

# **Fuel Properties Norwich Ltd**

**Carrow Works, Norwich**

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





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Non-Technical Summary**

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2.0	26-05-23	E3506	Various	A Banks	Dr N Davey

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## 1 INTRODUCTION

1.1 This document provides a Non-Technical Summary of the findings of the Environmental Statement (ES), which has been prepared on behalf of Fuel Properties Norwich Ltd to accompany a planning application for a proposed development at Carrow Works, Norwich (hereafter referred to as the 'Application Site').

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

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

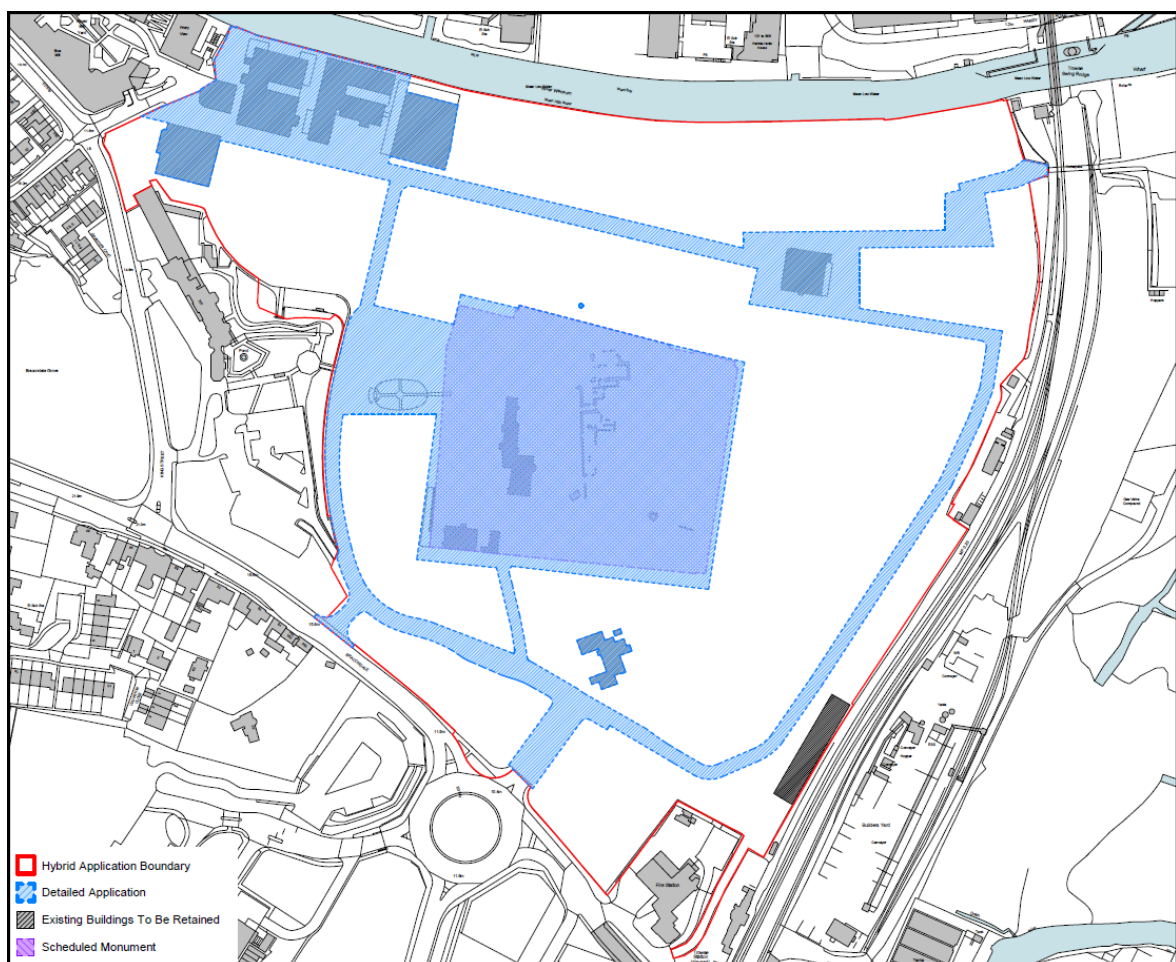
## 2 THE SITE AND SURROUNDINGS

2.1 The Application Site is located to the southeast of Norwich Town Centre and falls within the administrative area of Norwich City Council (NCC).

2.2 The Application Site is 16.9 ha in size. It is bound to the north by the River Wensum, to the east by a rail track, to the west by Carrow House offices and associated carparks and to the south by Bracondale Road.

2.3 The planning application boundary is shown in Figure 2.1.

**Figure 2.1: Site Boundary**





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2.4 The Application Site is relatively flat and comprises previously developed land with a number of large buildings and pockets of grass and trees. It encompasses in part two Conservation Areas; the Bracondale Conservation Area and Trowse Millgate Conservation Area.

2.5 The Application Site is not located within an Area of Archaeological Significance. The nationally designated 'Carrow Priory (ruined portions)' Scheduled Monument is located in the centre of the Application Site and the 'Norwich City Walls and Towers' Scheduled Monument is located approximately 120m northwest of the Application Site boundary. As well as the known potential for medieval archaeology, there is some potential for Palaeolithic, Mesolithic and Roman remains to survive on the Application Site along with Later Prehistoric palaeoenvironmental evidence along the northern edge of the area.

2.6 The Application Site does not comprise any statutory or non-statutory sites designated for their nature conservation value. The nearest statutory designated site of nature conservation importance is Whitlandham Local Nature Reserve (LNR), which is situated approximately 300m from the Application Site.

2.7 The majority of the Application Site is located within Flood Zone 1, indicating that it has a low risk of flooding from rivers and seas. A small area in the north-eastern corner of the Application Site is shown to be located within Flood Zone 2 (medium flood risk). Land within Flood Zone 2 and 3 is located 70m east of the Application Site.

2.8 The Application Site does not fall within a designated Air Quality Management Area (AQMA). However, the Central Norwich AQMA is located approximately to the west of the Application Site.



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### 3 THE PROPOSED DEVELOPMENT

3.1 The Proposed Development is for the development of:

**Detailed (Full) Component:**

*“Full application comprising the construction of the principal means of access, the primary internal road and associated public spaces and public realm, including restoration and change of use of Carrow Abbey to former use as residential (Use Class C3), alteration and extension and conversion to residential use (Use Class C3) of the Lodge, Garage and Gardener’s Cottage and the Stable Cottages, development of the former Abbey Dining Room for residential use (Use Class C3), adaptation and conversion for flexible uses (Class E and/or C2 and/or C1 and/or C3 and/ or F1 and/or F2 and/or B2 and/or B8 and/or Sui Generis) for buildings 207, 92, 206, 7 (7a, 8 and 8a), 209, 35, the Chimney and Class E and/or B2 and/or B8 for the retained Workshop (Block 258), enhanced access to Carrow Abbey and Scheduled Ancient Monument and associated ancillary works”.*

*The full component of the application covers a site area of 5.02 ha.*

**Outline Component:**

*“Demolition of existing buildings and replacement with phased residential-led (Use Class C3 and/or Class E and/or F1 and/or F2 and/or C1 and/or C2 and/or B2 and/or Sui Generis), landscaping, open space, new and modified access, car parking and ancillary works.”*

*The outline component of the application covers a site area of 11.9 ha*

3.2 The proposed site masterplan is presented in Figure 3.1.



**Figure 3.1: Proposed Masterplan**

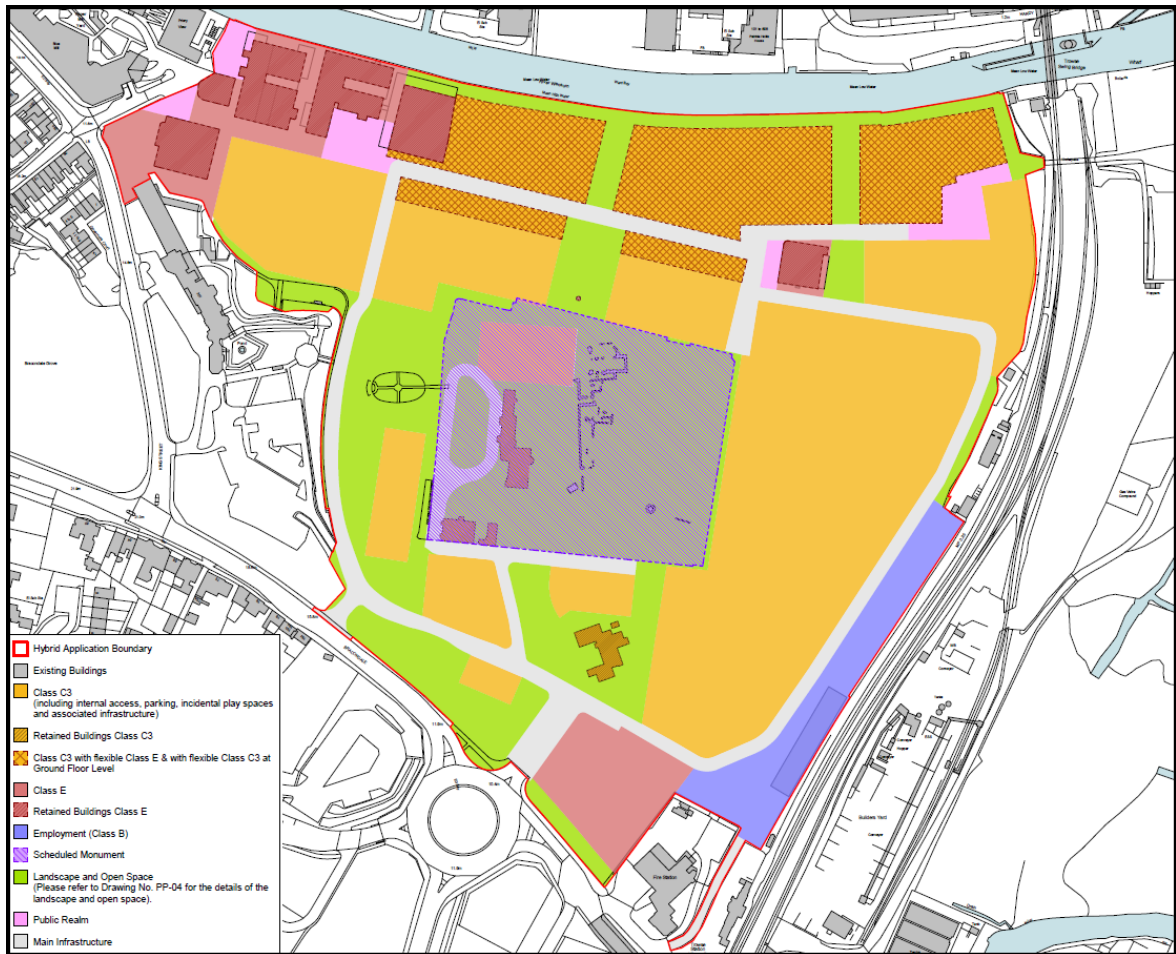


### **Land Use**

3.3 The proposed land use is illustrated in Figure 3.2 below.



**Figure 3.2: Land Use Plan**



3.4 The maximum extent for the proposed land uses is illustrated in Table 3.1 below:

**3.5 Table 5.1: Land Use Summary**

Use	Area	%
Residential (Use Class C3)	5.882 ha (14.535 acres)	34.8
Residential use of Retained Buildings	0.150 ha (0.371 acres)	0.9
Residential use with mixed-use at Ground Floor	1.864 ha (4.606 acres)	11
Mixed-use (Use Class E)	0.976 ha (2.412 acres)	5.8
Mixed-use of retained buildings	0.622 ha (1.537 acres)	3.6
Employment (Use Class B)	0.636 ha (1.572 acres)	3.8
Landscape and Open Space	4.705 ha (11.626 acres)	27.8
Public Realm	0.382 ha (0.944 acres)	2.3
Main Infrastructure	1.707 ha (4.218 acres)	10.1
Hybrid Application Boundary	16.917 ha (41.803 acres)	100

3.6 The Proposed Development is divided into a number of discrete areas as illustrated in Figure 3.3 below:

**Figure 3.3: Masterplan Areas**



### Indicative Schedule of Residential Development

3.7 Table 3.2 presents the proposed schedule for the Residential Development and Figure 3.4 illustrates the location of the different building typologies.



**Table 3.2: Indicative Schedule**

	<b>Refurbished Apartments</b>	<b>New Build Apartments</b>	<b>Refurbished Houses</b>	<b>New Build Houses</b>	<b>Total</b>
<b>Gateway</b>	125	62	-	-	<b>187</b>
<b>Waterside</b>	-	530	-	-	<b>530</b>
<b>Railway Side</b>	-	330	-	-	<b>330</b>
<b>Build to Rent</b>	-	250	-	-	<b>250</b>
<b>Private Housing</b>	-	77	-	-	<b>77</b>
<b>Housing Area 1</b>	-	-	-	110	<b>110</b>
<b>Housing Area 2</b>	-	-	-	234	<b>234</b>
<b>Abbey Grounds</b>	-	-	6	9	<b>15</b>
<b>Abbey Gardens</b>	-	25	3	33	<b>61</b>
<b>Food Store &amp; Employment</b>	-	65	-	-	<b>65</b>
<b>Total</b>	<b>125</b>	<b>1139</b>	<b>9</b>	<b>386</b>	<b>1859</b>



**Figure 3.4: Indicative Typologies Plan**

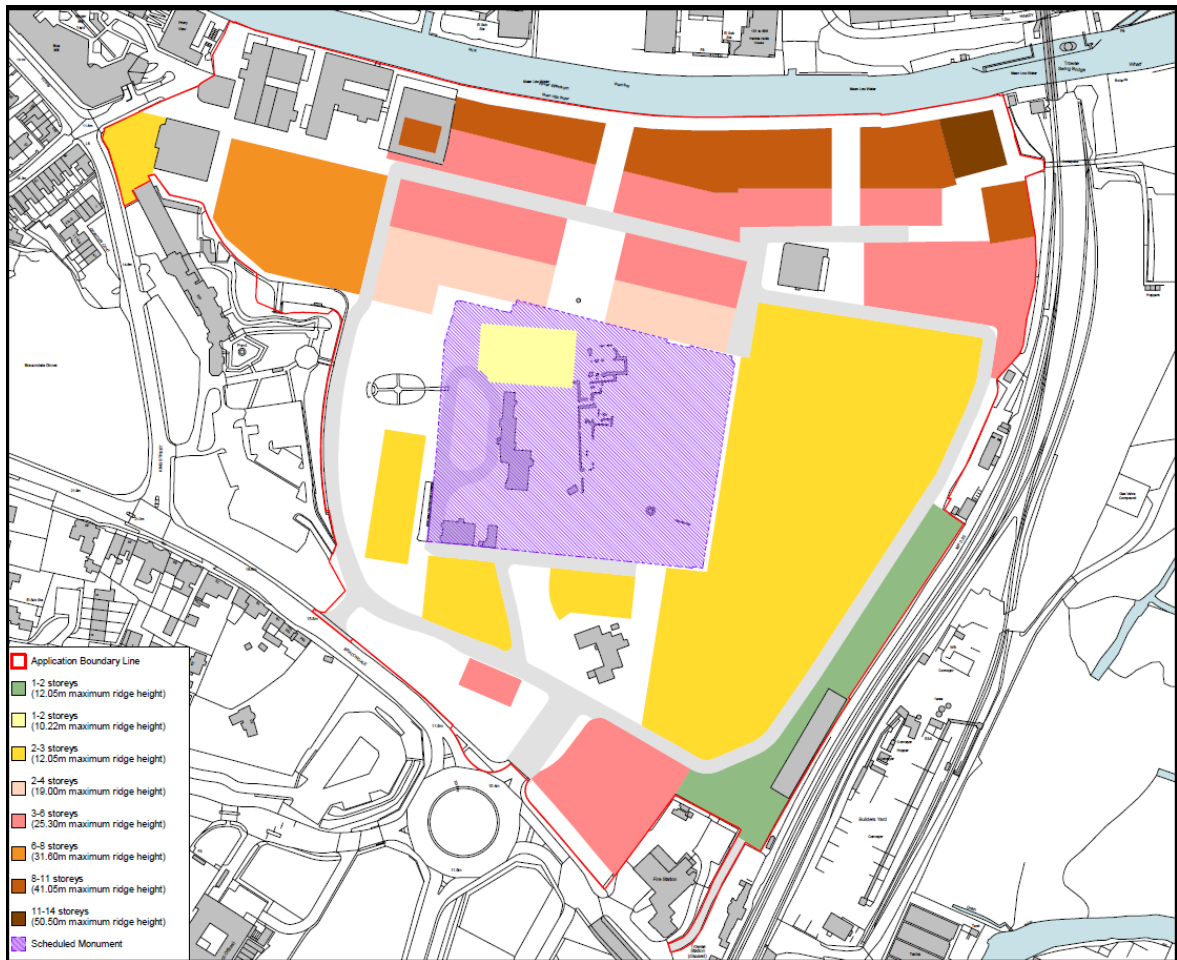


### **Scale and Massing**

3.8 The heights of the buildings will vary across the Application Site. The taller buildings are located along the river front and buildings heights step down around existing historic buildings. The proposed heights allow for pitched or flat roofs on residential and mixed-use buildings in order to accommodate a varying roof-scape as is characteristic of the existing use of the Application Site and the surrounding area.

3.9 The proposed building heights are illustrated in the Building Heights parameter plan shown in Figure 3.5 below:

**Figure 3.5: Building Heights Plan**



### Character Areas

3.10 The Proposed Development will have six distinct character areas. Each character area will be identified by unique approaches to design, scale of buildings and their relationship to the adjacent open spaces and density. The six character areas are illustrated in Figure 3.6.

**Figure 3.6: Character Areas**



### *Coleman's Wharf*

3.11 Coleman's Wharf is located in the northwest corner of the Application Site at the location of the primary entrance. The design of this area establishes a gateway feature into the Proposed Development from the city centre. Visitors will be greeted by the feature curved wall of the Counting House and a view towards the Mustard Seed Driers at the end of the route. The existing 19<sup>th</sup> century warehouse buildings will be refurbished to provide creative mixed-use spaces at ground floor.

3.12 The architecture of the new buildings in this area will be simple forms and lighter brick to allow the exiting factory buildings to shine.





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### *Mustard Quarter*

3.13 The Mustard Quarter is located in the north of the Proposed Development. The buildings are tall and dense. Buildings of 6 to 11 storeys front both the river and the new pedestrian Mustard Mill Way. At either edge, building heights step down to the heritage assets.

3.14 Inspired by the existing variation of buildings running along the south side of the River Wensum, the new buildings will each have their own unique identity which will be achieved through varied materials and playful roofscapes creating a varied view for pedestrians and residents alike.

### *Mint Yard*

3.15 The Mint Yard is located in the northeast of the Proposed Development. It will mark the entrance to the Proposed Development from the east and further from Whitlingham Country Park. The route to and from the underpass will be instantly greeting by a vibrant public square lined with retail or food and beverage outlets.

3.16 The architecture will be contemporary, clean and rhythmic with inspiration of materials and form taken from the existing buildings.

### *Robinson's Terraces*

3.17 Robinson's Terraces character area is located in the southeast of the Proposed Development between the railway and Abbey Gardens. The housing in this area is influenced by the architecture and character of the terraced housing within Norwich.

3.18 Uniform streets are divided by a central green corridor which will reflect the history of this part of the Proposed Development by providing a fruit picking trail as well as water gardens and create a link to the water and busier areas of the Proposed Development. A variety of housing sizes along each terrace will be encouraged ensuring mixed communities.

### *The Abbey & Cottages*

3.19 The Abbey Cottages character area is located in the southwest of the Proposed Development where there are a number of historically significant buildings and a scheduled ancient monument. This area will form a more private and quiet residential area that respects the heritage of the area.



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3.20 In the centre, the Grade I listed Abbey is the heart of this character area. The proposals will reinstate the most important historical routes, views and spaces around the Abbey and restore much of the hardstanding to green wildflower gardens.

3.21 Larger family homes with gardens will sit in the landscape replacing the existing 20<sup>th</sup> century buildings with sympathetic forms and massing that frame the Abbey. The architecture of the new buildings are proposed to be simple in form, with subtle inspiration taken from the Abbey reflecting its roof pitches, materials and fenestration.

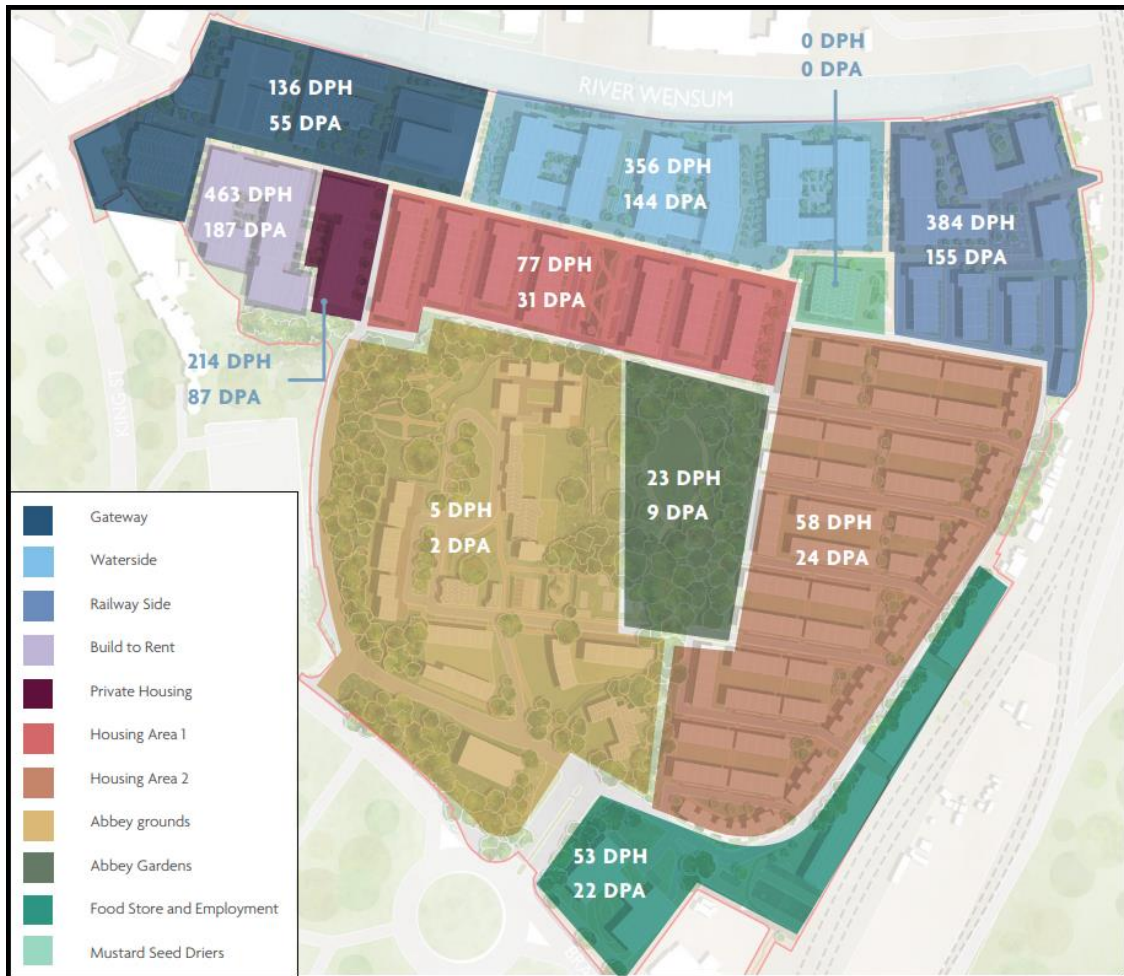
#### *Workers Yard*

3.22 The Workers Yard character area is located in the south of the Proposed Development. This area will comprise a large food store at the entrance to the Proposed Development which will serve the wider area aswell as the new Proposed Development. New residential apartments are proposed over the food store.

#### **Density**

3.23 The densities of the residential areas within the Proposed Development vary across the Application Site and are illustrated in Figure 3.7 below.

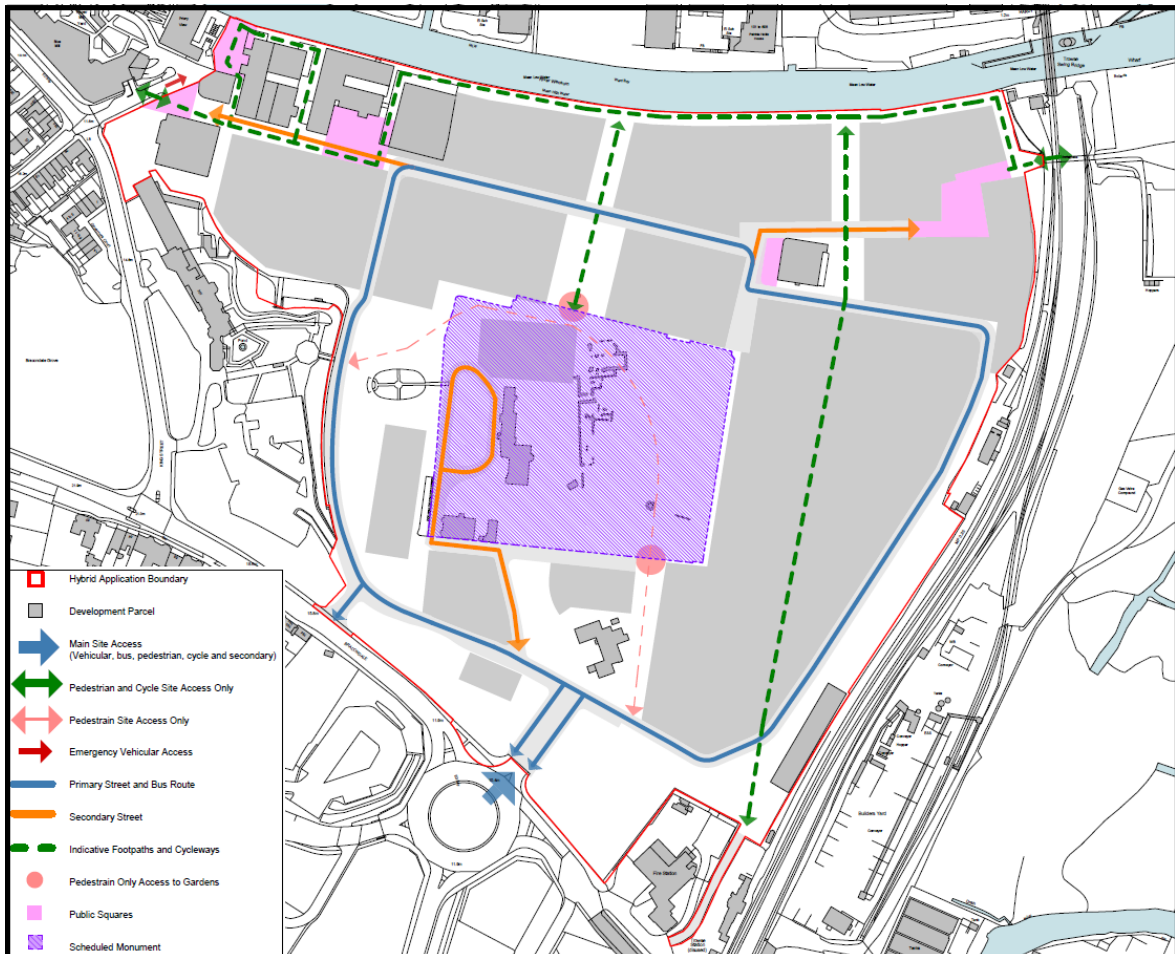
**Figure 3.7: Densities**



## Access

3.24 The access and movement proposals include the provision of one primary and one secondary vehicle access from the public highway and pedestrian and cycle access and routes across the Application Site. A plan showing the vehicle, cycle and pedestrian accesses to the Application Site is shown in Figure 3.8.

**Figure 3.8: Access**



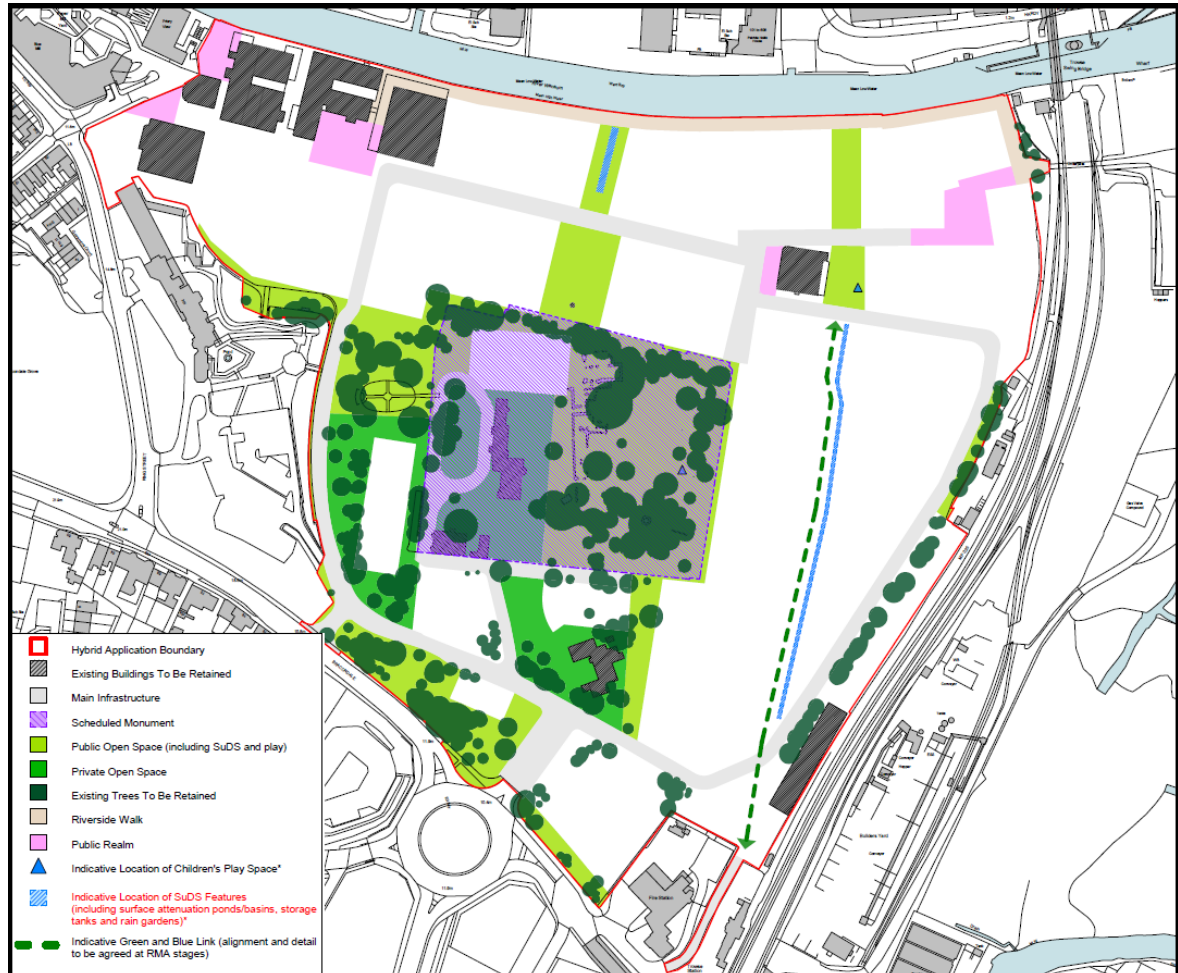
## Open Space

3.25 The proposed masterplan is landscape driven; a network of spaces connect the historic buildings together and open up the currently inaccessible areas to the public by providing new and existing green spaces.

3.26 A range of open spaces will link to the surrounding green infrastructure and provide a connection between Norwich City Centre and Whitlingham Country Park. The Abbey grounds

open space would be made publicly accessible with multiple access points both ramped and stepped.

**Figure 5.9: Open Space**



## Recreation

3.27 A variety of play spaces will be distributed across the Proposed Development which incorporate a range of different play experiences. These will take the form of LEAP's, several LAPs and a variety of informal play spaces located within the various character areas onsite as illustrated in Figure 3.10 below. The informal play spaces will be located within amenity green space to offer doorstep play experiences. There will also be opportunities to include playful leaning within community growing spaces.



**Figure 3.10: Play Spaces**

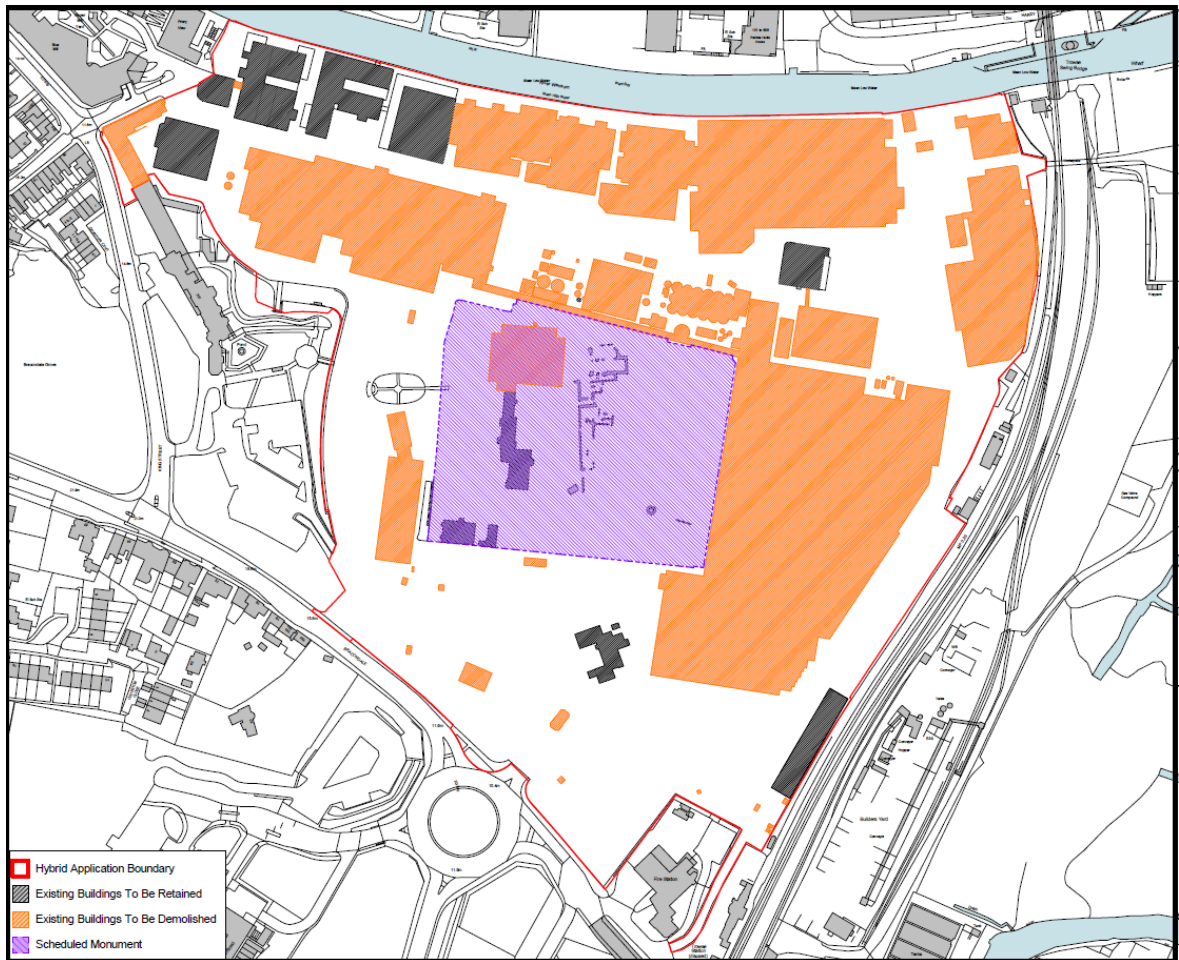


### Demolition

3.28 The buildings proposed for retention and demolition are illustrated in Figure 3.11 below. The buildings to be retained are located in three different areas of the Application Site and form the character of these areas.



**Figure 3.11: Demolition Plan**





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## 4 DEVELOPMENT PROGRAMME AND CONSTRUCTION

### INTRODUCTION

4.1 The Proposed Development will be constructed in two Phases. It is anticipated that the duration of the construction works for Phase 1 will be to be approximately 5 years commencing in 2024 and completed by end 2028 and Phase 2 will be approximately 13 years commencing in 2028 and completed by end 2040.

4.2 The construction effects of the Proposed Development would be managed through the development of a project and site-specific Construction Environmental Management Plan (CEMP).

4.3 The CEMP would outline methods for contractor and general public liaison, hours of work, methods to deal with complaints and outline management practices to control dust, traffic and access, waste, water resources, ecological and archaeological effects, ensuring a high level of control throughout the construction works.

4.4 The procedures within the CEMP would ensure the delivery of a high level of environmental control throughout the construction phase, thereby minimising the potential for adverse effects.



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## Transport and Access

### **Introduction**

4.5 This Chapter documents the assessment of the likely significant effects of the Proposed Development with respect to transport.

### **Predicted Impacts**

4.6 The scope of the assessment is based on the ES scoping note as well as the scope of the Transport Assessment which has been agreed with Highway Authority officers and includes an assessment of both construction and operational phases.

### **Effect during construction phase: short to medium term**

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

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

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

4.10 The daily traffic flow associated with the construction traffic is considered to be relatively low and effect on the local highway network without the CLP would be Minor adverse short term local. The construction vehicles would use existing and proposed vehicle accesses from Bracondale. This is a main arterial route with standard footways and cycleways available either on one or both sides of the carriageway. On this basis, the effects on pedestrians and cyclists in the absence of the CLP would be Minor adverse short term local.

### **Effect during operational phase: long term**

4.11 TA shows that all three junctions within the study area experience a level of stress during the AM and PM peak periods in 2028. The introduction of additional traffic would increase queue



lengths at all three junctions. In the absence of mitigation measures the Proposed Development would result in a **Moderate Adverse long-term local** effect on the operational capacity of the local highway network.

4.12 In the absence of any mitigation measures, the increase in pedestrians would have a **Moderate Adverse long-term local** effect on the local pedestrian network and the predicted increase in cyclists would have **Minor Adverse long-term local** effect on the local cycle network.

4.13 The predicted travel demand would have **Moderate Adverse medium-term local** effect on local bus services. The predicted travel demand would have a **Neutral** effect on rail capacity.

### **Mitigation**

4.14 The Proposed Development will be supported by a Construction Logistics Plan (CLP) for each phase which will include a route management strategy as well as dictate any limitations on construction vehicle delivery hours. As a result, the likelihood is that construction vehicle movements will predominantly occur outside of peak hours such that operatives can avoid busy periods on the external network, and avoid late nights/early hours to reduce the disturbance of nearby residents.

4.15 It is anticipated that there would be minimal flows associated with construction during the peak hours so the effects on the highway network would be Neutral. The very presence of HGVs on the local network may contribute towards fear and intimidation of vulnerable road users so the residual effects on pedestrians and cyclists would be Minor Adverse short-term local.

4.16 During the construction phase, details of the routing strategy, hours of operation, along with logistics and mitigation measures would be included in the CLP and CEMP which should be secured through a suitable planning condition

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

4.18 The development will enhance the existing permeability of the local walking and cycling network through implementation of a number of measures including provision of walking and cycling facilities through the Application Site. The Proposed Development will deliver a new



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footbridge over the River Wensum and upgrade the existing subway beneath the railway. The Proposed Development will also deliver off-site highway improvements at three junctions in order to enhance pedestrian and cycle routes and crossings between the Proposed Development and the City Centre.

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

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

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

4.22 The Framework Travel Plan forms part of a three-part Transport Implementation Strategy (TIS) comprising the Construction Logistics Plan, Framework Travel Plan and Delivery Plan. The combined effect of the TIS would be to manage and control the movement of people and goods to, from and within the development during the construction and operational phases of development.

### **Summary of Effects**

4.23 The residual impact of the Proposed Development following the proposed range of on- and off-site highway improvements and the TIS would be a Minor Adverse long-term local effect on highway capacity, however, the residual effect of the Proposed Development would be a Moderate beneficial long term local effect on pedestrian and cycle infrastructure. The residual effect on bus and rail capacity would be Neutral.



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## 5 AIR QUALITY

### Introduction

5.1 This Chapter reports on the effects of the Proposed Development on air quality.

### Predicted Impacts

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

#### Effect during construction phase: short to medium term

5.3 An assessment of the potential impacts during the construction phase has been carried out. This has shown that during this phase of the Proposed Development releases of dust and PM<sub>10</sub> are likely to occur during site activities. Through good site practice and the implementation of suitable mitigation measures, the impact of dust and PM<sub>10</sub> releases may be effectively mitigated and the resultant impacts are considered to be negligible.

#### Effect during operational phase: long term

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

5.5 The assessment found that concentrations of pollutants would be below the relevant objective levels within the Application Site and within the local area. Emissions from traffic generated by the Proposed Development are predicted to result in a negligible impact on local air quality in the surrounding area.

### Mitigation

5.6 A high risk of dust soiling impacts and a medium risk of human health impacts arising from particulates generated during the construction works are predicted at adjacent receptors during construction of the Proposed Development. Appropriate mitigation measures for the Application Site have therefore been identified following the IAQM guidance. It is recommended





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

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

### **Summary of Effects**

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



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## 6 NOISE AND VIBRATION

### **Introduction**

6.1 This Chapter has considered the potential impact of noise and vibration generated during the construction phases; whether the Application Site is suitable for the Proposed Development when taking into account the existing environmental noise conditions and the potential impact of the Proposed Development, including increased road traffic noise on nearby noise-sensitive locations and noise from any installations of electrical or mechanical plant.

### **Predicted Impacts**

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

#### **Effect during construction phase: short to medium term**

6.3 The appraisal of noise and vibration levels associated with the construction phases of the Proposed Development shows that there is low likelihood of noise impacts associated with enabling, ground-works and super-structure activities. Moderate Adverse short term effects are calculated when works occur in close proximity to affected receptors. Effects during the majority of works, at typical distances across the Application Site, are calculated to be Negligible (not significant). Any impacts that occur are likely to be of a temporary and intermittent nature and the majority of works would have a Negligible effect at distant receptors.

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

#### **Effect during operational phase: long term**

6.5 Calculated noise levels indicate that the ambient environment at the Application Site would be suitable for residential dwellings, provided sufficient ventilation is adopted at properties within the identified areas.

6.6 Based on application of quantitative significance criteria, the Proposed Development would experience effects ranging from Negligible to Moderate, prior to consideration of appropriate mitigation. Following incorporation of suitable glazing and ventilation the magnitude



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of effect would not exceed any recognised or statutory objectives and would be considered Negligible.

6.7 Long term effects from the increase in road traffic are calculated to be Negligible at the identified road links.

### **Mitigation**

6.8 Measures to control construction noise should be incorporated within the Construction Environmental Management Plan (CEMP) and/or detailed in construction method statements.

6.9 For the operational phase, proportional and adequate acoustic treatments (e.g. mechanical or passive ventilation, acoustic air bricks) will be incorporated into the Proposed Development, in order to achieve an appropriate acoustic environment.

### **Summary of Effects**

6.10 Construction noise and vibration effects are calculated to be up to Moderate Adverse in the short-term. The majority of works are likely to give rise to Negligible (not significant) effects. Generic mitigation measures have been recommended, which when implemented are capable of ensuring that the impact of noise and vibration during the construction of the Proposed Development is adequately controlled.

6.11 An assessment has been carried out in accordance with the adopted criteria to determine the suitability of the Application Site for residential accommodation. Proposed units, as identified within the Chapter, will require appropriate glazing and ventilation specification in order to achieve the required internal noise levels and the resultant noise effect will be Negligible (not significant) at proposed residential properties.

6.12 The impact of traffic associated with the Proposed Development has been assessed. It is calculated that changes in road traffic noise would not give rise to significant effects. There are calculated significant effects at existing receptors adjacent to the surrounding roads.



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## 7 BIODIVERSITY AND NATURE CONSERVATION

### **Introduction**

7.1 This Chapter reports on the effects of the Proposed Development on ecology and nature conservation. The Chapter is informed by ecology surveys of the Application Site, including a desk study, and Preliminary Ecological Appraisal.

### **Predicted Impacts**

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

7.3 A number of ecological designations within the surrounds of the Application Site have been identified by the desk study. Potentially significant effects have been identified on Broadland (Ramsar and SPA), River Wensum (SAC), The Broads (SAC), Whitlingham Local Nature Reserve, and three County Wildlife Sites.

7.4 The Application Site itself is dominated by buildings and hardstanding, which are considered to be of low ecological value, however impacts on woodland and grassland within the Application Site, although largely retained by proposals, have been assessed.

7.5 Surveys of protected species have yet to be completed, however the PEA noted potential suitability for bats, reptiles, birds (including peregrine falcon) and polecat. Further surveys for these species groups will be required to inform the assessment, at which point this assessment will require updating, however indications of importance, potential impacts, and possible mitigation measures have been proposed based on the condition of habitats and desk study data.

### **Mitigation, Compensation and Enhancement**

7.6 Mitigation, compensation and enhancement measures are therefore proposed, including mitigation for the internationally designated sites in the form of contributions to the Norfolk Green Infrastructure and Recreational Impact Avoidance and Mitigation (GIRAM) Strategy, to mitigate potential recreational impacts. Various options are available to mitigate nutrient load impacts on the international sites, however the detail is yet to be finalised.



7.7 Construction safeguards, formalised via a Construction and Environmental Management Plan (CEMP), new habitat retention and enhancement, mitigation methods for protected species (to be confirmed on completion of phase 2 surveys) are also proposed to ensure compliance with relevant legislation and planning policy.

### **Summary of Effects**

7.8 Following mitigation, compensation and enhancement measures, it is considered that the residual effects of the Proposed Development are likely to be neutral to net positive at local level, however this will require confirmation after completion of phase 2 species surveys and a finalisation of the nutrient neutrality strategy.



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## 8 WATER QUALITY, HYDROLOGY AND FLOOD RISK

### Introduction

8.1 This Chapter presents an assessment of the likely effects of the Proposed Development on terrestrial hydrological regimes, water quality and flood risk.

### Predicted Impacts

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

#### Effect during construction phase: short to medium term

8.3 The most significant predicted environmental effects during construction (if left unmanaged) would include an increase of surface water runoff, thereby increasing fluvial flood risk, as well as sediment pollution and chemical pollution of both the River Wensum and the underlying groundwater.

#### Effect during operational phase: long term

8.4 The most significant predicted environmental impacts during operation (if left unmanaged) would again include an increase of surface water runoff and fluvial flood risk, as well sediment pollution and chemical pollution of both the River Wensum and underlying groundwater.

8.5 Additional consideration is also to be given to nutrient neutrality. Guidance has been provided by Natural England with regards to the potential to affect water quality by treated foul effluent resulting in adverse nutrient impacts on habitat sites. The Proposed Development will result in a net increase in population served by the Anglian Water wastewater system. At this stage it is known that there are various options available for the mitigation of this impact, however, currently no specific mitigation measure has been opted for.

8.6 The detailed aspect of this application does not include any new buildings, therefore it is proposed that nutrient neutrality is considered and conditioned at the reserved matters application stage, where the new housing developments will be brought forward for assessment.





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## **Mitigation**

8.7 The construction phase environmental effects will be managed using measures outlined in a CEMP. Measures will include identifying appropriate storage areas for chemicals and earthworks (i.e. out of the way of surface water flow paths), appropriate temporary drainage, and sedimentation/filtration basins for runoff.

8.8 The Proposed Development will include Sustainable Drainage Systems (SuDS), as detailed within the Flood Risk Assessment and Drainage Strategy report. The system seeks to limit the rate of surface water runoff to the 1 in 100 year greenfield run-off rate for the entire Application Site. This runoff rate would be lower than the current natural rate of surface water runoff during extreme events. Hence, as less water would escape from the Application Site, the system would provide a slight downstream betterment in flood risk terms.

8.9 Water quality is to be improved via the use of SuDS and petrol interceptors. These measures offer a high protection to the River Wensum and better coverage of the Application Site when compared to the pre-development scenario. This therefore offers a betterment downstream with regards to water quality.

## **Summary of Effects**

8.10 As a result of the package of mitigation and enhancement measures proposed as part of the Proposed Development, the residual impact on the hydrology and flood risk environment by surface water, during both construction and operation, are considered to be insignificant.

8.11 As the proposed detailed part of this application does not include any new buildings, nutrient neutrality is proposed to be reviewed as part of the reserved matters applications for the plots on-site.



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## 9 SOILS, GEOLOGY AND CONTAMINATED LAND

### Introduction

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

### Predicted Impacts

9.2 An assessment of ground conditions and contamination has been undertaken using the findings of a desk-based study and intrusive site investigation undertaken at the Application Site in 2018 and updated using 2022 baseline data.

### Effect during construction phase: short to medium term

9.3 It is expected that further intrusive (area specific), mainly geo-environmental investigations, will be required to aid the geotechnical design processes. These will also incorporate further environmental elements (e.g. soil and groundwater sampling and ground gas monitoring) thus expanding the current baseline knowledge. It is considered highly likely that the results will confirm the current conclusions that the Application Site is suitable for the proposed end use. Due to the geology of the area, the site investigation would be designed to identify potential dissolution features (which can cause sinkholes). If potential dissolution features are identified, this would be accounted for through the engineering design of foundations and / or construction methods to ensure that potential risks to structures and the safety of demolition and construction workers and future users of the Application Site are minimised.

9.4 The presence of the PCE contaminated groundwater plume represents a significant on-going source of contamination that is currently being addressed through active remediation prior to redevelopment of the Application Site. The Environment Agency has been fully consulted during the investigation and remediation process.

9.5 An assessment of the potential impacts during the construction phase has been carried out. This has shown that during this phase of the Proposed Development land contamination is unlikely to worsen during site activities.



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### **Effect during operational phase: long term**

9.6 The residual impact of the Proposed Development on land contamination during both the construction and operational phases is not considered significant. The active remediation programme combined with the proposed mitigation measures should have an overall Permanent Positive impact on the local environment, especially through the reduction of the risks to surface water and groundwater.

### **Mitigation**

9.7 Through good site practice and the implementation of suitable mitigation measures such as Pre-demolition Survey, Hazardous Material Surveys, Construction Environmental Management Plan (CEMPs), Construction Health and Safety Controls, Geoenvironmental Surveys, Remediation Options Appraisal and Remediation Strategy (including land gas protection measures), Remediation programme implementation, Verification Assessment and Reporting and Foundation Works Risk Assessment any potential temporary impacts may be effectively mitigated, and the resultant impacts would not be significant.

### **Summary of Effects**

9.8 Following implementation of the proposed mitigation measures, the Proposed Development (construction and demolition phase) has potential for Temporary, Minor Adverse impact at a Local scale (Not Significant).

9.9 Following implementation of the proposed mitigation measures, the Proposed Development (operational phase) has potential for Permanent, Beneficial impact at a Local scale (Not Significant).



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## 10 ARCHAEOLOGY

### **Introduction**

10.1 This chapter documents the assessment of the likely significant effects of the Proposed Development with respect to archaeology.

### **Predicted Impacts**

10.2 The scope of the assessment has been agreed with the Historic Environment Senior Officer at Norfolk County Council and includes an assessment of both construction and operational phases.

#### **Effect during construction phase: short to medium term**

10.3 The Proposed Development will include below ground intrusions, (foundations, service runs etc.) with the potential to have an adverse impact on surviving archaeological remains prior to the implementation of mitigation measures.

#### **Effect during operational phase: long term**

10.4 Impacts to archaeological assets that may survive on the Application Site are limited to construction phase works. It is not anticipated that there would be any effects to archaeological remains once the Proposed Development is operational.

### **Mitigation**

10.5 The LPA in consultation with the Senior Historic Environment Officer, and in accordance with the NPPF, may attach an archaeological condition of planning to permission for the Proposed Development. This may require an initial archaeological site investigation (geophysical survey/evaluation) in order to further assess the potential for the survival of significant below ground archaeological remains at the Application Site. The evaluation may also be required to take place pre-determination of the application. If significant remains are seen to be present during the evaluation, a programme of archaeological mitigation may be necessary prior to construction.

10.6 All archaeological site based work would need to take place before below ground impacts relating to construction commence.



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10.7 Potential adverse impacts to sub-surface archaeological remains during the construction phase could be successfully mitigated by a programme of archaeological excavation and recording where remains of higher significance are present, or by an archaeological watching brief where remains of lesser significance are present, or a combination of both where necessary. This is typically secured via an appropriately worded pre-commencement condition.

10.8 The method statements, or Written Schemes of Investigation (WSI), detailing the archaeological site investigation, and any subsequent mitigation, would be developed in consultation with the Senior Historic Environment officer and submitted against the relevant condition followed by the results of the work. If significant archaeological remains are encountered during mitigation, assessment and publication of the results may also be required.

10.9 Preservation in situ may be required for archaeological remains of appropriately high significance.

### **Summary of Effects**

10.10 The presence or absence of archaeology on the Application Site, along with its significance, can only be confirmed by conducting an on-site investigation prior to construction of the Proposed Development. The results of such an evaluation would inform any necessary archaeological mitigation measures.

10.11 The assessment has found that there is potential for the survival of unrecorded sub-surface archaeological remains within the Application Site. The adverse direct effect on any such remains will be mitigated by implementing a programme of archaeological works within those undisturbed parts of the Proposed Development to be subject to ground-breaking works. The Proposed Development would have a Minor to Major adverse direct impact upon any unrecorded sub-surface archaeological remains, which will be mitigated for by appropriate evaluation and further mitigation if required, in consultation with LPA.

10.12 It is assumed that the effects of the other developments in conjunction with the Proposed Development would not form an additional cumulative effect on any below ground archaeological remains that may survive on the Application Site.





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## 11 HERITAGE, TOWNSCAPE AND VISUAL IMPACT

### Introduction

11.1 This Chapter provides a summary of the findings from the Environmental Statement (ES) with regards to Heritage, Townscape and Visual Impacts.

### Built Heritage

11.2 In respect of designated heritage assets the ES has assessed those assets with the potential to be effected by the Proposed Development. It concludes that the listed buildings within the site boundary all have the potential to experience change within their setting, with lesser effects to heritage setting for those assets beyond the site boundary. The operational effects on built heritage receptors generally range from minor neutral to moderate beneficial. It is found that the scale, nature and siting of the proposals would overall preserve the special interest and significance of the majority of assets. The case of Carrow Abbey and Priory which has achieved a Major Adverse Effect is summarised separately.

11.3 With regards to the Bracondale Conservation Area, it is concluded that the proposal would amount to a largescale change but would not cause harm. The area's special architectural and historic character would be preserved. In the other instances where significant resultant effects have been identified in EIA terms, these are neutral or beneficial and heritage significance and setting is preserved.

11.4 When considered alongside cumulative schemes, there would be little change to the assessed operational effects. This is due to the self-contained nature of the Application Site, and the Proposed Development of the emerging context of the surroundings.

### Carrow Abbey & Priory

11.5 Due to their sensitivity, works to subdivide the Abbey and change within the setting of the Priory and Abbey have been identified as a moderate adverse effect with the potential to cause a low level of less than substantial harm. The nature of the works to convert the Abbey are of such that the degree of intervention into the fabric is minimal, and the change of use to residential is considered the least harmful option to restore a function to the building and achieve a sustainable and Optimum Viable Use. As a result of the change within their setting, the overall resultant effects are considered to have some adverse elements. With mitigation strategies this maybe be lessened to a Moderate Adverse effect.



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## **Townscape**

11.6 In respect of Townscape, the ES chapter presents an analysis of the character and nature of the historic and emerging townscape to which the Proposed Development will become a part. It has identified that the Application Site sits within an urban fringe area, is relatively enclosed and self-contained area which comprises of a wide variety of building types within distinctive character areas. This includes the distinctive Industrial buildings of large footprint and scale and the open and historic setting of the Priory. Because of the self-contained nature of the Application Site, it presents an opportunity to create a new and engaging townscape which enhances heritage assets within its bounds. Sensitive and considered design choices means the Application Site has the potential to form a new cohesive pocket of redeveloped townscape character areas referential to the historic context of each unique area.

11.7 The townscape effects on the wider and local area resulting from the Proposed Development have also been assessed. It was found that the Proposed Development would have either a moderate beneficial, minor beneficial, negligible neutral, or no effect on the townscape character areas.

11.8 When considered alongside cumulative schemes, there would be little change to the assessed operational effects due to the Proposed Development being characteristic of the emerging context of the surroundings. Cumulative effects would remain unchanged.

## **Visual**

11.9 The potential visual effects of the Proposed Development were assessed with reference to the 19 views projected as Accurate Visual Representations (AVRs). The list of views was agreed with Historic England and Norwich City Council during the scoping process and subsequent preapplication discussions.

11.10 Views from within the site boundary within the immediate vicinity, have been assessed to understand the potential effect of the Proposed Development. From the grounds surrounding Carrow Abbey there is the potential for the upper parts of new residential buildings to appear in the background in some view positions, however, this would not detract from the townscape and would in fact be consistent with existing largescale built form on the Application Site and of the emerging townscape.

11.11 In the local views within northern portion of the Application Site, the architecture, scale, bulk and mass of the Proposed Development will become more apparent. The presence of the large-scale blocks forming the refreshed character area would be reflective of the baseline



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condition and offer an enhance to the public realm. Where visible, the Proposed Development will be experienced as a high-quality addition to the townscape, offering significant improvement over the current arrangement. This is achieved through considered architecture for both the commercial and residential elements, with appropriate use of brick, varied fenestration, and enforcing the unique heritage interest of character areas through distinctive and interpretive design. The use of a distinctive open central street plan and the placement of open squares and riverside activation, all of which add interest, variation to locally experienced forms, add distinctive qualities and give the scheme a strong sense of identity.

11.12 Overall, the Proposed Development would have either beneficial, neutral, negligible, or no effect on identified viewpoints (no effect has been identified where the Proposed Development is completely occluded by intervening townscape, and therefore not visible). Therefore, visual amenity would be maintained or enhanced by the Proposed Development. There have been no adverse effects identified. Where significant residual effects in ES terms have been identified, these are either beneficial or neutral and so no additional mitigation would be needed. This remains indicative of the area's capacity for change, the opportunities to enhance the visual amenity and townscape quality of the area, as well as the high-quality design of the Proposed Development.

### **Summary of Significant Effects**

11.13 Overall, the proposal offers a high standard of design that has considered the historic urban context and historic use of the Application Site. The Proposed Development would largely give rise to predominantly beneficial, neutral or negligible effects and would enhance the visual amenity and townscape character of the Carrow Works site. The only adverse effect identified, concern works to convert the Abbey to a sustainable use. The clear benefits of bringing this building back into active use have been carefully considered to ensure minimal intervention into historic fabric. This assessment has recognised that a residential use is likely to be the Optimum Viable Use.

11.14 Though the Proposed Development would offer some enhancement to the setting of Carrow Abbey through the replacement of negative contributors, reinstating the historic detachment of the building, there is nevertheless considered to be some residual harm to the Priory and setting of the Abbey through the subdivision of the grounds. This will disrupt one's appreciation of Scheduled Monument and the Grade I listed Abbey. It is our conclusion that the benefits of being able to deliver a viable scheme that will facilitate the regeneration of the area, outweighs the less than substantial harm identified to Carrow Priory and its setting.



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11.15 The functions of the Application Site are currently redundant with numerous heritage assets currently at risk of dissociation through dereliction and disuse. While still adjacent to industrial built form and large scale redevelopment to the north of the river, due to topography, riverside location, and mature screening the Application Site has a degree of isolation from the surrounding townscape. Additionally, considering its former use, the Application Site is considered capable of sustaining considerable change. The proposed massing, siting, bulk, scale and architecture has been carefully considered so that the submitted Proposed Development is deemed appropriate in views and townscape. The assessment concludes that while some harm has been identified, this would be balanced against a number of clear heritage benefits across the Application Site as a whole, including regeneration of the area and preservation of key heritage assets. Overall, the character of the surrounding townscape would be enhanced due to the carefully considered and high-quality design which has drawn on the historic context of the Application Site.



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## 12 SOCIO-ECONOMICS, POPULATION AND HUMAN HEALTH

### **Introduction**

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

### **Predicted Impacts**

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

#### **Effect during construction phase: short to medium term**

12.3 178 Full Time Equivalent (FTE) jobs would be generated on-site by the Proposed Development during the construction phase of which 73 FTE jobs would be in the Local Impact Area.

#### **Effect during operational phase: long term**

12.4 Once completed, the Proposed Development is predicted to generate 1,058 - 2,062 FTE jobs on-site of which 54 -675 FTE jobs would be in the Local Impact Area.

12.5 The Proposed Development will provide 1,859 residential dwellings of a range of sizes including 15% affordable housing which will be beneficial for local residents.

12.6 The Proposed Development will result in additional retail spending as a result of the future residents on-site. It is estimated that the additional retail spending in Norwich City Borough by 2038 will be £28.4 million which will stimulate the local economy.

12.7 The Proposed Development is predicted to result in 4,461 new residents. The Proposed Development is likely to have a minor adverse impact on GP surgeries due to increasing patient to GP ratios. Contributions will also be provided towards enhancing early years and SEN school provision. Incoming residents will create additional demand on local libraries, youth centres and adult learning and therefore contributions will be provided. Contributions would also be provided towards adult social.

12.8 The Proposed Development will provide new open space including new parks, outdoor play facilities and public squares. This open space provision is above local policy requirements.





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The proposed design has been designed to minimise crime in accordance with Crime Prevention By Design principles.

12.9 The assessment considered the cumulative impacts of adjacent developments including Anglia Square, May Gurney site and Land North of Carrow Quay proposals. This is also considered as part of the wider East Norwich Regeneration strategy. Potential adverse cumulative impacts were identified for GP surgeries, youth facilities and early years education prior to mitigation.

### **Summary of Effects**

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



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## 13 CLIMATE CHANGE

### Introduction

13.1 A Climate Change assessment has been undertaken which includes:

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

### Predicted Impacts

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

#### Effect during construction phase: short to medium term

13.3 During the construction phase, the assessment has identified that there will be significant greenhouse gas emissions associated with material embodied carbon, transport, construction plant activities and waste production during the 6 year construction phase. It is estimated that the worst case approximate embodied carbon emissions would be 48,374 tonnes CO<sub>2e</sub> per annum. This is considered to be a Moderate Adverse impact.

#### Effect during operational phase: long term

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

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



13.6 The operational energy emissions are predicted to be Moderate Adverse after the incorporation of renewable technologies on-site including heat pumps and photovoltaic panels.

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

### **Mitigation and adaptation**

13.8 The Proposed Development design will incorporate appropriate adaptation measures to reduce the climate change risks of flooding through the provision of SuDS measures, raising ground levels, using soakaway drainage, permeable paving and bioretention. Adaptation measures for water shortages will include water efficient sanitaryware and consideration of opportunities for water re-use and rainwater harvesting across the Application Site. The climate change resilience of landscaping features will be supported by the planting of ecologically diverse and climate resilient species. The Energy Statement has set out a number of measures that will reduce overheating including natural ventilation. Despite these adaptation measures, due to the presence of scientific unknowns within the climate system, residual effects cannot be defined.

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

- Implementation of a Site Waste Management Plan and Construction Logistics Plan during construction;
- Selection of sustainable materials during construction and consideration of alternative materials with low embodied carbon;
- Minimising operational transport emissions through the Framework Travel Plan, new bus stops, new footbridge, provision of secure cycle storage; and
- The implementation of a fabric first approach, passive design measures and renewable technologies including heat pumps and photovoltaic panels to minimise operational energy emissions to be net zero carbon.

### **Summary of Effects**

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



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- Minor Adverse (not significant) to Moderate Adverse (significant) for embodied carbon;
  - Minor Adverse (not significant) for operational transport; and
  - Moderate Adverse (significant) for operational energy.

13.11 Overall, the adaptation and mitigation measures are considered to be appropriate in accordance with best practice, the NPPF and the Greater Norwich Council Local Plan.



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## 14 WASTE

### **Introduction**

14.1 This Chapter reports on the effects of the Proposed Development on waste management.

### **Predicted Impacts**

14.2 The potential for the generation of waste is an aspect of any activity. In relation to the Proposed Development waste will be generated during the demolition and clearance phase, during the construction phase and during the operational phase.

### **Effect during construction phase: short to medium term**

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

### **Effect during operational phase: long term**

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

### **Mitigation**

14.5 During the construction phase the implementation of suitable mitigation measures, such as a formal CEMP, RMP (SWMP), will be required. The Proposed Development has applied Building Research Establishments Environmental Assessment Method (BREEAM) assessment methodology and should achieve an 'Excellent' rating under BREEAM UK New Construction 2018 part of which considers and assess waste management.





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### **Summary of Effects**

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

