Water Lane, Exeter

Environmental Statement

Volume 1: Main Report

On behalf of **Cilldara Group (Exeter)**

Project Ref: 332310057/001 | Rev: 01 | Date: August 2023

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	Name	Position	Signature	Date
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For and on behalf of Stantec UK Limited				

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Contents

Tables

Figures

1 Introduction

1.1 Project Background

1.1.1 This Environmental Statement (ES) has been prepared by Stantec UK Ltd (Stantec) on behalf of Cilldara Group (Exeter) (referred to hereafter as 'the Applicant') in relation to an outline planning application for a mixed use land development project (hereafter referred to as the 'Proposed Development') at Water Lane, Exeter (hereafter referred to as the Site). A Site Location Plan is provided in **Appendix A.1**. This ES presents the findings of the Environmental Impact Assessment (EIA) and identifies the likely significant environmental effects of the Proposed Development during demolition, construction, and operation.

1.1.2 In summary, the outline planning application for the Proposed Development is for the demolition of existing buildings and construction of a mixed-use development including residential, student housing, retail, education, and commercial land uses. A full description of the Proposed Development is provided in **Chapter 3** of this ES.

1.1.3 The Site is located within the administrative authority of Exeter City Council (ECC). Existing land uses on the Site include industrial warehouses (e.g. for boat building), a vacant building to the south of the Site previously used as a meat rendering plant; and a bus and coach depot at the centre of the Site. The Site also contains an area of hardstanding used for vehicle parking that is located adjacent to the railway line.

1.1.4 The Site is specifically allocated within ECC's Local Plan First Review (1995-2011) under Policy KP6 and within ECC's adopted Core Strategy (2012) under Policies CP3 and CP17, as the Water Lane Regeneration Area. A requirement of the allocation is that new housing is of a modern design and compatible with existing land uses in the area; provides a mix of uses to create a safe environment; addresses flood risk; and aims to connect to a heat supply from the Marsh Barton Energy from Waste (EfW) facility. The Site will contribute to the delivery of at least 12,000 dwellings across Exeter City as outlined within Exeter City Council's adopted Core Strategy (2012).

1.1.5 Please note this document is a working draft and this statement presents the baseline, policy and methodology section only of each technical chapter. The Applicant will follow up in Autumn 2023 with the Non Technical Summary and the technical assessment including the following information;

- Primary and Tertiary Mitigation
- Assessment of Significant Likely Effects
- Secondary Mitigation and Enhancement
- Residual Effects
- Cumulative Effects
- Monitoring
- Conclusions
- Glossary
- Appendices and Figures

1.2 Terms and Definitions

1.2.1 For ease of reference the following terms have been used in the ES (unless the context dictates otherwise):

- 'the Site' – land on which the Proposed Development is located (the extent of which is shown on the Site Location Plan at **Appendix A.1**), and which lies within the Water Lane Regeneration Area;
- 'Proposed Development' – the mixed use development for which outline planning permission is sought as set-out in **Chapter 3**;
- ECC - Exeter City Council;
- 'the Applicant' – Cilldara Group (Exeter) Ltd;
- 'Water Lane Regeneration Area' – the Exeter City Council's Local Plan First Review (1995-2011) site allocation under Policy KP6, that covers the Proposed Development and the remainder of the allocation to the north, currently a large former gasworks site;
- Adopted Core Strategy 2026 (adopted in 2012) – This refers to Exeter City Councils framework for development that allocated the Site under Policies CP3 and CP17, as part of a mixed use redevelopment site;

EIA Terms:

- Primary Mitigation – modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken;
- Secondary Mitigation – actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the ES;
- Tertiary Mitigation – actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects;
- Impact – in relation to the outcome of the project (e.g. the removal of habitat or the generation of emissions to air);
- Effect – the consequent implication in environment terms (e.g. the loss of a potential breeding habitat for a protected species or the reduction in local air quality);
- Parameter Plans – the plans that define the maximum parameters for the Proposed Development on which the EIA will be based, shown in **Appendix A.2**; and
- Illustrative Master plan – an indicative view of how the scheme could look.

1.3 The Environmental Statement and Other Documents

1.3.1 This ES presents the findings of an EIA undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended), referred to as the 'EIA Regulations'.

1.3.2 The Proposed Development is considered by the Applicant to be EIA development (as defined) because it is development that falls within paragraph 10(b) of Schedule 2 of the EIA Regulations that has the potential to give rise to significant environment by virtue of its size.

1.3.3 A request for the adoption of a Screening and Scoping Opinion was submitted to ECC on the 14th of July 2022 and is provided in **Appendix A.3**. A Screening Opinion from ECC, received on the 12th of October 2022 and is provided in **Appendix A.4**, determined that the project is EIA development. An EIA Scoping Opinion (screening and scoping reference number 22/1343/SO), received from ECC, on the 24th of November 2022 is provided in **Appendix A.5**.

1.3.4 This ES comprises the following volumes and is to be submitted with the planning application.

- **Volume 1:** Main Report (this document);
  - **Chapter 2:** description of the Site and surrounding area;
  - **Chapter 3:** summary of the Proposed Development;
  - **Chapter 4:** description of the demolition and construction works, and the site management arrangements;
  - **Chapter 5:** methodology adopted to undertaken EIA;
  - **Chapter 6:** summary of the planning and policy context;
  - **Chapter 7**: Ecology and Biodiversity;
  - **Chapter 8**: Contamination;
  - **Chapter 9**: Flood Risk and the Water Environment;
  - **Chapter 10**: Materials and Waste;
  - **Chapter 11**: Noise and Vibration;
  - **Chapter 12**: Transportation and Access;
  - **Chapter 13**: Impact Interactions and Summary;
  - **Chapter 14**: Schedule of Mitigation and Monitoring; and
  - **Chapter 15**: Glossary of abbreviations used in the ES.
- **Volume 2:** Appendices including Heritage; and
- **Non-Technical Summary.**

1.3.5 The other principal documents submitted with the planning application are and include:

- Planning Statement
- Design and Access Statement
- Air Quality Assessment
- Waste Audit Statement

- Health Impact Assessment (HIA)
- Sustainability Strategy Delivery Framework
- Energy Strategy
- Biodiversity Net Gain Assessment
- Arboriculture Impact Assessment
- Utilities Strategy
- Lighting Assessment
- Topographical Survey
- Landscape and Green Infrastructure Strategy
- Landscape/Townscape Visual Impact Assessment
- Statement of Community Involvement

1.3.6 A full list of planning application documents submitted to support the Proposed Development are provided in the Planning, Design and Access Statement (Nash, 2023).

1.4 Project Team

1.4.1 Regulation 18(5)(a) of the EIA Regulations requires that, to ensure the completeness and quality of environmental statements, *"the developer must ensure that the environmental statement is prepared by competent experts*". Regulation 18(5)(b) requires an environmental statement to be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.

1.4.2 The project team working on elements supporting the ES are provided in **Table 1.1**. On behalf of the Applicant and in accordance with the EIA Regulations, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare the ES is provided in **Appendix A.6.**

Table 1.1. EIA Team

Project Team Member	**Team Position**
Stantec	EIA Coordination, Flood Risk and the Water Environment, Materials and Waste, Noise and Vibration, Transportation and Access
G&J Geoenvironmental Consultants Ltd	Contamination
Richard Green Ecology	Ecology and Biodiversity
Oakford Archaeology	Heritage

2 Site and Surrounding Area

2.1 The Site

2.1.1 The Site sits between Water Lane and the mainline railway, partly fronting on to the Exeter Canal and is centred approximately on national grid reference SX 92269 91267. A Site Location Plan is provided in **Appendix A.1**.

2.1.2 The Site is approximately 6.38 hectares (ha) with an elevation that varies by 3.0 m above ordnance datum (AOD) across the Site. This is from approximately 8.0 m AOD along the boundary of the railway line sloping downwards to approximately 6.0 m AOD along the southern boundary of the Site and 9.0 m AOD at the northern boundary with variations across this range between these boundaries.

2.1.3 Existing uses on the Site include a single storey vacant industrial building fronting Water Lane at the southernmost area of the Site. Broken hardstanding surrounds the vacant building to the south and west and is bounded by vegetation separating the Site from the London-Penzance railway line.

2.1.4 The mechanical unit of the SecAnim Saria Group including a metal chimney is located to the north of the industrial building. Further north of the mechanical unit, an additional unoccupied single story former office building is located. In addition, temporary cabins are located surrounding the building.

2.1.5 To the north of land previously occupied by the SecAnim Saria Group, a footpath crosses the Site horizontally from the east at Water Lane to the railway line to the west, providing an underpass to Marsh Barton Industrial Estate to the west.

2.1.6 A three storey industrial building previously occupied by Coastal Workboats Ltd is located immediately north of the footpath. Hardstanding used for boat and material storage surrounds the building to the north and west.

2.1.7 To the north of the Coastal Workboats Ltd building, land formerly occupied by the SecAnim Saria Group contains two brick buildings fronting Water Lane of one and two storeys in height respectively. Parking is located at the front of the one storey building. To the rear of these buildings, two industrial buildings are located beyond an area of hardstanding. Hard standing and car parking spaces are located to the north of the building.

2.1.8 Hedges line the western edge of the industrial building on the land formerly occupied by the SecAnim Saria Group. Hardstanding containing parked vehicles is located adjacent to the western boundary of the Site. Trees and hedges separate the hardstanding from the railway line along the length of the western boundary.

2.1.9 Greenslade's Tours company industrial unit and offices are located at the centre of the Site. The office building is of one storey in height containing parking at the front of the building. To the rear of Greenslade's Tours offices contains tarmacked hardstanding utilised as a bus and coach depot. An industrial unit is located to the north of the hardstanding at the rear of the offices and a bus storage unit located to the south west.

2.1.10 To the north of the Greenslade's Tours site is land previously occupied by RC Scaffolding, predominantly containing areas of hardstanding with two temporary structures comprised of scaffolding, wood and corrugated metal containing stored materials.

2.1.11 A vacant warehouse comprised of a corrugated metal and brick structure of approximately 5 storeys in height and 80 m in length is located to the north of land previously occupied by RC

Scaffolding. The vacant warehouse is surrounded by hardstanding to the north and west of the building containing parked vehicles.

2.1.12 A two to three storey Casting House office building, a warehouse occupied by Colas Ltd, and warehouse occupied by CrossFit Exe, are located to the north of the Site fronting Tan Lane. To the rear of CrossFit Exe building, disused metal railway rails are integrated into the hardstanding.

2.1.13 Tan Lane, including a section of railway underpass, and the Water Lane/ Tan Lane junction is situated at the northernmost boundary of the Site. A vacant two storey building previously occupied by Willeys Social Club is located at the north-eastern corner of the Water Lane/ Tan Lane junction.

2.2 The Surrounding Area

2.2.1 The immediate area surrounding the Site is bounded by distinct edges as follows:

- Vulcan Estate is located to the south east of the Casting House, Colas Lts and a warehouse occupied by CrossFit Exe. Vulcan Estate contains hardstanding with parked vehicles and a series of one and two storey industrial units, workshops and offices with ongoing uses including multiple vehicle repair shops and a metal fabrication unit. An Electricity Distribution Site and substation is situated to the east between the Vulcan Estate and land previously occupied by Greenslade's Coaches.

- Water Lane is located along the eastern boundary of the Site: the street runs on a northwest to southeast orientation providing direct access to the Site. Beyond Water Lane, to the north east contains the northern area of the Water Lane Regeneration Area, currently a large former gasworks site and Haven Banks development. Beyond Water Lane; to the east of the Site, comprises a residential area at Cotfield Street and Gabriels Wharf/River Meadows made up of predominantly 4 storey residential apartments.

- The Exeter Canal is located directly adjacent to Water Lane at the southeastern section of the Site and runs on a north south orientation at the eastern boundary beyond the former gasworks and residential apartments. The Exeter Canal is publicly accessible via Water Lane and forms the south eastern boundary of the Site.

- Alphington residential area lies to the north of Tan Lane and is predominantly comprised of two storey terraced residential housing.

- Great Western Railway line is located along the western boundary of the Site: rail route providing connections from London-Penzance including Plymouth and Exeter St Davids.

2.2.2 The surrounding area includes Marsh Barton industrial estate which is situated directly behind the railway line to the west of the Site.

2.2.3 A gas fired power plant, Green Frog (GF) Energy Ltd Plant, is located approximately 20 m to the south of the Site with Water Lane Solar Farm adjacent. To the south-west of the Site a number of industrial buildings are located including a gas turbine power station (Whitetower Energy Plant), a ready-mix concrete manufacturing process (Glendinning Concrete Batching Plant) and the energy for waste (EfW) facility (Exeter Energy Recovery Facility). Cartwheel Penny Park and Garden and Grace Road Playing Fields are located to the south beyond the Water Lane Solar Farm.

2.2.4 The Exeter Quayside is located approximately 450 m to the north comprising a key retail and leisure area for Exeter. Exeter City Centre is located approximately 1.5 km to the north east of

the Site and is within a 20 minute walking distance of the Exeter Quayside, accessible via South Street. Vehicle access to Exeter City Centre is via Alphington and Fore Street.

2.3 Environmental Context

2.3.1 The Site contains no scheduled monuments, registered parks and gardens (RPG), listed buildings or non-designated heritage assets.

2.3.2 The surrounding area contains six protected Scheduled Monuments including the Roman, Anglo Saxon and medieval defences collectively called Exeter City Walls; the medieval Exe Bridge, St Edmund's Church, and medieval tenement remains, lying between the River Exe and Frog Street; and the medieval bridge and part of a late medieval conduit under Holloway Street.

2.3.3 The are two RPG within 5 km of the Site including the Grade II* St Bartholomew's Cemetery, Exeter, located approximately 1.3 km to the northwest and Grade II Northernhay and Rougemont Gardens located approximately 1.5 km north of the Site.

2.3.4 Several conservation areas surround the Site including the Riverside and Central Conservation Areas located 330 m and 565 m to the north respectively, and the Southern and the Friars and St Leonard's Conservation Areas located 412 m and 680 m to the east.

2.3.5 There are many Listed Buildings in the surrounding area including those located in the historic quayside the most notable being the Grade I listed Custom House located approximately 575 m to the north of the Site, Grade I listed Quay House located approximately 564 m to the north, Grade II* listed Harbourmaster's Office located approximately 572 m to the north, and the Grade II* listed Fish Market located approximately 529 m to the north.

2.3.6 There are also several Listed Buildings located along the A377 Alphington Road including the Grade II Listed Nos. 6 and 8 Alphington Road located approximately 367 m to the west, Nos. 40-47 Alphington Road located approximately 418 m to the west and Nos. 54-58 Alphington Road located approximately 427 m to the west. Listed Buildings along Topsham Road include the Grade II* listed Devon County Hall located approximately 744 m to the east and Grade II* listed Bellair building located approximately 812 m to the east.

2.3.7 There are several other sites of historical interest located in the wider area surrounding the Site including the Grade I listed Cathedral Church of St Peter located approximately 1 km to the north; Grade I listed Church of St Mary Steps located approximately 730 m to the north; Grade II* listed buildings 3-9, 2, and 1 at Colleton Crescent located approximately 520 m to the north and the Grade II listed Street Surface on Stepcote Hill located approximately 745 m to the north.

2.3.8 Riverside Valley Park is located approximately 310 m to the south east of the Site and is one of the Exeter Valley Parks managed by Devon Wildlife Trust containing several pedestrian and cycle paths over 40 ha.

2.3.9 Bonhay Road Cutting Site of Special Scientific Interest (SSSI) is located 1.3 km north west of the Site. Stoke Woods SSSI is located 5 km to the north of the Site. The Exe Estuary Special Protection Area (SPA), SSSI and Ramsar site is located 2.8 km to the south east of the Site. The Belvidere Meadows Local Nature Reserve (LNR) is located approximately 3.3 km to the north of the Site and Barley Valley LNR approximately 2 km northwest.

2.3.10 The Exeter Canal is located adjacent to the Site and the River Exe is located approximately 265 m from the Site, forming the nearest watercourses. The Site is within an area considered at risk from flooding, with the wider Water Lane area located in Flood Zone 3. A small area adjacent to the railway line is located in Flood Zones 1 and 2.

2.3.11 Vehicular access to the Site is via Water Lane from Haven Road, connecting the Site to the A377 that provides further connections to the A30. The A30 eastbound provides access to the M5 and westbound to West Devon including Okehampton, and Cornwall. Tan Lane is located to the north within the Site boundary, providing additional access to the Site. Pedestrian and cycle access is located along the canal to Exeter Quay. The nearest train station to the Site is located at Marsh Barton providing services to Exmouth and Paignton via Exeter St David's. Marsh Barton is located approximately 410 m south of the Site.

2.3.12 The Site's underlying soil geology belongs to the Alphington Breccia Formation of reddish-brown, fine-grained Breccia stone, a sedimentary bedrock formed between 298.9 and 252.2 million years ago during the Permian period and gives rise to alluvial deposits of clay, silt, sand and gravel, sedimentary deposit formed between 11.8 thousand years ago and the present during the Quaternary period (BGS, 2023).

2.3.13 Site use such as the bus depot, scaffolding storage, meat rendering plant and vehicle parking, repair and storage result in potential sources of land contamination resulting from fuel tanks and infrastructure, chemical storage, process area and machinery and vehicles.

3 The Proposed Development

3.1 Introduction

3.1.1 This chapter sets out the description of the Proposed Development for which outline planning permission is sought.

3.2 Application Description

3.2.1 The description of the Proposed Development is:

'Demolition of existing buildings and structures and residential-led mixed use development providing new dwellings and workspace, retail, café/restaurant, community and cultural/leisure/education/hotel uses and associated infrastructure, including vehicular access and servicing, mobility hub, energy plant; alteration of ground levels; drainage and public open space; landscaping and public realm works, including pedestrian and cycle routes, with all matters reserved for future consideration, with the exception of access'.

3.3 Application Drawings

3.3.1 The chapter should be read in conjunction with the Parameter Plans which are provided in **Appendix A.2**. The Parameter Plans set out the proposals for approval including the range and quantum of proposes land uses, building heights, the area and density of development, landscaping and the access infrastructure that will be accommodated within the Site and form the basis of the EIA.

3.3.2 The Parameter Plans entail the following:

- Disposition of Uses
- Access
- Building Heights
- Green and Blue Infrastructure
- Demolition and Retention

3.3.3 The planning application is in outline with all matters reserved, except for access. The main access to the Site is proposed via a new junction on to Tan lane and therefore the assessment within this ES has been undertaken based on associated concept/preliminary design drawings. The drawings form an appendix to the TA, which is provided in **Appendix H.1,** and include:

- Concept Access Strategy
- Proposed Vertical Alignment and Clearance Through Tan Lane Tunnels

3.3.4 **Appendix A.7** provides a Framework Parameter Plan and an Illustrative Layout that demonstrates how the Proposed Development could be built out within the parameters and is for information only. The Framework Parameter Plan and Illustrative Layout does not form the basis for the assessment.

3.3.5 For the purposes of this EIA, the following indicative phasing strategy (**Appendix A.9**) has been considered for the Proposed Development, which is subject to change following further discussion with ECC.

- Phase 1 – the infrastructure works are to be completed in the first phase of the Proposed Development;
- Phase 2 – residential units with non-residential uses at ground floor level are to be constructed at the centre of the Site;
- Phase 3A – the construction of residential units with non-residential uses at ground floor level at the southern boundary of the Site;
- Phase 3B – the construction of education and commercial uses, located to the south of the electricity distribution site;
- Phase 4 – the construction of residential units with non-residential uses at ground floor level to the south of the Site fronting the Exeter Canal;
- Phase 5 – the construction of residential units with non-residential uses at ground floor located at the centre of the Site along the railway boundary;
- Phase 6 – the construction of residential units with non-residential uses at ground floor located at the centre of the Site fronting Water Lane and Gabriels Wharf;
- Phase 7 – the construction of the commercial uses/commercial ground floor with residential uses on upper level located opposite Water Lane and River Meadows;
- Phase 8 – the construction of the residential/student housing units with non-residential uses at ground floor level to the north of the Site; and
- Phase 9 – the construction of the residential/student housing units with non-residential uses at ground flood level to the north of the Site along the railway boundary.

3.4 Description of the Proposed Development

Assessment Scenarios

3.4.1 The land uses within the Proposed Development are described within the description of the Proposed Development (**Section 3.1**) and the Parameter Plans (**Section 3.2**). The maximum proposed floorspace for the Proposed Development is 117,020 m^2 Gross External Area (GEA) and reflects the limit of floorspace within the boundaries set by Parameter Plans under the outline planning application.

3.4.2 For the purpose of the EIA, four scenarios have been proposed for testing within the ES dependent on land use. Each technical discipline has selected the scenario that will represent the 'worst case' assessment for potentially significant environmental effects, which is confirmed within the methodology section of each topic Chapter 7 to Chapter 12 of the ES.

3.4.3 The maximum floorspace applies to the four assessment scenarios presented in **Table 3.1** which forms the basis of the assessment in the EIA. The four scenarios allow for flexibility for areas to come forward as a combination of either Residential (C3), Student (Suis Generis), and Commercial & Non- Residential (C1, E & F).

Table 3.1: Maximum Proposed Land Uses

Proposed Use Class	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Residential dwellings (Class C3)	Up to 920 dwellings	Up to 900 dwellings	Up to 980 dwellings	Up to 950 dwellings
Student housing (Suis Generis)	Up to 250 student beds	Up to 290 student beds	Up to 250 student beds	Up to 290 student beds
Commercial & Non-Residential (Use Classes C1, E, F1 & F2).	Up to 40,000 m^2	Up to 40,000 m^2	Up to 36,000 m^2	Up to 36,000 m^2

Demolition and Retention

3.4.4 A demolition and retention parameter plan can be found in **Appendix A.2**.The existing Metal Railway Rails located to the north of the Site and the Metal Saria Chimney will be retained for potential re-use onsite.

3.4.5 Demolition of the following buildings across the Site will be undertaken as part of the Proposed Development;

- Willeys Social Club building;
- Casting House;
- Warehouse occupied by Colas Ltd;
- Warehouse occupied by CrossFit Exe;
- Vacant warehouse at the centre of the Site;
- Industrial units and offices previously occupied by Greenslade's Tours Company;
- Brick and industrial buildings on land formerly occupied by the SecAnim Saria Group;
- Industrial building previously owned by Coastal Workboats Ltd;
- Mechanical units of the SecAnim Saria Group; and
- Single storey vacant industrial building at the southernmost area of the Site.

Residential

3.4.6 For the purpose of the EIA, the maximum area for each proposed land use is defined by the development scenarios in **Table 3.1**.

3.4.7 Flexibility has been designed into the parameter plans to allow for either residential dwellings (Class C3) or student housing to be brought forward within the parcel of land to the north west of the Site, depending on market demand at the time of delivery. In addition, land in the north of the Site adjacent to Water Lane allows for either residential dwellings (Class C3) with ground floor commercial (Class E) or a hotel (Class1) to be brought forward.

3.4.8 The maximum amount of residential dwellings that can be brought forward is represented by Scenario 3 up to 980 residential dwellings.

3.4.9 The residential dwellings are located to the north of the Proposed Development. There will be non-residential uses at ground floor level that will comprise commercial, business and service uses (Class E) and Local Community Uses (Class F2) such as a mobility hub for shared parking, electric vehicles and bicycles and delivery drop-off and pick-up.

3.4.10 Residential dwellings containing non-residential uses at ground floor level (Class E and F2) are also located at the central and southern areas of the Proposed Development.

Student Housing

3.4.11 As outlined in **Section 3.4.7**. above, either residential or student housing will be brought forward depending on market demand at the time of delivery. The maximum amount of student housing that can be brought forward is up to 290 student beds under the maximum proposed land use Scenario's 2 and 4.

3.4.12 The student housing is located to the north of the Proposed Development. There will be non-residential uses at ground floor level that will comprise commercial, business and service uses (Class E) and Local Community Uses (Class F2) and a mobility hub for shared parking, electric vehicles and bicycles and delivery drop-off and pick-up.

Commercial

3.4.13 The Proposed Development consists of commercial use Class E for shop, food and drink, office, research and development or hotel use (Class C1) fronting Water Lane and the Exeter Canal.

3.4.14 As defined by **Table 3.1**, the maximum area for Commercial & Non-Residential (Use Classes C1, E & F) is up to 40,000 m^2 for Scenario's 1 and 2 and up to 36,000 m^2 for Scenario's 3 and 4. These scenarios are applicable to the commercial ground floor use and residential upper levels located to the north of the commercial area, that fronts Water Lane and the existing residential area at Cotfield Street and Gabriels Wharf/River Meadows beyond.

3.4.15 The Proposed Development will include education and commercial uses (Class F1 and E) for office use, research and development, industrial processes compatible with residential amenity and Suis Generis energy infrastructure. The education and commercial buildings will be located to the rear and south of the Electricity Distribution Site and Sub Station. Education and commercial buildings to the south of the electrical substation will contain non-residential uses at ground floor level of Class Use E and F2.

Building Heights

3.4.16 The Building Heights Parameter Plan shows maximum building heights and within each height zone, required variation in height. It shows that the residential and student housing located to the north of the Site will be of varying buildings heights ranging from up to 5 storeys fronting the Water Lane and Tan Lane junction and up to 7 storeys along Tan Lane and the railway line.

3.4.17 The residential area at the centre of the Site is proposed to be comprised of varying heights up to up to 5 storeys fronting Water Lane and the existing residential area at Cotfield Street and Gabriels Wharf/River Meadows. The building height will increase to up to 7 storeys at the centre of the Site and then up to 8 storeys at the railway boundary. The residential buildings located to the south of the Site will have a height of up to 7 storeys.

3.4.18 Within the residential area at the centre of the Site along the railway boundary, there is an opportunity for a taller building of up to 12 storeys; the footprint, form, massing, and specific height of which is to be determined through technical assessments, detailed design, and consideration through the planning process at reserved matters stage.

3.4.19 The buildings fronting Water Lane and the Exeter Canal for commercial use, including the commercial ground floor use with residential on upper levels, will be of up to 5 storeys in height. The education and commercial uses at the centre of the Site will be comprised of varying building heights of up to 5 storeys fronting Water Lane and the Electricity Distribution Site and up to 7 storeys at the centre of the Site along the railway line.

Green and Blue Infrastructure

3.4.20 As shown on the Green and Blue Infrastructure Parameter Plan, the south of the Proposed Development is comprised of a public square fronting the Exeter Canal and an area of open space including a linear park of a minimum 12 m width with Integrated Sustainable Urban Drainage (SuDs) and play features. The primary open space includes extensive planting, incorporating a combination of existing and proposed trees. The primary area of open space will form part of the existing Canalside Habitat of Principal Importance.

3.4.21 An Ecological Transition Zone is proposed to follow the length of the western boundary to provide a vegetated buffer to transition from the existing ecological dark corridor along the railway line to the Proposed Development. The width of the Ecological Transition Zone is to be a minimum of 3 m but will be wider in places and this is to be determined at reserved matters stage.

3.4.22 Areas of intermediate open space are proposed to the south of the Site stretching a minimum of 18 m width between the Ecological Transition Zone to the Exeter Canal, providing ancillary social space and habitat connections.

3.4.23 A primary street will cross the centre of the Site parallel to Water Lane with secondary streets running perpendicular. The primary and secondary streets are proposed to be liveable streets meaning that they will include integrated social spaces, trees, planting, and SuDs to create a more attractive and accessible street.

3.4.24 An additional public square is located to the north of the Proposed Development fronting Tan Lane.

3.4.25 A Flood Risk ES Addendum will be prepared to address and mitigate flood risk and is to be submitted in Autumn/ Winter 2023.

3.4.26 The land uses for the Proposed Development will be designed to with no residential uses at ground floor level.

3.4.27 A review of the mapping system for assets in the vicinity by South West Water (SWW) has confirmed that there is capacity for foul and potable water supply for the Proposed Development.

Transport and Access

3.4.28 The Proposed Development will improve Tan Lane through the inclusion of enhanced pedestrian and dedicated cycle provisions along with provision of a new vehicle/pedestrian/cycle access into it from Tan Lane. The Proposed Development will also be accessible from the southern extent of Water Lane and from the existing pedestrian and cycle provisions along Marsh Green Road North by way of an existing subway.

3.4.29 The Proposed Development has been designed to include pedestrian and cycle priority areas to Local Transport Note (LTN) 1/20 standard from the south of the Site along the Exeter Canal through to the centre of the Site. The canal side frontage of the Proposed Development is intended to be accessible by pedestrians, cyclists, emergency vehicles and for access only to the likes of the existing solar farm to the south.

3.4.30 A private street is proposed to be provided alongside the base of the existing railway embankment, opposite the canal side frontage, in order to provide rear access to neighbouring development blocks for pedestrians, loading, service vehicles and impaired mobility users only.

3.4.31 The primary street utilises the proposed new access from Tan Lane at the north of the Site and routes along the western boundary next to the railway line embankment to serve the centre of the Site along with associated pedestrian and cycle provisions. This street is on higher ground and is proposed to provide for safe access and egress in an extreme flood event, as a part of a wider strategic route serving the existing community and other development sites. It provides a point for a pedestrian/cycle crossing over the railway to the raised, disused railway embankment to the edge of Marsh Barton.

3.4.32 A mobility hub for shared parking, electric vehicles and bicycles and delivery drop-off and pick-up will be included as part of the Proposed Development. The Proposed Development will provide up to 276 off street car parking spaces at ground floor level. A proportion of the car parking spaces will be allocated to residential, hotel and Exeter College use and the remainder left unallocated for use by visitors and the remaining land uses onsite. The Proposed Development will also provide car club spaces and around 5 disable spaces for the student housing.

3.4.33 The existing bus service that extends along Tan Lane on the Green Route is proposed to be diverted through the Proposed Development. The proposed opening-up of the second Tan Lane arch will facilitate access for electric buses.

Energy

3.4.34 The Proposed Development will contain an all-electric residential led development in accordance with Part L of Schedule 2 of the Building Regulations. This Proposed Development will seek to use renewable a combination of renewable and sustainable energy sources to be determined at the detailed design stage including photovoltaic (PV) cells. Electricity from the National Grid will be utilised as required. The Energy Statement confirms that the Site will be suitable for ground source heat pumps.

3.5 Primary Mitigation

3.5.1 In accordance with Regulation 18(3)(c) of the EIA Regulations and guidance for the Institute for Environmental Management and Assessment (IEMA) Delivering Quality Development

(IEMA, 2016), assessments within each topic section have taken account of primary mitigation which is inherent in the scheme design. The key primary mitigation which forms part of the Proposed Development include the following, with discipline specific primary mitigation listed within each chapter.

- Provision of a mix of land uses providing residential units including student and affordable housing. This will offer a choice of housing and address local housing need;
- Creation of employment and provision of education facilities;
- Open space provision including a public square and a linear park of a minimum 12 m width with Integrated Sustainable Urban Drainage (SuDs) and play features;
- Habitat creation through planting incorporating a combination of existing and proposed trees;
- The Proposed Development will include an Ecological Transition Zone which will provide a vegetated buffer to transition from the existing ecological dark corridor for bat movement along the railway line to the Proposed Development;
- The layout and massing of buildings has been designed to reduce effects on views and nearby heritage assets, whilst providing a scheme that optimises efficient use of land;
- The Proposed Development has been designed as a low parking development to reduce the reliance on cars and promote sustainable travel;
- The Proposed Development will include pedestrian and cycle priority areas that are designed to LTN 1/20 standard that are accessible by emergency vehicles only;
- The provision of a new access road and pedestrian and cycle access on Tan Lane to create a walkable and cyclable neighbourhood; and
- The existing pedestrian and cycle access from Marsh Green Road North by way of the existing subway will be retained to connect the Site to the surrounding areas.

Tertiary Mitigation

3.5.2 The key tertiary mitigation includes the following, with discipline specific tertiary mitigation listed within each chapter.

- A Demolition Construction Environmental Management Plan (DCEMP) will be secured by a planning condition and will set out the environmental issues and management procedures to be adopted during the demolition and construction works on Site to help control potential temporary adverse impacts to the environment and the local community;
- Re-use of materials from onsite demolition as outlined in the Demolition and Retention Parameter Plan;
- The Proposed Development will follow the principles of the Waste Hierarchy – ‘eliminate, reduce, reuse, recycle, other recovery and disposal’ as outlined in the Waste Audit Statement;
- EV charging infrastructure will be provided in line with the standards of Part S of the Building Regulations;

- All dwellings constructed after June 2023 must comply with the Building Regulations Part L 2021 which came into effect in June 2022. The new Building Regulations enforce higher fabric performance, so dwellings are designed to be more energy efficient. It also considers the use of zero and low carbon energy generation at an early stage of the design process;

- A Mobility Strategy to include the use of Mobility Hubs to provide centralised parking for car-free zones and includes EV provision;

- The Energy Strategy will be based on the Energy Hierarchy: Be Lean: use less energy and Be Clean: supply energy efficiently, through the design and specifications of the proposed buildings, and Be Green: use renewable energy; and

- A Remediation Strategy will be produced based on the findings of the intrusive investigation work and the result of the risk assessments. The Remediation Strategy will detail the work required and the mitigation measures necessary to ensure that no significant risks remain, the Site is suitable for the proposed use and that it would not be capable of being determine as contaminated land under Part IIA of the Environmental Protection Act 1990.

3.6 Consideration of Alternatives

3.6.1 Regulation 18(3)(d) of the EIA Regulations requires an ES to include "*a statement 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 options chosen, taking into account the effects of the development of the environment". This is expanded at paragraph 2 of Schedule 4 of the EIA Regulations require an ES to include "a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects".*

3.6.2 This legal requirement is expressed in very general and high-level terms, requiring only the inclusion of "reasonable" alternatives and an "indication" of "main" reasons. Although a full description of alternatives and a full assessment of their likely environmental effects are not required, sufficient detail should be provided to allow for a meaningful comparison between the alternatives and the Proposed Development.

3.6.3 The consideration of alternatives in this ES complies with that requirement and has regard to the guidance in the PPG on Environmental Impact Assessment which states (similarly to the EIA Regulations) "Where alternative approaches to development have been considered, the Environmental Statement should include a description of the reasonable alternatives studied which are relevant to the proposed development and its specific characteristics and provide an indication of the main reasons for the choice made, including a comparison of environmental effects".

3.6.4 Alternatives should only be considered where they are feasible, realistic, and genuine. This may depend on various factors, including planning policy, land ownership, financial viability, technical feasibility, and design quality. Options which are unlikely to be acceptable or deliverable are not realistic alternatives and so do not need to be considered.

3.6.5 Whilst environmental effects are relevant when choosing between alternatives, other factors are also relevant. The main selection criteria which the Applicants have used when choosing between the alternatives which it has considered include planning policy, viability, design quality, market requirements, site constraints and opportunities and environmental effects.

3.6.6 An outline of the reasonable alternatives considered in relation to the Proposed Development and the main reasons for choosing the Proposed Development in preference to them, including a comparison of the environmental effects will be submitted by the Applicant in the Autumn 2023 submission.

4 Demolition, Construction and Site Management

4.1 Introduction

4.1.1 This chapter provides information in the anticipated demolition and construction of the Proposed Development and the management of the demolition and construction phase on the Site.

4.2 Demolition and Construction Plan

4.2.1 Environmental effects associated with the demolition and construction phases will be managed through a Demolition and Construction Environmental Management Plan (DCEMP).

4.2.2 The DCEMP outlines, as appropriate, the measures to be implemented during demolition and construction to mitigate environmental effects. For the purposes of the assessments within the ES, specific measures which will be set out in the DCEMP, and as noted within each topic chapter of the ES, are treated as tertiary mitigation.

4.2.3 The DCEMP will provide a framework to govern the demolition and construction works including further information on the roles, responsibilities and communications during demolition and construction, construction management and methodology and mitigation measures associated with construction traffic, air quality and dust, noise and vibration and contamination and ground conditions.

4.3 Construction Programme.

4.3.1 The indicative programme for construction of the Proposed Development is as follows;

- Demolition Commencement – 2024
- Construction Commencement – 2025
- First Occupation – 2027
- Completion - 2033

4.4 Construction Method and Management

4.4.1 Standard construction hours are Monday to Friday between 07:00 to 19:00 and Saturday 08:00 to 13:00.

4.4.2 The demolition and construction works carry with them a range of issues to be dealt with in their design, preparation and execution.

4.4.3 Key demolition and construction activities shall include:

- Demolition of all buildings onsite;
- Enabling works include site clearance, temporary access, erection of fences & security provision;
- Construction of new access and roads;
- Construction of all building foundations and structures and services;

- Construction of green and blue infrastructure; and
- The movement of materials, waste and people to and from the Site.

4.5 Access and Routing to Site

4.5.1 Vehicular access during construction will be via the signalised crossroads junction that the A377 Alphington Road forms with Haven Road and Exe Bridges Retail Park. From this point construction traffic will be able to either travel to the south along the A377 to access the A30, or to the north via the Exe Bridges Roundabout which connects with the B3212 and A3015.

4.5.2 Haven Road extends from the signalised crossroads junction to connect with the northern extent of the Water Lane carriageway at the priority T junction. At this point Haven Road becomes the minor arm with the latter continuing as the straight ahead movement which will cater for development traffic travelling to and from the site. Water Lane (North) then extends to form a priority crossroads junction with Water Lane (South), Tan Lane and Willeys Avenue. The latter provides an alternative way for general traffic to access the site from the A377 albeit only left turn in movements are afforded from it. Tan Lane extends beneath the nearby mainline railway line by way of an underbridge but use of this is restricted to buses and 'authorised vehicles' only.

4.5.3 Access to the site itself is proposed to be directly gained via a new priority junction arrangement that is intended to be formed with Tan Lane prior to the aforementioned underbridge. In addition, access to the site is also proposed from Water Lane (South) itself.

4.5.4 Traffic will be generated during the demolition and construction period as a result of bringing plant and materials to the site, transporting demolition material off site and due to construction personnel accessing the site.

4.5.5 **Chapter 12 Transportation and Access** and the Transport Assessment (TA) will set out additional details on construction traffic and management. Management of construction traffic, deliveries and personnel access will be managed through principles that will be agreed as part of a Construction Traffic Management Plan (CTMP).

4.5.6 All operatives will be encouraged to travel sustainably and car/van share to reduce vehicular trips associated with construction workers travelling to and from site. There are a range of public transport services in close proximity to the site including the newly opened Marsh Barton Railway Station and local bus services. Bike parking and showers will be provided on site.

4.5.7 The number of lorry movements, hours of operation and any required lorry holding areas will need to be agreed in advance with local planning and/or local highway authority.

4.5.8 Where possible all delivery and waste removal vehicles will seek to avoid peak AM and PM periods on the local highway network. In addition, wheel washing facilities will be established on site so that construction vehicles that exit it will be cleaned before re-entering the public highway network.

4.5.9 The A30, accessible from the A377, connects to the M5 to the south and is likely to be the main route to and from site for HGV related construction traffic.

4.6 Construction Waste

4.6.1 Waste will be generated from the demolition of existing buildings and from the construction process. The material generated through the demolition phase that is expected to be reused on site where possible includes concrete, bricks, steel, timber and soils.

4.6.2 The demolition and construction process needs to be managed to accommodate the peak periods of waste generation. Where possible waste reduction strategies and practices will be formulated in advance. During demolition and construction, materials recovered from on-site works may be suitable for reuse of Site, reducing the traffic generation and pollution, costs of transportation and procurement of virgin materials. This, combined with considerate design practice, will help to minimise

4.6.3 Construction waste will be managed and minimised in line with the Waste Hierarchy as outlined in the Waste Audit Statement. The waste management methods in order of preference are as follows;

- Waste Prevention – Through good design and procurement mechanisms.
- Preparation for Reuse – To provide design features to the Proposed Development to use materials in their current state and form, this can occur either on or off site.
- Material Recovery – By using waste materials found on site and recycling / recovering them into an alternative form that can be used for construction purposes.
- Other Recovery – Energy recovery from biodegradable or combustible materials.
- Disposal – The least preferred option where the waste stream would be subject to a final disposal route, such as landfill.

4.6.4 Devon County Council has adopted the Devon Waste Plan in December 2014 which forms part of Devon's Development Plan. The Proposed Development will aim to recycle 90% of construction and demolition waste, as stated in the Policy W5: Reuse, Recycling, and Materials Recovery.

5 Assessment Method

5.1 Introduction

5.1.1 This chapter describes the process by which the EIA has been carried out. It includes a discussion of the relevant EIA regulations, the EIA process, approach to consultations and the EIA assessment method. Details of the technical method followed for each topic are presented in each of the technical chapters (Chapter 7-12) as appropriate.

5.2 EIA Regulations

5.2.1 The Town and County Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the EIA Regulations) implement EC Directive 85/337/EEC, as amended, into domestic legislation. The initial Directive and its three amendments have been codified by Directive 2011/92/EU. A new Directive 2014/52/EU was implemented in 2014 and the provisions and requirements were enacted in the UK on 16 May 2017 to form the EIA Regulations.

5.2.2 To ensure that the provisions of the EIA Regulations continue to be implemented in the same way or an equivalent way following the exit of the United Kingdom from the EU at the end of the transition period, appropriate amendments were made by The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018. There had been no substantive change to EIA requirements as a result of the departure of the UK from the European Union.

5.2.3 The EIA Regulations set out the procedures for undertaking an EIA and the information which is required in an ES and such procedure has been followed in this assessment.

5.3 EIA Process

5.3.1 In general terms the main stages in the EIA are as follows:

- **Screening** – determining whether a proposed project falls within the remit of the EIA Regulations;
- **Scoping** – determining the extent of issues to be considered in the assessment and reported in the ES;
- **Establishing Baseline** – drawing together and reviewing existing available data and undertaking surveys to determine the existing and future baseline conditions;
- **Assessment and Iteration** – assess likely significant effects of development, evaluate alternatives, provide feedback to design team on potential adverse impacts, modify development or impose parameters, incorporate mitigation, assess effects of mitigated development; and
- **Preparation of the ES.**

5.4 Screening and Scoping

5.4.1 Under the EIA Regulations, ‘Screening’ is a procedure used to determine whether a proposed development is likely to have significant effects on the environment and therefore whether a planning application requires an EIA.

5.4.2 A request for the adoption of a Screening and Scoping Opinion was submitted to ECC on the 14th of July 2022 and is provided in **Appendix A.3**. A Screening Opinion from ECC, received on the 12th of October 2022, determined that an EIA is required and is provided in **Appendix A.4**. An EIA Scoping Opinion (screening and scoping reference number 22/1343/SO), received from ECC, on the 24th of November 2022 is provided in **Appendix A.5**.

5.4.3 Within the Scoping Opinion a number of specific comments have been identified and are taken into account and considered for inclusion in the subsequent ES. Each of the topic chapters of this ES identify the specific comments within the Scoping Opinion and how they have been addressed within the chapter. The ES has also responded to the comments within the Scoping Opinion as follows:

- A robust assessment of the ecological environmental impacts and opportunities based on relevant and up to date environmental information is provided in **Chapter 7 (Ecology)** of this ES;
- Ecology Technical Appendices detailing the survey work and desk study used to inform the Ecological Impact Assessment (EcIA), Biodiversity Net Gain before (or 'pre') and after (or 'post') development habitat plans, and an Outline Mitigation and Enhancement drawing can be found in **Appendix B**;
- A review of the ECC's record of intrusive contamination surveys has been undertaken as part of the ES assessment for **Chapter 8** (**Land Contamination**);
- The Flood Risk Assessment (**Chapter 9 (Flood Risk)** of this ES) demonstrates that the occupants of the Site would be safe from flood risk over the lifetime of the development, including the effects of climate change. Safe access and egress is also outlined in the Flood Risk Assessment;
- The Grade II* listed Colleton Crescent, Grade I listed Cathedral Church of St Peter and the scheduled city walls heritage assets have been assessed within the **Heritage Appendix** of this ES;
- The impact on conservation areas and their setting, including the Riverside Conservation Area is included in the **Heritage Appendix** of this ES;
- The impact on the City of Exeter is considered in the **Heritage Appendix** of this ES;
- A Remediation Strategy will be produced based on the findings of the intrusive investigation.
- A Waste Audit Statement is provided in **Appendix E**;
- **Chapter 11 (Noise and Vibration)** assesses the effect of noise and vibration from the surrounding industrial and commercial uses on the new residential in accordance with BS8233:2014 'Sound insulation and noise reduction for buildings;
- Details of how low levels of car ownership will be maintained is outlined in **Chapter 12 (Transportation and Access)**; and
- Cumulative Effects of the Proposed Development are outlined in **Appendix A.8**. This includes the redevelopment of Haven Banks, Water Lane (application reference 22/1145/FUL).

5.4.4 As a result, this ES has been prepared to fulfil the requirements of the Scoping Opinion and in compliance with regulation 18(4)(a) of the EIA Regulations which requires an ES to be based on the most recent scoping opinion issued.

5.5 Consultation

5.5.1 In addition to consultation to agree the scope of the EIA, consultation with relevant statutory and non-statutory bodies has been undertaken throughout the EIA and design process. Section X.3 of each of the technical discipline chapters (**Chapters 7 – 12**) provides a summary of consultation undertaken in relation to that discipline.

5.5.2 As part of the EIA process, the following consultees have been consulted to agree the detailed scope of the assessment, to provide information, to discuss assessment methods and findings, and/or agree mitigation measures and design responses. A summary of key consultees and the key technical areas that were consulted on is included below:

- Exeter City Council; Environmental Health Officer, Waste Management Officer, and Principal Project Manager Heritage.
- Natural England
- Royal Society for the Protection of Birds (RSPB)
- Devon County Council; including the Lead Local Flood Authority (LLFA) and
- Environment Agency.

5.5.3 Pre-application meetings on the design of the development have also been held with ECC in 2022 and 2023.

5.5.4 The EIA has given due regard to the requirements of the consultees and their assistance is gratefully acknowledged.

5.6 Assessment Assumptions

5.6.1 The following assumptions have been used to ensure that the EIA provides a robust assessment of likely significant effects of the Proposed Development:

- Baseline conditions have been established through site surveys and desk based assessment of the current conditions onsite.
- Suitable planning conditions or planning obligations will be imposed as identified in this ES to secure appropriate mitigation measures.
- The Proposed Development will be constructed broadly in accordance with the phasing, programme and construction practices documented in **Chapter 4.**
- The Proposed Development will be delivered in accordance with the Parameter Plans (shown in **Appendix A.2**).
- The assessment of likely significant cumulative effects has assumed that the approved and/or existing developments identified in **Appendix A.8**. will be built out as set out in the documents supporting those applications.

5.7 Uncertainty and Limitations

5.7.1 The prediction of future effects inevitably involves a degree of uncertainty. Where necessary, the technical chapters describe the principal factors giving rise to uncertainty in the prediction of likely environmental effects and the degree of the uncertainty.

5.7.2 Confidence in the predictions has been achieved by employing accepted assessment methodologies, e.g. Guidelines for Ecological Impact Assessment in the UK. Uncertainty inherent within the prediction has been described. The ES has sought to provide a robust assessment of the likely significant effects of the Development.

5.7.3 Further limitations in preparing this ES are noted in each of the technical chapters, as appropriate in **Section x.4** of each chapter.

5.8 Assessing Effects

Establishing Baseline Conditions

5.8.1 A range of Site surveys and data collection exercises have been used to identify environmental conditions at the Site and in the surrounding area to provide a basis for the subsequent assessment work. The surveys undertaken are reported in each of the technical chapters.

5.8.2 It should be noted however that some of the technical surveys and assessments on which the EIA is based are too detailed and lengthy for incorporation into Volume 1 of this ES (e.g. ecology survey reports). In such instances, the technical survey and assessment reports are provided in full as an appendix to this ES (Volume 2), with a relevant summary and the reference for the full survey or assessment provided in the ES. The geographical scope of these appended surveys and assessments has been based on the likelihood for significant effects.

5.8.3 The EIA has assessed the likely significant effects of the Proposed Development against baseline conditions in the same year (i.e. providing an assessment of 'do something' and 'do nothing'). As required by the EIA Regulations, each chapter has also considered as appropriate the likely evolution of current baseline conditions without implementation of the Development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of available environmental information and scientific knowledge. The EIA has therefore used these future baseline conditions within the assessment of effects.

Assessing Demolition and Construction Effects

5.8.4 The EIA has assessed the likely environmental effects that could occur during demolition and construction. Given that a principal contractor has not yet been appointed it is not possible to be definitive about the construction works. Therefore, the assessment of likely environmental effects during the demolition and construction phases has been based on available information and reasoned judgements based on professional experience to enable the likely environmental effects to be identified.

5.8.5 Demolition and construction effects will be temporary and intermittent, i.e. works will not occur in one location throughout the entire duration of the construction works. The potential duration and intermittency of effects is identified as appropriate in the ES **Chapters 7-12** based on the information provided in **Chapter 4**.

5.8.6 In judging the significance of construction effects, it has been assumed that the DCEMP will be secured via a suitably worded condition as tertiary mitigation, that will adequately address mitigation measures in relation to construction effects identified within **Chapters 7-12**.

Assessing Operational Effects

5.8.7 To provide an assessment that is generally consistent between topic chapters, the EIA has focused on assessing the likely environmental effects of the overall development. This approach ensures that the full environmental effects of the outline planning application have been considered. Where worst case effects could occur during an earlier year then such an assessment has been undertaken and this is reported in the relevant topic chapter.

5.9 Mitigation and Enhancement

5.9.1 The incorporation of mitigation measures, which are measures to avoid minimise or compensate for adverse effects, is an integral part of the design and EIA processes.

5.9.2 The EIA Regulations require an ES to contain: *"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment".*

5.9.3 The EIA has run concurrently with the design process to identify any likely significant environmental effects and then iteratively modify the design or how it is constructed to mitigate any likely significant adverse environmental effects and to maximise the environmental opportunities which might arise as a consequence of the demolition, construction and operation of the Proposed Development.

5.9.4 Primary, Secondary and Tertiary mitigation is defined as follows;

- Primary mitigation is defined as the measures which are designed to be an inherent part of the Proposed Development and is set out in **Section 3.6.** and within each topic chapter. Such measures included a surface water management strategy. Measures to enhance the current Site have also been included within the design of the Development such as habitat creation and delivering a net gain for biodiversity;

- Secondary Mitigation are the measures which require further activity to be achieved, and do not form an inherent part of the Proposed Development. Secondary mitigation measures and opportunities for environmental enhancement have also been identified through the EIA process. Such mitigation and enhancement measures are identified in this ES along with how it is proposed that they be secured; and

- Tertiary Mitigation is defined as the measures secured through legal process assumed to be an inherent part of the Proposed Development. These include actions that would occur with or without input from the EIA in the design process.

5.9.5 A hierarchy of methods for mitigating significant adverse effects will be followed; these are, in order of preference:

- **Avoidance** – designing a development in such a way that avoids effects on the environment (e.g. avoiding siting residents in areas that could be affected by flood risk)

- **Reduction** – design the Proposed Development or employ construction methodologies such that significant effects identified are reduced (e.g. employment of sustainable drainage to mitigate the effects of development on surface water run-off)

- **Compensation** – providing off-site enhancement in order to compensate for where onsite mitigation has not been possible (e.g. financial contributions towards local infrastructure).

5.9.6 Environmental effects remaining after mitigation measures have been incorporated are termed "residual effects" and these are fully described in the ES.

5.10 Assessment of Cumulative Effects

5.10.1 The EIA Regulations require the assessment to consider the likely significant effects of the Proposed Development in the context of other existing and/or approved projects, as well as the cumulative effects that may result from the Development and these other developments.

5.10.2 'Approved developments' are considered to be planning permissions that are partially built out and extant planning permissions. Planning applications that have been submitted but not yet determined have also been considered where there is a likelihood that the application may be granted planning permission before this application is determined.

5.10.3 A review of 'approved developments' was undertaken to identify major developments within 1 km of the edge of the planning application boundary of the Site that may lead to likely significant cumulative effects with the Proposed Development. It was considered that significant cumulative effects are unlikely with developments outside of these areas.

5.10.4 An initial review of approved/existing development was undertaken, and confirmation of approval sought from ECC. The initial review identified two developments to be included in the cumulative assessment. The full methodology for approved developments, the schedule of approved developments and a plan showing their location is provided in **Appendix A.8.**

5.10.5 Whilst the remainder of the Water Lane Development Area (WLDA) to the north of the Site does not fall into the definition of an approved/existing development, the EIA has assessed the likely significant cumulative effects of the Proposed Development alongside the WLDA. Given that that there is no planning application for the northern area of the WLDA at the time of undertaking the EIA, the assessment has been based on the Exeter City Council Local Plan allocation and design information that is available at the time of assessment.

5.11 Impact Interactions

5.11.1 **Chapter 13** provides the assessment of impact interactions, i.e. receptors being affected by more than one environmental effect and therefore potentially being subject to a more significant combined effect than the individual effects reported in each of the topic chapters.

5.11.2 The approach adopted for the assessment is in accordance with the methodology set out above, with further details provided in **Chapter 13**.

5.11.3 **Chapter 13** therefore provides an overall summary of the effects of the Proposed Development during construction and operation.

5.12 Significance Criteria

5.12.1 The two principal criteria for determining significance of an environmental effect are the magnitude of the effect and the sensitivity of the receptor, in addition the likelihood of the effect occurring is also considered as appropriate.

5.12.2 The approach to assessing and assigning significance to an environmental effect has relied upon such factors as consideration of the EIA Regulations, guidelines, standards or codes of practice, the advice and views of statutory consultees and other interested parties, and professional judgement.

5.12.3 The following questions are relevant in evaluating the significance of likely environmental effects:

- Is the effect direct, indirect or cumulative?
- Does the effect occur over the short, medium or long term?
- Is the effect permanent or temporary?
- Is it positive, neutral or adverse effect?
- Is the effect reversible or irreversible?
- Does the effect increase or decrease with time?
- Is the effect of local, regional, national or international importance?
- Are health standards or environmental objectives threatened?
- Are mitigating measures available and is it reasonable to require these?

5.12.4 Specific significance criteria have been prepared for each specialist topic, based on the generic criteria, for adverse and beneficial effects, set out in **Table 5.1**.

Table 5.1: Generic Significance Criteria

Significance Level	Criteria
Substantial	Only adverse effects are assigned this level of significance as they represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites and features of international, national or regional importance. A change at a regional or district scale site or feature may also enter this category.
Major	These effects are likely to be important considerations at a local or district scale but, if adverse, are potential concerns to the project and may become key factors in the decision-making process.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.
Not Significant	No effect or effect which is negligible or beneath the level of perception, within normal bounds of variation or within the margin of forecasting error.

5.12.5 Effects that are described as ‘substantial’, ‘major’ or ‘moderate’ are determined to be *significant,* and effects that are described as ‘minor’ or ‘negligible’ are determined to be *not significant* in the context of the EIA Regulations.

5.13 Monitoring

5.13.1 The EIA Regulations introduce the requirement for the monitoring of significant adverse environmental effects where appropriate and that a schedule of proposed monitoring should be set out in an ES.

5.13.2 Each chapter of the ES therefore identifies the proposed monitoring arrangements for that topic. As stated in the EIA Regulations effort should be made to ensure that *"the type of parameters to be monitored and the duration of the monitoring are proportionate to the nature, location and size of the development and the significance of its effects on the environment."*

5.13.3 A summary of mitigation and monitoring requirements identified in each topic chapter is provided in **Chapter 14**.

6 Planning Policy and Context

6.1. Introduction

6.1.1 This chapter summarises the key planning policy documents that have informed and set the planning context of the EIA process with further detail on relevant policies is set out within the Planning Statement submitted with the application.

6.1.2 Topic chapters (see Chapter 7 to 12) set out specific planning policies within these planning policy documents and how they have informed the topic assessment.

National Planning Policy Framework

6.1.3 The National Planning Policy Framework 2021 (NPPF) sets out the Government's approach to planning matters and is a material consideration in the determination of planning applications. At the heart of the framework is a presumption in favour of sustainable development. Paragraph 8 sets out sustainable development with three overarching objectives:

- ***an economic objective*** *– to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and* improved *productivity; and by identifying and coordinating the provision of infrastructure;*

- ***a social objective*** *– to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-*designed*, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and*

- ***an environmental objective*** *– to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon* economy*.*

6.1.4 The NPPF is supported by guidance in the national Planning Practice Guidance (PPG) (PPG, 2021) that helps interpret policy for delivery and includes a section specifically to provide guidance on EIA.

Local Planning Policy

Exeter Local Plan First Review 1995 - 2011

6.1.5 Saved policies of the Exeter Local Plan First Review form part of the adopted development plan. The Site is specifically allocated within ECC's Local Plan First Review (1995-2011) under Policy KP6.

Exeter Core Strategy 2006 - 2026

6.1.6 The Exeter City Council Core Strategy 2006- 2026 also forms part of the adopted development plan and sets out the policies to guide future development and change in Exeter for the period 2006 to 2026.

6.1.7 The Site is specifically allocated under Policies CP3 and CP17 for a mixed use redevelopment site, as part of a wider delivery of at least 12,000 dwellings across Exeter City. A requirement

of the allocation is that new housing is of a modern design and compatible with existing land uses in the area; provides a mix of uses to create a safe environment; addresses flood risk; and aims to connect to a heat supply from the Marsh Barton Energy from Waste (EfW) facility.

Emerging Local Plan

6.1.8 Exeter City Council is currently preparing an emerging Exeter plan. The emerging Exeter Plan has undergone outline draft consultation with a further public consultation on the final draft of the Exeter Plan scheduled for Autumn 2023. It proposes to allocate land at Water Lane, including the Site, for mixed use, high quality, high density development.

6.3.2. Other documents which are material considerations include Supplementary Planning Documents and Guidance (SPDs and SPGs) prepared and adopted by ECC. These include:

- Residential Design Guide SPD (adopted 2010)
- Affordable Housing SPD (adopted 2014)
- Public Open Space SPD (adopted 2005)
- Sustainable Transport SPD (adopted 2013)
- Archaeology and Development SPD (adopted 2004)
- Planning Obligations SPD (2014)
- Decentralised Energy and Sustainable Construction SPD (not yet adopted)
- Exeter Transport Strategy (2020-2030)
- Net Zero Exeter 2030 Plan (2020)
- Liveable Exeter Housing Delivery Programme (2019)
- Exeter Air Quality Action Plan (2019)
- Strategic Housing Market Assessment (2015)

6.1.9 A separate Planning, Design and Access Statement has been submitted in support of the application which gives more detail of the relevant policies and will include an assessment of the conformity of the Proposed Development with the Development Plan and relevant material planning considerations.

7 Ecology and Biodiversity

7.1. Introduction

7.1.1 This chapter assesses the likely effects on ecology and biodiversity associated with the Proposed Development. This section sets out the relevant policies, proposed approach and methodology used within the Ecological Impact Assessment (EcIA) and Biodiversity Net Gain (BNG) assessment.

7.1.2 This chapter is supported by the following appendices:

- **Appendix B.1**: Ecological Impact Assessment (EcIA)
- **Appendix B.2:** Biodiversity Net Gain (BNG) Assessment

7.1.3 The EcIA and BNG assessments were carried out by Richard Green Ecology Limited in line with the 'Guidelines for Ecological Impact Assessment' published by the Chartered Institute for Ecology and Environmental Management (CIEEM) (CIEEM, 2019) and British Standard's for Biodiversity- BS 42020:2013 Biodiversity - Code of practice for planning and development (BSI Standards Publication, 2013), Biodiversity Metric 4.0 user guide and technical annexes (Natural England a, b & c, 2023) and 'Biodiversity net gain – Good practice principles for development' (CIEEM, 2019).

7.1.4 In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.6**.

7.2 Policy Context, Legislation, Guidance and Standards

Legislation

7.2.1 This section identifies the legislation and policy that has informed the assessment of effects with respect to Ecology and Biodiversity.

The Conservation of Habitats and Species Regulations 2017 (as amended)

7.2.2 The Conservation of Habitats and Species Regulations 2017 (as amended)(the Habitats Regulations) are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives) into English and Welsh law. These regulations were last amended in 2019 to make them operable from 1 January 2021 despite the UK's withdrawal from the European Union (EU).

7.2.3 The Habitats Regulations cover the requirements for protecting sites that are internationally important for threatened habitats and species (Natura 2000/European sites) and set out a legal framework for species requiring strict protection.

Wildlife and Countryside Act 1981 (as amended)

7.2.4 The Wildlife and Countryside Act 1981 (as amended) consolidated and amended existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Birds Directive. The Wildlife and Countryside Act is divided into four parts.

- Part I is concerned with the protection of wildlife;
- Part II relates to the countryside and national parks (and the designation of protected areas);
- Part III covers public rights of way; and
- Part IV deals with miscellaneous provisions of the Act.

The Natural Environment and Rural Communities (NERC) Act 2006

7.2.5 Section 40 of the NERC Act 2006 imposes a duty on every public authority to conserve biodiversity in exercising its functions, and to have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

7.2.6 Section 41 (S41) of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species that are of principle importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) of Priority Species and Habitats. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006.

The Environment Act 2021

7.2.7 The Environment Act 2021 introduced a new framework for setting long-term, legally binding targets for environmental improvement. Part 6 and Part 7 include provisions to strengthen and improve the duty on public bodies to conserve and enhance biodiversity, including mandating a minimum of 10% net gain in biodiversity through the planning system.

Hedgerows Regulations 1997

7.2.8 These regulations restrict the removal of hedgerows. To be in protected under the regulations, a hedgerow must be at least 30 years old and over 20 m long and in addition must fulfil one of a number of criteria set out in the legislation.

The Protection of Badgers Act 1992

7.2.9 The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a set or obstructing access to it.

National Policy

7.2.10 Nature conservation and biodiversity guidance is provided at the national level in the National Planning Policy Framework (NPPF), revised in July 2021, in Section 15 at paragraphs 174 to and 179 to 182. Paragraph 174 indicates that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

7.2.11 When determining planning applications, paragraph 180 advises that LPAs should refuse planning permission for a development if significant harm to biodiversity cannot be avoided, adequately mitigated or, as a last resort, compensated for. Developments whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged by

the LPA. Where the development is likely to have an adverse impact on a Site of Special Scientific Interest (SSSI) or an irreplaceable habitat, planning permission should not be permitted unless the benefits of the development clearly outweigh the likely impact on the SSSI and the national network of SSSI or a suitable compensation strategy exists.

7.2.12 Paragraph 182 states that, the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a Natura 2000/European site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Local Policy

Development Plans

- Exeter Core Strategy (2006- 2026) Adopted 2012
- The Exeter Plan Outline Draft (2022) (please note this policy has not yet been adopted): Examination Autumn 2023

7.2.13 The Exeter Core Strategy (adopted in 2012) contains environmental objectives and strategies for the spatial development of the city. Relevant Core Policies (CP) include CP11, CP16 and CP18. CP11 states that development must be located and designed so as to minimise and if necessary, mitigate against environmental impacts. CP16 and CP18 pertain to the protection of local European Sites and SSSI, specifically the Exe Estuary Special Protection Area (SPA) and Bonhay Road Cutting SSSI, and incorporation of high-quality Green Infrastructure (GI) into the design of the development to meet biodiversity, recreation and movement needs.

7.2.14 This is further elaborated within The Exeter Plan Outline Draft (2022) under policy NE3, which ensures all development proposals avoid, mitigate or compensate for harm to biodiversity in accordance with the 'mitigation hierarchy' and provide a net gain in biodiversity. Policy NE2 seeks to protect the functions of the seven Valley Parks in Exeter, within which appropriate development should provide suitable alternative natural greenspace, nature conservation and enhancements and public access by active travel.

Supplementary Planning Documents (SPD)

- Residential Design Guide SPD (adopted 2010)

7.2.15 The Residential Design Guide SPD (adopted 2010) highlights that the appraisal of proposed developments must include biodiversity from site analysis to layout design. This ensures that the development will protect and enhance biodiversity on the site, as well as connections between ecological features within and across the site, with existing features of biodiversity value incorporated with the design and enhanced where reasonably possible.

Guidance and Standards

7.2.16 The EIA and BNG assessment presented in this chapter has been carried out in accordance with the principles contained within:

- 'Guidelines for Preliminary Ecological Appraisal', 2nd edition, (CIEEM, 2017);
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1'. (CIEEM, 2019);
- BS42020: Biodiversity – Code of Practice for Planning and Development.

- Biodiversity Metric 4.0 user guide and technical annexes (Natural England a, b & c, 2023); and,
- 'Biodiversity net gain – Good practice principles for development' (CIEEM, 2019).

7.2.17 Additional guidance in respect of the survey and/ or evaluation of habitats or species are referenced in the associated technical appendices and/ or the Methodology sections below.

7.3 Consultation

7.3.1 The EIA Screening and Scoping Opinion was submitted to ECC on 14th July 2022, and the ECC Scoping Opinion was received on 24th November 2022 which is provided in **Appendix A.5**, Table 7.1. summarises the consultees' comments which include responses from ECC, Natural England, and the Royal Society for the Protection of Birds (RSPB).

Table 7.1 Summary of (topic) Consultation

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
Robin Upton, Case officer, ECC, 24/11/2022	Given the size of the site and nature and complexity of the impacts involved in the proposed development, the effects on biodiversity are considered to be potentially significant. Areas of concern include cumulative impact on the Exe Estuary SPA and adjected Exeter Canal and Countess Wear Country Wildlife Site (CWS), potential spread of non-native schedule 9 species, and potential impacts on protected species, specifically otters, great crested newts (GCN), badgers, bats and nesting birds. Biodiversity Net Gain pre and post development habitat plans is required.	Baseline condition surveys are currently being undertaken, the results of which will be included in the Autumn 2023 submission of the ES.	This will be addressed in the Autumn 2023 submission of the ES.
Natural England, 08/11/2022	A robust assessment of environmental impacts and opportunities based on relevant and up to date environmental information should be undertaken prior to a decision on whether to grant planning permission. Annex A to the letter response provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for the proposed development, including cumulative and in-combination effects, designated nature conservation sites (specifically the Exe Estuary Ramsar, SPA and SSSI), protected species and BNG requirement.	Baseline condition surveys are currently being undertaken, the results of which will be included in the Autumn 2023 submission of the ES.	This will be addressed in the Autumn 2023 submission of the ES.

7.4 Methodology

7.4.1 The assessment scope has been informed by relevant national and local planning policy and guidance, established best practice and experience, as well as via the consultation process.

7.4.2 This ES chapter, supported by the EcIA, seeks to:

- establish baseline conditions and identify important ecological features present (or those that could be present);
- identify important ecological features that could be impacted by the project;
- identify potential impacts and their significance; and
- provide details for mitigation, compensation and enhancements.

Study Area

7.4.3 Assessment has been undertaken within a study area that varies depending upon the relevant ecological feature, following best practice guidelines, see below.

7.4.4 The desk study areas for statutory and non-statutory designated sites are 10 km and 2 km radii from the Site, respectively, and the desk study area for protected and notable species is a 2 km radius from the Site.

7.4.5 Field surveys extended to the Site boundary and immediately adjacent habitats.

Baseline Data Collection

7.4.6 Baseline data collection has been undertaken by a combination of desk study and field survey as detailed in **Appendix B.1**.

Desk study

7.4.7 A comprehensive desk-based data search has been undertaken and is described in **Appendix B.1**. This included gathering details of statutory and non-statutory designated sites for nature conservation within 10 km and 2 km of the Site respectively. Pre-existing ecological records for protected and notable species (from Devon Biodiversity Records Centre (DBRC)) within 2 km of the Site were also collated.

Field Study

7.4.8 A suite of field surveys has been undertaken between June 2021 and September 2023, the methodologies of which are detailed within **Appendix B.1** and a brief summary of key findings is provided in **Section 7.8.**

7.4.9 Field surveys included:

- an extended UK Habitat Classification Survey,
- a BNG habitat condition assessment,
- a visual inspection of buildings for bats and birds,
- a ground level and aerial inspection of trees for bats and birds,

- bat emergence surveys,
- bat activity surveys including automated acoustic detectors and transects, and
- reptile surveys.

Sensitive Receptors

7.4.10 The identification of sensitive receptors follows the EIA Scoping Opinion and baseline EcIA detailed in **Appendix B.1**. Sensitive receptors that could experience impacts from the Proposed Development and are considered include:

- Exe Estuary Special Protection Area (SPA)/ Ramsar site
- Exeter Canal County Wildlife Site (CWS)
- Habitats, including line of trees
- Badger *Meles meles*
- Bats (foraging/ commuting/ confirmed and potential roost features)
- Breeding birds
- Common reptiles
- Great crested newt *Triturus cristatus*
- Common amphibians
- Hedgehog *Erinaceus europaeus*
- Otter *Lutra lutra*
- Invertebrates
- Invasive species, including Japanese knotweed *Reynoutria japonica*

7.4.11 Ecological receptors that were screened out given the absence of suitable habitat on the Site and the unlikelihood of their presence on the Site, and are subsequently not mentioned within the ES include, cirl bunting *Emberiza Cirlus*, barn owl *Tyto alba*, great crested newt (GCN) *Triturus cristatus*, hazel dormouse *Muscardinus avellanarius*, white-clawed crayfish *Austropotamobius pallipes*, and water vole *Arvicola amphibius*.

Assessment

7.4.12 This assessment is carried out in accordance with the principles contained within CIEEM guidelines detailed in **Paragraph 7.2.16**.

7.4.13 The CIEEM guidelines avoid and discourage the use of a matrix approach for determining significance of impacts. However, to provide consistency with other chapters, ecological impacts are assessed and described as below.

Magnitude of impact

7.4.14 The magnitude of an impact provides a measure of the environmental effect arising. Magnitude includes consideration of extent, duration, frequency, and severity.

7.4.15 Whilst specifically not included in the CIEEM (2019) guidelines, the four category-scale for the significance of impacts (including residual impacts) detailed in **Table 7.2** is used to compare impacts of scale with other disciplines and provide a coherent ES.

Table 7.2. Magnitude of impact criteria

Magnitude of Impact	Criteria
Major	A significant deterioration/improvement in conditions or circumstances.
Moderate	A readily apparent change in conditions or circumstances.
Minor	A perceptible change in conditions or circumstances.
Negligible or No Effect	Either no effect or effect which is beneath the level of perception.

Sensitivity of receptors

7.4.16 Habitat evaluations are based on guidance from the CIEEM (2019). The level of value of specific ecological receptors is assigned using a geographic frame of reference, as follows:

- International/European;
- National;
- Regional;
- District/County; and
- Local.

7.4.17 Value judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as Sites of Special Scientific Interest (SSSI)), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource. In terms of the latter, 'quality' can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.

Significance of effect

7.4.18 The assessment of the significance of an effect is determined with reference to the overall magnitude of impact and sensitivity of the resource/receptor. The assessment relies on professional judgement by individuals with sufficient relevant expertise.

7.4.19 Effects may be beneficial or adverse; negligible, minor, moderate, or major; short, medium, or long-term; temporary or permanent; and local, district, regional, national, or international level.

7.4.20 **Table 7.3** provides a matrix used to determine significance of effects-based receptor sensitivity (at a geographical scale) and impact magnitude, which incorporates CIEEM guidance and allows a comparable assessment to other disciplines.

Table 7.3. Significance of effect based on impact magnitude and receptor sensitivity

	Magnitude of Impact		
Sensitivity	**Low**	**Moderate**	**High**
Local	Negligible	Minor	Minor
District/ County	Minor	Minor	Moderate
Regional	Minor	Moderate	Moderate/ Major
National	Moderate	Moderate/ Major	Major
International/ European	Moderate/ Major	Major	Major

7.4.21 Effects that are described as 'major' or 'moderate' are determined to be *significant,* and effects that are described as 'minor' or 'negligible' are determined to be *not significant* in the context of the EIA Regulations.

7.4.22 When assessing cumulative impacts, ecological impacts of the proposal are only considered cumulatively where a residual impact remains after mitigation and enhancement measures.

Limitations

7.4.23 Where confidence in predicted impacts cannot be quantified, an assessment is made following the precautionary principle, i.e., assuming a reasonable worst-case scenario or assuming the greatest impact from the development.

7.5 Baseline Conditions

The Site

7.5.1. The Site consisted of light industrial units, a decommissioned factory, and areas of hardstanding. There were areas within and surrounding the Site consisting of sparsely vegetated ground with areas of rank and amenity grassland, ruderal vegetation, trees, scrub, non-native shrubs, and hedges.

The Surrounding Area

7.5.2. The surrounding landscape consisted of light industrial and residential areas to the south and west, and the Riverside Valley Park, Exeter Canal and the River Exe to the north and east of the Site.

7.5.3. The Riverside Valley Park is an area of land managed by Exeter City Council, where a balance is sought between informal recreation and wildlife conservation. The Riverside Valley Park also comprises Exeter Greenspace Tier B habitats, which have been influenced heavily by modification, e.g., with land provided playing fields.

7.5.4. The Site is bounded to the west by a railway line, to the south east by Exeter Canal and to the south by an area of undeveloped land with patches of scrub, ruderals and trees. These areas are mapped on the Exeter Biodiversity Reference Map as Exeter Greenspace Tier A habitats, i.e., areas that support wildlife-rich assemblages but do not meet the Habitats of Principal Importance (HPI) criteria (NERC Act, 2006).

7.5.5. Further detail on the baseline conditions of the Site will be provided in the Autumn 2023 submission after baseline condition surveying is complete.

Designated sites

7.5.6. There are three statutory and nine non-statutory sites designated for nature conservation within 10 km and 2 km respectively of the Site as detailed in **Table 7.4**.

Table 7.4. Statutory and non-statutory sites designated for nature conservation

Site name and designation	Location from the Site	Reason for designation
Statutory within 10 km of the Site		
Exe Estuary Ramsar site / SPA	2.80 km south east	Designated for its internationally important populations of more than 20,000 wintering wildfowl and waders.
Stoke Woods SSSI	4.01 km north	The site contains areas of semi-natural woodland and recently managed woodland, supporting a good population of breeding birds, such as buzzard *Buteo buteo*, tawny owl *Strix aluco*, all three British species of woodpecker, and nightingale *Luscinia megarhynchos* in some years. Several species of warbler also nest in the woods, with a particularly large population of wood warbler *Phylloscopus sibilatrix*.
Haldon Forest SSSI	6.28 km south west	Haldon Forest supports an exceptional assemblage of breeding birds of prey, including several rare species, a nationally important population of breeding nightjar *Caprimulgus europaeus* and rich communities of invertebrates, especially butterflies. In addition, the site incorporates two pockets of lowland heathland, a nationally-scarce and threatened wildlife habitat.
Non-statutory within 2 km of the Site		
Exeter Canal CWS	0.01 km east	Canal with botanical and dragonfly interest adjacent to the south east part of the Site. Forms part of the Riverside Valley Park.
Countess Wear CWS	0.19 km east	A floodplain and grazing marsh site with areas of scrub and broadleaved woodland. Dragonfly interest. Forms part of the Riverside Valley Park.
Cricklepit Lane & Quay Lane CWS	0.59 km north	Town walls with botanical interest, scrub and tall herbs.
Alphinbrook Flood Channel Other Site of Wildlife Interest (OSWI)	0.71 km south	Semi-improved grassland in flood alleviation zone.
Exwick Weir CWS	1.13 km north west	Mesotrophic running water, species-poor semi-improved grassland, marginal vegetation and bankside scrub and trees.
Alphinbrook CWS	1.26 km west	Mesotrophic running water and wet woodland. Forms part of the Alphington Whitestone Valley Park.
Matford Marshes CWS	1.55 km south east	Floodplain and grazing marsh with dragonfly and bird interest.
Ludwell Valley Park CWS	1.67 km east	Traditional orchard, semi-improved and unimproved neutral grassland, species-rich arable fields (seeded) and young woodland.
Barley Valley Local Nature Reserve (LNR)	1.85 km west	Eleven hectares of a patchwork of woods, meadows and rolling hills along the western ridge line of Exeter city, with a network of footpaths and bridleways. The site is known to support yellow meadow ant *Lasius flavus* and hazel dormouse.

Habitats

7.5.7. Habitats on the Site were identified in line with UK Habitat (UKHab) Classification with respective UKHab codes. The majority of the Site consisted of developed land with a sealed surface (u1b) and buildings (u1b5). An area of artificial unvegetated, unsealed surface, vacant/derelict land with ruderal/ ephemeral vegetation (u1c 17 351) including redshank *Persicaria maculosa*, cinquefoil *Potentilla sp.*, scarlet pimpernel *Anagallis arvensis*, and black medic *Medicago lupulina*, was adjacent to the southern boundary.

7.5.8. Mixed scrub (h3h) dominated by buddleia *Buddleja davidii* and bramble *Rubus fruticosus agg.* bisected the Site, predominantly in the north and central areas; whereas isolated areas of well managed amenity and rank modified grassland (g4) were in the south parts of the Site.

7.5.9. A line of trees (w1g6) measuring approximately 110m, comprising mature black poplar *Populus nigra* were located along the south east boundary of the Site adjacent to Exeter Canal.

7.5.10. A well manged other hedgerow (h2b) dominated by Viburnum species *Viburnum sp.*, with privet *Ligustrum sp.*, elder *Sambucus nigra*, and ornamental shrubs was located along the northern boundary of the former factory site in the south part of the Site.

Protected species

Desk study

7.5.11. There are several records of protected and notable species within 2 km of the site. Notable species records included hedgehog, badger, otter, grass snake *Natrix helveticus*, common lizard *Zootoca vivipara*, brown long-eared bat *Plecotus Auritus* and whiskered bat *Myotis mystacinus*.

7.5.12. There are several bird records within 2 km, as well as records of invasive species, including Japanese knotweed *Reynoutria japonica* and Himalayan balsam *Impatiens glandulifera*.

7.5.13. The closest records include swift *Apus apus* and Jersey tiger moth *Euplagia quadripunctaria* along the railway embankment, and stonechat *Saxicola rubicola*, otter and Japanese knotweed adjacent to the south east part of the Site by the canal.

7.6. Summary

7.6.1. This ES Chapter sets out relevant policy context, legislation, guidance and standards, as well as consultation undertaken in relation to Ecology and Biodiversity. The methodology to be used to undertake this technical assessment is also reported in this chapter. The Applicant will be submitting a full technical assessment in Autumn 2023. The following information will be provided in the upcoming Autumn submission;

- Baseline Conditions;
- Baseline Evolution;
- Primary and Tertiary Mitigation;
- Assessment of Significant Likely Effects;
- Secondary Mitigation and Enhancement;

- Residual Effects;
- Cumulative Effects;
- Monitoring;
- Conclusions;
- Glossary; and
- Appendices and Figures.

8 Contamination

8.1 Introduction

8.1.1 This chapter assesses the likely effects on Land Contamination associated with the Proposed Development and sets out the relevant legislation, policies and guidance, the proposed approach and the methodology used within this ES Chapter.

8.1.2 This chapter is supported by the following appendices:

- **Appendix C.1**: Policy Context, Legislation, Guidance and Standards
- **Appendix C.2:** Interpretative Desk Report by G&J Geoenvironmental Consultants, December 2022
- **Appendix C.3**: Contaminated Land Assessment by Frank Graham Consulting Engineers, October 1995

8.1.3 The Land Contamination assessment and ES chapter was carried out by a Specialist in Land Condition (SiLC) at G&J Geoenvironmental Consultants Limited, a specialist ground investigation and land contamination consultancy.

8.1.4 In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.6**.

8.2 Policy Context, Legislation, Guidance and Standards

8.2.1 The below legislation and policy documents have been taken into consideration within this ES. **Appendix C.1** sets out further details.

National Policy

National Planning Policy Framework

8.2.2 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out Government planning policy and how it is expected to be applied. The NPPF considers three dimensions to sustainable development: economic, social and environmental. In terms of land contamination, the environmental role aims to contribute to protecting and enhancing our environment.

8.2.3 The NPPF states how ground conditions should be considered (Paragraph 183) and is detailed in **Appendix C.1.**

Planning Practice Guidance (2019)

8.2.4 The Planning Practice Guidance (PPG) (Ministry of Housing, Communities and Local Government, 2019) Land affected by Contamination, published in June 2014 and last updated in July 2019 provides guidance in support of the NPPF and states that responsibility for securing a safe development, in relation to land contamination, rests with the developer and/or landowner. However, local planning authorities should be satisfied that a proposed development will be appropriate for its location and not pose an unacceptable risk.

Local Policy

Local Plan First Review (1995-2011)

8.2.5 Policy EN2 of the Local Plan First Review (Exeter City Council, 2011) states:

8.2.6 Where development is proposed on or near a site where there is contamination or good reason to believe that contamination may exist, the developer should carry out a site assessment to establish the nature and extent of the contamination. Development will not be permitted unless, in relation to the specific use for which permission is being sought, practicable and effective measures are to be taken to prevent unacceptable risks to human health or the environment.

8.2.7 Further detail on remediation measures outlined in Policy EN2 are provided in **Appendix C.1**.

Core Strategy (2006- 2026)

8.2.8 The Core Strategy (Exeter City Council 2012) Policy CP11 states that;

- development should be located and designed so as to minimise and, if necessary, mitigate against environmental impacts.

Legislation

Environmental Protection Act (EPA) 1990 as amended by the Environment Act 1995 Part 2A

8.2.9 UK legislation on land contamination is principally contained in Part 2A of the Environmental Protection Act, 1990.

8.2.10 This legislation endorses the principle of a “suitable for use” approach to contaminated land, where remedial action is only required if there are unacceptable risks to health or the environment, taking into account the use of the land and its environmental setting.

Contaminated Land (England) Regulations 2006

8.2.11 The contaminated land regime applies a risk-based approach to land remediation, requiring the action taken to be proportionate and appropriate to the risk. The identification of contaminated land is based upon establishing a pollution linkage from a contaminant, through a pathway to a receptor. The Contaminated Land (England) Regulations 2006 defines the 'appropriate' persons to bear responsibility for remediation as those 'who caused or knowingly permitted the substances to be in, on or under that land' based on the 'polluter pays' principle. If the polluter cannot be found, then responsibility shifts to the owner or occupier of the land.

The Waste (England and Wales) Regulations 2011

8.2.12 The waste hierarchy has been transposed into UK law through The Waste (England and Wales) Regulations 2011. The regulations came into force on 29 March 2011. The provisions relating to the hierarchy (set out at in Regulations 12, 15 and 35) came into force on 28 September 2011. The prevention of waste offers the best outcomes for the environment. It is at the top of the priority order, followed by preparing for re-use, recycling, other recovery and disposal, in descending order of environmental preference.

Guidance and Industry Standards

Overall Assessment Framework

8.2.13 In the UK, the framework upon which the assessment of contaminated land is based is described in Land Contamination: Risk Management (LCRM), published by the Environment Agency (EA, 2021). LCRM is the principal guidance outlining the overall process that should be followed to identify, investigate, manage and remediate contaminated land in the UK. The assessment of land contamination at the Site will adhere to the processes outlined in LCRM.

8.3 Consultation

8.3.1 Consultation with a Senior Environmental Technical Officer for Exeter City Council was undertaken via e-mail between 19-22 May 2023 and was followed up with a visit to the council offices on 25 May 2023 to review relevant reports held in hard copy by the council.

Table 8.1 Summary of Land Contamination Consultation

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
ECC	Access to relevant reports held by Exeter City Council, as alluded to in the Scoping Opinion	Relevant information from the reports reviewed during a visit to Exeter City Council offices has been used to inform the baseline conditions.	Section 8.4 and 8.5.
	Agreement of approach to the assessment, given that a full site investigation to determine baseline conditions has not yet been undertaken.	The approach to the assessment is based on a full ground investigation being undertaken as part of the tertiary mitigation measures, along with the subsequent production of a Remediation Strategy.	Section 8.6.
Scoping Opinion	Scoping Opinion states that "*the ES will need to demonstrate that the project will not create any unacceptable risks to human health or the wider environment and provide sufficient detail of the mitigation measures that will secure this. Where mitigation/remediation is required, the range of mitigatory measures and/or remediation options considered should be clearly set-out and the reasons for the selection of the preferred measures explained.*	A full ground investigation, that will be required as part of the tertiary mitigation measures, will identify any unacceptable risks that will require mitigation in the context of the proposals, and will be the basis of a Remediation Strategy. The Remediation Strategy will clearly describe the mitigation measures and remedial options that have been considered, and the justification for the those selected. At present, there is insufficient information on which to base a detailed Remediation Strategy. The full ground investigation, followed by the	Section 8.4, 8.5 and 8.6

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
	Should any contaminated material be present and remediation by removal is required the associated traffic movements should be considered within the Traffic and Transport section. Reiterative assessment of other topic areas may be required if in-situ remediation is proposed"	production of a Remediation Strategy and the implementation of the remedial measures, will ensure there are no unacceptable risks to human health or the wider environment. The aim will be ensured that as much material remains on site for use as possible, with offsite disposal being an option of last resort.	

8.4 Methodology

Study Area

8.4.1 The study area comprises the whole of the Site area described in Chapter 2 and shown in **Appendix A.1**, and which is the area considered by the Interpretative Desk Study (**Appendix C.2**.).

Baseline Data Collection

8.4.2 The baseline conditions have been established through review of the Interpretative Desk Study and the Contaminated Land Assessment report (**Appendix C.3**). In addition, a review of available reports held in hard copy by ECC was undertaken on 25 May 2023. The relevant reports reviewed are as follows:

- 'Geotechnical Report, Colas & Westrock Sites, Water Lane, Exeter, Devon', Anglian Site Investigations, Report: 5350, 1 June 1999
- 'Contamination Assessment, Water Lane Exeter', Ground Engineering, Report: 99068/1, 1 June 1999
- 'PPC Permit Application Site Report', JL Thomas Ltd, August 2004
- 'First Phase Report on the Site Protection and Monitoring Programme for Installations where Reference Data is Required, JL Thomas & Co Ltd, Spring Gardens, Canal Banks, Exeter, EX2 8DX', Geotechnical Engineering Ltd, Report: 21034/01, 30 May 2008

8.4.3 The Interpretative Desk Study summarises published information with regards to the site setting, such as geological records, hydrogeological records and historical maps, together with observations made during a site inspection. This information allows an assessment of the potential for land contamination to be present.

8.4.4 The available ground investigation reports from the 1990s and the monitoring report from 2008 provide some information for limited portions of the site. However, at this stage, full intrusive site investigation work has not been undertaken to establish the actual baseline contamination conditions at the site.

Assessment

8.4.5 The assessment has been undertaken in accordance with LCRM. The Interpretative Desk Study constitutes a Preliminary Risk Assessment in which an initial Conceptual Site Model has been developed based on desk-based research and site reconnaissance. The CSM has been used to highlight any potentially significant source-pathway-receptor pollutant linkages that require further investigation and evaluation (Generic and / or Detailed Quantitative Risk Assessment).

8.4.6 The sensitivity of receptors is dependant of the use of a site and the environmental setting. For example, users of a residential development are considered to be more sensitive than users of a commercial development given that residential users will include children and will be potentially exposed via multiple pathways for a longer period of time. A groundwater body that is classed as a Principal Aquifer and forms part of potable water source is considered more sensitive than a Secondary Aquifer from which water is not extracted.

8.4.7 The Significance Criteria described below and detailed in **Table 8.2** are used to assess the significance of land contamination impacts and reflect the sensitivity of different receptors.

8.4.8 The assessment is based on the development footprint / parameter plans for the proposed mixed use development comprising residential units, student accommodation and commercial / non-residential uses. There are currently 4 possible land use scenarios for the site, each of which have a slightly different number of residential units and student beds, and slightly different commercial floor areas. In terms of land contamination, there is no scenario that may be considered a 'worst-case' and the final details of the use classes will not have an impact of the assessment.

Significance Criteria

8.4.9 The quantitative assessment of contaminated land requires appropriate assessment criteria to provide a benchmark against which to determine the presence of unacceptable risks and 'significant' contamination sources with respect to the site setting and proposed use.

8.4.10 In terms of human health, there are several sources of published Generic Site Assessment Criteria (GSAC). GSAC are contaminant concentrations that are based on minimal or low risk thresholds and are well below levels that might be considered to represent an unacceptable risk to human health. In the UK, published GSAC are based on the Contaminated Land Exposure Assessment (CLEA) model. Commonly used GSAC include the Category 4 Screening Levels (C4SLs) (CL:AIRE, 2014), the Suitable 4 Use Levels (S4ULs) (Land Quality Press, 2015), and the Soil Generic Assessment Criteria (SGAC) (CL:AIRE, 2015).

8.4.11 The GSAC used to assess contaminated land at the Site are a combination of the C4SLs and S4ULs, being considered the most appropriate values based on the identified contaminants of concern and the CSM for the Site.

8.4.12 Risks from ground gases are assessed based on guidance within CIRIA Report C665 (CIRIA, 2007), BS 8485 (BSI, 2015), BS 8576 (BSI, 2013) and RB17 (CL:AIRE, 2012). The ground gas assessment is undertaken to determine site Characteristic Situation(s) based on the modified Wilson and Card classification. This classification corresponds to the calculated Gas Screening Value(s) (GSV), which is the rate at which hazardous gases are emitted from a monitoring standpipe.

8.4.13 The impact of contaminated land on the water environment considers the aims of the Water Framework Directive (WFD). The WFD requires that hazardous substances are prevented from entering a groundwater body from which water is abstracted for public consumption, while entry of non-hazardous substances should be limited so as to not cause pollution. The

quality of surface water bodies should be prevented from deteriorating in terms of pollution with the aim of achieving 'good chemical status'.

8.4.14 Quantitative assessment of the risks to the water environment are benchmarked against appropriate water quality standards. For potable groundwater bodies, UK Drinking Water Standards (DWS) are considered the most appropriate reference concentrations, while for surface waters, freshwater Environmental Quality Standards (EQS) attached to the WFD and associated legislation, provide an appropriate benchmark.

8.4.15 The assessment of the significance of contaminated land impacts has been adapted from guidance provided in CIRIA Report C552 (CIRIA, 2001). The significance criteria consider impacts, both adverse and beneficial, to human health, controlled waters, ecological receptors and property, which are covered by Part IIA of the Environmental Protection Act 1990. The significance criteria are presented in **Table 8.2**. In relation to this EIA, effects of moderate and major significance are considered to be 'significant' within the meaning of the EIA Regulations.

Table 8.2. Significance Criteria

	Level of effect	Criteria
Significant	Major Adverse	There is evidence that Significant Harm, as defined by Part IIA of the Environmental Protection Act (EPA) 1990, is currently occurring or is highly likely to occur without immediate action. ▪ Severe short term (acute) risks to human health ▪ Observable pollution of potable groundwater or a sensitive surface water receptor ▪ High risk of catastrophic damage to buildings or property, such as build-up of explosive gases ▪ Short-term (acute) risk to a sensitive ecological receptor or national or international importance
	Moderate Adverse	Significant Harm, as defined by Part IIA of the EPA 1990, is likely to occur in the medium or long-term ▪ Long term (chronic risks) to human health ▪ Medium / long term risks to potable groundwater or a sensitive surface water receptor ▪ Risk of damage to buildings or property ▪ •Medium / long term risk to a sensitive ecological receptor of national or international importance
Not Significant	Minor Adverse	There is potential for harm to occur, although not necessarily Significant Harm, as defined by Part IIA of the EPA 1990. ▪ Contaminants at concentrations close to conservative human health generic screening criteria, or that can be easily managed by PPE during siteworks ▪ Minor visual or olfactory impacts ▪ Potential for minor pollution of a non-sensitive groundwater or surface water body ▪ Low risk of damage to buildings or property ▪ Low risk to an ecological receptor of local importance ▪ • Loss of plants in a landscaping scheme
	Negligible or No effect	No discernible impact on human health, controlled waters, ecological systems or property
	Minor Beneficial	Minor reduction in contamination impacts ▪ Minor reduction in risks to human health, that may already be low ▪ Reduction in visual / olfactory impacts ▪ Improvement in quality of non-sensitive groundwater or surface water body ▪ Minor reduction in risks to buildings or property ▪ Minor reduction in risks to an ecological receptor of local importance ▪ Minor reduction of risks to plants.

Significant	Moderate Beneficial	Moderate reduction in contamination impacts so that the potential for Significant Harm, as defined by Part IIA of the EPA 1990, has been eliminated or reduced to acceptable levels ▪ Reduction in long term (chronic) risks to human health ▪ Reduction in the medium / long term risks to the quality of potable groundwater or a sensitive surface water receptor ▪ Reduction in the risk to buildings or property Reduction in the medium / long term risks to a sensitive ecological receptor
	Major Beneficial	Major reduction in contamination impacts so that Significant Harm, as defined by Part IIA of the EPA 1990, is no longer occurring or the risk of such has been reduced to acceptable levels ▪ Significant reduction in short term (acute) risks to human health ▪ Significant improvement in the quality of potable groundwater or a sensitive surface water receptor ▪ Significant reduction in the risk of catastrophic damage to buildings or property Significant improvement, or reduction in the risks, to a sensitive ecological receptor

Limitations

8.4.16 Available records which are used to initially determine the site setting and history, are taken at face value and assumed to be reliable. However, the potential for records to be incomplete and / or inaccurate means that all potential contamination sources, pathways and receptors may not be identified.

8.4.17 The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths at the time of any ground investigation works. At intermediate locations, conditions can only be inferred.

8.4.18 Only limited intrusive investigations have previously been undertaken at the Site, primarily in the 1990s. Large areas of the Site have not at this stage been subject to intrusive investigations and therefore an assessment of the baseline conditions in such areas is based on the findings of desk based research and site inspections only.

8.5 Baseline Conditions

The Site

8.5.1 The site covers an area of approximately 6.38 ha and comprises a series of plots separated by internal boundaries that are primarily used for industrial purposes. Overall, the site includes a number of commercial / industrial buildings together with significant areas of hardstanding.

8.5.2 Current site uses include: a scaffolders yard, bus depot, boat builders, vehicle parking / storage and an asphalt contractor. Recent uses include a meat rendering plant, engineering works and a vehicle workshop / transport hub.

8.5.3 The current uses include potential sources of contamination such as fuel tanks and infrastructure, chemical storage, process areas and vehicles / machinery, which are described in detail in the Interpretative Desk Study (**Appendix C.2**).

Site History

8.5.4 Prior to the middle of the 20th century the site was predominantly agricultural with the only notable features being a railway branch line in the north and some buildings described as 'oil stores' in the south.

8.5.5 By the mid-twentieth century, the site had been largely developed for industrial use and included an oil depot, timber yard, rendering facility, scrap yard, iron foundry and engineering works.

The Surrounding Area

8.5.6 The Site is bound to the south-west by the Exeter St Thomas railway line, beyond which is a large industrial estate with numerous commercial and industrial premises. Adjacent to the north are a car body shop, metal fabricators, vehicle repair workshop and the site of a former gas works, while to the north-west is a residential area.

8.5.7 Much of the eastern boundary is formed by Water Lane, with the Exeter Canal, open space and the River Exe beyond, while to the south is a solar farm and battery storage facility.

History of Surrounding Area

8.5.8 A railway line has been present along the south-western site boundary since at least the late 19th century, while a gas works was present to the north of the site from at least the same time until the early 21st century, although latterly it was only used for gas storage.

8.5.9 Later nearby developments include a sewage works to the west, engineering and electrical works to the north, an oil depot to the north-east and then widespread industrial development to the west of the Site around the same time the Site itself was being developed for industrial use. A former landfill is recorded immediately to the south of the site.

Geology, Hydrogeology and Hydrology

8.5.10 The geological map of the area shows the site to be underlain by Quaternary Alluvium deposits which in turn overlie a sedimentary bedrock comprising the Alphington Breccia Formation.

8.5.11 Both the superficial Alluvium and Breccia bedrock beneath the site are classed as Secondary (A) Aquifers, meaning the underlying geology has potential to supply water from more permeable layers on a local scale, and may be important for supplying baseflow to rivers.

8.5.12 The site is outside any Groundwater Source Protection Zones, meaning it is outside the catchment of a groundwater source from which water is abstracted for public potable supply.

8.5.13 The nearest watercourses are the Exeter Canal and River Exe. The canal is located immediately east of the site beyond Water Lane, while the River Exe flows in a south-easterly direction beyond the canal approximately 300m from the site at its closest point.

8.5.14 The water quality of the River Exe was rated as 'fail' for chemical quality and 'moderate' for ecological quality in 2019.

Encountered Ground Conditions

8.5.15 Based on the available information, previous ground investigation works are limited to the central and south-western parts of the site, as described in the 1995 report included in **Appendix C.3** and the 1999 and 2008 reports referenced in Paragraph 8.4.2.

8.5.16 The central part of the site comprised the former engineering works, oil depot (which is now a bus depot) and vehicle workshop / transport hub. Together the investigation works in this area comprised the excavation of 17 trial pits, 11 flight auger boreholes and 2 cable percussive boreholes.

8.5.17 Four boreholes were drilled along the south-western boundary of the site in 2008 in order to allow groundwater monitoring in support of a Pollution Prevention and Control (PPC) permit for the rendering plant.

8.5.18 The works in the central part of the site found between 0.3-2.2m of Made Ground underlain by silty, sandy clays and layer of gravel that was likely representative of Alluvium and / or River Terrace Gravels. The deeper boreholes encountered Breccia from approximately 5mbgl.

8.5.19 Oily sheens were noted associated with the groundwater and the soils within the saturated zone typically had a hydrocarbon odour.

8.5.20 On-site chemical testing confirmed the presence of hydrocarbons, while laboratory testing recorded the presence of Polycyclic Aromatic Hydrocarbons (PAHs) and concentrations of some metals that were in excess of the generic site assessment criteria (GSAC) for a residential land use but, with rare exceptions, were well below the GSAC for a commercial use.

8.5.21 Groundwater analysis confirmed the presence of elevated concentrations of hydrocarbons. No assessment of the risks from ground gases was undertaken.

8.5.22 The four boreholes along the south-western site boundary found between 1.7-3.2m of Made Ground overlying 2-3m of sandy gravel, which in turn was underlain by mudstone.

8.5.23 Samples of groundwater from the four boreholes were found to contain significant concentrations of hydrocarbons and slightly elevated concentrations of some metals, when compared to drinking water standards.

Conceptual Site Model

Contamination Sources

8.5.24 The interpretative Desk Study has identified a number of potential contamination sources associated with past and current on-site and off-site uses.

8.5.25 The limited ground investigation works that have been undertaken on the site have identified the presence of hydrocarbons, and to a lesser degree metals, in soil and groundwater. There remains a likelihood that contamination is present in areas not covered by the previous investigation works.

Identified Sensitive Receptors

8.5.26 The sensitive receptors with respect to land contamination are considered to be the following;

- Site users – current site users / users of the completed development (residents / workers);
- Construction workers – those involved the development works;
- Site neighbours - residents of nearby residential properties to the north-west and users of other adjacent sites;
- Groundwater – the underlying Secondary An Aquifers;
- Surface water – The River Exe;
- Construction materials such as concrete for foundations and water pipes.

Exposure Pathways

8.5.27 The following exposure pathways have been identified based on the studies undertaken to date:

- Direct contact leading to ingestion and dermal absorption by site users / constructions workers;
- Inhalation of particulates and vapours by site users, construction workers and / or neighbours;
- Migration, accumulation and inhalation of ground gases;
- Contamination of drinking water within pipes lain in contaminated ground;
- Attack on foundations and underground services by aggressive soil conditions;
- Leaching of contaminants in soil and migration via the unsaturated zone to the Secondary An Aquifers;
- Migration of contaminated groundwater and / or surface run-off (via surface drainage) to the River Exe.

Current Impacts

8.5.28 There is currently only limited information from intrusive surveys with regards contamination of the soil and groundwater which is insufficient to determine whether any significant risks currently exist, or whether they may exist for the Proposed Development. However, based on the available information and current uses of the site there are a number of potential impacts, which are summarised below:

- Current site users comprise workers and visitors associated with the industrial units. The current site uses are generally considered to have low sensitivity and there is no obvious evidence of potentially significant human health impacts from land contamination.
- Evidence of hydrocarbon contamination noted in groundwater during the previous intrusive investigation works undertaken in the central and south-western parts of the site.

The groundwater is of low sensitivity but may form a pathway to the nearby surface watercourses.

- There is no current evidence of land contamination having any significant impacts on the current buildings and structures on the Site.
- There are numerous potential sources of contamination that have not yet been investigated.

8.5.29 These potential impacts will be investigated and assessed in detail to determine whether any significant risks currently exist or are likely to exist in the context of the proposed development. All identified significant risks will be addressed through appropriate mitigation and remediation works, that will be described in detail in a Remediation Strategy which will be informed by the findings of a site wide ground investigation (see Tertiary Mitigation, below)

Baseline Evolution

8.5.30 Assuming a 'no development' or 'do nothing' scenario, there is little prospect of the potential contamination sources being fully investigated and assessed, and consequently little prospect of any impacts that are present changing significantly. Without development there is unlikely to be any requirement to investigate and / or remediate the site.

8.5.31 Some contaminants, most notably organics, will degrade and disperse over time, while the production of hazardous ground gases within Made Ground or the adjacent landfill may also be expected to decline. However, these changes would have minimal impact based on current land uses.

8.5.32 However, the site is allocated and would be expected to come forward for development if the Proposed Development did not go ahead. In such circumstances, the site would still be investigated and remediated.

8.6 Primary and Tertiary Mitigation

Primary Mitigation

Construction

8.6.1 There are no primary mitigation measures relevant to land contamination during the construction phase.

Operation

8.6.2 There are no primary mitigation measures that have been specifically incorporated into the design to address the effects of land contamination, although the development proposal is only at outline stage.

8.6.3 However, the Proposed Development will provide some primary mitigation where the presence of hard surfaces or buildings prevent the direct exposure of site users to potentially contaminated soils, while topsoil imported into soft landscaped areas will also reduce exposure to the underlying soils.

8.6.4 The presence of hard surfaces and buildings may also reduce infiltration of rainwater and therefore the potential for contaminants to leach from the soil.

Tertiary Mitigation

8.6.5 A comprehensive intrusive ground investigation will be undertaken prior to any development as would be required for any development on potentially contaminated land in accordance with planning policy. The intrusive ground investigation will form the basis of risk assessments to determine if any significant contamination sources are present and, if so, ensure that they are addressed in accordance with industry guidance and best practice. This will be secured by planning conditions.

Construction

8.6.6 All health and safety and environmental management measures will be detailed in various construction management documents to be agreed with regulatory authorities, such as a Construction Environmental Management Plan (CEMP).

8.6.7 The potential effects on human health during the construction phase (site workers and site neighbours), will be mitigated through the implementation of the following measures:

- Construction workers will wear Personal Protective Equipment (PPE), appropriate to the identified risks, in order to prevent significant exposure to potentially contaminated soil;
- Construction workers will follow procedures consistent with good site hygiene practice and in accordance with a site-specific Health and Safety Risk Assessment;
- Measures will be implemented to minimise the generation of dusts, vapours, odours and any other emissions that may arise, as deemed necessary and appropriate in accordance with an appropriate Risk Assessment;
- Emissions monitoring will be undertaken to identify any potential impacts on site neighbours.

8.6.8 The potential effects on controlled waters during the construction phase will be managed by the following mitigation measures:

- The design of ground investigation boreholes and piled foundations will take account of the need to prevent the creation of any preferential pathways to the underlying Secondary An Aquifer;
- Piling, or any other ground improvement techniques, will be undertaken accordance with guidance contained within Environment Agency report NC/99/73 (EA, 2001) and utilise the most appropriate method to prevent the creation of preferential contaminant migration pathways;
- Appropriate measures will be adopted to control and manage surface water run-off and prevent potentially contaminated run-off entering surface drainage systems and local watercourses. This may include a temporary surface water management system, wheel washing and covering of any stockpiles, for example; and
- Site works will be undertaken in accordance with CIRIA Report C532 (CIRIA, 2001).

8.6.9 The potential impact on concrete from aggressive ground conditions will be mitigated by the use of an appropriately resistant concrete mix, while the selection of water pipe material will be appropriate to the ground conditions, but it is likely that standard plastic pipes are unlikely to be suitable in at least part of the site due to the presence of organic contamination. This will be secured by recommendations detailed in the ground investigation report, which will be

provided to the building contractor, and by agreement with the service provider in terms of water supply pipes.

Operation

8.6.10 The potential effects on human health during the operational phase, will be mitigated through the implementation of the following measures:

- A Remediation Strategy will be a condition of the planning permission and will be produced, based on the findings of the intrusive investigation and the results of the risk assessments. The strategy will detail the remediation works required (if any) and the mitigation measures necessary to ensure that no significant risks remain in the context of the Proposed Development, that the site is suitable for the proposed use and that it would not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990, in accordance with planning policy. The Remediation Strategy will prioritise mitigation measures that have the least environmental impact and will favour treatment and / or re-use on-site over removal from site for treatment or disposal.

- Appropriate cover systems will be placed in areas of soft ground to manage the risks from residual contamination that remains after the completion of any remediation works that may be necessary based on the findings of the intrusive investigation and risk assessment. The design of the cover systems will be detailed in the Remediation Strategy.

- Appropriate gas protection measures will be incorporated in any new buildings located in areas where a gas risk is deemed to exist (if any) based on the findings of the intrusive investigation and current industry guidance (as detailed in paragraph 8.4.8). Based on a likely 'worst-case', it is assumed that gas protection measures will be appropriate for an NHBC 'Amber 2' classification for any new houses, and 'Characteristic Situation 2' for all other buildings. Such measures will likely comprise a properly installed (by a specialist) and verified gas resistant membrane and an appropriate sub-floor passive ventilation layer.

- Remediation or removal of any grossly contaminated soils identified during the intrusive investigation or subsequent earthworks, that are deemed to present an unacceptable risk. It is preferred that any contaminated materials are treated, either on or off site, and then re-used on the Site. Disposal at landfill will be the option of last resort. The re-use of excavated materials will be undertaken in accordance with the Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

8.6.11 The potential impacts on controlled waters during the operational phase will be mitigated through the implication of the following measures:

- Remediation or removal of any grossly contaminated soils / groundwater identified during the intrusive investigation or subsequent earthworks, that are deemed to present an unacceptable risk to controlled waters.

- A period of groundwater monitoring will be undertaken if considered necessary based on the findings of the intrusive investigation in order to demonstrate that there are no ongoing significant adverse impacts on water quality.

8.6.12 The mitigation measures implemented to manage the effects of land contamination and aggressive ground conditions on building materials during the operational phase will essentially be the same as those that will mitigate risks during the construction phase. These will comprise the use of an appropriately resistant concrete mix and the selection of suitable water pipe materials.

8.7 Assessment of Significant Likely Effects

Construction Phase

Effects on Human Health

8.7.1 During the construction phase, the only personnel accessing the Site (or part of the Site undergoing construction) will be construction workers and authorised visitors. The nature of earthworks means that there is always the possibility for exposure to potentially contaminated soils via direct contact and the inhalation of vapours and particulates.

8.7.2 Although a detailed intrusive investigation is yet to be undertaken, the available information suggests a likelihood of contaminated soils and groundwater being present.

8.7.3 Construction workers may be exposed via direct contact with contaminated soils or groundwater, the inhalation of vapours and the inhalation of dusts generated from exposed contaminated ground.

8.7.4 With the mitigation measures described in Paragraph 8.6.7 in place (appropriate PPE, safe working procedures and good hygiene practice), the potential effects on construction workers are considered to be temporary ***negligible*** and therefore not significant in accordance with the criteria **Table 8.2.**

8.7.5 The construction phase may also present risks to the users of neighbouring sites, through the potential migration of vapours, odours and particulates. Of greatest concern is the potential for the migration of vapours / odours and airborne dusts during dry and dusty conditions. With the mitigation measures described in Paragraph 8.6.7 in place (dust and emission suppression and environmental monitoring), the potential effects on site neighbours are considered to be ***negligible*** or temporary ***minor adverse*** and therefore not significant in accordance with the criteria in **Table 8.2.**

Effects on Controlled Waters

8.7.6 The potential for the construction phase to have significant impacts on the groundwater or surface watercourses is low. However, there is a possibility of ground investigation boreholes or piled foundations (for example) creating a 'preferential pathways' for any contamination to migrate to the aquifer.

8.7.7 In addition, there is a possibility of earthworks exposing contaminated soils, which during wet weather could result in the generation of contaminated run-off which may enter surface drainage systems.

8.7.8 With the mitigation measures described in Paragraph 8.6.8 in place (avoiding the creation of preferential pathways, using good piling practice and managing surface water run-off), the potential effects on controlled waters are considered to be ***negligible*** and therefore not significant in accordance with the criteria in **Table 8.2.**

Effects on Construction Materials

8.7.9 The construction phase will result in new buildings, infrastructure and underground services being placed on or in soils that could contain substances that may degrade or otherwise impact construction materials.

8.7.10 The limited intrusive works so far undertaken have identified organic contamination that may have implications for water supply pipes. High sulphate and / or low pH conditions may also exist that could have implications for subsurface concrete.

8.7.11 With the mitigation measures described in Paragraph 8.6.9 in place (selection of appropriate concrete mix and water supply pipe material), the potential effects on construction materials are considered to be ***negligible*** and therefore not significant in accordance with the criteria in **Table 8.2.**

Operational Phase

Effects on Human Health

8.7.12 During the operational phase, the most sensitive human health receptors will be the users of the Proposed Development who may be exposed to potentially contaminated soils via direct contact, the inhalation of vapours, dusts and gases.

8.7.13 The mitigation measures will seek to ensure that any potentially significant risks to site users will be addressed. Remediation works (assuming these are required based on the findings of the site wide intrusive investigation) will result in a reduction in contaminant concentrations and / or the breaking of exposure pathways.

8.7.14 Although the current risks to site users are considered to be low due to the relative low sensitivity of the current land uses, it is considered that the mitigation measures described in Paragraph 8.6.10 (placement of an appropriate cover system, installation of gas protection measures where required and the remediation or removal of any grossly contaminated soils) will result in permanent ***minor beneficial*** effects on human health during the operational phase, in accordance with the criteria in **Table 8.2.**

Effects on Controlled Waters

8.7.15 The Site is underlain by superficial Alluvium which overlies the Alphington Breccia Formation, both of which are classed as Secondary An Aquifers. The nearby Exeter Canal is likely to be hydraulicly isolated from the groundwater beneath the site, while the River Exe maybe in hydraulic continuity, but is generally over 300m from the site.

8.7.16 The intrusive ground investigation works, and risk assessments will determine the presence and magnitude of any risks to controlled waters receptors, while subsequent remediation works (assuming these are required) will result in a reduction in contaminant concentrations and therefore a reduced potential for ongoing impact on controlled waters.

8.7.17 Although the current risks to controlled waters are likely to be low due to the relative low sensitivity of the groundwater and distance to the River Exe, it is considered that the mitigation measures described in Paragraph 8.6.11 (remediation or removal of any grossly contaminated soils or groundwater together with a period of groundwater monitoring) will result in permanent ***minor beneficial*** effects on controlled waters during the operational phase, in accordance with the criteria in **Table 8.2**.

Effects on Construction Materials

8.7.18 The potential effects of land contamination on construction materials during the operational phase are essentially the same as those during the construction phase but are more likely to become apparent during operation due to the longer time the materials will have been in the ground.

8.7.19 However, with the mitigation measures described in Paragraph 8.6.9 in place (selection of appropriate concrete mix and water supply pipe material), the potential effects on construction materials are considered to be ***negligible*** and therefore not significant in accordance with the criteria in **Table 8.2.**

8.8 Secondary Mitigation and Enhancement

8.8.1 No Secondary mitigation or enhancement measures are anticipated to be necessary with regards to land contamination. All potential impacts from land contamination will be addressed through the Primary and Tertiary mitigation measures described in Section 8.6, as are required for any development regardless of whether an EIA is necessary.

8.9 Residual Effects

8.9.1 As no further mitigation or enhancement measures are considered necessary, the residual are effects are the same as those detailed in Section 8.7.

8.10 Cumulative Effects

8.10.1 There are not considered any significant cumulative land contamination effects associated with the Proposed Development and any other committed developments.

8.10.2 While the overall condition of land in the local area may contribute, for example, to water quality in local watercourses, it is impossible to quantify. The aim for any individual site is to demonstrate that it does not present any unacceptable environmental risks associated with land contamination, and this is independent of the impact from other sites. Remediation works should always result in an environmental improvement (or at least no deterioration), and the more contaminated land in area that is remediated, then the greater the potential for a positive impact on water quality, but the remediation required for one site does not have any bearing on that required on another.

8.11 Monitoring

8.11.1 The ground investigation that will be undertaken prior to development, and the Remediation Strategy that will be produced based on the findings of the ground investigation, both of which will be secured via planning conditions, will determine if any medium or long term monitoring (for example, of groundwater quality) is necessary.

8.12 Conclusions

Introduction

8.12.1 The Land Contamination assessment and ES Chapter has been carried out by a Specialist in Land Condition (SiLC) at G&J Geoenvironmental Consultants Limited, a specialist ground investigation and land contamination consultancy.

8.12.2 The assessment has been undertaken in consideration of key national and local policies, including;

- The National Planning Policy Framework (NPPF)
- Planning Practice Guidance – Land Affected by Contamination
- Exeter City Council Local Plan First Review
- Exeter Core Strategy

8.12.3 The assessment methodology is based on industry guidance including the Land Contamination Risk Management (LCRM) framework published by the Environment Agency, and the statutory guidance attached to Part IIA of the Environmental Protection Act 1990, published by Defra.

8.12.4 The methodology is based on the identification and mitigation of potentially significant pollution linkages in the context of a Conceptual Site Model, which is summary of contamination sources, receptors and exposure pathways which together form pollutant linkages.

8.12.5 The baseline conditions have been inferred from available reports which include desk based studies and details of limited previous ground investigations which have identified potential contamination sources and the presence of contamination, primarily from hydrocarbons, in the soil and groundwater.

8.12.6 However, a full ground investigation across the entire site has not been undertaken and will therefore form part of the mitigation measures.

Demolition and Construction Effects

8.12.7 The effects on construction workers from exposure to contaminated soils and groundwater will be mitigated through PPE and appropriate work procedures. The residual effects are considered to be ***negligible*** and therefore not significant.

8.12.8 The effects on site neighbours from emissions during construction will be mitigated by measures to supress dusts, vapours, odours as detailed in a Construction Environmental Management Plan (CEMP) that will be secured through a planning condition. The residual effects are considered to be ***negligible*** to temporary ***minor adverse*** and therefore not significant.

8.12.9 The effects on controlled waters from the migration of groundwater via preferential pathways and by contaminated run-off will be mitigated by the appropriate design of boreholes and piled foundations, and by a surface water management system. The residual effects are considered to be ***negligible*** and therefore not significant.

8.12.10 The effects on building materials from aggressive ground conditions will be mitigated by the use of an appropriately resistant concrete mix and suitable materials for water pipes. The residual effects are considered to be ***negligible*** and therefore not significant.

Operation Effects

8.12.11 The effects on users of the completed development from exposure to land contamination will be mitigated by undertaking a comprehensive ground investigation, development of a remedial strategy and implementation of the remedial measures. The residual effects are considered to be permanent ***minor beneficial***.

8.12.12 The effects on controlled waters from the leaching of contamination from soil and the migration of contaminated groundwater will be mitigated by undertaking a comprehensive ground

investigation, development of a remedial strategy and implementation of the remedial measures. The residual effects are considered to be permanent ***minor beneficial***.

Table 8.3: Land Contamination Significance Table

Stage of Development	Residual Effects	Receptor	Duration of Effect	Significance of Residual Effect
Construction	Exposure to contaminated soils and groundwater	Construction workers	Temporary	Negligible
	Exposure to dusts, vapours, odours	Site Neighbours	Temporary	Negligible / Minor Adverse
	Migration of contaminated groundwater via preferential pathways created by boreholes or piled foundations, for example	Groundwater	Permanent	Negligible
	Exposure of contaminated soils creating contaminated run-off	Surface drainage system / watercourses	Temporary	Negligible
	Aggressive ground conditions	Concrete, water pipe materials	Permanent	Negligible
Completed Development	Exposure to contaminated soils	Site users	Permanent	Minor Beneficial
	Leaching of contamination from soil	Groundwater	Permanent	Minor Beneficial
	Migration of contaminated groundwater	Groundwater / surface watercourses	Permanent	Minor Beneficial

8.13 References

- Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*
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- British Standards Institution (2013). *BS8576:2013, Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs).* BSI
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- Construction Industry Research and Information Association (2001). *CIRIA C532: Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors.* London, CIRIA
- Contaminated Land: Applications in Real Environments (CL:AIRE) (2011). *The Definition of Waste: Development Industry Code of Practice, Version 2.* London, CLAI

9 Flood Risk and the Water Environment

9.1 Introduction

9.1.1 This chapter has been prepared by Stantec UK Ltd to cover the topic of flood risk and the water environment. In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.6**.

9.1.2 This chapter assesses the likely flood risk and water environment effects associated with the construction and operation of the Proposed Development on key receptors.

9.1.3 This chapter outlines the legislative, policy framework and guidance, describes the assessment methodology, study area, baseline conditions, an overview of potential impacts, mitigation measures, likely residual effects, monitoring and a summary.

9.1.4 This chapter is supported by the following appendices:

- Appendix D.1: Flood Risk Assessment
- Appendix D.2: Surface Water Drainage Strategy

9.1.5 Associated effects on ecology are considered in Chapter 7 Ecology and Biodiversity of the ES. Effects on ground conditions and water quality arising from land contamination are considered in Chapter 8 Contamination of the ES.

9.2 Policy Context, Legislation, Guidance and Standards

9.2.1 The following legislation, planning policy and guidance has informed the assessment process. A full review of the relevant national and local planning policies is provided within Section 2 Policy in the Flood Risk Assessment (FRA) in **Appendix D.1**.

National Policy

9.2.2 National policy in relation to flood risk is contained within the National Planning Policy Framework (NPPF), updated July 2021, issued by the Ministry of Housing, Communities and Local Government, with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change'. The associated Planning Practice Guidance (PPG) (with reference to the 'Flood Risk and Coastal Change' section) was last updated August 2022. The following policy documents are the relevant National Policy documents with regards to flood risk, drainage and the water environment. The ES and associated technical documents have been completed in line with the requirements of these policies.

- Flood and Water Management Act (2010)
- Water Resources (EIA) England and Wales (Amendments) Regulations (2017)
- Water Environment (Water Framework Directive) (England and Wales) Regulations (2017)
- Environmental Permitting (England and Wales) Regulations (2016)
- The Groundwater (WFD) (England) Directive (2016)

- Flood Risk Regulations (2009)
- Sustainable Drainage Systems: House of Commons Written Statement – HCWS161 (2014)

Local Policy

- EA, South West River Basin Management Plan (RBMP), 2022;
- EA, South West River Basin District Flood Risk Management Plan 2021 to 2027 (2022);
- The Devon County Council (DCC) Preliminary Flood Risk Assessment (PFRA), (2011) and Addendum (2017);
- Devon SWMP Phase 1 Strategic Assessment (2012);
- Devon Local FRMS 2021-2027, (2021);
- DCC Sustainable Drainage System – Guidance for Devon, (2020);
- Exeter City Council (ECC) Core Strategy, (adopted 2012),
- The Exeter Plan Outline Draft Consultation, (September 2022);
- The ECC Level 1 Strategic Flood Risk Assessment (SFRA), (February 2008);
- ECC SFRA Level 2, (May 2014).

9.3 Consultation

9.3.1 Consultation with statutory and non-statutory consultees has been undertaken to collate data in respect of the local baseline water environment, define the scope of technical work required to inform the FRA and Drainage Strategy that supports this chapter, and confirm design principles to be applied to ensure compliance with the relevant national and local policies. Consultation has been undertaken via pre-application discussions and formally through EIA process as discussed below.

9.3.2 The EIA Screening and Scoping Opinion was submitted to ECC on 14th July 2022, and the Scoping Opinion was received on 24th November 2022. **Table 9-1** summarises the consultees' comments on the scope of the water environment assessment and how these have been addressed.

9.3.3 In addition to the EIA Scoping Report further consultation has taken place with the Environment Agency (EA) and Devon County Council (DCC), as the Lead Local Flood Authority (LLFA) that is also summarised in **Table 9-1**.

Table 9-1: Summary of Flood Risk and Water Environment Consultation

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
EA meeting 13th June 2022	Advised modelling results would be available early July 2022. 100yr event + CC expected to overtop defences, but extent and depths not known at this stage. Ground floor commercial use should be appropriate. EA confirmed that the Marsh Barron project is seeking to use the disused railway as a safe escape route. Access from Water Lane require a pedestrian/cycle bridge over the railway.	Results from the EA's River Exe 2022 modelling has been used to inform the FRA provided in **Appendix D.1**. Additional hydraulic modelling will be undertaken once model files are received making use of the EA River Exe 2022 model to confirm baseline and future flood levels and depths at the site and will be outlined in the FRA. Discussions have been undertaken with ECC to develop the proposals for safe access and egress and the overarching strategy will be outlined in the FRA. Hydraulic model outputs will confirm the safe access and egress route	Detailed in FRA provided in **Appendix D.1**. Discussed in **Section 9.5** and **9.6**.
EA – Scoping Opinion Comments (7th November 2022)	Draft EA flood modelling shows a residual risk during future flood event taking into account climate change when the defences are overtopped. The actual design flood levels are not currently available, however can provide results for the equivalent Q100 20% and Q100 73% so a pro-rata level/depth is feasible. Potential for large flood depths moving through the area and any development will need to consider safe access and egress – potentially new bridge connection required from the development in the wider Haven Banks and Water Lane area. Redevelopment will need to be designed to make residential and commercial usages to be	Results from the EA's River Exe 2022 modelling has been used to inform the FRA provided in **Appendix D.1**. Additional hydraulic modelling will be undertaken once model files are received making use of the EA River Exe 2022 model to confirm baseline and future flood levels and depths at the site and will be outlined in the FRA. Discussions have been undertaken with ECC to develop the proposals for safe access and egress and the overarching strategy will be outlined in the FRA. Hydraulic model outputs will confirm the safe access and egress route. Hydraulic modelling will be undertaken to inform the layout and level strategy for the site. Post development modelling will be undertaken to demonstrate that the development does not increase flood risk elsewhere	Detailed in FRA provided in **Appendix D.1**. Discussed in **Section 9.5** and **9.6**.

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
	safe from the design flood (Q100 +CC), residual risk (i.e. breaches), flood conveyance routes and have no impact on third parties. Associated infrastructure will need to be flood resistant and resilient as appropriate for the flood risk vulnerability of the use. Should not redirect any floodwater into the canal as this is not a flood defence asset.	and to inform the finished floor levels for each plot. Mitigation measures will include flood resistance and resilience measures, flood warning and evacuation plan which will be detailed at a high level within the FRA.	
EA – pre app meeting December 2022	EA prepared updated model of the River Exe (2022) and provided the outputs from the model as basis for assessing flood risk. Model not available until May 2023. Improved flood defences in Exeter reduce flood risk to the site (present day). Hydrological assessment shows higher peak flow estimates than previous assessment. Flood depths in climate change runs show larger flood depths than previous modelling. The EA require: • Finished Floor Levels (FFL) minimum 300mm above 'design' flood level.	Hydraulic modelling will be undertaken to inform the layout and level strategy for the site. Post development modelling will be undertaken to demonstrate that the development does not increase flood risk elsewhere and to inform the finished floor levels for each plot. Mitigation measures will include residential accommodation at first floor and above, appropriate finished floor levels, flood resistance and resilience measures, flood warning and evacuation plan. These will be detailed within the FRA.	Detailed in FRA provided in **Appendix D.1**. Discussed in **Section 9.5** and **9.6**.

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
	• Design flood level is 1 in 100 year with allowance for climate change. • High confidence in modelling noted. • EA will accept flooding of commercial uses in design event, not exceeding 500mm. Flood resistance and resilience measures required. • Surface water risk to be managed. • Water Lane is key conveyance route. This route should be maintained. • New Level 2 SFRA due. If application submitted prior to issue, evidence required to show Sequential and Exception Tests are passed. • Post-development modelling required. No changes in flood hazard classified, but flood depth changes acceptable provided not significant. • Safe access and egress are required. • Groundwater remediation scheme north of Site requires attention.		
EA meeting 17th April 2023	EA showed slides of future defended 1 in 100 yrs+CC event with potential flood depths at	Hydraulic modelling will be undertaken to inform the layout and level strategy for the site. Post development modelling will be undertaken	Detailed in FRA provided in **Appendix D.1**. Discussed in **Section 9.5** and **9.6**.

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
	Water Lane of 1m to 1.3m. Access/egress route will need to be a strategic route serving the area, however, installation of the bridge over the railway would not be needed for 10 yrs or so. Further discussions to be undertaken with ECC and EA to discuss emergency access/egress route Flood mitigation strategy for Water Lane site outlined – water compatible and less vulnerable uses at ground floor, with FFL at 300mm for more vulnerable uses and commercial spaces allowed to flood up to 500mm. Sequential and Exception Tests will need to be passed.	to demonstrate that the development does not increase flood risk elsewhere and to inform the finished floor levels for each plot. Mitigation measures will include residential accommodation at first floor and above, appropriate finished floor levels, flood resistance and resilience measures, flood warning and evacuation plan. These will be detailed within the FRA.	
LLFA – Scoping Opinion comments dated 10th November 2022	LLFA does not require an EIA for these proposals. A planning application will need to provide betterment to the existing surface water management. The applicant should assess theoretical greenfield conditions and aim to mimic these. Devon County Council's SuDS Guidance should be reviewed.	A Surface Water Drainage Strategy has been prepared to support the planning application (**Appendix D.2**). This has been prepared in line with DCC guidance and requirements. Brownfield and Greenfield runoff rates have been assessed and proposed runoff rates are significantly reduced from brownfield rates and match existing greenfield rates where possible.	Detailed in Surface Water Drainage Strategy provided in **Appendix D.2**. Discussed in **Section 9.5** and **9.6**.
LLFA – pre app consultation- interim response following initial pre-app meetings,	Flood risk and surface water management is a key constraint of the site. Initial information from the EA has been released but LLFA await	Hydraulic modelling will be completed to inform the layout and level strategy for the site. The outcomes of this will be detailed with the FRA.	Detailed in Surface Water Drainage Strategy provided in **Appendix D.2.** Discussed in **Section 9.5** and **9.6**.

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
dated 20th December 2022	full modelling data. Key issues still remain unresolved in terms of the theoretical flood levels, required finished floor levels and means of escape solutions.		

9.4 Methodology

Study Area

9.4.1 The study area has been defined as a 1 km buffer around the Site to identify the water environment receptors. This includes major waterbodies (i.e. River Exe and Exeter Ship Canal and the Alphin Brook – see **Figure 3-1 Appendix D.1**) and water services infrastructure which are close to, or hydrologically linked, to the Site. The 1 km buffer area allows for an assessment of the potential direct effects, as well as providing a broader water environment context.

9.4.2 The Site lies within the administrative boundary of Exeter City Council.

Baseline Data Collection

9.4.3 This chapter is informed by the supporting FRA (**Appendix D.1**) and Surface Water Drainage Strategy (**Appendix D.2**).

9.4.4 The existing studies / documents have been reviewed to assist with characterising the baseline water environment at the Site and to identify the best available data to be taken forward to inform the assessment.

9.4.5 Existing baseline conditions within the Site and the wider study area were identified as follows, drawing upon a combination of desk-based sources including those below and in accordance with local and national policy and guidance documents set out in **Section 9.2**:

- Environment Agency (EA) published 'Open Data' datasets available online, reproduced with OS mapping under licence to Stantec (contains Ordnance Survey data © Crown Copyright and database right 2022;
- Topographic survey of the site (Drawing reference C21105_SX) undertaken by Lewis Brown Chartered Surveyors in May 2021;
- EA Product 5, 6, and 7 data (EA Reference 280974, received 17/10/22), based on the 'Exeter 2D Modelling and Mapping - Model Update 2011' and EA Product 6 data based on the River Exe Model 2022 dated 8th December 2022;
- DCC, Flood Investigation Report – Devon Floods 19th – 24th December 2012 – Final Report, August, (2016);
- Design and Construction Guidance (DCG) for foul and surface water sewers offered for adoption, (2021);

- CIRIA, The SuDS Manual (c753) (2015);
- Department for Environment, Food and Rural Affairs (DEFRA), The Non-Statutory Technical Standards for Sustainable Drainage Systems (2015);
- DCC, Flood Investigation Report – Devon Floods 19th – 24th December 2012 – Final Report, August 2016;
- Haven Banks – Hydraulic modelling exercise to define Flood Zones 1, 2, 3a and 3b for the land in the Haven Banks area of Exeter (Revision A), Clarke Bond, January 2009; and
- Information set out in **Chapter 8 – Land Contamination**.

9.4.6 Hydraulic modelling will be completed by Stantec UK Ltd which will confirm the baseline flood risk to the site in present day and climate change scenarios. This will be based upon the River Exe hydraulic modelling used to inform the now completed Exeter Flood Defence Scheme, once model files have been received from the EA. The approach and results will be recorded within the updated ES and will be detailed in a Hydraulic Modelling Report that will be appended to the FRA, with results used to inform the mitigation measures.

Sensitive Receptors

9.4.7 From analysis of the baseline information, the key water environment receptors which could potentially be affected by the Proposed Development are identified with their sensitivity value in **Table 9-3**.

9.4.8 There is a Western Power Distribution (WPD) step down station between the northern and southern areas of the site. This is a key receptor when considering the flood risk impacts of the scheme. It is understood that this infrastructure is essential for serving power to south Exeter.

9.4.9 Engagement has been undertaken with WPD to understand their current flood mitigation measures that are in place. WPD have confirmed that based on an assessment using 2009 flood data, it was decided to construct a new steel framed elevated switch room with a floor level above the 1 in 1000 year flood level. All of the associated relay panels, battery chargers, intruder detection systems were also relocated to this room. The remaining plant on site were not considered to be at risk as it had been previously agreed that transformers are sealed units and would tolerate flash flooding and would be impractical to bund transformers to the required flood height whilst trying to maintain the flow of air required to cool them.

9.4.10 WPD do not have any temporary demountable defences that they deploy at this site and therefore will not impact flow routes around the Water Lane Site.

Assessment

9.4.11 Identification and assessment of likely significant water environment effects of the Proposed Development has been made by firstly considering the sensitivity of the receptor (i.e. its importance and ability to tolerate and recover from change) and, secondly, by considering the likely magnitude of impact (i.e. the size/level of the impact). By combining sensitivity and magnitude, the significance of the effect can be established. Primary and tertiary mitigation measures are discussed ahead of the assessment of magnitude of impact, and then secondary mitigation measures are also assessed to further mitigate and significant effects.

9.4.12 The following development scenarios have been assessed in this ES chapter:

- Construction phase: the activities, which will include the consideration of necessary demolition and Site enabling work activities, and construction of the proposed development.
- Operational phase: the final completion of the scheme, assuming full occupation and operation.

9.4.13 Receptors which have the potential to be affected by flooding or by other changes to the water environment or water infrastructure are classified with regard to their ability to absorb change, or in terms of their overall importance. **Table 9-2** sets out the criteria for identifying the sensitivity of the receptors.

Table 9-2: Sensitivity of Receptor Criteria

Sensitivity	Descriptor
High	High importance and rarity, national scale, and limited potential for substitution process.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

9.4.14 The sensitivity of the receptors for the Proposed Development are summarised in **Table 9-3**. The flood risk receptors have been defined using the PPG 'Flood Risk and Coastal Change' Table 2 which confirms the 'Flood Risk Vulnerability classification' of a land use.

Table 9-3: Summary of Receptors and Sensitivity

Receptor	Sensitivity	Reasoning
Surface Water – River Exe	High	WFD water body
Surface water – Exeter Ship Canal	High	WFD water body
Surface water – Alphin Brook	High	WFD water body
Groundwater – Permian Aquifer in Central Devon	High	WFD groundwater body and Secondary aquifer
Flood risk – to existing and proposed land uses – residential	High	Vulnerability classification
Flood risk – to existing and proposed land uses – commercial/retail	Medium	Vulnerability classification
Flood risk – to Western Power Distribution step down station	High	Essential infrastructure

Flood risk – to South Devon Mainline Railway	High	Essential Infrastructure
Flood Risk – to people	High	Vulnerability classification

9.4.15 Magnitude of impact is determined by considering the degree of change to relevant baseline conditions. This takes into account the timing, scale, size and duration of the impact.

9.4.16 The magnitude of impact assessment criteria has been further developed and amended since the scoping report was received, based on the available information at the time of completion of this assessment. **Table 9-4** shows the magnitude of impact criteria for this assessment relevant to the water environment.

Table 9-4: Water Resources and Flood Risk Magnitude of Impact

Category		Criteria for Assessing Impact
Substantial	Adverse	• Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements on a regional scale. • Decline in surface water quality on a regional scale. • Substantial negative change to flow conveyance and floodplain storage; and / or increase in peak flood level (>200mm). • Significant increase in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
	Beneficial	• Increase in resource and/or quality and integrity of resource; substantial improvement to key characteristics, features or elements on a regional scale. • Increase in surface water quality on a regional scale. • Substantial positive change to flow conveyance and floodplain storage; and / or reduction in peak flood level (>200mm). Significant decrease in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
Major	Adverse	• Loss of resource and/or quality and integrity of resource; major damage to key characteristics, features or elements on a catchment scale. • Decline in surface water quality on a catchment scale. • Major negative change to flow conveyance and floodplain storage; and / or increase in peak flood level (>100mm) . • Large increase in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
	Beneficial	• Increase in resource and/or quality and integrity of resource; major improvement to key characteristics, features or elements on a catchment scale. • Increase in surface water quality on a catchment scale. • Major positive change to flow conveyance and floodplain storage; and / or reduction in peak flood level (>100mm) . • Large decrease in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.

Category		Criteria for Assessing Impact
Moderate	Adverse	• Loss of resource and/or quality and integrity of resource; moderate damage to key characteristics, features or elements on a local scale. • Decline in surface water quality on a local scale. • Moderate negative change to flow conveyance and floodplain storage; and / or increase in peak flood level (>50mm). • Moderate increase in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
	Beneficial	• Increase in resource and/or quality and integrity of resource; moderate improvement to key characteristics, features or elements on a local scale. • Increase in surface water quality on a local scale. • Moderate positive change to flow conveyance and floodplain storage; and / or reduction in peak flood level (>50mm). • Large decrease in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
Minor	Adverse	• Loss of resource and/or quality and integrity of resource; minor damage to key characteristics, features or elements on a site specific scale. • Decline in surface water quality on a site specific scale. • Minor negative change to flow conveyance and floodplain storage; and / or increase in peak flood level (>10mm) . • Minor increase in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
	Beneficial	• Increase in resource and/or quality and integrity of resource; minor improvement to key characteristics, features or elements on a site specific scale. • Increase in surface water quality on a site specific scale. • Minor positive change to flow conveyance and floodplain storage; and / or reduction in peak flood level (>10mm). • Minor decrease in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.
Negligible		• No change in resource and/or quality and integrity of resource; negligible improvement to key characteristics, features or elements. • No change in surface water quality on a site specific scale. • No change to flow conveyance and floodplain storage; and / or no change in peak flood level. • No change in volume and/or peak discharge of surface water runoff from the Site in comparison to the existing scenario.

9.4.17 Significance of effect can be further classified by considering magnitude of impact against sensitivity of receptor. The significance criteria are outlined in **Table 9-5**.

Table 9-5: Effect Significance Matrix

		Magnitude of Impact (degree of change)				
		Negligible	**Minor**	**Moderate**	**Major**	**Substantial**
Environmental Value (sensitivity)	**High**	Minor	Minor or moderate	Moderate or Major	Major or Substantial	Substantial
	Medium	Negligible or minor	Minor	Moderate	Moderate or Major	Major or Substantial
	Low	Negligible or minor	Negligible or Minor	Minor	Minor or moderate	Moderate or Major
	Negligible	Negligible	Minor or Minor	Minor	Minor	Moderate

9.4.18 In addition to the significance of the effect, potential effects have also been classified as either temporary or permanent, where appropriate. Temporary effects are principally considered to occur in the construction phase, and permanent effects once the Proposed Development is complete and operational (albeit that the effect may first occur during construction).

9.4.19 The residual effects of the Proposed Development, following the implementation of any proposed mitigation measures, have been assessed based on the standardised significance criteria. These have been based on the qualitative appraisal of the magnitude of the effect and the sensitivity of the affected receptor in relation to water resources and flood risk.

9.4.20 Those effects that are assigned as either Substantial, Major or Moderate Adverse effects are considered 'significant'. Therefore, they will be reviewed in more detail and assigned potential mitigation measures.

9.4.21 Scenario 3, as set out in **Chapter 3**, has been assessed within this Chapter. This scenario has the maximum number of people when considering the combined residential dwellings (assumed 2 per flat) and student beds (assume 1 per student bed), with people being considered of high sensitivity with regards to flood risk.

Limitations

9.4.22 In undertaking the assessment of the Site and wider surrounding area, there are a number of assumptions and limitations affecting the outputs from this work. These include:

- Assessment of flood risk and drainage at the Site is based on the most up-to-date currently available data at the time of writing this report.
- Hydraulic modelling supplied by the EA has been used to assess the fluvial floodplain extents. Updates to the hydraulic modelling and post-development modelling will be completed by Stantec.
- Some of the conclusions in the assessment are based on third-party data. No guarantee can be given for the accuracy or completeness of any of the third-party data used.
- Climate change projections that will be used within the FRA (Appendix D.1) and proposed Surface Water Drainage Strategy (Appendix D.2) are in accordance with the Environment Agency's updated climate change allowance most recently published in May 2022. The climate change projections are subject to change within future design works, but this is an accepted principle and can be reviewed and addressed within the future design works for the Proposed Development, where required.

- The EA are currently unable to supply their River Exe 2022 model and therefore the full post development hydraulic modelling will not be completed at the time of submission of the initial planning application. As such an update to the FRA to refine initial mitigation measures set out in the FRA will be required and an associated update to the ES will also be prepared.

9.5 Baseline Conditions

Watercourses and Waterbodies

9.5.1 The watercourses noted below are shown on **Figure 3-1** of **Appendix D.1**.

9.5.2 The River Exe is located approximately 300m to the east of the Site and flows from north to south. The River Exe is a designated EA 'Main River', and it is the primary source of flooding to the Water Lane site.

9.5.3 The Exeter Ship Canal runs parallel to the River Exe, but is located closer to the site, bordering the south-eastern boundary. The Canal is linked to the River Exe by lock gates that are located approximately 200m east of the site, adjacent to Exeter Quay. It is understood that the Exeter Ship Canal is managed by ECC.

9.5.4 The Alphin Brook, also an EA Main River, is a tributary of the River Exe and is located approximately 500m south of the site, flowing west to east towards the River Exe.

Topography

9.5.5 EA LIDAR data, shows that the site levels fall towards the railway and from north to south across the site. Levels in the north of the site are approximately 7.4 m AOD falling to 5.0 m AOD in the south of the site. The South Devon Mainline Railway forms a topographic barrier along the south-west boundary of the site and an area of locally higher ground. The elevation of the railway line falls from approximately 10.9 m AOD to 7.0 m AOD in the south. Within the site boundary there is an area of high ground alongside the railway, known as Foundry Lane, within the concept masterplan, where the ground levels vary between approximately 8.5 m AOD to 9 m AOD.

9.5.6 A topographic survey of the site was undertaken by Lewis Brown Chartered Surveyors in May 2021, which shows the site levels are well represented by the LIDAR data.

Geology and Hydrogeology

9.5.7 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the site lies on superficial deposits of Alluvium comprising clay, silt, sand and gravel and is underlain by bedrock of the Alphington Breccia formation which is a sedimentary rock.

9.5.8 According to the EA 'Aquifer Designation Map' the underlying bedrock and superficial deposits are classified as a secondary aquifer. Secondary aquifers may provide significant quantities of drinking water, water for business needs and form an important source of base flow to river, lakes and wetlands.

9.5.9 DEFRA publishes indicative Groundwater Source Protection Zones (SPZs) for 2,000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. The zones define areas where a range of human activities may damage/pollute groundwater. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest. Examination of the mapping shows that the Site does not lie within a Source Protection Zone. The Site also does not lie within a 'Drinking Water Safeguard Zone'.

Water Quality and Resources

9.5.10 The River Exe, Exeter Ship Canal and Alphin Brook fall within the South West River Basin District. The EA's online 'Catchment Data Explorer' shows that all of these watercourses are a surface water WFD waterbody and therefore are monitored by the EA against the objectives of the WFD.

9.5.11 The River Exe is classified as a heavily modified watercourse under the WFD. It is currently rated an overall 'Moderate' rating, with a 'Moderate' ecological potential and a 'Fail' chemical status. Issues that have been identified as preventing the waterbody reaching a 'Good' potential include physical modification to the waterbody, sewerage discharge from the water industry and pollution from towns, cities and transport.

9.5.12 The Exeter Ship Canal is classified as an artificial watercourse under the WFD. It is currently rated an overall 'Moderate' rating, with a 'Moderate' ecological potential and a 'Fail' chemical status. Issues that have been identified as preventing the waterbody reaching a 'Good' potential include physical modification to the waterbody and pollution incidents.

9.5.13 The Alphin Brook is currently rated an overall 'Good' rating, with a 'Good' ecological status and a 'Fail' chemical status. It is not designated as a heavily modified watercourse.

9.5.14 For the 2019 assessment of chemical status, the EA has changed some methods and increased their evidence base. Due to these changes, all water bodies now fail chemical status, and this assessment is not comparable to previous years assessments.

9.5.15 Groundwater in the study area has been assessed against the objectives of the WFD. The RBMP identified the groundwater body underlying the Proposed Development the Permian Aquifers in Central Devon. The groundwater body is currently classified as at overall 'Poor' status with 'good' quantitative quality and 'poor' chemical status. The reasons for the WFD body achieving a 'Poor' status are recorded on the EA Catchment Data Explorer to be poor livestock and nutrient management within the catchment.

9.5.16 **Chapter 8 Appendix C.2** provides an Interpretative Desk Study Report. This report indicates that there are no groundwater abstractions recorded within 1 km of the site, other than a temporary licence to abstract groundwater for pollution remediation purposes, that there are no surface water abstraction licences within 250 m of the site, but 12 licences within 1 km of the site, and that there are no records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500 m of the study area.

Existing Drainage Infrastructure (Surface Water and Foul)

9.5.17 It is currently understood that the majority of the Site drains to the existing South West Water (SWW) public surface water and/or combined sewers. It is not clear where these systems eventually discharge, but the local topography and proximity to the River Exe indicate that this is the likely receptor for surface water discharge. It may be that in some instances these existing surface water sewers discharge into the Exeter Ship Canal, which is closer, however this itself eventually discharges into the River Exe near Powderham.

9.5.18 The Site is within South West Water's wastewater service area. The nearest wastewater treatment facility is located approximately 2.8 km south-east of the Site.

9.5.19 Asset mapping obtained from South West Water indicates the presence of existing public surface water sewers within the Site, although their extent is limited. Therefore, it is assumed much of the Site is drained via private drainage systems prior to entering the public networks. The mapping indicates that the existing public surface water sewers remain separate from the

combined network beyond the Site's boundary. However, the extents of this mapping does not confirm an eventual connection further downstream.

9.5.20 The mapping also indicates that there is a separate foul network, however this serves the existing housing on Cotfield Street and Gabriels Wharf rather than the existing industrial buildings. These appear to be served by the existing public combined network on the Site. The foul network remains separate from the combined network upon leaving the Site underneath the adjacent railway, but then connects approximately 100 m south-west of the Site's boundary.

Flood Risk and Defences

Risk of Fluvial Flooding

9.5.21 The EA provided a copy of the River Exe modelling completed in 2011 in their consultation response in October 2022. Following a consultation meeting in December 2022, Product 6 model outputs from the River Exe 2022 model were provided. The EA indicated that they were not able to provide a copy of the latest hydraulic model until February 2023. This was later updated in further consultation to May 2023; however, no model files have been received at the time of submission.

9.5.22 Hydraulic modelling will be completed for the site to inform the baseline flood risk to the site, and post-development modelling will be completed to inform mitigation measures requirements and details. The model files are required prior to the completion of these modelling exercises. At present, the baseline flood risk to the site and mitigation measures are based upon the open source data and the modelled results received from the EA to date.

9.5.23 The EA Flood Map for Planning (Appendix A of the FRA in **Appendix D.1** of this ES) indicates the site is generally in Flood Zone 3 and at high risk of flooding ignoring the presence of flood defences, with some areas within Flood Zones 1 and 2. The areas at low and medium risk of flooding are associated with areas of higher ground, in particular at Foundry Lane. The flood risk shown at the site is based on fluvial rather than tidal flooding. The Flood Zones are defined as follows:

- **Flood Zone 1 'Low Probability'** less than a 1 in 1000 (0.1%) Annual Probability of flooding from rivers.
- **Flood Zone 2 'Medium Probability'** between a 1 in 1000 and 1 in 100 (0.1% - 1%) Annual Probability of flooding from rivers and between a 1 in 1000 and 1 in 200 (0.1% - 0.5%) Annual Probability of flooding from the sea.
- **Flood Zone 3 'High Probability'** greater than a 1 in 100 (1%) Annual Probability of river flooding or greater than a 1 in 200 (0.5%) Annual Probability of flooding from the sea.

9.5.24 The Flood Map for Planning shows that the areas in Flood Zone 3 benefit from a '*reduction in risk of flooding from rivers and sea due to defences*'. This means that the site benefits to a degree from the presence of flood defences. The relative benefit from these defences is described in more detail below.

9.5.25 There has been a history of flood alleviation projects and construction of flood defences within Exeter to reduce the risk of flooding from the River Exe. The most recent upgrade to the Exeter flood alleviation scheme was built between 2014 and 2021 involving lowering of the spill levels in the Trews flood relief channel to increase its capacity and provide ecological improvements and the construction of new flood walls, flood gates, control structures and demountable flood defences between Cowley Bridge and Countess Wear.

9.5.26 The EA has indicated that the site benefits from flood defences. This flood defence is in the form of an embankment, located between the Exeter Canal and the River Exe. The embankment extends between the southern extent of the allotments located between Exeter Canal and the River Exe to approximately 100 m upstream of the confluence of the Exeter Canal with the River Exe.

9.5.27 The flood defence at this location is noted to be in Good condition.

9.5.28 The DCC Flood Risk Asset Register indicates that there are no known flood risk assets under DCC ownership within the site boundary.

9.5.29 The River Exe 2022 modelling has not yet been incorporated into the Flood Map for Planning. At a consultation meeting in December 2022, the EA explained that the latest modelling, in comparison to the previous model results, that the risk of flooding at the site has been reduced in the present day, but that in the future when the impacts of climate change are taken into account the risk of flooding has increased with greater flood depths being predicted.

9.5.30 When the impacts of defences are taken into account, the site is shown to be at risk of flooding in the 0.1% AEP or 1 in 1,000 year event in the present day. This is considered to be a low risk of flooding, given the low frequency of such events. The outputs show that the site is not at risk of flooding during the 3.33% AEP or 1 in 30 year event and therefore is not considered to be within the Flood Zone 3b 'Functional Floodplain'.

9.5.31 If the impacts of climate change on peak river flows are taken into consideration, the risk of flooding at the site increases. With the presence of defences, the site is at risk of flooding in the 1 in 100 year event. The site is located within the East Devon Management Catchment; For the 2080s epoch (i.e. assumed 100-year design life), the 'Central' climate change allowance (appropriate for 'More Vulnerable' development, which includes residential, and education uses) indicates peak river flows are anticipated to increase by 46%.

9.5.32 The 1 in 100 year fluvial flood event with an allowance for climate change in the defended model scenario is the design event when mitigation proposals are being considered. The area adjacent to Foundry Lane and the railway are shown not to be at risk of flooding, but flood depths across the wider site are significant. For the remainder of the site, the modelled flood depths are generally above 0.5 m, with some areas with depths exceeding 2 m adjacent to Tan Lane and adjacent to the southern boundary of the site.

9.5.33 A more detailed assessment of flood levels is provided in the FRA**, Appendix D.1**, with direct reference to the development proposals. Modelled flood hazard results from the River Exe 2022 model are not yet available and therefore results from the River Exe 2011 model have been used to inform the development proposals at this stage.

9.5.34 In addition to the actual flood risk to the site from fluvial sources, the site is at a residual risk of flooding should there be a failure of flood management infrastructure such as a breach of a raised flood defences. This is more relevant to the present day scenario where the site is not at risk of flooding during the 1 in 100 year event. The predicted depths are lower than those for the design event and therefore the latter have been used to develop mitigation proposals, as a precautionary approach.

9.5.35 The EA Historic Flood Map shows that the site has been flooded in the past from the River Exe exceeding the capacity of the channel. The flood history data shows that there has been extensive flooding across the wider south-west area including the area around the site and Marsh Barton.

9.5.36 Historically, Exeter has been prone to flooding from the River Exe. The 2008 SFRA outlines that there were two serious flood events in 1960 which affected a large area of St Thomas, St David's, and Alphington wards, where approximately 1,000 properties were flooded by the

River Exe bursting its banks. Water Lane itself is situated in St David's, although the 1960 event flood map shows the site did not flood. Ultimately, these events resulted in the construction of the River Exe flood relief scheme through Exeter.

9.5.37 It is understood that the EA Flood Warning Service covers Exeter and the Water Lane site. It is also understood that the flood warning lead time is circa four hours.

Risk of Tidal Flooding

9.5.38 Tidal flooding results in the inundation of low-lying areas due to high tides that breach or overtop the flood defence structures. Tidal flooding is generally caused by seasonal high tides and where stormy weather conditions results in strong wave action that increase water levels above the norm.

9.5.39 The River Exe is a tidal watercourse. The EA has provided outputs from tidal flood scenarios from the River Exe tidal modelling. The EA model outputs show that in the present day the Site is outside the 0.1% AEP or 1 in 1,000 year annual probability flood outline in the present day. When the impacts of climate change are considered, the tidal limit of the River Exe is closer to the site, but the site remains unaffected. The risk of tidal flooding is therefore considered to be 'Low' in both the present day and when the impacts of climate change are taken into account.

Risk of Flooding from Surface Water

9.5.40 The EA 'Risk of Flooding from Surface Water' map indicates that the majority of the Site is at a 'very low' risk of surface water flooding (land at lower than 1 in 1000 (0.1%) annual probability of surface water flooding).

9.5.41 There are, however, areas of the site that are shown to be at between a 'Low' and 'High' risk of surface water flooding including areas of ponding and surface water flow routes.

9.5.42 There is an area of surface water ponding immediately to the south of the point where Tan Lane passes beneath the railway line that is shown to be at risk of flooding in the 'Low', 'Medium' and 'High' risk events. In the 'High' risk event, the flood depths are predicted to be less than 300 mm, but in the 'Low' risk event the flood depths are shown to vary but some areas of ponding between 900 mm and 1,200 mm.

9.5.43 The surface water flood mapping indicates that there is a flow route along Water Lane, but with some ingress to the site adjacent to Gabriel's Wharf. In the 'High' and 'Medium' risk events there is some localised areas of surface water ponding, but in the 'Low' risk event there is a more apparent flow route along Water Lane impacting the central area of the site on the eastern boundary. In the 'Low' risk event the flood depths are predicted to be between 300 mm and 600 mm.

9.5.44 At the southern boundary of the site there is an area shown to be at risk of surface water flooding in the 'Low' risk event with predicted flood depths less than 600 mm.

9.5.45 The Flood Investigation Report prepared by DCC for the Devon December 2012 flood events also indicates that from the 1980s onwards, surface water flooding has also been an additional problem affecting properties throughout Exeter, with highway records showing many instances of blocked surface water drainage and flooding of roads and property. During this 2012 event, a mix of 14 residential and commercial properties were flooded, with the Flood Investigation Report noting that many of these properties had been flooded on previous occasions, with most of the properties affected being situated adjacent to the River Exe.

Risk of Flooding from Groundwater

9.5.46 There is limited detailed information available on flood risk from groundwater from historical records. The DCC PFRA identifies that groundwater may have been a contributing factor to flood incidents, but there are no significant incidents with groundwater flooding being considered the main source. The SFRA identifies that within much of Exeter groundwater flooding is not a major concern. On this basis the risk of groundwater flooding is considered to be low.

Risk of Flooding from Reservoirs

9.5.47 The EA provides maps showing the risk of flooding in the event of a reservoir failure. The reservoir breach extents are shown in the baseline flood maps included in the FRA (Appendix D.1).

9.5.48 The EA reservoir maps show two flooding scenarios, a 'dry-day' and a 'wet-day'. The 'dry-day' scenario predicts the flooding that would occur if the dam or reservoir failed when rivers are at normal levels. The 'wet day' scenario predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood.

9.5.49 The mapping shows that the site is at risk of flooding in the event of a reservoir breach during a 'dry-day' and 'wet-day' scenarios. A review of the online datasets indicates that this is associated with Wimbleball Lake, located in Exmoor which is located approximately 45 km north of the site.

9.5.50 It should be emphasised that the risk of flooding from a reservoir breach is very small. The EA is the enforcement authority for the Reservoirs Act (1975) and there is a mandatory requirement for all large, raised reservoirs (where greater than 25,000 m3 of water is stored above natural ground level) to be inspected and supervised by reservoir panel engineers.

9.5.51 In England, for raised reservoirs which hold less than 25,000 m3 above natural ground level the reservoir owner has a duty of care under the Health and Safety at Work Act 1974 to ensure others are not placed at risk from their assets or actions.

9.5.52 Whilst the consequences of a reservoir breach could be severe, the probability of such an occurrence is therefore considered to be very low.

Risk of Flooding from Sewers and Water Mains

9.5.53 Asset plans from South West Water indicates there are a series of foul and surface water sewers located along the boundary and passing through the site. The SFRA does not contain any details of surface water sewer flood incidents in the vicinity of the site.

9.5.54 The risk of sewer flooding to the Site is therefore considered to be low.

Risk of Flooding from Canals, Ponds and Artificial Watercourses

9.5.55 The Exeter Ship Canal runs parallel to the River Exe, but is located closer to the site, bordering the south-eastern boundary. The Canal is generally at a comparable or lower level than the site along the boundary. Towards the southern extent of the site, the Canal banks are higher than the site, however, given that the EA modelling shows there is a significant fluvial flow route that passes through the site, it is considered that assessment of the fluvial risk is considered the key constraint for development and therefore no further assessment is proposed at this stage.

9.5.56 There are no other canals, ponds, or artificial watercourses local to the Site that could lead to flooding.

9.5.57 Therefore, there is a low risk of flooding from these flood sources.

Baseline Evolution

9.5.58 In the absence of the Proposed Development (no development scenario), the land uses within the Application Boundary would be retained and there would be no impacts upon road drainage or the water environment. The existing drainage regime within the Application Boundary would continue.

9.5.59 **Appendix A.8** of the ES provides a full list of schemes which have been identified as being likely to be in operation prior to the construction of the Proposed Development. These schemes form part of the future baseline scenario and have been taken into account in the assessment of likely significant effects from the Proposed Development (construction and operation) presented in this chapter.

Summary

This ES Chapter sets out relevant policy context, legislation, guidance and standards, as well as consultation undertaken in relation to Flood Risk and the Water Environment. The methodology to be used to undertake this technical assessment is also reported in this chapter. The Applicant will be submitting a full technical assessment in Autumn 2023. The following information will be provided in the upcoming Autumn submission;

- Primary and Tertiary Mitigation;
- Assessment of Significant Likely Effects;
- Secondary Mitigation and Enhancement;
- Residual Effects;
- Cumulative Effects;
- Monitoring;
- Conclusions;
- Glossary; and
- Appendices and Figures.

9.6 References

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- *The Environmental Permitting (England and Wales) Regulations* (2016), The Stationary Office.
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- Devon County Council (2021). *Local Flood Risk Management Strategy*;
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9.7 Glossary

- ABI - Association of British Insurers
- AP - Annual Probability
- BGS - British Geological Survey
- CDM - Construction (Design and Management)
- CIRIA - Construction Industry Research and Information Association
- DCC - Devon County Council
- DDA - Disability Discrimination Act
- DEFRA - Department for Environment, Food and Rural Affairs
- DPD - Development Plan Document

- EA - Environment Agency
- ECC - Exeter City Council
- FAS - Flood Alleviation Scheme
- FFL - Finished Floor Levels
- FRA - Flood Risk Assessment
- FRAP - Flood Risk Activity Permit
- FRMP - Flood Risk Management Plan
- GIS - Geographic Information System
- ICM - Integrated Catchment Model
- LFRMS - Local Flood Risk Management Strategy
- LLFA - Lead Local Flood Authority
- mAOD - Metres Above Ordnance Datum (Newlyn)
- NPPF - National Planning Policy Framework
- PFRA - Preliminary Flood Risk Assessment
- PPG - Planning Practice Guidance
- RoSWF- Risk of Surface Water Flooding
- SuDS - Sustainable Drainage Systems
- SFRA - Strategic Flood Risk Assessment
- SWMP - Surface Water Management Plan

10 Waste

10.1 Introduction

10.1.1 This chapter assesses the likely significant environmental effects of the Proposed Development in relation to waste.

10.1.2 This chapter considers waste impacts at the construction and at the post completion (operational) stages of the Proposed Development, taking into account relevant local and national guidance and regulations. It identifies, where appropriate, the nature of likely significant effects, and sets out, as appropriate, the mitigation measures that will be applied.

10.1.3 This chapter outlines the relevant legislation, policy framework and guidance applicable to waste. It describes the assessment methodology, study area, baseline conditions, and provides an overview of potential impacts. The mitigation measures, likely residual effects, monitoring and a summary are also included.

10.1.4 This chapter has been prepared by Stantec UK Limited ('Stantec'). In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.6.**

10.1.5 The following matters have been identified and assessed within this chapter:

- The anticipated waste arisings from the Proposed Development and how these arisings are able to be reduced and, the quantities and type (e.g. inert / hazardous); and
- The impact of these waste arisings on the identified waste management infrastructure.

10.1.6 This chapter does not make reference to impacts associated with the consumption of material resources (including primary raw materials, such as aggregates and minerals, and manufactured construction products which include recycled and secondary aggregates.

10.1.7 This chapter should be read in conjunction with the remainder of the Environmental Statement (ES). The potential impacts associated with waste arising from the excavation, construction and post-completion of the Proposed Development have also been assessed where appropriate in other chapters, including as follows:

- Chapter 12 - Transport (i.e. vehicle movements associated with collection/ transfer of waste);
- Chapter 11- Noise & Vibration (i.e. arising from construction and excavation activities);
- Chapter 8 - Contamination (i.e. earthworks implications).

10.2 Legislation, Policy Framework and Guidance

10.2.1 This section provides a summary of the policy and legislative context for the Proposed Development in relation to waste.

National Policy

National Planning Policy Framework (NPPF) (2021)

10.2.2 The NPPF's goal of supporting sustainable development identifies the importance of using natural resources prudently and minimising waste. It identifies that strategic policies should make provision for minerals and waste management.

10.2.3 The NPPF does not contain any specific waste policies since national waste planning policy is published as part of the Waste Management Plan for England 2021. However, in Section 2 'Achieving sustainable development' NPPF sets out an environmental objective in which 'using natural resourcing prudently, minimising waste and pollution' are core tenets.

National Planning Policy for Waste (2014)

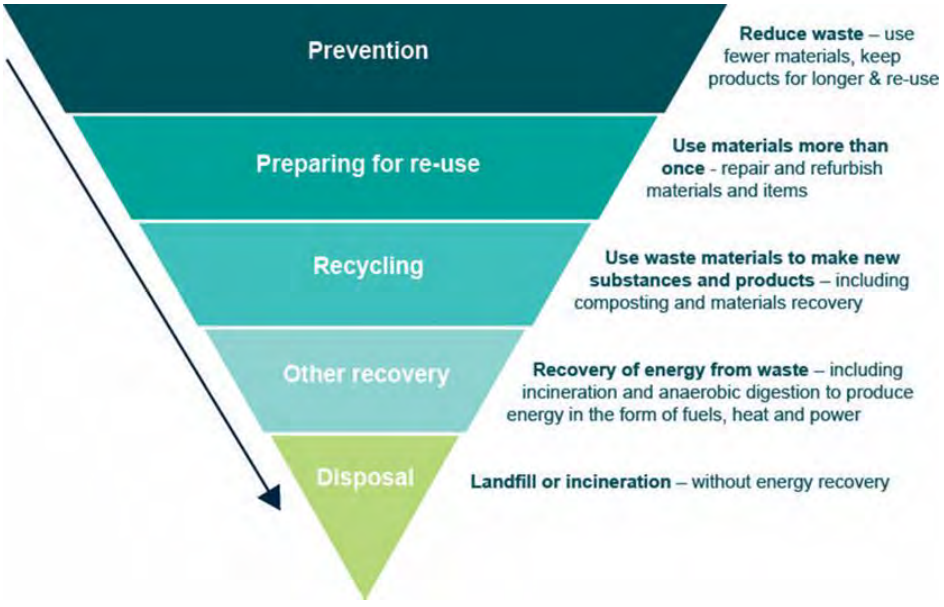
10.2.4 This provides the planning framework to enable Local Planning Authorities (LPA) to put forward, through local waste management plans, strategies that identify sites and areas suitable for new or enhanced facilities to meet the waste management needs of their areas. Information is also included concerning non-waste developments, including any development whose end function is not directly related to waste.

10.2.5 The National Planning Policy for Waste states that when determining planning applications for non-waste developments, Local Planning Authorities should ensure that the likely impact of the development on existing waste management facilities is acceptable, and the handling of waste maximises reuse/recovery and minimises off-site disposal.

10.2.6 The National Planning Policy for Waste (2014) should be read in conjunction with the NPPF and the Waste Management Plan for England, described below.

10.2.7 The waste hierarchy is illustrated at **Figure 10.1** which ranks waste management options according to what is best for the environment.

Figure 10-1: The Waste Hierarchy



Waste Management Plan for England (2021)

10.2.8 The Plan serves to review the Waste (England and Wales) Regulations 2011 (as amended) together with waste local plans ensures that waste management plans are in place for the whole of the UK (inclusive of plans produced by the devolved administrations). The Plan focuses on waste arisings and their management. It is a high-level, non-site specific document. It provides an analysis of the current waste management situation in England and evaluates how the Plan will support implementation of the objectives and provisions of the Waste (England and Wales) Regulations 2011.

10.2.9 The focus of the Plan is on the management of waste arisings within England, with targets to ensure that a minimum of 65% of municipal waste is reused or recycled by 2035. A maximum of 10% of generated municipal waste can be disposed of in landfill by 2035.

10.2.10 The Plan provides an update of the latest compositional analysis of household waste, commercial and industrial waste, and construction, demolition and excavation waste (CDE). This information helps to inform national, regional and local waste management needs.

10.2.11 There continues to be a focus on all stakeholders to recognise waste as a resource and drive towards higher levels of higher quality recycling.

Resources and Waste Strategy (2018)

10.2.12 The Resources and Waste Strategy sets out how developments and Local Authorities will preserve material resources by minimising waste, promoting resource efficiency and moving towards a circular economy in England. The Resources and Waste Strategy contains five strategic ambitions: to work towards eliminating food waste to landfill; to double resource productivity; to work towards ensuring all plastic packaging placed on the market is recyclable, reusable or compostable; to eliminate avoidable waste of all kinds; and to eliminate avoidable plastic waste. It sets the framework that will help government, businesses and the public to play their part in reducing the impact of our consumption and the resulting waste on the environment.

The Waste Prevention Programme for England (2013)

10.2.13 This document sets out the Waste Prevention Programme for England. It articulates the actions for government and others which together will move us towards reducing waste. The aim of the Programme is to improve the environment and protect human health by supporting a resource efficient economy, reducing the quantity and impact of waste produced whilst promoting sustainable economic growth.

The Environmental Protection Act (1990)

10.2.14 The Environmental Protection Act defines the fundamental structure and authority for waste management. It requires that waste producers and their supply chains must take all reasonably practical steps to ensure that:

- Waste is consigned only to a registered waste carrier, licensed waste contractor, local authority waste collector or person dealing with waste in ways that are exempt from licensing;
- Waste that is disposed of is accompanied by a detailed written description of the waste to ensure its safe handling, treatment and disposal (waste transfer notes are to be kept for a minimum of two years and hazardous waste consignment notes are to be kept for a minimum of three years);

- Waste is securely contained to prevent it escaping to the environment;
- Appropriate measures are taken to ensure that others involved in the handling and disposal of waste do so in accordance with all applicable Regulations;
- Copies of registration certificates should be obtained for all waste contractors and waste carriers used as part of the Proposed Development and it should be ensured that they are on the Environment Agency's 'Public Register of Waste Carriers, Brokers and Dealers'; and
- Checks should be made on the final destination of each waste, ensuring that each waste disposal facility is licensed to accept the waste. Duty of Care audits of carriers and waste disposal facilities are advisable. The generation of waste from the Proposed Development shall be managed in accordance with all applicable legislation and policy and in accordance with good practice.

The Hazardous Waste (England and Wales) Regulations (2005) (as amended 2016)

10.2.15 The Regulations apply to all wastes listed as hazardous in the European Waste Catalogue (2000/532/EC) and the CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008).

10.2.16 Waste management contractors working on the Proposed Development will be required to provide evidence that the waste hierarchy has been applied. This evidence can be in the form of waste transfer notes and hazardous waste consignment notes, which themselves must be kept for two and three years respectively.

The Waste (England and Wales) (Amendment) Regulations 2014

10.2.17 The Waste Regulations 2014 place a duty on waste producers and all handlers of waste to manage waste in accordance with a hierarchy of options where this achieves the best overall environmental outcome. Therefore, as a producer, the operator/residents of this development must endeavour to reduce, sort and separate waste.

10.2.18 These Regulations also aim to improve the quality and quantity of material being collected for recycling by placing a duty on waste collectors to enable recyclable material (particularly glass, paper, plastics, and metal) to be collected separately where it is necessary to support the recovery of high-quality recyclables and where this is technically, environmentally or economically practicable (TEEP). Although this duty is specifically on the collectors of waste, it is important for any new development to consider the logistical impacts of separating out these materials.

The Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2018

10.2.19 The Regulations put in place requirements to ensure that operators on certain sites that produce certain materials and undertake certain activities (such as the storage, use or treatment of waste) have a permit or exemption from the regulator (i.e. the Environment Agency, LPA).

10.2.20 The Regulations allow for any permit or exemption details of all sites that manage waste from the Proposed Development to be checked to ensure waste is being managed legally.

Local Policy

10.2.21 The local planning authority for the proposed development is Exeter City Council.

10.2.22 Exeter City Council have the responsibility to collect waste from households, and Devon County Council have the responsibility to dispose of it.

The Devon Waste Plan (2014)

10.2.23 Devon County Council adopted the Devon Waste Plan in December 2014 and forms part of Devon's Development Plan. Key policies include:

10.2.24 **Policy W4: Waste Prevention** requires the provision of waste audit statements for major development proposals. Major Development is defined as residential development comprising 10 or more dwellings or a site area of 0.5 hectares.

10.2.25 **Policy W5: Reuse, Recycling, and Materials Recovery** aims for recycling levels of at least **64%** for household and business waste and **90%** for construction and demolition waste by 2031.

10.2.26 **Policy W10: Protection of Waste Management Capacity** aims to ensure that existing and planned waste management capacity is safeguarded from other forms of development.

10.2.27 **Policy W21: Making Provision for Waste Management** states that developments need to demonstrate that they either include adequate wate management provision, make financial contribution to off-site management of waste arisings, or the existing waste management infrastructure is adequate.

Waste Management and Infrastructure SPD (2015)

10.2.28 The Waste Management and Infrastructure Supplementary Planning Document (SPD) provides practical guidance for developers on the policies from the Devon Waste Plan outlined above. Chapter 4 'Managing Waste from New Development' details how to successfully implement Policy W4 and W21.

Resource and Waste Management Strategy for Devon and Torbay 2020-2030 (2020)

10.2.29 The Resource and Waste Management Strategy is the joint strategy for 10 local authorities, including Exeter City Council and Devon County Council. The strategy sets out how the county has progressed against 2013 Strategy Policies and how the authorities will manage waste going forward.

Residential Design Guide SPD (2010)

10.2.30 The Residential Design Guide SPD provides detailed guidance in support of policies from the Exeter Local Plan First Review. The SPD sets standards of design that Exeter City Council require for new residential development proposals.

10.2.31 SPD Design Principle I: Sustainable Design states that *'the design process should include a construction methodology which minimises waste and energy use'.*

10.2.32 Chapter 8 of the SPD details residential bin storage requirements, including design requirements for bin storage and collection.

Guidance

10.2.33 The IEMA guide to: Materials and Waste in Environmental Impact Assessment was published in 2020 (IEMA Guidance, 2020) and provides guidance for assessing the environmental impacts and effects of materials and waste.

10.3 Consultation

10.3.1 The EIA Scoping Opinion, dated 24th November 2022, stated that Materials and Waste should be scoped into the EIA, however no reference was given to 'materials' in the narrative. Consultation emails were sent to ECC and DCC on the 18th of April 2023 to confirm the scope of the assessment, however no comments have been received in relation to the scope of the assessment at the time of preparing the ES.

10.3.2 Given the scale and nature of the Proposed Development, materials required for the construction of the Proposed Development are unlikely to be particularly scarce or environmentally sensitive, nor is the Proposed Development likely to result in materials become scarce.

10.3.3 Within the EIA Screening Opinion Statement of Reasons, prepared by ECC, it states that the construction and operation of the project *'will not use natural resources that are in significant short supply. Whilst some resources are non-renewable, none are likely to be unusual for a development project such as this and sustainable design and construction methods will be required in accordance with Exeter Core Strategy Policy CP15'.*

10.3.4 Given the above, this chapter does not make reference to impacts associated with the consumption of material resources (including primary raw materials, such as aggregates and minerals, and manufactured construction products which include recycled and secondary aggregates).

10.3.5 Consultation and correspondence with the Waste Management Officer at ECC has been undertaken. This correspondence (dated 25th April 2023) provided specific guidance regarding bin storage requirements, which has been incorporated into the Waste Audit Statement (**Appendix E.1**).

10.4 Methodology

Study Area

10.4.1 The study area for the assessment is the redline boundary of the Proposed Development, shown on the Site Location Plan. This is the area within which waste will ultimately be generated.

10.4.2 The expansive study area beyond the red line boundary is judged to be represented by the Southwest region, which includes Devon, Wiltshire, Dorset, Bath, Bristol, and South Gloucestershire, Gloucestershire, Somerset, and Cornwall.

10.4.3 This is considered to be the area within which suitable waste infrastructure would be expected to accept arisings or waste generated by the continuation of the Proposed Development.

Baseline Data Collection

10.4.4 Desktop baseline data collection has been undertaken as part of this assessment. The baseline considers the current use of the Site, waste arisings within the region, and non-

hazardous/ inert landfill capacity. The following sources have been used to inform the baseline:

- DEFRA published Local Authority and regional Waste Statistics – (2021/22)
- Environment Agency – Landfill capacity (2021)

Sensitive Receptors

10.4.5 Landfill void capacity is defined as the sensitive receptors for this assessment, in line with IEMA guidance.

10.4.6 Both non-hazardous and inert landfill capacity is considered, for landfills located within the South West region. This capacity is spread within the sub-regions across several permitted sites. Further info is provided in **Table 10.4** – Non-Hazardous and Inert Landfill Facilities

10.4.7 The waste generated at all stages, both prior to, and post the implementation of mitigation measures for the Proposed Development needs to be presented against the remaining capacity in order to be able to determine to what degree the increase in volumes of waste will reduce the landfill capacity.

Assessment

10.4.8 The IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA Guidance, 2020) has been used, as appropriate, in the assessment approach for this Chapter.

10.4.9 This chapter's assessment identifies the environmental impacts associated with waste arisings from the Proposed Development, including from human activities, along with the measures which will be implemented to mitigate the impacts.

10.4.10 For the purposes of this chapter, waste is defined as per the definition in the EU Waste Framework Directive: "'waste' means any substance or object which the holder discards or intends or is required to discard". The term 'holder' is defined as the producer of the waste or the person who is in possession of it and 'producer' is defined as anyone whose activities produce waste.

10.4.11 As far as reasonably practicable, and in line with the principles set out within national and local policy, the Waste Hierarchy will be followed and embedded into the Proposed Development, including minimising disposal and maximising reuse and recycling. Sustainable waste management is implemented through the Waste Hierarchy as shown in **Figure 10.1**:

- Prevention;
- Preparing for reuse;
- Recycling;
- Other recovery, including energy recovery; and
- Disposal.

10.4.12 This assessment looks at a matrix approach which is based upon the characteristics of the impact (magnitude and nature) and the sensitivity of the receptor.

10.4.13 This chapter does not make reference to impacts associated with the consumption of material resources (including primary raw materials, such as aggregates and minerals, and

manufactured construction products which include recycled and secondary aggregates). Given the scale and nature of the Proposed Development, materials required for the construction of the Proposed Development are unlikely to be particularly scarce or environmentally sensitive, nor is the Proposed Development likely to result in materials become scarce.

Data sources

10.4.14 A variety of data sources will be referenced within this chapter. They will include:

- Environment Agency – Landfill capacity (2021)
- BRE – Waste Benchmark Data (October 2017)
- DEFRA published Local Authority and regional Waste Statistics – (2021/22)
- WRAP Guidance – Bulk Density and apportionment of C&I Waste (2013)
- Our Waste, Our Resources: A Strategy for England (2018)

Significance criteria

10.4.15 In order to assess the likely significant environmental impacts as a result of the generation of waste by the Proposed Development, the chapter assesses the resultant implications against the least desirable waste management method – disposal to landfill, for which there is a finite regional capacity. This is in line with the IEMA Guidance (2020) for a proportional approach to assessing the environmental impacts of waste.

10.4.16 The key resultant effect for this assessment is the potential diminishment in non-hazardous / inert landfill void capacity, that would result from the Proposed Development (along with other developments in the area).

10.4.17 In respect to the assessment of the magnitude impact from the generation and disposal of waste across the Proposed Development, the criteria are based on the expected levels of landfill diversion.

10.4.18 For the construction stage, the approach considers the acceptance of a good practice landfill diversion rate of 90%. This is a level emerging across the country as policy develops - for example the New London Plan (2021) - and has been shown to be achievable and sometimes exceeded by various major UK developments and organisations including HS2 and London 2012 Olympics. Policy W5 of the Devon Waste Plan also sets a target of 90% recycling rate for construction and demolition waste by 2031.

10.4.19 For waste generated in the operational stage of development projects, the national strategy ‘Our Waste, Our Resources: A Strategy for England (2018)’ aims to move waste up the Waste Hierarchy. Its preliminary goal is to recycle at least 65% of municipal waste (by weight) by 2035, with no more than 10% requiring landfill disposal. Policy W5 of the Devon Waste Plan also sets a target of 64% recycling rate for household and commercial waste by 2031.

10.4.20 **Table 10.1** presents the magnitude of impacts in relation to this recognised good practice landfill diversion rate of 90%.

Table 10.1: Magnitude of Impacts

	Large	Moderate	Small	Negligible	No change
Landfill Diversion	<30% landfill diversion	30-59% landfill diversion	60-89% landfill diversion	90-99% landfill diversion	100% landfill diversion

10.4.21 As detailed in **section 10.4.5**, landfill void capacity is defined as the sensitive receptor for this assessment.

10.4.22 **Table 10.2** illustrates the effect on the receptor where the outlined calculation results in a varied range of effects depending on the percentage that is calculated.

Table 10.2: Sensitivity of Receptors

Receptor	High	Medium	Low	Negligible	No change
Landfill Void Capacity	... reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	...reduce considerably: by 6-10% as a result of wastes forecast.	...reduce noticeably: by 1-5% as a result of wastes forecast.	...reduce minimally: by <1% as a result of wastes forecast.	Remains unchanged or is expected to increase through a committed change in capacity.

10.4.23 Once the magnitude and the sensitivity has been determined the assessment will use the matrix in **Table 10.3** to determine the significance.

Table 10.3: Significance of Effects

MAGNITUDE	SENSITIVITY			
	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

10.4.24 An effect is considered significant where the matrix records a moderate or major effect. It will be deemed not significant where the effect is measured to be minor or negligible.

Assessment Scenario

10.4.25 The Disposition of Uses Parameter Plans details four Scenarios for the maximum areas of proposed use classes. Scenario 1 has been selected as the assessment scenario for this chapter, as it represents the worst-case scenario for waste.

10.4.26 Scenario 1 comprises:

- 920 residential dwellings;
- 250 student beds; and
- 40,000 m^2 of commercial and non-residential.

10.4.27 Assuming 240L of waste per week for residential dwellings, 100L for student dwellings based on a 30-week year, and a commercial waste generation of 4L/m^2 , Scenario 1 would generate the greatest annual waste arisings.

Limitations

10.4.28 The assessment has been made against the most up to date and detailed information provided or available. Where assumptions have had to be made the rational and references for these have been explained.

10.4.29 Given that the Proposed Development is applying for outline planning permission, at this stage there are limits as to the level of detail regarding the proposed development, particularly in relation to the specifics on how waste will be contained and managed within the operational stage.

10.4.30 The most up to date landfill data available through the Environment Agency was recorded at the end of 2021, therefore it does not set out the current day position. In some cases, permitted landfill operators may claim commercial confidentiality over their data. It remains however the most reliable data and is widely used in order for local planning authorities to plan for future waste infrastructure needs.

10.5 Baseline Conditions

The Current Baseline

10.5.1 The 6.38-hectare site currently comprises of industrial land use. Current site uses include a scaffolders yard, bus depot, boat builders, vehicle parking / storage and an asphalt contractor. Recent uses include a meat rendering plant, engineering works and a vehicle workshop / transport hub.

10.5.2 The existing site uses will generate mixed commercial and industrial waste. As we are unable to accurately quantify waste arisings from the existing site uses, the baseline for this assessment assumes no waste is currently generated at the Site, presenting a worst-case scenario for the assessment.

Current Waste Arisings Within ECC and the Region

10.5.3 The local planning authority for the proposed development is ECC. ECC have the responsibility to collect waste from households, and DCC has the responsibility to dispose of it.

10.5.4 The average household in the ECC area currently produces approximately 662kg of waste (including recycling) per year and recycling rates for household waste are currently ~ 25.5% (Defra, 2023).

10.5.5 DCC disposed of 369,257 tonnes of household waste throughout 2021/22. DEFRA published statistics report a 55.1% reuse, recycling and composting rate, with 4.3% of collected municipal waste being sent to landfill (Defra, 2023).

10.5.6 According to data from DEFRA, in 2021/22 DCC generated 386,110 tonnes of LAC waste, of which 16,853 tonnes was non-household Commercial and Industrial Waste ('C&I') waste.

Current Non-Hazardous / Inert Landfill Capacity

10.5.7 The Environment Agency (2021) reported non-hazardous and inert landfill capacity to be 25,570,506m^3 within the Southwest region at the end of 2021, the most recent data available.

10.5.8 This capacity is spread within the sub-regions across 53 different permitted sites as shown in **Table 10.4**.

Table 10.4:South West– Non-Hazardous and Inert Landfill Facilities

Sub Region	Number of landfill sites (Non-Hazardous and Inert)	Remaining Capacity end 2020 (Non-Hazardous) (cubic metres)	Remaining Capacity end 2020 (Inert) (cubic metres)	Remaining Capacity end 2020 (Total) (cubic metres)
Devon	10	267,996	1,345,517	1,613,513
Wiltshire	10	4,154,512	21,600	4176112
Dorset	9	400,000	1,020,334	1420334
Bath, Bristol, and S Glos	7	0	7,838,530	7,838,530
Gloucestershire	6	2,249,839	5,183,227	7433066
Somerset	5	1,137,401	270,000	1407401
Cornwall	6	1,501,933	179,617	1681550
TOTAL		**9,711,681**	**15,858,825**	**25,570,506**

10.5.9 It is assumed that all waste from both the construction and operational stages of the Proposed Development would be sent to non-hazardous landfill. 25,570,506 m^3 has therefore been used throughout this assessment as the landfill void capacity, in order to assess the potential diminishment in non-hazardous void capacity, that would result from the Proposed Development. Depending on the type of waste produced, in reality, some waste may be sent to Inert landfill. The estimates and conclusion made in this chapter are therefore conservative.

Future Baseline

10.5.10 This Chapter considers the evolution of the site in the event that the proposed development does not come forward, or a “do nothing scenario” reference case. In the context of the proposed development, it can be assumed that in this scenario the current industrial uses of the site would likely continue, and as such the industrial waste generated by the site in its current use would also continue.

10.6 Summary

10.6.1 This ES chapter sets out relevant policy context, legislation, guidance and standards, as well as consultation undertaken in relation to waste. The methodology to be used to undertake this technical assessment and a review of the baseline conditions on the Site is also reported in this chapter. The Applicant will be submitting a full technical assessment in Autumn 2023. The following information will be provided in the upcoming Autumn submission;

- Primary and Tertiary Mitigation;
- Assessment of Significant Likely Effects;
- Secondary Mitigation and Enhancement;
- Residual Effects;
- Cumulative Effects;

- Monitoring;
- Conclusions;
- Glossary; and
- Appendices and Figures.

11 Noise and Vibration

11.1 Introduction

11.1.1 This Chapter reports the findings of the likely significant environmental noise and vibration effects of the construction and operation of the Proposed Development on noise and vibration sensitive receptors in the area surrounding the Proposed Development, taking into account relevant national, regional and local policy, guidance and regulations. The chapter also determines the suitability of the Site for the Proposed Development.

11.1.2 The Chapter describes the methods used to establish the baseline environmental sound and vibration conditions which exist in the vicinity of the Site, the potential direct and indirect effects of the project arising from noise and vibration, the mitigation measures required to prevent, reduce or offset the effects, and the residual impacts associated with the Proposed Development

11.1.3 This chapter is supported by the following appendices:

- Appendix F.1: Policy Context, Legislation, Guidance and Standards
- Appendix F.2: Glossary of Acoustic Terminology
- Appendix F.3: Instrumentation
- Appendix F.4: Figures
- Appendix F.5: Time History Graphs

11.1.4 This assessment and ES chapter has been produced by Stantec who sponsoring members of the Institute of Acoustics (IoA) are, and registered members of the Acoustic Noise Consultants (ANC).

11.1.5 In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix A.6**.

11.2 Policy Context, Legislation, Guidance and Standards

National Legislation

11.2.1 National legislation that is relevant to the noise and vibration assessment is as follows:

- Control of Pollution Act (1974); and
- Environmental Protection Act (1990).

11.2.2 Further explanation of the relevant legislation is provided in **Appendix F.1.**

National Planning Policy

11.2.3 National planning policy that is relevant to the noise and vibration assessment is as follows:

- National Planning Policy Framework (NPPF) (2021);
- Noise Policy Statement England (NPSE) (2010); and
- Planning Practice Guidance (2019).

11.2.4 Further explanation of the relevant planning policies are provided in **Appendix F.1**

Local Planning Policy

11.2.5 Local Planning policy that is relevant to the noise and vibration assessment is as follows:

- Local Plan First Review (1995-2011) – Policy EN5
- Core Strategy (2006-2026) – Policy CP11

11.2.6 Further explanation of the relevant local policies are provided in **Appendix F.1.**

Other Relevant Policy, Standards and Guidance

11.2.7 Other policy, standards and guidance that are relevant to the noise and vibration assessment are as follows. Further details on each are provided in Appendix F.1:

- British Standard 8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'
- British Standard 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound
- British Standard 7445:2003 'Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures'
- British Standard 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1 Noise
- British Standard 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 2 Vibration
- Professional Practice Guidance on Planning and Noise, 2017
- Calculation of Road Traffic Noise 1988 (CRTN)
- DEFRA 'Method for Converting the UK Traffic Noise Index LA10,18 hr to EU Noise Indices for Noise Mapping'
- Department of Transport 1995: Calculation of Railway Noise
- World Health Organization, Guidelines for Community Noise, 1999, W.H.O.
- Design Manual for Road and Bridges (2020) – Design Manual for Road and Bridges LA 111 Traffic Noise and Vibration

- Institute of Environmental Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (IEMA, 2014)
- Building Bulletin 93 Acoustic Design of Schools: Performance Standards, 2015 (BB93)
- BS 6472-1:2008 'Guide to Evaluation of Human Exposure to Vibration From Buildings – Part 1: Vibration Sources Other Than Blasting

11.3 Consultation

11.3.1 Consultation with the Environmental Officer at Exeter City Council (ECC) took place on the 27th of May 2021 to discuss the potential sources of noise in the vicinity of the proposed development site. The sources of noise identified by the Environmental Health Officer are included in this report.

11.3.2 Response to comments received in ECC's EIA Scoping Opinion have been set out below.

Table 11.1 Summary of Noise Consultation

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
Exeter City Council – Scoping Opinion 24th November 2022	Request that construction impacts on adjoining residential properties is assessed within the ES	Construction noise assessment has been undertaken	This will be addressed in the Autumn 2023 submission of the ES
Exeter City Council – Scoping Opinion 24th November 2022	New residential in close proximity to retained industrial/commercial uses. Should be fully assessed in the ES in accordance with BS 8233:2014	Assessment from industrial uses has been undertaken	This will be addressed in the Autumn 2023 submission of the ES.

11.3.3 A meeting was also held on 10th July 2023 to discuss the Green Frog peaking plant between the applicant and ECC. ECC advised that noise mitigation solely through enhanced glazing won't be acceptable because in hot weather this would mean that residents have to choose between ventilation for cooling and closed windows to mitigate noise. As a result, measures such as background ventilation will potentially be required.

11.4 Methodology

Study Area

11.4.1 In relation to construction noise impacts, DMRB LA 111 Revision 2 (Standards for Highways, 2020) advises in paragraph 3.5 Note 1 that:

"A study area of 300m from the closest construction activity is normally sufficient to encompass noise sensitive receptors."

11.4.2 In relation to construction vibration impacts, DMRB LA 111 Revision 2 (Standards for Highways, 2020) advises in paragraph 3.29 Note 1 that:

"A study area of 100m from the closest construction activity with the potential to generate vibration is normally sufficient to encompass vibration sensitive receptors."

11.4.3 The study area for the operational phase assessment (once the Proposed Development is complete and occupied) includes noise sensitive receptors (NSRs) in the local area (up to 600 m from the site boundary) that are most likely to be affected by a change in noise levels resulting from operation of the Proposed Development.

Baseline Data Collection

Procedure

11.4.4 An unattended environmental sound survey was undertaken between approximately 13:30 hours on Tuesday 29 June 2021 and approximately 13:40 Wednesday 30 June 2021 in order to determine the existing sound climate at the site.

11.4.5 Measurements of the L_{Aeq}, L_{A90} and L_{AFMax} sound levels were logged in 15-minutes intervals. The sound level meters were located in environmental cases. The microphones were connected to the meters via an extension cable and fitted with the manufacturer's windshield.

11.4.6 Attended environmental sound survey measurements were also taken between approximately 11:10 and 18:30 hours on Tuesday 29 June 2021 and between 08:30 and 13:30 hours on Wednesday 20 June 2021 at locations considered representative of potential noise sources around the site. The sound level meters were located on a tripod. The microphones were fitted with the manufacturer's windshield

11.4.7 Field calibrations were performed before and after the measurements with no significant fluctuations recorded (< 0.5 dB). Calibration certificates are available upon request.

11.4.8 An unattended vibration survey was undertaken between approximately 11:10 on Tuesday 29 June 2021 and approximately 13:56 hours on Wednesday 30 June 2021.

11.4.9 The Wd weighted Vibration Dose Value (VDV) was measured in the X and Y axis and the Wb weighted VDV was measured in the Z axis over 30-second intervals.

11.4.10 The accelerometer was attached to a DIN plate and placed into the ground. The vibration level meter was located in an environmental case with the accelerometer connected to the meter via an extension cable.

11.4.11 The instrumentation used in the survey (including calibration information) is listed in **Appendix F.3**.

Measurement Positions

11.4.12 Unattended sound measurements were undertaken at two positions at the site. Attended sound measurements were taken at four positions at the site representative of potentially noisy activities. Vibration measurements were undertaken at a single position on the southwest boundary of Plot 8, approximately 10 m from the edge of the Great Western Railway Line. The measurement positions are detailed in **Figure 11.1** in **Appendix F.4** and described in **Table 11.2**.

Table 11.2: Description of Measurement Positions

Location	Description
LT1	The microphone was located in a free field position at the south-western boundary of Plot 8, approximately 5 m from the edge of the Great Western Railway Line, 60 m from the Materials Reclamation Facility boundary, 70 m from the substation boundary and 130 m from the Recycling Facilities (Public and Council) boundary, at 1.5 m above ground level.
LT2 + V1	The microphone was located in a free-field position at the south-western boundary of Plot 9, approximately 10 m from the edge of the Great Western Railway Line, 20 m from the UPS Depot, at 1.5 m above ground level. The accelerometer was located in a similar position but at ground level.
ST1	The microphone was located in a free-field position at approximately 5 m from the north-eastern boundary of the substation, at 1.5 m above ground level.
ST2	The microphone was located in a free-field position at approximately 5 m from the south-western boundary of the substation at 1.5 m above ground level.
ST3	The microphone was located in a free-field position at the western site boundary of Plot 8 approximately 40 m from the Materials Reclamation Facility boundary, at 1.5 m above ground level.
ST4	The microphone was located in a free-field position at the western site boundary of Plot 8 approximately 55 m from the Recycling Facilities (Public and Council), at 1.5 m above ground level.
ST5	The microphone was located in a free-field position approximately 20 m south of the boundary of Plot 10 and 60 m north of the Energy from Waste Facility, at 1.5 m above ground level.

Meteorological Conditions

11.4.13 Due to the nature of the survey (i.e. unattended), it is not possible to accurately comment on the meteorological conditions throughout the entire survey period. However, based on a review of publicly available weather forecasts and observations at the beginning and end of the survey period, the weather conditions are detailed in **Table 11.3**. These conditions are considered suitable for obtaining representative sound level measurements.

Table 11.3: Meteorological Conditions

Description	29/07/2021	30/02/2021
Temperature (°C)	20	18
Precipitation (mm)	0	0
Cloud Cover (%)	80	80
Wind Description	Light air	Light air
Wind Speed (m/s)	1.4	1.4
Wind Direction	East	Northwest

Sensitive Receptors

11.4.14 Based on a review of the baseline conditions, **Table 11.4** identifies the receptors considered to be potentially significantly affected by the Proposed Development. The judgement of potential significance is based on the location of the sensitive receptor and its relationship with Site. **Figure 11.2** in **Appendix F.4** also details the approximate locations of the identified receptors.

Table 11.4: Noise Sensitive Receptors

Reference	Receptor
A	Residential receptors on Cotfield Street to the north of the Site
B	Residential receptors on Water Lane to the north of the Site
C	Residential receptors on Tan Lane to the west of the Site.
D	Residential receptors on Smiths Court Lane to the west of the Site.
E	Residential receptors on Willeys Avenue to the west of the Site
F	Residential receptors on Water Lane to the west of the Site.
G	Residential receptors on Chandlers Walk to the west of the Site
H	Residential receptors on Monitor Close to the west of the Site.

Assessment

Scope

11.4.15 The assessment of the Proposed Development utilises a wide range of applicable standards and guidance. However, the principal guidance documents used to inform the assessment are as detailed in **Table 11.5.**

Table 11.5: Assessment Methodologies

Assessment Type	Reference Document
Instrumentation and Measurement Procedures	BS 7445: Part 1:2003 Description and Measurement of Environmental Noise. Guide to Quantities and Procedures
Construction Noise and Vibration Impact	Design Manual for Roads and Bridges BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites
Operational Impact from Road Traffic	Design Manual for Roads and Bridges Department of Transport 1988: Calculation of Road Traffic Noise
Assessment of Commercial Uses	British Standard 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound
Proposed Education Sites	Building Bulletin 93 Acoustics of Schools: A Design Guide
Suitability of Site for Residential Use	British Standard 8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' Professional Practice Guidance on Planning and Noise, 2017
Operational Vibration	British Standard 6472:2008 Guide to Evaluation of Human Exposure to Vibration from Buildings – Part 1: Vibration Sources Other Than Blasting

Significance of Impacts

11.4.16 This section summarises the approach that has been adopted to apply noise and vibration related legislation, planning policy and industry-standard guidance to this assessment.

Potential Magnitude of Impacts in Terms of Noise and Vibration

11.4.17 Based on the IEMA Guidelines for Environmental Noise Assessment and relevant guidance, the relationship between the magnitude of the noise impact, noise effect, and significance is described in **Table 11.6**.

Table 11.6: Noise Exposure Hierarchy and Effect Levels

Magnitude (Nature of Impact)	Description of Effect (on a specific receptor)	Significance
Major Beneficial	Causes a material change in behaviour and/or attitude, e.g. individuals begin to engage in activities previously avoided due to preceding environmental noise conditions. Quality of life enhanced due to change in character of the area.	More Likely to be Significant.
Moderate Beneficial	Improved noise climate resulting in small changes in behaviour and/or attitude, e.g. turning down volume of television; speaking more quietly; opening windows. Affects the character of the areas such that there is a perceived change in the quality of life.	

Magnitude (Nature of Impact)	Description of Effect (on a specific receptor)	Significance
Minor Beneficial	Noise impact can be heard but does not result in any change in behaviour or attitude. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	Less Likely to be Significant
Negligible	N/A = No discernible effect on the receptor	Not Significant
Minor Adverse	Noise impact can be heard but does not cause any change in behaviour or attitude, e.g. turning up the volume of television; speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life	Less Likely to be Significant.
Moderate Adverse	Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Potential for non-awakening sleep disturbance. Affects the character of the area such that there is a perceived change in the quality of life.	
Major Adverse	Causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in character of the area.	More Likely to be Significant
Substantial Adverse	Significant changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Significant

11.4.18 The impact of the Proposed Development in noise and vibration terms has been assessed with consideration to the proposed LOAELs and SOAELs based on the guidance set out in PPG and other relevant policies and standards.

Likely Significant Effects in EIA Terms

11.4.19 The approach to assessing and assigning significance to an environmental effect has relied upon the context of the results of the assessment undertaken in noise and vibration terms.

11.4.20 Effects that are described as ‘minor’ or ‘negligible’ in EIA terms are determined to be ‘not significant’, and effects that are described as ‘moderate’ or ‘major’ in EIA terms are determined to be ‘significant’ in the context of the EIA Regulations.

11.4.21 The level of effects and significance in EIA terms has been determined based on the results of the assessments and is discussed further in the 'Assessment Approach' section below.

11.4.22 It should be noted that the magnitude of impact in noise terms might not directly translate into the same significance of effect in EIA terms. This will depend on the context of each situation being assessed.

Data Sources

Acoustic Model

11.4.23 An acoustic model has been prepared using SoundPLAN to assess noise levels across the study area. The model includes the effect of topography and existing buildings.

11.4.24 SoundPLAN uses the CRTN methodology to model noise from road traffic and includes variables such as the volume and speed of traffic. It utilises CRN methodology to model noise from trains.

11.4.25 The acoustic model includes traffic data provided by the transport consultants. The trip generation assessment and methodology are outlined in **Chapter 8: Transport and Access**.

11.4.26 The cumulative effects have been assessed based on the predicted future traffic data. The scenarios include vehicular movements associated with the occupation of committed developments in the vicinity of the Site.

11.4.27 The following scenarios have been modelled:

- 2023 baseline – to establish the existing acoustic climate at the site;
- 2033 Future design year with other existing/approved development – to predict the future acoustic climate at the site, inclusive of change due to other existing/approved development but before the Proposed Development has been constructed; and
- 2033Future design year with other existing/approved development and Proposed Development – to predict the future acoustic climate at the site, inclusive of change due to other existing/approved development and after the Proposed Development has been constructed.

Assessment Approach

Construction Noise

11.5 BS 5228:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' does not provide specific limits for construction noise, but it does define methods of assessing the significance. The standard also provides information on construction noise and vibration reduction measures promoting a 'Best Practice Means' approach to control noise and vibration. A method for determining the sound levels associated with construction activities is also detailed and considers the numbers and types of equipment operating, their associated Sound Power Level (Lw), and the distance to receptors, along with the effects of any screening.

11.5.1 Based on the guidance detailed in table E.1 of BS 5228:2009+A1:2014, **Table 11.7** below defines the threshold of potential significant effects at dwellings.

Table 11.7: Threshold of Potential Significant Effect at Dwellings

Assessment Category and Threshold Value Period	Threshold Value in dB ($L_{Aeq, T}$)		
	Category A[A]	Category B[B]	Category C[C]
Night-time (23:00 – 07:00)	45	50	55
Evenings and Weekends[D]	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

Note 1 – A potential significant effect is indicated if the $L_{Aeq, T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

Note 2 – If the ambient noise level exceeds the Category C threshold values given in the table (i.e., the ambient noise levels is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq, T}$ noise level for the period increase by more than 3 dB due to site noise.

Note 3 – Applied to residential receptors only.

A) Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B) Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C) Category C: Threshold values to use when the ambient noise levels (when round to the nearest 5 dB) are higher that category A values.

D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays

11.5.2 With reference to BS5228, normal construction hours are Monday to Friday between 07:00 to 19:00 and Saturday 08:00 to 13:00. For assessment purposes it is assumed no construction work will take place on Sundays or Bank Holidays.

11.5.3 As this is a high-level assessment, the calculations have been based on normal construction hours. If there is a requirement to work outside of these hours, this will be controlled through the Section 61 CoPA prior approval process. This will be based on the specific construction activities that are required for evening and/or night-time periods.

11.5.4 **Table 11.8** defines the construction noise adverse impact levels for residential buildings.

Table 11.8: Construction Noise Impact Levels for Residential Buildings

Magnitude of Impact in Noise Terms	Construction Sound Level $L_{Aeq, T}$ (dB) at Residential Receptor
Substantial**	Above or equal to the Threshold Level* + 10 dB
Major	Above or equal to the Threshold Level* + 5 dB and below the Threshold Level* + 10 dB
Moderate	Above or equal to the Threshold Level* and below the Threshold Level* + 5 dB
SOAEL	
Minor	Above or equal to the Ambient Sound Level and below the Threshold Level*
LOAEL	
Negligible	Below the Ambient Sound Level
*Threshold level determined as per BS 5228:1 Section E3.2 and Table E.1 **Substantial magnitude of impact is not a standard scale across this ES. It has been included for the assessment of severity in noise terms.	

Construction Vibration

11.5.5 The effects of human response to whole body vibration in buildings are defined in BS 6472-1: 2008 in terms of Vibration Dose Value (VDV). However, for human response to construction-related vibration, it is considered more appropriate to use the Peak Particle Velocity (PPV) measure, as suggested in BS 5228-2:2009+ A1:2014 Code of practice for noise and vibration control on construction and open sites (BSI, 2014). Part 2: Vibration.

11.5.6 The limit of human perception to vibration is between approximately 0.15 mm/s and 0.3 mm/s PPV. The sensitivity of the human body also varies according to different frequencies of vibration, with perception generally possible between 1 Hz to 80 Hz.

11.5.7 Based on the above guidance **Table 11.9** details the proposed assessment criteria.

Table 11.9: Construction Vibration Impact Levels

Magnitude of Impact in Vibration Terms	Vibration Level PPV mm/s	Description of Effects
Major	> 10	Vibration is likely to be intolerable for any more than a very brief exposure.
Moderate	1 to 10	Increasing likelihood of complaint in residential environments but can be tolerated at the lower end of the scale if prior warning and explanation has been given to residents.
SOAEL		
Minor	0.3 to 1	Increasing likelihood of perceptible vibration in residential environments.
LOAEL		
Negligible	< 0.3	Vibration is unlikely to be perceptible in even the most sensitive situations for most vibration frequencies associated with construction.

11.5.8 Table B.2 of BS 5228-2:2009+A1:2014 provides guidance on PPV vibration limits for transient excitation for different building types. **Table 11.10** outlines the transient vibration guide values for cosmetic damage to buildings. Consideration will be given to the guideline values detailed in **Table 11.10** in determining the significance of construction vibration.

Table 11.10: Transient Vibration Guide Values for Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or Framed Structures. Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
Un-reinforced or light framed structures. Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s. at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s. at 40 Hz and above
Note 1 Values referred to are at the base of the building. Note 2 At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not exceeded.		

11.5.9 In addition to the above, section 3.19 of DMRB states that construction vibration shall constitute a significant effect in EIA terms where it is determined that a substantial, major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights.
- A total number of days exceeding 40 in any six consecutive months.

Construction Traffic

11.5.10 The assessment of noise due to construction traffic on the existing sound climate in surrounding areas is based on the change in sound levels at noise-sensitive receptors due to a change in the volumes of road traffic generated by the construction of the Proposed Development.

11.5.11 The change in noise level has been calculated by comparing the anticipated construction traffic flows with the baseline traffic flows.

11.5.12 Assessment for this ES Chapter uses short-term assessment criteria taken from DMRB to assess the temporary construction impact. **Table 11.11** details the proposed assessment criteria.

Table 11.11: Change in Noise Levels Due to Construction Traffic

Magnitude of Impact in Noise Terms	Change in Noise Level $L_{A10,18hr}$ (dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	< 1.0

11.5.13 Where the impact in noise terms is above negligible, the assessment of effects, and therefore determining whether an effect is significant or not, will take into account the following factors:

- Proximity of calculated change to the minor/moderate boundary;
- Consideration of the calculated change in the long term;
- Absolute noise level with reference to relevant criteria in BS 8233:2014;
- The context of the specific noise-sensitive receptor; and
- Acoustic context of the area and likely perception of change by the receptor.

11.5.14 Construction noise and construction traffic noise have been considered to be a significant effect in EIA terms where it is determined that a substantial, major or moderate magnitude of noise impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights;
- a total number of days exceeding 40 in any 6 consecutive months.

Operational Internal and External Noise Levels for Proposed Residential Receptors

11.5.15 Internal and external noise levels for proposed receptors have been assessed with reference to the criteria detailed in BS 8233.

11.5.16 The proposed internal and external noise criteria are presented in **Table 11.12**.

Table 11.12 Internal and External Noise Criteria for Habitable Rooms Due to Transportation Noise

Level	Proposed LOAEL and SOAEL Levels for Transportation Noise Affecting New Residential Premises	
	Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
Internal Noise Levels		
LOAEL	35 dB $L_{Aeq, 16\ hr}$	30 dB $L_{Aeq, 8\ hr}$
		45 dB L_{Amax} 10-15 times per night
SOAEL	50 dB $L_{Aeq, 16\ hr}$	45 dB $L_{Aeq, 8\ hr}$
		65 dB $L_{AMax\ if\ more\ than\ 20\ events}$
		80 dB $L_{AMax\ if\ less\ than\ 20\ events}$
External Amenity Areas (Free Field Levels)		
LOAEL	50-55 dB $L_{Aeq, 16\ hr}$	-
SOAEL	65 dB $L_{Aeq, 16\ hr}$	-

11.5.17 It is assumed that outdoor incident noise levels in external areas used for amenity (i.e. gardens/balconies) are only of concern during the daytime hours, as people are unlikely to make frequent use of the outdoor amenity areas during night-time hours.

Operational Road Traffic Noise Affecting Existing Receptors

11.5.18 Operational road traffic noise impacts have been assessed in accordance with the guidance outlined in DMRB LA 111, implementing the calculation methodology of the CRTN.

11.5.19 The prediction method takes into account factors such as the traffic flow, composition and speed, and the alignment and distance of the road relative to the receiving property to calculate the dB LA10 18-hour noise level.

11.5.20 The prediction of road traffic noise has been undertaken using the commercially available, proprietary noise mapping software SoundPlan, which uses the CRTN calculation methodology and is, therefore, appropriate for use in the prediction of noise for this scheme.

11.5.21 DMRB LA 111 provides a classification for the magnitude of change in road traffic noise. **Table 11.13** below presents the magnitude of impact in noise terms to assess the full and permanent effects of the Proposed Development.

Table 11.13: Magnitude of Change in Noise Terms

Magnitude of Impact in Noise Terms	Change in Noise Levels at Noise Sensitive Receptor (dB $L_{A10,18h,}$ or L_{night})
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	< 1.0

Building Services Plant and Operational Noise from the Commercial and Employment Uses

11.5.22 Building services plant noise and operational noise impacts from the Commercial and Employment Uses have been assessed in accordance with the guidance outlined in BS 4142.

11.5.23 Based on BS 4142, the proposed LOAEL and SOAEL values are provided in **Table 11.14**.

Table 11.14: Proposed LOAEL and SOAEL for Existing and Proposed Building Services Plant and Industrial/Commercial Sources

Magnitude of Impact in Noise Terms	Rating Level ($L_{Ar, Tr}$ dB) at Noise Sensitive Residential Receptor
Major	Greater than or equal to 10 dB above the typical background sound level, depending on context.
SOAEL	
Moderate	5-9.9 dB above the typical background sound level, depending on context.
LOAEL	
Minor	0-4.9 dB above the typical background sound level, depending on context.
Negligible	Less than the typical background sound level, depending on context.

Proposed Learning Sites

11.5.24 The guidance stated in Building Bulletin 93 (BB93) and Acoustics of Schools: A Design Guide, sets out criteria in terms of $L_{Aeq,30min}$. Due to the assessment methodology (i.e. based on traffic data), it is not possible to calculate the future $L_{Aeq,30min}$ levels. An assessment has therefore been undertaken based on the $L_{Aeq,16hr}$ sound levels as calculated by the acoustic model. This assessment should be considered indicative to establish whether the principle of the education facilities in the proposed location is acceptable.

11.5.25 **Table 11.15** details the proposed LOAEL and SOAEL criteria for school sites.

Table 11.15: School LOAEL and SOAEL Criteria

Adverse Effect Level	External Ambient Noise Level $L_{Aeq,16hr}$ dB
SOAEL	70
LOAEL	60

Perceptible Vibration Criteria

11.5.26 The assessment of potential impact due to vibration from the railway to the southwest of the site on the proposed development will be based on the BS 6472:2008.The assessment criteria in **Table 11.16** are proposed.

Table 11.16: Proposed Vibration Assessment Criteria

Adverse Effect Level	Vibration Dose Value $ms^{-1.75}$	
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
LOAEL	< 0.2	< 0.1
SOAEL	0.4 to 0.8	0.2 to 0.4

Limitations

Baseline Sound Survey

11.5.27 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey and the conditions were considered to be representative of typical conditions at the survey positions. This report refers, within the limitations stated, to the environment of the Site in the context of the surrounding area at the time of the inspections. Conditions are considered likely to be representative and to provide a suitable basis for the assessment. Environmental conditions can vary. No warranty is given as to the possibility of change to the acoustic environment of the Site or surrounding area at differing times.

Construction Noise Assessment

11.5.28 BS 5228:2009 Annex E (Informative) states that noise predictions should be undertaken to determine eligibility for noise insulation or temporary re-housing. However, the informative also states that these assessments should be undertaken when a contractor has been appointed and detailed method statements on the construction programme and plant to be used are available.

11.5.29 The details of the types of construction methods and plant likely to be used during the construction phases are yet to be finalised. Therefore, at this stage in the scheme's design, it is not possible to state precisely where the plant will operate and for how long during the working day. However reasonable assumptions have been made to inform the assessment of construction noise presented in this assessment.

11.6 Baseline Conditions

The Site and Surrounding Area

11.6.1 Based on observations during the site survey it was noted that on-site sound levels were dominated by train motions on the Great Western Railway Line, vehicle movements on Water Lane and surrounding industrial operations.

11.6.2 A summary of the long-term sound survey results is presented in **Table 11.17.** Time-history graphs detailing the full results of the 24-hour unattended environmental sound survey are contained in **Appendix F.5**.

Table 11.17: Summary of Environmental Sound Survey Results – Long-term

		Measured Sound Levels		
Position	**Period**	**dB $L_{Aeq, T}$**	**Typical* dB L_{AFMax}**	**Typical** dB $L_{A90, T}$**
LT1	Daytime (07:00 to 23:00)	68	-	40
	Night-time (23:00 to 07:00)	64	85	33
LT2	Daytime (07:00 to 23:00)	65	-	38
	Night-time (23:00 to 07:00)	61	82	32

* Based on the 10th highest measured maximum sound level.
** Calculated based on the statistical distribution of background sound levels during the measurement period in general accordance with guidance in BS 4142:2014

11.6.3 Short-term attended sound survey measurement results are presented in **Table 11.18**.

Table 11.18: Summary of Environmental Sound Survey Results – Short-term

Position	Date	Measurement Duration, T (mm: ss)	Measured Sound Levels	
			dB $L_{Aeq, T}$	dB $L_{A90, T}$
ST1	29/06/2021	00:47	56	55
		05:01	57	55
		05:00	54	53
		02:00	55	54
ST2		00:57	55	51
		05:00	53	48
ST3	29/06/2021	04:31	58	54
	30/06/2021	05:20	56	54
		05:13	55	54
		02:21	57	55
ST4	29/06/2021	06:00	50	43
	30/06/2021	01:37	53	49
ST5	29/06/2021	10:02	63	62
		05:02	62	61

Environmental Vibration Levels

11.6.4 A summary of VDV levels are presented in **Table 11.19**. The full VDV time-history results of the environmental vibration survey are contained within **Appendix F.5**.

Table 11.19: Summary of Measured Vibration (VDV) Levels

Position	Period	Maximum Vibration Dose Value ($m.s^{-1.75}$)
V1	Daytime (07:00 – 23:00 hours)	0.09
	Night-time (23:00 – 07:00 hours)	0.05

11.7 Summary

11.7.1 This ES Chapter sets out relevant policy context, legislation, guidance and standards, as well as consultation undertaken in relation to Noise and Vibration. The methodology to be used to undertake this technical assessment and a review of the baseline conditions on the Site is also reported in this chapter. The Applicant will be submitting a full technical assessment in Autumn 2023. The following information will be provided in the upcoming Autumn submission;

- Baseline Evolution;
- Primary and Tertiary Mitigation;
- Assessment of Significant Likely Effects;
- Secondary Mitigation and Enhancement;
- Residual Effects;
- Cumulative Effects;
- Monitoring;
- Conclusions;
- Glossary; and
- Appendices and Figures.

12 Transportation and Access

12.1 Introduction

12.1.1 This chapter of the ES, prepared by Stantec, assesses the likelihood of the Proposed Development having a significant effect on the environment in terms of traffic and transport.

12.1.2 This chapter and its supporting appendices provide a description of the assessment methodology, a description of the relevant baseline conditions within the area, and an assessment of any likely significant environmental effects relating to transport during the demolition construction works and once the development is completed and operational.

12.1.3 Any mitigation measures required to prevent, reduce, or offset any significant adverse effects, and the likely residual cumulative effects following the implementation of these measures, are also identified.

12.1.4 In summary, the objectives of the chapter are to:

- Review the baseline conditions within the area, including traffic flows and infrastructure;
- Identify the potential impacts of the Proposed Development on the surrounding area;
- Identify the embedded transport mitigation measures that have been incorporated into the development proposals; and,
- Outline any further mitigation measures that could be required in order to address any significant residual effects of the Proposed Development.

12.1.5 This chapter is supported by the following appendices:

- **Appendix G.1**: Summary of policy and guidance
- **Appendix G.2**: Figures

12.2 Policy Context, Legislation, Guidance and Standards

National Policy

National Planning Policy Framework (2021)

12.2.1 The revised National Planning Policy Framework (NPPF) came into force in July 2021 and replaced the 2019 edition of the NPPF. The presumption in favour of sustainable development remains the core objective of the NPPF; para. 10 states that "*so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development*".

12.2.2 Further detail on the assessment's accordance with the NPPF is included in **Appendix G.1**, with particular emphasis given to paras. 110, 111, and 112.

Planning Practice Guidance (2014)

12.2.3 The National Planning Practice Guidance (NPPG) provides the overarching framework within which the transport implications of development has also been considered.

12.2.4 Further detail on the assessment's accordance with the NPPG is included in **Appendix G.1**.

EIA Regulations

12.2.5 This chapter has been prepared in accordance with the requirements set out in the EIA Regulations 2017, and has taken account of the guidance presented within the following:

- Institute of Environmental Management and Assessment (IEMA), '*Guidelines for Environmental Impact Assessment of Road Traffic*' (2004); and,
- Design Manual for Roads and Bridges (DMRB), '*LA 104 – Environmental assessment and monitoring*' (2020).

Transport Decarbonisation Plan

12.2.6 In March 2020, the Department for Transport published '*Decarbonising Transport: Setting the Challenge*', which sets out six strategic priorities in order to reach net zero emissions by 2050.

12.2.7 Further detail of the plan and its relevance to the assessment is provided in **Appendix G.1**.

Local Policy

12.2.8 The following local planning policy and strategies are relevant to the Proposed Development:

- Outline Draft Exeter Plan 2020 – 2040;
- Saved policies from the Local Plan First Review (1995 – 2011);
- Devon and Torbay Local Transport Plan (2011 - 2026), LTP3 Strategy;
- Exeter Core Strategy 2006 – 2026 (adopted 2012);
- Exeter Transport Strategy 2020 – 2030, (2010); and
- Liveable Exeter Vision (2019).

12.2.9 Other documents which are material considerations include Supplementary Planning Documents and Guidance (SPDs and SPGs) prepared and adopted by ECC.

12.2.10 Further detail is provided in **Appendix G.1**.

12.3 Consultation

12.3.1 **Table 12.1** below sets out the comments relating to traffic and transport in the adopted Scoping Opinion, and how and where these have been addressed in the chapter. It additionally sets out relevant comments appended to the Scoping Opinion as provided by DCC as the Local Highway Authority and addresses how and where these have been addressed in the chapter.

Table 12.1 Comments Provided in Scoping Opinion

Consultation (Who and Date)	Summary of issues raised during consultation	How it has been dealt within this Chapter	Where it has been addressed within the chapter (if applicable)
Exeter City Council Scoping Opinion, November 2022	ES to include the effects of the Proposed Development upon the local highway network, including known constrained highway capacity at junctions such as the A377 Alphington Road / Haven Road and A377 Exe Bridges close to the Site.	The traffic flow scenarios assessed within this ES chapter are derived from the spreadsheet model and calculations prepared for and presented within the associated TA. This analysis demonstrated that there would be a minimal impact on the Exe Bridges junction, and it has therefore been scoped out of this ES assessment. The A377 Alphington Road / Haven Road junction has been carefully reviewed within this ES chapter.	Preparation of spreadsheet model to support assessment described in Section 12.4
Exeter City Council Scoping Opinion, November 2022	ECC advise that the approach to 'low car' levels is supported, however details of how car ownership levels will be maintained as 'low' should be provided.	The transport strategy established within the TA demonstrates how the Proposed Development will utilise both infrastructure and behavioural change measures to maintain low car ownership levels. In brief, the strategy focuses on limiting the opportunity for private vehicle parking both on and off site, access to and incentivisation for uptake in sustainable transport, and provision of future mobility solutions (i.e. a mobility hub).	N/A
Devon County Council Highways, Consultee Response, November 2022	DCC advise that there will be a likely change in the number and type of vehicle movements, therefore the appropriate vehicle counts and speeds must be provided to ensure that there is a detailed analysis of the current vehicle movements.	The TA document provides full details on existing traffic counts within the area; the assessment set out within this ES chapter is derived from these figures.	Preparation of spreadsheet model to support assessment set out in Section 12.4
Devon County Council Highways, Consultee Response, November 2022	DCC advise as a proposed 'low car' scheme it must be demonstrated to the satisfaction of the Highway Authority that the mitigation in place would be appropriate for the scale of the Site.	It is established in the TA that a suite of mitigatory measures, in terms of both on-site design (limited parking availability), off-site parking restrictions, sustainable transport, future mobility solutions and behavioural change incentivisation (travel plan measures), will be appropriate to maintain the vision for a 'low car' scheme.	N/A

12.4 Methodology

12.4.1 The assessment of transport and access related impacts has been carried out in accordance with the *'Guidelines for the Environmental Assessment of Road Traffic*' and the Design Manual for Roads and Bridges (DMRB).

12.4.2 This assessment was undertaken based on the description of development provided in Chapter 3 of this volume of the ES.

Study Area

12.4.3 The IEMA Guidelines suggest two broad rules to identify appropriate extent of the highways assessment area as follows:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

12.4.4 Whilst the highway study area includes all of the application Site's surrounding local road network that are likely to be subject to daily traffic flow changes as a result of the proposed development's construction or operation, a full assessment has only been undertaken on those links which satisfy the conditions set out in the rules above.

Traffic Flow Assessment Methodology

12.4.5 The baseline year is considered to be 2023, as this is considered to represent the traffic conditions at the Site prior to the advancement of any related works; this data has been collected through the commissioning of a suite of traffic count surveys, including Manual Classified Counts (MCC) on key junctions within the Site surrounds on the 23rd and 25th February 2023, and an automatic traffic counter (ATC) on Water Lane between the 23rd of February and 1st of March 2023.

12.4.6 Data for the subsequent future baseline years have been extrapolated from these baseline surveys with reference to the industry standard methodology, for which further detail is outlined below.

12.4.7 This ES chapter therefore also considers the impacts of the Proposed Development on the local highway network and additionally seeks to assess the impact on the surrounding pedestrian, cycle, and public transport networks.

12.4.8 The traffic flows and forecasts prepared in support of this ES comprise a key assessment parameter referred to in this chapter, and the flows used in this assessment were therefore extracted from the spreadsheet model prepared by Stantec. Further detail of this assessment will be provided within the full submission.

12.4.9 As previously outlined, the baseline traffic flow conditions have been based on a suite of MCC and ATC data undertaken in February 2023. This data has been extrapolated to the 2028 and 2033 future scenario years using industry standard growth factors.

12.4.10 These regional growth factors for background traffic have been extracted from the DfT TEMPro database (version 8, with reference to the NRTP 2022 Dataset); this is considered to be the industry standard methodology.

12.4.11 Full details of the which junctions and links were assessed, and the TEMPro factors used will be provided as part of the full submission. The baseline conditions of the existing walking, cycling, and public transport services and routes are provided in Section 12.5 of this ES chapter.

12.4.12 It has been necessary to include an assessment of traffic-generating committed development that is due or proposed to come forward within the Site's study area between now and the 2033 forecast year, which represents the earliest year by which the proposed development is intended to be completed. The table below establishes the other potential existing / approved developments (referred to as 'committed developments') that have the potential for cumulative effects alongside the Proposed Development have been reviewed and either scoped into or scoped out of this ES chapter.

Table 12.2 Traffic and transport committed development schemes and screening

	Committed Development 1 Haven Banks	Committed Development 2 Marsh Green Road	Committed Development 3 Water Lane - Northern Regeneration Zone
Application reference	22/1145/FUL	22/0890/FUL	N/A
Application name	Haven Banks	Marsh Green Road	Water Lane - Northern Regeneration Zone
Location	Haven Banks, Water Lane, Exeter EX2 8BY	28-30 Marsh Green Road West, Exeter EX2 89N	Water Lane – adjacent to proposed South Regeneration Zone development redline boundary
Proposal	Comprehensive redevelopment to deliver a new, mixed use neighbourhood, comprising demolition of existing buildings and construction of four residential-led mixed-use buildings of 2 to 6 storeys, including retail, café/restaurant and flexible commercial units (Class E), residential (Class C3) and co-living (Sui Generis) accommodation, pedestrian square and public realm, amenity areas, landscaping, access, parking, servicing and associated works (revised plans)	Change of use from B8 (Storage and distribution) to Sui Generis mixed use B8 and E(a) (Storage and distribution and non-food retail); part demolition and remodelling of southern building; part demolition and raise ridge height of northern building; new cladding and roofing finishes throughout; ground level raised to the east and alterations to Site layout, turning and parking arrangements	Residential-led mixed-use development within Northern Zone of Water Lane regeneration area.
Distance to site	230 metres north of proposed development	550 metres west of proposed development	Immediately adjacent to proposed development
Application status	Application validated August 2022	Permitted January 2023	Application not submitted
Commencement status	Awaiting planning permission	Not commenced	N/A
Potential for transport impact	**Yes** – Scoped into TA and ES for assessment of potential impact	**No** – Not scoped into TA or ES for assessment on the basis that the potential impact on the local highway network is considered to be negligible	**Yes** – Scoped into TA and ES for assessment of potential impact

12.4.13 The assessment to be provided in the full submission will demonstrate how the potential trip generation of the Haven Banks and Northern Regeneration Zone developments have been extracted or calculated, and subsequently included within Stantec's spreadsheet model.

12.4.14 In addition, the full submission documents will establish the trip generation, distribution, and assignment methodology used to forecast the proposed development's trip generation potential which will be used in this ES assessment and chapter.

Consideration of Human Health

12.4.15 The consideration of human health is implicitly incorporated into the assessment and mitigation of traffic and transport impacts; this is additionally encouraged or required through the suite of policy and guidance documents this chapter refers to which note the intentional or unintentional benefits of different transport measures, and the effects of human health and wellbeing.

12.4.16 The consideration given to human health within the TA, and other upcoming supporting documents such as the Framework Travel Plan, are summarised in **Table 12.3** below.

Table 12.3 Topics Considered with Regard to Human Health (TA)

Aspect Assessed	Consideration of Human Health
Personal Injury Collision (PIC) data analysis	Assesses whether there are mitigatory measures which can be introduced by the proposed development scheme to prevent or reduce the severity of collisions.
Accessibility of walking and cycling facilities and proposals for the development to deliver improvements	Walking and cycling is known to have a positive effect on human health and wellbeing; policy and guidance documents encourage new developments to infer priority to and deliver facilities for pedestrians and cyclists wherever possible.
Process to secure funding for sustainable transport measures as part of the Travel Planning process	Funding/improvements can be secured as part of the Section 106 (S106) and/or Section 278 (S278) process for the delivery of sustainable transport measures that encourage the formation of sustainable, and notably healthier, travel patterns. The delivery of facilities and incentives for the uptake of modes such as public transport, walking and cycling have the benefit of improving health and wellbeing. This links back to the relevant policy and guidance.

12.4.17 Additionally, the consideration given to human health within this ES Chapter is summarised in the table below. Further detail and assessment of these aspects is provided throughout this chapter.

Table 12.4 Topics Considered with Regard to Human Health (ES)

Aspect Assessed	Consideration of Human Health
Noise and vibration	This is assessed in Chapter 12 of this volume of the ES.
Severance / pedestrian delay / pedestrian amenity	Walking is known to have a positive effect on human health and wellbeing. Pedestrian amenity, meaning the pleasantness of pedestrians' journeys, can amplify this effect, whilst severance / pedestrian delay can inhibit uptake of travelling on foot.
Fear and intimidation	Increased fear and intimidation can be detrimental to human health and wellbeing and can have additional consequences such as discouraging walking and cycling.
Accidents and safety	This is addressed in the analysis set out in this chapter.
Air quality	This has been scoped out of the wider EIA, but it is considered that detail of the existing and forecast traffic levels infers an understanding of the potential impact on air quality. A standalone assessment on air quality will be submitted in support of the planning application.

Assessment Scenarios

12.4.18 Each of the assessment traffic scenarios identified have been calculated with reference to the extrapolated future year data and the addition of the trip generation and distribution scenarios developed using an industry-standard spreadsheet modelling approach.

12.4.19 The 2028 Peak Construction scenario assumes that:

12.4.20 The background network traffic conditions in 2028 reflect the growth forecast in the National Trip End Model;

- The Haven Banks committed development site is complete and operational;
- All site demolition and clearance works will have been completed;
- Initial enabling infrastructure has been delivered;
- The construction of Phases 1 and 2 have been completed and are now fully occupied and operational; and
- Construction of Phases 3a and 3b of the Site (which includes the new Exeter College site) will have commenced.

12.4.21 A trip generation methodology based on a high-level estimate of the potential materials, and therefore the number of HGV deliveries and construction staff that are forecast to travel to and from the Site on a daily basis, has been undertaken and the resulting figures have been cumulatively added to the 2028 baseline scenario in order to forecast the likely future conditions during the construction period and the potential impact on the local highway network.

12.4.22 Construction traffic will be required, as part of a supporting Construction Traffic Management Plan (CTMP) to be developed in future, to use set routes to travel to and from the Proposed Development. At this stage it has been assumed that construction traffic will route to / from the site via the A377 / Haven Road junction and travel along the A377 Alphington Road to / from the A30. Routing of construction traffic predominantly in this way will negate any adverse impacts north of the Site and reduce vehicles routing through the city centre.

12.4.23 For the purposes of this assessment, the scenario assumes that the Site compound will be directly accessed via the proposed realignment of Tan Lane (delivered as Phase 1) as this is assumed to constitute a worst case scenario in terms of the amount of traffic assigned to Tan Lane. A second scenario, in which construction traffic is routed via Water Lane and operational traffic routed via the re-aligned section of Tan Lane, has been considered but has ultimately not been included within this assessment.

12.4.24 With regards to assessing the full development, two scenarios have been prepared in order to account for two different access options for the Northern Regeneration Zone site; these are 2033 Operational Scenario 1: ‘Water Lane Open’ (‘Scenario E’), and 2033 Operational Scenario 2: ‘Water Lane Blocked’ (‘Scenario F’).

12.4.25 Both scenarios seek to assess the impact of the fully operational development on the surrounding highway and active / sustainable travel networks. The fully operational development scenario considers the following quantum of development as the maximum land use scenario with regards to the assessment of traffic and transport, e.g., this quantum is considered to be the ‘worst-case’ with regards to trip generation potential and thereby represents the most trip intensive scenario by which to assess the potential impact on the local highway network:

- 900 residential units (non-student);
- 290 student accommodation beds; and
- 40,000sqm of commercial and non-residential use classes (C1, E, and F).

12.4.26 The extrapolated baseline data in the 2033 future year is supplemented with the addition of the forecast vehicle trip generation and subsequent trip distribution of the two emerging / committed development schemes outlined in **Table 12.4** above, as included within the Stantec spreadsheet model. The addition of the proposed development traffic to these 2033 full baseline scenarios allows an assessment of the potential impact of the proposed development on each of the links and junctions scoped into the assessment study area.

12.4.27 Scenario E ('Water Lane Open') assumes that the section of Water Lane to the south of its junction with Tan Lane remains open to all traffic, and therefore assumes that:

- Existing traffic on the network will continue to use Tan Lane and Water Lane as before;
- All operational traffic generated by the Northern Regeneration Zone will route via Water Lane at the Water Lane/Tan Lane/Willeys Avenue junction; and
- 50% of the operational traffic generated by the proposed development will route via the re-aligned section of Tan Lane, and the remaining 50% will route via Water Lane.

12.4.28 Conversely, Scenario F ('Water Lane Blocked') assumes that the Northern Regeneration Zone development will stop up vehicular use of Water Lane to the north of its junction with Cotfield Street, up to its junction with Tan Lane and Willeys Avenue (essentially creating a priority junction in this area).

12.4.29 This will therefore require that:

- Residents on Water Lane to the south of this point will route through the proposed development (Southern Regeneration Zone) onto the re-aligned section of Tan Lane instead of routing north on Water Lane;
- All operational traffic generated by the Northern Regeneration Zone will route via the re-aligned section of Tan Lane; and
- All operational traffic generated by the proposed development will route via the re-aligned section of Tan Lane.

12.4.30 Whilst Scenario F requires that all traffic is re-routed via Tan Lane, Scenario E represents the 'worst-case' scenario. This is because whilst Scenario F represents a higher total vehicle flow on Tan Lane, Scenario E represents the biggest proportional impact of the Proposed Development. It should also be noted that the traffic distribution past the Water Lane / Tan Lane / Willeys Avenue junction will be the same in both of the operational scenarios.

12.4.31 The scenarios that have been assessed within this ES chapter, as described above, are summarised in **Table 12.5.**

Table 12.5 Assessment scenarios considered in ES Chapter

Ref	Scenario	Details
Scenario A	2023 Baseline	Observed baseline conditions in 2023 (without the addition of cumulative schemes or the proposed development).
Scenario B	2028 Baseline	Anticipated baseline conditions in 2028. Scenario assumes that the Haven Banks site is complete and operational, and that all demolition and enabling works at the site have been completed.
Scenario C	2028 Peak Construction	Peak construction phase scenario. Scenario assumes that all demolition and enabling works to have been completed, Phases 1 and 2 of the scheme are complete and occupied, and that construction of Phase 3(a+b) and Phase 4 is ongoing. The scenario additionally assumes that the Haven Banks site is complete and operational.
Scenario D	2033 Baseline	Expected baseline conditions in 2033 (without the addition of any of the proposed development scheme). Scenario includes operational traffic from cumulative developments in the area
Scenario E	2033 Operational Scenario 1: Water Lane Open	Fully operational scenario, including all operational traffic from cumulative schemes and from the proposed development. Traffic from the NRZ and 50% of traffic from the proposed development will route via Water Lane with the remaining 50% routing via the re-aligned section of Tan Lane.
Scenario F	2033 Operational Scenario 2: Water Lane Blocked	Fully operational scenario, including all operational traffic from cumulative schemes and from the proposed development. Assumes that a section of Water Lane is stopped up for vehicular use; all traffic (including existing residents of Water Lane) will route via the re-aligned section of Tan Lane.

Sensitive Receptors

12.4.32 The IEMA Guidance makes clear that "*a critical feature of environmental assessment is determining whether a given impact is significant*". Further, it states that *"Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact*".

12.4.33 The Guidance identifies groups and special interests which should be considered in identifying receptors:

- People at home;
- People in workplaces;
- Sensitive groups including children, the elderly, and the disabled;
- Sensitive locations e.g. hospitals, churches, schools, and historical buildings;
- People walking;
- People cycling;
- Open spaces, recreational sites, and shopping areas;

- Sites of ecological / nature conservation value; and
- Sites of tourist / visitor attraction.

12.4.34 The *Guidelines for the Environmental Assessment of Road Traffic* additionally states that the principles for the identification of receptors and their associated sensitivity include the following:

- *"The need to identify particular groups or locations which may be sensitive to changes in traffic conditions;*
- *"The list of affected groups and special interests set out in the guidance* [included above]*";*
- *"The identification of links or locations where it is felt that specific environmental problems may occur";* and that
- *Such locations "…would include accident black-spots, conservation areas, hospitals, links with high pedestrian flows etc.".*

12.4.35 The receptors that have been identified for the purposes of this assessment have therefore been determined based on professional judgement; which has taken into account their relative importance for all road users and their existing characteristics, such as the presence or absence of pedestrian facilities.

12.4.36 The above guidance has additionally been used to outline in broad terms definitions for the sensitivity of receptors to traffic for the categories assessed in this chapter. **Table 12.6** therefore outlines the scale of receptor sensitivity used in this assessment.

Table 12.6 Scale of receptor sensitivity

Sensitivity	Description
Very High	Very high importance and rarity, international and national scale and very limited potential for substitution
High	High importance and rarity, and limited potential for substitution. Includes receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident black spots (with reference to accident data), retirement homes, and urban / residential roads without footways that are used by pedestrians
Medium	Medium importance and rarity, and limited potential for substitution. Receptors that are sensitive to traffic flows including: congested junctions, doctors surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, and recreation facilities
Low	Low or medium importance and rarity. Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions, and residential areas with adequate footway provision
Negligible	Very low importance, local scale. Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

12.4.37 In line with the above principles, the identified receptors alongside their determined sensitivity, are established in **Table 12.7** below. The majority of the identified receptors are links; in the interests of a robust assessment, each link has been categorised in relation to the most sensitive aspect. It should also be noted that whilst the below provides a broad categorisation, in actuality each receptor assessed will have a different sensitivity to each specific effect.

12.4.38 The links and junctions scoped into the assessment have been identified with reference to the upcoming supporting technical note to be included in the full submission, which establishes the distribution and assignment of development generated traffic and therefore indicates where there is a potential for impact.

Table 12.7 Receptor and associated sensitivity

Receptor	Receptor Type	Sensitivity
Water Lane (South)	Link	Low
Willeys Avenue	Link	Low
Haven Road	Link	Medium
Tan Lane	Link	Low
A377 / Haven Road Junction	Junction	Medium
A377 Alphington Road (North)	Link	Low
A377 Alphington Road (South)	Link	Low
Pedestrian / Cycle Network	-	Medium
Bus Network	-	Medium
Rail Network	-	Medium

Assessment

12.4.39 The IEMA Guidance identifies the main transport effects that could arise from the construction and operation of new developments. These effects relate to the following:

- Severance;
- Driver delay;
- Pedestrian and cycle amenity;
- Fear and intimidation;
- Accidents and road safety;
- Dust and dirt; and
- Hazardous loads.

12.4.40 In line with the adopted Scoping Opinion Response, the 'dust and dirt' criterion has not been considered further within this chapter.

12.4.41 The 'hazardous loads' criterion is also not considered in this assessment, as it deemed unlikely that the construction or operation of the Proposed Development will require the transportation of hazardous loads that would have the potential for a significant effect on receptors. The impact of the Proposed Development in relation to the remaining five aspects have been considered accordingly.

12.4.42 Further details of the approach to the assessment in respect of each of the criteria is provided below.

Severance

12.4.43 The IEMA Guidance states that "*Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery*".

12.4.44 It is acknowledged within the Guidance that the measurement and prediction of severance is "*extremely difficult*" and that *"there are no predicative formulae which give simple relationships*

between traffic factors and levels of severance", however, the Guidance tentatively suggests that *"Changes in traffic flow of 30%, 60% and 90% are regarded as 'slight', 'moderate', and 'substantial' changes in severance respectively*".

12.4.45 The assessment of severance in this ES chapter pays full regard to specific local conditions, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided.

12.4.46 **Table 12.8** below details the thresholds for severance used in this assessment.

Table 12.8 Scale of Impact Magnitude for Severance

Magnitude	Description
Major	90% or greater change in total traffic flow
Moderate	60% to 89% change in total traffic flow
Minor	30% to 59% change in total traffic flow
Negligible	Less than 30% change in traffic flow

Driver Delay

12.4.47 Para 4.33 of the Guidance states that "*Traffic delays to non-development traffic can occur at several points on the network surrounding the site including: at the site entrance, on the highways passing the site, at other key intersections or / and at side roads where the ability to find gaps in traffic may be reduced, thereby lengthening delays*".

12.4.48 The TA details that, in line with the expectation that the Site is not forecast to materially generate more traffic than the potential number of vehicle trips that could be generated and subsequently load onto the highway network in comparison to the extant site uses, a requirement to undertake detailed junction modelling has not been undertaken. As such, it is considered that the requirement for further assessment of this EIA parameter is not warranted and can be scoped out of this assessment.

Pedestrian Delay and Amenity

12.4.49 Pedestrian delays for a particular walking journey can be increased by changes to traffic flows, which can affect the ability of pedestrians to cross roads. This therefore has the potential to affect an individual's desire to make particular journeys on foot.

12.4.50 Para 4.35 of the IEMA Guidance states that *"Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads*", dependent on "*the level of pedestrian activity and the general visibility and physical conditions*" at the site.

12.4.51 For the purposes of this assessment, the scale of magnitude set out in **Table 12.9** will be used to categorise and assess the impact on pedestrian delay, with the characteristics of the link-receptor taken into consideration to better determine the actual impact of the development.

Table 12.9 Scale of Magnitude for Pedestrian Delay

Magnitude	Description
Major	Link subject to a two-way traffic flow of more than 5,600 vehicles per hour
Moderate	Link subject to a two-way flow of 3,500 to 5,600 vehicles per hour
Minor	Link subject to a two-way flow of 1,400 – 3,500 vehicles per hour
Negligible	Link subject to a two-way flow of less than 1,400 vehicles per hour

12.4.52 Pedestrian amenity is broadly defined as the *"relative pleasantness of a journey*", and it is affected by traffic flow, traffic composition, and pavement width / separation from traffic. The Guidance suggests a tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled.

12.4.53 For the purposes of this assessment, if this is not met the magnitude can be described as 'Negligible'.

Fear and Intimidation

12.4.54 The impact of levels of fear and intimidation is dependent upon the volume of traffic, it's Heavy Vehicle (HV) composition, the proximity to people, or the lack of protection caused by factors such as narrow footway widths. The Guidance states that there are no commonly agreed thresholds for estimating levels of fear and intimidation from known traffic and physical conditions, but it does nevertheless suggest some thresholds which could be used, based on previous research. These are shown in **Table 12.10** below.

Table 12.10 Scale of Impact Magnitude for Fear and Intimidation

Magnitude	Average Hourly Two-Way Traffic Flow Over 18-Hour Day	Total 18-Hour HGV Flows	Average Vehicle Speed Over 18-Hour Day (mph)
Major	>1,800 vehicles	>3,000 vehicles	>20mph
Moderate	1,200 to 1,800 vehicles	2,000 to 3,000 vehicles	15 – 20mph
Minor	600 to 1,200 vehicles	1,000 to 2,000 vehicles	10-15mph
Negligible	<600 vehicles	<1,000 vehicles	<10mph

12.4.55 It should be reasserted that whilst quantitative thresholds are suggested, the experience of road users is dependent on qualitative factors such as the availability of pedestrian facilities. These thresholds also do not take into consideration how changes in traffic flow is perceived dependent on the existing road conditions; for example, a small addition to a link already experiencing higher traffic volumes is unlikely to correspond with higher levels of fear and intimidation as it is likely to be in line with the existing perception of the road.

12.4.56 In light of this, the guidance set out for severance in **Table 12.8** will additionally be utilised to understand where roads with a higher level of existing traffic (i.e. those with 'Substantial' or 'Moderate' baseline levels) where the perception of the road, and therefore the levels of fear and intimidation, is unlikely to be impacted. If the additional traffic is in line with the existing perception of the area, i.e., a 'Negligible' increase in traffic flow, the impact will be described as 'Negligible'.

Accidents and Safety

12.4.57 The IEMA Guidance suggests that *"Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents, e.g. junction conflicts*".

12.4.58 For the purposes of this assessment, links where no inherent highway safety issues were identified in the 2023 Baseline year have been described as having a 'Negligible' magnitude. Similarly, if it is considered, through the application of professional judgement, that the development proposals will have no effect on highway safety in the area, the impact magnitude will be described as 'Negligible'.

Impact on Pedestrian, Cycle, and Public Transport Networks

12.4.59 Intensified use of an area can subsequently lead to increased use of the available pedestrian, cycle, and public transport networks. The thresholds tentatively set for the purpose of this assessment are detailed in **Table 12.11** below.

Table 12.11 Scale of Impact Magnitude for Impact on Pedestrian, Cycle, and Public Transport Networks

Magnitude	Maximum Increase in Passengers Per Bus / Carriage	Maximum Additional Users (Pedestrian Network)	Maximum Additional Users (Cycle Network)
Major	<50+ passengers	<1,500+ pedestrians	<50+ cyclists
Moderate	35 to 49 passengers	1,000 to 1,499 pedestrians	35 to 49 cyclists
Minor	15 to 34 passengers	500 – 999 pedestrians	15 to 34 cyclists
Negligible	>15 passengers	>500 pedestrians	>15 cyclists

12.4.60 It should be noted, however, that these increases are considered to be a beneficial effect; increased uptake in travel by sustainable modes is both a core principle of the Proposed Development and encouraged by planning policy and guidance at both the national and local scale. Increased use of sustainable modes is recognised as a method to relieve or mitigate the effect of a development in terms of impact on the local highway network, and as a method to improve the health and wellbeing of future site users.

Assessment of Significance

12.4.61 The assessment of significance within this ES chapter has been based on the matrix presented in **Table 12.12** below.

Table 12.12 Significance Matrix

	Sensitivity of Receptor				
Magnitude of Impact					
	Very High	**High**	**Medium**	**Low**	**Negligible**
Major	Substantial Significance	Substantial or Moderate Significance*	Moderate Significance	Moderate or Minor Significance*	Minor or Negligible Significance*
Moderate	Substantial or Moderate Significance*	Moderate Significance	Moderate or Minor Significance*	Minor or Negligible Significance*	Negligible Significance
Minor	Moderate Significance	Minor or Negligible Significance*	Minor or Negligible Significance*	Negligible Significance	Negligible Significance
Negligible	Minor Significance	Minor or Negligible Significance*	Negligible Significance	Negligible Significance	Negligible Significance

**Choice between two categories of magnitude of impact will depend on the specifics of the impact, and be down to professional judgement and reasoning*

12.4.62 Effects that are described as 'substantial', 'major' or 'moderate' are determined to be *significant,* and effects that are described as 'minor' or 'negligible' are determined to be *not significant* in the context of the EIA Regulations.

Limitations

12.4.63 In undertaking the traffic and transport assessment of the Site and wider surrounding area, several assumptions have been applied, for example, the use of the NTEM for forecasting has been used to determine the potential future baseline traffic conditions. These assumptions are considered, however, to comprise the standard assumptions and limitations inherent to assessments of this nature and as such, they are not considered to affect the validity of the results.

12.4.64 Traffic generation estimates for the demolition and construction stages will be based on several assumptions set out in ES Volume 1, Chapter 4: Demolition, Construction and Site Management, specifically with regards to the phasing and timing of the construction programme. Other assumptions include using professional judgement to determine the potential amount of materials, vehicles, and the number of workers. A Construction Environmental Management Plan (CEMP) will be secured through an appropriately worded planning condition and will set out mitigation measures for the construction stage, including measures to manage construction transport. The estimated number of construction vehicles is informed by information available at the time of writing and will be reviewed as part of the production of the CEMP and any future Construction Logistics Plan (CLP).

12.5 Baseline Conditions

The Site

12.5.1 The Site is located within a 1.5 km walk of the edge of Exeter City Centre and in close proximity to the Marsh Barton Trading Estate from its western boundary. The immediate geographical relationships with the Water Lane area are Marsh Barton, Exeter Quay, the city centre, St Thomas, St Leonard's, and Wonford.

12.5.2 The Site covers a total area of approximately 6.38 hectares. The immediate area surrounding the Site is bounded by distinct edges as follows:

- Vulcan Estate is located to the south east of the Colas and Casting House elements of the site with the latter containing a small number of apartments. Vulcan Estate contains hardstanding with parked vehicles and a series of one and two storey industrial units, workshops and offices with ongoing uses including multiple vehicle repair shops and a metal fabrication unit. An electrical bulk supply point (BSP) is situated to the east between the Vulcan Estate and land previously occupied by Greenslade's Coaches.

- Water Lane (South) is located along the eastern boundary of the site: the road runs on a northwest to southeast orientation providing direct access to the site. Beyond Water Lane (South), to the northeast lies an area known as the Northern Regeneration Zone which currently comprises a former gasworks site and adjoining ECC car park and industrial/employment lands. Beyond Water Lane (South); to the east of the site, comprises a residential area at Cotfield Street and Gabriels Wharf/River Meadows made up of predominantly 4 storey residential apartments.

- The Exeter Ship Canal is located directly adjacent to Water Lane (South) at the southeastern section of the site and runs on a north south orientation at the eastern boundary beyond the former gasworks and residential apartments. The Exeter Ship Canal is publicly accessible via Water Lane (South) and forms the south eastern boundary of the site.

- Tan Lane is located to the north west of the site: the lane is a lower order street that runs on a north south orientation off Water Lane (South) and passes underneath the Great Western Railway line by way of an underline bridge.

- Great Western Railway line is located along the western boundary of the site: rail route providing connections from London-Penzance including Plymouth and Exeter St Davids.

The Surrounding Area

Walking and Cycling

12.5.3 The site has good levels of existing accessibility to pedestrian facilities and on and off-road cycle routes which vary in terms of their quality.

12.5.4 In its immediate vicinity, Tan Lane provides fairly narrow footways on either side, but these cease prior to the railway line at which point pedestrians have to walk in the carriageway briefly, Following this, footways recommence which extend to connect with a provision on Exton Road and then with Marsh Green Road.

12.5.5 The northern extent of Water Lane (South) has a footway present on its western side before terminating for approximately 125 metres prior to the Vulcan Estate, before recommencing. After its junction with Cotfield Street, footways are present on both sides of the road prior to reverting back to one on the western side which terminates at the entrance to the former Saria

meat rendering factory. At this point, a footpath commences alongside the edge of the Exeter Ship Canal where it extends to the south to form a pedestrian / cycleway that extends to the Salmonpool Swing Bridge and Clapperbrook Lane East.

12.5.6 Willeys Avenue and Water Lane (North), including the section of Haven Road (West) that it transitions into, have good quality footways located on either side of the carriageway which extend up to their junctions with the A377 Alphington Road. Signalised pedestrian facilities are then located in close proximity to both of these junctions in order to allow pedestrians to negotiate crossing the A377.

12.5.7 The A377 has footways on both sides in the vicinity of the site, except for where it passes underneath the mainline railway line where there is only provision on its western side. At the A377 Exe Bridges Roundabout, a footway is provided to serve the arms it forms with Cowick Street, Okehampton Street, the A377 Bonhay Road, and the A3015 Western Way.

12.5.8 The 'Travel Devon' cycle routes map of Exeter (www.traveldevon.info/cycle/cycle-routes/cycle-maps/), maintained by DCC, identifies several key pedestrian and cycle routes within the immediate vicinity of the site area that create opportunities for active travel. Water Lane, which forms a portion of the Site's northern boundary, is identified by DCC as an 'Advisory cycle route'. Whilst no definition is explicitly given for this designation, it is inferred that these are on-road routes where it is thought that the conditions, in terms of vehicle speeds and traffic levels, are conducive for cyclists.

12.5.9 Cotfield Street, which connects Water Lane with the towpath that runs alongside Exeter Ship Canal, is also classed as an advisory cycle route with footways located on either side. This ties in with a section of the towpath that extends to the north which is a traffic-free cycle route connecting to Cricklepit Bridge to the north, and Trews Weir Bridge to the north east, to serve journeys towards destinations including St Leonards, County Hall, the Royal Devon & Exeter Hospital, and local schools located in that area.

12.5.10 Towards the southernmost extent of Water Lane, in the vicinity of which the carriageway terminates, there is a route designated by DCC as a 'Traffic-free cycle route' where it runs alongside Exeter Chip Canal. This extends to Salmonpool Swing Bridge, where public right of way (PRoW) Exeter Footpath 23 routes to the south of this point with the cycle route switching to extend eastwards across Salmonpool Swing Bridge.

12.5.11 Across Salmonpool Swing Bridge, traffic-free cycle routes continue parallel to the canal as National Cycle Route 34 and extend west into the Wonford area of the city to tie into the extensive pedestrian-cycle network. It also extends to the south to tie in with the traffic-free provision that runs alongside the A379 Bridge Road, A3015, and B3181 to serve destinations such as Countess Wear, Pynes Hill, Hill Barton, Pinhoe and onward routes to Sowton Industrial Estate and Exeter Business Park.

12.5.12 Towards the southern extent of the Site, a traffic-free cycle route extends west into the Marsh Barton Trading Estate via a subway under the adjacent rail line; this connects into the advisory cycle route on Marsh Green North which routes through the Estate to connect with the A377 Alphington Road and to the north to link with the junction of Water Lane, Willey's Avenue, and Tan Lane.

12.5.13 Travelling west from the Salmonpool Swing Bridge is an advisory cycle route on Clapperbrook Lane East, which extends west into Marsh Barton Trading Estate over the rail line and south to Alphington and Matford. This is accessed by a newly constructed segregated pedestrian / cycle bridge as part of the newly opened Marsh Barton railway station.

12.5.14 In the vicinity of the Haven Banks car park, a traffic-free cycle route extends north parallel to the car park, and then further north onto Haven Road / Maritime Court. From this point an advisory cycle route runs along Haven Road to the north to tie in with a traffic free cycle route

that extends along both sides of the River Exe. The northern side of the river is accessible via via Cricklepit Bridge which is a traffic-free route from which the Quay can be accessed, and pedestrians and cyclists can travel onto the city centre, Exeter St Davids railway station, Exeter College's main campus, and the University of Exeter's Streatham Campus.

12.5.15 On the basis of its location, the site performs well with regards to pedestrian and cycle access for all trip purposes, including travel to work, school, and leisure and retail opportunities.

Local Bus Services

12.6 Local Bus Services

12.6.1 The WYG report entitled 'How far do people walk' (July 2015), was prepared because guidance on walking distances was limited and outdated. Prior to this report, recommended walking distances were based on the CIHT report entitled 'Guidelines for Providing for Journeys on Foot' (2000), as the Government's Planning Policy Guidance 13; Transport (PPG13), which was withdrawn in 2012, and the National Planning Policy Framework (NPPF; 2012) which replaced it did not provide any specific guidance on walking distances. The WYG report therefore sought to use more recent data (based on data from the National Travel Survey) to suggest recommended walking distances, as the CIHT report's conclusions no longer represented the current situation. Within the WYG report, it is concluded that the 85th percentile walking distance to a bus stop is 800 metres, and the average distance in England (excluding London) is 580 metres.

12.6.2 With the above in mind, the nearest bus stops to the Site are 'Haven Close' on Water Lane, approximately 450 metres to the north of the centre of the site, and 'Marsh Green Road North', approximately 500 metres to the west of the site via the existing pedestrian / cycle subway.

12.6.3 **Table 12.13** outlines the available services for the proposed which are indicated on the Travel Devon interactive bus map (www.traveldevon.info/bus/interactive-bus-map/).

Table 12.13 Summary of Bus Services[1]

Bus Stop	Service	Route	Frequency (Two-way)		
			Monday-Friday	Saturday	Sunday
Haven Close / Marsh Green Road North	Green	Sowton P&R – Heavitree – Exeter City Centre – Marsh Barton – Marsh Barton Railway Station - Matford P&R	Every 20 Minutes	Every 20 Minutes	-
Homeclyst House	B	Exeter Science Park – Polsoe – Exeter City Centre – St Thomas – Marsh Barton – Exminster	Every 30 Minutes	Every 30 Minutes	Hourly
	366	Kenn – St Thomas – Exeter City Centre	Once per day	Once per day	-

12.6.4 From both the Haven Close and Marsh Green Road North stops, the Stagecoach South West Green service can be accessed; this service connects Park and Ride services in Sowton and Matford via Heavitree, the city centre and Marsh Barton. The journey times to the city centre and to Sowton are 6 minutes and 27 minutes respectively from Haven Close, and 7 and 28 minutes from Marsh Green Road North.

[1] Source: Traveline (Plan Your Journey | Traveline), Accessed July 2023

12.6.5 Future site users travelling to and from the site will therefore have the option of using the Green bus service if they were to drive part way and park at either the Sowton or Matford Park & Ride facilities, given it directly serves the site.

12.6.6 Further services can be accessed from the A377 Alphington Road at Homeclyst House, which is approximately 850 metres to the northwest of the site via Willey's Avenue; these are the B service operated by Stagecoach South West, and the 366-service operated by Country Bus.

12.6.7 The Stagecoach South West B service routes between Exeter Science Park and Exminster, via Exeter city centre and Marsh Barton, and Exminster. The journey times to Exeter city centre and Exminster are 8 minutes and 17 minutes respectively.

12.6.8 Therefore, much like the Green service, students, visitors and employees travelling to and from the site will also have the option of using the B service if they were to drive part way and use the Park & Change facility at Exeter Science Park given it serves stops on Alphington Road.

12.6.9 The Country Bus 366 service provides a localised service between the village of Kenn and Exeter city centre via the St Thomas area of the city. The journey times to the city centre and Kenn respectively are 5 minutes and 21 minutes respectively.

12.6.10 Overall, the immediate vicinity of the Site and the surrounding area as a whole has good bus links to the city centre, Park & Ride / Change facilities, key employment sites, and other local destinations on a combination of the Green, B and 366 routes.

Rail Services

12.6.11 The nearest existing railway station is Marsh Barton railway station, which opened on the 4th of July 2023 and is located on Clapperbrook Lane East, approximately 700 metres to the south of the proposed Site. The most direct route to the station from that site is via the existing traffic-free pedestrian / cycle route that extends alongside the south eastern edge of it next to the Exeter Ship Canal.

12.6.12 Marsh Barton is a suburban station located next to Exeter's largest trading estate. It is located on the Riviera Line between Exeter, Torbay, and Paignton, and is operated by Great Western Railway. The station principally serves local and sub-regional destinations, such as Exeter city centre, Newton Abbot, and Torquay.

12.6.13 The station also serves Digby & Sowton railway station which is a short walk from the Digby Park & Ride facility. However, instead of catching the bus from this facility, students, visitors, and employees could drive part way to interchange and catch the train to Marsh Barton which takes approximately 20 minutes.

12.6.14 Facilities at Marsh Barton railway station include:

- 40 bicycle parking spaces located adjacent to the platform entrances, which are sheltered, and CCTV monitored;
- 3 disabled parking spaces, 2 maintenance vehicle parking spaces, and 1 drop off parking space;
- Step free access to all platforms; and
- Accessible ticket machines.

12.6.15 Further services are available from Exeter St David's from which services depart to regional and national destinations such as Taunton, Plymouth, Bristol Temple Meads, and London Paddington.

12.6.16 **Table 12.14** provides a summary of these services.

Table 12.14 Summary of Direct Rail Services[2]

Origin Station	Destination	Service Frequency (per hour)		Approximate Journey Time
		Peak	Off Peak	
Marsh Barton	Exeter St David's	2	1	8 minutes
	Exeter Central	2	1	16 minutes
	Dawlish	1	1	17 Minutes
	Newton Abbot	1	1	30 minutes
	Torquay	1	1	45 minutes
	Exmouth	2	1	45 minutes
Exeter St David's	Taunton	2	2-4	26 minutes
	Plymouth	2	2-3	60 minutes
	Bristol Temple Meads	2	2	60 minutes
	London Paddington	1-2	2	120 minutes

12.6.17 As demonstrated above, Marsh Barton station provides regular rail services to key regional destinations including Exeter St David's (8-minute travel time) and Newton Abbot (30-minute travel time). From these stations, opportunities are provided for further afield travel.

Access to Local Facilities and Amenities

12.6.18 It is generally accepted in transport guidance documents that walking offers the greatest potential to replace short car trips, particularly those under 2 kilometres in length, and cycling has the potential to substitute those under 5 kilometres.

12.6.19 In considering the proximity of key facilities and amenities with regards to walking distances, the most recent transport statistics are set out within the DfT's 'National Travel Survey: 2019 (NTS) Report. This indicates that 24% of all journeys are under one mile and 74% of journeys under one mile are made on foot and that the average walking trip length is 17 minutes.

12.6.20 Whilst the NPPF now supersedes the previous Planning Policy Guidance (PPG), the underlying principles of PPG13: Transport (March 2001) remain relevant as they are based on recorded travel behaviour and generally accepted accessibility indicators. The relevant excerpt from PPG13 is set out as follows:

"*Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres*".

12.6.21 In addition, guidance on this issue is provided by Manual for Streets (MfS) 2007 which states in para. 4.4.1 that: "*Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' [up to about 800m] walking distance of residential areas which*

[2] Source: National Rail Enquiries (https://ojp.nationalrail.co.uk/service/planjourney/search), accessed July 2023

residents may access comfortably on foot. However, this is not an upper limit and walking offers the greatest potential to replace short car trips, particularly those under 2km".

12.6.22 A more recent report entitled, 'How far do people walk?' which is based on evidential data as recorded in the NTS, identifies that outside of London the mean distance for walking is 1,150 metres and the 85th percentile distance is 1,950 metres where walking is the main mode or is the first stage of a public transport trip.

12.6.23 With regards to cycling, the NTS identifies that the average trip length by bicycle is 3.1 miles (5.0 kilometres). Furthermore, Table NTS0308 identifies that 88% of all cycle trips are over 1 mile (1.6 kilometres) and 58% over 2 miles (3.2 kilometres). A total of 80% of all cycle journeys are made over distances less than 5 miles (8 kilometres).

12.6.24 Furthermore, for journeys outside the 8 kilometre cycling distance cited as having potential to replace car journeys, e-bikes as an emerging mode have shown considerable growth globally and, in the UK, as they offer a longer range and increased distance travelled by bike, whilst also encouraging new users and less mobile people to cycle.

12.6.25 In 18 European studies (including grey literature) (Cairns et al., 2017), it was found that depending on the study, the average weekly mileage by e-bike ranged from 15 kilometres to >70 kilometres, and the average commute trip length ranged from 9.8 to 17 kilometres. UK e-bike retailer Halfords also recorded that "*Electric bike sales are on the rise*" (around 50,000 – 60,000 are sold each year in the UK compared to overall UK bile sales of 3 million.) Therefore, increased uptake of e-bikes will provide an alternative sustainable travel option to desired destinations.

12.6.26 **Table 12.15** provides a comprehensive summary of the various local facilities currently available to people living or working in the area, along with the respective actual walk and cycle distances from the approximate centre of the Proposed Development (rounded to the nearest minute). This high-level assessment has been based on average walk and cycle speeds given in the CIHT's '*Guidelines for Providing for Journeys on Foot*' report (2000).

Table 12.15 Summary of Local Facilities and Estimated Walk / Cycle Times

Type of Facility / Amenity	Name of Facility / Amenity	Approx. Distance from Site (km)	Average Journey Time	
			Walk	Cycle
Primary & Secondary Education	St Thomas Primary School	1.1 km	13 mins	4 mins
	St Leonard's Church of England Primary School	1.9 km	23 mins	6 mins
	Alphington Primary School	2.1 km	25 mins	7 mins
	West Exe School	1.6 km	19 mins	5 mins
	Isca Academy	2.2 km	26 mins	7 mins
	Exeter College, Hele Road Site	2.5 km	30 mins	8 mins
Higher Education	University of Exeter (St Luke's Campus)	2.4 km	29 mins	8 mins
	University of Exeter (Streatham Campus)	3.8 km	45 mins	13 mins
Employment	Quayside	0.8 km	10 mins	3 mins
	Marsh Barton Trading Estate	1.0 km	12 mins	3 mins
	Matford Business Park	2.0 km	24 mins	6 mins
	RD&E Hospital	2.8 km	33 mins	9 mins

	County Hall	2.3 km	27 mins	8 mins
	City Centre (centre of)	2.2 km	26 mins	7 mins
Supermarket / Foodstore	ALDI	0.9km	11 mins	3 mins
	The Food Warehouse	1.0 km	12 mins	3 mins
	Co-Op	1.3km	15 mins	4 mins
	Sainsburys	1.5 km	18 mins	5 mins
	M&S Food Hall	1.2 km	14 mins	4 mins
Retail	Stone Lane Retail Park (Argos/Matalan/B&M/Pets at Home)	1.0 km	12 mins	3 mins
	The Exebridges Centre (TK Maxx/Pound Land, Next)	1.2 km	14 mins	4 mins
Leisure	Riverside Valley Park	0.8 km	10 mins	3 mins
	Riverside Leisure Centre	1.0 km	12 mins	3 mins
	The Gym Group (Stone Lane Retail Park)	1.0 km	12 mins	3 mins
	Quayside	0.8 km	10 mins	3 mins
Local Centre	St Thomas Local Centre	1.5 km	18 mins	5 mins
Healthcare	Boots Pharmacy	1.1 km	13 mins	4 mins
	myDentist	1.3 km	15 mins	4 mins
	St Thomas Medical Group	1.6 km	19 mins	5 mins
	RD&E Hospital	2.8 km	33 mins	9 mins

12.6.27 The following sub-sections provide further detail with regards to education, employment, and retail provision.

Education

12.6.28 There are a number of schools, both pre-/primary schools and secondary schools, within close proximity to the Site and within the Government's statutory walking distances to schools; approximately 3.2 kilometres for children under 8 years old, and 4.8 kilometres for children ages 8 to 16 years old.

12.6.29 The nearest primary school is St Thomas Primary School, which is located approximately 1.1 kilometres to the north-east of the Site via existing routes, and the nearest secondary school is West Exe School, approximately 1.6 kilometres to the west of the Site.

12.6.30 Whilst there is a good provision of accessible schools within Exeter, it is established within the 'Liveable Exeter' vision that the Water Lane regeneration area as a whole is anticipated to deliver a new primary school to support the community.

12.6.31 With regards to higher education, the main campuses of Exeter College and the University of Exeter are both accessible via cycle, bus routes and local train services within the vicinity of the proposed site, which therefore supports the ambition of the development to deliver student accommodation.

Employment

12.6.32 The Site is extremely well positioned for future residents to access employment opportunities, either via existing direct pedestrian / cycle routes to the Marsh Barton Industrial Estate or Quayside area, or access to the city centre or key regional employment centres such as the Royal Devon and Exeter (RD&E) Hospital, via active or sustainable modes.

Retail

12.6.33 The Water Lane regeneration area's location with respect to existing retail areas ensures that there is excellent access to a wide range of retail opportunities. Marsh Barton Trading Estate, which abuts the Site if not for the railway line, provides a wide range of large grocery, 'big box', and more specialised retailers typical of an edge-of-town retail park (e.g., Sainsburys, Halfords, Wren Kitchens, car dealerships) in addition to the industrial units and supporting food, beverage, and leisure opportunities such as gyms, a climbing centre, and soft play centres.

12.6.34 The nearest local centre, with regards to everyday, essential and convenience items such as groceries, basic pharmacy items, or hot food takeaways are available on Cowick Street, which serves as the high street for the St Thomas area. This can be accessed within 1.3 kilometres of the Site.

12.6.35 An extensive range of facilities are available within the city centre, which is easily accessible within 2.2 kilometres by both active modes (e.g., walking / cycling) or public transport (bus/train) from the Site.

Summary

12.6.36 The above demonstrates that the Proposed Development is already very well positioned for access to a range of facilities and amenities, which are readily accessible by both active and sustainable travel modes. The majority of these facilities are accessible on foot via existing pedestrian routes within 30 minutes, and all of the facilities outlined above are accessible within a maximum 17-minute cycle journey.

Highway Safety

12.6.37 Personal Injury Collision (PIC) data obtained from DCC or the five-year period between 1st January 2017 and 31st December 2021 for the following study area:

- A377 Alphington Road between Haven Road and Willeys Avenue.
- Haven Road up to its junction with Water Lane.
- Willeys Avenue up to its junction with Water Lane, and the side streets between these points.
- Tan Lane up to the railway bridge.
- The entirety of Water Lane.

12.6.38 **Table 12.16** below summarises the reported incidents within the study area.

Table 12.16 PIC data recorded for study area (1st January 2017 to 31st December 2021)

Location	Date	Severity of Accident	Pedestrian / Cyclist Involvement
A377 Alphington Road	November 2017	Slight	No
A377 Alphington Street / Willeys Avenue	February 2018	Slight	Yes
Chamberland Road	October 2018	Serious	Yes
A377 Alphington Road	December 2018	Fatal	Yes
Water Lane	January 2019	Slight	No
Haven Road	July 2019	Serious	Yes
Water Lane / Old Havens Retail Park Access	October 2020	Slight	Yes
A377 Alphington Street / Haven Road	April 2021	Slight	Yes
A377 Alphington Street / Haven Road	July 2021	Serious	Yes

12.6.39 Nine incidents were recorded within the study area, of which five were categorised as ‘Slight’, three were categorised as ‘Serious’, and one was categorised as ‘Fatal’.

12.6.40 The fatal collision occurred on the December 2018 on A337 Alphington Road, when a pedestrian walking under the railway bridge was hit by a vehicle, which then crossed the pavement and hit a metal fence.

12.6.41 With regards to the incidents categorised as ‘Serious’, the following collisions occurred when:

- The driver of vehicle was confronted by a group of pedestrians, causing the driver of vehicle to drive off. A pedestrian grabbing the doorhandle of the vehicle in an attempt to open the door was dragged along the floor for a short distance before letting go, causing serious injuries.
- A vehicle turned onto Haven Road and collided with a pedestrian crossing the highway.
- A vehicle travelling turning onto A377 Alphington Street struck a pedestrian crossing the highway.

12.6.42 The analysis indicates that there were no obvious clusters of incidents or any clear trends in terms of accidents, and it is considered that the incidents can be attributed to driver / pedestrian error. It is therefore unlikely that are any local safety concerns or inherent highway design issues that would preclude or be exacerbated by the development proposals.

Summary of Baseline Conditions

12.6.43 The following conclusions are therefore drawn with regards to the existing transport conditions at the Site and the surrounding area:

- There is a good quality network of footways within the surrounding area that will link the Site to a number of facilities and amenities within Exeter.
- There are existing bus stops located within appropriate walking distance from the Site which facilitate access to key destinations such as the city centre and Exeter Science Park.
- The Site is well positioned to access facilities and amenities by active transport means including educational, retail, and medical facilities, and many of these are within the recommended walking and cycling distances. The range of facilities and amenities within the Site's surrounds will encourage journeys to be made by non-car modes.
- There are no local highway safety concerns or inherent highway design issues that would preclude or be exacerbated by the Proposed Development.

12.6.44 This ES Chapter sets out relevant policy context, legislation, guidance and standards, as well as consultation undertaken in relation to Transportation and Access. The methodology to be used to undertake this technical assessment and a review of the baseline conditions on the Site is also reported in this chapter. The Applicant will be submitting a full technical assessment in Autumn 2023. The following information will be provided in the upcoming Autumn submission;

- Primary and Tertiary Mitigation;
- Assessment of Significant Likely Effects;
- Secondary Mitigation and Enhancement;
- Residual Effects;
- Cumulative Effects;
- Monitoring;
- Conclusions;
- Glossary; and
- Appendices and Figures.