

Wheat Quarter Ltd

**Former Shredded Wheat Factory (North Side),
Welwyn Garden City**

**Environmental Statement: Volume 3,
Non-Technical Summary**





Wheat Quarter Ltd

Former Shredded Wheat Factory (North Side), Welwyn Garden City

Environmental Statement: Volume 3, Non-Technical Summary

Revision	Date	Notes	Author	Checked	Approved
2.0	10-06-21	E2785	Various	A Banks	Dr N Davey

**Entran Limited
2nd and 3rd Floors
Northgate House
Upper Borough Walls
Bath
BA1 1RG**

**T: 0117 937 4077
www.entranltd.co.uk**



-

CONTENTS

PAGE

1	Introduction	1
2	The Site and Surroundings	2
3	Environmental Impact Assessment Methodology	5
4	Alternatives and Design Evolution	11
5	The Proposed Development	15
6	Development Programme and Construction	22
7	Transport and Access	37
8	Air Quality	41
9	Wind Microclimate	43
10	Noise and Vibration	45
11	Landscape and Visual Amenity	47
12	Ecology and Nature Conservation	51
13	Water Quality, Hydrology & Flood Risk	53
14	Soils, geology and contaminated land	55
15	Cultural Heritage	57
16	Socio-Economics	59
17	Climate Change and Greenhouse gases	62
18	Waste Management	65



1 INTRODUCTION

1.1 This document provides a Non-Technical Summary of the findings of the Environmental Statement (ES), which has been prepared on behalf of Wheat Quarter Ltd to accompany a planning application for a proposed development at the North Side site of the former Shredded Wheat Factory, Welwyn Garden City, (hereafter referred to as the 'Site').

1.2 The ES identifies and records the results of assessments of the construction and operational phases of the Proposed Development and considers the potentially significant environmental effects the Proposed Development will create. The ES suggests a range of measures to mitigate the identified effects and, where opportunities exist, to introduce improvement measures.

1.3 This report provides a Non-Technical Summary of the ES findings.

2 THE SITE AND SURROUNDINGS

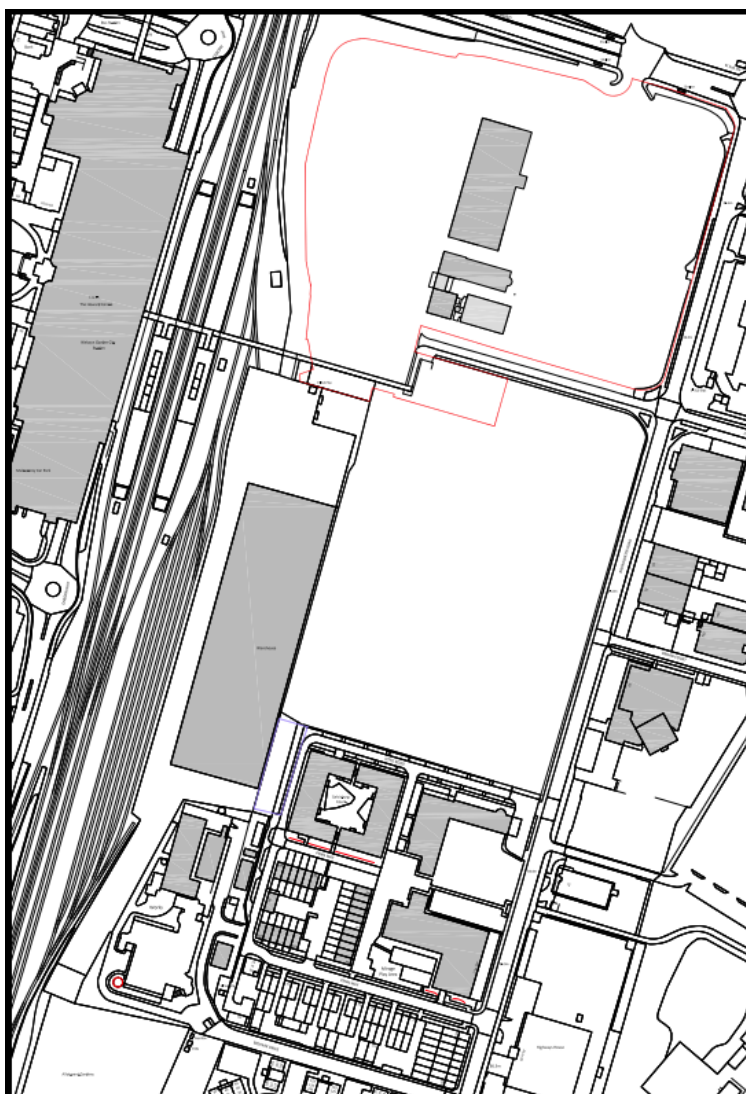
2.1 The Site is located to the East of Welwyn Garden City town centre in Hertfordshire and falls within the administrative area of Welwyn Hatfield Borough Council (WHBC).

2.2 The Site measures approximately 4.5 ha in size and forms the northern portion of the wider former Shredded Wheat Factory, Broadwater Road in Welwyn Garden City.

2.3 It is bound to the north by Bridge Road (B195), to the east by Broadwater Road (A1000), to the west by the East Coast Mainline railway and to the south by Hydeway.

2.4 The planning application boundary is shown in Figure 2.1.

Figure 2.1: Site Boundary





2.5 The Site is redundant and the vast majority has been vacant since 2008. It currently comprises buildings associated with the former Shredded Wheat cereal production factory and cleared areas where former buildings have been demolished.

2.6 The Site is in a sustainable location, well connected to public transport and community facilities / amenities located in Welwyn Garden City town centre to the west. Welwyn Garden City train station is located to the west of the Site and accessed from the Site via the pedestrian footbridge. It serves the East Coast Mainline rail services with frequent services to Stevenage (10 minutes), London Kings Cross (23 minutes), Moorgate (47 minutes) and Cambridge (57 minutes). In addition, the Site benefits from a well-connected bus network which provides services to the wider area. The nearest bus stop is located on Broadwater Road.

2.7 The surrounding area comprises a variety of uses and building types, including low level industrial and commercial / business uses to the north and east, and Welwyn Garden City train station and town centre to the west. To the south is the Shredded Wheat South Side site, construction of phase one of this development has commenced.

2.8 The Site is not located within a Conservation Area, however, it is within close proximity to the Welwyn Garden City Conservation Area, separated by the East Coast Mainline railway. The Welwyn Garden City Conservation Area is located approximately 40m west of the Site.

2.9 The Site is not located within an Area of Archaeological Significance. However, the Site does include the Grade II Listed Nabisco Shredded Wheat Factory and a number of associated factory buildings within its curtilage. The Grade II Listed Office Block of the Roche Products Factory is located to the south of the Site, beyond the South Side site. The Grade I listed Hatfield House and Garden, a Registered Park and Garden is located approximately 4km to the south of the Site.

2.10 The Site is not covered by any statutory or non-statutory designated ecological sites. The Sherradspark Wood Local Nature Reserve is located approximately 875m to the northwest of the Site.

2.11 The Site lies within an area defined by the Environment Agency as Flood Zone 1 (<0.1% risk of flooding in any one year).

2.12 The Site is not located within a designated Air Quality Management Area.



2.13 With the exception of the listed buildings that are to remain, the demolition of the existing buildings on-site has been completed.



3 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

3.1 This ES is submitted as a requirement of the EIA Regulations. The key requirements of the EIA Regulations with regards to the assessment methodology are as follows:

- Provision of a description of the relevant aspects of the current state of the environment (baseline scenario) and future baseline scenario;
- Description of the likely significant effects of the development on the environment resulting from:
 - a) The construction of the development, including where relevant demolition works;
 - b) The use of natural resources;
 - c) The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and disposal and recovery of waste;
 - d) The risks to human health, cultural heritage or the environment due to accidents or disasters;
 - e) The cumulation of effects with other existing or approved projects; and
 - f) The impact of the project on climate and the vulnerability of the project to climate change.
- Description of methods used to assess the significant effects and a description of the measures envisaged to avoid, prevent, reduce or offset identified significant adverse effects on the environment;
- Description of the expected significant adverse effects of the development on the environment from the vulnerability of the development to risks of major accidents or disasters where relevant.

3.2 The main objectives of the ES comprise:

- Establishing the existing baseline;
- Determining environmental conditions. This task was divided into two phases:
 - i) collection and review of existing data relating to the Site, including a review of information held by statutory and non-statutory consultees; and
 - ii) the enhancement of existing data, where necessary with information collected through site investigation and surveys.



- identifying, predicting and assessing the significance of the environmental impacts including beneficial, adverse, direct, indirect, long term, medium term, short term, temporary, permanent and cumulative impacts which could be expected as a result of the development proposals on those environmental issues that were considered to be potentially significant during the scoping process; and
- determining mitigation and management measures, which would be required in order to prevent, reduce or remedy any significant adverse effects along with consideration of enhancement measures which could be implemented to ensure positive benefits as a result of these proposals.

CONSULTATION

3.3 Pre-application consultation is an essential part of the EIA process and has been used to:

- identify available baseline data and the need for any further field surveys; and
- identify the main environmental issues that need to be assessed in detail.

3.4 Both statutory and non-statutory consultees have been consulted as part of the EIA. In addition, the Applicant is committed to consultation with local interested residents and parties regarding the development proposals.

3.5 Before and during the Outline Application for the wider development (Planning Reference 6/2018/0171/MAJ), detailed consultation was undertaken with local residents, key stakeholders and Welwyn Hatfield Borough Council (WHBC) and Hertfordshire County Council (HCC).

3.6 Since the approval of the initial scheme, further pre-application meetings have been undertaken with WHBC and Peartree Ward members.

SCOPING THE EIA

3.7 The purpose of an EIA scoping exercise is to ensure that all relevant environmental issues with respect to the Proposed Development are identified from the outset and to confirm that the EIA process would conform to the requirements of the EIA Regulations.

3.8 Following completion of the scoping process, a scoping report was issued to WHBC. The scoping report detailed the findings of the scoping assessment and set out the proposed



methodology for those technical areas deemed potentially likely to experience a significant effect as a result of the Proposed Development.

3.9 The Scoping Opinion from WHBC was received in November 2020 which has informed the scope of the EIA. A copy of the Scoping Opinion is included in **Volume 2, Appendix 3.1** of this ES.

PROJECT TEAM

3.10 This ES has been completed by a team of specialist consultants with suitable qualifications as illustrated in Table 3.1 below. Further details of the qualifications and experience of the consultants undertaking the technical assessments are included in the statement of competence in **ES Volume 2, Appendix 3.2:**

Table 3.1: Consultant Team

Section	Consultant
Chapters 1 to 6	Entran Ltd
Chapter 7: Transport and Access	Entran Ltd
Chapter 8: Air Quality	Entran Ltd
Chapter 9: Wind Analysis and Pedestrian Comfort	Urban Microclimate Ltd
Chapter 10: Noise and Vibration	Entran Ltd
Chapter 11: Townscape and Visual Impacts	Bradley Murphy Design Ltd
Chapter 12: Ecology and Nature Conservation	Bradley Murphy Design Ltd
Chapter 13: Water Quality, Hydrology and Flood Risk	RMA
Chapter 14: Soils, Geology and Contaminated Land	EAME
Chapter 15: Cultural Heritage	KM Heritage
Chapter 16: Socio-Economics and Human Health	Greengage
Chapter 17: Climate Change	Greengage
Chapter 18: Waste	EAME



CUMULATIVE EFFECTS AND EFFECTS INTERACTIONS

3.11 Cumulative impacts from proposed or committed developments in the vicinity of the Proposed Development have been considered within each of the technical chapters. The proposed or committed schemes considered are identified in Table 3.2.

Table 3.2: Proposed or Committed Developments

Site Name	Distance from the Site (km)	Location	Description
South Side site (Extant Planning Application)	Adjacent to Site (south)	524075, 212750	Residential development
South Side site (Revised Development)	Adjacent to Site (south)	524075, 212750	Residential development
Rank Xerox Ltd, Bessemer Road, Welwyn Garden City, AL7 1HE	375m north of Site	524335, 231475	Various applications of office to residential use. Details available on Welwyn Hatfield Borough Council online planning portal.
Pall Mall Distribution Site	Adjacent to Site (west)		Part of the Broadwater Road West allocation site. Mixed use provision.
Mercury House, 1 Broadwater Road, Welwyn Garden City, AL7 3BQ	Adjacent to Site (east)	524330, 212980	Change of use from B1 office to C3 residential, construction of roof and side extensions, creation of 43 residential apartments and cycle storage compound. Permission Granted. Details available on Welwyn Hatfield Borough Council online planning portal 6/2016/2624/FULL
Former Argos Direct Distribution Depot, 1 Bessemer Road, Welwyn Garden City, AL7 1HF	Adjacent to Site (north)	524260, 213120	Erection of 2 industrial / distribution buildings comprising of commercial uses. Permission Granted. Details available on Welwyn Hatfield Borough Council online planning portal 6/2015/1957/MAJ
Land East of Bessemer Road	Adjacent to Site (northeast)	524450, 213050 (approx.)	Regeneration of the Site to provide a new retail Aldi foodstore with associated parking, servicing and landscaping. Permission Granted. Details available on Welwyn Hatfield Borough Council online planning portal 6/2016/1058/FULL.
51 Bridge Road East Welwyn Garden City AL7 1JR	400m northeast of the site	524584, 212938	Erection of 54 residential flats consisting of (19x 1-bed and 35 2-bed), with associated access, car parking, amenity space and landscaping involving the demolition of existing office building (B1). Ref: 6/2017/2104/MAJ
Biopark Broadwater Road Welwyn Garden City AL7	120m south of the Site	523971, 212508	Demolition of existing buildings and construction of 289 residential units (Use Class C3) and community hub



3AX			(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. Ref: 6/2020/3420/MAJ
Accord House 28 Bridge Road East Welwyn Garden City AL7 1HX		524364, 212967	Removal of roof and addition of three new floors of residential accommodation comprising 24 x 1 bed flats and 1 x 2 bed flat. Details available on Welwyn Hatfield Borough Council online planning portal 6/2018/2472/MAJ
73 Bridge Road East, Welwyn Garden City, AL7 1UT		524760, 212826	Erection of two new buildings comprising 111 residential apartments. Details available on Welwyn Hatfield Borough Council online planning portal 6/2020/2268/MAJ
37 Broadwater Road, Welwyn Garden City, AL7		524210, 212550	Construction of 22 x 2 beds and 2 x 3 bed apartments with 26 car parking spaces. Details available on Welwyn Hatfield Borough Council online planning portal 6/2018/2287/MAJ
Former Roche Building, Broadwater Road, Welwyn Garden City, Hertfordshire, AL7 3AY		524098, 212527	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 Details available on Welwyn Hatfield Borough Council online planning portal N6/2010/1776/MA Change of use of former Roche Products Factory (Class B offices, research and manufacturing) to provide 34 residential units (Class C3) across basement, ground and first to third floors, with associated external alterations including excavation to the rear lightwell of southern elevation, additional and altered fenestration to the northern and southern elevations, creation of additional car parking and associated landscaping, together with internal alterations including the subdivision and reconfiguration of floorspace, the introduction of 5 new spiral staircases and provision of servicing within the building. Details available on Welwyn Hatfield Borough Council online



			planning portal 6/2016/1882/MA
29 Broadwater Road Welwyn Garden City AL7 3BQ		524248, 212650	Demolition of office building and erection of 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. Details available on Welwyn Hatfield Borough Council online planning portal 6/2019/3024/MAJ

3.12 The extant planning permission allows redevelopment of the South Side site. This planning permission has been implemented through the start of the works for Phase One South Side site works.

3.13 A revised planning application for Phases Two and Three of the South Side site is currently under consideration by WHDC. Where possible both the development allowed under the extant planning permission and the revised application for Phases Two and Three of the South Side site are considered as committed developments with regards to cumulative effects.

3.14 Consideration has also been given to the effects arising from the interaction of impacts on different environmental topic areas arising from the Proposed Development. Where relevant, the interactions are discussed within the Technical Chapters.

4 ALTERNATIVES AND DESIGN EVOLUTION

INTRODUCTION

4.1 This chapter sets out the need for the Proposed Development and the reasonable alternatives considered by the Applicant. The EIA Regulations (Ref 1.1) states that an ES should include:

“a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.”

4.2 The following sections describe the reasonable alternatives considered by the Applicant in addition to the Proposed Development. Consideration has also been given to and commentary is provided on any alternatives or options considered by the Applicant as follows:

- The ‘No Development’ alternative;
- Alternative Sites; and
- Alternative Designs and Layouts.

‘NO DEVELOPMENT’ ALTERNATIVE

4.3 The Site has an extant consent allowing development of the Site which would be implemented if planning consent is not achieved for the current proposed masterplan. A ‘No Development’ option is therefore not considered.

ALTERNATIVE SITES

4.4 The Applicant has control of the Site and it is available for development. The Proposed Development is specific to the Site and as the Applicant has control of the land, other sites in the immediate vicinity have not been considered.

ALTERNATIVE DESIGNS AND LAYOUTS

4.5 The current Proposed Development has evolved over a number of design iterations, responding to local authority planning and development aspirations, public engagement and taking account of the Applicant's development objectives, design aspirations and prevailing environmental constraints. The evolution of the Development has therefore responded to a variety of design and environmental issues and the resultant proposals are considered to offer the most advantageous design solution.

4.6 The wider site (including the South Side site) has a consent for:

'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 erection of a civic building comprising 494 m² of health (Use Class D1), 494 m² of community use (Use Class D1), 1,232 m² of office (Use Class B1) and 646 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 5,096 m² of flexible business floorspace (Use Class B1), 265 m² Combined Heat and Power (Sui Generis), 2,494 m² International Art Centre (Use Class D1), 1,226 m² Gymnasium (Use Class D2), 1,576 m² of restaurant / coffee shop / bar (Use Class A1/A3/A4/A5), Creche / Day Nursery of 644 m² as well as a Network Rail TOC Building of 364 m²; plus associated car parking, access, landscaping, public art and other supporting infrastructure.'

4.7 This consent was granted in February 2019 and remains extant. The application was made in full, the planning reference is Ref: 6/2018/0171/MAJ. This planning permission has been implemented following the start of works on the Phase One South Side site.

4.8 Prior to this the wider site (including the South Side) also obtained a consent for the development of an alternative scheme, however this consented scheme has not been implemented and the permission has since expired. The development was not considered to make best use of this land as required by local and national planning policy.

4.9 This previously consented scheme comprised the following:

- New build and change of use to include up to 850 dwellings, workspace, a healthcare facility, a hotel, class A1, A3 and A4 units and a community building;
- The demolition of non-original silos and factory and the refurbishment and change of use of the original silos, Production Building, Grain Store and Boiler House;

- The provision of landscaping to include a linear park, a Multi-Use Games Area (MUGA), allotments, green walls and a neighbourhood square; and
- Highway works, to include the widening of footways and the provision of cycleways to Broadwater Road and Bridge Road, together with works to Hydeway and the erection of a new footbridge from Bridge Road leading directly into the scheme.

4.10 This outline planning consent (Ref: N6/2015/0294/PP) was granted on 18th August 2017, together with an associated Listed Building Consent (N6/2015/0293/LB) and planning permission for footbridge improvements (6/2016/0457/FULL).

4.11 The design of the Proposed Development has evolved from the consented schemes. The revised design retains the garden city principles which underpinned the design approach for the consented scheme and the building footprints and landscape design depart as little as possible from the consented scheme. The Proposed Development, however, differs materially from the consented scheme by increasing the number of dwellings and significantly increasing the diversity of residential use types by introducing a significant increase in C2 class as well as a Private Rented Sector (PRS) operator. In addition, the regeneration strategy for the community / commercial centre of the Site, where the listed former factory buildings sit, has been developed and refined.

4.12 The Proposed Development builds on the knowledge accumulated for previous proposals, yet its design is inspired by new ideas and objectives as well as by previously established principles:

- To transform the Shredded Wheat Factory site into a vibrant new destination with a distinctive character: The Wheat Quarter;
- To restore and re-purpose the original 1920's factory buildings;
- To create beautiful, durable and useful buildings within an enjoyable setting;
- To provide a substantial amount of new homes in a range of sizes and increased diversification of the end user demographic;
- To create public spaces that are well-connected, safe, inclusive and enjoyable;
- To create places with quality and character, drawing primarily on the prominent location and industrial heritage of the Site (hardscapes, mixed use, civic space) and on the potential for amenity provision (landscapes, biodiversity, environmental improvements);
- To create beautiful and enjoyable new landscapes, including new sensory gardens designed especially for disabled people;

-
- To improve the quality, connectivity and accessibility of existing routes and infrastructure, with a focus on east-west routes and connections to the town centre and surrounding areas – including the pedestrian bridge over the railway;
 - To benefit the local community by accommodating activities and services such as employment space, health and fitness and community services;
 - To set out a vision for an arts centre and museum, investing in public art to be exhibited – indoors and outdoors – for the enjoyment of all;

4.13 The final layout of the Proposed Development is identified in Chapter 5 and **ES Volume 2, Appendix 5**.

5 THE PROPOSED DEVELOPMENT

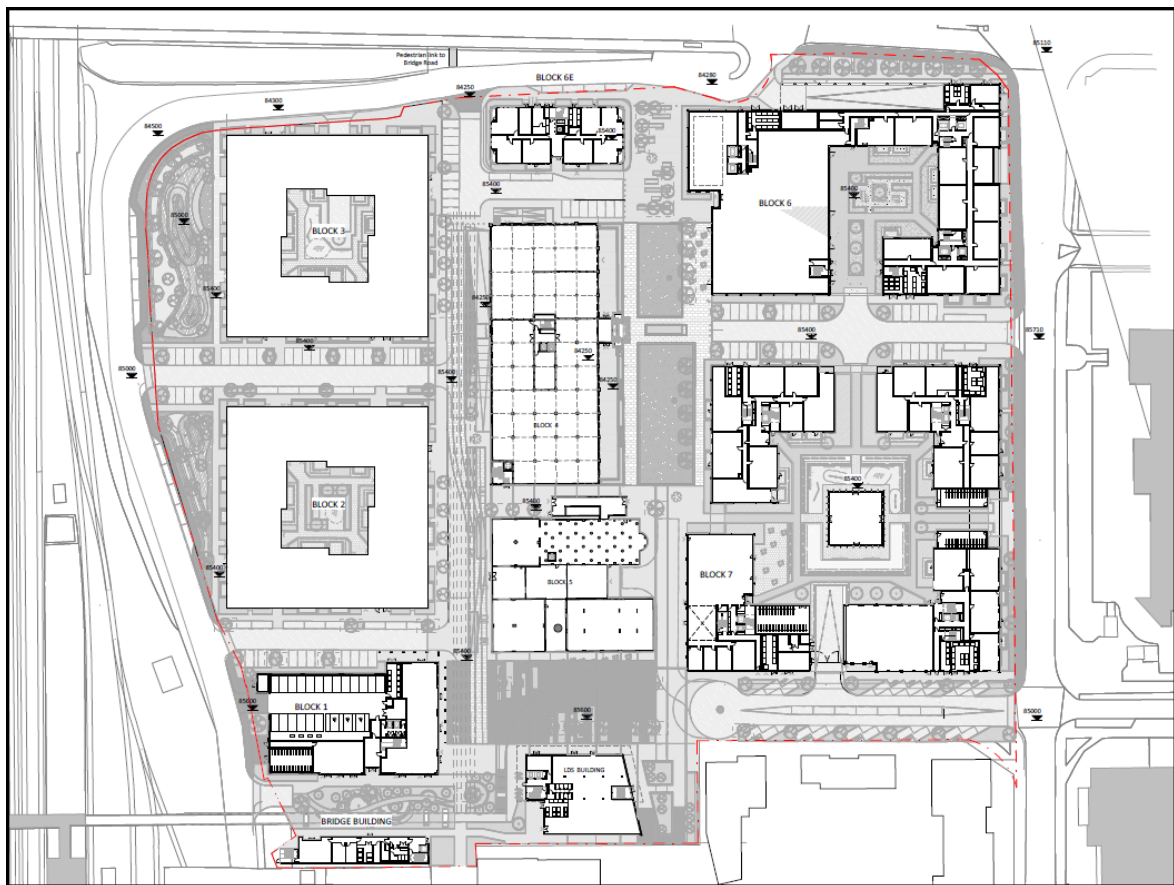
5.1 The Proposed Development comprises a site with an area of approximately 4.5 ha.

5.2 The planning application is hybrid and comprises the following:

- *Detailed Planning Application for 399 Private Rented Sector (PRS) dwellings and 153 (Class C3), 250 units of residential care accommodation for the elderly (Use Class C2) with associated communal facilities, 15247m² of community and commercial hub comprising (Use Classes E and F1) with associated cycling hub, car parking, access, landscaping, public art and other supporting infrastructure;*
- *Outline Planning Application for 418 dwellings (Class C3) with all matters reserved except access.*

5.3 The proposed site layout is presented in Figure 5.1.

Figure 5.1: Proposed Site Layout



5.4 The masterplan aims to provide legible spaces and enhance the connectivity throughout the Site, while supporting a sense of community.

Character and Appearance

5.5 The Site can be broadly split into three character zones with the former Shredded Wheat building structures acting as a central spine. At the southern end of the Site is Goodman Square and the Civic Buildings. At the northern end of the Site, small residential buildings are proposed. To the east of the former Shredded Wheat Production Hall building are two permitter residential blocks. Direct views of the former Shredded Wheat Production Hall building will be retained from both Bridge Road and Broadwater Road. The residential blocks will surround semi-private amenity space areas.

5.6 The residential element of the proposals comprise simple layouts and repetition of a relatively small number of different dwelling types to ensure the viability of the scheme. The design provides variation and contrast through the use of different materials, fenestration patterns and façade details.

5.7 The former Shredded Wheat Production Hall will provide commercial, employment and leisure uses. The former Boiler House and Grain Silos will be converted to provide an Air & Museum Hub with multi-disciplinary indoor and outdoor space and a bar on the top floor of the silos.

5.8 The Civic Building will be located on the most prominent location on Goodman Square opposite the former factory buildings. It is designed as an elegant and simple dark glass block, clad with an irregular grid of projecting metal fins. The proposed design of this building aims to provide an elegant, contemporary and powerful entrance to the new quarter. The distinctive form and materials will contrast with the adjacent buildings and are intended to complement the building's setting.

5.9 The Bridge Building will be located adjacent to the pedestrian footbridge which gives access to Welwyn Garden City train station and the town centre. This building will provide Commercial, Civic and Leisure uses and the Cycle Hub.

Scale and Massing

5.10 The height of buildings across the Site will range from four to 10 storeys, the taller buildings will be located around the boundary of the Site, with the lower buildings located internally

5.11 Figures 5.2 illustrates the proposed building heights within the Site.

Figure 5.2: Building Heights



Density

5.12 The residential element of the Proposed Development will have an overall density of 257 dwellings per hectare.

Quantum of Development

5.13 Table 5.1 identifies the quantity of the land proposed for the mixed uses to be provided by the Proposed Development.

Table 5.1: Land Budget Summary

	Land Budget Summary
Site Area	4.5 hectares
Residential Element	
Density	257 dwellings per hectare
Total no of dwellings (Use Class C3)	970
Total no of dwellings (Use Class C2)	250 (residential care homes for the elderly)
Commercial Element	
Community and Commercial Hub (Use Classes E and F1)	15247 m ²

Commercial Area

5.14 The Civic Building will be a six storey building to accommodate the community uses, offices and a restaurant or coffee shop and will be located on the most prominent location on Goodman Square opposite the former factory buildings.

5.15 The Production House, the primary factory building, is to be converted for commercial, employment and leisure uses. It will include a central core which facilitates flexible division of the building into several uses both laterally as well as vertically.

5.16 An Art / Museum Hub will be provided in the former Boiler House and Grain House. These will include a multidisciplinary indoor and outdoor space. The Boiler House and Grain House are listed buildings. The silos will be repaired and restored with the ground floor cleared for art installations and museum exhibitions. A new restaurant / bar will be provided at the top of the silos.

Residential Uses

5.17 The residential component of the masterplan forms a significant part of the development proposals and will provide up to 970 new homes comprising apartments of different sizes and tenures and 250 residential care community homes.



5.18 All residential dwellings will be flats, however different types of tenure will be provided and all will include private outdoor amenity spaces in a variety of types; gardens, recessed and projecting balconies and roof terraces.

5.19 The proposals include a total of 1,220 residential dwellings of which approximately 50% are dual aspect units, 38% are single aspect units and 12% are single aspect north facing units.

Access and Parking

5.20 Access to the Site for road vehicles will be via access points off Broadwater Road and Bridge Road as illustrated in Figure 5.3. Car movements have been limited to the periphery of the Site to ensure that as much as possible of the areas used by pedestrians are free from car traffic. A designated taxi pick up and drop off point and queuing facility for 5 taxis has been located on Hydeway. A turning circle for all vehicles entering Hydeway has been located at the western end of the road, adjacent to Goodman Square. Car and taxi access into the square will be prevented by means of a set of drop down bollards, which will only afford access to refuse, emergency and delivery vehicles.

Figure 5.3: Vehicular Access



5.21 Car parking will be largely located within undercroft or basement areas supplemented by a small amount of on-street car parking spaces. Vehicular access beyond the on-street parking spaces will be prohibited through the landscaping design to ensure vehicles are not able to pass into the defined publicly accessible spaces.

5.22 The scheme provides a network of streets and publicly accessible spaces designed to allow easy access. New connections have been created and the accessibility of existing routes have been improved. Pedestrian crossing points along new roads and streets will either provide level access or dropped kerbs.

5.23 On-street cycle parking will be provided in the main public spaces around Goodman Square and the railway footbridge. There is also a new cycle hub proposed adjacent to the footbridge. Safe and secure private cycle storage will be provided within each residential block.



5.24 Delivery vehicles serving the non-residential areas will enter via two access points, one off Bridge Road and the other off Hydeway.

5.25 It is proposed that a centralised management system will be implemented for the collection of both domestic and commercial refuse and recycling. As with car movements, it is proposed that refuse and recycling lorry movements are limited to the periphery of the Site.

Sustainable Urban Drainage System

5.26 A Sustainable Urban Drainage System (SUDS) has been prepared for the Proposed Development which has been designed to accommodate a 1 in 100 year rainfall event including a 40% allowance for climate change. The Site has been divided into six sub-catchment areas and each area has a separate proposed discharge point to Thames Water surface water sewer. Further details of the proposed SUDS are provided in Appendix E of the Flood Risk and Drainage Strategy which is included as **Volume 2, Appendix 13.3** of this ES.

6 DEVELOPMENT PROGRAMME AND CONSTRUCTION

INTRODUCTION

6.1 This chapter describes the anticipated programme of development works and the key activities that would be undertaken on the Site during the construction phase of the project. It identifies, in general terms, the potential effects associated with construction activities and outlines proposals for their mitigation. Detailed consideration of construction-related environmental effects upon the various technical topics assessed, together with their associated mitigation measures, are provided in each of the technical assessment chapters of this ES.

6.2 It is proposed that a Construction Environmental Management Plan (CEMP) would be prepared and implemented for each construction phase of the Proposed Development. This would be discussed and agreed with WHBC prior to the commencement of works at the Site. An outline of the content of the CEMP is provided in this chapter.

6.3 Planning for construction is necessarily broad at this stage and may be subject to modification. For example, specific construction activities could vary in frequency depending upon the particular stage of works. Consequently, where uncertainty exists, the assessment has assumed a 'worst-case' situation. It is considered, however, that sufficient information is available at this stage to enable the likely significant environmental effects relating to the construction works to be identified and their significance assessed.

PROGRAMME OF WORKS

6.4 The construction period is anticipated to be approximately four years to complete the Proposed Development in its entirety.

DESCRIPTION OF THE WORKS

6.5 The proposed construction works can be divided into the following main stages:

- Enabling works;
- Site preparation;
- Construction of the development; and
- Removal of remaining construction elements.



Enabling Works

6.6 Enabling works will be undertaken prior to the start of the main construction works. The extent of these works would include:

- Establishment of site project offices and construction compound including car designated parking areas for contractors;
- Isolation or diversion of utility services impinging upon excavation areas;
- Provision of temporary electrical supplies and other required services for the duration of the construction works; and
- Erection of site hoardings including provision of a site security system.

Site Preparation

6.7 All existing non-critical infrastructure will be removed. The enabling works would entail the decommissioning and removal of any associated structures and communication infrastructure in all areas within the Site boundary. The works will include the use of heavy plant, with the potential for on-site material selection, dependant on site establishment and space to facilitate necessary plant. All works will be strictly managed to ensure that vehicle movement and dust are controlled and kept to a minimum. Further details on the management of dust are included in Chapter 8: Air Quality.

6.8 Site preparation works will also involve the breaking out of any hardstanding material, crushing and screening to produce stock piles of aggregate hardcore materials for use within the sub-base and foundation structures of the new buildings and roadways.

6.9 All live utilities and any live drainage would be capped off or diverted before any excavation works commence. A method statement will be produced outlining the process for identifying and disconnecting existing services at the Site.

6.10 Once the temporary works are in place, any groundworks or earthmoving would proceed. All material will be re-used on site where possible, or otherwise transported off-site where reuse is not possible.

Construction of the Proposed Development

6.11 This phase will include the construction of the access roads within the Proposed Development.

6.12 The Site would require new mains water, gas, electricity and IT/telephone connections. Statutory services will be brought into the Site as and when the programme dictates, although the trenching works will be carried out alongside the substructure work.

6.13 The operation of construction vehicles and general construction activities may give rise to the potential for surface runoff to become contaminated with hydrocarbons, silt or other construction materials. This may in turn lead to a contamination event should site drainage be allowed to enter watercourses. Excavations may require dewatering (of accumulated rainfall or runoff) during construction. In such circumstances, it will be important to ensure that the quality of this water is sufficiently high to allow discharge to an appropriate point. Further details on drainage are provided in Chapter 13: Water Quality, Hydrology and Flood Risk.

Removal of Remaining Construction Elements

6.14 This last phase will be undertaken at the end of the main construction works or where the construction has progressed to a stage where it can be undertaken at an earlier time. The extent of these works would include:

- Removal of site project offices and construction compound;
- Decommissioning of temporary electrical supplies and other required services utilised for the construction works; and
- Removal of site hoardings and site security system.

Hours of Work

6.15 It is proposed that hours of work during the construction phase would be as follows:

- 0700-1900hrs on weekdays;
- 0700-1300hrs on Saturdays; and
- No working on Sundays or bank holidays.



6.16 These proposed hours would be agreed with the Local Authority Planning department prior to commencement of the works. Special working outside these hours, such as heavy plant activities and crane and equipment assembly, would be kept to a minimum and would be subject to prior agreement with reasonable notice by the Local Authority's Environmental Health Officer (EHO).

6.17 It is anticipated that none of the works outlined above will be carried out on Sundays or Bank Holidays without special prior agreement with WHBC and other relevant parties.

Plant and Equipment

6.18 The following plant and equipment is anticipated to be used during the construction works.

Table 6.1: Indicative Plant used during Construction

Plant and Equipment	Enabling works and Site Preparation	Construction	Services installation	Fit out	Landscaping
Concrete silo and ready-mix lorries		X	X		X
Concrete cutter, saws and splitters	X	X	X		X
Cranes and hoists	X	X			
Cutters, drills and small tools		X	X	X	
Excavators and breakers	X	X	X		X
Floodlights	X	X		X	
Fork lifts trucks		X	X	X	
Hydraulic benders and cutters		X	X	X	
Road Brush Vehicles		X	X	X	
Lorries/vans	X	X	X	X	X
Tarmac laying equipment		X			X



Plant and Equipment	Enabling works and Site Preparation	Construction	Services installation	Fit out	Landscaping
Scaffolding and access platforms		X		X	X
Temporary supports		X		X	
Tipper lorries		X			X
Wheel washers	X	X	X		X
Skips & Skip trucks	X	X		X	X

ENVIRONMENTAL MANAGEMENT AND MITIGATION

Environmental Management Plan

6.19 A principal construction contractor will be responsible for all aspects of construction operations. In line with best practice, the construction contractor will subscribe to the CCS (Considerate Contractors Scheme).

6.20 A CEMP would be prepared by the Principal Contractor which would include details of all relevant environmental management controls necessary for environmental protection during the construction works. This would follow best practice guidelines and would be agreed with the Local Authority Environmental Health Department.

6.21 The CEMP would include:

- Restrictions and targets for specific work activities in order to minimise environmental effects, including disruption and disturbance to local residents (if relevant), workers and the general public;
- Details of the means by which appropriate environmental monitoring, record keeping and reporting would be managed to ensure the above targets are being met;
- Procedure(s) to deal with necessary 'abnormal' works that may result in deviation from the agreed procedures and targets; and

- Provision for a programme of regular environmental audits and reviews at key stages in the construction programme.

6.22 The CEMP would place stringent contractual and procedural performance obligations upon trade contractors. These would be maintained and reinforced by commitments detailed below and, where relevant, within Chapters 7-16 inclusive. Such obligations would be enforced through subsequent detailed agreements with and consents provided by the Local Authority. A clear management structure and description of the responsibilities and authority of a specific Project Environmental Manager (PEM) would be included.

6.23 The PEM would have primary responsibility for liaising with the Planning Authority and other statutory agencies on environmental matters. It is anticipated that regular meetings would take place to review progress and to agree necessary options. Notwithstanding this, it is recognised that positive action and reaction by site operatives at the time of any environmental incident or breach of targets are essential components for effective environmental management.

6.24 The CEMP would address requirements in relation to environmental controls and would allow for, and include, the following:

- The appointment of an experienced PEM responsible for the preparation and implementation of the CEMP;
- Details of the phasing of the works, including information on construction works that may be carried out by trade contractors;
- Procedures for construction activities, highlighting any operations likely to result in adverse environmental effects, with an indication of the mitigation measures to be employed;
- Wheel washing and highway cleaning procedures;
- Reference to and provision of a framework for compliance with all legislation that would be relevant;
- Emergency procedures that would be implemented on the Site;
- Prohibited or restricted operations;
- Control limits of target criteria for environmental issues, where practicable;
- Requirements for monitoring and record-keeping;
- Mechanisms for third parties to register complaints and the procedures for responding to complaints;

- Provisions for reporting, public liaison and prior notification, especially where dispensations would be required;
- Details of construction operations, highlighting the operations most likely to result in disturbance and/or working outside core working hours, together with an indication of the expected duration of each activity;
- Possible departures from target criteria and details of how any adverse effects would be minimised or potential complaints addressed;
- Details of proposed routes for HGVs travelling to and from the Site;
- Provisions for auditing by the PEM, WHBC and other regulatory authorities, where appropriate;
- Details of plant to be used;
- Details of all construction works involving interference with a public highway, including temporary carriageway/footpath closures, realignments and diversions; and
- Housekeeping procedures and environmental management controls.

Contract Conditions

6.25 Individual trade contracts would incorporate appropriate requirements in respect of environmental control, based largely on the standards of 'good working practice' outlined in the EMP in addition to statutory requirements. Contractors would therefore be required to demonstrate how they would achieve the provisions of the EMP, how targets would be met and how potential adverse environmental effects would be minimised.

Management of Construction Works

6.26 The PEM would deal with queries from the public and other complaints and enquiries. This nominated individual would be named at the Site entrance, with a contact number and would be identified to the Local Authority and community groups, prior to the start of the Site activities and whenever a change of responsibility occurs.

6.27 Any complaints would be logged and reported to the relevant individual within the Local Authority (and *vice versa*) as soon as practicable.

6.28 The CEMP would specify the roles and responsibilities of the PEM and the appropriate Officers within Local Authority in respect of any breaches or complaints from the public. The



required actions would be different in each specific case, depending on the operation, equipment or location.

Emergencies and Accidents

6.29 The building contractor would be required to maintain high safety standards on-site and to be fully compliant with current health and safety legislation.

6.30 An Emergency Incident Plan would be put in place to deal with potential spillages and/or pollution incidents. Any pollution incidents would be reported immediately to the regulatory bodies.

Materials Storage and Handling

6.31 Environmental issues would be considered in the procurement of raw materials and manufactured building components and all such materials would be appropriately stored on the Site to minimise damage by vehicles, vandals, weather or theft. Deliveries of hazardous materials would be supervised and a just-in-time deliveries system would be implemented to minimise storage times and reduce the risk of spillage on-site. Tanks and drums of liquid chemicals and fuels would be stored in bunded compounds. Packaging materials would be returned, where possible.

6.32 Contractors and their sub-contractors would be expected to maintain a tidy site and, where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works.

6.33 Where possible, pre-fabricated elements would be lifted directly into position from delivery vehicles. This would assist in reducing on-site storage and labour requirements and construction noise levels to surrounding sensitive receptors.

6.34 Mobile cranes would be used for general unloading and hoisting during the structural and envelope works. Passenger/goods materials hoists, fork lift trucks and other electric or hydraulically operated plant may be used to distribute and transport materials around the Site.



Waste Management and Minimisation

6.35 Waste would be generated during all stages of the construction works. Although specific materials cannot be identified at this stage of the design, potential sources of waste within the construction process are anticipated to comprise:

- Excavated material;
- Packaging – including plastics, wooden pallets, expanded foams;
- Waste materials generated from inaccurate ordering, poor usage, badly stored materials, poor handling, spillage; and
- Dirty water, for example from Site runoff containing silt.

6.36 It is the intention of the project to use all excavated material, wherever possible within the Proposed Development.

6.37 A Site Waste Management Plan (SWMP) would be developed and implemented detailing how waste created during the construction phase would be managed. This would be prepared by the Contractor in accordance with the Site Waste Management Plan Regulations 2008 and non-statutory guidance on preparation of SWMPs. All relevant Contractors would be required to investigate opportunities to minimise waste arisings at source and, where such waste generation is unavoidable, to maximise the recycling and reuse potential of construction materials. Recycling of materials would take place off-site, where noise and dust are less likely to result in effects to the occupants of surrounding properties. Appropriate waste management and recycling centres close to the Site would be identified prior to the construction works and contracts would be established with registered waste carriers and authorised waste disposers for construction waste.

6.38 All waste would be stored on the Site in accordance with the relevant legislation, in particular the Waste (England and Wales) Regulations 2011 (Ref 6.1) and no burning of construction waste would be undertaken at the Site.

6.39 The destination of all waste or other materials removed during construction would be notified to the relevant authority by the Contractor/Construction Manager for approval. Loads would only be deposited at authorised waste treatment and disposal sites. Deposition of waste would be in accordance with the requirements of the EA, Environmental Protection Act 1990 (EPA), the Controlled Waste Regulations 1992 as amended, the Hazardous Waste Regulations



2005 (Ref 6.2), the List of Wastes (England) Regulations 2005 (Ref 6.3) and the Waste (England and Wales) Regulations 2011.

Traffic and Access Management

6.40 An assessment of the potential effects of the Proposed Development on traffic and the local transportation network is presented in Chapter 7: Transport and Access.

6.41 Specific detail relating to the management of construction traffic will be presented within a dedicated construction transportation plan, which will be submitted for approval by the Local Authority post planning.

6.42 All construction traffic entering and leaving the Site would be closely controlled. Deliveries would be phased and controlled on a 'just-in-time' basis, wherever possible. This would minimise travel time and traffic congestion around the Site.

6.43 The majority of all deliveries would be made by standard HGVs, with no special access / delivery requirements.

6.44 It is anticipated that in the peak period of demolition and construction, approximately 310 daily traffic movements would occur to and from the Site (arising from 155 vehicles of which less than 25 are classed as HGVs). Construction traffic will access the Site from Bridge Road and Broadwater Road.

6.45 The Traffic Management Plan would detail the management of the above measures as well as the management of car parking on the Site and the Site labour force travel to the Site. No parking on public roads would be allowed and the Contractor/Construction Manager would be responsible for enforcing this requirement. Provision would be made within the Site for essential on-site parking. Any local traffic management measures for Site access would be agreed with the relevant authorities.

Air Quality and Dust

6.46 Site-specific best practice measures would be implemented by contractors to minimise the disturbance to local residents and other potentially sensitive receptors. These measures would include:



- Damping down surfaces during dry weather;
- Providing appropriate hoarding and/or fencing to reduce dust dispersion and restrict public access;
- Sheeting buildings, chutes, skips and vehicles removing wastes with the potential for dust generation;
- Appropriate handling and storage of materials, especially stockpiled materials;
- Restricting drop heights onto lorries and other equipment;
- Fitting all equipment with dust control measures such as water sprays wherever possible;
- Using a wheel wash, limiting speeds on the Site to 5 mph, avoidance of unnecessary idling of engines and routing of Site vehicles as far from sensitive properties as possible;
- Using gas powered generators rather than diesel, if possible (these are also quieter) and ensuring that all plant and vehicles are well maintained so that exhaust emissions do not breach statutory emission limits;
- Switching off all plant when not in use;
- No fires would be allowed on the Site; and
- Ensuring that a road sweeper is available to clean mud and other debris from hardstanding, roads and footpaths.

6.47 Full assessments of the potential effects of the construction works on air quality are presented in Chapter 8: Air Quality.

Hazardous Materials and Contaminated Land

6.48 Prior to construction, the Contractor would be required to prepare a Method Statement and Risk Assessment demonstrating how the safety of construction workers and the public would be addressed in terms of potentially harmful substances. Protective measures would include:

- Provision of adequate facilities and procedures for personal washing and changing;
- Provision and use of personal protective equipment (PPE);
- Implementation of dust suppression methods; and
- Implementation measures to avoid surface water ponding and the collection and disposal of the Site runoff.

6.49 Such measures should be carried out in accordance with the Protection of Workers and the General Public during the Development of Contaminated Land document and CIRIA Report 132: A Guide for Safe Working on Contaminated Sites (Ref 6.4).

6.50 Other practical methods of limiting risks from hazardous materials and contaminated land would include:

- The storage of all potentially hazardous materials on hard surfaced areas, with bunding to the satisfaction of the Environment Agency;
- The storage of ground tank oil in accordance with the Control of Pollution (Oil Storage) (England) Regulations, 2001 (Ref 6.5); and
- The treatment of any excess dewatering effluent prior to discharging to the foul sewerage system and only on the achievement of an approved discharge consent from Southern Water.

Site Drainage and Effects on Water Resources

6.51 The assessment of the potential effects of the Development proposals on water resources is presented in Chapter 13: Water Quality, Hydrology and Flood Risk. In summary, a precautionary approach would be adopted to appropriately manage construction-derived surface water run-off. As such, particular care would be taken to prevent any release or mobilisation of pollutants, which could pose a potential risk to receptors such as surface water and groundwater.

6.52 Best practice pollution prevention measures would be put in place to isolate environmentally damaging substances and prevent their release. These measures would be agreed in consultation with the Environment Agency and Southern Water and would include:

- Secure, careful siting and bunding of fuel storage facilities and any areas used for the storage of potentially hazardous materials;
- Use of drip trays when filling smaller containers from tanks or drums to avoid drips and spills;
- Works involving concrete would be carefully controlled and ready-mix concrete wagons would be washed out in a safe designated area;
- The avoidance of stockpiling materials wherever possible to prevent spills and, where undertaken, sheeting and covering these stockpiles and haulage vehicles loads;

- Management of the Site drainage to prevent sediment laden contaminated runoff entering the wider environment;
- Surface drainage would pass through settlement and oil interceptor facilities where required;
- Provision for the treatment and safe disposal of wastewaters, including water from dewatering pumping operations should these be undertaken;
- Appropriate management and transportation of the Site waste including the establishment of dedicated waste storage areas designed to prevent pollution, regular inspections and the implementation of waste minimisation and management plans as described above; and
- Ensuring that any water which may have come into contact with contaminated material would be disposed of in accordance with the Water Resources Act (1991) and other legislation, to the satisfaction of the Environment Agency.

6.53 Furthermore, any piling systems would be designed to minimise the risk of potential pathways for contamination to reach groundwater resources.

6.54 An Emergency Plan would be implemented, forming part of the CEMP, outlining procedures to follow in the instance of any accidents involving spillages. This would involve the provision of on-site equipment for containing spillages, such as emergency booms and chemicals to soak up spillages. Should an incident occur, the Environment Agency would be contacted immediately.

Protection of Ecological Resources

6.55 An assessment of the potential effects of the Development on ecological resources is presented in Chapter 12: Ecology and Nature Conservation.

6.56 Chapter 12 details the measures that will be taken to mitigate effects from the Proposed Development can be broadly summarised as follows:

- Screening during construction;
- No trenches or excavations to be left open, though if unavoidable, exit ramps will be put in place;
- Adherence to the EA's Pollution Prevention Guidance Notes;
- Careful timing of works; and
- Ecologically-informed lighting strategy for operational phase.

CUMULATIVE EFFECTS

6.57 Any cumulative effects during the construction phase are identified within Chapters 7-16 where relevant.

SUMMARY

6.58 The construction effects of the Proposed Development would be managed through the development of a project and site-specific CEMP. The CEMP would be agreed with the Local Authority and other relevant bodies prior to the commencement of works which, as a minimum, would comply with the mitigation measures set out in this ES. The CEMP would outline methods for contractor and general public liaison, hours of work, methods to deal with complaints and outline management practices to control dust, traffic and access, waste, water pollution, ecological and archaeological effects, ensuring a high level of control throughout the construction works.

6.59 The procedures within the CEMP would ensure the delivery of a high level of environmental control throughout the construction phase, thereby minimising the potential for adverse effects. Further detail regarding specific mitigation during construction works for the Proposed Development is presented within Chapters 7 to 16 of this ES.



REFERENCES

Ref 6.1: HMSO (2011) The Waste (England and Wales) Regulations 2011

Ref 6.2: Office of the Deputy Prime Minister (2005) The Hazardous Waste (England and Wales) Regulations, SI 2005 No.894. HMSO, Norwich.

Ref 6.3: HMSO (2005) The List of Wastes (England) Regulations 2005

Ref 6.4: CIRIA (2002) CIRIA Report 132 Good Practice Guidance For The Management of Contaminated Land. Safe Working Practices on Contaminated Sites.

Ref 6.5: HMSO (2001) Control of Pollution (Oil Storage) (England) Regulations.

7 TRANSPORT AND ACCESS

Introduction

7.1 This chapter documents the assessment of the likely significant effects of the Proposed Development with respect to transport.

Predicted Impacts

7.2 The scope of the assessment is based on that carried out in support of the consented scheme and has been agreed with Highway Authority officers and includes an assessment of both construction and operational phases.

Effect during construction phase: short to medium term

7.3 It is anticipated that that the number of vehicular movements to and from the Site as a result of each phase of the construction will not be more than the number of trips generated by the completed development.

7.4 Each construction phase will have its own Demolition and Construction Management Plan, including control of access from the highway.

7.5 The HGV trips will be spread throughout the day, as they will be made up of materials deliveries, off-site disposal and other trips related to the management of the construction process.

7.6 The daily traffic flow associated with the site construction traffic is considered to be relatively low and the change in magnitude for severance is considered to be negligible adverse for all links assessed. In general, the construction vehicles would use existing vehicle accesses from Broadwater Road or Bridge Road. These are main arterial routes with standard footways available either on one or both sides of the carriageway. On this basis, the change in magnitude for fear and intimidation is considered to be negligible adverse for all links assessed.

7.7 The development will be supported by a Construction Logistics Plan (CLP) which will include a route management strategy as well as dictate any limitations on construction vehicle delivery hours. It is anticipated that there would be minimal flows associated with construction during the peak hours and the change in magnitude of the site access junctions for driver delay,



pedestrian delay and pedestrian amenity are considered to have a magnitude of negligible adverse.

7.8 The daily traffic flow associated with the construction traffic is likely to be minimal when compared to the operational phase and as with all major construction sites it is anticipated that in addition to the CLP, a CEMP will be secured through a suitable planning condition. It is considered that the change in magnitude for accidents and safety is negligible adverse for all links assessed.

7.9 The wider development will deliver significant highway improvement works to Bridge Road and Broadwater Road as well as off-site highway improvements to increase operational capacity at a number of roundabouts remote from the Site. All highway works will be delivered by means of a Section 278 Agreement with the local highway authority. The S278 technical approval will include a requirement for a traffic management plan to ensure safe working practices within the highway as well as minimal disruption to pedestrian and cycle movements. On this basis, appropriate management is considered to result in a negligible adverse change in magnitude for fear and intimidation for all links assessed. During the construction of the highway improvement works the effect on driver delay is considered to have be minor adverse but pedestrian/cyclist delay and pedestrian/cyclist amenity are considered to have a magnitude of negligible adverse.

Effect during operational phase: long term

7.10 The significance of the change in traffic magnitude on severance would be moderate adverse on the Broadwater Road and Bridge Road corridors.

7.11 There is no change in fear and intimidation between the baseline and with development scenarios (excluding Broadwater Road and Bridgewater Road improvement works) on the links considered.

7.12 Additional traffic is likely to lead to further delay on the local highway network. In the absence of mitigation measures, the effect on driver delay on the junctions considered would be major / moderate adverse.

7.13 The effect on pedestrian delay is considered as minor / negligible adverse on the Bridge Road and Broadwater Road corridors. The effect on pedestrian delay at the Bridge Road/Broadwater Road junction would be moderate adverse.

7.14 The increase in pedestrian and cycle trips on Bridge Road, Broadwater Road and the footbridge over the railway would result in moderate adverse pedestrian/cyclists delay on the links and junctions considered.

Mitigation

7.15 During the construction phase, details of the routing strategy, hours of operation, along with logistics and mitigation measures would be included in the CLP and CEMP which should be secured through a suitable planning condition. As a result, the likelihood is that construction vehicle movements will predominantly occur outside of peak hours such that operatives can avoid busy periods on the external network, and avoid late nights/early hours to reduce the disturbance of nearby residents.

7.16 The traffic management plan secured as part of the S278 technical approval process will ensure safe working practices within the public highway during the construction of the off-site highway improvement works. This will minimise disruption to pedestrian and cycle movement.

7.17 The Proposed Development will enhance the existing permeability of the local walking and cycling network through implementation of a number of measures including provision of walking and cycling facilities through the Site. The Proposed Development will deliver the refurbishment of the rail footbridge and the re-modelling of Bridge Road and Broadwater Road to reduce vehicle speeds and enhance pedestrian and cycle routes and crossings.

7.18 The Proposed Development will deliver a new Cycle Hub for Welwyn Garden City that will provide new infrastructure and incentives to encourage Active Travel and has the potential to act as a focal point for training and advice to further promote sustainable travel choices.

7.19 The Proposed Development will also deliver an electric Car Club to allow new residents to live in this location without owning a car, but with access to one as and when they may need it for essential journeys. The Car Club vehicles will be available to the new Wheat Quarter residents but also available to the wider community.

7.20 The Proposed Development will be supported by a Framework Travel Plan to promote the use of sustainable modes of travel and reduce the reliance on the private car.

7.21 As a result of the enhancements, it is anticipated that residents, employees and visitors will consider modes other than the private car.



Summary of Effects

7.22 The residual impact of the Proposed Development is considered to be minor / negligible adverse during both the construction and operational phases. The residual impact of the off-site highway improvement works is considered to be minor adverse during the construction phase and minor / negligible positive during the operational phase.

8 AIR QUALITY

Introduction

8.1 This chapter reports on the effects of the Proposed Development on air quality.

Predicted Impacts

8.2 The scope of the assessment has been agreed with the Local Authority and includes an assessment of both construction and operational phases.

Effect during construction phase: short to medium term

8.3 An assessment of the potential impacts during the construction phase has been carried out. This has shown that during this phase of the Proposed Development releases of dust and PM₁₀ are likely to occur during site activities. Through good site practice and the implementation of suitable mitigation measures, the impact of dust and PM₁₀ releases may be effectively mitigated and the resultant impacts are considered to be negligible.

Effect during operational phase: long term

8.4 Detailed modelling has been undertaken to determine the impacts of the Proposed Development on the air quality in the vicinity of the Site and assess the suitability of the Site for residential use.

8.5 The assessment found that concentrations of pollutants would be below the relevant objective levels across the Site and within the local area. Emissions from traffic generated by the Proposed Development are predicted to result in a negligible impact on local air quality in the surrounding area. The assessment has also demonstrated that impacts from nearby industrial uses would not adversely impact on the Proposed Development.

Mitigation

8.6 A high risk of dust soiling impacts is predicted at adjacent receptors during construction of the Proposed Development. Appropriate mitigation measures for the Site have therefore been identified following the IAQM guidance. It is recommended that the measures identified are



incorporated into a Dust Management Plan (DMP) and approved by the Local Authority prior to commencement of any work on Site.

8.7 During the operational phase, the impact is predicted to be negligible, therefore no mitigation measures are considered necessary.

Summary of Effects

8.8 Following the implementation of the recommended mitigation measures, the residual impact of the Proposed Development on local air quality is considered to be negligible during the construction and operational phase.

9 WIND MICROCLIMATE

Introduction

9.1 This chapter reports on the likely effects of the Proposed Development on the wind microclimate in and around the Site.

Predicted Impacts

9.2 The assessment is based on an experience-based desk study. It considers the Proposed Development massing and exposure in conjunction with long-term wind climate statistics applicable to the Site and provides an expert review of the likely suitability of wind conditions for proposed activities, based on the industry standard Lawson criteria for pedestrian comfort and safety.

Effect during construction phase: short to medium term

9.3 The wind environment is largely dictated by the building masses which will vary throughout the construction phase, such that any effects will be short term, though the exposure of surrounding receptors to prevailing winds will not be significantly increased at any stage. Pedestrian activities within the Site will also be different during construction and perception of conditions both within the Site and in the surrounding area is also likely to be affected by expectations of conditions around a building site, with pedestrians more likely to tolerate adverse conditions as they can appreciate it as a temporary situation. Therefore, the assessment of wind environment has been limited to the operational phase of the Proposed Development.

Effect during operational phase: long term

9.4 The Proposed Development comprises buildings of modest height in terms of wind effects and generally steps up in height from southwest to northeast, which encourages prevailing south-westerly winds to pass over the Proposed Development. However, the Site is relatively exposed and there is potential for channelling of pedestrian level winds around and between the buildings. In response to this, the Proposed Development includes proposals for substantial soft-landscaping which is expected to help alleviate the channelled winds.



9.5 As a result, the Proposed Development is expected to have negligible effect on pedestrian level wind conditions with regards to pedestrian safety, and conditions in and around the Site are expected to rate as safe for all users.

9.6 In terms of pedestrian comfort, with respect to wind force, thoroughfares within and alongside the Site are expected to be generally suitable, and at least tolerable, for pedestrian access to, and passage through or past, the Proposed Development. These effects are considered to range from negligible to minor adverse, though cumulative effects (with the introduction of the Shredded Wheat Factory South Side) are expected to reduce this to negligible.

9.7 Entrances to the Proposed Development are generally expected to enjoy suitable conditions for pedestrian ingress / egress, though there is potential for the west entrance to the Block 5 Art Centre to be marginally windy, but tolerable, during winter. Effects on entrances are therefore mainly negligible with a potential localised effect of no worse than minor adverse significance.

9.8 Recreational spaces are expected to have generally suitable, and no worse than tolerable, conditions for planned activities. Effects on amenity spaces are therefore mainly negligible with some localised effects of no worse than minor adverse significance.

9.9 The Proposed Development is expected to have negligible effect on the pedestrian level wind conditions within the surrounding area.

Mitigation

9.10 Conditions within the Site are expected to be generally suitable, and no worse than tolerable, for planned pedestrian activities and no further mitigation is proposed.

Summary of Effects

9.11 The residual impact of the Proposed Development on wind conditions in and around the Site is expected to be mainly negligible with some potential localised effects of no worse than minor adverse significance within the Site.

10 NOISE AND VIBRATION

Introduction

10.1 This chapter has considered the potential impact of noise and vibration generated during the construction phases, whether the Site is suitable for the Proposed Development when taking into account the existing environmental noise conditions and the potential impact of the Proposed Development from changes to road traffic.

Predicted Impacts

10.2 The scope of the assessment includes consideration of both construction and operational phases.

Effect during construction phase: short to medium term

10.3 The appraisal of noise and vibration levels associated with the construction phases of the Proposed Development shows that there is low likelihood of noise impacts associated with enabling, ground-works and super-structure activities. Any impacts that occur are likely to be Minor and of a temporary and intermittent nature.

10.4 There will be no other significant noise or vibration impacts associated with the construction works.

Effect during operational phase: long term

10.5 Calculated noise levels indicate that noise levels at the Proposed Development would be suitable for residential dwellings, provided sufficient ventilation is adopted at the identified properties.

10.6 Based on application of quantitative significance criteria, the Proposed Development would experience effects ranging from Minor to Major, prior to consideration of appropriate mitigation. Following incorporation of suitable glazing and ventilation the magnitude of effect would not exceed any recognised or statutory objectives and would be considered Negligible.

10.7 Specific consideration of mitigation measures is required where a required façade reduction of above 24 dB is identified. In order to ensure the protection of future occupants from adverse noise effects.

10.8 Minor impacts are calculated in the short term at existing residential dwellings to the south, along Broadwater Road.

10.9 Long term impacts from the increase in road traffic are calculated to be Negligible at all identified road links.

Mitigation

10.10 Measures to limit noise emissions will be included within a CEMP which will be agreed with the local authority.

10.11 For the operational phase, proportional and adequate acoustic treatments (e.g. mechanical or passive ventilation, acoustic air bricks) will be incorporated into the Proposed Development for all properties identified as experiencing Moderate or Major effects, prior to mitigation, in order to achieve an appropriate acoustic environment.

Summary of Effects

10.12 The impact of noise and vibration during construction of the Proposed Development has been predicted and assessed in accordance with BS 5228. Generic mitigation measures have been recommended, which when implemented are capable of ensuring that the impact of noise and vibration during the construction of the Proposed Development is adequately controlled and will provide a Minor or Negligible effect.

10.13 An assessment has been carried out in accordance with the adopted criteria to determine the suitability of the Site for residential accommodation. Proposed units will require appropriate glazing and ventilation specification in order to achieve the required internal noise levels and the resultant noise effect will be Negligible at proposed residential properties.

10.14 The impact of development associated traffic has been assessed. It is calculated that increases in road traffic noise would not result in significant effects at existing receptors adjacent to the surrounding roads. The noise effect at all existing properties is calculated to be Negligible in the long term.

11 TOWNSCAPE AND VISUAL AMENITY

Introduction

11.1 The Site is located on the eastern edge of Welwyn Garden City town centre, separated by the East Coast Mainline railway. The Site is located within the industrial zone of Welwyn Garden City on the northern part of the grounds of the former Shredded Wheat factory. It contains Grade II Listed buildings of the former Shredded Wheat factory, of which the retained 1920's silos and production hall form a visual landmark within the surrounding townscape area and provide a sense of place and form some of the oldest industrial development within Welwyn Garden City.

11.2 The Site features an existing pedestrian connection running east / west along Hyde Way, which connects with Welwyn Garden City town centre via a pedestrian footbridge over the railway. Due to the decline in industry and manufacturing over the last century the Site fell into disrepair and dereliction, affecting the quality of the Site and immediate townscape setting. Most of the former factory buildings have been removed from the Site under the extant consent, temporarily allowing more open views of the retained 1920s parts of the former factory.

11.3 The design of the Proposed Development in its wider context was assessed using 21 different viewpoints, which were selected in consultation with WHBC and Historic England during discussions to inform the application for the extant consent.

Predicted Impacts

11.4 The majority of views into the Site are from roads, the railway station and pedestrian routes adjacent to or in very close proximity to the Site. Opportunities for views of the Site from a distance of greater than a few hundred metres are limited to the tops of the silos, as for the most part the Site is visually screened by layers of existing intervening built form and vegetation. A long distance view, through intervening vegetation towards the tops of the silos, is currently experienced by receptors visiting Hatfield House and Gardens (a Registered Historic Park and Garden and Grade I listed building).

Effect during construction phase: short to medium term

11.5 During demolition and construction, there would inevitably be a visual intrusion to the local townscape and views from locations close to the Site as a result primarily of large

construction plant and machinery, including tower cranes, and the presence of partially completed built form of the Development. There would be also temporary disruption to the public access along Hyde Way. However, this situation is unavoidable for the redevelopment of the Site and would only be temporary in nature.

11.6 Phase 1 of the South Side is currently under construction, in accordance with the extant consent, therefore during construction of the Site receptors to the east, south and west would experience glimpsed views of the construction activities within the Site on the skyline to the rear and in the context of the South Side construction activity. The Site construction phase would introduce additional visually detracting uncharacteristic features to views, primarily tall onsite machinery including tower cranes, piling rigs and scaffolding however, these activities would be obscured by emerging built form and activities on the South Side and similar activities would take place on the North Side under the extant consent in any case.

11.7 A small proportion of existing trees and vegetation would be removed during demolition and construction but this would also be rectified by the significant amount of landscaping to be incorporated into the Proposed Development. Once new planting has established, the landscape proposals would substantially increase the vegetation coverage, diversity and amenity value within the Site.

Effect during operational phase: long term

11.8 The design of the Proposed Development is a culmination of an extensive consultation process with WHBC, Historic England and many other statutory and non-statutory stakeholders as part of an iterative design process. The Proposed Development would regenerate a parcel of former industrial, brownfield, derelict land of low townscape quality that contains valued Grade II Listed buildings.

11.9 The Proposed Development would introduce new high quality built form and enhance the sense of place. The Proposed Development would ensure the long term prominence and monumentality of the original 1920's elements of the Grade II Listed former Shredded Wheat Factory through their retention and refurbishment. The Proposed Development would introduce a number of community uses, including play provision and would deliver new public realm, green open space and highway improvements. These would result in the sensitive integration of the Proposed Development into the wider setting of Welwyn Garden City.



11.10 For pedestrians in the immediate area of the Site, on Broadwater Road, Bridge Road and on the Network Rail footbridge into the Site, the Proposed Development would positively enhance the visual quality, experience and approach creating a welcoming, safe and visually inviting townscape. People using Welwyn Garden City railway station would also experience an improvement to their views towards the Site.

11.11 For users of the Peartree Heritage Trail, in close proximity to the Site, the Proposed Development would result in a reduction of their sequential view of heritage features, replaced with framed views between the Proposed Development blocks, down the internal streets at key points towards the retained and restored 1920s listed buildings. Views of these heritage features have already been opened up in some locations, due to removal of later sections of the factory under the extant consented scheme.

11.12 For a small proportion of residential receptors, in close proximity to the Site and directly adjacent to the South Side site, for the most part the consented South Side development will restrict and screen views to the Proposed Development and any partial to glimpsed views would be seen in the context of the South Side development through breaks in the consented built form, in the near distance.

11.13 The Proposed Development would be introduced to views in the near distance however, there would not be a significant change to these views. Similarly, visitors and tourists to Hatfield House, with long distance views towards the Site, would experience long distance partial to glimpsed views of the upper storeys of residential built form within the Proposed Development, which would be largely screened by intervening vegetation and the extent consented South Side development. The extant consented South Side development will, for the most part, restrict and screen views to the Proposed Development and any partial to glimpsed views towards Proposed Development would be of the upper storeys, seen in the distance above and in the context of the South Side development and built form of Welwyn Garden City town centre.

Mitigation

11.14 Appropriate mitigation measures for the Proposed Development have been identified for both the construction and operational phases. During construction, measures include the retention and protection of trees and other vegetation where possible, control of mobile cranes and lighting, sensitive location of compounds and use of hoarding to control views. For the completed scheme, measures include the sensitive design and layout of the Proposed Development, provision of new planting within and on the Site boundaries, creation of a diverse

range of public squares and open space to contribute positively to townscape character and the provision of new ecological habitats and enhancements, together with the ongoing management of the landscaped open spaces during the operational phase.

Summary of Effects

11.15 There would be effects on the townscape character and visual amenity in areas in close proximity to the Site during the construction period, with views of construction activities, cranes, plant and equipment however, these effects would be temporary. The Proposed Development would not result in any significant long term adverse effects upon townscape character or on visual amenity in the area surrounding the Site.

11.16 The Proposed Development has been designed in consultation with key stakeholders. The scheme delivers a bespoke, sustainable and high quality landscape, designed to characterise the development, provide a long term landscape and ecological resource and contribute to the positive integration of the development into the surrounding context of Welwyn Garden City.

11.17 The effects of the proposals on the townscape and views would be largely similar to those likely as a result of the consented scheme.

12 ECOLOGY AND NATURE CONSERVATION

Introduction

12.1 This chapter reports on the effects of the Proposed Development on ecology and nature conservation. The chapter is informed by ecology surveys of the Site, including a desk study, an extended Phase 1 Habitat survey and a range of previous assessments.

Predicted Impacts

12.2 The scope of the assessment has been agreed with the Local Authority and includes an assessment of both construction and operational phases.

12.3 No statutory or non-statutory designated sites of nature conservation importance are contained within the Site. All such sites within the surrounding area are removed from the Site and sufficiently separated by existing urban development so as to preclude direct or indirect impacts from the Proposed Development.

12.4 The Site itself is dominated by buildings, hardstanding and areas of recently disturbed ground, which are considered to be of typically negligible ecological value. Habitats which are considered to be of limited elevated value in the context of the Site comprise semi-mature trees and a mosaic of habitats including ephemeral / short perennial, scrub and grassland vegetation. Areas of grassland and a number of trees are to be retained.

12.5 Surveys of protected species have found that the Site is of generally limited ecological value. The Site has previously supported nesting peregrine falcon *Falco peregrinus* and a low population of slow-worm *Anguis fragilis* (which has since been translocated to adjacent habitats). Habitats also offer some potential for roosting bats, nesting birds and other Priority Species including hedgehog.

Mitigation, Compensation and Enhancement

12.6 Mitigation, compensation and enhancement measures are therefore proposed, including construction safeguards, a bespoke peregrine falcon mitigation, new habitat and open space provision and drainage and lighting design. Notably, habitat enhancement measures could provide an overall gain in biodiversity across the Site, including substantial habitat creation and enhancement and provision of new nesting and shelter opportunities for faunal species.

12.7 The Proposed Development and mitigation scheme have also been designed to achieve compliance with relevant legislation and planning policy. Measures are proposed to avoid the killing of or injury to protected species such as bats, birds and reptiles (protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017). Opportunities for enhancements to biodiversity are also proposed, in accordance with the National Planning Policy Framework (NPPF), the NERC Act 2006 and local policy. Proposed enhancements will also deliver significant benefits in terms of green infrastructure, providing networks of green links and corridors through and around the Site.

Summary of Effects

12.8 Following mitigation, compensation and enhancement measures, it is considered that the Proposed Development would result in an overall gain in the existing ecological interest supported by the Site, with particular benefits in respect of habitats, roosting bats, nesting birds including peregrine falcon, notable mammals, reptiles and invertebrates. Together, these gains are considered to result in an overall beneficial effect of moderate magnitude, which is likely to be significant at the local level.

12.9 A Biodiversity Impact Assessment has demonstrated that the Scheme design would achieve a net gain in biodiversity

13 WATER QUALITY, HYDROLOGY & FLOOD RISK

Introduction

13.1 This chapter presents an assessment of the likely effects of the Proposed Development on water quality, hydrology and flood risk.

Predicted Impacts

13.2 The scope of the assessment includes an assessment of both the construction and operational phases.

13.3 From reviewing the baseline conditions within and surrounding the Site, groundwater, surface water and water supply and infrastructure are considered to be the key receptors in terms of the Proposed Development. For groundwater, this is due to the Site being situated above a Principal Aquifer and within an Source Protection Zone (SPZ) Zone 3. For surface water, the Site is located within a catchment that has a 'good' ecological status objective for 2021. For water supply and infrastructure, the Site is located within an area of known water stress and capacity issues. Flood risk and drainage are considered to be low sensitivity receptors as the Site is located in Flood Zone 1 and is not in a critical drainage area. Similarly, water resources is considered to be low sensitivity because there are no active abstractions within a 1 km radius of the Site.

13.4 The key effect during the construction phase is the potential for the contamination of groundwater and/or surface water from general construction related activities. However, with suitable mitigation measures, the residual effect is considered to be negligible. Water demand and the impact of development on surface water quantity and quality are considered to be key potential effects during the operational phase of the Proposed Development. However, with these measures in place, the residual effects is considered to be negligible to minor beneficial.

13.5 As the Site is located in Flood Zone 1 (low risk), flooding from rivers or the sea is not considered to be a significant effect and is therefore not included in the assessment of likely construction and operational effects. Similarly, as there are no active abstractions licences located within a 1 km radius of the Site, any potential impact on groundwater or surface water interruption affecting local abstractions is not considered within the assessment of likely construction and operational effects.

Mitigation

13.6 The construction phase environmental effects will be managed using measures outlined in a Construction Environmental Management Plan (CEMP) and this will include implementing the British Standard Code of Practice for Foundations.

13.7 The Proposed Development will include Sustainable Drainage Systems (SuDS), as detailed within the Flood Risk Assessment and Drainage Strategy report (Appendix 13.3 of the ES). The system seeks to reduce the rate of surface water runoff in accordance with local policy and provide suitable pollution controls. This runoff rate and water quality will be reduced significantly when compared to the existing rates and quality for the operational lifetime of the development.

13.8 Consultation will be on-going with Affinity Water and Thames Water regarding any off-site infrastructure improvements which may be required in relation to the supply of mains water and foul drainage demand of the Proposed Development. However, it is anticipated that any increase in water demand will be reduced by incorporation appropriate water-saving devices and complying with the Draft Local Plan Policy target water consumption of 110 l/p/d.

Summary of Effects

13.9 In conclusion, given the location and nature of the receptors, the overall environmental effect of the Proposed Development in relation to water quality, hydrology and flood risk following mitigation measures is considered to be Negligible to Minor Beneficial. All residual effects are Negligible with the exception of surface water drainage (Minor Beneficial) and water demand (Minor Beneficial).

14 SOILS, GEOLOGY AND CONTAMINATED LAND

Introduction

14.1 This chapter reports on the effects of the Proposed Development on the soils and geology, with particular regards to land contamination.

Predicted Impacts

14.2 An assessment of ground conditions and contamination has been undertaken using the findings of a desk based study and various intrusive site investigations undertaken at the Site between 2006 and 2017.

Effect during construction phase: short to medium term

14.3 An assessment of the potential impacts during the construction phase has been carried out. This has shown that during this phase of the Proposed Development land contamination is unlikely to worsen during site activities. Through good site practice and the implementation of suitable mitigation measures such as Personal Protective Equipment (PPE) and implementing techniques as part of the Construction Environmental Management Plan (CEMP), any potential temporary impacts may be effectively mitigated, and the resultant impacts are negligible.

Effect during operational phase: long term

14.4 The majority of the Site was subject to demolition and site clearance/turn-over (to two metres below ground level). The 2017 site investigation, undertaken post-site clearance, did not identify any potentially significant on-site (in ground) sources of contamination. The limited evidence of contamination is such that the Site is considered suitable for the proposed end use (without remediation).

14.5 It is expected that further intrusive (block specific), mainly geo-environmental investigations, will be required to aid the geotechnical design processes. These will also incorporate further environmental elements (e.g. soil and groundwater sampling and ground gas monitoring) thus expanding the current baseline knowledge. It is considered highly likely that the results will confirm the current conclusions that the Site is suitable for the proposed end use.

14.6 Due to the geology of the area, the site investigation would be designed to identify dissolution features (which can cause sinkholes) at proposed basement and building foundation locations within the Site. Where potential dissolution features are identified, this would be

accounted for through the engineering design of foundations and / or construction methods to ensure that potential risks to structures and the safety of demolition and construction workers and future users of the Site are minimised.

Mitigation

14.7 During the construction phase, good site practice and the implementation of suitable mitigation measures, such as construction workers wearing suitable PPE and implementing techniques as part of the CEMP, will be required.

14.8 A Foundation Works Risk Assessment should be prepared in consultation with the Environment Agency to establish the appropriate piling methodology to minimise Chalk and bentonite turbidity issues. In addition, several measures for good site management have been recommended to minimise exposure of workers and the public to potentially harmful substances during construction.

14.9 The provision of building footprint and hardstanding across most of the Site and the provision of raised green shared areas would result in a very low risk of harm to human health and the wider environment following completion of the Proposed Development.

14.10 For the operational phase, ground gas protection measures may be required. However, the risk of this may will be refined through additional ground gas monitoring prior to construction. No further mitigation measures are required for the operational phase.

Summary of Effects

14.11 The residual impact of the Proposed Development on land contamination is negligible/neutral during both the construction and operational phases.

15 CULTURAL HERITAGE

Introduction

15.1 This chapter reports on the effects of the Proposed Development on built heritage receptors. The heritage receptors identified are the Grade II listed former Shredded Wheat factory and its setting, the setting of the Grade II former Roche Products Factory Office Building, to the south of the Site, the setting of Grade I listed Hatfield House and the setting of Welwyn Garden City Conservation Area, to the west of the Site and Peartree Conservation Area to the south east of the Site.

Predicted Impacts

15.2 The scope of the assessment includes an assessment of the likely significant effects arising from the proposals during both construction and operational phases of the Proposed Development.

Effect during construction phase: short to medium term

15.3 As part of previously consented schemes, the demolition of the parts of the former Shredded Wheat Factory that were constructed in the 1930s and 1950s has been completed. This has exposed elements of the original 1920s factory complex that will be repaired as part of the previous consent and does not form part of the permission being sought for this Development.

Effect during operational phase: long term, completed development

15.4 For the Grade II listed former Shredded Wheat Factory and Grade II listed former Roche Product Factory, the completed Development will have a beneficial effect. With regards the Development within its setting, this would be of substantial significance. The impact of the completed Development affecting the setting of the former Roche Factory Office Buildings would be insignificant.

15.5 With regards the setting of Grade I Hatfield House, Welwyn Garden City & Peartree Conservation Area, the impact will be negligible and therefore insignificant.

15.6 It is concluded that there will not be significant cumulative effects arising from the schemes identified.

Mitigation

15.7 With regards to the setting of the former Shredded Wheat Factory, no mitigation is required as the completed Development is regarded as having a beneficial impact. Similarly no mitigation is proposed for the impact on the setting of the former Roche Building, Hatfield House or the Conservation Areas as the impact of the Development would be negligible.

Summary of Effects

15.8 The overall impact of the Proposed Development on nearby built heritage receptors is considered to be either beneficial and of moderate/substantial significance. For the heritage receptors that are further from the Site the impact is considered to be negligible.

16 SOCIO-ECONOMICS

Introduction

16.1 This chapter has been prepared to assess the effects of the Proposed Development on Socio-economics, Population and Human Health.

Predicted Impacts

16.2 The scope of the assessment has been agreed with the Local Authority and includes an assessment of both construction and operational phases.

Effect during construction phase: short to medium term

16.3 492 Full Time Equivalent (FTE) jobs would be generated by the Proposed Development during the four year construction phase; including jobs directly created by the Proposed Development at the Site and those created along the supply chain through the provision of goods and services to the construction process.

16.4 There is potential for cumulative beneficial effects to occur with regards to the construction supply chain resulting from the combination of the Proposed Development and other nearby proposed developments considered. This effect is unlikely to be significant.

Effect during operational phase: long term

16.5 Once completed, the Proposed Development is predicted to generate 464 to 1,124 FTE jobs within the region; 309 to 749 of which would be generated locally through direct employment on-site. It is envisaged that some of these new jobs would be filled by local residents and this would contribute to reducing unemployment in Welwyn Hatfield.

16.6 Delivery of 970 residential dwellings and 250 extra care dwellings would positively contribute to local housing targets, providing high quality new housing stock designed to generous space standards.

16.7 The Proposed Development will result in additional retail spending as a result of the future residents onsite. It is estimated that the additional retail spending in the local area will be £18.6 million which will stimulate the local economy.

16.8 The Proposed Development is predicted to result in 2,763 new residents. This will create additional pressure on local GP surgeries. It was identified that there is a current deficiency in local GP surgeries based on the ratio of registered patients to the number of GPs. It was identified that local dentists and hospitals have the capacity to accommodate for these new residents.

16.9 The Proposed Development is projected to bring new children to the area including 38 children aged 0 to 4 years, 12 children aged 5 to 10 years and 14 children aged 11 to 18 years. These children will result in increased demand for childcare facilities and secondary schools beyond their existing or projected capacity. There are enough spaces at local primary schools to accommodate these new children.

16.10 The Proposed Development will provide 19,142 sqm of designated public open space as well as podium level and roof level semi-private open space and play areas for children. The proposed design has been designed to minimise crime through good lighting, CCTV and increasing natural surveillance to meet Secured By Design accreditation.

16.11 The projected population of 2,763 persons will create additional demand on local libraries and youth centres. Despite this, the proposals will provide a variety of new community facilities.

16.12 Cumulative impacts on local GP surgeries, childcare provision, primary education provision and secondary education provision. Overall, cumulative impacts associated with other nearby developments were identified that could place increased demand on local GP surgeries, childcare facilities and secondary schools.

Mitigation

16.13 The impact of the construction employment (both direct and indirect) generated by the demolition and construction phase of the Proposed Development is positive and therefore would not require mitigation.

16.14 For the operational phase, mitigation will be provided in the form of childcare contributions, primary and secondary education contributions, healthcare contributions, library contributions and youth contributions. This will ensure that the Proposed Development compensates for the increased demand on primary school places, secondary school places, GP surgeries, libraries and youth services.



Summary of Effects

16.15 The residual Socio-economic impacts of the Proposed Development on future and local residents will be mostly beneficial or negligible. Overall, the Proposed Development will help to meet local housing targets, stimulate the local economy and offer a variety of recreational and open space for future and local residents.

17 CLIMATE CHANGE AND GREENHOUSE GASES

Introduction

17.1 A Climate Change assessment has been undertaken which includes:

- An assessment of the likely significant impacts of climate change on the resilience of the Proposed Development during operation; and
- An assessment of the likely significant impacts of the Proposed Development on the environment with regard to climate change through the direct and indirect release of greenhouse gas emissions during construction and operation.

Predicted Impacts

- The scope of the assessment has been agreed with the Local Authority and includes an assessment of both the construction and operational phases.

Effect during construction phase: short to medium term

17.2 During the construction phase, the assessment has identified that there will be significant GHG emissions associated with material embodied carbon, transport, construction plant activities and waste production during the four year construction phase. It is estimated that the scale of these emissions during construction is likely to 40,112 tonnes CO_{2e} based on RIBA Benchmarks. This is considered to be a Moderate Adverse impact.

Effect during operational phase: long term

17.3 The Climate Change Resilience Assessment used a risk based methodology and UK Climate Change projection data to identify the key risks associated with the Proposed Development due to climate change in the 2030s, 2060s and 2090s.

17.4 During the operational phase, Climate Change Resilience Assessment has identified Minor Adverse impacts due to flooding, water shortages and soft landscaping failures based on climate change projections for the 2060s and 2090s. In addition, overheating of buildings was identified as a Moderate Adverse impact for the 2030s and a Major Adverse impact on the Proposed Development in the 2060s and 2090s. This is due to the fact that climate change is predicted to increase temperatures and extreme weather conditions over the next 60+ years.

17.5 The operational energy emissions are predicted to be Minor Adverse after the incorporation of renewable technologies including mechanical ventilation with heat recovery and photovoltaic panels for Block 7.

17.6 The operational transport emissions are predicted to be Moderate Adverse due to the volume of trips that will be generated as a result of the Proposed Development and their associated magnitude of emissions.

Mitigation and adaptation

17.7 The Proposed Development design will incorporate appropriate adaptation measures to reduce the climate change risks of flooding through the provision of SuDS measures which will include the use of green or brown roofs, permeable paving (with impermeable membranes), landscaped attenuation basins and geocellular storage. Adaptation measures for water shortages will include water efficient sanitaryware and consideration of opportunities for water re-use across the Site. The planting strategy includes a wide variety of species and is designed to be resilient to climate change. A Landscape Management Plan will be conditioned will ensure that a health assessment is carried out every five years to ensure planting remains suitable for dealing with changing climate conditions and replaced / altered where necessary. The Energy Statement has set out a number of measures that will reduce overheating including natural ventilation. Despite these adaptation measures, due to the presence of scientific unknowns within the climate system, residual effects cannot be defined.

17.8 In addition, the Proposed Development will incorporate a variety of measures to reduce greenhouse gas emissions during the construction and operational phases of the Proposed Development including:

- Implementation of a Site Waste Management Plan, Travel Plan and Construction Logistics Plan during construction;
- Selection of sustainable materials during construction based on the BRE Green Guide and consideration of alternative materials with low embodied carbon;
- Minimising operational transport emissions through the Travel Plan, Car Club, provision of secure cycle storage and Cycle Hub; and
- The implementation of a fabric first approach, passive design measures and renewable technologies including mechanical ventilation with heat recovery and photovoltaic panels for Block 7 to minimise operational energy emissions.

Summary of Effects

17.9 Following the mitigation embedded into the design, construction and operation of the Proposed Development, the residual GHG impacts are considered to be as follows:

- Minor to Moderate Adverse for construction embodied carbon;
- Minor Adverse for operational transport; and
- Minor Adverse for operational energy.

17.10 Overall, the adaptation and mitigation measures are considered to be appropriate in accordance with best practice, the NPPF and the Welwyn Hatfield Borough Council Local Plan.

18 WASTE MANAGEMENT

Introduction

18.1 This chapter reports on the effects of the Proposed Development on waste management.

Predicted Impacts

18.2 The potential for the generation of waste is an aspect of any activity. In relation to the Proposed Development waste will be generated during the site demolition and clearance phase (which has largely been completed), during the construction phase and during the operational phase.

Effect during construction phase: short to medium term

18.3 An assessment of the potential impacts during the construction phase has been carried out using available guidance. Through good site practice and the implementation of suitable mitigation measures such as a Construction Environmental Management Plan (CEMP), Resource Management Plan (RMP) and a Site Waste Management Plan (SWMP), any potential temporary impacts may be effectively mitigated, and the resultant impacts are negligible.

Effect during operational phase: long term

18.4 The British Standard BS 5906:2005 (Waste Management in Buildings) has been used to assess the potential waste volumes associated with the proposed site use. Residential tenants will have their waste collected as part of the Local Authority's municipal waste collection services and thus will be obliged to comply with The Local Authority's waste collections and recycling requirements.

18.5 Commercial waste storage facilities will be provided. A strategy is being explored for controlling commercial waste collections, which will be written into the lease agreements to ensure a particular company is used in-line with a site wide collection policy.

Mitigation

18.6 During the construction phase the implementation of suitable mitigation measures, such as a formal CEMP, RMP and SWMP, will be required. The Proposed Development has applied Building Research Establishments Environmental Assessment Method (BREEAM) assessment



methodology and should achieve an 'Excellent' rating under BREEAM UK New Construction 2018 part of which considers and assess waste management.

Summary of Effects

18.7 The residual impact of the Proposed Development is negligible/neutral during both the construction and operational phases.

