Environmental Statement

Broadwater Gardens

Relating to site at
BioPark, Broadwater Road, Welwyn Garden City, AL7 3AX

December 2020

hgh

hghconsulting.com

Contents

List of Figures

Appendices (Volume 2)

Appendix 8.1: HTVIA

Appendix 8.2: Agreed correspondence with the council regarding scope

1. Introduction

1.1.1. This Environmental Statement (ES) had been prepared on behalf of HG Group (Ltd) ("the Applicant") to accompany a detailed planning application for the redevelopment of the BioPark site, Broadwater Road, Welwyn Garden City, AL7 3AX ("the Project Site").

1.1.2. The above development is referred to hereon after as "The Project". The Project comprises a residential development of 289 residential units with associated private and communal amenity space, public open space, car and cycle parking and landscaping. A more detailed description of the development is outlined in Chapter 4.

1.1.3. The Project Site covers an area of 1.22 hectares (ha) and is located within the administrative boundary of Welwyn Hatfield Borough Council ("WHBC"). The Project Site location is shown in **Figure 1.1** below and a description of the site and its surrounding are provided within Chapter 3.

Figure 1.1: Project Site Location

1.1.4. The application is a full planning application for the redevelopment of the Project Site to provide 289 residential units in buildings ranging from 2 to 9 storeys with associated private and communal amenity space, public open space, car and cycle parking, and associated landscaping.

1.1.5. Environmental Impact Assessment (EIA) is a formal procedure underpinned by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations'). The EIA process enables developers to respond iteratively to the prevailing environmental conditions and constraints pertaining to their proposals.

1.2. Purpose

1.2.1. The purpose of the ES is to inform the decision-making process in relation to the Project. The ES contains such information referred to in Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations') as is relevant to the specific characteristics reasonably required to assess the likely significant environmental effects of the Project. Chapter 2 provides further detail on how the EIA scope has been defined and the methodology.

1.2.2. In accordance with the EIA Regulations, this ES considers the environmental effects of the Project during construction and during occupation of the Project. The assessment also considers the potential for cumulative effects which may arise from the Project when considered against other relevant nearby development schemes, as well as the combined effects of individual effects arising from the Project. Where likely significant adverse effects on the environment are identified, the ES proposes ways to avoid, prevent or reduce and, where possible, offset these effects. These are known as mitigation measures.

1.3. Structure of Environmental Statement

1.3.1. The ES is set out in a structured manner to allow for easier navigation:

- **Non Technical Summary (NTS)**
- **Volume 1:** (this Volume) Main text; and
- **Volume 2:** Appendices.

1.3.2. In this volume, the ES is split into three parts:

1.3.3. Chapters 1—5 sets out the assessment requirements, the location and uses on and surrounding the Project Site, sets out alternatives that have been considered when formulating the Project, the Project description and sets out an approximate construction process.

1.3.4. Chapters 6 – 8 considers the potential effects of the Project on the sensitive receptors in the surrounding area. These chapters have been structured in a uniform manner so that the assessment method and criteria, the baseline conditions, the predicted effects and proposed mitigation measures can be easily identified.

1.3.5. Chapter 9 summarises the conclusions of the ES by setting out any residual significant effects that may arise from the construction and development of the Project.

1.4. Technical Team

1.4.1. The specialist consultant team appointed to undertake the assessments for the EIA are set out in **Table 1.1**. below.

Table 1.1: EIA Technical Team

Company	Technical Topic
Air Pollution Services	Air Quality
i-Transport	Transport
Bidwells	Heritage and Townscape Visual Impact

1.4.2. In addition to this ES and its technical appendices, the following key documents have been submitted in support of the planning application. Where appropriate some of these will inform the ES:

- Design and Access Statement;
- Planning Statement;
- Environmental Statement;
- Heritage and Townscape Visual Impact Assessment;
- Transport Assessment;
- Travel Plan;
- Daylight and Sunlight Assessment;
- Flood Risk Assessment and Drainage Strategy;
- Contaminated Land Assessment;
- Noise Assessment;
- Ecological Impact Assessment;
- Arboricultural Impact Assessment;
- Financial Viability Assessment;
- Energy Strategy;
- Sustainability Strategy;
- Fire Strategy;
- Statement of Community Involvement;
- Economic Statement;
- Marketing Assessment;
- Construction Management Plan;
- Site Waste Management Plan.

1.5. Opportunity for Public Consultation

1.5.1. Should interested parties wish to make representations on the content of this ES, or the any other documents, plans or drawings associated with the planning application, they should be made in writing to:

Planning Department
Welwyn Hatfield Borough Council
The Campus
Welwyn Garden City
AL8 6AE

www.welhat.gov.uk

1.5.2. Hard copies of the complete ES can be purchased from hgh Consulting at a cost of £100. The ES can be purchased on CD at a cost of £5 and an electronic version can be sent free of charge in PDF format.

2. EIA Scope and Methodology

2.1. What is an Environmental Impact Assessment?

Legal Background

2.1.1. The Town and Country Planning (Environmental Impact Assessment Regulations 2017 requires that for certain planning application Environmental Impact Assessment (EIA) is undertaken and an Environmental Statement (ES) is produced and submitted with the planning application.

2.1.2. EIA is a procedure which assesses the environmental impacts of a Project and provides the information within an ES which serves to inform the decision-making process.

2.1.3. EIA is a systematic and objective process through which the likely significant environmental effects of a project can be identified, assessed and, wherever possible, mitigated. The process and its outcomes are then reported in the ES to the local planning authority and its advisors, and the public. The NTS is provided to allow a wider public understanding of the environmental effects of the Project.

2.1.4. EIA follows an iterative process that usually involves the following stages:

1. Screening is the first stage of the EIA process where the relevant authority (local planning authority of the Secretary of State) decide if EIA is required.
2. Once it has been agreed that EIA is required for the Project, scoping is undertaken to define what should be assessed. This is done in partnership between the applicant, the local planning authority and stator consultees (including the Environment Agency, Natural England and Historic England).
3. With the scope of the EIA set, relevant information on the environmental baseline conditions is collected. This information is then used initially to understand the dynamics of the likely environmental effects an inform the design of the Project to avoid and/or minimise potentially significant adverse environmental effects. It is also at this stage that areas of potential environmental enhancement are identified.
4. Any significant adverse effects that are identified during the formal assessment stage are then reviewed against the design to consider whether alterations could be made to avoid or reduce the effect. Should the design be altered the stage is repeated.
5. Where significant adverse effects cannot be avoided or reduced through alterations to the design itself, mitigation measures are considered. Monitoring may also be considered to measure the actual significance of the effect during and post-construction and allow management of mitigation where appropriate.

2.1.5. Once the EIA is completed, the ES is submitted to the local planning authority for consideration with the planning application(s).

2.2. Screening—Is an EIA Required?

2.2.1. Development that falls within Schedule 1 of the regulations always requires EIA and is referred to as 'Schedule 1 development'. Development listed in Schedule 2 that is located in a 'sensitive area' (Regulation 2(2)) or exceeds one of the relevant criteria thresholds given in Schedule 2 is referred to as 'Schedule 2 development'. Not all 'Schedule 2 development' will require an EIA, only that development likely to have significant environmental effects due to its size, location or nature. Development that requires EIA is referred to as "EIA development".

2.2.2. In determining whether the development is likely to give rise to significant environmental effects, reference should be made to Schedule 3 of the Regulations. This identifies three factors that should be taken into account:

- Characteristics of the development (such as size, cumulative effects, use of natural resources, production of waste, pollution and nuisances, risk of accidents and risks to human health);
- Location of development (by reference to the environmental sensitivity of the area); and
- Characteristics of the potential impact (having regard in particular to the extent of the impact, its transboundary nature, magnitude and complexity, probably and duration, frequency and reversibility).

2.2.3. A Screening Request was made to WHBC on 11th September 2020 (see Appendix 2.1) to determine if the Project would be considered 'EIA development', the Screening Request held the view that the Project was not likely to give rise to significant effects that would require assessment under EIA.

2.2.4. Following the Screening Request (Appendix 2.1), continued engagement was held with WHBC as part of the ongoing pre application discussions. WHBC considered that further information should be provided in respect of the Screening Request, specifically in relation to the operational impacts relating to transport and air quality. This additional information was provided to WHBC on 28th October 2020.

2.2.5. A Screening Opinion was adopted by WHBC on 18th November 2020 (see Appendix 2.2) which concluded the Project should be considered to be EIA development. And that,

"The ES should address the cumulative impacts on traffic and air quality specifically, as well as the potential significant impact regarding heritage, townscape and visual impacts."

2.2.6. hgh consulting do not agree with the conclusions of the Screening Opinion and a request for a Screening Direction was made to the Secretary of State on the 20th November 2020 (see Appendix 2.3). Appendix 2.3 contains full details of the Screening Process, including the WHBC request for further information.

2.2.7. At the time of writing, the Screening Direction is outstanding, it is understood that the Planning Casework Unit is working at reduced staffing, due to staff being redeployed to other

Government Departments to deal with the Covid 19 pandemic. The Screening Direction is anticipated to be adopted in January 2021.

2.2.8. Should the Screening Direction conclude that the Project is not considered to be EIA development, the ES will be withdrawn and the planning application will be determined on the basis of non EIA development.

Scope of the EIA

2.2.9. The principle of Scoping is to determine the likely significant effects associated with the Project and the scope of the assessments that should be included within the EIA. A formal Scoping Opinion has not been sought.

2.2.10. On 20th November 2020 hgh Consulting emailed WHBC to set out the anticipated technical scope of the ES (Appendix 2.4). It is acknowledged that WHBC advised, within the Screening Opinion (see Appendix 2.2), that a Scoping Opinion should be sought to determine the extent of issues to be considered in the assessment and reported within the ES.

2.2.11. However, Screening Opinion (see Appendix 2.2) was clear on what topics WHBC considered to have the potential to give rise to significant effects. Therefor,e a Scoping Opinion was not sought.

2.2.12. The technical scope of the ES is considered to be as follows:

- Air Quality;
- Transport; and
- Heritage and Townscape and Visual Impact (HTVIA).

Health and Wellbeing

2.2.13. The potential for the Project to result in significant effects related to human health will be considered within the specific topic chapters of Air Quality (Chapter 6) and Transport (Chapter 7).

Accidents, Fire and Natural Disasters

2.2.14. Given the nature of the Project, the potential for either large volume storage or frequent passage / delivery of fuels and chemicals during either the construction phase or following completion is considered to be low when compared to more industrial development proposals, such as chemical works, storage depots, docks or major highways. It is therefore considered that whilst there is always a potential risk that an accident, fire or natural disaster could result in a significant environmental impact, this risk can be appropriately mitigated through embedded design measures and through compliance with statutory guidelines. Therefore, this has not been considered in further detail.

Electronic Interference

2.2.15. Analogue television broadcast has now been phased out and replaced by digital television, which is largely unaffected by atmospheric conditions that rendered analogue television unwatchable, and does not suffer reflection effects and ghosted image generation. Given the switch to digital television broadcast, the Project will be unlikely to give rise to significant effects on digital television.

Climate change

2.2.16. Climate change has been considered within the Sustainability Statement and the Energy Strategy which are submitted as stand along documents in support of the planning application. These documents have informed the ES accordingly.

2.2.17. The geographical extent of the EIA also considers the potential implications of related and un-related development activities such as the highway improvements required for the EIA proposals.

2.3. Topics to be Scoped Out

2.3.1. A number of technical topics have not been considered for assessment within the EIA. This is due to the size, nature and location of the Project. The Project Site is not located within a 'sensitive locations' as defined in the EIA Regulations. The Project residential in nature (with an element of non residential space in the form of a community hub) and it is located on an existing brownfield site in buildings ranging from 2 to 9 storeys. The following information is contains some duplication of the information provided within the Screening Request (see Appendix 2.1) and updates following the completion of the technical reports which support the planning application.

Noise and Vibration

2.3.2. Overall, given the proposed location of the development and the predominantly residential nature of the Project, no significant environmental effects by way of noise are anticipated which would require the need for assessment under EIA. As this is the case, no significant cumulative effects related to noise are expected during operational phases and any impact during construction can be suitably mitigated through planning conditions. Notwithstanding the above, noise assessment supports the planning application documentation.

2.3.3. The noise assessment concluded that acceptable internal noise levels can be achieve through the selection of suitable glazing and acoustically treated trickle ventilation. The external areas of open space will be screened from the dominant noise sources provided by the buildings structure. Noise within these areas have been assessed as being within the WHO guidelines.

2.3.4. Vibration levels measured at the Project Site are considered to be low and not likely to lead to adverse effects on the building structure or the future occupants of the Project.

Flooding and Drainage

2.3.5. A Flood Risk Assessment (FRA) and Drainage Strategy has been prepared and forms part of the planning application documentation. The FRA concludes that the Site is located within the Environment Agency Flood Zone 1. With the exception of groundwater flooding the flood risk to the Project Site is considered to be very low. The risk of flooding from groundwater is considered to be low.

2.3.6. The Drainage Strategy conforms to the requirements as set out within the emerging local plan and the NPPF. The Drainage Strategy will mitigate and existing floodrisk to the Project and compliance with the strategy will ensure that the Project will not increase floodrisk up and down stream of the Project Site.

Ecology

2.3.7. The Site is not subject to any statutory or non-statutory nature conservation designations. There are two statutory sites within 2km of the Site:

2.3.8. Sherrardspark Wood is a Site of Special Scientific Interest (SSSI) lies approximately 1.1km from the Site and the Commons Local Nature Reserve (LNR) lies 2km from the Site.

2.3.9. Sherrardspark is characterised by the acid soils which support an extensive ancient semi-natural Sessile Oak / Hornbeam Quercus petraea / Carpinus betulus woodland. A significant part of this wood is dominated by mature Sessile Oak High forest.

2.3.10. The Commons LNR is a mosaic of habitats including the Blackfan valley fen, broadleaved woodlands, marsh.

2.3.11. One Herts and Middlesex Wildlife Trust Nature Reserved lies within 2km of the Site. There are two Local Wildlife Sites (LWS) within 1km which include the Twentieth Mile Bridge Allotments which lies adjacent to the Site and the Dismantled Railway E. of Sherrardspark which lies approximately 0.9km from the Site.

2.3.12. A Preliminary Ecological Appraisal (PEA) and Preliminary Bar Roost Assessment (PBRA) has been carried out and the findings are summarised below.

2.3.13. The existing Site is dominated by buildings and hard paved areas for vehicles. Formal landscape planting is considered to be sparse and beds of no larger than 50sqm. Few trees are present on the Site and a wedge of ornamental trees with self-sown Sycamore are present along with small patches of overgrown grass and weeds.

2.3.14. The Site is considered unsuitable to support Great Crested Newts; Dormice; Water Voles/ Otters; Badgers; Reptiles; or Hedgehogs.

2.3.15. A bat survey was carried out which concluded that the buildings and trees on site have a negligible suitability to support roosting bats.

2.3.16. The Site is considered to be of limited value for wildlife and there is no evidence for potential to support protected or notable species.

2.3.17. Furthermore the PEA found that the Project will not impact statutory or non statutory wildlife sites within the surrounding 2km radius.

2.3.18. The Project has the potential to provide opportunities for increased foraging, nesting and connectivity for wildlife with landscaping resulting in a marginal net gain in biodiversity on the Site.

Microclimate (Wind)

2.3.19. Near the ground, the effects of surface roughness associated with buildings, trees or other obstructions influences certain aspects of behaviour and properties of the wind causing the wind speed to generally increase with height. Consequently, impacts arising from wind are usually associated with large buildings over 11 storeys which can cause windward vortexes where the wind blows perpendicular to the building and is diverted downward to ground level. The proposed development is generally lower rise with the buildings ranging from three/four storey to 8/9 storeys. It is therefore considered that the project will not give rise to significant environmental effects as a result of adverse wind conditions, however a wind study may be undertaken and submitted as part of the application to assess localised effects to ensure mitigation within the site.

2.3.20. Due to the location of the Project and the nearest cumulative schemes at the Former Shredded Wheat Factory and the schemes along Broadwater Road there is no potential to give rise to significant cumulative effects in relation to microclimate.

Archaeology

2.3.21. The Project Site does not lie within an Archaeological Priority Area. Historic mapping suggests the surrounding area comprises relatively modern development, particularly industrial use from the 1890s, with the railway use being associated with the Site from earlier. An archaeological assessment is not required to support the planning application.

Ground Conditions

2.3.22. A Phase I and Phase II Geoenvironmental Assessment has been carried out by Symbiotic Solutions Ltd. On the basis of the desk study, site investigation results and observations, laboratory testing and monitoring results no significant risks to human health or controlled waters, no significant ground gas risks and no significant risks to buried services have been identified that require specific remediation / mitigation actions. As such the Project is unlikely to give rise to significant adverse impacts in relation to ground conditions.

Socio Economics

2.3.23. The Project Site was formally used for research and development use and it is no longer operational. At the time of its closure, it was operating at approximately 44% occupancy.

2.3.24. During construction the Project will have positive economic impacts due to the number of jobs supported and the indirect effects of that increase of employment.

2.3.25. Once operational, the Project will see the introduction of a residential use on a site that has been in industrial use for a number of years. The provision of new housing to meet current demand, including an allocation of affordable housing is assumed to have a positive social impact. However, the introduction of new housing is likely to result in a subsequent demand on social infrastructure such as local services, including GPs and schools.

2.3.26. It is considered that the impact on social infrastructure and including schools will not be significant and the Project will contribute towards the provision of infrastructure through the Community Infrastructure Levy (CIL) payments.

Daylight and Sunlight

2.3.27. A daylight and Sunlight assessment has been carried out in support of the planning application. It concludes that the vast majority of the windows and rooms within the neighbouring properties will exceed the guideline values with the Project in place.

2.3.28. The assessment shows overall daylight adherence rates of 97% for VSC and 98% for daylight distribution. In terms of sunlight, all of the rooms within the neighbouring properties are shown to exceed the guideline values. It is also worth noting that a number of the windows and rooms assessed will experience an increase in daylight and/or sunlight availability as a result of the development proposals. Overall, the results of the daylight and sunlight assessments show an excellent level of adherence to the BRE guidelines.

2.3.29. An assessment has been also been carried out for the light within the Project and the results indicate that high levels of adherence are achieved for all daylight and sunlight assessments carried out.

2.4. Planning Policy Context

2.4.1. The ES will consider legislation and relevant national, regional and local planning policy and guidance, including:

- The National Planning Policy Framework (NPPF);
- National Planning Practice Guidance (PPG);
- Welwyn Hatfield District Plan (2005) – Saved Policies (2008).

2.4.2. The Draft Local Plan is currently at Examination-in-Public stage. Hearings are expected to recommence in early 2021 with adoption of the plan to follow later in the year.

2.5. Statutory Involvement

Consultation Process

2.5.1. Extensive consultation has taken place with statutory and non-statutory authorities since early 2020.

2.5.2. This includes three pre-application meetings with WHBC, and consultation with Historic England and Hertfordshire County Council Highways, and Hertfordshire County Council Lead Local Flood Authority.

2.5.3. Two design workshops have also taken place with WHBC and Place Services in September and October 2020.

2.5.4. In addition, there has been consultation with the local community. Due to the COVID-19 outbreak traditional methods, such as public exhibitions and face-to-face meetings were not be possible, therefore a 'digital first' consultation was used and details of the proposal were held on a consultation website. In addition, letters were sent out to key stakeholders including local councillors and local community groups and a community consultation newsletter was sent out in early November 2020.

2.5.5. The feedback received during the November 2020 consultation period included a favourable response to the principle of redevelopment and regeneration of the Project Site. Whilst there is support from many respondents for the Project, the main areas of concern for the majority of those who provided feedback were focused on the scale, parking, impact on local infrastructure, affordability, and sustainability.

2.5.6. A Statement of Community Involvement (SCI) details the consultation exercise with the local community and is submitted in support of the planning application.

2.6. Baseline Information

2.6.1. A wide range of baseline data on the environment has been obtained for the purposes of the assessment including:

- Published documentary information from a variety of sources;
- Survey information, including background noise levels, air quality, traffic levels in the road network, community facilities, etc;
- Aerial photography; and
- Data provided by stakeholders, including statutory and non-statutory consultees.

2.6.2. A description of the Project Site and surroundings is given in Chapter 3. More detailed baseline information considered for each topic assessment is presented in each of the relevant chapters of this ES as appropriate to describe the significant environmental effects arising from the Project.

2.7. Project Details to be Assessed

2.7.1. In order for the significant environmental effects of the Project to be identified and assessed, it is necessary to understand the Project Site and Location (Chapter 3), as well as to clearly identify all the components of the Project (Chapter 4).

2.7.2. The planning application is being made in detail. Full details of the Project are being submitted for approval with detailed plans and elevations.

2.8. Impact Assessment Guidance

2.8.1. The assessments that are being presented in the ES consider the potential for significant environmental effects to affect the baseline conditions as a direct/indirect result of the Project. A description of the aspects of the environment likely to be significantly affected by the development is a requirement of the EIA Regulations. The baseline conditions are defined as the existing state of the environment and how it may develop in the future in the absence of the Project and with certain committed developments included.

2.8.2. Where likely significant adverse effects have been identified during the assessment, it is a requirement to set out the measures that have been proposed to prevent, reduce and where possible offset any effects. These are described in each topic chapters if required.

2.8.3. The remaining residual effects taking account of mitigation measures are stated in each of the ES topic sections and included within summary tables. In each case, significance criteria are applied to identify the extent to which mitigation measures would reduce the effect that has been assessed and the residual effect that would remain.

2.8.4. In order to forecast potential future effects, it is necessary to make predictions. To ensure that predictions are as accurate as possible, a description of the methods used to assess the effects of the Project are also required by the EIA Regulations. It is also necessary to provide an indication of any difficulties or limitations encountered by the technical consultants during the EIA process.

2.8.5. Unless specifically stated otherwise, the proposed assessments will be undertaken in accordance with best practice guidelines published by the relevant professional bodies. Each technical chapter in this statement provides brief details of the baseline and assessment methodology that has been employed for that topic area.

2.8.6. Where there is no topic specific guidance available, a generic framework of assessment criteria and terminology has been developed to enable the prediction of potential effects and their subsequent presentation. The development of this generic framework has drawn upon hgh's experience of undertaking EIA. Where specific guidance is available, full details of the assessment criteria and terminology have been set out in the context of that topic.

2.9. General Assessment Framework

Receptor Sensitivity and Impact Magnitude

2.9.1. Receptors are those aspects of the environment sensitive to changes in baseline conditions. The sensitivity of a particular receptor depends upon the extent to which it is susceptible to such changes.

2.9.2. Impact magnitude is determined by predicting the scale of any potential change in the baseline conditions. Where possible, magnitude is quantified; however, where this is not possible a fully defined qualitative assessment is undertaken. The assessment of magnitude is carried out taking account of any inherent design mitigation in the proposal that forms part of the Project description.

TABLE 2.1: RECEPTOR SENSITIVITY AND IMPACT MAGNITUDE

Receptor		**Impact**	
Sensitivity to Change		**Magnitude of Change**	
Very High	VH	Very High	VH
High	H	High	H
Medium	M	Medium	M
Low	L	Low	L
Very Low	VL	Very Low	VL
Negligible	N	Negligible	N

2.10. Effect Significance

2.10.1. As shown in **Table 2.2**, the effect significance is determined by combining the predicted magnitude of impact with the assigned sensitivity of the receptor. **Table 2.3** sets out the broad definitions of significance. The definition of the level of significance at which a significant impact arises will be provided within the topic method section of each chapter of the ES.

TABLE 1.2: EFFECT SIGNIFICANCE

Criteria			Receptor Sensitivity				
			VH	H	M	L	VL
Impact Magnitude	Positive	VH	Substantial	Substantial	Major	Moderate	Moderate
		H	Substantial	Major	Moderate	Moderate	Minor
		M	Major	Moderate	Moderate	Minor	Minor
		L	Moderate	Moderate	Minor	Minor	Minor-Neutral
		VL	Moderate	Minor	Minor	Minor-Neutral	Minor-Neutral
	Negligible		Neutral	Neutral	Neutral	Neutral	Neutral
	Negative	VL	Moderate	Minor	Minor	Minor-Neutral	Minor-Neutral
		L	Moderate	Moderate	Minor	Minor	Minor-Neutral
		M	Major	Moderate	Moderate	Minor	Minor
		H	Substantial	Major	Moderate	Moderate	Minor

		VH	Substantial	Substantial	Major	Moderate	Moderate

TABLE 2.2: DEFINITION OF SIGNIFICANCE

Significance	Definition
Substantial	These effects represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.
Major	These effects are likely to be importance considerations at a regional or district scale but, if adverse, are potential concerns to the Project, depending upon the relative importance attached to the issue during the decision-making process.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may led to an increase in the overall effects on a particular area or on a particular resource.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in the detailed design of the Project.
Neutral	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

2.10.2. A required by the EIA Regulations, the likely significant effects of the EIA proposals are described as:

- Adverse or beneficial;
- Direct or indirect;
- Temporary or permanent;
- Reversible or irreversible; and
- Cumulative.

2.10.3. Adverse effects are undesirable and result from negative impacts. Beneficial effects are desirable and result from positive impacts.

2.10.4. Each effect will have a source originating from the development, a pathway and a receptor. Effects which operate in this direct way are regarded as direct effects. Effects on other receptors via subsequent pathways are regarded as indirect effects.

2.11. Qualitative and Quantitative Assessments

2.11.1. The assessment will be based on the comparison of qualitative and where possible quantitative predicted impacts compared with existing baseline environmental conditions. Any significant changes expected in future baselines due to environmental trends will also be described qualitatively, or in certain cases calculated as quantitative future baseline to allow meaningful future year assessment. These future year baselines can take account of cumulative developments not yet built although in the planning system. Each technical chapter of the ES clearly sets out where the assessments are quantitative and qualitative.

2.12. Initial and Residual Effects

2.12.1. As stated previously, the EIA process enables the likely significant effects of a Project to be identified so that, where possible, adverse effects predicted to arise as a result of the proposal can be prevented, reduced and where possible offset through the adoption of suitable measures. Additionally, enhancement measures can be incorporated to maximise the beneficial effects of the development. The adoption of mitigation and enhancement measures results in initial and residual effects. These can be defined as:

- *Initial Effects*: Effects occurring as a result of the Project prior to the adoption of any additional mitigation or enhancement measures; and
- *Residual Effects*: Effects occurring as a result of the Project taking into account the adoption of identified additional mitigation or enhancement measures.

2.12.2. All of the assessments have involved a process of interaction between the EIA team and the design team with the different technical consultants commenting on the design and suggesting design changes to reduce an adverse environmental effect or increase an environmental benefit, either during the construction or operational stages of the Project.

2.12.3. Measures that design out significant effects that form an inherent part of the Project as proposed, known as inherent effects, are considered in the initial impact. For example, many environmental constraints such as flood risk, must be designed out of a Project for it to be viable and it would be impractical to consider the Project without such measures in place.

2.12.4. Additional mitigation and enhancement is defined as a measure that is additional to the Project as initially proposed to address any outstanding residual effects.

2.13. EIA Assumptions and Limitations

2.13.1. The following key assumptions will be made in preparing this ES:

- All legislative requirements will be met. Therefore, any standard guidance which is provided to ensure minimum legal compliance is not considered to constitute mitigation in the EIA and will not be taken into account;
- The assessment of effects prior to the adoption of mitigation measures will assume that the Project will be constructed in accordance with industry standard techniques. Such techniques will therefore not be considered as mitigation;

- Where further assumptions have been made for individual topic assessments these will be identified within the relevant topic chapters; and
- Any limitations or uncertainties associated with impact prediction or the sensitivity of receptors due to the absence of data or other factors will give rise to uncertainty in the assessment. Any such limitations will be referred to in the relevant technical chapters of this ES.

Limitations

2.13.2. It is acknowledged that a formal Scoping Opinion has not been sought, however given the nature and location of the Project and the detailed Screening Opinion (See Appendix 2.2) it is considered that the Scope of the EIA is appropriate. Furthermore, consultation has been carried out with technical officers (Environmental Health and Heritage) at the WHBC and Hertfordshire County Council (Transport).

2.14. Cumulative Assessment

2.14.1. Schedule 4 of the EIA Regulations requires that the cumulative effects of the Project should be included within the ES.

2.14.2. The EIA Regulations does not set out a methodology for cumulative impact assessment. However, in many cases the broad methods employed for Sustainability Appraisal (SA) and Strategic Environmental Assessment (SEA) can be used. The European Commission has also produced a 'Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Iterations' (May 1999). These methodologies are generally qualitative since many of the interactions are too complex to robustly model quantitatively.

2.14.3. European guidance on cumulative impacts (Document EC DH XI) "Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions" (May 1999) defines cumulative impacts as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Project".

2.14.4. The guidance goes on to state that:

> "Activities in the past, present and future can all have a bearing on the project being assessment and will influence the time frame set for the EIA. Setting time frame "boundaries" will allow for the inclusion of past and future developments which could lead to indirect or cumulative impacts or impact interactions.....
>
> In practical terms the extent of the assessment in terms of how far into the past and into the future will be dependent upon the availability and quality of information. Past activities can often be identified from historical maps, present activities from current maps and future development activities from development plans.....
>
> In setting the future time boundary it is suggested that in general beyond 5 years there is too much uncertainty associated with most development proposals.....

> .....it is only reasonably to consider current events and those that will take place in the foreseeable future. Furthermore, the assessment can only be based on the date that is readily available. There needs to be a cut off point at which it can be said that the impacts cannot be reasonably attributed to the project."

2.14.5. As well as the above cumulative impacts, others will be considered on a case by case basis.

2.14.6. The cumulative impact assessment will be considered in the following categories:

- Combined Effects of Individual Impacts – For example, when air quality impact caused by increased vehicle emissions combines with a microclimate impact of reduced wind speed causing a reduction in dispersion, resulting in adverse air quality; and
- Combined Effects with Other Developments – Those that are major applications (10+ units / 1000+sqm floorspace) that were approved in the last 5 years or pending, that were considered as having the potential to give rise to cumulative impacts.

Combined Effects of Individual Impacts

2.14.7. Combined effects on individual receptors have been assessed and are set out below in Table 2.4, no combined effects have been identified. The residual impacts that have been identified by each discipline have been analysed to identify receptors that may be impacted by combined effects from, for example, air quality and transport.

2.14.8. Where a single receptor has been identified as being impacted by combined effects, this exercise has assessed the potential residual impacts on that single receptor.

Combined Effects with Other Development

2.14.9. In respect of potential cumulative effects with other developments the Planning Practice Guidance (Paragraph 24: Reference ID: 4-024-20170728) states the following:

> "Each application (or request for a screening opinion) should be considered on its own merits. There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."

2.14.10. Therefore, it is considered that that a robust cumulative assessment will account for any existing or approved developments (i.e. anything with planning permission) and any application which could give rise to cumulative impacts.

2.14.11. The scope of committed developments to be assessed within the cumulative assessment will be based on a criteria set out in each technical topic, if relevant.

2.14.12. A list of cumulative developments formed part of the Screening Request (Appendix 2.1) issued to WHBC as part for their consideration in order to agree which development should be considered as having the potential to give rise to significant cumulative effects. The cumulative projects were agreed in WHBC's Screening Opinion (Appendix 2.2). The Opinion also set out

a number of other projects to be included in the cumulative assessment (refs: 6/2018/2472/MAJ, 6/2020/2268/MAJ, and 6/2018/2387/MAJ)

2.14.13. The projects to be included within the cumulative assessment are listed in **Table 2.4** below:

Table 2.3: Summary of Potential Cumulative Development

Site	Planning Reference	Description	Decision (Date)	Comments
Former Shredded Wheat Factory	2015/0293	Part demolition, repair, restoration, extension and conversion of the former Shredded Wheat factory complex to include demolition of all buildings and structures except the original 1920's silos, production hall, grain store and boiler house. Refurbishment and change of use of the retained listed buildings to provide 2 Class C3 residential units, a Class C1 boutique/budget hotel, Class B1(a) offices, a class Class A4 pub/bar, a class Class D1 crèche and a Class D2 gym/dance/exercise.	Approved (March 2017)	Southern parcel has commenced construction with the northern parcel awaiting a start date and will therefore be considered as cumulative development.
	N6/2015/0294/PP	Outline application for the part demolition, repair, extension of conversion of the former Shredded Wheat factory. Refurbishment and change of use of the retained listed buildings. Erection of up to 805 units and c. 14,000sqm of commercial and community floorspace.	Approved (November 2017)	
	6/2018/0171/MAJ	Creation of a mixed-use quarter comprising the erection of up to 1,340 residential dwellings including 414 (31%) affordable dwellings (Use Class C3); 114 extra care homes (Use Class C2); the	Approved (February 2019)	

		erection of a civic building comprising 497 m² of health (Use Class D1), 497 m² of community use (Use Class D1), 883 m² of office (Use Class B1) and 590 m² of retail (Class A1/A2/A3/A4/A5); alterations, additions and change of use of Grade II Listed Building and retained Silos to provide 5,279 m² of Approved (February 2019) Welwyn Park Homes Ltd Broadwater Gardens Page 9 of 35 flexible business floorspace (Use Class B1), 270 m² Combined Heat and Power (Sui Generis), 2,057 m² International Art Centre (Use Class D1), 1,235 m² Gymnasium (Use Class D2), 1,683 m² of restaurant/coffee shop/bar (Use Class A1/A3/A4/A5), Creche/Day Nursery (Use Class D1) of 671 m² as well as a Network Rail TOC Building (Use Class B1) of 360 m²; plus associated car parking, access, landscaping, public art and other supporting infrastructure.		
Former Roche Products Site	N6/2010/ 1776/MA	Erection of 209 dwellings and the retention and alteration of the existing listed building for community uses, together with associated open space, landscaping, car parking and new access arrangements.	Approved (March 2011)	Completed and Operational. Considered part of the baseline environment and not

				deemed cumulative development.
	N6/2016/1882/FUL	Conversion of the listed Roche building to provide 34 residential units.	Approved (October 2018)	Completed and Operational. Considered part of the baseline environment and not deemed cumulative development.
29 Broadwater Road	6/2019/3024/MAJ	128 flats with associated car parking, landscaping, amenity space, bin and cycle storage, with alterations to existing and formation of new access on Broadwater Road and alterations to the existing access on Broad Court.	Approved (July 2020)	Small in scale and sufficiently distanced from the site, and unlikely to give rise to cumulative impacts. However, it is considered cumulative development.
37 Broadwater Road	6/2018/2387/MAJ	Construction of new build of 22 x 2 Bedroom and 2 x 3 Bedroom residential apartments with balconies and a roof garden. Layout of 26 car parking spaces, cycle parking, refuse store, internal access routes, landscaping and supporting infrastructure.	Approved (July 2019)	Considered cumulative development.

Mercury House 1 Broadwater Road	6/2016/2624/FULL	Change of use from B1(a) office to C3 residential, construction of roof and side extensions, creation of 43 residential apartments and cycle storage compound	Approved (September 2017)	Constructed and occupied. Considered to be part of the baseline environment and not cumulative development.
Accord House 28 Bridge Road	6/2018/2472/MAJ	Removal of roof and addition of three new floors of residential accommodation comprising 24 x 1 bed flats and 1 x 2 bed flat	Approved (May 2019)	Small in scale and unlikely to give rise to cumulative impacts. However, it is considered cumulative development.
73 Bridge Road East	6/2020/2268/MAJ	Erection of two new buildings comprising 111 residential apartments	Pending Decision (Submitted)	Small in scale and unlikely to give rise to cumulative impacts. However, it is considered cumulative development. Potential overlap in construction period.
37 Broadwater Road	6/2018/2387/MAJ	Construction of 22 x 2 beds and 2 x 3 bed apartment with 26 car parking space	Approved (July 2019)	Small in scale and unlikely to give rise to cumulative impacts. However, it is considered

				cumulative development.

2.14.14. It should be noted that construction on the Former Roche Products Site (ref. N6/2010/1776/MA) has completed and the site is operational. It is therefore considered to be part of the baseline environment and not deemed to be cumulative development. The planning permission (ref. N6/2016/1882/FUL) for the conversation of the listed Roche building to provide 34 residential dwellings has been built out and is gradually receiving new residents. For the purpose of this ES it is considered to be cumulative development.

2.14.15. The former Shredded Wheat Factory development southern parcel has commenced construction with the northern parcel awaiting a start date and will therefore be considered as cumulative development for the purposes of this ES.

2.14.16. The three planning applications on Broadwater Road have been identified as being potentially cumulative. One of which (Mercury House) has been constructed and it occupied and therefore is considered to be part of the baseline environment and therefore not cumulative development. The remaining two application on Broadwater Road developments are relatively small in scale and sufficiently distant from the Site, as such they are unlikely to give rise to cumulative impacts requiring assessment under EIA. However, they have been considered within this ES.

2.14.17. If the planning application for the Project was to be granted approval, the Project has the potential to be constructed within the same time period as some of the above developments. The construction and demolition works for each scheme will be undertaken in accordance with a Construction Environmental Management Plan (CEMP). The CEMP will include measures to mitigate potential impacts related to air quality, noise, transport, ground conditions and other environmental considerations. With these measures in place, significant adverse residual impacts would not be expected during the demolition/construction phases of development.

2.14.18. It should be noted, that at the time of writing, consultation had commenced for a scheme of up to 11 storeys and up to 437 residential units on the south side of the Shredded Wheat factory. However, this is still at early pre-application stages and has therefore not been included in the list of cumulative schemes. This application will be subject to EIA and the EIA will need to take account of the Project (given that the application for this Project will be submitted and therefore will be technically a cumulative development).

3. The Project Site and Setting

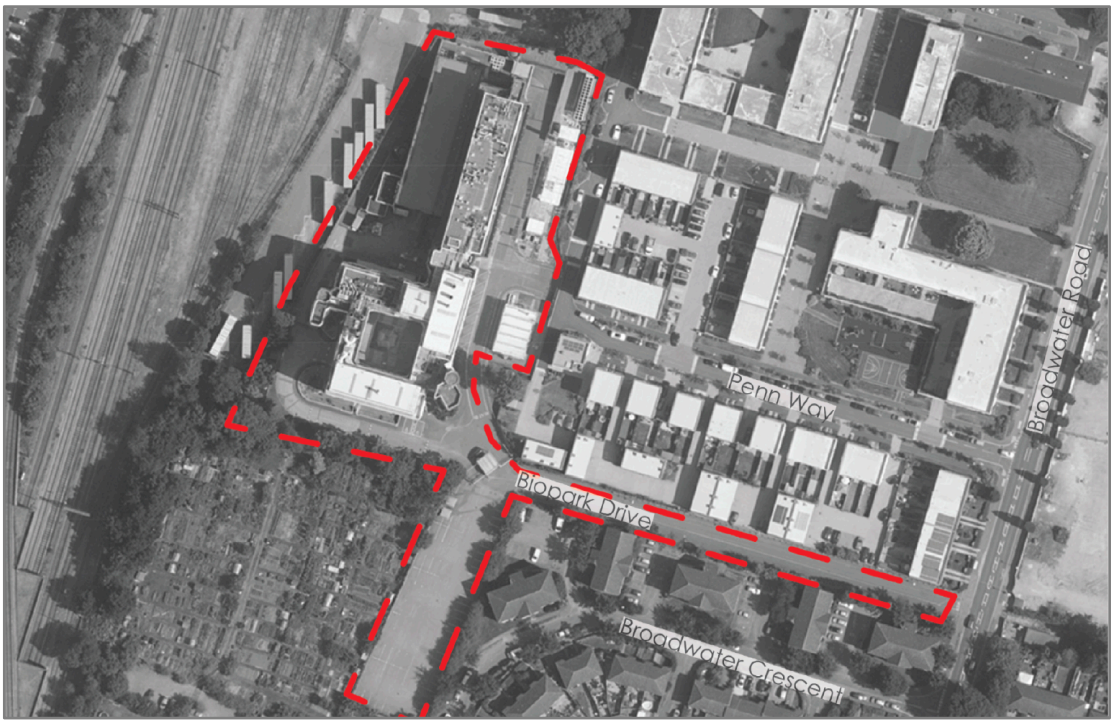
3.1. Introduction

3.1.1. This chapter sets out the location of the Project Site and gives an overview of the existing land uses and features as well as an overview of the surrounding area.

3.2. Project Site Location

3.2.1. The Project Site occupies an area of approximately 1.24ha and is located within the town of Welwyn Garden City in WHBC. The Project Site is broadly rectangular in shape; however, the planning red line boundary extends from the main Project Site boundary to south (to include the existing car park) and to the east (to include BioPark Road). The location of the Project Site is shown in **Figure 3.1** below.

Figure 3.1: Project Site Location



3.2.2. The Project Site is situated to the south east of Welwyn Garden City railway station. The railway line separates the Project Site from the town centre with access provided via a footbridge approximately 350m to the north of the Project Site.

3.3. Existing Project Site

3.3.1. The Project Site comprises a vacant Research and Development (B1b use) complex which was formerly owned, used and let by the University of Hertfordshire. The existing floorspace

of the Project Site is approximately 13,872 sqm. The existing building is currently tallest towards the south of the site, where it is 30.51m at the stair core. A number of flues and plant rooms also add to the height bringing the highest point to 34.76m.

3.3.2. On the northern part of the Project Site, the complex includes specialist laboratory and associated office space within the main building and a number of outbuildings close to the eastern boundary.

3.3.3. The eastern boundary of the Project Site comprises ancillary buildings such as outhouses and plant rooms. On the southern part of the Project Site there is an associated car parking area. There are approximately 160 associated car parking spaces across the Project Site (in a mixture of surface level parking on the vicinity of Broadwater Crescent and a two-storey basement beneath the main building).

3.3.4. Images of the existing Project site are shown in **Figures 3.2 to 3.4** below.

Figure 3.2: Images of main façade of the existing BioPark Building

Figure 3.3: Side elevation of the existing BioPark building

Figure 3.4: Area of hardstanding to the south of the main existing BioPark building

3.4. Project Site History

3.4.1. The history of the Project Site is shown in **Table 3.1** below.

Table 3.1: Planning History

Reference	Description of Development	Decision (Date)
N6/664/2001/FP	Erection of two storey building for employment (B1) use.	Approved (July 2001)
N6/665/2001/FP	Erection of fencing and gates at south east entrance to 2 of 4 Broadwater Road site, plus movement of existing turnstile and installation of second turnstile at same entrance.	Approved (July 2001)
N6/666/2001/FP	Installation of personnel turnstile and additional fencing at north east entrance to Broadwater Road site.	Approved (July 2001)
N6/2006/0700/FP	Internal and external alterations	Approved July 2006
6/2017/1243/FULL	Retention of 3 and erection of 1 further antenna on lift shaft roof of BioPark.	Approved (August 2017)

3.5. The Surrounding Context

3.5.1. The wider local building topology in the surrounding area is largely residential with red brickwork and heights ranging from two to four storeys.

3.5.2. The immediate surrounding area was until recent years predominantly industrial in character and use. However, the area is subject to extensive redevelopment which includes residential and mixed-use schemes

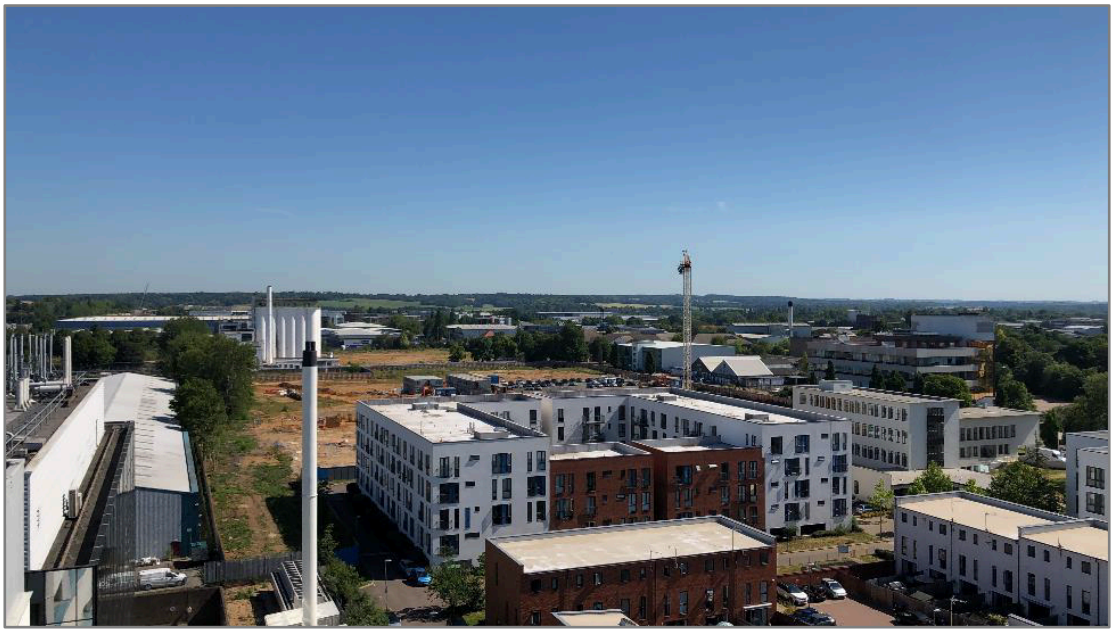
3.5.3. To the north of the Project Site is the former Shredded Wheat Factor. In November 2017, permission was granted (ref. N6/2015/0294/PP) for a residential-led mixed-use development of 805 units and c. 14,000sqm of commercial and community floorspace. Permission was granted (ref. 6/2018/0171/MAJ) in February 2019 for the redevelopment of the site to create the 'Wheat Quarter'; a residential-led mixed-use quarter including 1,340 dwellings, community uses, office and retail space.

3.5.4. To the west of the site is the former Roche Products site. Planning permission (ref: N6/2010/1776/MA) was granted in March 2011 for the redevelopment of the site to provide 209 residential units. The heights across the site range from 2 to 4 storeys. This development has since been developed by Taylor Wimpey. The Roche Products building, which is Grade

II listed, is also undergone conversion for 34 residential units (ref. N6/2016/1882/FUL) having received planning permission in October 2018.

3.5.5. **Figure 3.5** below shows the view north from the BioPark building. It shows the Shredded Wheat Silos in the middle distance and the cleared industrial zone.

Figure 3.5: View north from the BioPark building



3.6. Designations

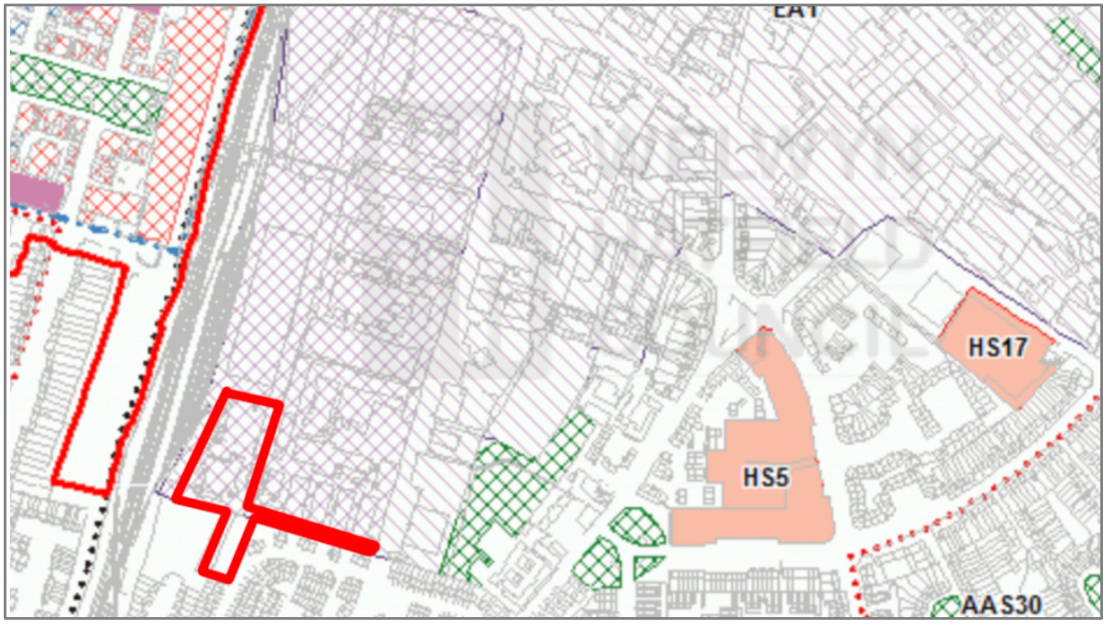
Policy Designations

3.6.1. In the adopted Local Plan, the Project Site has the following designations **(Figure 3.6)**:

- Employment Area (EA1 - Welwyn Garden City Industrial Area); and
- Mixed Use Development Site at Broadwater West.

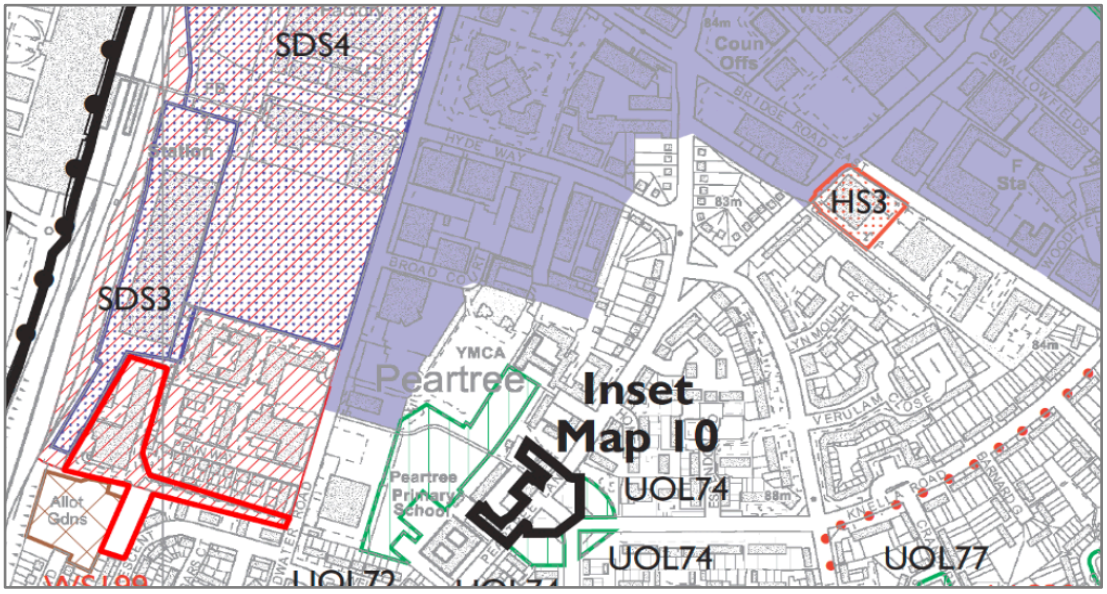
3.6.2. The adopted Parking Standards Supplementary Planning Guidance ("SPG") (2004) designates the Project site within parking Zone 2 with the southern part occupied by the car park in Zone 3.

Figure 3.6: Extract from Welwyn Hatfield Borough Council's Local Plan Proposals Map (2005)



3.6.3. Within the Draft Local Plan Proposed Submission Document (2016), the northern part of the Project Site is designated as part of the Broadwater Road West Mixed-Use Area (**Figure 3.7**), which is allocated for development comprising 1,020 homes and other uses including employment, housing, leisure and rail-related uses.

Figure 3.7: Extract from Welwyn Hatfield Borough Council's Draft Local Plan Proposals Map



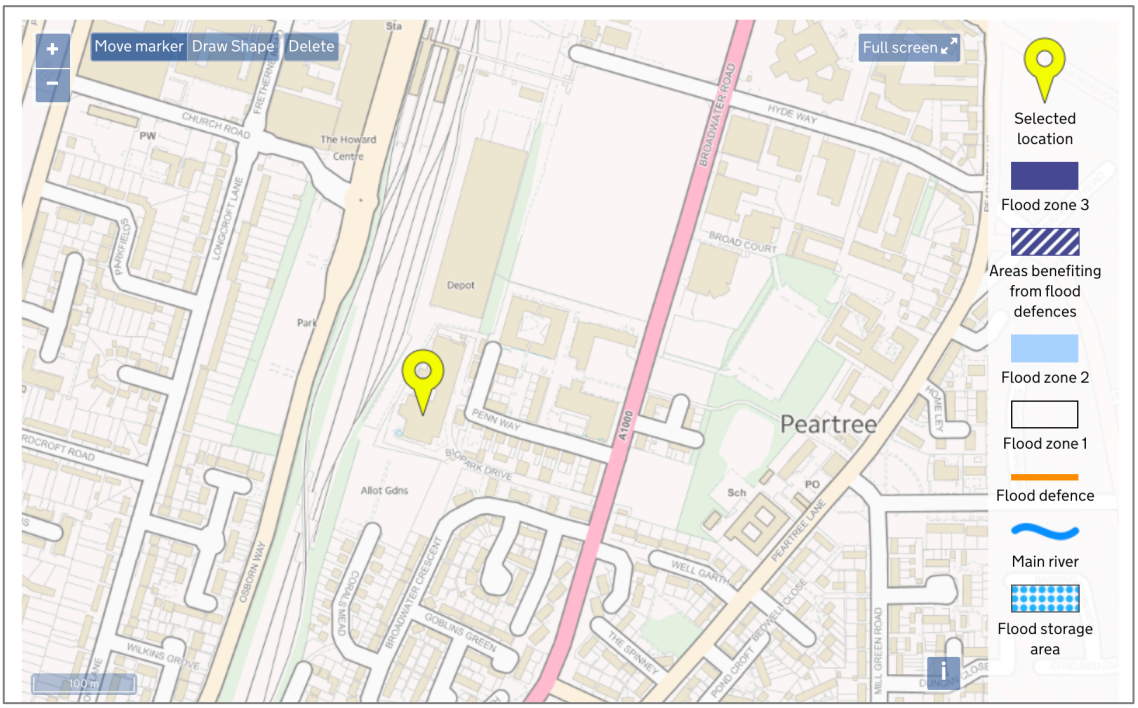
Air Quality

3.6.4. The Project Site is not located within an Air Quality Management Area (AQMA).

Flood Risk

3.6.5. The Project Site is located in Flood Risk Zone 1 (Low risk) as shown on the Environment Agency Flood Risk Map for Planning extract below **(Figure 3.8)**.

Figure 3.8: Extract from the Environmental Agency Flood Risk Map



Archaeology

3.6.6. The Project Site is not within an Archaeological Priority Area (APA).

3.6.7. Historic mapping suggests the surrounding area comprises relatively modern development, particularly industrial use from the 1890s, with the railway use being associated with the Project Site from earlier.

3.6.8. An assessment will be submitted in support of a planning application. This will determine whether there are any archaeological remains on the Project Site and will put in place a strategy for appropriately dealing with any found remains

Topography

3.6.9. The general Project Site area is relatively flat except for the ramps down to the car parking and features directly around the building. The wider area around the Project Site is also relatively flat.

3.7. Geology

3.7.1. The Project Site is underlain by superficial deposits comprising Lowestoft Formation diamicton. Kesgrave Catchment sands and gravels are present 80m to the southwest coincident with a railway cutting and around 100m to the north-east.

3.7.2. The superficial deposits overly bedrock geology comprising the Lewes Nodular Chalk Fm. and Seaford Chalk Fm. (undifferentiated).

3.7.3. The British Geological Society (BGS) data does not identify any artificial or worked / made ground on or within 500m of the Project Site.

3.8. Project Site Accessibility

3.8.1. Welwyn Garden City railway station is located less than 1km walking distance from the Project Site, accessed via BioPark Drive and Broadwater Road. It takes approximately 12 minutes to walk from the Project Site to the railway station. A future link, through the new development at the Former Shredded Wheat Factory site to the railway station and via the refurbished footbridge is anticipated to greatly reduce the walking time.

3.8.2. The Penn Way bus stops are located approximately 16m from the Project Site and located on Broadwater Road. Both stops are served by the 601 Alban Way bus route. The 601 bus service routes between Welwyn Garden City and Borehamwood via Hatfield and St Albans, and there are two services per hour across the weekday.

3.8.3. There are two existing basement car parking levels located at the northern end of the Project Site and accessed via a ramp to the rear of the main building. Surface level car parking is also present. The Project Site is entirely made up of either buildings or hardstanding.

3.8.4. The only access to the site is provided via BioPark Drive, a 9.0m wide private road (consisting of 7.6m wide carriageway, 0.2m wide service strip, and 1.8m wide footway). The joins the A1000 Broadwater Road to the east via a simple crossover. Further details of the above are contained in the submitted Design and Access Statement and Transport Assessment which are submitted in support of the planning application.

3.9. Heritage

3.9.1. There are no listed buildings within the Project Site, nor is the Project Site within a Conservation Area.

3.9.2. An office block associated with the former Roche Products Factory to the east is Grade II Listed. The former Shredded Wheat Factory is to the north east of the Project Site; the

Production Hall and silos are Grade II Listed. Welwyn Garden City town centre Conservation Area lies to the west on the opposite side of the railway line.

4. The Project Description

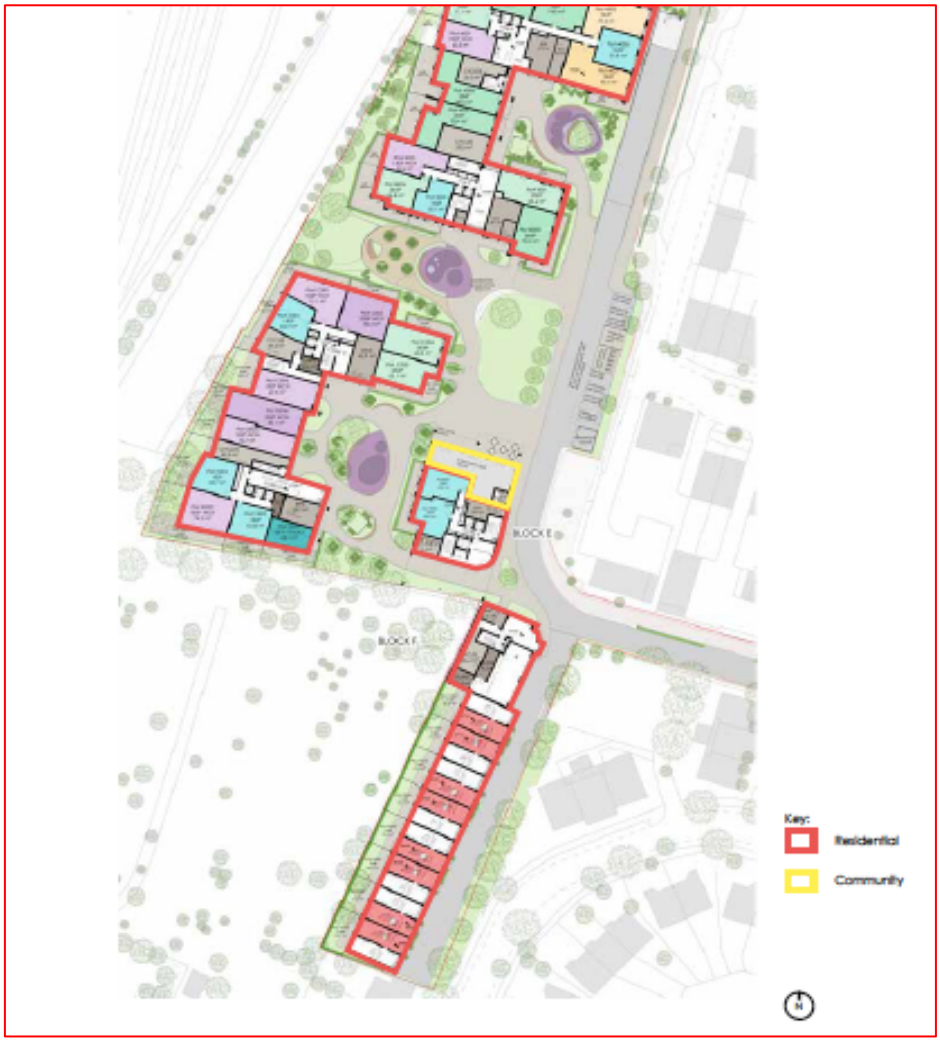
4.1. Introduction

4.1.1. This chapter presents the key characteristics of the Project which have informed the assessment. The assessment has also been informed by the application drawings and plans have been submitted in support of the planning application. To avoid unnecessary duplication both in hard copy, and on the planning register, the application drawings have not been appended to this ES.

4.2. The Planning Application

4.2.1. The planning application includes the Project Site as shown in **Figure 4.1** with the Planning red line site boundary. The planning application is a full application for redevelopment of the Project Site.

Figure 4.1: Proposed Site Plan



4.2.2. The Project as sought by the planning application, is described as:

"Demolition of existing buildings and construction of residential units (Use Class C3) and community hub (Use Class E/F.2), with public realm and open space, landscaping, access, associated car and cycle parking, refuse and recycling storage and supporting infrastructure."

4.3. The Proposal

4.3.1. The Project involves the demolition of the existing BioPark facility and the development of 289 residential homes with a community hub providing a gym and café. The Project is proposed with public realm and open space, landscaping, access, associated car and cycle parking, refuse and recycling storage and supporting infrastructure.

4.3.2. In order for the significant environmental effects of the Project to be identified and assessed, it is necessary to clearly identify all of the components of the Project. A full set of plans and drawings have been submitted in support of this application. A Drawing Schedule can be found in Appendix 4.1.

4.3.3. **Table 4.1** below set out the key elements of the Project which have informed the EIA.

Table 4.1: Key Elements of the Project

Accommodation Schedule				
Size	Affordable Rent/ Social Rent	Shared Ownership	Private Market	Total
	Units	Units	Units	Units
1-Bed	**2**	**8**	**119**	**129**
2-Bed	**5**	**8**	**113**	**126**
3-Bed	**2**	**4**	**20**	**26**
4 Bed	**0**	**0**	**8**	**8**
Total	**9**	**20**	**260**	**289**

Demolition	Demolition of the existing BioPark buildings.
Residential	A total of 289 residential homes (281 flats and 8 townhouses). 29 M4(3) dwellings (10%) and the remainder M4(2) dwellings;
Storeys	The Project includes 6 flatted Blocks which range from 2 to 9 storeys and a row of 8 townhouses. Block A: 6 to 9 storeys

	Block B: 6 to 9 storeys Block C: 5 to 8 storeys Block D: 5 to 8 storeys Block E: 4 to 7 storeys Block F: 2 to 4 storeys Townhouses: 2 to 3 storeys
Car Parking	A total of 226 car parking spaces will be provided within the Project Site, which is broken down as follows: • 219 residential spaces, including: ○ 22 visitor spaces for the residential • 7 visitor spaces for the community hub. Of the total 226 car parking spaces, 30 will be blue badge (29 allocated to the residential and 1 allocated for the community hub. The majority of the car parking will be allocated and provided within the basement, along with 12 motorcycle spaces, also located within the basement. Over 20% of spaces will have electric vehicle charging points.
Cycle Parking	A total of 308 cycles spaces will be provided for the Project as follows: • 289 long stay residential, secure and within the basement, and • 18 visitor spaces residential, at surface level. • 1 space allocated within the community hub for staff.

4.4. Residential

4.4.1. The Project will provide 289 residential units with a 10% affordable housing split between 20 (69%) shared ownership homes and 9 (31%) social rented homes. The accommodation schedule for the Project is summarised in **Table 4.1** above.

4.4.2. In total, 11% of units are proposed as M4(3) wheelchair user dwellings and the remainder to meet M4(2) standards for accessible and adaptable dwellings.

4.4.3. An illustration of the Project is shown in **Figure 4.2** below.

Figure 4.2: Illustration of the Project looking southwards towards the community hub.

4.5. Non-residential

4.5.1. A total of 97.8 sqm of commercial floorspace is proposed in the form of a community hub at ground floor level in Block E to include a café and gym use.

4.6. Materials

4.6.1. The predominant material used for the building elevations will be brick. The window frames will be PCC aluminium, the projecting canopies will be brushed bronze and the balconies will include metal railings. An illustration of the use of materials is shown on **Figure 4.2** below.

Figure 4.3: Illustration of West Elevations Blocks A&B and C&D

4.6.2. The number of storeys will range across the Project Site from 2 to 9 storeys in the northern area of the (see **Table 4.3**). The tallest buildings will be located on the western edge of the Project Site towards the railway line.

Table 4.3: Building Heights

	Height (Storeys)
Blocks A & B	6- 9
Blocks C & D	5- 8
Block E	4- 7
Block F	2- 4
Townhouses	2- 3

4.6.3. The main materials will comprise of industrial black framed windows and art deco curves. The material palette will be red multi-brick, white brick, and terracotta tiles. Further details of the proposed materials can be found within the Design and Access Statement (DAS) which accompanies the planning application. An illustration of the massing can be seen below in **Figure 4.4**.

Figure 4.4: Proposed massing

4.7. Access and movement

Pedestrian

4.7.1. The Project proposes to establish a legible, safe and accessible environment.

4.7.2. The Project Site is surrounded by a high quality pedestrian network. At the Project Site's boundary to Broadwater Road, wide footways (in excess of 3m) are located on both sides of the carriageway. Dropped kerbs and tactile paving are provided across the minor accesses along Broadwater Road.

4.7.3. There are high quality cycle routes provided in the vicinity of the Project Site. The length of Broadwater Road consists of an off-carriageway shared pedestrian / cycle route on its eastern side. A toucan crossing is provided just to the south of the Hydeway junction, with the shared pedestrian / cycle route following the southern side of Hydeway

4.7.4. The landscape and layout of the Project will allow for easy pedestrian movement and legible route through the Project Site. The Project proposes enhanced pedestrian links northwards towards and connecting to the Shredded Wheat Quarter via Penn Way. This is to improve the Project Site's pedestrian connectivity.

4.7.5. Further details can be found in the Transport Assessment (TA) and DAS that accompanies the planning application.

Highway

4.7.6. The Project Site includes a dedicated road which access Broadwater Road. There will be vehicle links to the main road and the rail link to London and the North.

4.7.7. Access to the Project Site will be via the existing BioPark Drive access. which splits within the Project Site to access the northern and southern parts of the Project Site. The access will have a dedicated shared footway and cycleway along one side of the carriageway.

4.7.8. The Project will see the improvement of the access to provide a wider shared footway / cycleway on the northern site of the access road. This footway will connect to the existing infrastructure on Broadwater Road and will route directly into the Project Site. Any alterations to the adopted highway network on Broadwater Road will be subject to a Stage 1 Road Safety Audit (RSA).

4.8. Amenity / Open Space

4.8.1. The Project includes 3,822sqm of communal amenity space and 3,974sqm of private amenity space, in the form of balconies, terraces and gardens. (see **Table 4.2** below).

Table 4.2: Amenity space

Amenity Space	Total
Communal	3,822 sqm
Private	3,947 sqm
Combined Total	**7,770 sqm**

4.9. Play Space

4.9.1. Child playspace will be distributed across the project Site, with a focus on three doorstep play spaces. A total of 260sqm of play space will be provided across the Project Site within formal play areas.

4.9.2. An illustrative plan has been produced and is within the Landscape Strategy to demonstrate the scope of play space accommodated on Project Site. Full details of the proposed play space will be subject to separate conditions for the planning application.

4.10. Landscaping

4.10.1. Key features of the landscape proposals are:

- Large community lawn area providing opportunities for informal play and seating;

- Orchard hideaway and native hedgerow along the western boundary with food growing opportunities for the community;
- Hedgerows and climbers to soften the main vehicle entrance (BioPark Drive);
- Outdoor dining area amongst the edible planting;
- Ornamental hedge buffer between townhouses and adjacent existing residential development;
- Three doorstep play spaces within the public realm for children up to the age of 6 incorporating sensory play equipment;
- Roof terraces with a variety of spaces created including Garden Rooms, formal and informal seating and sunbeds;
- Timber dence at the rear of the townhouses to provide security and privacy; and
- Extensive green and brown roofs.

4.10.2. Proposed planting will use native species wherever possible and there will be a variety of open and private amenity spaces within the scheme.

4.10.3. Details of proposed landscaping is set out in the Landscaping Strategy that has been submitted in support of this application. A Landscaping Schedule is provided in Appendix 4.2.

4.11. Flood Risk and Drainage

4.11.1. The Project Site is located in Flood Risk Zone 1 ("Low Risk") as per the Environment Agency's Flood Map for Planning.

4.11.2. A Flood Risk Assessment and Drainage Strategy and has been submitted with the Planning Application with further details on the flood risk and drainage strategy.

4.11.3. The Project Site has a very low risk of flooding from reservoirs, rivers or the sea, and surface water. The flood risk from groundwater is also deemed to be low.

4.11.4. The Flood Risk and Drainage Strategy explains that the existing surface and foul water drainage networks serve the existing buildings. Both the foul and surface water networks discharge into sewers within Broadwater Road. Sewer records received from Thames Water show that the site is serviced by a separate foul and surface water sewer at the end of BioPark Drive.

4.11.5. The proposed drainage strategy looks to utilise a variety of SuDS measures across the Project Site to manage water quality, biodiversity, amenity and water quantity.

4.11.6. The Project will restrict run-off from the site to the 1 in 1 year greenfield run-off rate (1.6l/s). The design has been carried out to attenuate flows for all events up to and including the 1 in 100 year return period with a 40% allowance for climate change.

4.11.7. The drainage strategy includes a range of SuDS to manage and treat rainfall close to the source before discharging rainfall at a controlled rate into the existing Thames Water surface water sewer beneath Broadwater Road.

4.11.8. The proposed foul water strategy is to collect soil vent pipes and stub stacks from the building in a below ground system and discharge to the existing Thames Water foul sewer. The Project looks to retain the existing two storey basement. Any run-off in this area will be collected via gullies and pumped to the below ground foul water system.

4.12. Energy and Sustainability

4.12.1. An Energy Assessment has been prepared in support of the planning application and can also be found at Appendix 4.3. A fabric first approach has been adopted to minimise demand and a site wide energy centre will be allocated within the basement under Block C which will incorporate efficient gas boilers to serve Blocks A to F. The townhouses will have stand alone gas boilers as the location of houses in relation to the energy centre create inefficiencies

4.12.2. The Project will include Photovoltaic (PV) arrays totalling 76kWp which represents a total carbon reduction of 10% for the residential and 13.39% for the community hub.

4.12.3. The incorporation of the above measures will reduce carbon emissions (above Part L Building Regulations) by 12.85% for the residential elements and 13.86% for the community hub.

4.12.4. A Sustainability Statement has been prepared in support of the planning application and can also be found at Appendix 4.4. The Project will incorporate water saving measures to internal appliances. Rainwater discharge will be managed via a combination of infiltration, blue and green roofs and attenuation stores.

4.12.5. All primary building materials will have a BRE Green Guide rating of between A+ and B. Assessment against the Green Guide will ensure that selected materials will have minimised embodied carbon and are recyclable at the end of life.

4.13. Ecology

4.13.1. There are no significant ecological constraints to the redevelopment of the Project Site and the potential impacts on existing wildlife are likely to be minimal.

4.13.2. The Project includes extensive areas of landscape planting provision which affords excellent opportunities for increasing foraging, nesting and connectivity for wildlife. A combination of fruit trees (orchard), native and ornamental flower and berry-rich species will attract a rich variety of wildlife and in particular, provide a resource for pollinating invertebrates.

4.13.3. Native planting will be sourced from local, or UK provenance and flowering species should be those known to be utilised by pollinators. The Royal Horticultural Society's 'Perfect for Pollinators' list provides examples of suitable native and ornament species. Plants specifically used to attract pollinating insects will be sourced from organic suppliers where practical (as many commercial outlets use pesticides such as neonicotinoids which are persistent and can remain harmful to invertebrates).

4.13.4. Biodiverse green roofs will significantly improve the structural diversity and opportunities for aerial and wind blown wildlife to colonise, whilst meadow grassland will provide an additional habitat at ground level amongst the more conventional grassland and shrub planting. Some green walls produced by using climbing plants will also contribute to planting diversity.

4.13.5. The landscaping scheme has been designed to complement the landscaping approved in the Wheat Quarter scheme, to contribute to the creation of a landscaped corridor from Bridge Road in the north connecting in to the allotments to the south Redevelopment offers scope for increasing biodiversity and providing opportunities for roosting bats and nesting birds that are currently lacking, along with other landscape provision such as wildlife-friendly planting to encourage greater biodiversity than is present.

4.13.6. Bat roosting boxes will be integrated into built-structures to benefit from the thermal mass of the structure.

4.14. Trees

4.14.1. In order to facilitate the Project a number of existing trees will be removed. A total of 3 individual trees are proposed to be removed for the Project.

4.14.2. An Arboricultural Method Statement (AMS) and an Arboricultural Impact Assessment (AIA) has been carried out and submitted with the planning application documentation.

4.14.3. A total of 31 trees and 10 groups of trees were surveyed within the Project Sie. Some of these will have to be removed in order to facilitate the Project. Of these trees, 8 (U Category) are recommended for removal. A total of 3 trees are to be removed (2 Category C and 1 Cateogory B).

4.14.4. As part of the Project, it is proposed to plant many replacement trees. This will maintain – and improve – the quality and quantity of trees within the site. These will include trees which offer long term viability and amenity value as well as being beneficial to wildlife. Together these proposals will mitigate for the removal of trees as part of the site development

Alternative Locations and Options

Introduction

4.14.5. The EIA Regulations do not require the full assessment of all potential alternatives, only a reasonable account of those actually considered by the developers prior to submission of the application.

Alternative Locations

4.14.6. Alternative development options within EIA are often considered primarily in terms of location, however, the nature of the Project, it is not considered appropriate to consider alternative locations to deliver the Project. The Applicant does not wish to seek alternative locations for the Project and wish to regenerate the Project Site. Therefore, it is not considered necessary to assess alternative locations for the Project.

Alternative Options

4.14.7. Due to the nature of the Project, it is not considered appropriate to consider alternative options for the Project. Therefore, it is not considered necessary to assess alternative options for the Project.

4.14.8. There are two realistic types of alternatives, the 'do nothing', where the existing conditions remain as they are currently and could be occupied again under the current planning permission. Or, alternative layouts or massing to the Project which is submitted for planning approval.

Alternative Layouts and Massing

4.14.9. The design evolution is set out within the Planning Statement and DAS which is submitted with the planning application documentation. The key alternatives to the layout and design are briefly set out below, however, it is considered that they do not give rise to substantially different environmental impacts as to require detailed assessment under EIA.

4.14.10. The design process was an iterative process whereby the evolution of the design commenced in early 2020 and initial pre-application took place in March 2020.

4.14.11. Since that time, the scheme has evolved and a significant amount of stakeholder engagement took place, including 3 pre-applications with WHBC as well as consultation with Historic England, Hertfordshire County Council Highways, and Hertfordshire County Council Lead Local Flood Authority. Throughout this process design comments were taken on board at each stage in the consultation process and the design evolved into its current form.

4.14.12. Since the first pre-application the following main changes were made to the Project:

- maximum number of storeys reduced from 15 to 9 storeys;
- The perimeter road at the southern and western edges of the site were removed to enable a more efficient use of the Project Site.
- The layout of the southern section of the Project Site was redesigned to propose townhouses and a small flatted block.
- The majority of the surface level car parking was relocated to basement or under croft levels;
- The density was reduced;
- The overall number of units was reduced from 340;
- A new community hub was introduced at ground floor in Block E; and
- The overall number of parking spaces increased from 150 and proposed underground basement car park was extended to allow the vast majority of car parking to be located at basement level.

4.14.13. The design evolution of the Project is illustrated within the DAS.

5. Phasing, Construction and Implementation

5.1. Overview

5.1.1. This chapter of the ES sets out an overview of the proposed programme of construction works and the key activities that will be undertaken prior to completion of the Project. Likely significant environmental effects associated with the demolition and construction activities are identified, and where necessary, mitigation measures are outlined.

5.1.2. This chapter has been prepared in conjunction with the technical team, and their contractor HG Construction Ltd who has been appointed.

5.1.3. Full details of the demolition and construction activities are not known at this stage. Therefore, the assessment is based on the details that have been provided in relation to the key demolition and construction programme targets. These assumptions need to be realistic and appropriate to the Project and many will ultimately be defined in detailed Construction Environmental Management Plan (CEMP) and Construction Logistic Plans (CLP) which will be secured via planning conditions.

5.1.4. It is considered the reasonable assumptions, informed the design team, client team and wider technical team, enables the identification of potentially significant effects at the construction stage and enables suitable mitigation measures to be identified.

5.1.5. Potential environmental effects identified within this chapter are discussed in more detail within each of the corresponding technical chapters, where necessary, of this ES.

Phasing

5.1.6. The intention of the Project is to complete the demolition works before groundworks are commenced. Thereafter, the Project will be built out as a single phase.

5.2. Construction Programme

5.2.1. Demolition and site set up is anticipated to take 4- 6 months and construction is anticipated to take 24 months.

Remediation Strategy and methodology

5.2.2. A remediation strategy will be agreed for the site in accordance with DEFRA/Environment Agency (2004), Model Procedures for the Management of Land Contamination (CLR11). The strategy will be implemented through a site-specific Construction Management Plan (CEMP). This will be reviewed regularly to best suit the practices being undertaken on the Project Site.

Earthworks and Construction Material

5.2.3. Waste produced on-site will be subject to the Duty to Care under the Environmental Protection Act (1990) and will be treated in accordance with the Site Waste Management Plan.

5.2.4. All waste materials generated on site will be treated in accordance with the Site Waste Management Plan, making full utilisation of material reuse and recycling where possible.

5.2.5. Any materials that are deemed hazardous are to be handled and transported by the relevant guidelines specific to the material type. Records are to be kept of loads leaving site, detailing the type, weight and final destination.

5.2.6. The transportation of waste to and from the Project Site will comply with the Duty of Care requirements. These include ensuring waste is transported by registered carriers, disposal to appropriately licensed sites and maintenance of appropriate waste transfer documentation.

5.2.7. The duration of earthworks is expected to be 6 months. The estimated total building volume to be demolished on the Project Site is 40,000sqm. The main materials to be demolished is concrete.

5.2.8. The approximate total area of earthworks is 13,160sqm and the total amount of material estimated to be moved from the site is 8,000sqm.

5.3. Construction of the Project

5.3.1. Construction methods are influenced by a combination of factors. These include the existing ground conditions and the preferred methods of the building contractor. Details of this are summarised below.

Competence, Training and Awareness

5.3.2. Specific training needs will be developed for individuals to reflect the work to be carried out on the Project and the significant risks and opportunities identified.

5.3.3. The requirement is for all personnel to be aware if their general environmental management responsibilities, and for those who work may cause, or have the potential to cause, a significant impact on the environment, to receive specific environmental awareness briefings. Environmental awareness will be reinforced through information, such as poster campaigns, environmental/sustainability performance indicator reports and environmental alerts available onsite notice boards.

5.3.4. All contractors are responsible for ensuring the competency of their environmental staff. In the event that environmental training is needed for staff, a contractor is responsible for ensuring this requirement is fulfilled.

Construction Traffic

5.3.5. As a minimum, trips to the site are expected to be associated with waste removals from demolition and material deliveries including aggregates, steel and fabrications, mechanical and electrics, glazing and finishing products and people.

5.3.6. Assumptions on estimating and calculating vehicle movements have been based on similar sized projects.

5.3.7. The nature and scale of the proposed uses means the level of traffic (both total and HGV) generated during the operational phase would be greater than during the construction phase. Thus, the assessments have focused on the operational phase when traffic flows and hence impact would be greatest.

5.3.8. Based upon the HG Construction's estimates, it is anticipated that during demolition and construction there would be a maximum average of up to 60 HGV movements per day (30 vehicles in and 30 vehicles out).

Vehicle Routeing

5.3.9. Full details of the proposed construction routeing will be agreed with WHBC, the highways authority and the emergency services prior to the commencement of construction works.

5.3.10. The size of HGV to be used during the construction phase is as commonly used by many contractors and suppliers.

5.3.11. The anticipated vehicle routing strategy estimates all vehicles will arrive into the Project Site from Broadwater Road (south). Departing vehicles will predominately route back towards Broadwater Road south with some routing north. It is assumed that 80% of departing construction traffic will route south and 20% will route north.

5.3.12. Prior to the start of construction, a risk assessment will be completed by the Principal Contractor to assess and mitigate any potential risks associated with the access proposals for the construction period.

Vehicle Movement

5.3.13. Construction vehicles will enter and exit the Project Site from BioPark Drive in forward gear. An on-site turning area will also be created.

5.3.14. It is estimated that there would be an average of 20 No8 wheeler lorry movements per day during the demolition phase increasing to 30 No8 wheeler lorry movements during the groundworks phase.

5.3.15. Prior to the start of construction, a risk assessment will be completed by the Principal Contractor to assess and mitigate any potential risks associated with the access proposals for the construction period.

Plant Equipment

5.3.16. Consideration has been given to the types of plant and equipment that are likely to be used during the construction works. An indication of the typical types of plant and equipment associated with each key element of the works include excavators, skips, muck away, and 8-wheel lorries.

5.3.17. Noisy plant or equipment shall be situated as far as possible from noise sensitive buildings. Barriers (e.g. site huts, acoustic sheds or partitions) to reduce noise reaching noise sensitive buildings shall be employed where practicable.

Material Storage and Handling

5.3.18. Materials will be stored on the Project Site efficiently to reduce the risk of damage, environmental incidents, injury to site-based staff and theft. A material storage compound will be constructed on the Project Site.

5.3.19. The following provisions shall be adhered to wherever practicable:

- Vehicles and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers, maintained in good and efficient working order and operated in such a manner as to minimise noise emissions. The sub-contractor shall ensure that all plant complies with the relevant statutory requirements, prior to being brought on to site.
- Plant shall be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum.
- Machines in intermittent use shall be shut down or throttled down to a minimum when not in use.
- Compressors shall be fitted with properly lined and sealed acoustic covers which will be kept closed whenever in use. Pneumatic percussive tools are to be fitted with mufflers or silencers of the type recommended by the manufacturers.
- Equipment which breaks concrete, brickwork or masonry by bending or bursting or “nibbling” shall be used in preference to percussive tools where practicable.
- Where practicable, rotary drills and breakers activated by hydraulic or electrical power shall be used for excavating hard or extrusive material.
- Where practicable, equipment powered by mains electricity (via 110v transformers) shall be used in preference to equipment powered by internal combustion engine or locally generated electricity.
- Neither any part of the works nor any maintenance of plant shall be carried out in such a manner as to cause unnecessary noise or vibration except in the case of an emergency when the work is absolutely necessary for the saving of life or property or the safety of the works.
- Noise emitting machinery, such as generators for tower cranes etc, which are required to run continuously, shall be housed in a suitable acoustic lined enclosure wherever practicable.

Road and Footpath Closure

5.3.20. Any temporary road closures will be agreed with the local highway's authority, WHBC and emergency services. Notices will be posted to alert the public to any planned road closures and / or diversions.

Lighting

5.3.21. The extent of the area to be lit will vary during the different stages of construction according to area of construction, security and health and safety requirements. Careful selection and planning of temporary lighting will reduce the effects of light pollution.

Security

5.3.22. Site security is an important component of good environmental management and every effort shall be made to ensure the safety of the Project Site and local community.

5.3.23. Security measures will include a place close-boarded hoarding around the Project Site. Controlled access for vehicles and a separate one for pedestrians will be constructed.

5.3.24. Access and egress from the site are to be via a designated entry point only. Outside normal working hours the Project Site will be left locked and secure.

5.3.25. In addition, the Project Site will require various other means of protection to protect persons from injury this will include the following:

- Protection of excavations.
- Protection against illegal access to scaffold.
- Protection against illegal use of plant.
- Protection against injury by damaged services.
- Tool Box Talks and Briefings.
- Signage – warning and directional.

5.3.26. The Project Site already has a secure boundary and the existing security gatehouse will be retained.

Site Offices and Facilities

5.3.27. Double stacked site accommodation offices and welfare facilities are expected to be erected on existing hardstanding on the Project Site. The proposed fixed location for this is to be confirmed.

- Welfare arrangements will consist of the following:
- Suitable and sufficient number of toilets;
- Wash basins of adequate size with warm (hot and cold) water, soap and towels for hygiene purposes;

- Facilities for changing, drying and storing clothes;
- Supplies of drinking water;
- Adequate accommodations to sit and take meals, make drinks, and prepare hot food.

5.3.28. At the height of the construction the total persons on site are not expected to exceed 75 on any one day, therefore the toilet facilities will consist of 3 urinals, 3 toilets and 1 toilet with washing facilities for female visitors in accordance with: Schedule 2 of the Construction (Design & Management) Regulations 2015 and INDG293.

5.3.29. If the figure of 75 is permanently exceeded additional facilities will be provided in accordance with the stated regulations and guidance.

5.3.30. Waste from welfare facilities shall be discharged into a suitable foul water collection system.

5.3.31. Where employees are exposed to health risks from activities e.g. handling concrete, exposure to sewerage etc. then additional facilities such as showers may be required.

5.3.32. All welfare facilities provided by HG Construction will be maintained in a clean and orderly condition, any defects or damage are to be immediately reported to site management

5.4. Method Statements

5.4.1. Method statements will be completed by the Main Contractor or sub-contractor by trained engineers or other appropriately experienced personnel, in consultation with on-site staff and, where necessary, environmental specialists. Their production will include a review of the environmental risks and commitments, so that appropriate control measures are developed and included within the construction/demolition process.

5.4.2. Method statements will be reviewed and signed off by the appointed Environmental Manager as well as the Main Contractor and, where necessary reviewed, by an appropriate environmental specialist (e.g. ecologist). Where required, method statements will also be submitted to the enforcement agencies for information (EA, Environmental Health Officer at WHBC etc.). As a minimum, method statements will contain the following:

- Location of the activity and access/egress arrangements;
- Work to be undertaken and methods of construction;
- Plant and materials to be used;
- Labour and supervision requirements;
- Health, safety and environmental considerations; and
- Any permit or consent requirements beyond those already obtained

5.5. Construction Environmental Management Plan

5.5.1. Details of measures to protect the environment during the construction of the Project will be set out in a detailed Construction Environmental Management Plan (CEMP). Such measures

will address hours of working, noise, vibration, dust, light spill, wheel washing and control of run-off. It is anticipated that the implementation of the CEMP will be a condition on the planning permission, and it will be regularly monitored.

5.6. Construction Site Waste Management Plan

5.6.1. An accompanying draft Site Waste Management (SWMP) has been produced to accompany the planning application, providing details on forecast waste quantities and classifications likely to be generated during the construction of the Project. The Project will be constructed in line with the waste hierarchy.

5.6.2. A Construction Waste Management Strategy (CWMP) will be prepared by the Environment Manager in accordance with the waste hierarchy principles and best practice guidance, which will be implemented throughout the demolition and construction phases.

5.7. Demolition and Construction Traffic Management Plan

5.7.1. A Demolition and Construction Traffic Management Plan (CTMP) will be agreed with WHBC prior to works commencing. The CTMP would seek to keep demolition and construction traffic on the strategic road network and avoid sensitive routes and local communities in order to minimise impacts on receptors and manage environmental effects.

5.7.2. The CTMP will manage the daily delivery profiles and control movements and routeing of demolition and construction traffic through the following measures: ϒ Traffic Routing Strategy

- Ensuring vehicles access the Site via the most appropriate route and avoid unnecessary conflict with sensitive areas and receptors;
- Traffic Timing Strategy – Programme vehicle arrival and departures and working hours to lessen the impact on the highway network;
- Temporary Signage – In accordance with the Department for Transport Traffic Signs Manual Chapter 81 to inform road users of construction access points and the presence of HGVs and plant;
- Temporary Traffic Management – Provided on approaches and access in the form of traffic warning signs, possible reductions in speed limit signs to ensure safe passage of vehicles;
- Site Accesses – Designed in accordance with Design Manual for Roads and Bridges 42/95 Geometric Design of Major/Minor Priority Junctions; and
- Staff Travel Plan – Will provide details of how staff will travel to the Site by alternative modes in an effort to reduce single occupancy vehicles travelling to the Site.

6. Air Quality

6.1. Introduction

6.1.1. This chapter of the ES assesses the likely environmental effects from the Project with respect to air quality. It describes the methods used to assess the effects; the baseline conditions currently existing at the Project Site and in the surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.

6.1.2. The assessment takes into account current legislation, policy and technical guidance as well as a review of air quality data from WHBC.

6.1.3. The chapter assesses the effect of the Project on local air quality for existing sensitive receptors in the vicinity of the Project Site. In addition, the impacts of existing sources of pollution in the local area upon air quality for future occupants within the Project Site has been considered.

6.1.4. The assessment considers air quality effects upon human-health. There are no designated ecological sites within 1 km of the Project Site; potential air quality effects upon ecological habitats are therefore not considered further.

6.2. Assessment Criteria and Methodology

Consultation

6.2.1. An EIA Screening Request was submitted WHBC on 11th September 2020 (Appendix 2.1), which set out details of the Project and potential for significant effects.

6.2.2. WHBC adopted a Screening Opinion on 11th November 2020 (Appendix 2.2) which concluded that the Project should be subject to an EIA. In relation to air quality the Screening Opinion stated:

"As for the cumulative impact, due to the amount of development within the surrounding area, this site is likely to result in an intensification in traffic congestion, particularly during peak times. This would consequently result in potential impacts upon air quality within the local area. It is noted that the site does not fall within an Air Quality Management Zone. However, from the information submitted the LPA is not confident that the development would not result in significant effects on local air quality due to the increase in traffic congestion when considering the development with cumulative development."

6.2.3. And

"While the site is not in an Air Quality Management Area, so the air quality impacts and traffic management issues may be less significant, there is no explanation as to what former use the TRICS data is based upon, and nor is there any consideration of the cumulative effect of the

various developments coming forward in the vicinity, a number of which entail a significant increase in residential units with car parking."

…

Having said that above, the introduction to the new evidence promised further information on the cumulative impact of the proposed development on operational air quality, but in fact simply concluded that as there will be a net reduction of vehicle movements (based on the potentially-challengeable assumptions outlined above), the proposed development will have "a negligible or beneficial impact on air quality" and "the inclusion of road traffic associated with cumulative developments will not alter this conclusion". No evidence is provided to support these statements. Limited information has been presented, which takes sufficient account of the cumulative impact on local traffic and air quality, which may result in potential risk to human health."

6.2.4. The assessment approach was subsequently agreed with WHB) via WHBC Correspondence between Terry Vincent (Environmental Health Technical Officer at WHBC) and Dr Austin Cogan (Air Pollution Services (APS)) in December 2020. This WHBC Correspondence is provided in Appendix 6.7. In addition, air quality monitoring information for the local area was requested from WHBC by APS in November 2020, which was provided.

Geographical Scope

6.2.5. The assessment considers air quality within the local area, up to 350 m away from the Project Site, as well as within the Project Site itself.

Temporal Scope

6.2.6. The assessment considers the existing baseline conditions (2019[1]) and predicted conditions for the year of Project practical completion (i.e. operational) (2023) both with and without the Project in place.

Assumptions and Limitations

6.2.7. The assessment involves a range of uncertainties, including:

- Model inputs derived from:
    - Traffic flows
    - Traffic fleet composition
    - Traffic routes
    - Vehicle speeds

[1] The most recent full calendar year with available air quality monitoring data for the assessment.

- Traffic emissions
- Metrological conditions

- The model and its treatment of presenting real world conditions
- Post processing, including:
  - Ambient background concentrations
  - Local monitoring measurements used in the model verification process
  - NOx to NO_2 relationship and f-NO_2

6.2.8. The model verification exercise has been undertaken to adjust the predicted concentrations from the model so that they match local conditions as best as possible. This has adjusted concentrations to match average conditions; some locations will remain underpredicted and some overpredicted.

6.2.9. Although there is uncertainty associated with air quality modelling, the predictions made by this assessment have been carried out in a robust manner to minimise uncertainties where possible.

6.2.10. This chapter does not consider the impacts of air quality on the health implications associated with Covid-19, as there remains too much uncertainty at this stage to consider this explicitly. In addition, the potential long-term implications of the pandemic on transport practices has not been considered, as it is too uncertain at this stage.

6.2.11. Further details of the uncertainties and limitations set out above are described under Modelling (Appendix 6.4).

Methodology

6.2.12. The following section details the methodology of the assessment. The process consists of:

1. Defining baseline conditions.
2. Considering the impact of the emissions from the Project.
3. Evaluating the significance of any impacts in relation to both the air quality Objective (AQO) receptors, using Environmental Protection UK (EPUK), Institute of Air Quality Management (IAQM), and Environment Agency (EA) guidance, and the compliance receptors.

<u>Existing Conditions Methodology</u>

6.2.13. Consideration of the baseline conditions within the local area have been made based on the following:

- Information on existing air quality has been obtained by collating the results of monitoring carried out by the WHBC and where available other monitoring networks. This covers both the Project Site and the surrounding area, the latter being used to provide context to the assessment.

- Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been defined using the national pollution maps published by Defra[2] These cover the whole of the country on a 1x1 km grid of average concentrations.

- Predicted roadside concentrations of NO_2 in the study area have been identified using the maps of roadside concentrations published by Defra[3] as part of its 2017 Air Quality Plan for the baseline year 2015 and for the years 2017 to 2030. These maps are used by the UK Government, to report exceedances of the limit value to the EU. The national maps of roadside PM_{10} and $PM_{2.5}$ concentrations[4] which are available for the years 2009 to 2015, show no exceedances of the limit values anywhere in the UK in 2015. Consideration has been given to the predicted concentrations for 2019 and 2023.

- Industrial and waste management sources that may affect the area have been identified using the European Pollutant Release and Transfer Register[5]. Local sources have also been identified through examination of maps and the Council's Air Quality Review and Assessment reports.

Construction Assessment Methodology

Fugitive Dust and Particulate Matter Emissions

6.2.14. The assessment method follows the approach provided by the IAQM guidance document[6]. This approach follows a sequence of steps:

- Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required.

- Step 2 is to assess the risk of dust impacts.

    - Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the Project Site.

    - Step 2b defines the sensitivity of the area to any dust that may be raised.

    - Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation.

- Step 3 uses this information to determine the appropriate level of site-specific mitigation required to ensure that there should be no significant impacts.

- Step 4 is to examine the residual effects and to determine whether or not these are significant.

---

[2] Defra (2020). Background Mapping data for local authorities. Retrieved from UK AIR Air Information Resource: https://uk-air.defra.gov.uk/data/laqm-background-home
[3] Defra (2020). 2019 NO_2 projections data (2017 reference year). Retrieved from UK AIR Air Information Resource: https://uk-air.defra.gov.uk/library/no2ten/2019-no2-projections-from-2017-data
[4] Defra (2020). UK Ambient Air Quality Interactive Map. Retrieved from UK AIR Air Information Resource: https://uk-air.defra.gov.uk/data/gis-mapping
[5] European Environment Agency (2019). E-PRTR Facilities. Retrieved from European Pollutant Release and Transfer Register: https://prtr.eea.europa.eu/#/home
[6] IAQM (2016). Guidance on the assessment of dust from demolition and construction.

6.2.15. The approach developed by IAQM[6], divide the activities on construction sites into four types to reflect their different potential impacts. These are:

- demolition;
- earthworks;
- construction; and
- trackout.

Construction Traffic

6.2.16. The first step in considering the construction related road traffic impacts on human health due to the Project has been to screen the traffic generated against the EPUK and IAQM criteria set out in paragraph 6.2.28.

6.2.17. Where impacts can be screened out there is no need to progress to a more detailed assessment and where impacts cannot be screened out, then impacts are assessed using the methodology set out below.

Non-road Mobile Machinery

6.2.18. Emissions from Non-Road Mobile Machinery (NRMM) utilised during the enabling works, demolition and construction stages have been assessed qualitatively based on the IAQM guidance.

Operational Assessment Methodology

6.2.19. Emissions from the on-site combustion plant, undercroft and basement car park and road traffic generation associated with the Project have been considered when making an assessment of the impacts of the Project on the local area and within the Project Site itself.

6.2.20. Standard practice is to assess the impacts of a proposed development on local air quality using the EPUK and IAQM guidance on Land-Use Planning & Development Control: Planning for Air Quality.

6.2.21. The air quality within the Project Site for the future users is also considered.

6.2.22. The EPUK and IAQM guidance provides a staged approach to considering air quality assessments:

- Stage 1) Initial screening
- Stage 2) Detailed screening
- Stage 3) Simple or Detailed assessment

Stage 1 - screening

Impacts of the Project on the Local Area

6.2.23. **Table 6.1** of the EPUK and IAQM guidance provides the Stage 1 screening criteria. The approach first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m^2 of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a Stage 2 and in general there is no need to consider the impacts of the development on the local area.

Impacts of Emission Sources on the Project Site

6.2.24. The EUPK and IAQM guidance explains that there:

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

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

Stage 2 Screening Criteria

6.2.25. The EPUK and IAQM guidance provides example criteria and states the following in relation to the criteria:

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

6.2.26. The guidance notes that consideration should still be given to the potential impacts of neighbouring sources on the Project Site, even if an assessment of impacts of the Project on the surrounding area is screened out.

Road Traffic Assessments

6.2.27. The second stage of the EPUK and IAQM guidance then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. Where these criteria are exceeded, a detailed assessment is required, although the guidance advises

that *"the criteria provided are precautionary and should be treated as indicative",* and *"it may be appropriate to amend them on the basis of professional judgement".*

6.2.28. The criteria relating to road traffic are:

- A change of Light Duty Vehicle (LDV) flows of:

  - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA

  - more than 500 AADT elsewhere.

- A change of Heavy Duty Vehicle (HDV) flows of:

  - more than 25 AADT within or adjacent to an AQMA

  - more than 100 AADT elsewhere.

- Where roads are realigned near to sensitive receptors and the change in alignment is 5 m or more and the road is within an AQMA.

- Applies to junctions that cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights, or roundabouts.

- Where bus flows will change by:

  - more than 25 AADT within or adjacent to an AQMA

  - more than 100 AADT elsewhere.

Combustion Plant Assessments

6.2.29. The second stage has screening criteria for assessment of the proposed centralised combustion plant (i.e. NOx emission rate, exhaust conditions and relevant locations of sensitive receptors). Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that *"the criteria provided are precautionary and should be treated as indicative",* and *"it may be appropriate to amend them on the basis of professional judgement".*

6.2.30. The criteria relating to centralised combustion plant are:

- *"Typically, any combustion plant where the single or combined NOx emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion"* where *"as a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30 kW CHP unit operating at <95mg/Nm^3. Users of this guidance should quantify the NOx mass emission rate from the proposed plant, based on manufacturers' specifications and operational conditions"*;

- *"In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower*

than the receptor) then consideration will need to be given to potential impacts at much lower emission rates"; and

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

Simple or Detailed Assessments

6.2.31. Where an air quality assessment is identified as being required, then this may take the form of either a Simple Assessment or a Detailed Assessment. It is not uncommon for assessments to utilise detailed dispersion models to predict pollutant concentrations and impacts on local air quality (Detailed Assessment), however, it should be noted that exceeding a screening criterion in **Table 6.2** of the guidance does not automatically lead to the requirement for a Detailed Assessment and the use of professional judgement and sufficient evidence can be considered appropriate at times (Simple Assessment).

6.2.32. The EPUK and IAQM guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this chapter.

Detailed Assessment

6.2.33. The following section sets out the approach taken to the assessment of pollutant emissions upon air quality at the Project Site and impacts in the local area.

Modelling approach overview

6.2.34. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted for:

- the existing year of 2019; and
- the future year of 2023 (when the Project may first be operational) both with and without the Project.

6.2.35. It should be noted that the year of 2023 provides a worst-case assessment as concentrations of NO_2 are anticipated to reduce with the improvements in vehicle emissions, such as the increasing uptake of electric vehicles. Measurements made by WHBC (see paragraph 6.4.4) and predictions from Defra (see paragraph 6.4.6) also suggest air quality is already improving and will continue to improve.

Modelled Sources

6.2.36. The modelling has been carried out utilising the ADMS (v5.2) and ADMS-Roads (v5) dispersion models, taking account of emissions from the following sources:

- road traffic for two scenarios: with and without the Project, both taking account of changes in streetscape;
- railway locomotives, including those using the main railway lines, the sidings and station;

- the proposed undercroft and basement car park; and
- the proposed on-site combustion plant.

Modelled Receptors

6.2.37. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted at 39 receptor locations within the Project Site, at a range of heights, representing locations of worst-case exposure for future occupants. The receptor locations are shown in **Figure 6.1**. Concentrations have also been predicted across a 2m x 2m grid of receptors at ground level within the Project Site to provide further context at locations of external amenity space.

Figure 6.1: Receptor locations within the Project Site, Flue Location and Car Park Exhaust Location

6.2.38. Concentrations have also been predicted at 15 receptor locations representing existing sensitive exposure in the local area, which are the likely worst-case locations that may be affected by changes in air quality as a result of the Project. These receptor locations are shown in **Figure 6.2**.

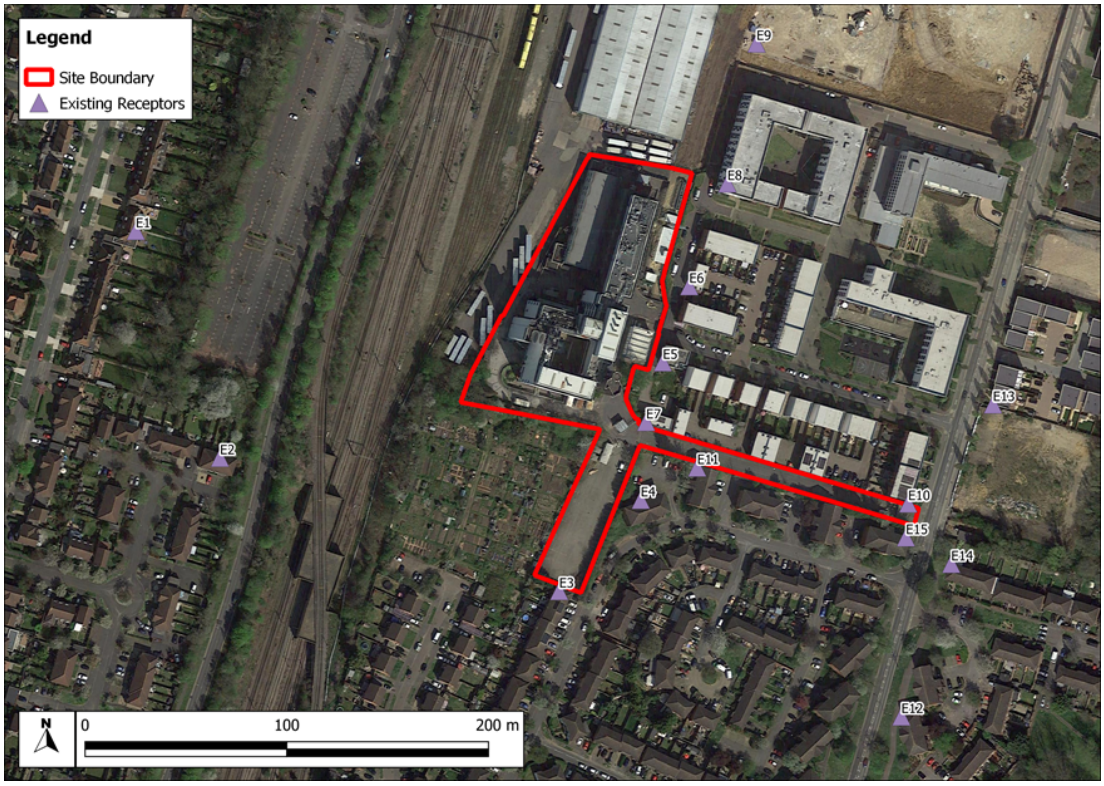


Figure 6.2: Existing Receptor locations in the local area

Imagery © 2020 Google, Map data © 2020.

6.2.39. In addition, concentrations have also been predicted at the WH18 monitoring site located at Broadwater Road, in order to verify the model (Appendix 6.4).

Additional Model Setup Parameters and Post-processing

6.2.40. Further details on additional model setup parameters and post-processing approaches are set out in Appendix 6.4. These include the vehicle emission factors, traffic data, combustion plant details, car park details, meteorology, surface characteristics, model verification and other key modelling considerations.

Cumulative Assessment Methodology

6.2.41. Cumulative effects during both the construction and operational phases have been considered, utilising information publicly available where possible. A qualitative assessment of cumulative effects has been carried out for the construction phase and a mixture of qualitative and quantitative assessments have been used when considering the cumulative operational effects.

Significance Criteria

Long-term (Annual Mean) Impacts

6.2.42. Standard practice is to assess the impacts of a development on local air quality using the EPUK and IAQM guidance on Land-Use Planning & Development Control: Planning for Air Quality. The approach provides a method for describing the impacts on local air quality arising from development.

6.2.43. Impact descriptors for individual receptors are used which expresses the magnitude of incremental change as a proportion of a relevant assessment level and then examining this change in the context of the new total concentration and its relationship with the assessment criterion. **Table 6.4** sets out the matrix for determining the impact descriptor for annual mean concentrations at individual receptors, based on **Table 6.3** in the EPUK and IAQM guidance document. Impacts can be beneficial or adverse in nature. The terminology within **Table 6.4** comes from the guidance. For the purposes of this ES:

- *Negligible and Moderate retain their meanings;*
- *Slight can be considered equivalent to Minor; and*
- *Substantial can be considered equivalent to Major.*

Table 6.4: Annual mean impact descriptors for individual receptors

Annual Mean Concentration with Project ($\mu g/m^3$)	% Change in Concentration relative to the AQO ($\mu g/m^3$)			
	1	2-5	6-10	>10
75% or less of AQO	Negligible	Negligible	Slight	Moderate
76-94% of AQO	Negligible	Slight	Moderate	Moderate
95-102% of AQO	Slight	Moderate	Moderate	Substantial
103-109% of AQO	Moderate	Moderate	Substantial	Substantial
75% or less of AQO	Negligible	Negligible	Slight	Moderate

Short-term Impacts

6.2.44. For impacts in relation to the 1-hour mean and 24-hour mean AQOs it is not practical to define a magnitude of impact, as the AQOs relate to a number of periods which can exceed the air quality standard threshold. Where there is no predicted exceedance of the short-term AQO the impact is described as negligible.

6.2.45. Previous research carried out on behalf of Defra and the devolved administrations identified that exceedences of the 1-hour mean NO_2 AQO are unlikely to occur where the annual mean is below 60 $\mu g/m^3$ [7]. Similarly, exceedences of the 24-hour mean PM_{10} AQO are unlikely to

[7] Defra (2018). Local Air Quality Management Technical Guidance (TG16). Retrieved from https://laqm.defra.gov.uk/technical-guidance/

occur where the annual mean is below 32 $\mu g/m^3$. Where annual mean concentrations are below these levels the short-term impacts are considered to be negligible.

Significance

6.2.46. The approach developed by EPUK and IAQM [8]has been used. The guidance is that the assessment of significance should be based on professional judgement, with the overall air quality impact of the Project described as either "significant" or "not significant".

6.2.47. If none of the criteria in Stage 1 and 2 are met, then there should be no requirement to carry out an air quality assessment for the impact of the Project on the local area, and the impacts can be considered as having a not significant effect.

6.2.48. Where a Simple or Detailed assessment is carried out, in drawing the determination of significance, the following factors should be taken into account:

- the existing and future air quality in the absence of the Project;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
- the potential for cumulative impacts. In such circumstances, several impacts that are described as "slight" individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a "moderate" or "substantial" impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
- the judgement on significance relates to the consequences of the impacts; i.e. will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

6.2.49. The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the occupants of any new development where the air quality is such that an air quality objective is not met will be judged as significant.

[8] EPUK and the IAQM (2017). Land-Use Planning & Development Control: Planning For Air Quality

6.3. Legislation, Planning Policy and Guidance

Legislative Context

6.3.1. The Environment Act 1995[9] sets out the requirements of the Local Air Quality Management (LAQM) regime and the requirement for the Government to produce an Air Quality Strategy including standards and objectives.

6.3.2. The latest Air Quality Strategy was published in 2007[10] and sets out the Air Quality Standards (AQS), which consider the effects on human health, and The National Air Quality Objectives (AQOs) for ambient pollution. The AQOs for use by local authorities when considering human health were incorporated into UK legislation within the Air Quality (England) Regulations, 2000, Statutory Instrument 928[11] and the Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043[12].

6.3.3. The Strategy explains that the AQSs for the protection of human health are defined as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The AQS are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedences allowed per year (if any) and a date by which it must be achieved. An exceedence is a breach of the threshold for the concentration for the specific averaging period.

6.3.4. The AQO's set out the extent to which the Government expects the AQS to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and possible timescales. AQO are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences, within a specified timescale. The LAQM regime, introduced by the Environment Act 1995, requires local authorities to review air quality within their boundary and work towards achieving and maintaining the AQO.

6.3.5. The Strategy describes the Local Air Quality Management (LAQM) regime that has been established by Part IV of the Environment Act 1995, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an AQMA and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives. The strategy also provides the policy framework for air quality management and assessment in the UK.

6.3.6. In additional to the AQOs set within the Air Quality Strategy, the European Union (EU) has also set limit values and target values for the protection of human health and critical levels for the protection of ecosystems. These were transposed into the Air Quality Standards

[9] HMSO (1995). Environment Act. HMSO.
[10] Defra (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
[11] HMSO (2000). The Air Quality Regulations, 2000, Statutory Instrument 928. HMSO.
[12] HMSO (2002). The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043. HMSO.

Regulations[13] ,which sets out the UK limit values, target values and critical levels for specific pollutants. Like the AQO, the limit values, target values and critical levels are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedences allowed per year (if any) and a date by which it must be achieved. Some pollutants have more than one value covering different dates or averaging times. While the AQO are policy targets, the government has the duty to ensure compliance with the legally binding limit values which is a national obligation rather than a local one.

Planning Policy and Guidance

Planning Policy

6.3.7. There are a many policy and strategy documents published regarding air quality at a national and a local level. These are set out in Appendix 6.2. These documents all provide useful context, information, and justification in support of the approaches in this assessment. A summary of the relevant documents is provided below.

National Planning Policy

- National Planning Policy Framework;
- Planning Practice Guidance;
- Clean Air Strategy;
- The Industrial Strategy;
- The Clean Growth Strategy;
- The 25 Year Environment Plan;
- Road to Zero; and
- Air Quality Plan.

Local Planning Policy

- WHBC Local Plan;
- WHBC draft New Local Plan; and
- Broadwater Road West SPD.

[13] HMSO (2010). The Air Quality Standards Regulations 2010, ENVIRONMENTAL PROTECTION, 2010 No. 1001, STATUTORY INSTRUMENTS.

Guidance

EPUK and IAQM Air Quality Guidance for Planning

6.3.8. EPUK in partnership with the IAQM have produced guidance on *'Land-Use Planning & Development Control: Planning for Air Quality'*. EPUK and IAQM have produced this guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. It provides a means of reaching sound decisions, having regard to the air quality implications of development proposals and provides guidance on how air quality considerations of individual schemes may be considered within the development control process, by suggesting a framework for the assessment of the impacts of developments on local air quality.

Defra LAQM Guidance

6.3.9. Defra and the devolved administrations have published a guidance document on Local Air Quality Management (LAQM) - Local Air Quality Management Technical Guidance (TG16) April 2018. This document is designed to support local authorities in carrying out their duties under the Environment Act 1995, the Environment (Northern Ireland) Order 2002, and subsequent regulations. LAQM is the statutory process by which local authorities monitor, assess, and take action to improve local air quality. The Technical Guidance provides tools, approaches and technical information related to air quality.

IAQM Construction Dust Guidance

6.3.10. The IAQM produced guidance on the assessment of dust from demolition and construction. This document provides a risk-based methodology for assessing construction impacts, including demolition and earthworks where appropriate. The guidance has been used throughout this assessment, which should be read in conjunction with the guidance document.

Technical Standards

6.3.11. The AQOs and limit values for England for the pollutants relevant to this project are detailed in **Table 6.5**.

Table 6.5: AQOs and Limit Values

Pollutant	Time Period	AQO / Limit Value	Concentration, and the number of exceedences allowed per year (if any)	Date AQO / Limit Value to be Achieved From and Maintained After
Nitrogen Dioxide (NO_2)	1-hour Mean	AQO / Limit Value	200 µg/m3 not to be exceeded more than 18 times a year	31st December 2005 / 1st January 2010
	Annual Mean	AQO / Limit Value	40 µg/m^3	31st December 2005 / 1st January 2010
	24-hour Mean	AQO / Limit Value	50 µg/m^3 not to be exceeded more than 35 times a year	31st December 2004

Fine Particles (PM_{10})	Annual Mean	AQO / Limit Value	40 µg/m^3	31st December 2004
Fine Particles ($PM_{2.5}$) [a]	Annual Mean	AQO / Limit Value	25 µg/m^3	2020 / 2010

[a] The $PM_{2.5}$ objective is not in Regulations and there is no legal requirement for local authorities to meet it.

6.3.12. Following the UK leaving the EU, the Government have drafted a new Environment Bill which is not currently finalised, however, early indication is that the UK Government intends to benchmark the $PM_{2.5}$ target against the WHO guideline value. The WHO acknowledges that current evidence suggests no safe level for $PM_{2.5}$. However, the WHO set a guideline limit, which is 10 µg/m^3 as an annual mean and more stringent than the current AQOs, reflecting the level at which increased mortality from exposure to $PM_{2.5}$ is likely.

Relevant locations of exposure

AQO Receptors

6.3.13. The 2007 Air Quality Strategy explains that Air Quality Standards (AQS) and AQO were determined based on expert recommendations and represent *"levels at which no significant health effects would be expected in the population as a whole"*. The AQOs apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the AQO.

6.3.14. The annual mean AQO applies at locations where members of the public might be regularly exposed, such as building façades of residential properties, schools, nurseries, hospitals, and care homes.

6.3.15. The 24-hour mean AQO applies at the annual mean locations of exposure and at hotels, residential gardens and any location where members of the public might reasonably be expected to spend one day or longer.

6.3.16. The 1-hour mean AQO applies at the annual mean locations of exposure and at hotels, residential gardens and any outdoor location where members of the public might reasonably be expected to spend one hour or longer, such as busy pavements, parks, balconies, terraces, and locations with outdoor seating.

6.3.17. Places of work like factories or offices are not considered places where members of the public might be regularly exposed and therefore the AQO's do not apply at these locations.

Limit Value Receptors

6.3.18. Defra reports Limit Value compliance based on their monitoring and modelling at locations which match specific parameters (including distance from road, proximity to junctions etc.). The compliance with the limit values should be achieved at any location where members of the public have access. However, in accordance with Article 2(1), Annex III, Part A, paragraph

2 of Directive 2008/50/EC, locations where compliance with the limit values does not need to be assessed include:

"a) Any locations situated within areas where members of the public do not have access and there is no fixed habitation;

b) In accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply; and

c) On the carriageway of roads; and on the central reservation of roads except where there is normally pedestrian access to the central reservation."

6.3.19. The government models compliance with the Directive at locations 4 m from the kerbside, 2 m high, more than 25 m from major road junctions and adjacent to at least 100 m of road length where the limit value applies.

6.4. Baseline Conditions

Air Quality Management Areas

6.4.1. WHBC has investigated air quality within its area as part of its responsibilities under the LAQM regime. WHBC have not declared an Air Quality Management Area (AQMA) and the Project Site is located over 1.5 km from AQMAs declared by other local authorities.

LAQM Monitoring

6.4.2. WHBC monitors concentrations of NO_2 using passive monitors (diffusion tubes). There are 36 monitoring sites within 10 km of the Project Site, including a diffusion tube (WH28) located at the taxi rank approximately 441 m northwest of the Project Site and a diffusion tube (WH18) located at the intersection between the B195 and Broadwater Road about 552 m to the northeast of the Project Site. These monitoring locations are shown in **Figure 6.3**, along with other monitoring sites to provide further context. No monitoring of PM_{10} or $PM_{2.5}$ has been carried out within 10 km of the Project Site.

6.4.3. Measured annual mean NO_2 concentrations for these monitoring sites and other nearby sites are presented in **Table 6.6**. Data for 2014 to 2018 have been obtained from WHBC's 2019 air quality annual status report[14]. Data for 2019 has been provided by WHBC.

6.4.4. Several exceedences of the annual mean AQO level were measured at the WH2 and WH18 monitoring sites in 2014 and 2016. Measured NO_2 concentrations have, however, been below the AQO in the local area since 2017.

6.4.5. Defra's LAQM.TG16 guidance[7] states that exceedences of the 1-hour mean NO_2 AQO are unlikely to occur where the annual mean is below 60 µg/m^3. Since the measured concentrations are all well below 60 µg/m^3; it is therefore considered highly unlikely that the 1-hour mean NO_2 AQO has been exceeded in the local area due to emissions from road traffic.

[14] WHBC (2019). 2019 Air Quality Annual Status Report (ASR)

Table 6.6: Measured NO_2 Annual Mean Concentrations ($\mu g/m^3$) [a]

Site ID – Name (Type)	2014	2015	2016	2017	2018	2019
WH2 - Wigmores North, WGC	n/a	n/a	**43**	35	21	22
WH11 - Digswell Road, WGC	n/a	n/a	n/a	n/a	28	29
WH18 - B195/Broadwater Road, WGC	**42**	35	**40**	37	35	31
WH23 - Raymonds Plain, WGC	38	28	22	22	17	23
WH28 – Taxi Rank, WGC	n/a	n/a	33	27	25	24
AQO	**40**					

a Exceedances of the AQO are presented in bold.

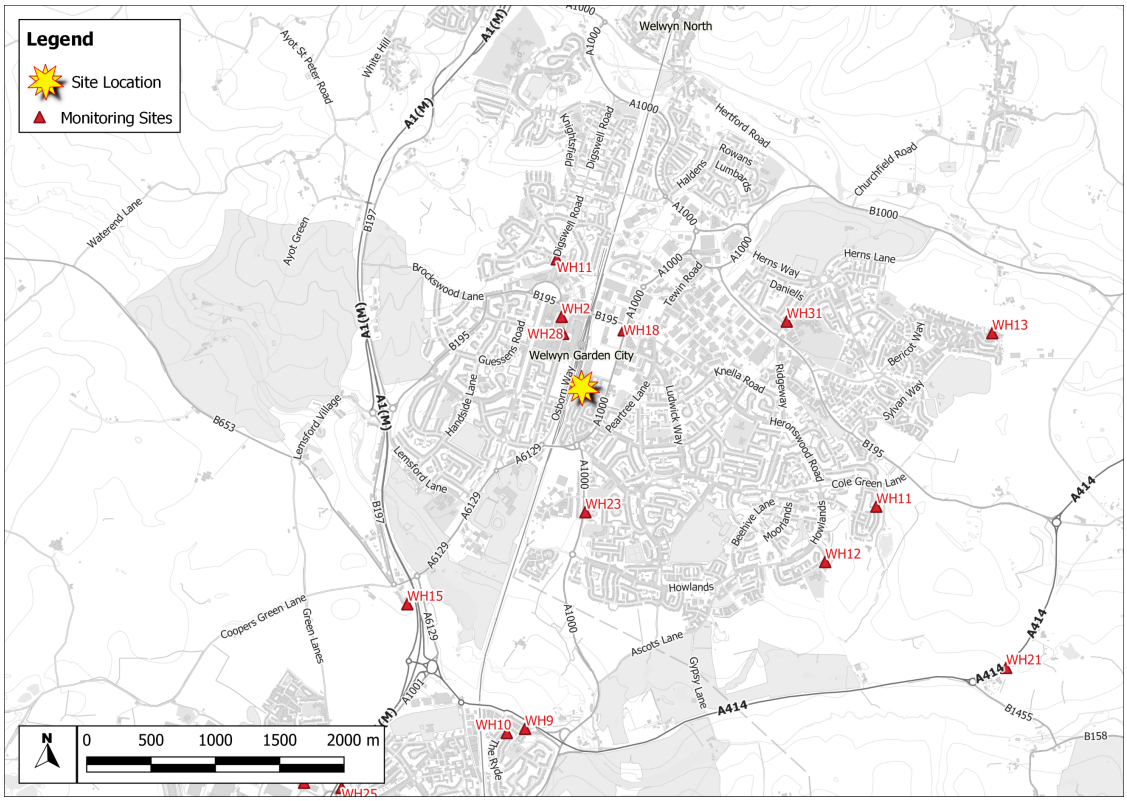


Figure 6.3: Monitoring Sites relative to Project Site

Contains OS data © Crown copyright and database right (2020).

Background Concentrations

6.4.6. Ambient background concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been defined using the national pollution maps published by Defra[2] . These cover the whole of the country on a 1x1 km grid for each year from 2017 until 2030. Concentrations for the baseline year (2019) and the earliest operational year of the Project (2023) have been extracted for the grid cells

covering the Project Site. The values are presented in **Table 5** and shown in **Figure 6.4**. All predicted background concentrations are well below the AQOs.

Table 6.7: Mapped Background Concentrations ($\mu g/m^3$)

Year	NO_2	PM_{10}	$PM_{2.5}$
2019	15.4 – 16.4	15.0 – 15.1	10.2 – 10.2
2023	13.1 – 14.1	14.2 – 14.2	9.5 – 9.5

Defra Predicted Roadside Concentrations

6.4.7. Defra has predicted roadside concentrations of NO_2, PM_{10}, and $PM_{2.5}$ for the main roads in the UK[3] for the years 2017 to 2030 as part of Defra's commitment to report exceedences of the limit values to the EU. For 2020, no exceedences of the NO_2 limit value are predicted in the local area, see **Figure 6.4**. No exceedences of PM_{10} or $PM_{2.5}$ are predicted.

6.4.8. It should also be noted that it is widely accepted that in many locations in the UK Defra's modelling has underpredicted roadside concentrations when compared with local monitoring and these Defra roadside estimates should be treated with caution.

6.4.9. The earliest year that the Project might be operational is 2023, with possible construction activities from 2021. Defra predicts that there will be no NO_2 exceedences of the limit value in 2020; the local area will therefore not be sensitive to small changes in concentrations during the operational phase and compliance with the limit values will be achieved at locations of existing sensitive exposure.

6.4.10. The earliest year that occupants of the Project may be exposed is 2023. Defra predicts that there will be no NO_2 exceedences of the limit value in 2023. Future occupants of the Project are thus likely to be exposed to concentrations below the limit values.

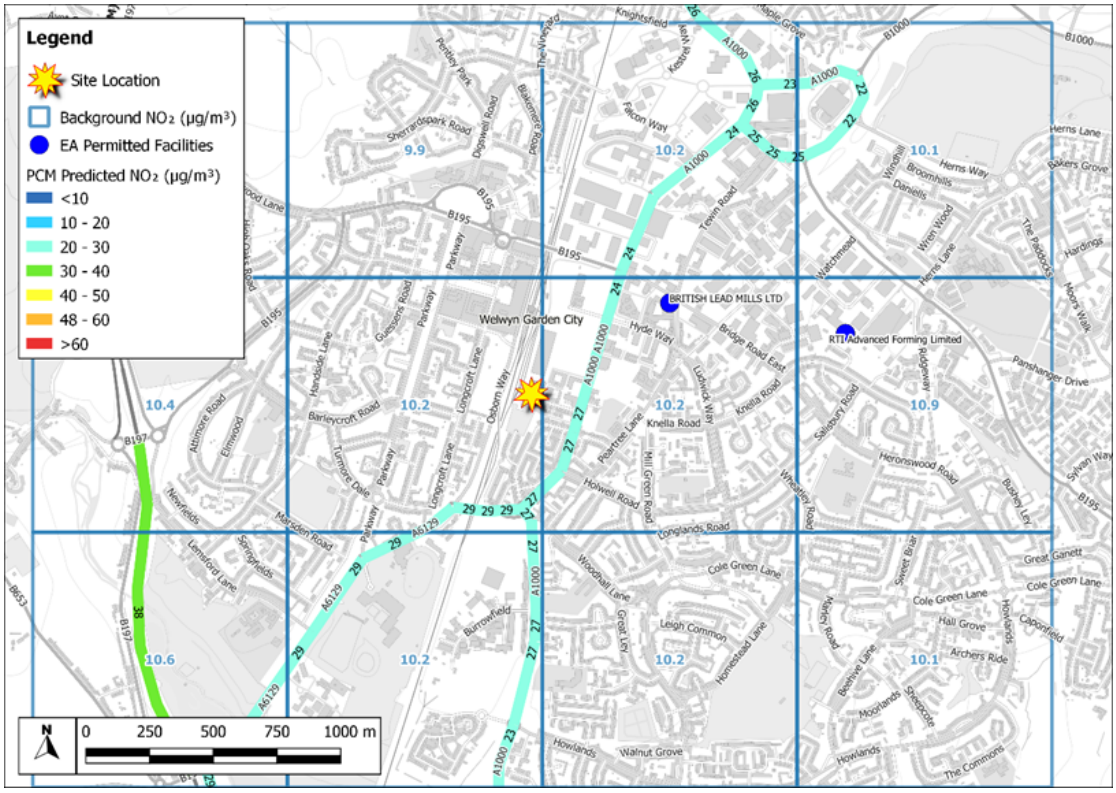


Figure 6.4: PCM modelled NO_2 concentrations for 2020, Defra predicted background concentrations for 2020 and site location

Contains OS data © Crown copyright and database right (2020).

Predicted Local Pollutant Concentration

6.4.11. Baseline concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted for the future year of 2023 in the local area. The predicted concentrations are set out in **Table 6.12**. All concentrations are below the AQOs.

Other Sources of Air Pollution

Permitted Facilities

6.4.12. The Environment Agency regulates sites which are at risk of contributing significantly to pollutant concentrations and maintains a database of these sites called the UK Pollutant Release and Transfer Register (PRTR). The UK PRTR data has been used to fulfil the reporting requirements of the European Pollutant Release and Transfer Register (E-PRTR) which provides details of all regulated sites in the UK[5].

6.4.13. The 2017 database has identified one regulated facility within 1 km of the Project Site, located 540 m to the northeast. This facility is operated by British Lead Mills Ltd and involves the

melting of non-ferrous metals. The facility operates with an environmental permit that specifies emission limits that the facility must meet to avoid having significant adverse effects upon local air quality. With the exception of carbon monoxide and ammonia, the facility has not recorded any recent significant releases above the emission limits.

6.4.14. It is also worth noting that there is an inorganic chemicals factory just over 1 km to the northeast of the Project Site operated by RTI Advanced Forming Ltd. The facility operates with an environmental permit that specifies emission limits that the facility must meet to avoid having significant adverse effects on local air quality. The facility has recorded recent releases of metals and acid gases well above the emission limits.

Nearby Railway

6.4.15. Adjacent to the western boundary of the Project Site is the East Coast Main Line, a railway line that connects London to Edinburgh. This includes some railway sidings adjacent to the Project Site, the main railway lines, and the Welwyn Garden City railway station (250m north of the Project Site). Emissions from locomotives using the railway line, sidings and nearby station have the potential to affect air quality at the Project Site.

6.5. Inherent Design Mitigation

6.5.1. The EPUK and IAQM guidance[8]is clear that it is important that proposed developments incorporate good design and best practice measures to ensure any impacts are minimalised as far as practicable, even where pollutant concentrations are predicted to be below the AQOs/limit values. This Project includes the following good design and best practice measures by design:

- pedestrian and bicycle access, including from a new entrance via Broadwater Rd, 289 long term cycle parking spaces and some short-term cycle spaces;
- situated close to public transportation, allowing easy access to sustainable modes of transport; and
- include electric vehicle charging points.

6.6. Potential Environmental Impacts and Effects

Demolition and Construction

Fugitive Dust and Particulate Matter Emissions

6.6.1. Works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway.

6.6.2. As there are human receptors within 350 m of the boundary of the site, according to the guidance an assessment is required of human receptors. There are no ecological receptors within the screening distances and therefore effects on ecological receptors can be discounted as not significant

Potential Dust Emission Magnitude

6.6.3. The guidance explains that the dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium, or Large. The guidance provides examples of the magnitude classification for each of the potential stages.

6.6.4. The existing buildings will be demolished, including a 35 m, large structure and several outbuildings. These existing structures are composed of potentially dusty materials, such as concrete. The total building volume is estimated to be approximately 40,000 m^3. There is likely to be on-site crushing and screening involved in the demolition process. There will also be demolition occurring at height, which poses an elevated risk of effects. The demolition activities will be approximately 4-6 months in duration. Based on the illustrative criteria in the IAQM guidance, the dust emission class for demolition is considered to be Large.

6.6.5. The dust generated by the earthworks depends on the nature of the earth and soil at the Project Site. The characteristics of the soil have been defined using the British Geological Survey's UK Soil Observatory website[15] and are set out in **Table 6.8**. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 6.8: Description of Soil Type

Category	Record
Soil layer thickness	Deep
Soil texture	Loam to Clayey Loam, Locally Chalky
Subsoil grain size	Mixed (Argillic Rudaceous) – A variable clay, silt, sand and gravel subsoil
European Soil Bureau Description	Glacial Till

6.6.6. There will be a requirement for earthworks on-site to create foundations, landscaping, and the undercroft and basement car park. The area of earthworks is estimated to be approximately 13,160 m^2, with dust arising mainly from the excavation, handling, and transport of dusty materials (such as dry soil). The earthworks will be approximately 6 months in duration. Based on the illustrative criteria in the IAQM guidance document, the dust emission class for earthworks is considered to be Large.

6.6.7. The Project includes the construction of several buildings, with a total building volume of approximately 60,000 m^3. The construction materials are known to include concrete and the process will include piling, but no on-site concrete batching or sandblasting. The construction works are estimated to have a duration of 24 months (including construction during some demolition and earthwork periods). Based on the illustrative criteria in the IAQM, the dust emission class for earthworks is considered to be Medium.

6.6.8. There will be a maximum of 30 Heavy-Duty Vehicles (HDVs) leaving the site on a single day, as stated in Chapter 7: Transportation. However, none of these vehicles will travel over

[15] British Geological Survey. (2020). UK Soil Observatory (UKSO). Retrieved from British Geological Survey: http://mapapps2.bgs.ac.uk/ukso/home.html

unpaved surfaces since there is an existing paved driveway on-site. There is, therefore, unlikely to be any dust or dirt tracked out onto the local roads. However, based on the example definitions set out in the IAQM guidance and taking a worst-case approach, the dust emission class for trackout has been assumed to be Small.

6.6.9. **Table 6.9** summarises the dust emission magnitude for the Project.

Table 6.9: Summary of Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Large
Earthworks	Large
Construction	Medium
Trackout	Small

Sensitivity of the Area

6.6.10. The guidance explains that the sensitivity of the area should take account of a number of factors including:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local baseline concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

6.6.11. The IAQM guidance document provides examples of high, medium and low sensitive receptors for each of the potential effects. These are provided in Box 6 to Box 8 of the guidance and consideration should be given to the additional factors presented in Box 9 of the guidance. The guidance has also, helpfully, provided a series of matrices (Table 2, Table 3 and Table 4 of the guidance document) to determine the sensitivity of the area based on the receptor sensitivity, number of receptors, the proximity to the dust emission activity and baseline PM_{10} concentration.

6.6.12. Residential properties are considered to be high sensitivity receptors to dust soiling and elevated levels of PM_{10}, while the commercial properties are medium sensitivity receptors. Some commercial properties, such as retail shops with windows, would be considered high sensitivity receptors to dust soiling.

6.6.13. **Figure 6.5** shows the site location with several bands representing 20 m, 50 m and 100 m distances from the Project Site. There are approximately 100 high sensitivity properties within 20 m of the Project Site. Based on Table 2 of the IAQM guidance document, the sensitivity of the area to dust soiling impact will be High.

6.6.14. Annual mean PM_{10} concentrations in the vicinity of the Project Site are predicted to be around 15 $\mu g/m^3$ (see **Table 6.7**). There are approximately 100 high sensitivity properties that are

likely to be exposed to these concentrations within 20 m of the Project Site. Based on Table 3 of the IAQM guidance, the sensitivity of the area to human health impacts due to elevated levels of PM_{10} during the demolition, earthworks and construction stages will be Medium.

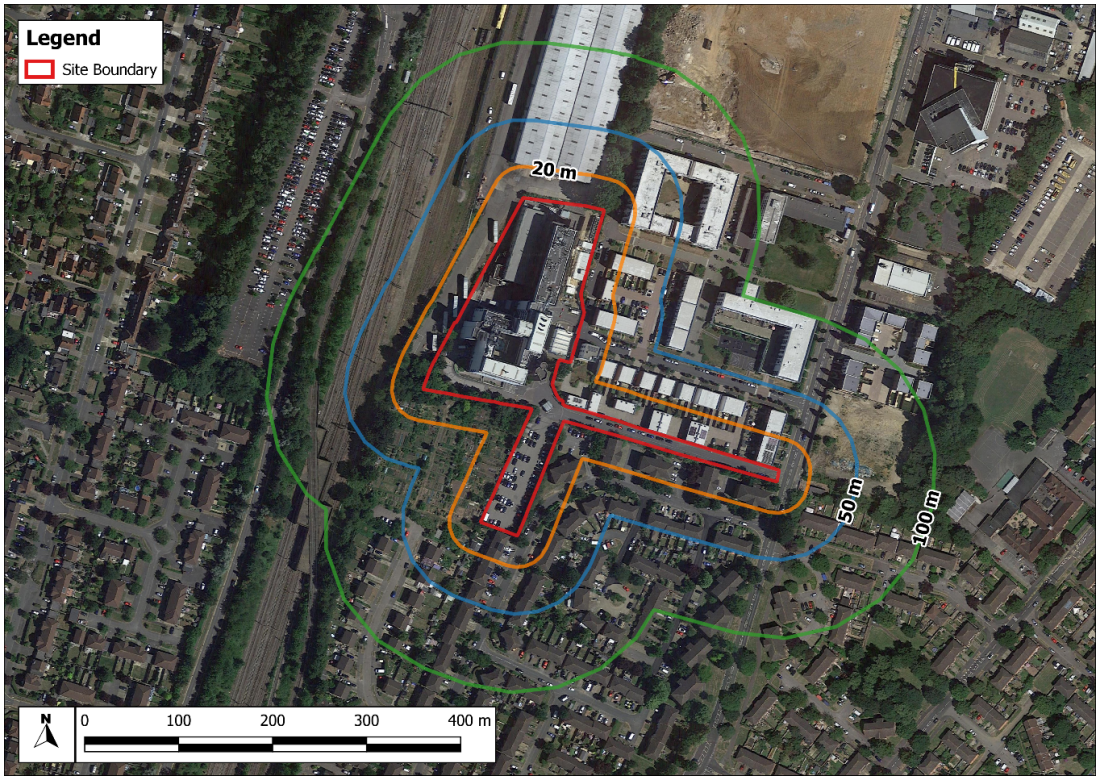


Figure 6.5: Distance Buffers from the Project Site

Imagery © 2020 Google, Map data © 2020

6.6.15. Footnote C of Table 2 of the guidance explains that where there is a small dust emission magnitude for trackout there is a risk of material being tracked up to 50 m from the Project Site. The Project will include the upgrade of the existing BioPark Drive from Broadwater Road to the east of the Project Site, and it is expected that all construction-related vehicles will access the Project Site via this entrance. There are more than 10 high sensitivity properties within 20 m of the roads along which material could be tracked, and thus the area is considered to be of High sensitivity to dust soiling impacts due to trackout. Accounting for baseline PM_{10} concentrations, the area is considered to be of Low sensitivity to human health impacts.

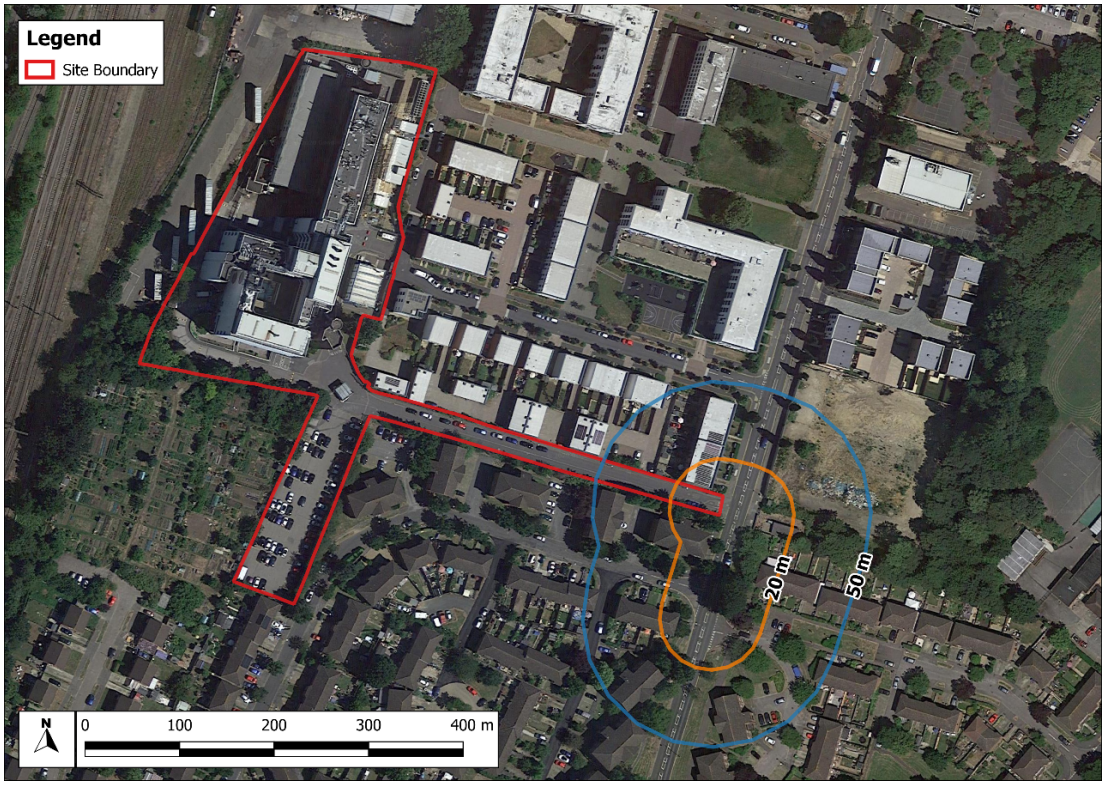


Figure 6.11: Distance Buffers from road lanes to the south of the Project where dirt may be tracked out from the Project Site

Imagery © 2020 Google, Map data © 2020

6.6.16. **Table 6.10** summarises the sensitivity of the area around the proposed construction works based on the highest level of sensitivity determined for each stage.

Table 6.10: Summary of Sensitivity of the Surround Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Low

Risk of Dust Effects

6.6.17. The guidance has, helpfully, provided a series of matrices (Table 2, Table 3 and Table 4 of the guidance document) to determine the potential impact at receptors based on the receptor sensitivity, number of receptors and the proximity to the dust emission activity.

6.6.18. The dust emission magnitudes in **Table 6.9** have been combined with the sensitivities of the area in **Table 6.10** using the matrices in the guidance (Table 6, Table 7 and Table 8 of the guidance), in order to assign a risk category to each activity. The resulting risk categories for the three construction activities, without mitigation, are set out in **Table 6.11**.

Table 6.11: Summary of Dust Risk for each Stage

Potential Impact	Risk			
	Demolition [1]	Earthworks [2]	Construction [3]	Trackout [4]
Dust Soiling	High Risk	High Risk	Medium Risk	Low Risk
Human Health	High Risk	Medium Risk	Medium Risk	Negligible

1 Based on Table 6 of the IAQM guidance document.

2 Based on Table 7 of the IAQM guidance document.

3 Based on Table 8 of the IAQM guidance document.

4 Based on Table 9 of the IAQM guidance document.

Construction Traffic

6.6.19. Pollutant emissions from construction traffic associated with the Project have been considered. The Project will lead to a temporary AADT increase of up to 60 HDVs per day during the demolition and construction phase as stated in Chapter 7: Transportation.

6.6.20. The screening criteria set out in the EPUK and IAQM guidance states that the impacts will be negligible where the change in HDV AADT flows are less than 100 outside of and AQMA.

6.6.21. Since the Project will lead to an increase in local road traffic that is below the EPUK/IAQM criteria, the impacts on local air quality will be negligible.

Non-Road Mobile Machinery

6.6.22. Consideration has also been given to the potential impacts of emissions from Non-Road Mobile Machinery (NRMM) used during the construction phase. Guidance from the IAQM[6] states that *"experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) […] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed*". On this basis, significant effects as a result of NRMM emissions can thus be discounted. However, suitable mitigation measures for construction site plant are set out in Appendix 6.5, based on advice presented in the IAQM**Error! Bookmark not defined.** = guidance document.

Operation

Impacts of the Project on the Local Area

6.6.23. The Project involves more than 10 residential units, thus based on the EPUK and IAQM guidance there is a need to consider the impacts on local air quality.

6.6.24. There will be a net reduction in vehicle movements (see Chapter 8 Transport and the Transport Assessment which accompanies the planning application) generated by the Project Site and as such, the impacts of road traffic emissions in isolation will be negligible, if not beneficial.

6.6.25. The combined impacts have, however, been assessed in detail, taking account of pollutant emissions associated with road traffic, undercroft and basement car parking, changes in streetscape, and combustion plant due to the Project.

6.6.26. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted at existing sensitive properties in the local area for the future year of 2023, with and without the Project. The predicted concentrations are presented in **Table 6.12**, **Table 6.13** and **Table 6.14**, respectively, along with the impacts descriptors.

6.6.27. All values are predicted to be well below the annual mean AQOs and all impacts are described as negligible.

6.6.28. Previous research carried out on behalf of Defra identified that, where road traffic emissions are the dominant pollutant source, exceedences of the 1-hour mean NO_2 AQO are unlikely to occur where the annual mean is below 60 $\mu g/m^3$ [7]. The maximum predicted annual mean NO_2 concentration at any of the receptors was predicted to be 22.1 $\mu g/m^3$. The concentrations are thus all below 60 $\mu g/m^3$; based on Defra's LAQM.TG16 guidance, it is therefore unlikely that the 1-hour mean AQO will be exceeded at any of the receptors. The 1-hour mean impacts are therefore considered to be negligible.

6.6.29. Similarly, exceedences of the 24-hour mean PM_{10} AQO are unlikely to occur where the annual mean is below 32 $\mu g/m^3$ [7]. The maximum predicted annual mean PM_{10} concentration at any of the receptors was predicted to be 15.8 $\mu g/m^3$. The concentrations are thus below 32 $\mu g/m^3$; based on Defra's LAQM.TG16 guidance, it is therefore unlikely that the 24-hour mean AQO will be exceeded at any of the receptors. The 24-hour mean impacts are therefore considered to be negligible.

6.6.30. It is also worth noting that the current use of the Project Site includes a large combustion plant, the emissions from which would be removed prior to the Project being operational. The proposed combustion plant is likely to generate fewer emissions. This reduction in emissions has not been accounted for within the modelling, as such the impacts of the Project should therefore be treated as conservative.

Table 6.12: Predicted NO_2 Concentrations ($\mu g/m^3$) and Impact Descriptors

Receptor	Without Project	With Project	Impact Descriptor
E1	16.5	16.6	Negligible
E2	17.0	17.1	Negligible
E3	17.0	17.1	Negligible
E4	17.2	17.3	Negligible
E5	17.6	17.7	Negligible
E6	17.6	17.8	Negligible
E7	17.8	17.9	Negligible
E8	17.5	17.7	Negligible
E9	17.5	17.7	Negligible

E10	21.4	21.4	Negligible
E11	17.6	17.7	Negligible
E12	20.9	20.9	Negligible
E13	21.6	21.7	Negligible
E14	20.6	20.7	Negligible
E15	22.0	22.1	Negligible
AQO	**40**	**40**	**-**

Table 6.13: Predicted PM_{10} Concentrations ($\mu g/m^3$) and Impact Descriptors

Receptor	With Existing Building	With Proposed Building	Impact Descriptor
E1	14.2	14.2	Negligible
E2	14.3	14.3	Negligible
E3	14.3	14.3	Negligible
E4	14.4	14.4	Negligible
E5	14.4	14.4	Negligible
E6	14.4	14.4	Negligible
E7	14.4	14.4	Negligible
E8	14.3	14.3	Negligible
E9	14.3	14.3	Negligible
E10	15.5	15.5	Negligible
E11	14.4	14.4	Negligible
E12	15.5	15.5	Negligible
E13	15.6	15.6	Negligible
E14	15.4	15.4	Negligible
E15	15.8	15.8	Negligible
AQO	**40**	**40**	**-**

Table 6.14: Predicted $PM_{2.5}$ Concentrations ($\mu g/m^3$) and Impact Descriptors

Receptor (Height)	With Existing Building	With Proposed Building	Impact Descriptor
E1	9.5	9.5	Negligible
E2	9.6	9.6	Negligible
E3	9.6	9.6	Negligible
E4	9.6	9.6	Negligible

E5	9.6	9.7	Negligible
E6	9.6	9.6	Negligible
E7	9.7	9.7	Negligible
E8	9.6	9.6	Negligible
E9	9.6	9.6	Negligible
E10	10.3	10.3	Negligible
E11	9.7	9.7	Negligible
E12	10.2	10.2	Negligible
E13	10.3	10.3	Negligible
E14	10.2	10.2	Negligible
E15	10.4	10.4	Negligible
AQO	**25**	**25**	**-**

Impacts upon Limit Value Compliance

6.6.31. Without the Project, existing levels of air pollution are predicted by Defra to be below the limit values in 2020. The Project is not expected to lead to a detrimental effect upon local air quality and will therefore not delay compliance with the limit values by WHBC.

Impacts upon the Project Site

6.6.32. Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted for the future year of 2023 at the Project Site. The maximum PM_{10} and $PM_{2.5}$ concentrations are predicted at the ground-floor level, nearest to the road and railway emission sources, while the maximum NO_2 are mostly at ground-floor level apart from at six receptor locations that are affected predominately by the on-site combustion plant emissions. The maximum concentrations at each receptor, of any floor height, are presented in **Table 6.15**. All values are well below the AQOs and air quality for future occupants will therefore be acceptable.

6.6.33. Consideration has also been given to potential short-term exposure at the roof terraces and balconies. The concentrations presented in **Table 6.15** includes receptors that represents locations of worst-case exposure at the roof terraces and balconies within the Project. No exceedences of the 1-hour mean AQO are predicted. Air quality for future occupants using the roof terraces and balconies will therefore be acceptable.

Table 6.15: Maximum Predicted Concentrations at the Project Site ($\mu g/m^3$)

Receptor	Annual Mean NO_2	Annual Mean PM_{10}	Annual Mean $PM_{2.5}$	1-hour Mean NO_2 [a]
S1	18.0	14.3	9.6	37.0
S2	18.1	14.3	9.6	37.5

S3	18.0	14.3	9.6	37.8
S4	18.0	14.3	9.6	36.6
S5	18.0	14.3	9.6	36.5
S6	18.2	14.3	9.6	38.3
S7	18.1	14.3	9.6	38.5
S8	18.1	14.3	9.6	38.8
S9	24.8	14.3	9.6	103.5
S10	18.0	14.4	9.6	41.9
S11	17.9	14.4	9.6	37.0
S12	18.1	14.4	9.7	36.7
S13	17.8	14.3	9.6	36.0
S14	17.8	14.3	9.6	39.1
S15	17.9	14.3	9.6	40.1
S16	18.0	14.3	9.6	41.1
S17	18.2	14.4	9.6	38.7
S18	19.8	14.4	9.6	72.5
S19	19.8	14.4	9.6	80.6
S20	19.2	14.4	9.6	71.9
S21	18.4	14.4	9.6	44.2
S22	18.3	14.4	9.6	37.4
S23	18.1	14.4	9.6	37.2
S24	18.0	14.4	9.6	36.8
S25	17.9	14.4	9.6	36.5
S26	17.6	14.4	9.6	35.2
S27	18.1	14.5	9.7	36.6
S28	17.7	14.4	9.7	36.6
S29	18.0	14.4	9.7	37.4
S30	17.1	14.3	9.6	35.0
S31	17.2	14.3	9.6	35.3
S32	17.4	14.4	9.6	35.6
S33	17.6	14.4	9.6	36.4

S34	20.1	14.4	9.7	69.8
S35	29.0	14.4	9.6	157.3
S36	17.9	14.4	9.6	47.0
S37	18.6	14.5	9.7	37.1
S38	17.8	14.4	9.6	35.6
S39	18.4	14.4	9.7	37.8
AQO	**40**	**40**	**25**	**200**

[a] Presented as the total 99.79th percentile of 1-hour mean concentrations.

6.6.34. To provide further context in relation to amenity in the local area and at the external areas within the Project, concentrations have been predicted for a grid of receptors at ground-floor level. A contour of the predicted ground level 1-hour mean NO_2 concentrations is presented in **Figure 6.6**. All values are below the AQO (200 $\mu g/m^3$); air quality within the external amenity areas will therefore be acceptable for future occupants of the Project.

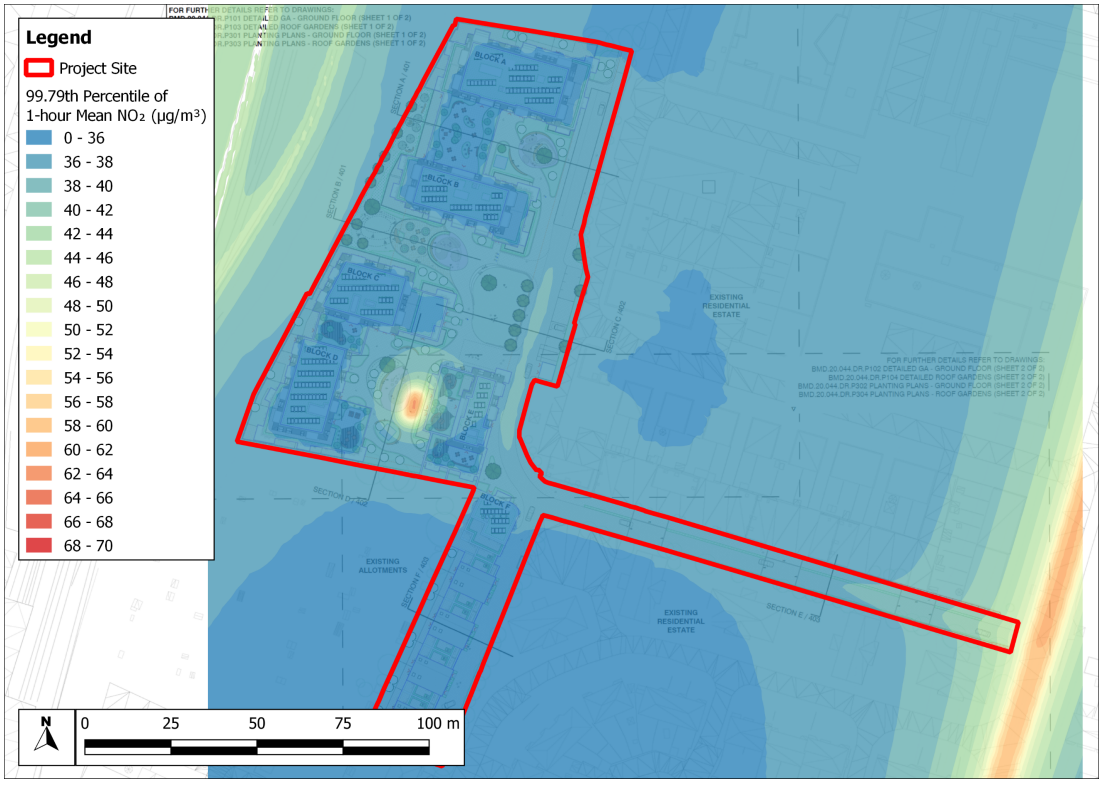


Figure 6.6: Predicted Ground Floor Level 1-hour Mean NO_2 Concentrations ($\mu g/m^3$)

Imagery © 2020 Google, Map data © 2020. Information obtained from Alan Camp Architects.

Further Considerations

6.6.35. There are several other local sources of air pollution that have not been explicitly modelled and require consideration. This includes:

- emissions from the British Lead Mills Ltd facility to the northeast of the Project Site, which involves the melting of non-ferrous metals releasing carbon monoxide; and
- emissions from the RTI Advanced Forming Ltd facility to the northeast of the Project Site, an inorganic chemical manufacturer releasing ammonia.

6.6.36. The locations of these local sources in relation to the Project Site are shown in **Figure 6.7**.

Figure 6.7: Locations of Other Local Sources and Project Site

Imagery © 2020 Google, Map data © 2020

6.6.37. When considering if either of these sources contribute significantly to air quality at the Project Site it is useful to take account of the source potential, the pathway effectiveness, and the risk of impacts. The source potential will vary depending on the source of pollution, its magnitude, frequency, and duration of emissions. The pathway effectiveness will depend on local meteorological conditions and whether there are any barriers between the source and Project Site.

6.6.38. Meteorological data has been taken from the Luton Airport Meteorological Station for the years of 2015 to 2019. This station is located approximately 15 km northwest of the Project Site and is considered to be representative of meteorological conditions in the local area. **Figure 6.8** presents a wind rose of the wind speed and direction measured at this station in 2015 – 2019. This demonstrates that the prevailing wind in the region is from the southwest and blows

towards the northeast. Pollutant emissions will be transported by the wind and, in general, will not be blown towards locations upwind of the source. The exception to this is during very calm wind conditions when emissions may disperse gradually in all wind directions, although typically only over relatively short distances.

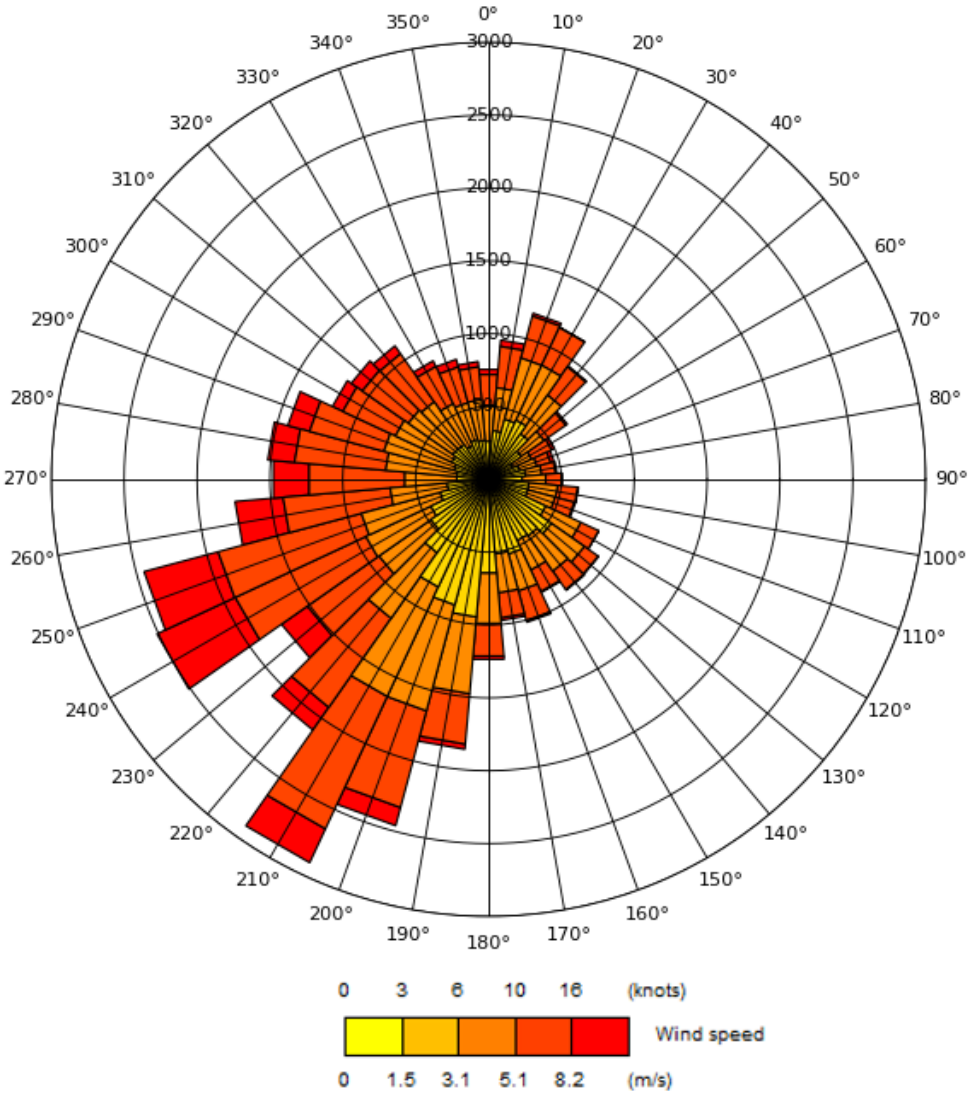


Figure 6.8: Windrose of wind speed and direction for 2015 to 2019 at the Luton Airport Meteorological Station

6.6.39. The source potential, pathway effectiveness and risk of impacts are described for each of the local sources below.

6.6.40. The British Lead Mills Ltd facility involves the melting of non-ferrous metals including lead and cadmium, the emissions from which appear to be exhausted through a single large flue in the centre of the facility. The exhaust stack is tall, providing good initial dispersion conditions, and is located over 540 m away from the Project Site. The wind predominately blows towards the northeast and the Project will thus be upwind of the facility most of the time and not be affected

by the emissions. During calm conditions, the emissions may disperse in all directions but likely only over short distances; the Project is far enough away to not be significantly affected during calm conditions. Furthermore, there are existing residential properties approximately 80 m south of the facility that are considered to be downwind most of the time.

6.6.41. The facility has a permit from the EA that sets emission limits for the facility to avoid significant impacts upon local air quality. These limits are likely to have been set to protect the occupants of these existing residential properties, which are more at risk than those at the Project Site. It is therefore unlikely that the facility will have a significant impact upon air quality at the Project Site. In addition, the contribution of the facility to pollutant concentrations in the local area is likely to be included within Defra's background mapped concentrations and any locally measured concentrations and has therefore been partially taken account of when considering the baseline conditions. Therefore, pollutant concentrations from the facility are unlikely to significantly change the conclusions set out in paragraph 6.6.32.

6.6.42. The RTI Advanced Forming Ltd facility, an inorganic chemical manufacturer, releases pollutant emissions from several flues on the roof of the facility located just over 1 km to the northeast of the Project Site. The facility operates with a permit from the EA which includes emission limits. The facility has, however, recorded recent releases of metals and acid gases well above the emission limits. The Project is upwind of the facility most of the time and will not be affected by the emissions. During calm conditions, the emissions may disperse in all directions but likely only over short distances; the Project is far enough away to not be significantly affected during calm conditions. It is therefore unlikely that the facility will have a significant impact upon air quality at the Project Site.

6.6.43. Pollutant concentrations for the future occupants of the Project are likely to be below the AQOs and thus acceptable.

6.7. Additional Mitigation, Compensation and Enhancement Measures

Construction

6.7.1. Measures to mitigate dust emissions will be required during the construction phase of the Project in order to minimise impacts upon nearby sensitive receptors.

6.7.2. The Project has been identified as a High Risk site for dust soiling effects during demolition and earthworks, Medium Risk for dust soiling effects during construction and Low Risk during track out. For human-health effects, the Project has been identified as a High Risk site during demolition, Medium site for earthworks and construction, and Negligible Risk during trackout, as set out in **Table 6.11**.

6.7.3. The IAQM guidance document describes measures that should be employed, as appropriate, to reduce the impacts. In addition to this the IAQM has also published guidance on monitoring during demolition and construction [16]. Based on the findings of this assessment, a set of

[16] IAQM (2018). Guidance on Monitoring in the Vicinity of Demolition and Construction Sites.

measures that are both highly recommended and desirable to be incorporated into the specification for the construction works has been drawn up. These measures are addressed under Construction Mitigation (Appendix 6.5).

6.7.4. If the WHO $PM_{2.5}$ guidance value of 10 $\mu g/m^3$ be adopted as part of the Environment Bill, then there is a possibility that the risk human-health effects should be considered High Risk. However, since the mitigation measures set out in Appendix 6.5 are already based upon a High Risk of human-health effects, the package of mitigation measures will remain appropriate.

6.7.5. The mitigation measures for the Project Site should be written into a dust management plan (DMP). The DMP may be integrated into a Code of Construction Practice or the Construction Environmental Management Plan (CEMP) and may require monitoring. It will be secured via a standard planning condition.

6.7.6. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

Operation

6.7.7. The assessment has demonstrated that the Project will not cause any exceedences of the AQOs or limit values in the local area. Furthermore, the future occupants of the Project will not be exposed to unacceptable air quality. The overall effect of the Project will be "not significant". It is, therefore, not considered necessary to propose further mitigation measures. The Project will, however, include a Travel Plan that will set out measures to encourage sustainable modes of transport, helping to minimise pollutant emissions.

6.7.8. Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which was transposed into UK law). Furthermore, the government and WHBC are working on improving air quality under the relevant air quality Strategies and LAQM regime.

6.8. Assessment Summary and Residual Environmental impacts and Effects

Construction

6.8.1. The IAQM guidance does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be not significant.

6.8.2. The IAQM guidance recognises that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. The local community may therefore experience occasional, short-term dust annoyance. The scale of this would not normally be considered sufficient to change the conclusion that the effects will be not significant.

Operation

6.8.3. As stated above, the overall effect of the Project without mitigation will be “not significant“. The Residual effects will thus remain “not significant”.

6.9. Cumulative Development

6.9.1. The potential for cumulative air quality effects from emissions associated with the Project in combination with other cumulative schemes within the local area has been considered, both in relation to cumulative demolition and construction related air quality effects and effects associated with the operation of the Project.

Construction

6.9.2. There are several cumulative schemes within the local area which have the potential for cumulative effects during the construction phase, particularly the ‘Former Shredded Wheat Factory’ which is located approximately 100 m to the north of the Project Site and was granted planning permission in February 2019.

6.9.3. It is considered that potential cumulative construction effects could occur with developments in the vicinity of the Project Site should construction occur at the same time.

6.9.4. Regular liaison meetings will be held with other ‘high risk’ construction sites within 500 m of the Project Site, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. This is a standard requirement typically set out CEMPs.

6.9.5. Significant cumulative dust effects are thus considered unlikely to occur as each development will be required to employ similar dust mitigation techniques such that the individual construction phase effects would be not significant, alone or in combination.

6.9.6. The cumulative schemes may also lead to temporary elevated traffic on local roads, details of which are set out in Chapter 7: Transportation. This would lead to slightly higher baseline concentrations in the local area. Significant effects are, however, unlikely to occur since the headroom between the baseline concentrations and the AQOs are large enough, such that no exceedences are likely to occur.

Operation

6.9.7. There is also the potential for cumulative effects to occur during the operational phase of the Project, whereby emissions from road traffic and combustion plant associated with the cumulative schemes may lead to elevated baseline concentrations.

6.9.8. The future year traffic data utilised within the assessment is based upon baseline traffic surveys carried out by the Department for Transport (DfT) and uplifted using a growth factor from obtained from DfT’s Trip End Model Presentation Program (TEMPro) which extracts

information from the National Trip End Model [17].This is expected to take account of increases in traffic in the local area set out in WHBC's Local Plan.

6.9.9. In addition, traffic flows associated with cumulative schemes in the local area have been explicitly included where possible. Data for most cumulative schemes was not available. However, to provide a conservative assessment, cumulative traffic flows from Former Shredded Wheat Factory development have been added to the uplifted baseline traffic flows, given that the redevelopment of the Former Shredded Wheat Factory site is the largest cumulative development in the local area and is located approximately 100 m away from the Project Site and will thus likely utilise the same local roads. This includes traffic flows associated with the approved outline application for the Former Shredded Wheat Factory (N6/2015/0294/PP) and the approved full application for the Former Shredded Wheat Factory (6/2018/0171/MAJ). Although the outline application has been superseded by the full application, its traffic flows are likely to be larger than all other cumulative schemes in the local area combined. In the absence of explicit traffic flows for other cumulative schemes, those of the outline application have been included to provide a worst-case assessment. The future year traffic data is thus considered to take account of cumulative schemes and the assessment has therefore predicted the cumulative concentrations arising from committed developments in the area in 2023.

6.9.10. It should be noted that the cumulative traffic flows used in this assessment are slightly different to those set out in Chapter 7: Transportation, as the data was not available at the time of the assessment. The traffic flows used are, however, higher than those presented in Chapter 7: Transportation and therefore provide a worst-case assessment.

6.9.11. Consideration has also been given to potential cumulative effects from combustion plant associated with the cumulative schemes. Emissions from nearby combustion plant are likely to disperse rapidly with distance and only those in close proximity to the Project Site are considered. Potential cumulative effects from the Former Shredded Wheat Factory have thus been considered. The energy strategy submitted as part of the planning application (6/2018/0171/MAJ) gives details of the likely plant to be installed for both the 'North Site' and 'South Site' which form the scheme. This states that the scheme will include several gas-fired combined heat and power plant in the 'North Site', which will release pollutant emissions. This is, however, located away from the Project Site. The 'South Site', which is located close to the Project Site, is stated to include electric boilers and roof mounted PV arrays, which will not give rise to any pollutant emissions. It is therefore considered unlikely that any significant cumulative effects will occur.

[17] DfT (2017). Trip End Model Presentation Program (TEMPro) download. Retrieved from https://www.gov.uk/government/publications/tempro-downloads

7. Transportation

7.1. Introduction

7.1.1. This chapter of the ES assesses the likely environmental effects from the Project with respect to transport. It describes the methods used to assess the effects; the baseline conditions currently existing at the Project Site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted. This chapter has been prepared by i-Transport LLP.

Consultations

7.1.2. An Environmental EIA Screening request was submitted to Welwyn Hatfield (WHBC) on 11th September 2020 (see Appendix 2.1), which set out details of the Project and the likely significant effects. WHBC adopted a Screening Opinion on 18th October 2020 (see Appendix 2.2) which requested *"additional information to demonstrate that the cumulative impacts of the Project, in terms of air quality and traffic impacts, would not result in effects that are considered to be significant".*

7.1.3. A full Transport Assessment (TA) and Framework Travel Plan (FTP) has been produced as separate documents which accompany the planning application documentation. The scope and structure of the TA has been informed by discussions with officers at the local highway authority, Hertfordshire County Council (HCC), including the scope of the broad extent of the study area. The main comments raised by HCC on the scoping note and within the pre-application meeting on the 29th September 2020 are set out below (are detailed fully in appendices to the TA):

- A potential secondary pedestrian/ cyclists/ emergency route needs to be considered and provided where applicable;
- Access to the nearby Sustrans routes to be considered;
- A detailed review of local facilities in the areas to be undertaken;
- A residential Travel Plan (TP) will be secured via S106, a FTP to be submitted with the application;
- Road safety study to be extended slightly to the north and south of the access to Broadwater Road;
- Car parking provision at lower levels that the maximum permitted in the adopted polices is considered acceptable at the Project Site due to its sustainable location and similar provision at local developments;
- Vehicles should not dominate the landscape or development, with the Project Site designed to encourage walking and cycling;
- Visitor parking spaces to be provided alongside cycle parking and electric vehicle charging point provision;

- The existing trip attraction to be based on similar 'Business Park' trip rates from TRICS rather than 'offices' – this is explained further in the TA, but has been considered as part of the overall assessment;
- The local Census mode share data and total person trip rates to be used to calculate the multi-modal trip generation of the Project Site;
- Distribution assumptions to be taken from the Census travel to work data for local area;
- A number of committed developments to be assessed including the Wheat Quarter, 29 Broadwater Road, 45 Broadwater Road and 37 Broadwater Road; and
- The proposal is anticipated to result in a reduction of traffic at the Project Site and therefore strategic modelling is considered not necessary.

7.1.4. Where appropriate, reference is made to the TA and FTP and relevant information is reproduced as necessary. The TA identifies the measures that are proposed to mitigate the anticipated operational transport impacts of the Project Site and to improve the accessibility and safety for all transport modes, particularly for alternatives to the car such as walking, cycling and public transport. In addition, the FTP sets out the measures that will be introduced to encourage travel other than by single occupancy car journeys.

7.2. Assessment Criteria and Methodology

Scope of Assessment

7.2.1. Assessments have been carried out in accordance with the 'Guidelines for the Environmental Assessment of Road Traffic' published by the Institute of Environmental Assessment (IEA, 1993). In accordance with the IEA guidelines this chapter of the ES will deal with the following environmental effects:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Accidents and safety; and
- Dust and dirt.

7.2.2. The IEA guidelines recommend that the environmental assessment should be undertaken at the year of opening the development or its first full year of operation. This is because the greatest environmental change will generally occur when the development traffic forms the largest proportion of the existing flow on the adjoining network. For consistency with the TA the assessments in this Chapter have been undertaken in 2023, which is the anticipated year of practical completion (i.e. operational).

7.2.3. The environmental assessment has been divided into two distinct phases in accordance with best practice as set out in the IEA guidelines. The assessments separately consider construction traffic and operational development traffic.

Geographical Scope

7.2.4. The assessment considers baseline monitoring data in the vicinity of the Project Site, residential receptors offsite, and onsite conditions and covers the geographic extent requested by HCC as part of the TA scoping exercise, as well as the arm of the signal controlled junction to the north of Broadwater Road / Bessemer Road / Bridge Road as the location where cumulative impact may be noticeable and where traffic count data is available.

7.2.5. The IEA guidelines recommend that highway links should be separately assessed when traffic flows have increased by more than 30%. In sensitive areas effects could be significant when traffic increases are 10% or more. These thresholds principally apply to total traffic although similar changes to the composition of traffic equally warrant appropriate assessment.

Temporal Scope

7.2.6. Assessment considers the existing baseline conditions (2020) and predicted conditions for the year of Project practical completion (i.e. operational) (2023) with and without the Project in place.

Assumptions and Limitations

7.2.7. The following assumptions have been made and are considered to give a conservative (and reasonable worst case) approach to assessment:

- Demolition /construction traffic is at its peak volume for the duration of this period ;
- The addition of the net Project Site trip generation. It is set out in the TA that the proposal will result in a reduction in vehicle trips at the Project Site during the network peak hours and across the day;
- Full growth in background traffic to 2023;
- The cumulative schemes are assessed with their gross development trip generation, despite a number of the schemes also resulting in a reduction in vehicle trips across the peak hours and the day (i.e. no account is taken for the fact that the Project Site may have historically generated more traffic than will occur in the future – that it, they are "previously developed land"); and
- No committed improvement to transport infrastructure implemented prior to development in 2023.

Methodology

7.2.8. The methodology used in this Chapter reflects the guidance set out in the Institute of Environmental Management and Assessment's (IEMA) 'Guidelines for the Environmental

Assessment of Road Traffic' (1993) and, where appropriate, Volume 11 of the Design Manual for Roads and Bridges (DMRB) 'Environmental Assessment' (2008) published by the former Department of Environment, Transport and the Regions (DETR), now Department for Transport (DfT). These are recommended tools for the appraisal of environmental effects of road traffic and they identify appropriate standard methodologies for assessment.

Construction Assessment Methodology

7.2.9. The assessment of the environmental effects of transportation requires a number of stages as follows:

- Collation of existing transport data (the existing situation or baseline);
- Forecasting the change in the existing situation as a result of known committed developments and transport infrastructure in the future without the Project Site (i.e. including cumulative effects and background growth);
- Forecasting the changes in travel demand as a result of the Project (using construction vehicle volumes provided by the Applicant's construction arm (HG Construction);
- Assessing the effects of the Project against a 'without Project' scenario;
- Identifying any necessary mitigation measures; and
- Assessing the effects of the Project against a 'without Project' scenario but including identified mitigation measures

Operational Assessment Methodology

7.2.10. The assessment methodology for the operational phase is the same at the construction phase with the exception of the forecast change in travel demand being calculated by i-Transport utilising industry standard methodology as detailed in the TA and later in this Chapter.

Significance Criteria

Sensitivity

7.2.11. The effected parties of increases in traffic comprise those living close to the roads where traffic flows are expected to change along with other road users including pedestrians and cyclists. Equally, the proximity or separation of affected parties from the road and the associated traffic composition influences the sensitivity of the receptor. Further, in terms of driver delay the closer to capacity the existing road network the more sensitive it is to change. There are no commonly agreed definitions of sensitivity to changes in traffic flow and in line with the IEA guidelines professional judgement is required. **Table 7.1** provides a broad guide which has been used to determine the sensitivity of each route assessed in this Chapter.

Table 7.1: Sensitivity Criteria

Descriptor or Criteria	Description
High Sensitivity	Moderate population located close to road
Medium Sensitivity	Moderate population located away from road
Low Sensitivity	Sparse population located close to road

7.2.12. Sensitivity may vary along a link for different effects. Where this is considered the case specific comment and professional judgement is explained.

Magnitude

7.2.13. The following magnitude criteria are based on the broad significance thresholds contained within the IEA guidelines. These have been used to determine magnitude, although in addition as recommended by the IEA guidelines a qualitative approach has also been adopted for individual criteria, where appropriate. **Table 7.2** sets out the magnitude criteria.

Table 7.2: Magnitude Criteria

Descriptor or Criteria	Description
High Magnitude	Over 60% change in traffic volume or composition
Medium Magnitude	Between 30% and 60% change in traffic volume or composition
Low Magnitude	Between 10% and 30% change in traffic volume or composition
Negligible Magnitude	Less than 10% change in traffic volume or composition

Significance

7.2.14. The magnitude of change and the sensitivity of the receptor are then compared to determine the significance of the impact in accordance with **Table 7.3**.

Table 7.3: Determination of Significance Effects

Magnitude of Effects	Sensitivity of Receptors		
	High	Medium	Low
High	Major	Moderate	Moderate
Medium	Moderate	Moderate	Minor
Low	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible

7.2.15. The assessment of significance considers the existing transport conditions as a baseline and provides a prediction of the future effect on the transport network for the construction and operation phases of the proposals.

7.3. Legislation, Planning Policy and Guidance

National Planning Policy Framework (February 2019)

7.3.1. The updated National Planning Policy Framework (NPPF) published in February 2019 sets out the Government's planning policies for England and how these are expected to be applied. Specific transport policies are contained within Section 9. The three key transport tests are set out in NPPF paragraph 108:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users; and

c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

Local Planning Policy

WHBC Draft Local Plan Proposed Submission (2016)

7.3.2. The WHBC draft Local Plan was published in 2016 and is currently under examination and therefore carries weight in the determination of applications. The Plan sets out the Council's planning framework for the borough and includes a number of policies to achieve their visions. A summary of some of the key policies from a highways and transport perspective is provided below:

- Policy SADM 2 Highway Network and Safety – this policy seeks to ensure development proposals will not an have unacceptable impact on the local highway network or on highway safety and that access is provided for all;
- Policy SADM 2 Sustainable Travel for All – all developments above a threshold (set by HCC) will be required to submit a Travel Plan to encourage and support sustainable travel for all new developments; and
- Policy SADM 12 Parking, Servicing and Refuse – vehicle and cycle parking is to be provided in accordance with the Council's parking standards. Developments will need to promote sustainable forms of travel and electric vehicle charging points should be incorporated into parking areas. With regards to refuse and servicing, new developments should ensure that access to refuse storage and services areas are appropriately sited and designed.

Welwyn Hatfield District Plan (2005)

7.3.3. The Welwyn Hatfield District Plan is the current adopted Local Plan in the borough. The Plan includes a number of saved policies, which include:

- Integrating transport and land use;
- Transport assessment;
- Green travel plans;
- Developer contributions;
- Pedestrian facilities; and
- Cycle routes and facilities.

Welwyn Hatfield District Plan Review Supplementary Planning Guidance Parking Standards (2004)

7.3.4. WHBC's parking standards are set out in the Welwyn Hatfield District Local Plan Review – Car Parking Standards (2004). The standards are subject to zonal areas whereby more accessible zones are able to provide a lower car parking provision.

Hertfordshire Local Transport Plan 4 (2018)

7.3.5. The Hertfordshire Local Transport Plan (LTP) 4 sets out how future developments will need to consider all modes of travel, including walking, cycling and public transport, and wider County projects aimed at creating a more sustainable County.

7.3.6. The LTP includes the following notable proposals:

- Sustainable travel towns – comprehensive packages of improvements for walking, cycling and public transport;
- East west bus rapid transit – a scheme between Hemel Hempstead and Welwyn Garden city for a future rapid bus network with potential future connections to Hertford and Harlow; and
- A414 highway improvements.

Guidance

7.3.7. Assessments have been carried out in accordance with the 'Guidelines for the Environmental Assessment of Road Traffic' published by the Institute of Environmental Management Assessment (IEMA,1993) (the 'IEMA Guidelines').

7.4. Baseline Conditions

7.4.1. The Project Site is currently occupied by a vacant employment site known as the BioPark, a research and development (B1b land use) complex formerly owned and used by the University of Hertfordshire.

7.4.2. The existing floor area of the Project Site is 13,872 sqm with some 160 associated car parking spaces (in a mixture of surface level parking in the vicinity of Broadwater Crescent and a two storey basement beneath the main building). The only access to the Project Site is provided via BioPark Drive, a 9.0m wide private road (consisting of 7.6m wide carriageway, 0.2m wide service strip, and 1.8m wide footway). BioPark Drive joins the A1000 Broadwater Road to the east via a simple crossover.

7.4.3. The Project Site is surrounded by a high quality pedestrian network. At the Project Site's boundary to Broadwater Road, wide footways (in excess of 3m) are located on both sides of the carriageway. Dropped kerbs and tactile paving are provided across the minor accesses along Broadwater Road.

7.4.4. There are high quality cycle routes provided in the vicinity of the Project Site. The length of Broadwater Road consists of an off-carriageway shared pedestrian / cycle route on its eastern side. A toucan crossing is provided just to the south of the Hydeway junction, with the shared pedestrian / cycle route following the southern side of Hydeway.

7.4.5. The Penn Way bus stops are located on Broadwater Road adjacent to BioPark Drive (northbound adjacent to the access and southbound circa 50m to the north). Both stops are served by the 601 Alban Way bus route. The 601 bus service routes between Welwyn Garden City and Borehamwood via Hatfield and St Albans, and there are two services per hour across the weekday.

7.4.6. Both of the bus stops provide a shelter, seating and timetable information. Passengers accessing the northbound bus stop will be required to cross Broadwater Road.

7.4.7. Additional bus stops and services are available within a short walk of the Project Site, including the 403 and 404 services available on Peartree Lane, circa 450m from BioPark Drive. In addition, a range of bus services are available from the bus stops on Bridge Road, opposite the station and located within a 10 minute walk from the Project Site (circa 750m).

7.4.8. Welwyn Garden City railway station is located circa 1km walking distance, via BioPark Drive and Broadwater Road, from the Project Site (equivalent to a 12-minute walk). The station is served by Great Northern and Thameslink rail services.

7.4.9. The most recently available (at the time of request) Personal Injury Accident (PIA) data has been obtained from HCC from 1 July 2015 to 30 June 2020. The study area includes the length of Broadwater Road from its junction with Bridge Road to the north to the A6129 in the south as agreed with HCC.

7.4.10. In the more recent five-years' PIA data there were a total of 21 PIAs recorded. This included eight PIAs resulting in serious injuries and 13 PIAs resulting in slight injuries. There were no fatal PIAs recorded. A review of the data reveals no accidents were recorded at the existing

BioPark Drive access, despite it being in use for much of the study period. Further the majority of accidents causes are classed as a result of:

- Driver failing to look properly;
- Misjudged speed of other road user;
- Reckless driving; or
- Traveling to close.

Traffic Flows

7.4.11. The base traffic flows have been obtained using traffic data from the Department for Transport (DfT). The DfT traffic data has been extracted for the following links:

- Bessemer Road (north of Broadwater Road junction);
- Bridge Road (east of Broadwater Road junction);
- Bridge Road (west of Broadwater Road junction); and
- Broadwater Road (south) – south of the Project Site.

7.4.12. The data has been 'growthed' to a base year of 2020 using TEMPRO growth factors.

7.4.13. A summary of the 2020 base Annual Average Daily Traffic (AADT) flows for roads within the vicinity of the Project Site has been undertaken and is summarised in **Table 7.4**.

Table 7.4: Summary of AADT Flows

	AADT (Two-Way) 2020 Base (%HGV)
Bessemer Road	14,533 (2%)
Bridge Road (east of Broadwater Rd junction)	13,407 (1%)
Bridge Road (west of Broadwater Rd junction)	16,580 (1%)
Broadwater Road (south)	18,918 (2%)
BioPark Drive	0

7.4.14. Whilst it is noted that the Project Site is currently vacant, the permitted lawful use is as B1(b) offices and therefore does have the potential to generate traffic, without the need for any planning permission or detailed assessment.

7.4.15. The trip generation resulting from the Project Site's existing B1 use has been calculated and is provided for reference within the supporting TA. This has been added to the 2020 base AADT flows in **Table 7.4**, to provide the basis of the operational phase assessments in this chapter and the TA as provided at **Table 7.5**.

Table 7.5: Summary of AADT Flows Incl. Existing Site Occupancy

	AADT (Two-Way)
	2020 Base (%HGV)
Bessemer Road	14,833 (2%)
Bridge Road (east of Broadwater Rd junction)	13,521 (1%)
Bridge Road (west of Broadwater Rd junction)	16,834 (1%)
Broadwater Road (south)	19,702 (2%)
BioPark Drive	1,452 (0%)

7.4.16. A summary of the identified links above is provided below:

- Bessemer Road – the A1000 Bessemer Road is a key distributor road to the north of Welwyn town centre. The link provides access to a number of employment and industrial units and is predominantly single carriageway. There are footways on both sides of the road and limited to no residential frontages. No sensitive receptors are identified.
- Bridge Road (east) – Bridge Road connects with Broadwater Road and Bessemere Road via a four arm crossroads junction. To the east, the road also provides access to a number of industrial and commercial units as well as side streets to residential areas. The road is a single carriageway with footways on both sides. No sensitive receptors are identified.
- Bridge Road (west) – Bridge Road, to the west of Broadwater Road, provides access to Welwyn Garden City railway station as well as Welwyn Garden City town centre, including the Howard Centre shopping area. The road provides access to the western residential areas past the town centre. Footways are provided on both sides of the carriageway. No sensitive receptors are identified.
- Broadwater Road (south) – Broadwater Road (to the south of the Project Site) connection to the A6129 and provides a key distributor route to the south of Welwyn and towards the M1 and wider strategic road network. There are no residential frontages along the road, which is a single carriageway link with footways on both sides. There are a number of signalised pedestrian crossings as well as access to a number of residential side streets. No sensitive receptors are identified.

7.5. Inherent Design Mitigation

7.5.1. The Project includes the following design interventions:

- Footway provision and enhancement –the provision of a 3.1m shared footway/cycleway on the northern side of BioPark Drive. The shared footway/ cycleway will connect with the existing provision on Broadwater Road and route directly into the Project Site.

- Vehicular access road through the Project Site –a vehicular route through the Project Site from Broadwater Road.
- Access arrangements –modifications at the Project Site access to facilitate new residential development. This includes providing a kerb radius, dropped kerbs and tactile paving across the Project Site access.
- Safeguarded route –safeguard a future potential pedestrian/ cyclist route to the north of the Project Site towards the Wheat Quarter.
- Cycle parking –cycle parking provision for all residential dwellings in accordance with WHBC's standards.
- Electric vehicle charging –provision of 24 spaces with active electric vehicle charging provision and a further 22 spaces with passive provision.
- Car club –a dedicated car club space will be provided.

7.6. Potential Environmental Impacts and Effects

7.6.1. The following environmental impacts have been assessed for both during the construction and operational phases.

Severance

7.6.2. The IEMA guidelines acknowledge that the measurement and prediction of severance is extremely difficult. Factors which need to be considered when determining whether severance is likely to be an important issue at the sensitive receptors include: road width, traffic flow and composition, traffic speeds, the availability of crossing facilities, and the number of movements that are likely to cross an affected route.

Driver Delay

7.6.3. Delays to drivers occur principally at junctions where vehicles are performing conflicting manoeuvres. Values for driver delay can be determined by the use of industry standard junction assessment packages (e.g. Junctions 9 and LinSig). Each package produces estimates of vehicle time and delay through the junction. As such, in the context of this ES, driver delay is identified in the TA by comparing the baseline and with development scenarios. This assessment is carried out for the network peak periods, which are the times when the local highway network is at its busiest and so impacts of the Project Site on driver delay would be greatest.

Pedestrian Delay

7.6.4. Changes in the volume, composition or speed of traffic may affect the ability of pedestrians to cross roads. Generally speaking, increases in traffic are likely to correspond to increased pedestrian delay. Pedestrian delay will also depend upon the level of pedestrian activity, visibility and physical conditions.

7.6.5. The IEMA methodology directs assessors to use their own judgement, based on experience, as to whether or not pedestrian delay is a significant impact. The determination of what constitutes a material impact on pedestrian delay and amenity is generally left to the judgement of the assessor and knowledge of local factors and conditions.

Pedestrian Amenity

7.6.6. The term pedestrian amenity can be defined as the relative pleasantness of a journey and is affected by traffic composition and speed as well as separation from traffic. There is no defined measure of pedestrian amenity. A tentative threshold for judging significance is set out in the IEMA guidelines where it is considered traffic flow would have to half or double for the effect to be noticeable.

7.6.7. There are no commonly agreed thresholds for estimating such effects and hence a qualitative assessment has been undertaken having regard to volumes, composition, and speed of traffic

Accidents and Safety

7.6.8. In order to assess the existing safety record of the adjoining road network Personal Injury Accidents statistics has been obtained from HCC for the latest available 5-year period. Details and an assessment of the data is provided in the TA

Dust and Dirt

7.6.9. Dust and dirt are often considered within the environmental impact assessment of traffic in the context of construction vehicles. The effect of dust in relation to construction activities is considered in Chapter 10: Air Quality utilising outputs from the TA. Therefore, no further consideration is given to dust and dirt in this Chapter.

7.7. Additional Mitigation, Compensation and Enhancement Measures

Construction

7.7.1. The following additional proposed mitigation and enhancement measures are proposed during the construction period:

- A Construction Management Plan – a Construction Management Plan will set out the Project Site's management practices to control dust and dirt. It will also control construction traffic vehicle routing to avoid local residential roads and ensure sufficient driver awareness training is provided. This is a standalone report produced by HG Construction to support the application.

Operation

7.7.2. The following additional proposed mitigation and enhancement measures are proposed during the operational period:

- A Travel Plan – a Travel Plan will be implemented which will set out a range of measures to support and encourage future residents and visitors of the Project Site to travel to and from the Project Site sustainability and reduce the reliance on the private vehicle.

7.8. Assessment Summary and Residual Environmental impacts and Effects

7.8.1. This section of the ES chapter assesses the impact traffic generated by the Project only.

Construction

7.8.2. Traffic generated during the construction stage is determined by the phasing of construction and the construction techniques employed and can vary considerably from day to day. The proposed duration period of the construction is anticipated to last 24 months.

7.8.3. The nature and scale of the proposed uses means the total (gross) level of traffic generated during the operational phase would be greater than during the construction phase. Thus, the assessments have focused on the operational phase when traffic flows and hence impact would be greatest.

7.8.4. Construction of the Project Site is anticipated to commence in 2021, subject to planning permission, and the first year of opening anticipated to be 2023. The Project Site operating hours during construction are anticipated to be as follows:

- Monday to Friday: 0800-1800; and
- Saturday: 0800-1300.

7.8.5. It is difficult to accurately predict traffic generation during construction with any certainty as programme and construction techniques vary considerably. However, based upon the HG Construction's estimates, it is anticipated that during demolition and construction there would be a maximum average of up to 60 HGV movements per day (30 vehicles in and 30 vehicles out).

7.8.6. The anticipated vehicle routing strategy estimates all vehicles will arrive into the Project Site from Broadwater Road (south). Departing vehicles will predominately route back towards Broadwater Road south with some routing north. It is assumed that 80% of departing construction traffic will route south and 20% will route north.

7.8.7. The construction of the Project Site would be guided by a Construction Management Plan which would ensure practices are implemented which minimise the environmental effects of construction traffic. For example, hours of operation would be limited, HGV's would be sheeted and wheel washing facilities would be provided. Construction HGV's would be prevented from routing through the local residential areas and side streets.

7.8.8. A summary of the existing HGV traffic on the identified highway links and the anticipated construction traffic AADT is provided in **Table 7.6**.

Table 7.6: Summary of AADT Construction Flows

	AADT (Two-Way)								
	2020			2023 No Development or Committed Development			2023 Development Under Construction – No Committed Development		
	Total	HGV	%HGV	Total	HGV	%HGV	Total	HGV	%HGV
Bessemer Road	14,833	329	2%	15,560	346	2%	15,566	352	*2%*
Bridge Road (east of Broadwater Rd junction)	13,521	155	1%	14,219	164	1%	14,219	164	*1%*
Bridge Road (west of Broadwater Rd junction)	16,834	114	1%	17,678	120	1%	17,678	120	*1%*
Broadwater Road (south)	19,702	348	2%	20,580	367	2%	20,634	421	*2%*
BioPark Drive	1,452	0	0%	0	0	0	60	60	*100%*

7.8.9. In accordance with IEA guidelines the change in total traffic and the composition of traffic is negligible as a result of the addition of construction traffic. As such, further assessment of the environmental effects of the Project is not required under IEA guidelines. A review of the environmental effects along BioPark Drive has not been assessed as there are no existing receptors along this link.

Operation

7.8.10. The trip generation resulting from the Project Site's occupation (289 residential units) has been calculated and is provided for reference within the supporting TA. This forms the basis of the operational phase assessments in this chapter and the TA.

7.8.11. The estimated traffic generated by the Project is set out in full in the TA along with a full appraisal of the reduction in traffic as a consequence of the cessation of previous activity associated with the permitted B1(b) land uses on the Project Site. The assessment demonstrates the Project Site will result in a reduction of traffic against the potential trip attraction of the permitted and lawful use of the Project Site. Overall the proposal will have net

reduction in two-way vehicle flows in the AM peak hour of 34, and net reduction in two way vehicle flows in the PM peak hour of 71, and a negligible change in two-way vehicular flows over the 12 hour day of -3. The TA considers the gross impact of the Project on the adjacent highway network and concludes no impact as a result of the Project. However, for consistency across ES Chapters, this assessment considers the net impact of the Project.

7.8.12. **Table 7.7** summarises the future traffic flows without and with the project.

Table 7.7: Summary of AADT Operational Flows

	AADT (Two-Way)			
	2020 Base	2023 Without Development	2023 With Development	% Increase
Bessemer Road	14,833	15,611	15,560	*-0.3%*
Bridge Road (east of Broadwater Rd junction)	13,521	14,239	14,219	*-0.1%*
Bridge Road (west of Broadwater Rd junction)	16,834	17,722	17,678	*-0.2%*
Broadwater Road (south)	19,702	20,715	20,580	*-0.7%*
BioPark Drive	1,452	1,452	1,202	*-17.2%*

7.8.13. **Table 7.6** demonstrates the Project Site will not result in an increase or decrease in traffic flows above 5% on the local highway network. This is well below the IEA guidelines which recommend assessing highway links when traffic has increased by more than 30% or by 10% in sensitive areas. The change as a result of the development is therefore negligible and further assessment of the environmental effects of the development is not required under IEA guidelines for these links.

7.8.14. A review of the environmental effects along the BioPark Drive has not been assessed as there are no existing sensitive receptors along the road. In the operational phase, BioPark Drive will be designed to accommodate future residents and visitors along this link with suitable carriageway widths, radii at the junction, a 3.1m shared footway/cycleway and associated landscaping. There is a net reduction in flows along BioPark Drive, thus resulting in a minor beneficial effect.

7.8.15. As well as a net reduction in vehicular flows as a result of the development, there is also an overall net reduction in total person flows as a result of the Project. In the AM peak hour there is predicted to be a 25% (61 person) reduction in total person flows, a 16% (37 person) reduction in the PM peak hour, and a 34% (824 person) reduction across a 12 hour day. Therefore, no further assessment of the impact of the proposal on walking, cycling, and/or public transport networks is considered necessary.

7.8.16. In accordance with IEA guidelines the change in total traffic and the composition of traffic is negligible as a result of the addition of operational traffic. As such, further assessment of the environmental effects of the Project is not required under IEA guidelines. A review of the environmental effects along BioPark Drive has not been assessed as there are no existing receptors along this link.

7.9. Cumulative Development

7.9.1. As detailed in the TA, a review and assessment of local committed developments has been undertaken. The following committed developments have been agreed with HCC during the pre-application scoping discussions:

- Wheat Quarter - the Wheat Quarter is a mixed use, residential development comprising of the following:
    - Up to 1,340 dwellings;
    - 114 extra care homes;
    - Civic building including heal and community uses;
    - Offices;
    - Retail/ leisure including coffee shop, restaurant;
    - Internal art centre; and
    - Gym.
- The development will provide vehicular access via Bridge Road and Broadwater Road, including pedestrian links and a pedestrian bridge towards Welwyn Garden City railway station;
- 29 Broadwater Road - the development at 29 Broadwater Road is for the construction of 128 flats with car and cycle parking. The Project Site was previously occupied by an office block;
- 45 Broadwater Road - the development at 45 Broadwater Road is for the redevelopment of the Project Site (a former office block) to a 104 unit care home; and
- 37 Broadwater Road- the 37 Broadwater Road development is also a redevelopment of the previous Project Site (a previous office block) for the construction of 24 flats with car and cycle parking provision.

Construction

7.9.2. **Table 7.8** summarises the impact of the construction of the Project occurring at the same time as the operation of the committed developments. It is assumed that as they are further progressed through the planning system that the Project Site, with a number of them already under construction, that their construction activities will have ceased by the time the Project Site construction commences.

Table 7.8: Summary of AADT (HGV) Flows – Cumulative Development (Construction)

	AADT (Two-Way)								
	2020			2023 Without Development & Committed Development			2023 with Development under Construction and Committed Development		
	Total	HGV	%HGV	Total	HGV	%HGV	Total	HGV	%HGV
Bessemer Road	14,833	329	2%	19,040	346	2%	18,745	352	*2%*
Bridge Road (east of Broadwater Rd junction)	13,521	155	1%	15,326	164	1%	15,213	164	*1%*
Bridge Road (west of Broadwater Rd junction)	16,834	114	1%	20,753	120	1%	20,500	120	*1%*
Broadwater Road (south)	19,702	348	2%	26,189	367	1%	25,459	475	*2%*
BioPark Drive	1,452	0	0%	1,452	0	0%	0	60	*100%*

7.9.3. In accordance with IEA guidelines the change in total traffic and the composition of traffic is negligible as a result of the addition of construction traffic. As such, further assessment of the environmental effects of the construction of the development under the cumulative scenario is not required under IEA guidelines. A review of the environmental effects along BioPark Drive has not been assessed as there are no existing receptors along this link.

Operation

7.9.4. **Table 7.9** summarises the 2023 without committed developments and the Project traffic flows and 2023 with committed developments and Project traffic data.

Table 7.9: Summary of AADT Flows – Cumulative Development

	AADT (Two-Way)			
	2020 Base	2023 Without Development and Committed Development	2023 With Development and Committed Development	% Decrease
Bessemer Road	14,833	19,040	18,988	*-0.3*
Bridge Road (east of Broadwater Rd junction)	13,521	15,326	15,307	*-0.1*
Bridge Road (west of Broadwater Rd junction)	16,834	20,753	20,710	*-0.2*
Broadwater Road (south)	19,702	26,189	26,055	*-0.5*
BioPark Drive	1,452	1,452	1,202	*-17.2*

7.9.5. **Table 7.8** demonstrates that whilst the local road network will see an uplift in traffic flows as are result of committed developments in areas, the operation of the Project Site will result in a very slight decrease in vehicle flows on the local road network, compared with the situation should it remain in use in its current form as a B1 office building. The project therefore has a negligible effect on local traffic flows in the cumulative assessment scenario.

7.9.6. On BioPark Drive, the Project results in a minor beneficial reduction in traffic flows compared to the potential existing situation.

7.9.7. In accordance with IEA guidelines the change in total traffic and the composition of traffic is negligible as a result of the addition of operational traffic in the cumulative scenario. As such, further assessment of the environmental effects of the Project is not required under IEA guidelines. A review of the environmental effects along BioPark Drive has not been assessed as there are no existing receptors along this link.

8. Heritage, Townscape and Visual Impact Assessment

8.1. Introduction

8.1.1. This chapter has been produced by Bidwells on the applicant to provide an assessment of the potential impacts of the Project upon the historic environment and surrounding townscape.

8.1.2. The aim of this ES chapter is to assess the likely residual and cumulative effects of the Project on the setting and importance of heritage assets in the vicinity of the Project Site, on the townscape resource as a My Meeting whole, and on visual amenity within the local and wider townscape surrounding the Project Site. Reference throughout will be made to the HTVIA submitted with the planning application which can also be found at Appendix 8.1 and should be read alongside this chapter. The HTVIA (see Appendix 8.1) includes relevant visualisations and photographic surveys as well as additional assessment in line with the requirements of the national and local policy and guidelines.

8.2. Assessment Criteria, Policy, Guidance and Methodology

8.2.1. This section sets out the assessment methodology used in this chapter. This methodology is used to establish the likely environmental effects of the Project on nearby heritage assets, on the townscape and on visual amenity.

8.2.2. The topics covered in this section include: policy and guidance informing the assessments; mitigation of effects through design and consultation; effects on the significance (or importance) of heritage assets; effects on townscape and visual receptors; cumulative effects; effects during demolition and construction; assumptions and limitations.

(i) Local and National Policy and Guidance

8.2.3. The assessment methodology set out in this section has been informed by policy and guidance at a national, regional and local level with regards to Environmental Impact Assessment (EIA), heritage, urban design, townscape and visual impact, as listed below. The policy and guidance mentioned is publicly accessible information, so its text is not reproduced in this document. This section should be read in conjunction with the HTVIA (Appendix 8.1).

National Policy and Guidance

- Department of the Environment, Preparation of Environmental Statements for Planning Projects that Require Environmental Assessment, Good Practice Guide 1995;
- EU Directive 85/387/EEC as amended by Directives 97/11/EC, 2003/35/EC, 2011/92/EU and 2014/52/EU;
- Town and Country Planning (Environmental Impact Assessments) Regulations, 2017/571;
- The Landscape Institute and Institute of Environmental Management and Assessment, Guidance for Landscape and Visual Impact Assessment (GLVIA) Third Edition, 2013;

- Ministry of Housing, Communities & Local Government (MHCLG), National Planning Policy Framework, published February 2019; updated June 2019;
- Ministry of Housing, Communities & Local Government (MHCLG), Planning Practice Guidance, on-line Resource, 2016, latest updated in October 2019;
- Planning (Listed Buildings and Conservation Areas) Act, 1990;
- Historic England, Advice Note 2 – Managing Significance in Decision-Taking in the Historic Environment (March 2015);
- Historic England, Advice Note 3 (2nd Ed.) – The Setting of Heritage Assets (December 2017);
- Historic England, Advice Note 4 – Tall Buildings (December 2015 and also its Second Edition: Consultation Draft of March 2020);
- Town and Country Planning Association, Policy Advice Note: Garden City Settlements (October 2008)

Local Policy and Guidance

- Welwyn Hatfield Borough Council, Welwyn Hatfield District Plan (2005);
- Welwyn Hatfield Borough Council, Broadwater Road West Supplementary Planning Document (December 2008), and
- Welwyn Hatfield Borough Council, Emerging Local Policy, Draft Local Plan Proposed Submission (August 2016).

(ii) Mitigation through design and consultation

8.2.4. It is envisaged that any mitigation of residual negative impacts and effects on receptors may be included at the detailed design stages. As part of the design development process the design team was advised on ways to mitigate, as far as possible, any potential adverse effects of the Project on the setting and significance of nearby heritage receptors, the townscape and visual receptors, while maximising any beneficial effects available. This process included the use of 3D computer models to illustrate the effects of different design options.

8.2.5. Given the above design development process, it is considered that mitigation is embedded in the designs and that it is unlikely that any further or 'supplementary mitigation' will be needed.

(iii) Scoping

8.2.6. A formal Scoping Opinion has not been sought, however during pre-application WHBC indicated that they

8.2.7. Furthermore, the WHBC Screening Opinion (see Appendix 2.2) stated:

"The development within the local context is transitioning from being an employment area, with an industrial characteristic, to a more residential urban area. Whilst it is noted that the proposed development would not be taller than the existing property, this development would introduce tall residential flatted buildings, within an area where most buildings, in particular residential, are smaller in height. The development is therefore deemed to be significant in physical scale with regard to buildings within the local context, namely those of a similar use, thus being residential. The development is therefore likely to give rise to significant visual effect on the local environment in terms of townscape and local character; and result in a marked intensification of the site in a residential characteristics, leading to significant environment effects, including traffic and air quality."

8.2.8. The Screening Opinion went on to state:

"The increase in scale, namely with height, may also result in a significant effect upon heritage assets and the townscape."

8.2.9. Whilst a formal Scoping Opinion was not sought, the scope of the assessment including the level of supporting visuals, the number and location of receptors to be assessed and level of analysis required to determine impact was decided in consultation with the conservation officer at WHBC and Historic England (HE). These discussions took place as part of the pre-application process and were confirmed over email, see Appendix 8.2.

Geographical Scope

8.2.10. In order to capture all built heritage assets which have the potential to be impacted by the Project, and having regard to the size of the Project Site and its topographic nature, a specific study area centred on the Project Site is used to inform the assessment. A study area of a 500m radius from the boundary of the Project Site was utilised in producing the HTVIA (see Appendix 8.1) This radius was also be applied to townscape and visual assessments.

8.2.11. It is noted however, often this is based on professional judgement rather than a pre-determined radius from the Project Site, and some heritage asset's informing the assessments may be at a much longer distance from the Project Site. This includes an assessment of the impact to the setting of Hatfield House, a Grade I listed building, and Hatfield Registered Park and Garden, also listed Grade I.

Temporal Scope

8.2.12. The temporal scope will assess the likely impacts (and the magnitude of change arising from these impacts) that the Project will have on receptors during the demolition/construction and operational stages, along with the resultant environmental effects on these receptors.

(iv) Effects on Heritage Receptors

Aims, objectives and scope

8.2.13. In terms of built heritage, this ES chapter is supported by the HTVIA (see Appendix 8.1) which includes a heritage assessment of above ground designated and non-designated heritage

assets in relation to the Project Site. This includes buildings, structures, and landscapes of heritage interest, within or immediately around the Project Site.

8.2.14. The setting of statutory designated heritage assets in the vicinity of the Project Site, including views to and from listed buildings formed part of this heritage assessment. The heritage assessment determined, as far as is reasonably possible from existing records, an understanding of the historic environment resource in order to:

i. Provide a heritage baseline assessment to understand the historical and archaeological (where relevant) background to the Project Site;

ii. Formulate an assessment of the importance and sensitivity of the known or potential heritage assets; considering their archaeological, historic, architectural/artistic interests and their setting; and

iii. Formulate an assessment of the likely effects of the Project on the significance of the known heritage assets and their settings.

Baseline data collection

8.2.15. In order to determine the built heritage assets which may be sensitive to the Project a broad range of documentary and cartographic sources and historic environment datasets was examined in order to determine the likely nature, extent, preservation and significance of any known or possible heritage assets that may be present within or in the vicinity of the Project Site. Sources consulted included HE's National Heritage List for England (NHLE), the Historic Environment Record of the local authority where the Project Site lies, conservation area appraisals and locally listed building records of the local planning authority and neighbouring local planning authorities (where necessary), regional and local archives and libraries, and online digital records and historic maps, among other sources.

8.2.16. In order to produce the heritage assessment a site visit was undertaken in March and June 2020. A walkover of the Project Site and environs was completed, to confirm the topography and existing land use, the nature of the existing buildings and monuments around the Project Site, identify any built heritage assets and their settings within the Project Site or its vicinity, and assess factors which may have affected the survival or condition of any known or potential assets.

Assessment methodology for heritage receptors

8.2.17. Local planning authorities require an applicant to provide an assessment of the significance of any heritage assets affected by the Project, including any contribution made by their setting to this significance. This includes designated and non-designated heritage assets.

8.2.18. The following terminology has been adopted within this assessment for classifying and discussing the historic environment:

a) A 'heritage asset' is a building, monument, site, place, area or landscape identified as meriting consideration in planning decisions because of its heritage interest. In this report, those assets likely to be affected by the Project are referred to as 'heritage receptors';

b) The 'setting' of a heritage asset is the surroundings in which a heritage asset is experienced. Its extent is not fixed, can extend beyond the asset's curtilage and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral;

c) 'Significance' (for heritage policy), as defined in the NPPF is used to describe the heritage interest of an asset to this and future generations. This interest may be archaeological, historic and/or architectural/artistic. Significance can derive not only from a heritage asset's physical presence, but also from its setting.

The assessment process

8.2.19. Following the characterisation of the baseline environment, the methodology used to assess the likely environmental effects on potential above ground heritage assets at, or in the vicinity of, the Project Site will entail:

i. Evaluating the significance/importance of heritage assets, based on existing designations and professional judgment where such resources have no formal designation, and considering historic, archaeological, architectural/artistic interest as outlined in the NPPF and Historic England's policy and guidance. This significance then translates into the 'sensitivity to change' of the heritage receptor;

ii. Evaluating the contribution that setting makes to the overall significance (or 'sensitivity to change') of above ground heritage assets selected for assessment;

iii. Predicting the 'magnitude of change' upon the known or potential significance of heritage assets and the likelihood and resulting scale of environmental effect;

iv. Considering the mitigation measures that have been included within the design of the development and any additional mitigation that might be required in order to avoid, reduce or off-set any significant adverse effects; and

v. Quantifying any residual effects (those that might remain after mitigation).

Assessing the sensitivity to change of the heritage receptor

8.2.20. The NPPF defines significance as, 'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be historic, archaeological, architectural or artistic.' The determination of the significance of a heritage asset is based on statutory designation and/or professional judgement against these values.

8.2.21. In producing this ES Chapter it is important to distinguish the use of the term 'significance' in a heritage context, which is defined by the NPPF as the significance of the heritage asset in question, with the use of 'significance' in EIA terms, which primarily relates to the 'significance of environmental effect' as a result of change owing to the Project.

8.2.22. In the context of the Environmental Impact Assessment (EIA) the heritage asset is the receptor of change and the term 'significance' where referring to heritage is interchangeable with the term 'importance' and the 'sensitivity to change' of the receptor. Therefore, to avoid confusion,

this assessment will utilise the term ‘importance’ in relation to the significance of the heritage asset (receptor) in question, while ‘significance’, will be associated with the ‘significance of the environmental effect’.

8.2.23. Evaluation of importance will be informed primarily by the designation of the assets at an international, national, regional or local level (such as listing) as well as their ability to contribute to an understanding of the past. Definitions of importance/sensitivity to change are set out **Table 8.1**.

Heritage Importance/ sensitivity to change	Criteria
Very High **Or international importance**	World Heritage Sites, Listed Buildings, Scheduled Monuments and Conservation Areas of outstanding quality, or built assets of acknowledged exceptional or international importance, or assets which can contribute to international research objectives. Registered Parks & Gardens, historic landscapes and townscapes of international sensitivity.
High **Of national importance**	World Heritage Sites, Listed Buildings, Scheduled Monuments, Conservation Areas and built assets of high quality, or assets which can contribute to international and national research objectives. Registered Parks & Gardens, historic landscapes and townscapes which are highly preserved with excellent coherence, integrity, time-depth, or other critical factor(s).
Medium **Of regional importance**	Listed Buildings, Scheduled Monuments, Conservation Areas and built assets (including locally listed buildings and non-designated assets) with a strong character and integrity which can be shown to have good qualities in their fabric or historical association, or assets which can contribute to national research objectives. Registered Parks & Gardens, historic landscapes and townscapes of good level of interest, quality and importance, or well preserved and exhibiting considerable coherence, integrity time-depth or other critical factor(s).
Low **Of local importance**	Listed Buildings, Scheduled Monuments and built assets (including locally listed buildings and non-designated assets) compromised by poor preservation integrity and/or low original level of quality of low survival of contextual associations but with potential to contribute to local research objectives. Registered Parks & Gardens, historic landscapes and townscapes with modest sensitivity or whose sensitivity is limited by poor preservation, historic integrity and/or poor survival of contextual associations.
Negligible	Assets which are of such limited quality in their fabric or historical association that this is not appreciable.

Table 8.1 Definitions of importance/ sensitivity change of heritage receptors.

Considering the setting of the heritage receptor

8.3.1 HE has issued Historic Environment Good Practice Advice in Planning guidance notes. The following of which are relevant to the Project: *Advice Note 2 – Managing Significance in Decision- Taking in the Historic Environment (March 2015)*, as well as *Advice Note 3 (2nd Ed.) – The Setting of Heritage Assets (December 2017).*

8.3.2 The HE guidance advocates a systematic and staged approach to the assessment of the implications of development in terms of their effects on the settings of heritage assets. The steps are as follows (reformulated here in context of the EIA):

- **Step 1** of the approach is 'identifying the heritage assets affected and their settings'. This initial step is carried out by undertaking documentary research as described previously under 'Baseline data collection';
- **Step 2** requires consideration of 'whether, how and to what degree these settings make a contribution to the importance of the heritage asset(s)'.

• **Step 3** involves 'Assessing the effect of the Project on the importance of the asset(s)'. This stage of the assessment addresses the key attributes of the Project, such as its:

- Location and siting;
- Form and appearance;
- Additional effects; and
- Permanence; and

• **Step 4** of the guidance should explore opportunities for 'maximising enhancement and minimising harm';

• **Step 5** is to 'make and document the decision and monitor outcomes'. For the purposes of this assessment, Steps 1-4 of the process have been followed. Step 5 is the duty of the Local Planning Authority and therefore not undertaken as part of this assessment.

8.3.3 HE guidance on managing change within the settings of heritage assets gives advice on understanding setting in relation to importance (or sensitivity to change' in regards to this assessment), and how views may contribute to setting. The advice note sets out a recommended approach (reformulated here in context of the EIA), including:

• Setting is the surroundings in which an asset is experienced and may therefore be more than its curtilage; that it may be affected by a range of factors beyond visual, including historical relationships between assets; it may extend beyond public rights of way;

• The extent of setting is not fixed and may change as the asset and its surroundings evolve; heritage assets within extensive townscapes or landscapes may have nested or overlapping settings;

• Where the setting of a heritage asset has been compromised, consideration needs to be given to whether additional change will further detract from, or can enhance the importance of the asset;

• Importance of setting in relation to designed townscapes or landscapes can extend beyond the designated area and may not necessarily be confined to land visible from the Project Site, but may have historic or other associations with the asset; and

• The contribution of views to setting can be assessed in relation to static, dynamic, long, short or laterally spreading views, and include a variety of views of, from, across or including that asset.

Determining the magnitude of change (impact of the Project)

8.3.4 Determination of 'magnitude of change' upon the importance of known or potential heritage assets is based on the severity of the likely impact (e.g. physical effects on built heritage assets or the permanent presence of new structures, etc., that result in changes to the contribution of setting to the heritage importance of a built heritage asset). **Table 8.2** describes the criteria used in this assessment to determine the magnitude of change.

Magnitude of change	Description of change
Large	• Complete removal of asset; • Change to asset importance resulting in a fundamental change in our ability to appreciate the resource and its historical context, character and setting; • The transformation of an asset's setting in a way that fundamentally compromises its ability to be understood or appreciated; and • The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Medium	• Change to an assets importance resulting in an appreciable change in our ability to understand the asset and its historical context, character and setting; • Notable alterations to the setting of an asset that affect our appreciation of it and its importance; or the unrecorded loss of archaeological interest.
Small	• Change to asset importance resulting in a small change in our ability to understand and appreciate the asset and its historical context, character and setting.
Negligible	• Negligible change or no material change to asset importance. No real change in our ability to understand and appreciate the asset and its historical context, character and setting
Uncertain	• Level of survival/condition of resource in specific locations ins not known: magnitude of change is therefore no known.
No Change	• No change

Table 8.2 Magnitude of change of heritage receptors.

Significance of environmental effect

8.3.5 The significance of the resultant environmental effect is determined by combining the assigned sensitivity to change of the receptor (dictated by the importance of the heritage asset) with the predicted magnitude of change (impact) on that receptor: Sensitivity to change (of the receptor) + magnitude of change (impact) = significance of effect.

8.3.6 **Table 8.3** illustrates how information on the sensitivity to change of the asset and the magnitude of change arising from the Project has been combined to arrive at an assessment of the significance of effect. The matrix is not intended to 'mechanise' judgment of the significance of effect, but to act as a check to ensure that judgments regarding heritage importance and the receptor's sensitivity to change and magnitude of change resulting from the Project arrive at a level of significance of the effect that is reasonable and balanced.

8.3.7 In terms of the assessment only the 'major' and 'moderate' effects will be considered 'significant', i.e. which may warrant mitigation, these are shaded in **Table 8.3**.

8.3.8 Once the significance of the effect has been established, the next step will be to assess the nature (or direction) of the effect, which can be 'beneficial', 'adverse' or 'neutral'. If the Project will enhance heritage values or the ability to appreciate them, as expressed in the first stage of the assessment, then the impact on heritage importance will be deemed to be positive, therefore the nature of the effect is attributed as 'beneficial'. However, if the development fails to preserve heritage values or impairs their appreciation by affecting the receptor's heritage importance negatively, then the nature of the effect will be deemed to be 'adverse'. In cases where the importance of the effect is considered to be very minor, negligible or uncertain, then it is generally impossible to identify the nature of the effect. In these cases the nature of the effect is attributed as 'neutral'.

8.3.9 The following terms have been used to define the significance of effects identified:

- Major effect: where the Project could be expected to have a considerable effect (either adverse or beneficial) on heritage receptors (assets). For the historic environment, if the effect is adverse in nature, this equates to 'substantial harm' to, or total loss of, importance (or significance in terms of the NPPF) of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting.

- Moderate effect: where the Project could be expected to have a noticeable effect (either adverse or beneficial) on heritage assets (receptors). For the historic environment, if the effect is adverse in nature, this equates to 'less than substantial harm' (in NPPF terms) to the importance (or significance) of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting.

- Minor effect: where the Project could be expected to result in a small, barely noticeable effect (either adverse or beneficial) on heritage assets (receptors). For the historic environment, if the effect is adverse in nature, this equates to a low degree of 'less than substantial harm' (in NPPF terms) to the importance of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting, or 'substantial harm' to, or the loss of, importance of an asset of low heritage importance.

- Negligible: where very minor or no discernible effect is expected as a result of the Project on heritage receptors (assets), i.e. the effect is insignificant. In this case the nature of the effect is identified as neutral.

Magnitude of change (impact of the development)	Sensitivity to change of the receptor				
		High	Medium	Low	Negligible
	Large	Major	Major or Moderate	Moderate or Minor	Minor or Negligible
	Medium	Major or moderate	Moderate	Minor	Minor or negligible
	Small	Moderate or minor	Minor	Minor	Negligible
	Negligible	Minor or negligible	Minor or negligible	Negligible	Negligible or No Change

Table 8.4 Significance of environmental effect matrix for townscape and visual receptors. Shaded areas indicate a 'significant effect' in EIA terms.

(v) Effects on the townscape and visual receptors

8.2.24. The methodology for the assessment of townscape and visual receptors is to some extent different to that of heritage receptors. The HTVIA (Appendix 8.1) includes a full methodology for townscape assessment, as well as identifying the townscape and visual receptors assessed in this report. This methodology, reformulated to relates to EIA assessment is reproduced below.

Baseline conditions and receptors for townscape assessment

8.2.25. The GLVIA, at paragraph 2.7, defines townscape as:

"…areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in wider-open landscapes, but townscape means the landscape within the built- up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces."

8.2.26. In order to get a full understanding of the Project Site, its existing condition and townscape context were visited, studied, researched and photographed. The information gathered represents the baseline conditions against which the assessments are made, based on Site visits in March and June 2020.

8.2.27. The purpose of the townscape assessment is to identify any significant effects as a result of the Project on the townscape as an environmental resource. This achieved by considering how the Project will affect the key components of the townscape, its perceptual and aesthetic qualities and its distinctive character, in accordance with the GLVIA (2013).

Baseline conditions of the townscape

8.2.28. Establishing the baseline conditions for the townscape assessment includes identifying areas of distinct townscape character surrounding to the Project Site, which have the potential to be significantly affected by the Project. This is done through research and field survey, and using information available that may have already been produced by others, for example by the local planning authority.

Townscape receptors

8.3.10 Townscape receptors are the key characteristics of the townscape within character areas that are likely to be affected by the Project. Examples of townscape receptors might be, amongst others:

- A particular scale or height of development that is characteristic and of value;
- Particular spatial layouts, patterns of development or urban grain;
- Particular relationships between open or green spaces, water bodies or topography;
- Particular features, such as skylines or permeability through the area, that are of importance;
- The overall character or quality/condition of a particular street or series of spaces; and
- Notable aesthetic, perceptual or experiential qualities.

8.3.11 These receptors are assessed in groups as 'character areas'.

Baseline conditions and receptors for visual assessment

8.3.12 Paragraph 2.20 of the GLVIA goes on to define visual amenity as, "When the interrelationship between people ('human beings' or 'population' in the language of the Directive and Regulations) and the landscape is considered, this introduces related but very different considerations, notably the views that people have and their visual amenity – meaning the overall pleasantness of the views they enjoy of their surroundings."

Baseline conditions of visual amenity

8.3.13 The assessments of effects on visual amenity are focused on the likely effects of changes to townscape views on visual receptors, i.e. people experiencing the townscape in a visual manner through townscape views. Therefore, the baseline condition is the appearance of townscape views as existing at the time of writing the assessment.

Townscape views for visual assessment

8.3.14 Site visits, supported by map analysis and the use of computer models, allow for the identification of viewpoint positions from which the Project would potentially be visible. The selected views are chosen in consultation with the local planning authority. The agreed viewpoints generally represent a spread of close, medium and long-distance views, where either the outline or the architectural design of the Project will be clearly visible.

8.3.15 The selected views are generally from publicly accessible locations and illustrate the urban relationships likely to arise between the Project and the setting of heritage assets, as well as other important elements of the townscape.

8.3.16 Where a view was deemed particularly sensitive a fully verified Accurate Visual Representations (AVRs, also commonly known as 'verified views') was constructed from the agreed viewpoints. AVRs are produced by incorporating a computer 3D model of the Project accurately into surveyed photographs of the local area. This was agreed with the Conservation Officer.

8.3.17 The assessment of visual effects is based on an assessment of the 'proposed' condition, illustrating the completed Project as occupied in its operational phase. Where appropriate, different seasonal conditions to illustrate changes in the townscape, for example the level of tree foliage visible are also represented.

Assessment methodology for townscape and visual receptors

8.3.18 As with the heritage assessment, the effects of the Project on townscape and visual receptors are assessed by combining judgements about the 'sensitivity of the receptor' and the 'magnitude of change' (impact) it would experience as a result of the Project to establish the significance of the environmental effect.

Sensitivity of townscape receptors

8.3.19 Once townscape character areas are identified, their potential sensitivity is established by combining judgements about the value attached to their townscape and their susceptibility to change as a result of the Project. The value of the townscape receptor can be identified by a range of criteria such as condition, scenic quality, rarity, representativeness/recreational value, perceptual qualities and associations. The susceptibility to change is the ability of the townscape receptor to accommodate the Project without detriment to the value of its character. For the purpose of the assessment, the sensitivity of townscape receptors is described as 'high', 'medium' or 'low'.

Sensitivity of visual receptors

8.3.20 The sensitivity of visual receptors is considered by combining judgements of the value attached to a particular view and the receptor's susceptibility to change in the view. While it is acknowledged that different people may have different responses to the visual stimuli of the townscape, based on their own aesthetic preferences and circumstances (e.g. a local resident could react differently to a view than a tourist), the visual assessment takes this into account by including a spread of views to cover a wide range of receptors. Some of the viewpoints will be from important thoroughfares or public parks, while some will be from local residential streets.

8.3.21 When heritage assets or their settings are visible in views, this will also inform the sensitivity of the receptor, as supported by HE publications, including 'Seeing the History in the View' (2011) and 'Historic Environment Good Practice Advice in Planning, Note 3: The Setting of Heritage Assets' (second edition, 2017). The former includes 'Table 1: Value/Importance of individual heritage assets identified within the view', which identifies those heritage assets of high

importance/value to *"normally be a World Heritage Site, grade I or II* listed building, scheduled monument, grade I or II* historic park and garden or historic battlefield which is a central focus of the view and whose significance is well represented in the view";* whereas heritage assets of medium importance/value are identified to *"normally be a grade II listed building, grade II historic park and garden, conservation area, locally listed building or other locally identified heritage resource which is a central focus of the view and whose significance is well represented in the view"*; and heritage assets of low importance/value *"may be a grade II listed building, grade II historic park and garden, conservation area, locally listed building or other locally identified heritage resource which does not form a main focus of the view but whose significance is still well represented in the view".*

8.3.22 For the purpose of the assessment, the sensitivity of visual receptors is described as 'high', 'medium', 'low' or 'negligible'.

Magnitude of change for townscape and visual impact

8.3.23 The magnitude of change for both townscape and visual impact assessment is generally considered to be a combination of:

(i) the size and scale of the potential impact;

(ii) the geographical extent of the area affected; and

(iii) the duration of the impact of the Project in operation and its reversibility. These are quantitative factors which can generally be measured with some certainty. The assessment takes all these factors into account. In considering new development in urban contexts, the duration of the impact is generally considered to be permanent and non-reversible.

8.3.24 The magnitude of change in relation to visual receptors, in particular, is established by visually assessing wireline AVRs illustrating the scale and visibility of the Project in the views, where the magnitude of change is a quantitative, objective measure of the impact of the Project as shown in each view.

8.3.25 For the purpose of the assessment, both for townscape and visual amenity, the magnitude of change is described as 'large', 'medium', 'small' or 'negligible'.

Structure of the assessment process

8.3.26 The assessment of townscape and visual effects are structured in a stepped approach. For townscape assessments, once the receptors are identified their sensitivity to change and the magnitude of change resulting from the Project is established. The following step involves an assessment of the residual effect, once mitigation through design is considered, including the qualitative aspect of the effect (i.e. its nature or direction). The final step involves an assessment of the cumulative effect, when considering the effect of the Project in combination with other relevant schemes.

8.3.27 For the assessment of visual effects a description of the existing condition, describing its townscape qualities and visual amenity is observed before the sensitivity to change of this view is established. A description of the Project's appearance in this view then follows, including an assessment of any mitigation achieved through the design process.

8.3.28 The Magnitude of change is then established. This is a quantitative assessment of the magnitude of change in the view as a result of the Project. The Residual effect is the result of combining the sensitivity of the view and the magnitude of change to establish the overall significance of the environmental effect. The cumulative effect where relevant, an assessment is made of the potential cumulative visual effects arising from the combined visibility in the view of the Project with other schemes (usually limited to those consented and/or under construction), also highlighting the contribution of the Project to the overall cumulative environmental effect.

8.3.29 This section is completed with reference to the assessment and descriptions of the view points included within the HTVIA (Appendix 8.1). These views have been agreed with the Conservation Officer at WHBC.

Establishing the significance of effects

8.3.30 As is also the case for heritage assessments, the significance of townscape and visual effects is established by combining assessments of the sensitivity of the receptors and the magnitude of the change resulting from the Project. Sensitivity to change (of the receptor) + magnitude of change (impact) = significance of effect.

8.3.31 Thereafter, the mitigation and/or enhancement achieved through design is considered, giving rise to a residual, or overall effect. The significance of townscape and visual effects is rated on a scale of 'major', 'moderate', 'minor', or 'negligible' or 'no change', as illustrated in **Table 8.4**, where only major and moderate effects are considered significant environmental effects in EIA terms.

8.3.32 'Major', 'moderate' and 'minor' effects are self-explanatory as a result of combining the sensitivity to change and the magnitude of change as identified in **Table 8.4**. 'Negligible' or 'no change' effects can arise where it is not possible to identify any effects on receptors owing to the Project. This may occur when receptors are located at a considerable distance from the Project, such that it would have only a minimal effect or would have no intervisibility owing to obscuration by surrounding buildings or vegetation.

Establishing the qualitative nature (or direction) of effects

8.3.33 Once the significance of the effect has been established and mitigation and enhancement through design are considered, the qualitative nature (or direction) of the overall, or residual, effect is defined as 'beneficial', 'neutral or balanced' or 'adverse'.

8.3.34 'Beneficial' townscape and visual effects occur when the Project would give rise to an improvement in townscape or view quality and the visual amenity of the viewer owing to:

- An enhancement of the townscape quality;
- An enhancement or reinforcement of the key characteristics of the townscape character areas; and/or
- The introduction of features or elements of high design quality, which enhance the existing character and visual amenity.

8.3.35 'Neutral or balanced' townscape and visual effects are the least common but can occur when:

- Beneficial and adverse effects are finely balanced; or
- Some detailed high-quality design aspects of the Project are not discernible, for example when views are too distant, but other qualitative aspects, such as the overall massing of a building, can still be appreciated. In this case, the consultancy does not have enough information to establish a beneficial or adverse nature of the effect.

8.3.36 'Adverse' townscape and visual effects can occur when the Project would give rise to deterioration in the quality of the townscape or visual amenity owing to:

- Harm to the key characteristics of townscape character areas that would affect their value negatively; and/or
- The introduction of features or elements of poor design quality that would detract from the existing character and negatively affect visual amenity.

Residual effects on townscape and visual receptors

8.3.37 After establishing both the quantitative and qualitative aspects of the assessment, the townscape and visual effects are given a rating which refers to both, the significance of the potential effect and whether it is beneficial, neutral or balanced, or adverse, after mitigation and/or enhancement through design have been taken into account.

8.3.38 These effects are referred to as 'residual' effects, which can be: 'major and beneficial'; 'moderate and beneficial'; 'minor and beneficial'; 'major and neutral/balanced'; 'moderate and neutral/ balanced'; 'minor and neutral/balanced'; 'major and adverse'; 'moderate and adverse'; 'minor and adverse'; 'negligible'; or 'no change'.

8.3.39 A proportionate approach is taken to carry out the assessment of effects. Those receptors most likely to be affected by the Project (e.g. those in closer proximity to the Project Site, or most exposed to it owing to the topography or townscape of the area) are assessed in more detail, while other receptors less likely to be affected, or those which share a setting and are therefore

likely to have similar effects, are assessed in a more proportionate way or in groups, based upon a judgement of likely levels of significance and effects.

8.3.40 In accordance with HE's recommendations in Note 3: The Setting of Heritage Assets (2017), the assessment commentary is intended to provide 'a clearly expressed and non- technical narrative argument that sets out 'what matters and why' in terms of heritage significance and the setting of assets affected, together with the effects of the development upon them'. The reader is therefore encouraged to appreciate the assessments in the context of the narrative text about each view. The effects found should not be translated into scoring systems or statistics.

Effects during demolition and construction

8.3.41 Effects arising during the demolition and construction phases are usually temporary, short-term and reversible. They would typically be 'adverse' in nature in terms of the townscape and visual amenity and harmful to the setting of heritage receptors, as the Project is erected behind scaffolding, hoarding, and with the visible use of heavy machinery, such as large cranes that are visible from very long distances. Though temporary, construction effects could also be potentially significant, especially for visual receptors who live or work in the area around the Project Site.

(vi) Cumulative effects of heritage, townscape and visual receptors

8.3.42 In addition to an assessment of the heritage, townscape and visual effects of the Project in isolation, this assessment also considers the effects of the Project when assessed in combination with other committed developments in the vicinity that may have a combined or 'cumulative' effect on receptors. These are generally schemes that have been either consented by the relevant planning authority or are under construction.

8.3.43 The assessment of cumulative effects refer to the combined or overall effect, rather than to the contribution of the Project to the cumulative effect. Generally, the schemes which have been consented have been accepted as appropriate in their urban context through the operation of the planning process, so it is assumed that their qualitative aspect will be beneficial.

8.3.44 Consented developments within the surroundings of the Project Site considered as cumulative development include:

- Former Shredded Wheat Factory, LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ;
- 29 Broadwater Road, LPA REF: 6/2019/3024/MAJ;
- 37 Broadwater Road, LPA REF: 6/2018/2387/MAJ;
- Accord House, 28 Bridge Road, LPA REF:6/2018/2472/MAJ

(vii) Assumptions and Limitations

8.3.45 The methodology in this assessment is affected by some assumptions and limitations:

- The report assessment is compiled using primary and secondary information derived from a variety of sources, only some of which have been directly examined. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably accurate;
- The visual assessment does not cover every possible view of the Project, but were selected using professional judgement of where there are particular instances of townscape or visual sensitivity;
- The wireline AVRs used for visual assessment include a degree of professional judgment made by the visualisation specialists in the artistic representation of materials and the effects of weather conditions, daylight and distance; and
- Assumptions have been made in this report about the susceptibility of people to visual changes in the townscape, as well as on the types of people likely to experience particular views. These assumptions are based on professional judgment but are limited as the responses of individuals are varied and cannot all be covered in the assessment.

8.3. Baseline Conditions

Historic Development

8.3.46 The Garden City movement was founded by Sir Ebenezer Howard in the 1920s following his earlier trial town at Letchworth Garden City.

8.3.47 Creating new towns was a passion of Howard who in the late 19th century felt that he could design a settlement of limited size, planned in advance, surrounded by a permeant belt of agricultural land as a future model for urban development. His main goal was to create 'Garden Cities' that were a cooperative blend of city and nature. The root of Howard's idea was to combine 'the advantages of town and countryside to create a pleasant egalitarian environment.'

8.3.48 These principles underpinned the design for Welwyn Garden City. A key theme throughout the design and planning of Welwyn Garden City was the idea that everything could be accessed within the town; an idea of self-containment. As such Howard planned the town with jobs, services, leisure facilities and housing within a single settlement. This idea was carried through to other "new towns" within the country such a Stevenage, Harlow and Milton Keynes.

8.3.49 Welwyn Garden City however was one of the earlier iterations of the movement and was born from Howard purchasing 1500 acres of farmland near Welwyn in 1919. Following on from this Howard appointed the French-Canadian architect Louis de Soissons as planner and designer in April 1920. Within six weeks De Soissons produced the master plan which was ultimately constructed with slight alterations over the decades.

Figure 8.9- Welwyn Garden City sketch plan by Sir Frederic Osborn (1919).

8.3.50 The style of the houses and public buildings throughout the Garden City are Neo-Georgian which is a contrary to the Art and Crafts style which was favoured by Unwin and Parker at Letchworth. It is thought that De Soissons and his associate Arthur Kenyon designed over half the houses within the town, the majority of which are in red brick, but many were constructed of concrete and flat roofs.

8.3.51 The town is laid out in a 'Grand Beaux Arts' tradition with a greensward avenue known as Parkway which at over 60m wide runs through the central area of the town, providing the central axis. The residential streets that surround this central core follow the contours of the land in order to minimise the cost of installing water and sewage services. These streets were carefully landscaped with no more than 12 houses per acre however De Soissons creatively reimagined the cul-de-sac to create singular communities with shared decorative detailing creating identities at street level.

8.3.52 De Soissons planned that all residents would shop in one place and though 'Welwyn Stores' provided initial amenity however commercial pressures of the 20th century have altered this original arrangement. He was also passionate about the reinstatement of trees and green spaces between each of the developments. De Soissons was still on the city board in 1948 when Welwyn Garden City was overtaken by the state and designated as a New Town under the New Towns Act 1946 with neighbouring Hatfield. He remained a key part of the development until his death in 1962.

8.3.53 Over the coming decades various development took place within the town which resulted in the creation of 8 distinct neighbourhoods; Howardsgate, Handside, Panshanger, Hatfield Hyde and Woodall, Digswell, Howlands, Lemsford, Monkswood, Haldens, Parkway and the Town Centre.

The Industrial Zone

8.3.54 A key part of the town's initial design was the desire to allow residents to live close to where they worked. In 1924 De Soissons designed the first and arguably the most important factory in the town for Shredded Wheat which was the first of its kind in England being a mixture of concrete and glass. In 1981 the factory and adjoining silos were listed at Grade II by Historic England.

8.3.55 Other factories were constructed within this expanding 'industrial zone', all approved by De Soissons before they were constructed. This included the International Modernist Grade II Listed Roche Factory, built by Otto Salvisberg in 1937.

8.3.56 The growth of industries in Welwyn Garden City depended on the growth and expansion of the town and population. Apart from the purpose-built factories such as Shredded Wheat and Roche Factory the majority of new factories were housed in Sectional Factory Units built in Bridge Road East, Broadwater Road, Hyde Way and Tewin Road.

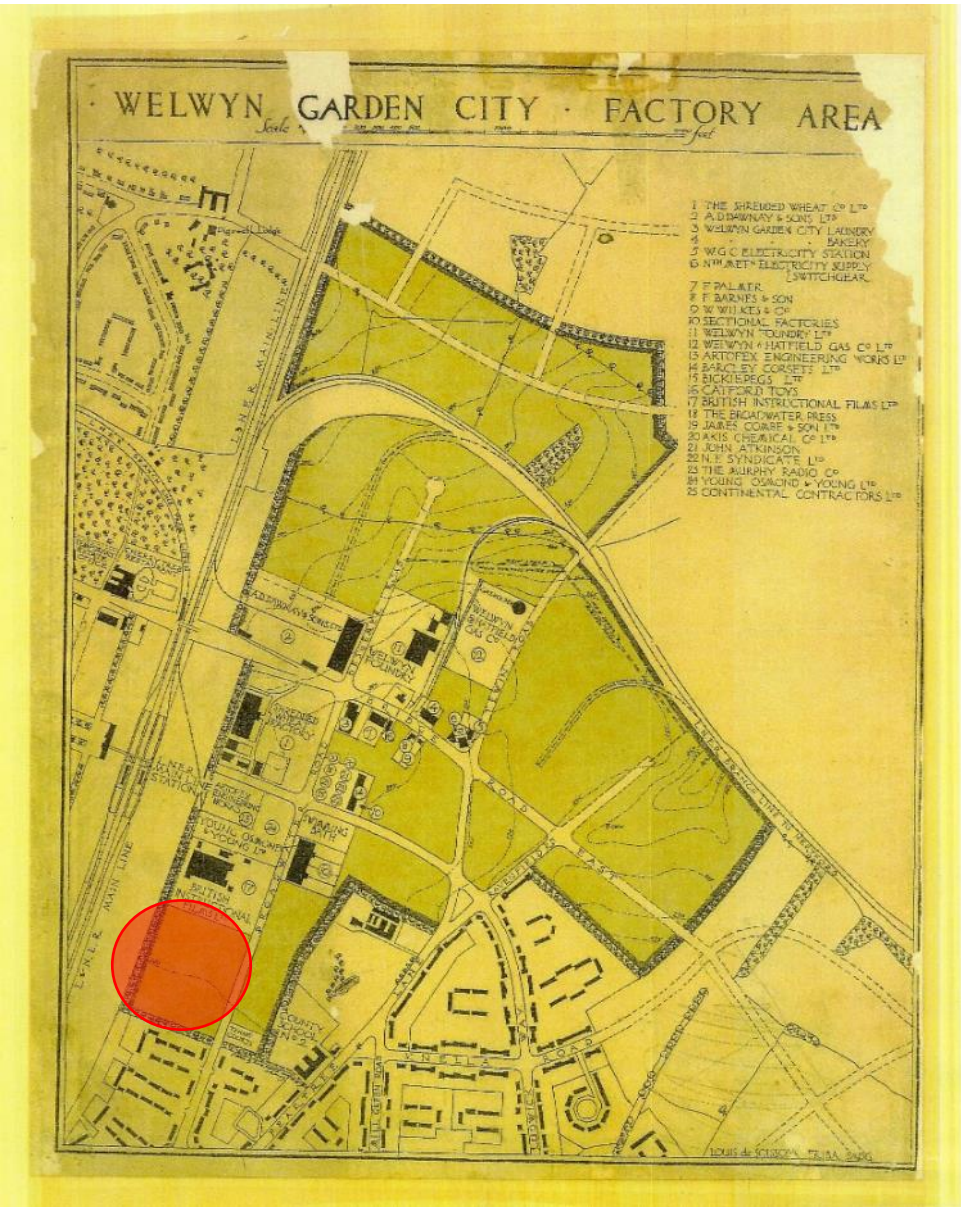


Figure 8.10- Late 1920s Map of Factory Area (approximate location of the Project Site highlighted in red).

8.3.57 The following is a quote taken from the Welwyn Garden City Directory 1926;

> *The town is planned with an industrial area, which is specially laid out with railway sidings, roads, and public services.*
>
> *The factory conditions are claimed to be ideal, and the factories are so placed that they have plenty of light and air with convenient access to the residential parts of the town*

and yet do not interfere with the town's amenities. Indiscriminate factory development will not be permitted in Welwyn Garden City.

The Shredded Wheat Factory is a type of the handsome factory premises of the town. This factory may be visited at certain times.

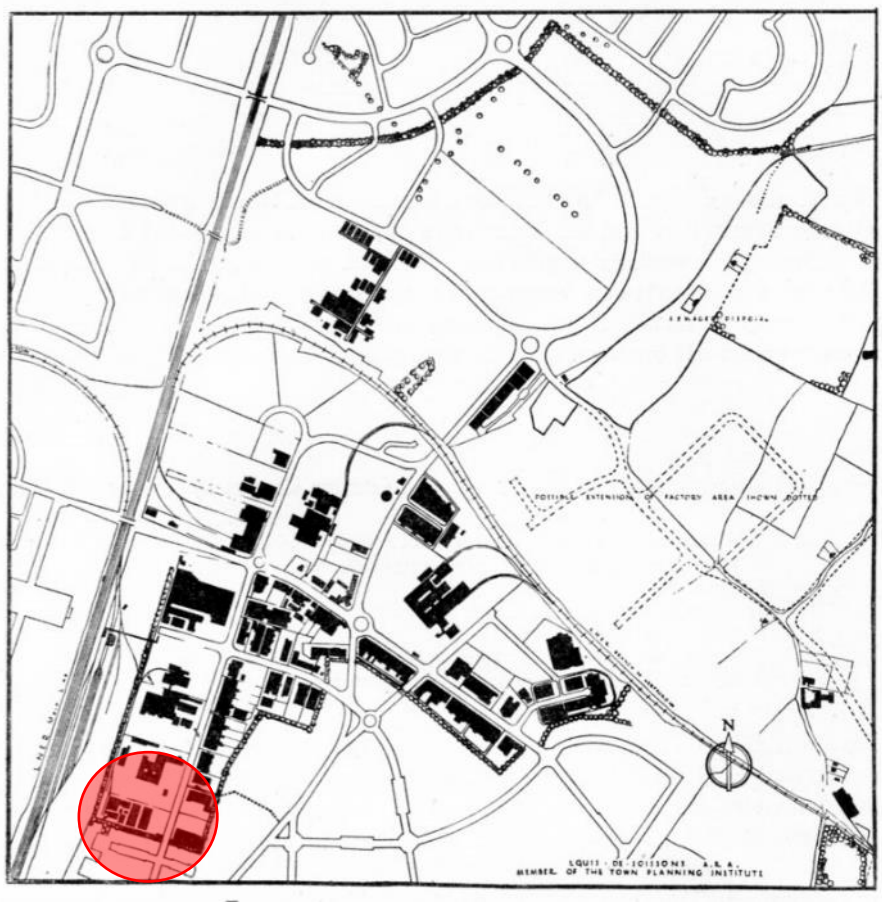


Figure 8.11- Map of Factory Area in Welwyn Garden City showing development in 1948 (approximate location of the Project Site in red)

8.3.58 The most striking building of this period was perhaps the Smith Kline & French (1964) designed by Arup Associates, comprising a six-storey brutalist block on stilts, with a brick podium below. This block towered over the other low-rise buildings of the garden city however it was demolished in 2004.

8.3.59 The Project Site is located within this industrial area, situated to the east of the town centre and adjacent to the railway line. This complex of industrial buildings creates a strong contrast to De Soissons neo-Georgian town centre to the west.

8.3.60 Earlier phase of buildings surrounding the Project Site included Welwyn Studios, a film studio built in 1928 by British Instructional Films which produced The 39 Steps and Brighton Rock amongst others. The Project Site was then sold to Ardath Tobacco and a factory designed by

De Soissons was built around it. The British chemical company ICI based its headquarters in WGC from 1938 and at its peak in the mid 1960's employed around 4000 people at its 65-acre site. This was built in phases from 1954 to 1963, using a variety of architects; J. Douglass Mathews & Partners, E. D. Jefferiss Mathews and Ronald Salmon & Partners; all contributing to the designs.

Existing Project Site Character

8.3.61 This section should be read in conjunction with the Project Site survey photographs provided in the HTVIA (Appendix 8.1). The Project Site comprises a 35-metre-high building equivalent to eleven residential storeys, with attached sheds and ancillary structures located to the south of Welwyn Garden City railway station. The buildings are indifferent in terms of architectural quality and the massing of the whole appears incidental and purely functional. This is expressed in the mix of materials and placement of the fenestration, with no discernible aesthetic style save for a blue treatment to window cills. The buildings form a relatively late phase of development within the industrial zone, and lack the modernist and 'moderne' aesthetic which characterised some of the more influential buildings within the area, many of which have now been demolished.

8.3.62 The building footprint within the Project Site is large scale, increasing in height towards the railway and terminating in a tower. Additional height is created in the surroundings through the chimneys which abut the tower building to the north. The extent of the chimneys and plant work to the roof highlight the overwhelmingly utilitarian and incidental appearance of the Project Site. Glimpses of these elements are the main way the Project Site is experienced from the majority of the surroundings. Consequently the utilitarian character of the Project Site is the most far reaching quality.

8.3.63 The existing building's overall architectural and historic value is therefore considered to be nil. Given their relative height and proximity to the railway, they do however possess a high visibility within the surroundings, including from within the conservation area to the west and from the crossings over the railway to the north and south.

8.3.64 The surroundings of the Project Site, once a major industrial hub, is now largely cleared for redevelopment following consented applications N6/2015/0294/PP and 6/2018/0171/MAJ. To the east, Broadwater Road creates the main access to the Project Site and also establishes a clear distinction in the surrounding townscape, dividing the old industrial zone from the residential housing to the east and modern industrial areas to the north east. Broadwater Crescent to the south is also residential in nature creating a late twentieth century suburban townscape which contrasts to the more historic character of the building stock to the west of the railway. To the west the East Coast Mainline and lorry trailer park creates a significant boundary, dividing the Project Site from the town centre. A footbridge over the railway line creates a link into what was the industrial zone however a new access is to be installed as part of the consented Shredded Wheat Quarter Scheme.

8.3.65 The redevelopment of the area to the north with residential blocks has commenced, with a terrace of housing to adjacent to the Project Site to the east. The overwhelming character of the area however is one of dramatic contrast to the more suburban scale of the surroundings. The industrial history and historic boundaries of this zone is clearly legible, appreciable both in terms

of the sharp step change scale, grain, materials, height and density which contrast to the consistency of the red brick suburban dwellings within the surroundings. Middle range views to the north take in the Shredded Wheat Factory which along with the tower within the Project Site, bookend the industrial zone along Broadwater Road. It is noted that consented development will further filter the existing views between the Project Site and Shredded Wheat Factory.

8.3.66 Due to the parallel nature of the railway and Broadwater Road, and the position of the access road, the Project Site currently possesses a somewhat inaccessible and character, establishing an awkward relationship with the surrounding residential areas and the town centre in particular. This indifferent character is underscored by the long-range views towards the Project Site with the elevations and roofline unresponsive to the character of the garden city in any material terms, as such failing to acknowledge the significant visibility of the Project Site from the surrounding area.

Built Heritage

8.3.67 To the west of the Project Site, the railway line and a lorry trailer park divorces the Project Site from the Town Centre, an area defined in local policy and separately as the Welwyn Garden City Conservation Area, a designated heritage asset. Within the same former industrial park to the north is the Grade II listed Former Office Block of the Roche Products Factory and Shredded Wheat Factory. Over four kilometres to the south is the Grade I listed Hatfield House and the Grade I listed Hatfield House Park and Garden. These are all designated heritage assets and the Project Site falls within these buildings' respective wider and extended settings.

8.3.68 It is acknowledged that there are additional listed buildings within the wider surroundings of the Project Site, including those located within Hatfield Park and Garden, Hatfield Old Village and surrounding Mill Green but due to intervening development, distance and a lack of intervisibility these have been scoped out of assessment. This includes St Etheldreda's Church as well as Hatfield Old Palace, both designated at Grade I and located over 4 km south of the Project Site. Pear Tree Conservation Area is also located to the south east of the Project Site beyond intervening development with no intervisibility and so is also scoped out of assessment. This is in line with paragraph 189 of the NPPF which requires a proportionate level of assessment no more that is sufficient to understand the potential impact of any Project.

Nabisco Shredded Wheat Factory, Grade II

8.3.69 The Shredded Wheat Factory retains high historic interest as the primary industrial building which commenced development of the industrial zone, creating a landmark within the surroundings and retaining a representative quality, illustrating the 'zoned' ethos of the Garden City movement. Pioneering construction methods were used during the building's development, illustrating technological advancement. It is also noted that consent for the alteration of the building has been granted, and as such this interest will be diluted with the partial loss of the remaining intact historic structure. The overall evidential value is low.

8.3.70 Designed by Louis de Soissons, the building forms one part of De Soissons vision for the town and as such is of high architectural value. There is medium communal value within the Shredded

Wheat Factory complex. Part of this value is residual, reflected in the commemorative interest of the building as an important place of employment for many of the residents of Welwyn Garden City.

8.3.71 This factory was one of the first to be located in the town, opening in May 1924, attracted by the Garden City image. When first built the structure included excellent amenities and working conditions, including a recreation ground. Whilst the design of the Project Site and buildings were informed by the functional demands of modern manufacture, equally important was the increasing awareness of the need to create a strong brand and corporate image provided by the striking appearance of the factory and modern setting of the Garden City. However, the historic setting of this building is completely removed, following the waves of twentieth century alteration and the recent clearance of the industrial buildings to the south. The building does nevertheless retain a landmark quality, dominating the skyline.

8.3.72 The buildings within the Project Site, while of a different style and developed several decades later, reinforce a sense of height in the surroundings. The overall architectural quality of the Project Site is however considered to be indifferent, creating an overall neutral contribution to the setting of the listed building.

8.3.73 The overall heritage importance / sensitivity to change for the listed building is considered to be medium.

Former Office Block of the Roche Products Factory

8.3.74 The architectural value of the listed building resides in its interest as a twentieth century example of a purpose built multifunctional industrial building, combining a factory, offices, warehouse and research facility dating to the 1930s. This interest has however been diminished by the demolition of the original factory block as well as the consented conversion of the building to residential use.

8.3.75 The building has been attributed to both Stanley Brown as well as the Swiss architect Otto R Salvisberg. Better known for large scale social housing, Salvisberg is an influential architect across the continent, founding his own practice in 1914. The historic interest of the building is therefore high. The building is expressive of contemporary building techniques and materials. This includes the porte-cochere supported on pilotis to the east elevation, travertine lining to the recessed main entrance, bronze doors, the use of curved concrete and an oversailing roofline. The overall evidential interest is considered to be diminished following the consented application to convert the building to residential use. The overall evidential interest is considered to be medium. There is residual communal interest in the commemorative value of the building as a place of employment. The overall communal interest is considered to be low.

8.3.76 The listed building has undergone significant alteration however it retains a strong sense of its original architectural modernist character, expressed in the strong geometric perpendicular appearance. The complex as a whole was designed to be appreciated from Broadwater Road to the east however the immediate setting of the building has changed substantially. While there was a history of expansion leading to the completion a terrace of larger blocks immediately to the west and south of the main structure, these have been cleared from the surroundings

towards the end of the 20th century and now redeveloped by a recent residential development with associated car parking and landscaping. The direct relationship with and responsive character to Broadwater Road to the east has however been retained.

8.3.77 While the buildings within the Project Site and the Former Roche Office share a commercial industrial character, there is little architectural relationship between the two. The tower within the Project Site presently dominates that of the listed building in terms of height, however the set back away from the road to the west means that the Project Site creates a backdrop rather than obscuring the listed building when seen from the main road. The contribution of the Project Site to the listed building is therefore considered to be negative in terms of the indifferent architectural character of the Project Site and its dominating appearance, which fails to respond to the considered modernist aesthetic of the listed building.

8.3.78 The overall heritage importance / sensitivity to change for the listed building is considered to be medium.

Hatfield House, Grade I

8.3.79 Hatfield House, which is located over 4km south of the Project Site, is an early seventeenth century mansion located at the west edge of the surrounding park land within a level plateau and near the old mediaeval palace (separately listed Grade I). The house was initially constructed for Robert Cecil, first Earl of Salisbury, between 1607 and 1612 following the transfer of the estate from the crown. The house has undergone layers of alteration, however as a rare surviving mansion of this date, the historic interest of the building is very high. There is considerable historic associative value, with the occupants of the house including the third Marquis of Salisbury, three time Prime Minster from a period of 1885 to 1902. The HTVIA in Appendix 8.1 provides a full description of significance.

8.3.80 The setting of the building comprises the extensive park land surrounding the house, including formal gardens, woodland and lengthy avenues to the north and south. The house is itself best appreciated from these formal approaches to the south and north, and the house when seen together with its garden forms part of a cohesive grouping which retains a seventeenth century character. The surrounding parkland therefore makes an important contribution to the significance of the house, matching the grand decorative detail of the facades with a series of elaborate and carefully orchestrated formal gardens and vistas. An appreciation of the historic importance of the estate is also evidenced by the sheer scale of the surrounding parkland, adding to the park's contribution to the listed building's overall setting.

8.3.81 At the time of the Project Site visit, no accessible views were identified of the Project Site from the ground floor of the house or surrounding gardens, although it is understood from previous applications (LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ) that partial glimpses of the Biopark building are just perceptible from the upper floors of the house. The Project Site is located over 4km from the house, and this distance to the Project Site is such that the quality of the buildings within the Project Site are not appreciable. These views take in both the silos of the Shredded Wheat Factory, the surrounding townscape of Welwyn Garden City as well as the expanse of Hatfield to the west and the extent of the consented

redevelopment surrounding the Shredded Wheat Factory. These areas of development are visible at a distance beyond the expansive parkscape which surrounds the house. The quality of these views are therefore predominately characterised by that of the formal gardens and woodland, beyond which later twentieth century development at Welwyn Garden City is apparent at an extreme distance.

8.3.82 Therefore due to the considerable distance from the house to the Project Site, the Project Site's development centuries after the enclosure of the parkland and the location of the Project Site within a wider band of visible twentieth century development far beyond the historic boundaries of the surrounding parkland associated with Hatfield Estate, the current contribution of the Project Site to the listed building is thought to be negligible.

8.3.83 The overall heritage importance / sensitivity to change for the listed building is considered to be very high.

Hatfield House, Registered Park and Garden Grade I

8.3.84 The park and garden reflect the extensive park land and more formal gardens surrounding Hatfield House and Palace comprising circa 7.5 sqkm of land. This encompasses the original medieval hunting parks as well as waves of subsequent landscape design. Remaining within the park today are the basis of the formal gardens designed by Robert Cecil dating to the early seventeenth century, including designs by Thomas Chaundler and Salomon de Caus. Later waves of development incorporated new landscaping in the eighteenth century before a further wave of remodelling took place in the nineteenth and twentieth centuries.

8.3.85 The historic interest of the park is therefore very high, given the extensive history of the Project Site and its relatively intact layered historic character which is expressive of the evolution of the parkscape over several centuries as well as exhibiting early examples of landscape design.

8.3.86 The park is located on an area of high ground, rising in the south-east and west. The park is comprised of mixture of formal gardens and extensive woodland with distinctive characters appreciably illustrating the waves of alteration and addition to the parkscape over time. The present Hatfield House and the old palace are located to the west within the park, adjacent to the old Village off Hatfield. The house is accessed in all directions via formal venues, including a tree lined path extending to the north west, known as the north drive, which prior to the construction of the west entrance was one of the principle approaches. This drive continues northwards beyond the gravelled forecourt north of the house flanked by dense woodland for 1.2 km to meet the Great North Road. The distinctive and layered character of the parkscape as well as its expansive extent makes it of high architectural value, with additional significant group value added when considered with the listed buildings within its extent.

8.3.87 The Project Site did not form part of the early medieval hunting grounds to the park located at a considerable distance to the north and intervening estate land identified as 'Wood Hall' is also clearly identifiable. The development of the current buildings within the Project Site postdates

the original formation of the park by several centuries and the Project Site has not been found to contribute to its historic interest.

8.3.88 The land rises and falls across the park creating unfolding views within the parkland. There is a plateau in the vicinity of the western and southern boundaries, creating more extensive views north from the main house as well as the from the southern end of the southern approach. These longer-range views are reflected in the alignment of the southern approach to the main house as well as the formal avenue through the park land to the north. The wider setting of the park is rural to the east, with the new town of Hatfield adjacent to the west, and several villages to the south.

8.3.89 To the north, while the northern boundary to the park land is comprised of Herford Road, there is a further 500m of open land between the boundary of the park and the commencement of suburban Welwyn Garden City. The Project Site itself falls some considerable distance to the north of these park lands, located over 2.60km away from the northern boundary of the park and separated by a series of major roads as well as intervening open fields and suburban development. The city is just about perceptible in longer range views from the southern end of the park looking over the house along the northern drive, and this includes slight and extremely distant views of the Shredded Wheat Factory. However the Biopark building within the Project Site appears to be obscured by the house itself within these views. The distance from the park to the Project Site is such that the quality of the buildings within the Shredded Wheat Factory is not discernible.

8.3.90 Views towards the Project Site from the park become obscured as the house is approached due to the rise and fall of the land. Therefore due to the extreme distance, intervening topography as well as its location well beyond the formal gardens and historic parkscape the contribution of the Project Site to the setting and significance of the park is considered to be negligible.

8.3.91 The overall heritage importance / sensitivity to change for the Registered Park and Garden is considered to be very high.

Welwyn Garden City Conservation Area

8.3.92 The Welwyn Garden City Conservation Area was first designated in 1968, with subsequent minor additions to the north and south. The onservation area boundary covers the main part of the Garden City west of the Mainline railway line, encompassing the commercial and civic heart of the city reflected in the location of the Parkway. As noted within the historic development section, Welwyn Garden City was only the second new town to be developed in accordance with the Garden City principles laid down by Ebenezer Howard. The design vision for the town was created by Louis de Soissons, who not only was the architect of the overall masterplan, but also was designed a significant number of buildings. In summary his masterplan reflected a civic and commercial centre for the town on the west side of the East Coast Mainline balanced

by a factory area on the east side of the railway, and the whole enclosed by a ring of residential development. The historic interest is therefore high.

8.3.93 The street layout remains broadly recognisable as that designed by De Soissons with the strong geometry of the city centre contrasting with the more organic grain developed in the surrounding residential areas. As such grain and street pattern has an influential quality, enhanced still further in the otherwise consistent use of the neo-georgian and arts and crafts aesthetic which gives an appreciable early to mid twentieth century architectural identity to the whole. The architectural interest is therefore moderate, reflecting areas of later infill and redevelopment.

8.3.94 The conservation area reflects materials and construction techniques available at during the early twentieth century. This evidential interest is low/medium due to the general mass production of these materials and lack of rarity value when the construction techniques are considered in a national context. The communal interest of the conservation area is high, given the strong identify of the town centre resulting in an appreciable commemorative value for residents.

8.3.95 Formal views and set pieces are clearly identifiable within the conservation area, as is the appreciable sense of change and transition when you leave the conservation area limits. Interest and variety at street level is provided in the playful use of decoration, creating specific identify to individual streets and undercutting what might otherwise be a somewhat monotonous townscape. The overall heritage importance of the conservation area is considered to be medium reflecting the redevelopment of key areas such as the town centre.

8.3.96 It is noted that the industrial zone has never formed part of the conservation area, reflecting the changing nature of the utilitarian landscape within this zone, necessitated by the regular redevelopment of historic buildings and fabric. The Project Site presently is perceptible from within conservation area, with glimpsed and partial views east from the low-lying suburban surroundings. Please see townscape character area analysis for further assessment of the contribution of the Project Site to specific sub-areas within the conservation area.

8.3.97 Due to indifferent architectural character of the Biopark building, the overall contribution of the Project Site to the conservation area is considered to be negative.

8.3.98 The overall heritage importance / sensitivity to change for the listed building is considered to be medium.

Townscape Receptors

8.3.99 The following townscape character areas have been identified as having the potential to be affected by the Project. These character areas were selected using information from a visit to the Project and desk based topographical research as well as informed through the pre-application process. A desk based assessment has suggested that the radius of townscape sensitivity is 500m from the Project Site, indicated by the red dashed line outlined below in **Figure 8.4**.

8.3.100 This section also includes the identification of views potentially impacted by the Project, indicated by the red arrows. These views have been agreed with Place Services, who represent

the WHBC on matters such as heritage and townscape. Agreement on the chosen views was provided by WHBC in email on 13 July 2020.

8.3.101 Where it was established that a lack of views, historic relationship, intervening topography and development resulted in no potential impact, character areas were scoped out of assessment. The following therefore assesses those character area determined to have the potential to be affected only. While it is acknowledged that there may be additional views of the Project Site from the surroundings not highlighted below, it is determined that the impact to these views will be sufficiently represented in the assessment of those highlighted.

8.3.102 Please refer Appendix 8.1 for further survey and photographic information, including analysis of those characters area's scoped out of assessment.

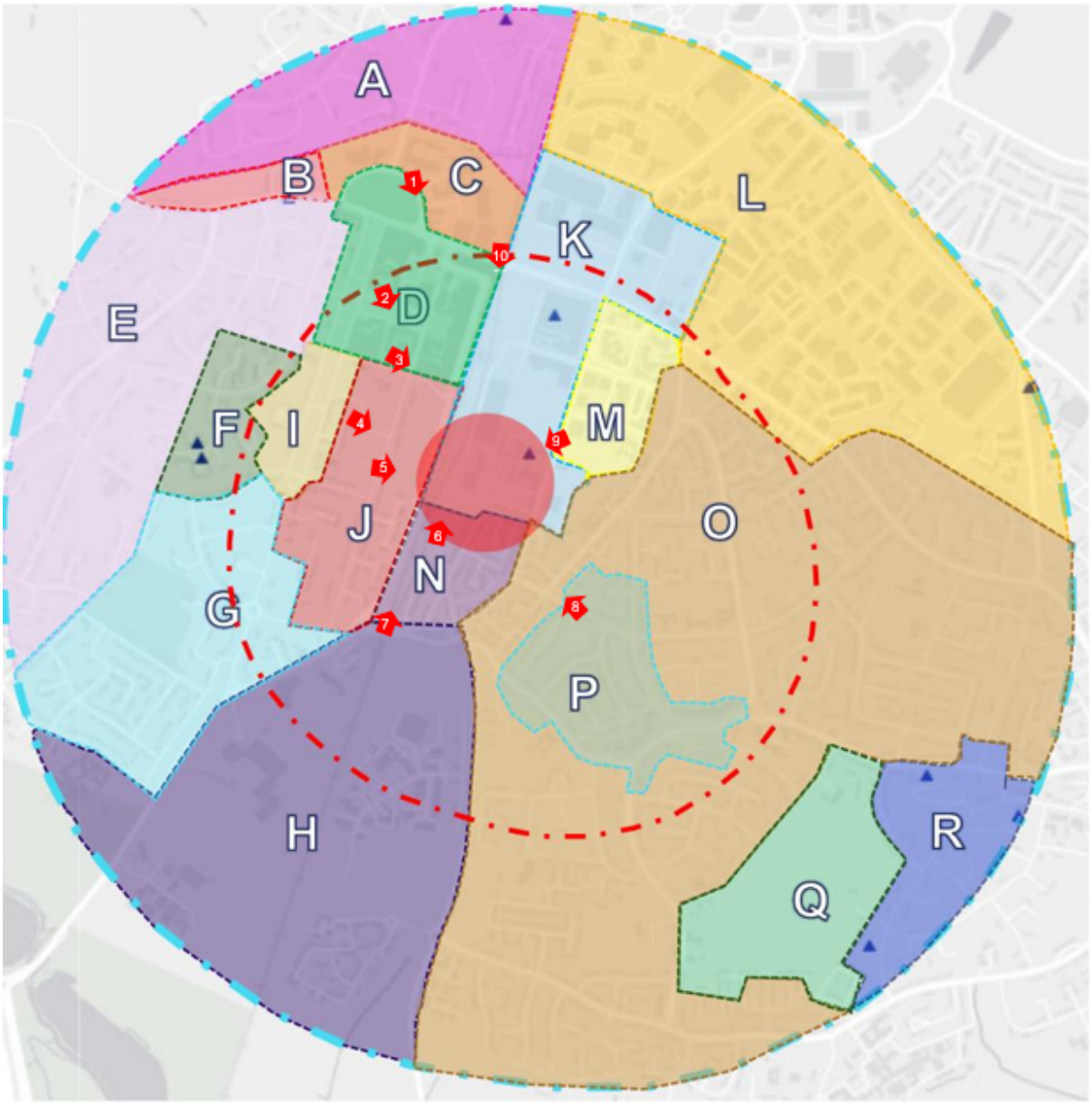


FIGURE 8.12. TOWNSCAPE CHARACTER AREAS. BLUE DOTTED LINE, 1KM RADIUS. RED DOTTED LINE, 500M RADIUS. BLUE TRIANGLES INDICATE THE LOCATION OF LISTED BUILDINGS. RED ARROWS INDICATED VIEWPOINTS FOR ASSESSMENT AGREED WITH THE COUNCIL.

D Parkway Commercial Town Centre

8.3.103 Townscape Character Area D is located within 500m of the Project Site to the north west, falling within the conservation area and is of moderate townscape value. This area falls within the designated town centre policy area. This area reflects the commercial centre of Welwyn, expressed in the formal geometry of the streetscape which includes the lengthy avenue of the parkway. This avenue is commenced by a semi-circular green space with formal views to the south taking in the length of the city centre and residential suburb beyond. The architectural character is mixed with several late twentieth century structures, including the Howard Centre which contains the station and shopping centre. This is reflective of the degree of change within the area which has included the conversion of many of the original structures dating to the first development of the area. Sporadic redevelopment has resulted in a mixed overall architectural quality, whilst a defined material pallet has remained nevertheless identifiable. The town centre character is appreciable through the formality of the street layout despite this evolution.

8.3.104 Due to the substantial scale of the Howard Centre to the eastern boundary, views of the Project Site are limited to glimpses from the eastern edge of the character area and from the northern end of the parkway. These views also take in the railway, creating an experiential barrier which underscores the limits to the town centre. The overall intervisibility between this area and the Project Site is therefore sporadic and partial. Therefore, the Project Site presently makes a neutral contribution, clearly distinct from the internal character of the parkway area, and only partially visible from the outer boundaries of the area. Views assessed (see Appendix 8.1) within this character area include **View 1** from **The Campus** looking south, **View 2** from **Howardsgate** looking south east and **View 3** from **Church Road** looking south east.

8.3.105 The character area is therefore found to be of medium sensitivity to change.

H Chequer Park

8.3.106 This area is located to the south of the Project Site, falling within the 500-metre search radius but outside that of the conservation area, reflecting a poor townscape value. In contrast to the conservation area to the north this area is largely open, with small clusters of commercial and recreational development creating pockets of density within open surroundings. The Twentieth Mile Bridge to the north creates a strong boundary and the area is split by the Railway. Gosling Sports Park to the west of the railway contains large structures which contrast to the finer grain of the residential suburbs to the north. The area includes a running track, tennis courts and ski centre. The dual lane bridge to the northern end of the area carries the A6129 and includes high brick walls. However by virtue of its elevated location as well as the clear view north along the railway, the area has clear views from the bridge towards the Project Site. These views fall away to the south. The current contribution of the Project Site is one of contrast with the height of the existing buildings creating a landmark feature within the horizon line. The indifferent quality of the buildings within the Project Site make this contribution negative. As assessed within the Project Site assessment section, the existing buildings are considered to have no architectural merit and the existing buildings have no meaningful relationship with the buildings within the

character area to the south. Views assessed from this character area include **View 7** taken from the **Railway Bridge** along the A6129 looking north (see Appendix 8.1).

8.3.107 The character area is therefore found to be of negligible sensitivity to change.

J Longcroft Lane

8.3.108 This character area is to the west of the Project Site within the Welwyn Garden City conservation area, and is considered to be of moderate townscape value, falling within the 500m search radius area. The lengthy Longcroft Gardens runs parallel to the primary axis through the conservation area, creating an unfolding north-south view which appears consistently residential and suburban in character. The street grain is formal, with short red brick terraces consistent with the Neo-Georgian aesthetic favoured by Louis De Soissons. The principles of the garden city movement are clearly discernible, with a spacious plot to each terrace row allowing a set-back creating a front garden away from the road. The provision of garages is also an indication of the date of development with growing attraction of the car increasing seen as an integral part of life. The Project Site is presently glimpsed from within the character area, where lower elements of the terraces such as garages facilitate a drop-in roof line. These glimpses are however perceived beyond the existing railway line and further filtered by vegetation. Due to the indifferent architectural character of the Project Site the current contribution of the Project Site to the townscape value of the area is therefore negative.

8.3.109 **Views 4** and **5** at **Parkfields and Longcroft Lane**, both looking east are included within the views assessment (see Appendix 8.1).

8.3.110 The character area is therefore found to be of medium sensitivity to change.

K Industrial Zone

8.3.111 This character area includes the Project Site, it does not fall within a conservation area and is considered to be of minor townscape value. This area comprises the old industrial zone and recent residential redevelopment. The present character is currently fragmentary, with large scale works and the clearance of the Project Site prior to redevelopment currently underway surrounding the Shredded Wheat Factory. Large scale buildings remain including the listed Shredded Wheat and Roche Office buildings, both listed grade II. The Shredded Wheat building dominates the skyline to the north and is expressive of the historic use of the area, contrasting starkly in terms of scale, massing, character and use from that of the city centre to the west. To the south the redevelopment of the area to provide modern residential homes creates a contemporary architectural character which is clearly distinct from that of the older residential suburbs which are representative of De Soissons original master plan.

8.3.112 The Project Site is clearly visible both within the character area and when looking south from the northern boundary of the industrial zone. While the consented development will filter these views, the Biopark building possesses a landmark quality, establishing a book end to that of the Shredded Wheat building and indicating the southern limit of the old industrial area. However the architectural style of the buildings within the Project Site are clearly late twentieth century in date and lack the interest and character seen within the Shredded Wheat buildings. The overall

contribution the Project Site to the townscape value of the character area is therefore negative. **View 10** from **Bridge Road** looking south is included from this character area (see Appendix 8.1).

8.3.113 The character area is therefore found to be of low sensitivity to change.

M Peartree Modern Business Area

8.3.114 This character area is located to the north east of the Project Site, it does not fall within a conservation area and it is considered of poor townscape value. While the area was designated within the masterplan of Welwyn as part of the industrial zone, the area has seen substantial decline with large areas remaining derelict in recent history. The overall architectural character is incidental and utilitarian, despite proximity to the major arterial route of Broadwater Road. There is intervisibility between the Project Site and this character area, with the upper portion of the existing Biopark building framing the end of the industrial area to the south, indicating the transition to residential areas. There is however very little shared character in terms of style either across the character area or with the Project Site itself, beyond a clear industrial use. The present contribution of the Project Site is therefore considered to be neutral. It is noted that the existing views will be filtered following the consented redevelopment of the currently cleared area to the south of the listed Shredded Wheat Factory. This consented development will alter the character of the existing views, creating a modern residential and commercial hub as well as screen views of the Project Site itself. **View 9** from **Broadwater Road** looking south west has been assessed from within this character area (see Appendix 8.1).

8.3.115 The character area is therefore found to be of low sensitivity to change.

N Broadwater Crescent

8.3.116 This character area is located directly to the south of the Project Site and is residential in character of poor townscape value. The area is suburban and late twentieth century in character, featuring two storey red brick houses following the clearance of the original 1920s structures in 1986. There is strong intervisibility between this character area and the Project Site with a sharp contrast in terms of both use, scale massing and character clearly discernible. There is no apparent attempt in the existing structure within the Project Site to respond to the residential character of this area and the alignment of roads creating north south views looking directly towards the Project Site further enhance this sense of dislocation, with the Biopark building dominant in the skyline. The present contribution of the Project Site is therefore negative. **View 6** from **Corals Mead** looking north is taken from this character area (see Appendix 8.1).

8.3.117 The character area is therefore found to be of low sensitivity to change.

P Peartree Conservation Area

8.3.118 This character area is to the south east of the Project Site and is a designated conservation area of moderate townscape value. Originally farm land, De Soissons incorporated existing historic routes into a planned neighbourhood. The provision of lower income housing is expressed in the change in density when compared to the city to the west of the railway line. There are further distinctions including architectural detail, but the broader tenets of Garden City design in terms of wide leafy avenues is in evidence. The houses are largely brick with simple Neo-Georgian decorative details. The conservation area is divided into three sub character areas, including a group of retail, community and ecclesiastical buildings, with large areas of open space reflecting the public use. The Project Site is presently not perceptible from the conservation area and the contribution is therefore nil. While not all streets within the conservation area were assessed, no views were identified as part of the visit to the Project Site. This area has been scoped out of assessment.

8.3.119 While this character area has been scoped out, however following pre-application discussions this area has been included in order to assess **View 8** from **Holwell Road** looking north west to demonstrate lack of impact.

Receptor	Existing Contribution of the Project Site	Sensitivity to Change
D Parkway Commercial Town Centre	Neutral	Medium
H Chequer Park	Negative	Negligible
J Longcroft Lane	Negative	Medium
K Industrial Zone	Negative	Low
M Peartree Modern Business Area	Neutral	Low
N Broadwater Crescent	Negative	Low

Table 8.5 Summary of Townscape Receptors and Sensitivity to Change

Visual Receptors

8.3.120 Viewpoints identified in **Figure 8.1** were selected as part of an on-site survey and in consultation with the council in order to select a representative range of views. This included as two verified Views from Parkfield and Longcroft Lane. These views were assessed for the contribution of the Project Site in terms of visibility as well as historic or architectural relationship. The quality of any existing views was also identified, in terms of distance and completeness. A determination of the overall contribution of the Project Site to these views was then made. Please see Appendix 8.1 for a full illustration and assessment of the existing views.

8.3.121 The existing contribution of the Project Site is tabulated below alongside an assessment of each view's sensitivity to change. The sensitivity of the views have been determined dependant on the quality of the existing contribution of the Project Site, whether the project is likely to have an appreciable change on this impact as well as the overall townscape quality represented in this view, such as if the location of the view point is from within a conservation area.

Receptor	Existing Contribution of the Project Site	Sensitivity to Change
View 1 The Campus	Negligible	Medium
View 2 Howardsgate	Nil	Medium
View 3 Church Road	Negative	Medium
View 4 Parkfields	Nil	Medium
View 5 Longcroft Lane	Negative	Medium
View 6 Corals Mead	Negative	Low
View 7 Railway Bridge	Negative	Low
View 8 Holwell Road	Negligible	Medium
View 9 Broadwater Road	Negative	Low
View 10 Bridge Road	Negative	Low
Verified View 1 Parkfield	Nil	Medium
Verified View 2 Longcroft Lane	Nil	Medium

Table 8.6 Summary of Visual Receptors and Sensitivity to Change

Committed Developments

8.3.122 Any effects upon the project have the potential to be intensified by the combined effect of the Project and other schemes coming forward in the area. The cumulative effects will change over time, as the time of demolition and construction of the Project and cumulative schemes may overlap at different stages. Hence, it is impossible to predict with full accuracy what the temporal nature of these effects may be, though all are considered to be short-term and reversible, as the regeneration of the area becomes complete over time.

8.3.123 Of the cumulative schemes considered, the most likely to interact with the Project in a significant way is Former Shredded Wheat Factory Development, (LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ)

8.3.124 This is owing to its proximity to the Project Site as well as the scale of development, almost completely clearing and redeveloping the northern end of what was the historic industrial quarter. This consented development includes the creation of a mixed-use quarter comprising the erection of up to 1,340 residential dwellings, 114 extra care homes, a civic building comprising and alterations, additions and change of use of Grade II Listed Shredded Wheat Building plus associated car parking, access, landscaping, public art and other supporting infrastructure. This consented scheme will dramatically alter the height and density of the land to the north of the Project Site, as well as filter existing views from the Project Site to the listed Shredded Wheat Building. It is noted this is however consistent with the evolving character of this area, having undergone the greatest degree of continual change within the wider surroundings.

8.4. Inherent Design Mitigation

FIGURE 8.13. COMPARISON OF EXISTING AND PROPOSED MASSING ACROSS THE PROJECT SITE SEEN FROM THE EAST.

8.4.1 The design rational of the Project has been guided by the desire to create a responsive development in order to mitigate any adverse impacts on the receptors identified above. Key to this was the provision of a Project that reflects the original intentions of the historic masterplan for the city. As such the intention of the Project design was to respond to the historic character of the Project Site surroundings which comprised a distinctive industrial quarter, appreciably separate from that of the main city to the west of the railway. Additionally, a key objective has been the provision of a new residential development that appropriately reinterprets 'garden city' principles. This has sought to be undertaken without resorting to pastiche in order to avoid conflict with the historic industrial character embodied by buildings such as the Shredded Wheat Factory and former Roche Office. Similarly the need to provide a complementary development which creates a cohesive sense of place with that of the surrounding consented developments was also identified.

8.4.2 As such, materiality and roof form have been closely developed to provide tangible references to the existing domestic typology of Welwyn Garden City to the west. A steep angle to the elevation at the upper storeys echoes the sloping massing seen within the roof forms within the city centre, and creates an interest and variety to the roofline which echoes the variety seen at street level within the conservation area. This angular approach also takes its cues from the strong geometry of the Project within the consented development to the north, creating a cohesive sense of place across the Project Site and surroundings. A red brick and clay tile palette similarly provides a demonstrably responsive material character, drawing directly from the existing character of the houses within the wider area.

8.4.3 The retention of open-space and attention to the quality of the street front has also been considered, with the creation of a new avenue through the development running north-south. This strong linear approach reflects a characteristic grain seen within the garden city to the west,

creating a sense of place with the design of formal vistas and sight lines through the Project Site.

8.4.4 The height across the Project Site reflects the intensification of development consistent with the consented redevelopment to the north. This creates a sense of definition to the old industrial quarter as a whole, as well as a sense of aesthetic cohesiveness. This sense of height is modulated to step down towards the main arterial route of Broadwater Road, responding to the importance of this through route leading north-south on the eastern perimeter of the Project Site. A change in materiality provides further articulation and visual interest as well as signposting a sense of differentiation to the industrial quarter and alleviating any sense of pastiche.

8.4.5 The massing of the Project has been developed to be stepped across the Project Site, creating a sense of permeability in long and medium distance views. As such the Project can be seen to retain the prominence of the Shredded Wheat Factory as primary structure within the historic industrial 'zone' as well as the preserving the quality of the formal vistas within the conservation area to the west.

8.4.6 The design has been developed with regard to the consented development to the north of the Grade II listed former Roche Office, creating a strong sense of place through the use of a mix of building typologies. This includes a terrace house with a gable end to Broadwater Lane, before a taller art-deco inspired structure responds to the quality of the Roche Building, enabling a transition from the residential suburban surroundings to the denser consented development west of Broadwater Road. The massing within the Project Site has been moved west to create a more open quality between the existing residential housing and the buildings within the Project Site. This creates a sense of identity and differentiation within the Project Site. Height builds towards the railway line to the west and north, reflecting the transition between residential areas to the south and east to the historic industrial zone to the north.

8.5. Potential Environmental Impacts and Effects on Built Heritage and Townscape

Construction and demolition

8.5.1 Works involved during the demolition and construction phases can have visual effects that can affect the setting of nearby heritage assets, as well as the quality of the surrounding townscape and the visual amenity of people. These works usually involve the use of heavy machinery and tall cranes, the erection of other infrastructure needed for construction, such as scaffolding, hoarding, mobile cranes, site lighting, temporary offices and facilities, etc., as well as ground excavation and building of foundations, before the construction of the buildings themselves.

8.5.2 The assessment of the effects of demolition and construction is based on two aspects: their duration and the scale of the development being built.

8.5.3 The demolition and construction practices are seen together with the existing Project Site and other townscape features; therefore they are most likely to represent a relatively small or medium addition to townscape views. For the purpose of the assessment, their effects are more likely to be of an adverse nature and can vary from negligible or no change, to minor, moderate, and in some cases, major significance.

8.5.4 The effects are varied depending on the distance between the Project Site and the receptors and this applied both to residual effects of the prosed development and to cumulative effects. The closer the receptor, there is a higher possibility that the Project Site is more exposed and therefore the visibility of demolition and construction works is increased.

8.5.5 The following assessments are based on the distance between the receptors and the Project Site and are categorised into close, medium and long distances from the Project Site. The effects are applicable to heritage receptors (i.e. the character and appearance of conservation areas and the setting and importance of listed buildings), townscape receptors and visual receptors.

8.5.6 The likely effect of demolition and construction- related practices on closer townscape views where most infrastructure would be visible, would be short- term, reversible, of a minor to moderate significance and adverse in nature. This effect would apply to visual receptors experiencing these views, as well as to heritage and townscape receptors located in close proximity to the Project Site.

8.5.7 The likely effect on visual receptors further from the Project Site where cranes and the construction of some taller elements will be visible, would be short-term, reversible, of a minor significance and adverse in nature. This would apply to heritage and townscape receptors located at a medium and long distance from the Project Site.

8.5.8 The likely effect on long views (i.e. From Hatfield House and Hatfield House Park and Garden), where only tall cranes and the construction of top parts are likely to be visible, would be short-term, reversible, and of a negligible significance and adverse in nature.

Receptor	Duration	Permeant/Reversible	Impact	Direction of Impact
Close Receptors				
Shredded Wheat Factory, Grade II	Short Term	Reversible	Minor to moderate	Adverse
Former Roche Office, Grade II	Short Term	Reversible	Minor to moderate	Adverse
Welwyn Garden City Conservation Area	Short Term	Reversible	Minor to moderate	Adverse
Longcroft Lane Character Area J	Short Term	Reversible	Minor to moderate	Adverse
Industrial Zone Character Area k	Short Term	Reversible	Minor to moderate	Adverse
Broadwater Crescent Character Area N	Short Term	Reversible	Minor to moderate	Adverse
View 4 Parkfield	Short Term	Reversible	Minor to moderate	Adverse
View 5 Longcroft Lane	Short Term	Reversible	Minor to moderate	Adverse
View 9 Broadwater Road	Short Term	Reversible	Minor to moderate	Adverse
Medium to Distant Receptors				
Hatfield House, Grade I	Short Term	Reversible	Negligible	Adverse
Hatfield House Park and Garden, Grade I	Short Term	Reversible	Negligible	Adverse

Parkway Commercial Town Centre Character Area D	Short Term	Reversible	Minor	Adverse
Chequer Park Character Area H	Short Term	Reversible	Minor	Adverse
Peartree Modern Business Area Character Area M	Short Term	Reversible	Minor	Adverse
View 1 The Campus	Short Term	Reversible	Minor	Adverse
View 2 Howardsgate	Short Term	Reversible	Minor	Adverse
View 3 Church Road	Short Term	Reversible	Minor	Adverse
View 6 Corals Mead	Short Term	Reversible	Minor	Adverse
View 7 Railway Bridge	Short Term	Reversible	Minor	Adverse
View 8 Holwell Road	Short Term	Reversible	Minor	Adverse
View 10 Bridge Road	Short Term	Reversible	Minor	Adverse
Verified View 1 Parkfield	Short Term	Reversible	Minor	Adverse
Verified View 2 Longcroft Lane	Short Term	Reversible	Minor	Adverse

Table 8.7 Potential Environmental Impacts and Effects During the Construction and Demolition Phase

8.6. Additional Mitigation, Compensation and Enhancement Measures

8.6.1 According to industry best practice, a Construction Environmental Management Plan (CEMP) will be secured via a standard planning condition. The CEMP will set out the standards and procedures to be adhered to during demolition and construction, in order to manage the associated short-term environmental effects.

8.6.2 The mitigation of potential construction effects would follow industry best practice construction standards, such as the use of appropriate hoarding. Site lighting would be designed to minimise light pollution on the surroundings of the, using light sources of the minimum intensity required and ensuring that light is only use where needed.

Operation

Built Heritage Receptors

Shredded Wheat and Former Roche Office Buildings

8.6.3 Both the Shredded Wheat and Roche Products Factory Building are clearly visible from the Project Site and the Shredded Wheat Factory in particular, due to its height, possesses a landmark quality. The prominence of the Shredded Wheat silos specifically, are preserved within the Project.

8.6.4 The present quality of the Project Site has been found to have a similar landmark quality, making it significantly taller than the majority of the buildings within the industrial zone, save that of the remaining structures within the Shredded Wheat Factory complex. As such the Project Site as existing is considered to create the impression of a 'bookend', signalling both the termination of the industrial zone along Broadwater Road to the south as well as proximity to the railway line.

8.6.5 The retention of this sense of height within the Project and contrast within the surroundings is therefore seen to have a neutral impact on the setting and heritage importance of the Shredded Wheat Factory and Former Roche Office. The Project will retain the existing views of the Shredded Wheat Factory and Former Roche Office, whilst improving the backdrop of these views with a more responsive design, that reflects the architectural quality of the listed buildings. This includes the retention of the prominence of the silos across the Project Site.

Magnitude of Change

8.6.6 The Project will be visible from the listed buildings identified above and falls within their wider settings however the magnitude of change as a result of the project is considered to be **small** given the existing contrast outlined above and preservation of key views and landmark characters.

Residual Effect of the Project

8.6.7 The effect of the Project on this group of receptors, after considering the mitigation embedded in the design, is considered to be **minor** and of a **beneficial** nature, and not significant in EIA terms.

Cumulative Effect

8.6.8 The cumulative schemes that will interact with this receptor in combination with the Project are Former Shredded Wheat Factory, LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ; 29 Broadwater Road, LPA REF: 6/2019/3024/MAJ; 37 Broadwater Road, LPA REF: 6/2018/2387/MAJ and Accord House, 28 Bridge Road, LPA REF:6/2018/2472/MAJ. These are all located to the north of the Project Site and form part of the wider redevelopment of what was the historic industrial area. These consented schemes also retain the clear linearity of Broadwater Road and protect the landmark quality of the listed buildings. The magnitude of change is considered to remain at a small level (i.e. having only a small change in our ability to understand and appreciate the assets and their historical context, character and setting). The cumulative effect is therefore expected to remain **minor** and of a **beneficial** nature and not significant in EIA terms.

Welwyn Garden City Conservation Area

8.6.9 The present architectural quality of the buildings within the Project Site has been found to be indifferent. The negative impact of this indifferent quality is amplified, given the long-range views of the Project Site, including from within the conservation area to the west. The Project is considered to improve the quality of these existing views with a new building which reflects the considerable historical importance of the industrial zone within Welwyn Garden City. This area has historically supported an array of styles, with many buildings constructed by architectural and industrial designers of note. While the existing buildings on Project Site do not have this historic or architectural quality, there is a clear opportunity to improve the contribution of the Project Site to the surroundings and provide a beneficial impact on the wider setting and heritage importance of the Welwyn Garden City Conservation Area.

Magnitude of Change

The Project will be visible from the conservation area, seen in partial glimpsed views from the western boundary. However the magnitude of change as a result of the project is considered to be **small** given the existing glimpses of the Project Site as well as the removal of the Project Site itself beyond the conservation area boundary. Views along key routes through the conservation area such as along the Parkway will remain undisturbed. Care has also been

taken to create a sympathetic material pallet so that glimpsed views where seen will blend in with the character of the surrounding architecture.

Residual effect of the Project

8.6.10 The effect of the Project on this group of receptors, after considering the mitigation embedded in the design, is considered to be **minor** and of a **beneficial** nature, and not significant in EIA terms.

Cumulative Effect

8.6.11 The cumulative schemes that will interact with this receptor in combination with the Project are Former Shredded Wheat Factory, LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ; 29 Broadwater Road, LPA REF: 6/2019/3024/MAJ; 37 Broadwater Road, LPA REF: 6/2018/2387/MAJ and Accord House, 28 Bridge Road, LPA REF:6/2018/2472/MAJ. These are all located to the north of the Project Site and form part of the wider redevelopment of what was the historic industrial area. The magnitude of change is considered to remain at a small level (i.e. having only a small change in our ability to understand and appreciate the assets and their historical context, character and setting) given the substantial redevelopment of this area over time. As such the consented schemes and the Project should be viewed as an appropriate continuation of this shifting architectural context. The cumulative effect is therefore expected to remain **minor** and of a **beneficial** nature and not significant in EIA terms.

Hatfield House and Hatfield Park and Garden

8.6.12 It is acknowledged that long range views of the Project Site from Hatfield House and Hatfield House Park and Garden have been identified in previous applications (6/2018/0171/MAJ), these views were however not perceptible from accessible areas at the time of the Project Site visit (please see appended HTVIA for reproduced views). Due to the considerable distance from the Project Site to the listed building and park as well as the character of these existing views showing the wider development of Hatfield and Welwyn Garden City, the impact of the project upon these existing views and the setting and heritage importance of the listed building and registered park and garden is considered to be neutral. It is noted that the height of the Project does not exceed that of the existing structure, and the alignment of the Project Site on a north-south axis ensures that the massing of the project will be obliquely obscured in views from the south.

Magnitude of Change

8.6.13 The Project will be visible, seen in very distant, partial glimpsed views from the upper levels only of the house. While views over the house from within the parkland to the south were possible, the Project Site is not presently distinguishable. Therefore the magnitude of change as a result of the project is considered to be **negligible** given the existing glimpses of the Project Site and its surrounding built context which are also visible.

Residual effect of the Project

8.6.14 The effect of the Project on this group of receptors, after considering the mitigation embedded in the design, is considered to be **minor or negligible** and of a **neutral** nature, and not significant in EIA terms.

Cumulative Effect

8.6.15 The cumulative schemes that will interact with this receptor in combination with the Project are Former Shredded Wheat Factory, LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ; 29 Broadwater Road, LPA REF: 6/2019/3024/MAJ; 37 Broadwater Road, LPA REF: 6/2018/2387/MAJ and Accord House, 28 Bridge Road, LPA REF:6/2018/2472/MAJ. These are all located to the north of the Project Site and form part of the wider redevelopment of what was the historic industrial area. These developments will be seen with the project however the magnitude of change is considered to be **negligible** level given the historic redevelopment of this area over time, the appearance of these schemes within the visible wider urban area of Welwyn Garden City and extreme distance of these receptors from the Project Site. The cumulative effect is therefore expected to remain **minor or negligible** and of a **neutral** nature and not significant in EIA terms.

8.6.16 The Residual Effects of the Project are therefore as follows, set out in **Table 8.8** below.

Receptor	Sensitivity to Change	Magnitude of change	Residual Effect	Nature of Effect
Shredded Wheat Factory	Medium	Small	Minor	Beneficial
Former Roche Office Building	Medium	Small	Minor	Beneficial
Hatfield House	Very High	Negligible	Minor or Negligible	Neutral
Hatfield House Park and Garden	Very High	Negligible	Minor or Negligible	Neutral
Welwyn Garden City Conservation Area	Medium	Small	Minor	Beneficial

Table 8.8 Summary of Residual Effects upon Built Heritage Receptors.

Townscape and Visual Receptors

Townscape Character Areas

Magnitude of Change

8.6.17 The Project is considered to have no impact upon the currently enclosed townscape character areas located within the heart of the town centre to the west of the Project Site. It is noted that the town centre possesses a formal geometry and carefully orchestrated views north-south along the Parkway. Therefore through the location of the Project Site to the south east, the

current contribution of the Project Site in townscape terms has been found to be neutral or nil to the following character areas: D Parkway Commercial Town Centre, M Peartree Modern Business Area, The magnitude of change upon these areas is therefore considered to be **negligible** given a combination of distance, intervening development and a lack of substantive contribution of the Project Site in townscape terms.

8.6.18 The contribution of the Project Site to character areas H Chequer Park, J Longcroft Lane has been found to be negative due to the indifferent existing architectural quality of the Project Site and intervisibility in existing distant or partial views. The magnitude of change from these area is considered to be **small** given the existing distance and/or poor quality of the views from these areas filtered by vegetation or existing development.

8.6.19 The contribution of the Project Site to character areas K Industrial Zone and Broadwater Crescent is also negative however given the proximity to the Project Site and strong degree of intervisibility the magnitude of change within these areas is considered to be **medium**.

Residual Effect

8.6.20 While the Project will be visible in the existing glimpsed and views from the surrounding further afield character areas, it is considered the more responsive design of the Project which has sought to acknowledge the long range visibility of the Project Site will have a **minor and/or negligible** neutral balanced or beneficial impact upon these views and the character areas in turn. Similarly through a sensitive pallet of materials and domestic character, the Project is considered to improve the dramatic existing view points of the Project Site from the railway bridges, Broadwater Road as well as from Broadwater Crescent to the south. The existing contribution of the Project Site to these views and their associated character areas has been found to be negative, and the Project constitutes a significant improvement in townscape terms, resulting in **minor beneficial** impacts.

8.6.21 The Residual Effects of the Project are therefore as follows, set out in the **Table 8.8** below. None of these are seen to be significant effects in EIA terms.

Receptor	Sensitivity to Change	Magnitude of change	Residual Effect	Nature of Effect
D Parkway Commercial Town Centre	medium	negligible	Minor / Negligible	Neutral/Balanced
H Chequer Park	negligible	small	Negligible	Neutral/Balanced
J Longcroft Lane	medium	small	Minor	Beneficial
K Industrial Zone	low	medium	Minor	Beneficial
M Peartree Modern Business Area	low	negligible	Negligible	Neutral/Balanced
N Broadwater Crescent	low	medium	Minor	Beneficial

Table 8.8 Summary of Residual Effects upon Townscape Receptors.

8.7. Cumulative Development

8.7.1 The cumulative schemes that will interact with these receptors in combination with the Project are Former Shredded Wheat Factory, LPA REFS: 2015/0293, N6/2015/0294/PP, 6/2018/0171/MAJ; 29 Broadwater Road, LPA REF: 6/2019/3024/MAJ; 37 Broadwater Road, LPA REF: 6/2018/2387/MAJ and Accord House, 28 Bridge Road, LPA REF:6/2018/2472/MAJ. As noted above these are all located to the north of the Project Site and form part of the wider redevelopment of what was the historic industrial area. The Project Site is reflective of the wider character of this historic industrial area, in that it represents a contrast from the historic residential quality of the architecture within the conservation area to the west and is comprised of a relatively recently developed buildings as well as the remnants of industrial structures. The consented developments identified above also fall within this area of redevelopment outside of the historic town centre. The Project when seen together with these consented schemes can be understood to be a continuation of the existing architectural context to provide a unified sense of place in what was once the old industrial area of the town. The cumulative effect is therefore expected to remain unchanged from the effects identified above, continuing an existing sense of contrast.

Visual Receptors

8.7.2 The Project has been developed with close regard to the impact upon close and clear views of the Project Site, taking into account important viewing corridors along Broadwater Gardens and from the railway bridges to the north and south. These views, as represented by the selected view points and agreed with the Council, have the highest magnitude for change by virtue of the proximity as well as a relative lack of intervening development. It is however noted that all of these view points fall outside of conservation areas and take in the existing poor architectural quality of the Project Site. As such Views 6, 7, 9 and 10 (see Appendix 8.1) have the potential for a **medium** magnitude of change.

8.7.3 Within the more enclosed views within the Welwyn Garden City Conservation Area to the west and from the Pear Tree Conservation Area to the south east, the quality of the Project Site has been found to be not visible, with distance, topography and intervening development resulting in a low potential magnitude of change as a result of the project. As such Views 1, 2, 3 and 8 (see Appendix 8.1) have the potential for a **negligible** magnitude of change.

8.7.4 Visual receptors from within the Welwyn Garden City Conservation Area to the eastern boundary and in relative proximity to the Project Site include View 4 and 5 (see Appendix 8.1) from Longcroft lane and Parkfield respectively, which also comprise Verified Views 1 and 2 (see Appendix 8.1). These views show existing Project Site falling below the roofline of the suburban development along Longcroft Lane. The linear quality of the street creates a strong horizon line in views east, with semi-detached buildings and short terraces establishing clear groupings. Breaks between these groupings typically feature garages so that while the roofline drops there is not an open sight line free from development.

8.7.5 The Project Site is partially visible in these views, seen filtered by existing vegetation. The Project will be seen beyond this vegetation and development. Wirelines produced for the verified

views (see Appendix 8.1) also indicate the Project will continue to fall below the roofline of development along this road and be filtered by vegetation. The distance from the Project Site is such that while the Project will be visible, this visibility is only possible in the breaks between terraced groupings. The prominence of the houses on the street is retained as will be their legible grouping as well as the prominence of the street grain. Views 4 and 5, and verified views 1 and 2 are therefore found to have the potential for a **small** magnitude for change because of the Project.

Residual Effects

8.7.6 As with the Townscape character areas, the Project has sensitively responded to the surrounding views, rehabilitating the contribution of the Project Site which presently possesses an indifferent architectural character. The existing contribution of the Project Site to these views has been found to be negative, and the Project constitute a significant improvement in townscape terms providing a high quality residential development. The resulting residual effects are therefore **minor** or **negligible** and **neutral/balanced** or **beneficial** in impact.

8.7.7 The Residual Effects of the Project are therefore as follows, set out in the Table below.

Receptor	Sensitivity to Change	Magnitude of Change	Residual Effect	Nature of Effect
View 1 The Campus	Medium	Negligible	Minor or Negligible	Neutral/ Balanced
View 2 Howardsgate	Medium	Negligible	Minor or Negligible	Neutral/ Balanced
View 3 Church Road	Medium	Negligible	Minor or Negligible	Neutral/ Balanced
View 4 Parkfields	Medium	Small	Minor	Beneficial
View 5 Longcroft Lane	Medium	Small	Minor	Beneficial
View 6 Corals Mead	Low	Medium	Minor	Beneficial
View 7 Railway Bridge	Low	Medium	Minor	Beneficial
View 8 Holwell Road	Medium	Negligible	Minor or Negligible	Neutral/ Balanced
View 9 Broadwater Road	Low	Medium	Minor	Beneficial
View 10 Bridge Road	Low	Medium	Minor	Beneficial
Verified View 1 Parkfield	Medium	Small	Minor	Beneficial
Verified View 2 Longcroft Lane	Medium	Small	Minor	Beneficial

Existing Mitigation

8.7.8 As set out as paragraphs 8.2.4 and 9.3.1 mitigation has been embedded as part of the design process so that the resultant effects are not significant in EIA terms. No further mitigation is therefore required aside as set out during the construction and demolition phase.

8.8. Assessment Summary and Residual Impacts

8.7.9 The assessment has taken into account the effects on heritage receptors through an assessment of their importance and the contribution that their setting makes to this importance, as well as any change to their setting that would arise as a result of the Project. In terms of townscape and visual impacts, the effects on townscape receptors and visual receptors arising from changes to a number of views were assessed in separate sections. This assessment has drawn on the accompanying HTVIA report (see Appendix 8.1) which has provided survey photography, views and additional assessment.

8.7.10 The effects arising from the Project have also been assessed in light of the detailed designs and plans. The development of the design has been informed by Heritage and Townscape consultancy to mitigate any adverse effects throughout the design process. The proposed design was described and independently assessed for its effects on the immediate and wider townscape as well as any surrounding heritage assets with the potential to be impacted.

8.7.11 The project has been found to be sensitively designed, taking into consideration, and mitigating against, potential adverse effects on the setting of the neighbouring designated heritage receptors such as the Shredded Wheat Factory and Welwyn Garden City Conservation Area. Overall, the proposed design is considered to be of a high quality and beneficial to the surrounding townscape rehabilitating what is presently a poor-quality area in architectural, townscape and heritage terms.

Effects during demolition and construction

8.7.12 An assessment of the effects of the demolition and construction works of the Project found that the effects would be short-term and temporary in nature predominantly affecting areas located closer to the Project Site. In other words, the effect of demolition and construction works would range between Negligible and Minor to Moderate and of an Adverse nature, depending on their distance to the receptors.

Effects on heritage receptors

8.7.13 The potentially affected designated receptors surrounding the Project Site were identified and the importance of these receptors, including any contribution made by their setting, were also assessed. It was found that the effects on heritage receptors and their immediate settings ranged from Minor Beneficial to Minor or Negligible Neutral. None of these impacts were therefore considered significant in EIA terms and required no further mitigation. In addition, no adverse cumulative effects were found.

Effects on townscape receptors

8.7.14 The assessment of the potential effects of the Project on the wider and immediate townscape areas found to that the Project would have only Beneficial or Neutral/Balanced impacts and no adverse effects on townscape receptors in the surrounding context of the Project Site. Most of

them would be Negligible to Minor with regards to their significance. In addition, no adverse cumulative effects were found. None of these impacts were therefore considered significant in EIA terms and required no further mitigation.

Effects on visual receptors

8.7.15 The effects of the Project on the selected ten view points and two verified views were assessed. These effects are summarized in the table below. It was found that the Project would have some Negligible and mostly Minor effects in most views. All effects were found to be of either a Beneficial or Neutral/Balanced nature, with no adverse effects recorded. In addition, no adverse cumulative effects were found. None of these impacts were therefore considered significant in EIA terms and required no further mitigation.

Conclusion

8.7.16 With the exception of the effects during demolition and construction, which are temporary, the effects found in the assessment as a result of the Project are largely expected to be either neutral or beneficial for the surrounding heritage, townscape and visual receptors. Overall, this is in line with the effects anticipated confirming that the Project is acceptable in terms of its environmental effects with regards to townscape and heritage.

8.7.17 Effects of the Project are therefore as follows, set out in the table below.

Receptor	Sensitivity to Change	Magnitude of change	Residual Effect	Nature of Effect
Built Heritage				
Shredded Wheat Factory	Medium	Small	Minor	Beneficial
Former Roche Office Building	Medium	Small	Minor	Beneficial
Hatfield House	Very High	Negligible	Minor or Negligible	Neutral
Hatfield House Park and Garden	Very High	Negligible	Minor or Negligible	Neutral
Welwyn Garden City Conservation Area	Medium	Small	Minor	Beneficial
Townscape				
D Parkway Commercial Town Centre	medium	negligible	Minor / Negligible	Neutral /Balanced
H Chequer Park	negligible	small	Negligible	Neutral /Balanced
J Longcroft Lane	medium	small	Minor	Beneficial
K Industrial Zone	low	medium	Minor	Beneficial
M Peartree Modern Business Area	low	negligible	Negligible	Neutral /Balanced

N Broadwater Crescent	low	medium	Minor	Beneficial
Visual				
View 1 The Campus	Medium	Negligible	Minor or Negligible	Neutral /Balanced
View 2 Howardsgate	Medium	Negligible	Minor or Negligible	Neutral /Balanced
View 3 Church Road	Medium	Negligible	Minor or Negligible	Neutral /Balanced
View 4 Parkfields	Medium	Small	Minor	Beneficial
View 5 Longcroft Lane	Medium	Small	Minor	Beneficial
View 6 Corals Mead	Low	Medium	Minor	Beneficial
View 7 Railway Bridge	Low	Medium	Minor	Beneficial
View 8 Holwell Road	Medium	Negligible	Minor or Negligible	Neutral /Balanced
View 9 Broadwater Road	Low	Medium	Minor	Beneficial
View 10 Bridge Road	Low	Medium	Minor	Beneficial
Verified View 1 Parkfield	Medium	Small	Minor	Beneficial
Verified View 2 Longcroft Lane	Medium	Small	Minor	Beneficial

Table 8.8 Summary of Residual Effects upon Built Heritage Receptors.

9. Summary of Residual Effects

Environmental Effect	Type of Receptor	Nature of Impact	Sensitivity of Receptor	Significance	Mitigation	Significance of Effect (Post Mitigation	Additional Mitigation	Residual Significance of Effect
Construction								
Chapter 6: Air Quality								
Dust and PM from demolition and construction activities	Existing residential properties	Dust soiling and impacts upon human-health	High	N/A	Package of mitigation measures within CEMP	Not Significant	None	Not Significant
NOx and PM emissions from NRMM	Existing residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
NOx and PM emissions from construction traffic	Existing residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
Chapter 7: Transport								
Severance	None	None	n/a	Negligible	None	Negligible	None	Negligible
Driver Delay	None	None	n/a	Negligible	None	Negligible	None	Negligible
Pedestrian Delay	None	None	n/a	Negligible	None	Negligible	None	Negligible
Pedestrian Amenity	None	None	n/a	Negligible	None	Negligible	None	Negligible
Accidents and Safety	None	None	n/a	Negligible	None	Negligible	None	Negligible

Chapter 8: A summary of residual effects relating to HTVIA is included within Chapter 8 of the main body of text.								
Operational								
Chapter 6: Air Quality								
NOx and PM emissions from changes in road traffic	Existing and proposed residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
NOx and PM emissions from car parking within Project Site	Existing and proposed residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
NOx and PM emissions from combustion plant within Project Site	Existing and proposed residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
Changes in NO_2 and PM concentrations due to altered streetscape	Existing and proposed residential properties	Impacts upon human-health	High	Not Significant	None	Not Significant	None	Not Significant
Chapter 7: Transport								
Severance	None	None	n/a	Negligible	None	Negligible	None	Negligible
Driver Delay	None	None	n/a	Negligible	None	Negligible	None	Negligible
Pedestrian Delay	None	None	n/a	Negligible	None	Negligible	None	Negligible
Pedestrian Amenity	None	None	n/a	Negligible	None	Negligible	None	Negligible
Accidents and Safety	None	None	n/a	Negligible	None	Negligible	None	Negligible
Chapter 8: A summary of residual effects relating to HTVIA is included within Chapter 8 of the main body of text.								

hghconsulting.com