrounding area. Visually, this would be an extension of the existing settlement to the east beyond the A10. Views from the surrounding countryside may be altered as a result of the proposed Development and would potentially affect identified representative receptors.

4.14.4 Approach and Methodology

The assessment process for the potential effects on the landscape character and visual amenity of the proposed Development aims to only include receptors of relevance to the assessment. The following are considered to be likely insignificant effects:

- While it is anticipated that there would be effects on the local landscape character, these may be localised and not relevant to character areas which lie beyond the Site boundary or study area due to their relative distance from the Site.
- Through topographical terrain analysis, a zone of theoretical visibility is produced to facilitate the selection of representative views. This excludes locations and receptors that would not be affected by the proposed Development due to the intervening landform, built form or vegetation and resultant lack of visibility of the Site.
- The visual assessment only considers publicly accessible spaces, so that effects on residential properties are not included in the assessment.
- Night-time lighting associated with the proposed Development, due the fact that the proposed Development is on the edge of an existing development where night-time lighting is already present. The proposed Development will cause additional night-time lighting on the edge of the existing and will therefore not cause a significant visual night-time impact. However, due to the potential disturbance of surrounding ecological habitats, night-time lighting will be considered further within the Ecology Chapter of the ES.

4.15 Wind Microclimate

4.15.1 Baseline Conditions

The baseline assessment will evaluate the existing wind microclimate at the Site and benchmark those conditions against the Lawson comfort Criteria.

The basic methodology for quantifying the baseline pedestrian level wind environment is outlined below:

- Step 1: Adjust standard meteorological data to account for conditions at the Site;
- Step 2: Measure the building-induced wind speeds at pedestrian level using the Computational Simulations (CFD)l;
- Step 3: Combine these to obtain the expected frequency and magnitude of wind speeds at pedestrian level; and
- Step 4: Compare the results with the Lawson Comfort Criteria to ‘grade’ existing conditions around the Site.

Testing will be conducted on the following configurations:

- Existing Site;
- Proposed Development with Existing Surroundings; and
- Proposed Development with Golf Course and Garden Village sites.

To note, all other cumulative schemes (identified in **Table 9**) are outside of the study area covered by the model hence an additional cumulative assessment is not necessary. This will be further explained in the Wind Microclimate ES chapter.

4.15.2 Likely Effects

When a new development is built, wind flow patterns within the Site and its immediate surrounds are often modified; this could either result in increased wind speeds or increased shelter at certain locations and for certain wind directions. The wind assessment will take account of the wind microclimate for wind directions in order to provide a fully quantifiable assessment of the calm and windy zones around and within the Site.

The wind conditions will be primarily compared with the intended pedestrian use of the Development because this assessment will take into account changes in pedestrian activities that accompany Development. The likely impacts would therefore relate to a wind microclimate that is too windy for the intended use of an area and/or in more extreme cases the generation of strong winds capable of impeding movement.

Sensitive Receptors will include thoroughfares, entrances, seating areas, public amenity spaces, terraces and balcony locations if present on the proposed Development.

4.15.3 Approach and Methodology

Given the size and geometry of the proposed Development, in addition to the Site's location in relation to surrounding buildings and nearby areas of public realm, it is important to avoid undesirable wind speeds being generated at ground level. Undesirable wind speeds could make some spaces within and around the proposed Development uncomfortable or unsafe for pedestrian use. The ES will therefore quantify the potential changes to the local wind environment (both on-Site and within the surrounding area) in terms of pedestrian amenity and public open space and quantify these in relation to their 'usability' for a range of pedestrian activities defined by the Lawson Comfort Criteria.

A computational model will be constructed consisting of the Riverside masterplan and the surrounding area. The model will be built for the configurations as noted above.

The models will be tested via computational simulations (CFD). Mean wind speeds will be measured around the base of the buildings forming the Development and other surrounding buildings, paths, roads, and areas of open spaces, for 18 wind directions. These results will be combined with long-term meteorological climate data for the London area.

The results of this analysis will then be benchmarked against the well established Lawson Comfort Criteria to determine the suitability of the different areas both within and surrounding the Site for sitting, standing, strolling, walking. The suitability of the conditions both within the Site and surrounding the Site will be presented and discussed within the ES. Should mitigation measures be required to ensure that wind conditions are suitable for their intended use, the areas requiring mitigation will be identified and mitigation measures will be developed. Where necessary, mitigation measures will be tested through additional rounds of computational simulations. The potential for strong winds to occur will also be quantified.

The results of all of the above assessments will be presented within the ES Chapter.

Selected roof terraces will be tested within the simulations in order to determine the suitability of these areas for future residents. Although the assessment of these spaces will be completed for all seasons, the focus will be on the wind conditions through the summer season.

4.16 Waste Management

4.16.1 Baseline Conditions

The woodland / grassland / meadowland / watercourses uses existing at the Site will produce limited quantities of waste likely limited to organic wastes arising from habitat and woodland management. Similar

wastes will arise from the allotments. The existing Travellers site will produce limited quantities of household waste and similar. The existing New River Trading Estate tenants will produce a range of wastes related to their specific business activities. The Turnford Household Waste Recycling Centre (HWRC) and the waste transfer station (WTS) at the Council depot will receive and despatch various household and potentially commercial waste streams.

4.16.2 Likely Effects

Waste will arise from the construction and operational phases of the Development. Sensitive receptors both on and offsite include humans, the environment (e.g. water quality, flora) and landfill disposal capacity. Less sensitive are offsite waste management facilities accepting wastes from the Site which can be considered to be beneficiaries, subject to having available capacity.

The loss of waste transfer capacity from the HWRC and Council WTS will be compensated for by re-provision at the Brookfield Garden Village site therefore there will be no overall negative effect.

4.16.3 Approach and Methodology

- The baseline scenario will be established through desk-based assessment including appraising publicly available data to find out:
  - waste arisings in the area (municipal solid waste, construction, demolition, and excavation);
  - where such wastes are typically despatched to; and
  - wastes handled by the Turnford HWRC and Council WTS (i.e. types and quantities).
- Identifying the potential waste management receptors in the vicinity and their level of sensitivity (applying IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) where relevant);
- Assessing the magnitude of wastes (construction and operation phases) that might arise from the proposed development and effects these might have. This would involve:
  - Using the Building Research Establishment's (BRE's) SmartWaste tool to estimate construction waste arisings;
  - Engaging with BBC to establish its operational waste storage capacity requirements, then estimating necessary waste storage provisions (i.e. bin numbers) using the best available information;
  - Using other publicly available information to estimate the operational waste arisings.
- Assessing the proposals for replacement HWRC and Council WTS in Garden Village in terms of waste capacity and types of waste to be managed.

4.17 Cumulative Effects

The EIA Regulations require that, in assessing the likely significant effects of a particular project, consideration is given to the likely significant cumulative effects that may arise from the project. Cumulative effects can be categorised into two types:

- **Impact Interactions** – Different effects arising from the proposed Development (e.g. noise, dust and visual effects) that all impact upon a single receptor; and
- **Combined Effects** – Effects arising from the proposed Development together with other existing and / or approved projects.

4.17.1 Approach and Methodology

Impact interactions would relate predominantly to demolition and construction, where effects such as construction noise and dust nuisance can occur together on nearby sensitive receptors. These would be qualitatively assessed using the findings of the individual EIA technical studies within the ES, together with professional judgement.

In respect of combined effects, a set of specific criteria were established to determine the existing and/or approved projects to be included within the assessment of cumulative effects:

- **Criterion 1**: Projects within 1km of the Site and with a valid planning permission (or that are anticipated to have planning consent by the time the application for Brookfield Riverside goes to planning committee);
- **Criterion 2**: Projects meeting criterion 1 that have a non-residential floorspace uplift of greater than 10,000m^2 Gross External Area (GEA);
- **Criterion 3**: Projects meeting criterion 1 that have greater than 150 residential units;
- **Criterion 4**: Projects meeting criterion 1 that have a total site area of greater than 5ha;
- **Criterion 5**: Projects meeting criterion 1, but not necessarily criteria 2-4, which introduce sensitive receptors near to the site.

The December 2020 Informal Scoping Opinion issued by BBC, advised on development proposals within the local area be considered within the cumulative assessment, including both submitted and foreseeable planning applications. Both the Brookfield Garden Village Development and the Golf Course Redevelopment, which are part of the Brookfield Masterplan, would be considered within the cumulative assessment of the proposed Development. The intended planning submission for these schemes is also Summer 2022.

The schemes relevant to consideration of cumulative effects are presented in **Table 9** and the locations are illustrated in **Figure 13.**

Table 9: The Schemes Relevant to Consideration of Cumulative Effects

Ref.	Scheme	Details	Planning Application Status
1	Brookfield Garden Village (Located adjacent to the western boundary of the site)	Outline application (all matters except access reserved) for a new mixed use Garden Village development comprising approximately 1,250 new dwellings, including affordable housing; elderly persons accommodation; a new neighbourhood centre comprising shop(s) and facilities; associated open space and community/recreational facilities; new primary school (up to 3FE); new blue light hub; site for relocation of Halfhide Lane gypsy community (20 pitches); relocation of Local Authority recycling centre, depot and Halfhide Lane allotments; associated drainage, landscaping and infrastructure; together with highway infrastructure and alterations comprising: the creation of a new link road and spine road between the Turnford Interchange and Halfhide Lane; creation of new cycle and pedestrian links via new A10 underpass to Winnipeg Way and via new bridge crossing over New River to Halfhide Lane; associated sustainable transport improvements to Halfhide Lane; Garden Village loop road, internal estate roads and associated cycle and pedestrian facilities.	Planning Application to be submitted in Summer/Autumn 2022.
2	Cheshunt Golf Course (Located to the south-west of	Outline planning application, with all matters reserved except for landscaping, to be considered for the reconfiguration and extension of the golf course including revisions to the southern and eastern boundaries.	Planning Application to be submitted in Summer/Autumn

Ref.	Scheme	Details	Planning Application Status
	the site)		2022.
3	Cheshunt Lakeside (07/18/0461/O) (Located approximately 1.4km south east)	Outline application with all matters reserved other than access for the demolition of existing buildings and structures and the redevelopment of the site for a residential-led mixed use development including basement parking and servicing comprising up to 1,725 apartments (use class c3 (including elderly accommodation)), up to 19,051 sqm (gia) of commercial and non-commercial floorspace including business (use class b1), retail (use classes a1, a2, a3 and a4) and community and leisure uses (use classes d1 and d2), a two form entry primary school, the creation of a new local centre plaza and link access from windmill lane, plus associated works for landscaping, flood attenuation, works to existing waterways, parking areas, pedestrian, cycle and vehicular routes.	Outline planning permission was granted on 02.08.2019. Reserved Matters for phase 1a and 1b have been approved and the development is currently under construction.
4	Rosedale Park North and South (07/17/0352/O) 2km west	Mixed use scheme to include new linear park and comprising up to 380 dwellings, 64 bed care home, local centre comprising up to 604 sq m (GIA) of A1, A3, A4, A5 and D1/D2 uses and ancillary facilities, a primary school, improved recreational leisure and sporting facilities and associated open space, landscaping and car parking.	Planning application approved July 2020.
5	Park Plaza (07/22/0287/F) (Located approximately 3km south of it site)	Redevelopment to create a new film and media studio complex including ground and enabling works partial demolition and demolition of existing structures works and change of use to existing listed buildings construction of stages workshops backlot and ancillary studio facilities and services (including offices staff amenity facilities mobility hubs and waste/recycling facilities associated with the principle use as a film and media studio complex) associated green space and other green infrastructure and associated works including soft and hard landscaping drainage utilities new vehicular access and associated works at A10 and Lieutenant Ellis Way junctions and other enabling works.	Planning application validated - 16/03/2022.
6	High Leigh Garden Village Phase 1 (07/13/0899/O) (Located approximately 3.8km to the north)	Outline planning application for a residential/mixed use development incorporating housing up to 523 units (with delivery of a 1FE primary school) or up to 485 units (with delivery of a 2fe primary school), a shop, a hotel (with ancillary gym/restaurant), commercial floor space, public open space and allotments, with all matters reserved except for means of access from the Dinant link road and lord street and a sustainable urban drainage systems with associated earth works to enable delivery of phase 1	Approved but not delivered
	High Leigh Garden Village, Phase 2 (07/20/0046/RM) (Located approximately 3.8km to the north)	High Leigh Garden Village Phase 2 Hoddesdon Hertfordshire-reserved matters pursuant to Condition 4 of outline planning permission 07/13/0899/O in relation to the first residential phase to provide 100 new homes; and discharge of conditions 16, 27, 33, 36, 43, 44 and 47 and part discharge of condition 23.	Application sent as part of Conditions Discharge – Within original sketch.
7	The Broxbourne School Site (07/16/0512/F) (Located approximately 1km to the north)	Hybrid application comprising of part full, part outline, for: 1) redevelopment of existing school to provide an 8 form entry secondary school on land to the south of the existing school buildings, comprising a single school building arranged over part-2, part-3 storeys; new indoor/outdoor sports facilities including floodlit synthetic turf pitch and hard-surfaced courts, forming a community leisure hub; car parking with student drop off/pick-up area; landscaping; remodelling of existing accesses at high road	Approved and being delivered

Ref.	Scheme	Details	Planning Application Status
		and bell lane (full application); and 2) redevelopment of existing school buildings and part-playing field area to the west for residential development comprising of up to 153 dwellings maximum; internal access road formed off existing bell lane access with associated improvements; public open space; car parking; landscaping (outline application - all matters reserved except means of access).	
8	Cheshunt Sports Village (07/18/0514/F) (Located approximately 3.4km to the south)	Area 1 - new stadium with capacity for up to 2000 spectators. 53 no. 1 bedroom apartments, 62 no. 2 bedroom apartments, 26 no. 3 bedroom houses and 22 no. 4 bedroom houses, (163 residential dwellings) highway access works, internal roads and supporting infrastructure area 2 - northern block - new facilities for Cheshunt football club in use classes d1, d2 and sui generis - matters relating to internal layout and appearance reserved. area 3 - western block - new sports, community, leisure, and commercial uses in use classes a1, a3, a4, a5, b1, d1 and d2 - matters relating to internal layout reserved. (Resubmission of 07/16/1369/F).	Appeal received and permission granted
9	Northern High Street Redevelopment	Outlined in the Emerging Local Plan within to Waltham Cross area.	No application has been made yet
10	133 -137 High Street Waltham Cross Hertfordshire EN8 7AP (07/21/1260/O) (Located approximately 2.9km to the south)	Outline permission for the demolition of existing building and erection of a 4-storey apartment block (containing 40 flats and commercial floor space) with basement parking (part of the Northern High Street allocation)	Resolution to grant planning permission subject to s.106 obligation (25.05.22)
11	Theobalds Business Park (07/1181/O) (Located approximately 2.3km to the south)	Outline application for construction of a high-tech employment development in a parkland setting together with associated infrastructure comprising: 1) a data centre facility (upto 65,000 sq.m) and associated ancillary plant storage and office space 2) business space (upto 36,400 sq.m) reserved for b1/b2/b8 use 3) open space, landscaping and flood mitigation 4) associated vehicular access from the a10 (Great Cambridge Road) and lieutenant Ellis Way 5) electricity sub-station.	Applied but not delivered

Combined effects will typically be considered within each respective technical chapters (e.g. the combined effects of the Proposed Development and other identified projects would be inherently assessed within the transport, air quality and noise chapters, as the cumulative traffic flows will be run through the traffic modelling (subject to separate scoping exercise with the Highways Authority), whereas impact interactions will be considered within the 'Cumulative Effects' chapter of the ES (See above) by taking the effects identified in each technical chapter on a single receptor and referencing these all in a single table for clarity.

5. Other Topic Areas to be Referenced in the ES

There are three topic areas which substantially overlap with other proposed ES Chapters and documents to be submitted in support of the planning application. These are Human Health, and Lighting.

At the time of authoring this EIA Scoping Report, there was no government guidance as to how these topic areas should be approached. As such, due to the considered overlaps, it is proposed that information relating to these topic areas is referenced within the ES, as opposed to preparing separate chapters / assessments for these topics.

5.1 Human Health

The proposed Development would not include any uses or activities that would be considered to pose a significant risk to human health. Furthermore, the proposed Development is not located within the vicinity of any activity or uses that would be considered to pose a risk to human health in respect of future residents or users of the proposed Development.

Issues resulting from noise and air pollution have already been considered within **Section 4.7 - 4.8**. These assessments inherently consider human health, being made against AQOs and noise levels that are set to protect residents and other sensitive users. Furthermore, human health is also a key consideration in assessing land quality, with Soil Guideline Values (SGVs) based on the end use of the Site (e.g. the most stringent values are set for 'residential with plant uptake' end uses, with less stringent requirements for commercial and retail uses etc.).

Physical activity will be encouraged through the provision of open space, enhanced cycle connectivity and improved Site permeability. It is therefore proposed that **ES Chapter 8: Transport and Access** would explain this approach and provide appropriate referencing to risks and effects to human health.

As such, the proposed scope of the ES already makes provision for the inclusion of information and assessments which can be used to judge the likely risks to, and effects upon, human health. It is therefore proposed that **ES Chapter 2: EIA Methodology** explains this approach and provides appropriate referencing as to where the ES deals with risks and effects to human health. This would negate the need for a separate ES Chapter dealing with the issue of human health, which in this instance would be unnecessarily repetitious.

A separate Health Impact Assessment (HIA) will be submitted as standalone document to support the planning application. This will take the form of a rapid HIA following the Healthy Urban Development Unit (HUDU) methodology.

5.2 Lighting

The Site lies in an urbanised rather than rural setting, close to Flamstead End, Coopers Walk and Turnford, the A10 (which is lit along this length), and commercial and retail uses within the Brookfield Centre and Brookfield Shopping Park. The Site is also partly brownfield, incorporating the New River Trading Estate. It is not therefore considered to lie in an area that is likely to be significantly affected by lighting, nor close to any existing individual receptors (e.g. homes) that are sensitive to lighting.

Night-time lighting has been considered within Landscape & Visual Effects section of **Section 4**, with those effects considered unlikely to be significant and therefore proposed to be scoped out of consideration within the ES. Lighting will still be relevant in the consideration of effects on ecology, however, particularly in areas that are already used for bat foraging or commuting or are being put forward as wildlife corridors within the masterplan. The effects of lighting will therefore be considered within **Chapter 13 Ecology** of the ES. Where full details of lighting are not available – such as for the outline elements of the scheme – it is proposed that maximum lux levels are set to inform the future

lighting design. This can be controlled by way of planning condition.

6. Topics Scoped Out of the ES

6.1 Risk(s) of Major Accidents and / or Disasters

The EIA Regulations 2017 relate to a very broad range of development types. These development types include, for example, power stations, hazardous waste facilities and fuel storage facilities. Clearly, it is these types of project that would be more likely prone to major accidents and / or disasters rather than a project such as the Development. It therefore follows that the consideration of risk(s) of major accidence and / or disasters in the context of EIA needs to be proportionate to the likelihood of the risk(s).

In relation to the Site and the proposed Development, a desk-based review has ascertained the following in relation to potential risk(s) of major accidents and / or disasters:

- no structural, geomorphological or geochemical features are recorded on or near to the Site by BGS mapping;
- the Site is not in an area that could be affected by coal or metalliferous mining activity;
- the Applicant is committed to implementing a CEMP to manage the Works and implement practices to manage environmental issues and any environmental risks during the demolition and construction;
- the design of the Development is not expected to cause any aviation risk due to its height; and
- there are no Control of Major Accident Hazards (COMAH) sites located within 3km of the Site.
- The safety of new junctions and highways will be considered in the TA that will be submitted alongside the planning application will. Road Safety Audits will also be undertaken at the appropriate stages of development to ensure the proposed highways designs achieve a high safety standard.
- with regard to crime prevention, the proposed Development would be designed in accordance with Secured by Design (SBD) principles in consultation with Hertfordshire Constabulary's Crime Prevention Design Service. This will ensure that any advice is taken on board and that crime prevention is dealt with through the design of the Development using the appropriate SBD principles; and
- due to the presence of a high pressure 14 inch fuel pipeline running through the Site, consultation with the Health and Safety Executive (HSE) would need to be undertaken and a PADHI Assessment may be required for their for approval. The design of the Development would also respond to the presence of the pipeline by including any easements and exclusion zones as necessary and agreed by any applicable regulatory bodies including the HSE. Hence all necessary guidelines and policies would be adhered to through the planning system.

IEMA guidance, Major Accidents and Disasters in EIA: A Primer[35], states that –

Major accidents and/or disasters can be scoped out of the assessment if you can clearly demonstrate that:

1. there is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/ or disaster or potential for the scheme to lead to a significant environmental effect; or

2. all possible major accidents and/or disasters are adequately covered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice

Taking into consideration the IEMA guidance quoted above, alongside the review of potential risks associated with the proposed Development, it is concluded that:

- No source-pathway-receptor linkages of any potential hazards identified exists ; and/or

35 IEMA (2020). Major Accidents and Disasters in EIA: A Primer. https://www.iema.net/resources/blog/2020/09/23/iema-major-accidents-and-disasters-in-eia-primer Available at: [Accessed: 03/03/2020].

- Any possible accidents and / or disasters will be addressed through existing design measures and or adhering to guidance, legislation and future agreed planning conditions issued by BBC.

Therefore, the risk of major accidents and/or disasters can be ‘scoped out’ of the ES.

6.2 Daylight Sunlight and Overshadowing (DSO)

EIA focuses on effects to existing receptors in the consideration of DSO, with the acceptability of DSO within the proposed Development itself being considered a design issue. There are no sensitive receptors (i.e. residential properties) within proximity of the Site that are likely to be significantly affected by changes in DSO as a result of the proposed Development, with maximum building heights anticipated to be 8 storeys. It is therefore proposed that DSO be scoped out of consideration within the ES. Commentary on DSO will be provided within the Design & Access Statement that accompanies the forthcoming planning application.

7. Defining the Significance of Environmental Effects

For each of the environmental topic areas, an assessment would be made in relation to the relative significance of the likely environmental effects identified.

Specific criteria for each issue would be developed, giving due regard to the following, as relevant:

- Sensitivity of the receptor; and
- Nature of the effect (direct or indirect, reversible or irreversible);
- Extent and magnitude of the effect;
- Duration of the effect (short, medium or long-term);
- Permanence of the effect (temporary or permanent);
- Whether the effect occurs in isolation or is cumulative;

In order to provide a consistent approach in reporting the outcomes of the various studies undertaken as part of the EIA, the following terminology would be used throughout the ES to describe the likely significance (or otherwise) of identified effects:

- **Insignificant**: No significant effect to an environmental resource or receptor;
- **Significant beneficial**: Advantageous or positive effect to an environmental resource or receptor; and
- **Significant adverse**: Detrimental or negative effect to an environmental resource or receptor.

Whilst there is no recognised definition of what constitutes a 'significant' effect, it is good practice to identify the degree of significance or importance. It is therefore proposed that significant effects will generally be described as follows, unless best practice guidance for specific topics requires the use of different descriptors:

- **Minor significance**: Slight, very short or highly localised effect;
- **Moderate significance**: Limited effect (by extent, duration or magnitude) which may be considered
- significant; and
- **Major significance**: Considerable effect (by extent, duration of magnitude) of more than local
- significance or in breach of recognised acceptability, legislation, policy of standards.

In accordance with the EIA Regulations, where significant environmental effects are identified, mitigation measures would be recommended and the significance of the residual effect (with the mitigation measures implemented) would be stated within the ES.

8. Proposed Structure of the Environmental Statement

The ES will comprise the following:

- Volume 1: Main Text;
- Volume 2: Figures;
- Volume 3: Appendices; and
- Non-Technical Summary.

8.1 Environmental Statement Volume 1: Main Text

This will contain the findings of the EIA. **Table 10** provides an outline structure of the ES.

Table 10: Proposed Structure of ES Volume 1

ES Chapter	Author
1. Introduction	Waterman
2. EIA Methodology	Waterman
3. Existing Land Uses & Activities.	Waterman
4. Alternatives & Design Evolution	Waterman
5. The Development	Waterman
6. Construction Strategy & Programme	Waterman
7. Socio-economics	CBRE
8. Transport & Access	Mayer Brown
9. Noise & Vibration	Tetra Tech
10. Air Quality	Tetra Tech
11. Greenhouse Gases & Climate Change	Hoare Lea
12. Ecology	Waterman
13. Water Resources and Flood Risk	Waterman
14. Ground Conditions & Contamination	Waterman
15. Historic Environment	Waterman
16. Landscape and Visual Effects	Waterman
17. Wind	RWDI
18. Waste	Waterman
19. Cumulative Effects	Waterman
20. Summary of Residual Effects & Next Steps	Waterman

8.2 Environmental Statement Volume 2: Figures

Figures accompanying all chapters of **ES Volume 1** will be presented in a separate volume.

8.3 Environmental Statement Volume 3: Appendices

This will provide detailed supporting data, information and the full text of all relevant technical assessments undertaken as part of the EIA which have supported the preparation of stand-alone technical chapters (e.g. protected species surveys).

8.4 Non-Technical Summary

This will provide an accurate and balanced account of the key information in the ES in non-technical language. The Non-Technical Summary (NTS) will be produced as a stand-alone document in a format suitable for public dissemination.

9. Next Steps

This request for a scoping opinion is made under Regulation 15 of the EIA Regulations 2017.

A copy of this request for a scoping opinion is expected to be made available on BBC's website (www.broxbourne.gov.uk) and circulated to:

- BBC – Planning;
- BBC – Environmental Health;
- HCC – Highways;
- HCC – Drainage;
- HCC – Heritage;
- Natural England;
- Environment Agency;
- Historic England; and
- Herts and Middlesex Wildlife Trusts.

Under Regulation 15(4) of the EIA Regulations 2017, BBC must, within 5 weeks beginning with the date on which that request was received, or such longer period as may be agreed in writing with the person making the request, adopt a scoping opinion and must send a copy to the person who made the request.

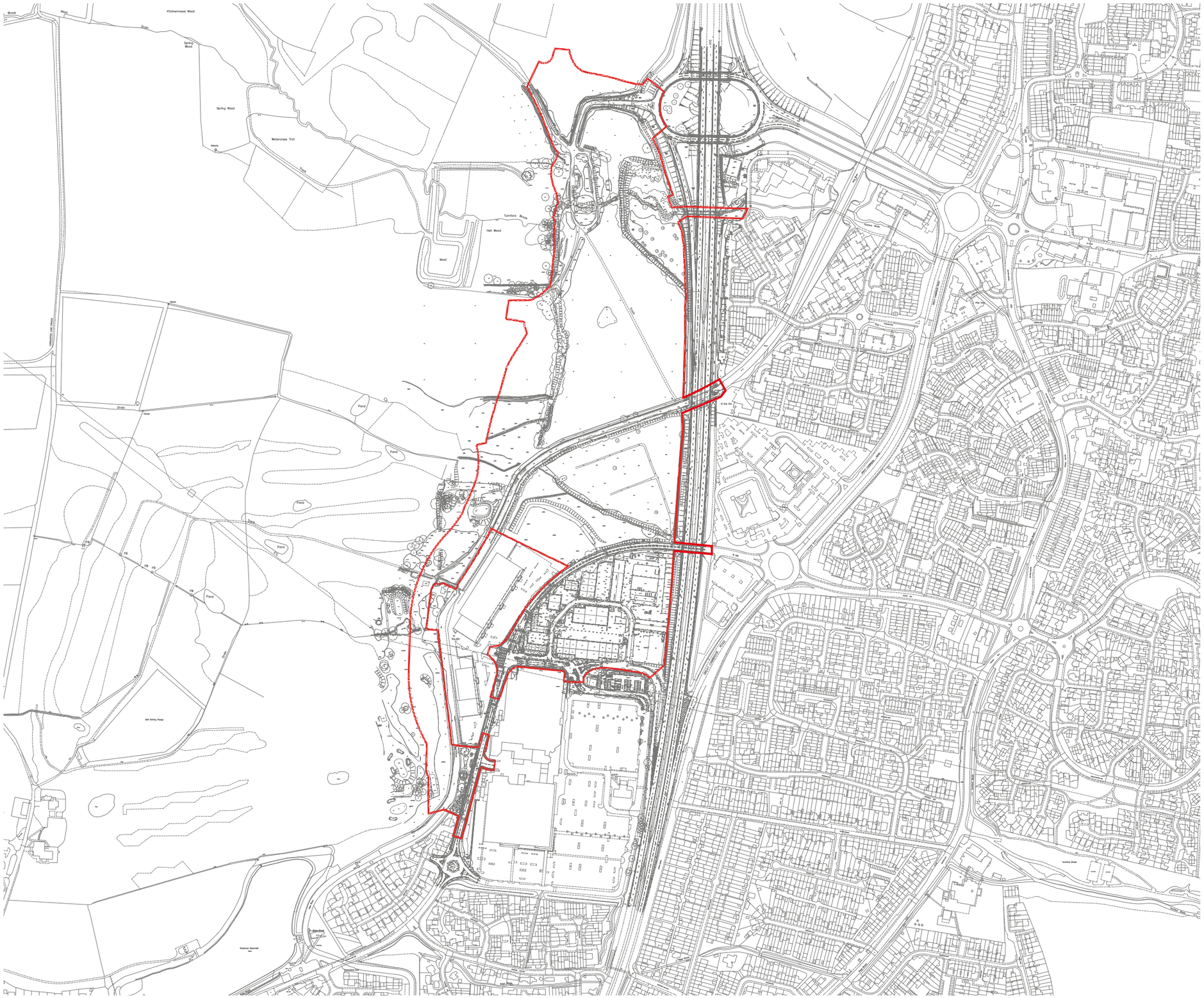
In accordance with Regulation 15(3) of the EIA Regulations 2017, should BBC consider that they have not been provided with sufficient information to adopt an EIA scoping opinion, they should notify the person making the request of the points on which they require additional information.

APPENDICES

A. FIGURES

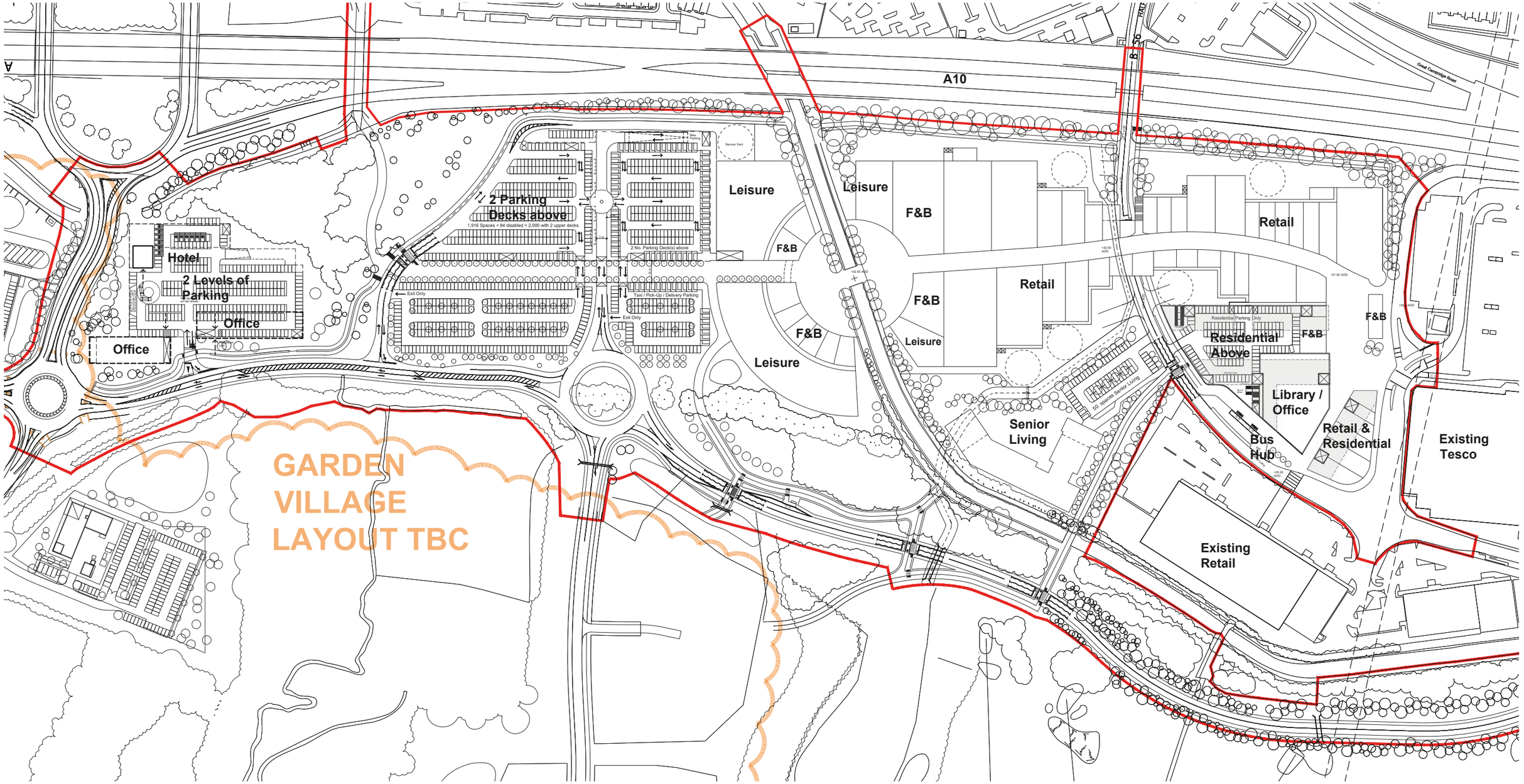
N

Project Details	WIE16725-100: Brookfield Riverside
Figure Title	Figure 1: Site Location Plan
Figure Ref	WIE16725-100_GR_SR_1D
Date	May 2022
File Location	\\s-lncs\wiel\projects\wie16725\100\graphics\sr\issued figures



Project Details	WIE16725-100: Brookfield Riverside
Figure Title	Figure 2: Redline Boundary Plan
Figure Ref	WIE16725-100_GR_SR_2A
Date	May 2022
File Location	\\s-lncs\wiel\projects\wie16725\100\graphics\sr\issued figures

www.watermangroup.com



N

Indicative Site Boundary

Project Details	WIE16725-100: Brookfield Riverside
Figure Title	Figure 3: Masterplan of Brookfield Riverside
Figure Ref	WIE16725-100_GR_SR_3A
Date	May 2022
File Location	\\s-lncs\wiel\projects\wie16725\100\graphics\sr\issued figures

Source: Lyons + Sleeman + Hoare Architects