

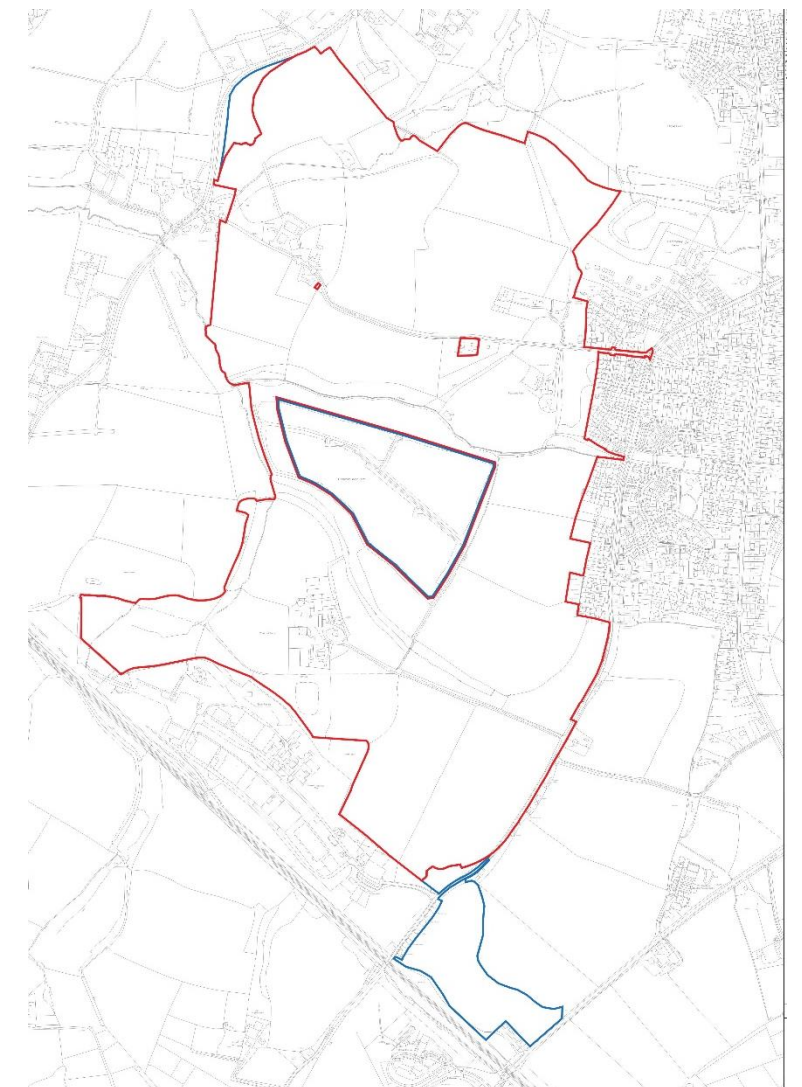
## Sustainability and Energy Statement

### One Horton Heath, Outline Application

DATE OF ISSUE: 10 MAY 2021  
ISSUE: 03  
HM REFERENCE: 27886-RP-SU-004

PROJECT:  
ONE HORTON HEATH  
EASTLEIGH

CLIENT:  
EASTLEIGH BOROUGH COUNCIL  
EASTLEIGH HOUSE  
UPPER MARKET STREET  
EASTLEIGH SO50 9YN







PROJECT NAME: **ONE HORTON HEATH**

REPORT NAME: **Sustainability and Energy Statement**  
**One Horton Heath, Outline Application**

ISSUE STATUS: **FINAL**

HM REFERENCE: **27886-RP-SU-004**

DATE OF ISSUE: **10 MAY 2021**

ISSUE: **03**

AUTHOR: **E.FLOWER**

CHECKER: **M.SCHEMBRI**

APPROVER: **J.HORNER**

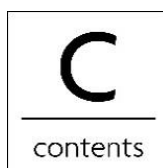
HM OFFICE: **SHACKLETON HOUSE**  
**HAYS GALLERIA**  
**4 BATTLEBRIDGE LANE**  
**LONDON**  
**SE1 2HP**

**T: +44 (0)20 7940 8888**  
**hilsonmoran.com**  
**info@hilsonmoran.com**

DOCUMENT HISTORY:

| ISSUE | DATE      | DETAILS     |
|-------|-----------|-------------|
| 03    | 10/5/2021 | FINAL ISSUE |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |
|       |           |             |

Copyright © Hilson Moran 2021. All rights reserved. This report is confidential to the party to whom it is addressed and their professional advisers for the specific purpose to which it refers. No responsibility is accepted to third parties, and neither the whole nor any part of this report nor reference thereto may be published or disclosed without the written consent of Hilson Moran.



## Contents

|                                                                                       |           |
|---------------------------------------------------------------------------------------|-----------|
| <b>Executive Summary .....</b>                                                        | <b>2</b>  |
| <b>1. Introduction.....</b>                                                           | <b>5</b>  |
| 1.1. Background .....                                                                 | 5         |
| 1.2. The Vision.....                                                                  | 6         |
| 1.3. Purpose .....                                                                    | 6         |
| 1.4. Scope.....                                                                       | 6         |
| 1.5. Relation to other documents.....                                                 | 7         |
| <b>2. Policy.....</b>                                                                 | <b>8</b>  |
| 2.1. Energy regulations and planning policy changes .....                             | 8         |
| 2.1.1. Climate Change Act 2008 (CC) .....                                             | 8         |
| 2.1.2. Government Zero Carbon Policy.....                                             | 8         |
| 2.1.3. World Green Building Council.....                                              | 8         |
| 2.1.4. Standard Assessment Procedure (SAP).....                                       | 8         |
| 2.1.5. SAP 10.2 .....                                                                 | 9         |
| 2.1.6. Building Regulations Part L 2010 .....                                         | 9         |
| 2.1.7. Building Regulations 2020 update .....                                         | 9         |
| 2.1.8. Fossil fuel heating ban .....                                                  | 10        |
| 2.2. Building Regulations Part G 2010.....                                            | 10        |
| 2.3. Local Plan .....                                                                 | 10        |
| 2.3.1. Local Plan (2001-2011).....                                                    | 10        |
| 2.3.2. Local Plan (2011-2029).....                                                    | 11        |
| 2.3.3. Local Plan (2016-2036) – Draft.....                                            | 11        |
| 2.3.4. Eastleigh Borough Council SPD on Environmentally Sustainable Development ..... | 12        |
| <b>3. BREEAM Communities.....</b>                                                     | <b>12</b> |
| 3.1. Step 1 Establishing the Principals .....                                         | 12        |
| 3.1.1. Phased Projects.....                                                           | 12        |
| 3.1.2. Mandatory Requirements.....                                                    | 13        |
| 3.2. BREEAM for non-residential buildings .....                                       | 13        |
| <b>4. Energy Statement.....</b>                                                       | <b>13</b> |
| 4.1. Background .....                                                                 | 13        |
| 4.2. Residential Energy Assessments .....                                             | 13        |
| 4.2.1. Building fabric performance .....                                              | 14        |

|                                                        |           |
|--------------------------------------------------------|-----------|
| 4.2.2. Heating System.....                             | 14        |
| 4.2.3. Other building services .....                   | 15        |
| 4.2.4. Photovoltaics .....                             | 15        |
| 4.3. Residential Energy Assessment Results.....        | 15        |
| 4.4. Non-residential Design Parameters.....            | 16        |
| 4.4.1. Building services .....                         | 16        |
| 4.4.2. Unregulated energy.....                         | 17        |
| 4.5. Overall building operational carbon savings ..... | 17        |
| 4.6. External lighting.....                            | 17        |
| <b>5. Water Conservation .....</b>                     | <b>18</b> |
| <b>6. Sustainable Materials .....</b>                  | <b>18</b> |
| 6.1. Circular Economy.....                             | 18        |
| 6.2. Durability .....                                  | 18        |
| 6.3. Low carbon .....                                  | 18        |
| 6.4. Responsible sourcing .....                        | 19        |
| <b>7. Flood Risk &amp; Drainage.....</b>               | <b>19</b> |
| 7.1. Prevention .....                                  | 19        |
| 7.2. Source Control .....                              | 20        |
| 7.3. Site Control .....                                | 20        |
| 7.4. Regional Control .....                            | 20        |
| <b>8. Waste Management .....</b>                       | <b>20</b> |
| 8.1. Residential land uses .....                       | 20        |
| 8.2. Non-residential land uses .....                   | 20        |
| 8.3. Construction waste.....                           | 21        |
| 8.4. Demolition waste.....                             | 21        |
| <b>9. Transport .....</b>                              | <b>21</b> |
| 9.1. Pedestrian and Cyclist Provision.....             | 21        |
| 9.2. Electric Vehicle Charging Facilities .....        | 21        |
| 9.3. Public Transport.....                             | 22        |
| 9.4. Framework Travel Plan.....                        | 22        |
| <b>10. Ecology .....</b>                               | <b>22</b> |
| 10.1. Construction .....                               | 22        |
| 10.2. Operation.....                                   | 22        |



**11. Health and Wellbeing..... 23**  
11.1. Thermal comfort .....23  
11.2. Air quality .....23  
11.3. Acoustics .....24

**12. Impacts of Constructions ..... 24**  
12.1. Environmental Management .....24  
12.2. Considerate Construction .....24  
12.3. Monitoring of construction site impacts .....24

**Appendix A: BREEAM Communities Scoring Tool for One Horton Heath ..... 25**



## Executive Summary

This statement forms part of an outline application for One Horton Heath (Proposed Development), a phased mixed-use development comprising:

- Up to 2,500 residential units in total;
- A primary Local Centre (and supporting secondary local centres) comprising mixed-use Residential/retail/leisure/community/employment/day nursery/food establishment uses;
- Office, commercial and industrial uses;
- A Primary School;
- Public open space including formal sports facilities and informal provisions;
- Relocation of solar panels;
- Key infrastructure and utilities provision including new roads, footpaths and cyclepaths and improvements to the existing road junction at Fir Tree Lane/ Burnetts Lane; and
- Ecological, landscape, site preparation and demolition works (All Matters Reserved Except Access). This application is subject to Environmental Impact Assessment.

The Proposed Developments has a vision of creating a greener borough and involves proactively planning to minimise the impact of the development on the existing community and environment during construction and throughout its lifetime.

This statement describes the Proposed Development's sustainability and energy credentials in the context of the following local planning policy and guidance:

- Eastleigh Local Plan 2001-2011
- Draft Eastleigh Borough Local Plan (2016-2036)
- Eastleigh Borough Council SPD Environmentally Sustainable Development (March 2009)

The following summarises the sustainability and energy best practice measures that are being adopted by the masterplan in the context of planning policy:

### Environmental Certification

The draft Local Plan (2016-2036) requires larger developments (above 150 dwellings or 10,000sq.m of floor space) to address sustainable development issues at the masterplan stage through BREEAM Communities 'Excellent' certification.

The One Horton Heath Masterplan is undergoing a BREEAM Communities Assessment. Step 1 of the assessment establishes the principals of the Proposed Development. All of the requirements in this stage are mandatory, and if the requirements are satisfactorily met, then the Interim Stage BREEAM Communities certificate is awarded. This is awarded on a Pass / Fail basis, dependant on the mandatory requirements being achieved.

The Proposed Development is on track to achieving the 'Excellent' rating target required by emerging planning policy. The current estimated scope is 72.5% (minimum required for an 'Excellent' rating is 70.0%).

In addition, all non-residential land uses above 500 sqm of floor space measured externally (including extensions to existing buildings) will target a building-level BREEAM New Construction (NC) 'Excellent' (or equivalent) rating. As required by emerging planning policy requirements.



Energy and Operational Carbon

The Proposed Development has a Zero Operational Carbon aspiration and a number of studies have been carried out to explore feasible options. Measures to be adopted to achieve this goal are:

- Passive design measures, energy efficient building services and smart systems will be specified;
- Grouped or individual heating systems are preferred over a site-wide heating network, due to the low density of development proposed;
- Heat pump technologies with high a high performance energy efficiency are the heating system of choice due to the rapid decarbonisation of grid electricity;
- Solar power generation will be deployed across usable roof areas across the site;
- Smart meters/sub-metering arrangements and smart energy management will be installed to enable operational monitoring of energy consumption and generation;
- Options to use the local Solar Farm, roof solar panels and battery technology (home of EV vehicles) to create a renewable power network across the development site are under investigation
- For the reduction of unregulated carbon emissions by home occupants, Home User Guides and educational initiatives will be implemented.

The Proposed Development achieves the following on-site carbon reduction using current and, indicatively, future regulatory energy assessments:

| Dwelling               | SAP 2012                                                      | SAP 10.1                                                            |
|------------------------|---------------------------------------------------------------|---------------------------------------------------------------------|
|                        | % Carbon Savings beyond Part L1A (2013) Target Emissions Rate | Indicative* % Carbon Savings beyond estimated Target Emissions Rate |
| Area- Weighted Average | 47%                                                           | 46%                                                                 |

Water Conservation

Internal water consumption in dwellings will be reduced by the installation of low flow rate sanitaryware. Recommended maximum flow rates for fittings to enable the target of less than 100 litres / person / day to be achieved will be specified.

Eastleigh Borough Council supplementary policy requirement ESD 2 requires that new dwellings incorporate rainwater or greywater recycling systems for all WC flushing and other appropriate uses unless green roofs are provided. A feasibility study found that the infrastructure requirements for this scale of water recycling would be cost prohibitive.

It is likely that water butts will be provided on houses to allow rainwater to be used for irrigation purposes. This will help to achieve Eastleigh Borough Council’s supplementary requirement ESD 3, which requires that rainwater is used to irrigate private or communal gardens.

Sustainable Materials and Embodied Carbon

The selection of materials for the Proposed Development have been informed by environmental performance (operational energy and carbon) and supply chain. At the detailing and procurement stages, consideration will be given to the following aspects:

- Applying circular economy principles in design, such as through material efficiency and construction waste reduction, durable design detailing, and designing for buildings’ lifecycle including end of life demountability;

- Designing for durability and longevity, through quality detailing and robust design of vulnerable and exposed elements;
- Selecting material with low embodied carbon; and
- Responsible sourcing of material, including legally-sourced timber and products with recognised responsible sourcing certificates.

Flood Risk and Drainage

A full range of SuDS techniques have been considered for use on the site. The Ground Investigation Report for the site concludes that “*Soakaway drainage is considered unsuitable for the site*”. There is a network of Ordinary Watercourses crossing the site. It is therefore proposed that surface water runoff is discharged to the onsite watercourses at, or below, greenfield runoff rates.

Through early discussions with the Lead Local Flood Authority and other stakeholders it was agreed that the strategic SuDS features on the site should comprise above ground storage within the green corridors that follow the onsite watercourses. Additional source control measures could be utilised within the upstream development parcels.

A SuDS ‘Management Train’ approach is being adopted to address the quality and quantity of runoff from the individual parcels, including preventative measures, source control, site control and regional control.

Waste Management

Key measures to managed site waste and reduce waste to landfill include:

- In the residential elements of the Proposed Development, appropriate space allocation to enable recyclable materials segregation form general waste, including specialist waste that are collected locally, such as food waste, garden waste, glass and batteries.
- A similar approach will be adopted for non-residential buildings, for which the provision of dedicated storage facilities for a building’s operational-related recyclable waste streams, so that this waste is diverted from landfill or incineration.
- During construction, site waste management plans will be used to set targets and monitor against these targets to ensure that waste produced as a result of the construction process is monitored and managed. At least 90% of non-hazardous waste generated during construction should be diverted from landfill (by weight or volume). Where space allows on site, waste materials should be segregated to improve recycling rates and avoid waste being sent to landfill.

Transport

The Concept Masterplan and Access Parameter Plan highlights the opportunities for users of the development to access/exit the site via sustainable modes including walking and cycling. There are several existing PROW routes which route through the site and also connect the site with the wider pedestrian/cyclist infrastructure.

The development would be supported by an extensive electric vehicle charging and car club strategy which includes passive and active spaces as such that when residents in particular wish to charge a vehicle at home the associated infrastructure is already in place to support the construction of a charging point.

The Concept Masterplan has also been developed with consideration to local bus operators with the main travel corridor carriageways measuring 6.5m in width to accommodate buses. The development is also likely to secure a



bus route through the proposed development with support of a financial contribution to encourage bus travel which is likely to involve re-routing of existing services, such as the Bluestar 3.

To support the outline planning application a Framework Travel Plan has been prepared which seeks to facilitate and promote the use of sustainable transport modes, by providing a package of soft measures, supported by investment in infrastructure.

The Framework Travel Plan is likely to be secured through the Section 106 agreement or planning conditions, with more detailed Full Travel Plans provided for each subsequent Reserved Matters planning application which provides more details on the layout specifics and end users.

### Ecology

A wide range of additional ecological mitigation and enhancement measures will provide additional ecological functionality of habitats in the wider local area and these measures will be implemented as part of the Proposed Development. These are summarised in the EIA Section 10.7 and Table 10.11 and illustrated on the Integrated / Embedded Landscape, Visual, Ecological Mitigation drawing location in Appendix 10.12 of this chapter of the EIA. This assessment concludes that there will be no likely significant negative effects on biodiversity as a result of the construction and operation of the wider OPA and Link Road.

During construction Retained hedgerows will be protected during construction by the implementation of a Construction Environmental management Plan (CEMP) including measures to prevent direct damage (via pollution, impacts etc.) and indirect impacts (such as changes in hydrology).

The habitats to be lost are largely of low ecological value and the loss of higher value habitat has been minimise where impacts are unavoidable. Particular attention has been given to any activities with the potential to affect the watercourses and water quality for designated sites for nature.

A specification has been agreed with key statutory consultees (including Natural England and the Environment Agency) to design in suitable ecological buffers has been delivered throughout the masterplan and these measures are designed to absorb the impact of the presence of the additional residents to protect the valuable habitats on, and adjacent to the site.

### Health and Wellbeing

A number of measures are proposed to safeguard the health and wellbeing of residents of the Proposed Development with respect to thermal comfort, air quality and acoustic quality.

- Thermal comfort: Measures will be in place to mitigate the risk of overheating. This includes openable windows, dual aspect openings wherever possible, appropriate glazing areas and/or solar control glass and shading.
- Air quality: The proposals exclude natural gas combustion, or other burning appliances used for heating systems. In addition, the amount of pollution released into indoor air will be reduced by specifying building materials, finishes and furnishings with low pollutant content.
- Acoustic quality: Building locations and orientations within the masterplan will be informed by the noise impact assessment to ensure that the effects of external noise on the building occupants are minimised and potential issues are reduced.

Indoor ambient noise levels in buildings and, where appropriate, external noise levels, will achieve noise levels from environmental noise sources 5dB (or a meaningful and reasonable dB) below targets set out in BS8233 or other appropriate good practice standards or regulations. The development will aim to achieve a rating noise level difference no greater than the background noise level as measured in the locality of the nearest or most exposed noise-sensitive area from all fixed installations or sources of an industrial nature in commercial premises within the Proposed Development.

### Impacts of Construction

The following measures will be adopted during construction to ensure that the sites are managed in an environmentally and socially considerate, responsible and accountable manner.

- The principal contractor will need to demonstrate sound environmental management practices and consideration for neighbours across their activities on-site.
- Site related energy, water and transport impacts will need to be monitored and reported to ensure ongoing compliance during the Construction, Handover and Close Out stages and to improve awareness and understanding for future projects.



1. Introduction

Hilson Moran was appointed by the One Horton Heath Project Team at Eastleigh Borough Council (the ‘Applicant’) to prepare a Sustainability and Energy Statements for the Outline Planning Application of the One Horton Heath Project.

The application is ), a phased mixed-use development comprising:

- Up to 2,500 residential units in total;
- A primary Local Centre (and supporting secondary local centres) comprising mixed-use Residential/retail/leisure/community/employment/day nursery/food establishment uses;
- Office, commercial and industrial uses;
- A Primary School;
- Public open space including formal sports facilities and informal provisions;
- Relocation of solar panels;
- Key infrastructure and utilities provision including new roads, footpaths and cyclepaths and improvements to the existing road junction at Fir Tree Lane/ Burnetts Lane; and
- Ecological, landscape, site preparation and demolition works (All Matters Reserved Except Access). This application is subject to Environmental Impact Assessment.

The Tables 1 and 2 outline the indicative accommodation schedule and land uses for the One Horton Heath Masterplan. These are subject to change:

| Type       | Percentage | Number | Open Market | Private Rented | Affordable | Retirement (Affordable) |
|------------|------------|--------|-------------|----------------|------------|-------------------------|
| 1B2P Flat  | 14.87      | 372    | 100         | 125            | 77         | 69                      |
| 2B4P Flat  | 24.02      | 601    | 100         | 125            | 169        | 206                     |
| 2B4P House | 23.86      | 597    | 300         | 125            | 172        | -                       |
| 3B6P House | 31.25      | 782    | 350         | 250            | 182        | -                       |
| 4B8P House | 6.00       | 150    | 150         | -              | -          | -                       |
| Total      |            | 2,500  | 1,000       | 625            | 600        | 275                     |
|            |            |        | 40%         | 25%            |            | 35%                     |

Table 1 Indicative residential mix for One Horton Heath

| Land use             | Use Class    | Illustrative floorspace (sqm) |
|----------------------|--------------|-------------------------------|
| Office               | B1           | 9,500                         |
| Industrial / Storage | B2/B8        | 9,500                         |
| Community Building   | F.2          | 500                           |
| Early Years Nursery  | E(f)         | 500                           |
| Retail               | E(a) and (c) | 2,499                         |

Table 2 Indicative non-residential uses and areas for One Horton Heath

1.1. Background

The masterplan site currently benefits from two extant planning consents, reference X/19/86303 and X/19/86475, which permit, inter alia, the construction of up to 1,400 houses across the two sites and a new link road from Bubb Lane through to Allington Lane.

Since the Council resolved to grant planning consent for both of the above in 2015 and 2016 respectively, each stalled due to protracted viability negotiations. The promoters held that the infrastructure burdens on the site; most notably the requirement for a secondary and primary school to be constructed on the site and for major on and off-site highways infrastructure rendered the site unviable when coupled with the other financial contributions that were requested from development.

The Council intervened because planned development at Horton Heath was not going to come forward within an acceptable timescale or manner. They stepped in to safeguard delivery of the new link road, community infrastructure and housing delivery in line with Local Plan requirements and Council strategy.

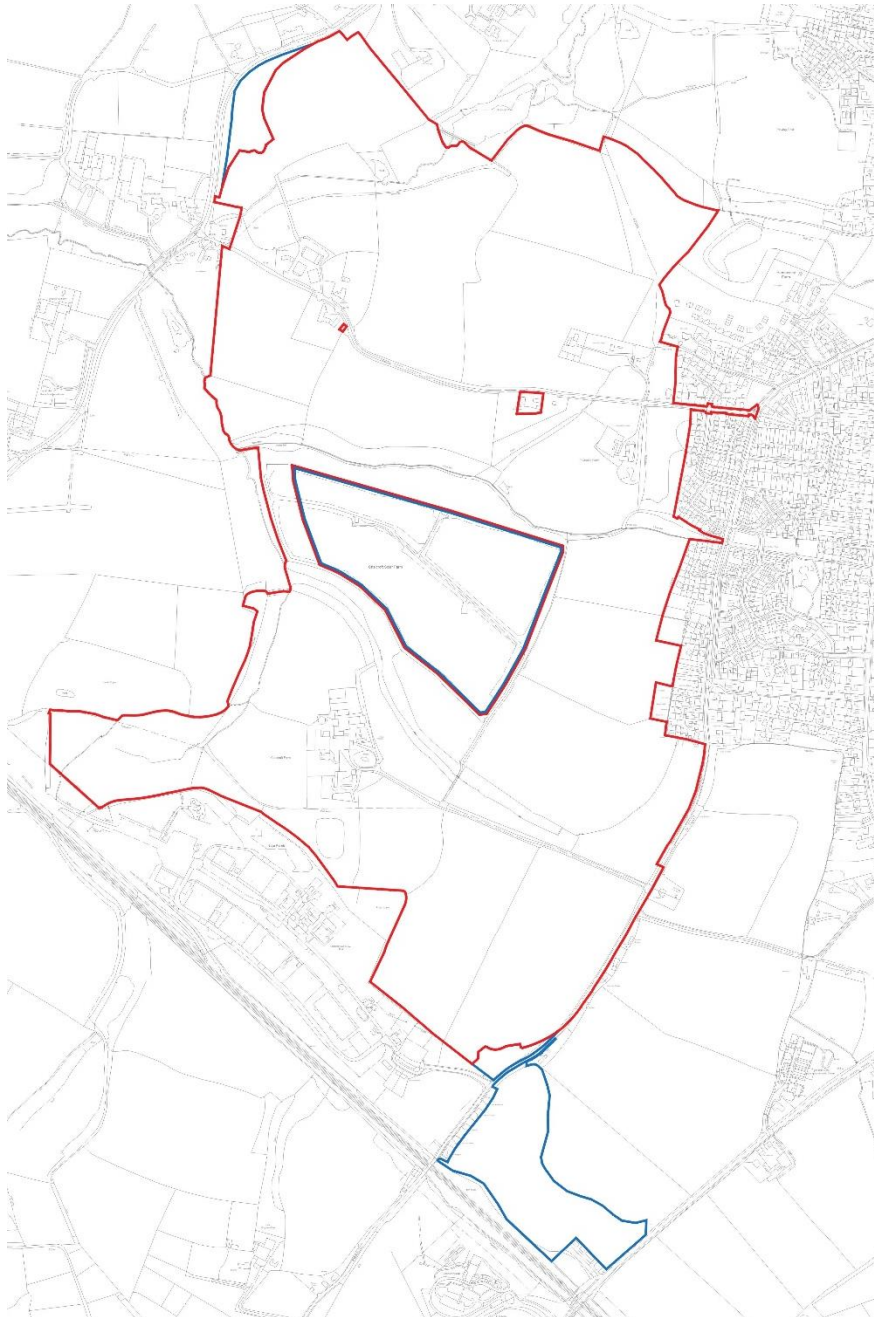


Figure 1 One Horton Heath masterplan

## 1.2. The Vision

A project brief was produced in July 2019 (version 1) which comprises the Council's vision, aims, objectives and quantified development outputs. The vision is defined as follows:

*"Creating a vibrant and welcoming place integral to the community of Horton Heath both now and into the future.*

*People are at the centre of our vision – the community that already live and work in Horton Heath, and the people who will live and work within the village in years to come. This project will create an exemplar development, which is integral to Horton Heath engendering pride and a strong sense of place. The local area, and by extension the Borough, will become Greener, Healthier, more Prosperous with a more diverse supply of Housing as a direct result of this project."*

In relation to the scope of this feasibility study, the vision for creating a greener borough involves proactively planning to minimise the impact of the development on the existing community and environment during construction and throughout its lifetime.

The sustainability aspirations outlined in this briefing document include:

- Delivering a development which is highly energy efficient, with buildings that have minimal energy demand and net zero carbon emissions
- Delivering a development which is not reliant on fossil fuels to meet its heating or energy demands
- Deliver a development which maximises opportunities for sustainable generation of energy on-site
- Delivering an exemplar scheme in terms of water consumption, actively seeking innovative means to reduce consumption of mains potable water
- Deliver high quality and multi-functional green infrastructure which serves the needs of the development and mitigates for its impacts
- Plan waste storage and collection arrangements such that domestic refuse bins are generally not visible from public areas, and to encourage and allow greater levels of recycling than is achieved across the borough as a whole
- Proactively seek ways to minimise the impacts of construction on the existing community, highway network and the environment.

## 1.3. Purpose

The document describes the Proposed Development's sustainability and energy credentials in the context of the following local planning policy and guidance:

- Eastleigh Local Plan 2001-2011
- Draft Eastleigh Borough Local Plan (2016-2036)
- Eastleigh Borough Council SPD Environmentally Sustainable Development (March 2009)

## 1.4. Scope

The scope includes the Proposed Development as defined in this document and by the red line boundary as shown in Figure 1: One Horton Heath Masterplan.



#### **1.5. Relation to other documents**

Other supporting documents that relate to this report include:

- Environmental Impact Assessment (Co-ordinated by Savills)
- Design & Access Statement (produced by Clague Architects);
- Acoustic Survey Report (produced by Hydrock);
- Air Quality Impact Assessment & Air Quality Neutral Assessment (produced by Hydrock);
- Flood Risk Assessment (produced by Odyssey);
- Ecology Strategy (produced by Johns Associates)
- Transport Statement (produced by Paul Basham Associates);
- Waste Management Strategy (produced by Savills); and

## 2. Policy

### 2.1. Energy regulations and planning policy changes

This section summarises key changes that are likely to have an implication on the Horton Heath Project.

#### 2.1.1. Climate Change Act 2008 (CC)

The UK government is committed to sustainable growth and the green agenda. This is demonstrated through various legally binding targets and standards, from which the Climate Change Act 2008 (CCA) is considered one of the most important. The Act mandates a 100% reduction in CO<sub>2</sub> from the 1990 levels, which are used as a baseline, by 2050.

The Zero Carbon Buildings policy forms part of Government's wider strategy to achieving the CCA target, while at the same time assists in tackling other important issues including energy security and fuel poverty

#### 2.1.2. Government Zero Carbon Policy

The policy, as set out today, requires all new homes from 2016 to mitigate, through various measures, all the carbon emissions produced on-site as a result of the regulated energy use. This includes energy used to provide space heating and cooling, hot water and fixed lighting, as outlined in Part L1A of the Building Regulations. Emissions resulting from cooking and 'plug-in' appliances such as computers and televisions are not being addressed as part of this policy.

This policy is well aligned with European Policy, specifically the Energy Performance of Buildings Directive (recast) which requires all new buildings to be nearly Zero Energy Buildings from 2020 (nZEB), as described in Article 2 of the EPBD.

There are three core requirements which must all be met for a home to qualify as zero carbon:

- The fabric performance must, at a minimum, comply with the defined standard known as the Fabric Energy Efficiency Standard (FEES)<sup>1</sup>
- Any CO<sub>2</sub> emissions that remain after consideration of heating, cooling, fixed lighting and ventilation, must be less than or equal to the Carbon Compliance limit established for zero carbon homes, and
- Any remaining CO<sub>2</sub> emissions, from regulated energy sources (after requirements 1 and 2 have been met), must be reduced to zero.

Requirement 3 may be met by either deliberately 'over performing' on requirements 1 and 2 so that there are no remaining emissions, or offset through off-site measures.

#### 2.1.3. World Green Building Council

The World Green Building Council sets the definition as:

- A net zero carbon building is a building that is highly energy efficient and fully powered from on-site and/or off-site renewable energy sources.

In April 2019 the UK Green Building Council (UKGBC) launched a framework definition for net zero carbon buildings, developed by an industry task group and supported by trade associations,

professional institutes and non-profit organisations. The definition framework includes whole life embodied and operational carbon emissions. *This scope of this feasibility study focuses on the operational energy element of net zero carbon, but follows the approach defined by the UKGBC. A summary is included in section 3.*

#### 2.1.4. Standard Assessment Procedure (SAP)

The Government's Standard Assessment Procedure (SAP) is used for assessing the energy performance of dwellings.

The calculation is based on the energy balance taking into account a range of factors that contribute to energy efficiency<sup>2</sup>:

- Materials used for construction of the dwelling
- Thermal insulation of the building fabric
- Air leakage ventilation characteristics of the dwelling, and ventilation equipment
- Efficiency and control of the heating system(s)
- Solar gains through openings of the dwelling
- The fuel used to provide space and water heating, ventilation and lighting
- Energy for space cooling, if applicable
- Renewable energy technologies

The calculation is independent of factors related to the individual characteristics of the household occupying the dwelling when the rating is calculated, for example:

- Household size and composition;
- Ownership and efficiency of particular domestic electrical appliances;
- Individual heating patterns and temperatures.

The current edition is SAP 10.0.

##### 2.1.4.1. SAP 10.0

Following a consultation process, a new version (SAP 10.0) has been published to allow comparison to SAP 2012 and an understanding of the methodological changes made ahead of any future official use. Official adoption will coincide with the Building Regulations 2020 update (expected during 2020 but delayed, it is not currently known when this update will occur).

Changes between SAP 2012 and SAP 10.0 include the following key items that are most relevant to this exercise:

1. CO<sub>2</sub> emission factors have been updated using the latest data available, indicating a significant reduction in the carbon intensity of grid electricity (see *Figure 3*)
2. Default distribution loss factors (DLF) associated with heat networks not entered in the Product Characteristics Database (PCDB) have been increased.
3. SAP 2012 used a fixed assumption for the proportion of electrical energy generated by Photovoltaic (PV) systems which is consumed within the dwelling. This has been replaced by a formula which also includes recognition of the presence of battery storage.

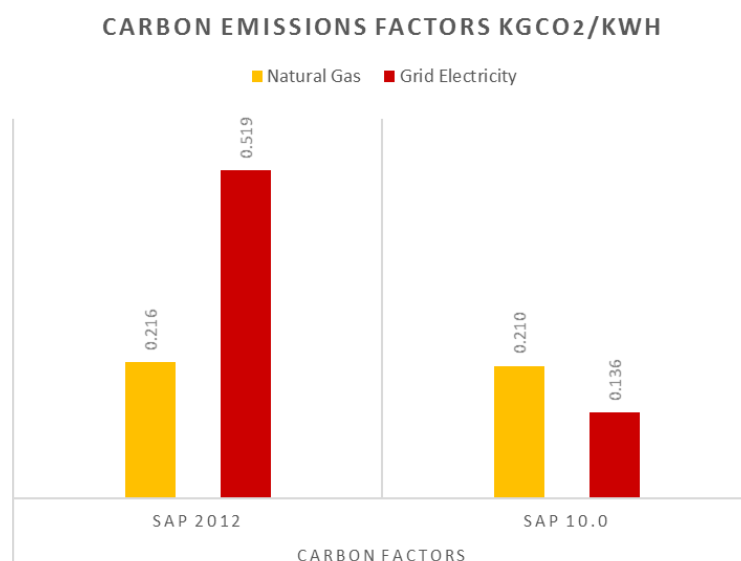
<sup>1</sup> Note The Part L of the Building Regulations 2020 consultation document proposes the removal of fabric efficiency rating.

<sup>2</sup> Source: Standard Assessment Procedure (SAP 10) BRE group <https://www.bregroup.com/sap/sap10/> <last visited 3.6.2019>

4. Solar gains in summer take account of blinds or curtains that can be drawn to reduce solar gain, and overhangs.
5. The treatment of heat losses from heat interface units (used with heat networks) has been adjusted and is proposed as 1.46 kWh/day.

#### 2.1.4.2. SAP 10.1

The Department for Business, Energy & Industry Strategy (BEIS) issued SAP version 10.1 in October 2019 alongside the Building Regulations Part L consultation documents, and SAP 10.2 will be published alongside the adopted Part L documents (expected March/April 2020 – see section 2.2).



**Figure 2 Comparison of SAP 2012 to SAP 10.1 carbon factors**

SAP 10.1 includes the following changes:

- Fuel prices, CO<sub>2</sub> emissions and primary energy factors have been updated;
- The monthly variation of CO<sub>2</sub> and primary energy factors is now taken into consideration;
- The calculation of hot water consumption has been adjusted to take account of the shower flow rate;
- The calculation of lighting energy has been updated to allow for the lighting efficacy and amount;
- The treatment of distribution loss factors associated with communal heating networks has been revised;
- The air flow rates associated with chimneys and flues have been updated;
- The assessment of summer internal temperatures has been refined;
- The treatment of mechanical ventilation system heat recovery and aerodynamic performance has been revised;
- Additional flow temperature options have been provided for heat pumps and condensing boilers;
- The self-use factor for electricity generated by Photovoltaic (PV) systems has been revised and allows for the effects of battery storage;

- The ability to include solar thermal space heating has been added;
- The assumed standard heating pattern has been adjusted;
- Provision has been made for heat loss data for heat interface units (for heat networks) to come from the PCDB;
- The reference building characteristics have been updated.

#### 2.1.5. SAP 10.2

The following items are under consideration for SAP 10.2, as indicated by BEIS:

- Consideration of the use of marginal carbon emission/ primary energy factors (incremental changes in carbon emissions as a result of a change in demand);
- Consideration of introducing a different 'in-use factor' for final as-built SAP assessments where compliant the heat network is compliant with CIBSE Code of Practice 1<sup>3</sup>;
- Review of the £120 standing charge in communal networks;
- Consideration of whether any changes are required for how SAP treats future heat loads.

#### 2.1.6. Building Regulations Part L 2010

The Approved Document L 2010 (2013 edition incorporating 2016 amendments) sets out elemental minimum energy and carbon dioxide emissions performance standards for all elements of the built environment along with assessment methodologies necessary to confirm compliance within new build dwellings.

The Part L1A 2013 specification sets a provision for a 6% reduction in CO<sub>2</sub> emissions from Part L1A 2010. The document set out new limiting U-Values for improved fabric performance and introduced design submissions as well as built submissions.

- Regulation 24 and 25: Set out the minimum energy performance requirements against a target CO<sub>2</sub> emission rate that shall not be exceeded. The notional building used to determine carbon dioxide and fabric efficiency targets is the same size and shape as the actual dwelling, constructed to concurrent specification.
- Regulation 26A: Requires new dwellings to achieve or better a fabric efficiency target in addition to the carbon dioxide target.

The 2016 amendments include no technical changes.

#### 2.1.7. Building Regulations 2020 update

On 1<sup>st</sup> October 2019 the government issued the first consultation documents for the revision of Part L and Part F of the Building Regulations. These documents set out the proposals on how the regulations will be amended to achieve the improvements required to set the UK on the track to meet the net zero greenhouse gas emissions by 2050. The updated Part L and Part F, as well as overheating risk mitigation regulations are expected to come into force in mid to late 2020.

The main performance metrics against which buildings must comply is proposed to become as below:

- Primary Energy target (new)
- CO<sub>2</sub> emissions target (existing)

<sup>3</sup> Heat Networks: Code of Practice for the UK is the first Code of Practice to be published by CIBSE. It has been produced as a joint project between CIBSE and the Association for Decentralised Energy (ADE) and was launched on 8 July 2015

- Householder affordability rating (new)
- Minimum standards for fabric and fixed building services (existing)

The consultation document proposes that the baseline or notional building standard against which CO<sub>2</sub> emissions reduction is measured is improved by 31%, including an increase in fabric standards to a degree that low-carbon heating and/or renewables are encouraged.

### 2.1.8. Fossil fuel heating ban

During the 2019 Spring Statement, the Chancellor mandated the end of fossil fuel heating for new homes from 2025 and a new Future Homes Standard, the details of which are currently unknown, but will likely include measures to meet the national zero carbon target (by 2050, announced on 12<sup>th</sup> June 2019), improve considerations for wellbeing in homes, meet the needs of an ageing population and use smart technology to manage energy generation, storage and consumption, fuel costs and wellbeing.

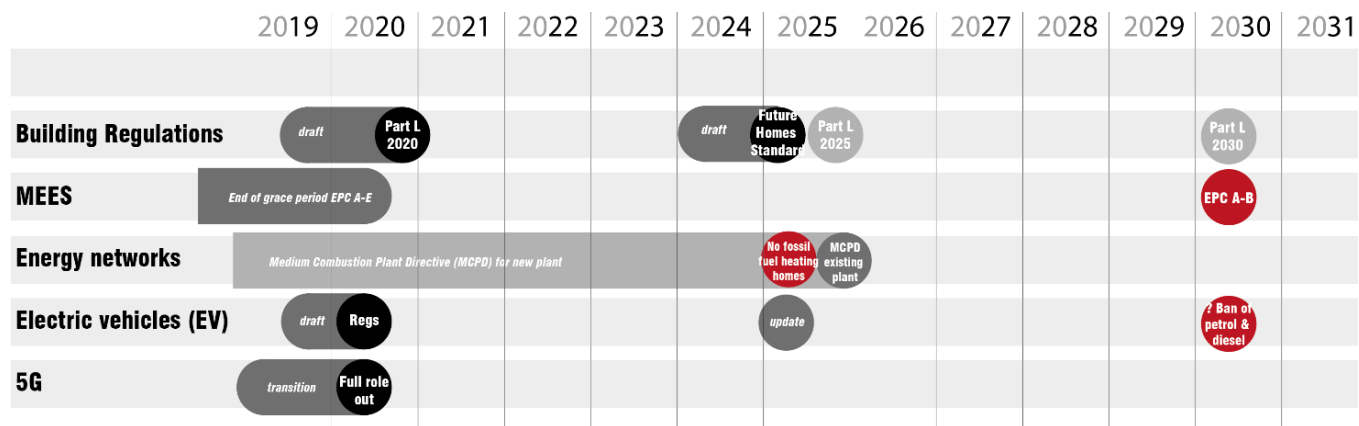


Figure 3 Energy and carbon policy changes timeline

## 2.2. Building Regulations Part G 2010

The Approved Document G 2010 (2015 edition with 2016 amendments) requires, in terms of water efficiency in dwellings, that the potential consumption of wholesome water by persons occupying a new dwelling must not exceed 125 litres per person per day.

Where the planning permission under which the building work is carried out makes it a condition that 110 litres per person per day is complied with, this requirement superseded the previous one.

*With respect to Eastleigh Borough Council, the adopted Local Plan does not quantify a water efficiency target. The emerging Local Plan recommends a predicted mains internal water consumption of no more than 110 litres/day for all new residential development. The proposed new residential and non-residential development (should aim to achieve a predicted mains internal water consumption of no more than 100 litres/person/day)*

## 2.3. Local Plan

### 2.3.1. Local Plan (2001-2011)

The Council adopted the Eastleigh Borough Local Plan Review (2001-2011) on 25 May 2006. Chapter 3 of the Local Plan: Environmental Sustainability includes the following policy requirements that are relevant to this Sustainability Statement:

### • Policy 26.NC Protection of Wildlife Network

Development proposals will be required to include measures to enhance the value of features and habitats of nature conservation importance where reasonable opportunities exist in connection with the development.

### • Policy 28.ES Waste Collection & Storage

Provision should be made in the design and layout of housing developments for the storage and collection of domestic waste and recyclable materials. These facilities must be sited in locations that would not give rise to disturbance to the occupiers of residential property.

### • Policy 34.ES Reduction of Greenhouse Gases

Planning permission will only be granted for proposals which make an appropriate contribution towards the Government's target to reduce levels of carbon dioxide and other greenhouse gases in the atmosphere by:

- Ensuring the use of the most sustainable construction materials and construction methods;
- Minimising the energy demands associated with the occupation of the development by using energy efficient equipment and incorporating high levels of insulation; and
- Maximising the proportion of energy that is generated from renewable sources.

### • Renewable Energy and the Efficient Use of Resources

The Local Plan refers to the Government policy on renewable energy, Department of Energy Paper 55 – "Renewable Energy in the UK: The Way Forward", which requires that each local authority consider the contribution their area can make to meeting need for renewable energy resources on a local, regional and national basis.

### • Policy 36.ES Lighting

Permission will be refused for proposals which do not incorporate well designed lighting, where lighting is necessary. Lighting should be concentrated in those areas where it is required and spillage, either horizontally or vertically, should be minimised. The size and design of the lighting columns should not detract from the character of the locality.

### • Policy 37.ES Energy Efficiency

Permission will be granted for development, provided the Borough Council is satisfied that where appropriate consideration has been given to all the following issues:

- The need to maximise energy efficiency, including opportunities for passive solar gain, in the layout, siting and landscaping of development;
- The need to reduce water consumption;
- The need to minimise waste during construction and in terms of materials;
- Opportunities for linking the development to renewable energy schemes; and
- Opportunities to extend the useful life of buildings and ensure that they are adaptable to other uses.

- **Policy 38.ES Renewable Energy**

Proposals for renewable energy schemes will be permitted provided they meet all the following criteria:

- They are appropriately designed, sited and located and do not cause unacceptable visual intrusion;
- The benefits of the scheme for the environment, economy and local community outweigh any harmful effects;
- They make use of the best available technology; and
- They are accompanied by a thorough analysis of the scheme which satisfactorily demonstrates their viability.

- **Policy 43.ES Areas at Risk of Flooding**

Development will only be permitted within areas at risk of flooding as shown on the proposals map where the following criteria are met:

- it is demonstrated that the site is adequately defended from flooding, or
- a flood risk assessment satisfactorily demonstrates that measures incorporated into the scheme would prevent either life being endangered or an unacceptable likelihood of damage to property; and
- it does not harm the integrity or maintenance of a flood defence structure, or inhibit the maintenance of a watercourse for the purpose of minimising flood risk, or increase flood risks elsewhere.

- **Policy 45.ES Sustainable Drainage**

Development proposals must incorporate adequate measures for the disposal of surface water from the development including, where practicable, source control techniques and sustainable drainage systems, incorporating defined arrangements for the future maintenance of the system.

### 2.3.2. Local Plan (2011-2029)

A previous draft Local Plan covering the period 2011-2029 was submitted for formal examination in 2014. Following hearings held 10-13 November 2014, the Government's Planning Inspector issued his Preliminary Conclusions. He concluded that the plan was not sound because it did not provide sufficient housing, with particular concerns about affordable housing provision. He recommended the Council produce a new Local Plan. As a result of these Preliminary Conclusions, the examination was concluded and work started on the new Local Plan.

### 2.3.3. Local Plan (2016-2036) – Draft

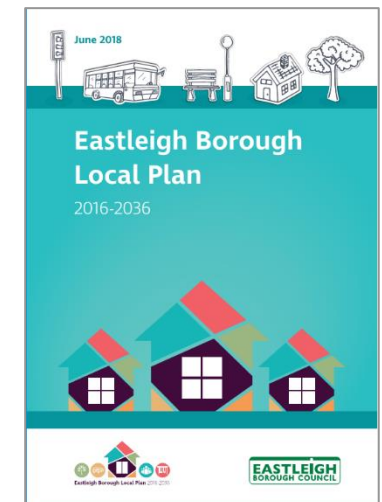
Eastleigh Borough Council prepared a new local plan and published it for public consultation in January 2020

The Local Plan requires that:

- All new build residential development must achieve at the time a Reserved Matters or Full Planning Application is submitted:
  - A 19% improvement in predicted carbon emissions, compared with the building regulations standard current at the time, through increased energy efficiency of the building fabric, unless this is superseded by an updated building regulations requirement equivalent to 'zero carbon homes'; and
  - A predicted mains internal water consumption of no more than 110 litres/person/day.
- All non-residential and multi-residential development above 500 sqm of floor space measured externally (including extensions to existing buildings) must achieve:
  - BREEAM 'Excellent' (or equivalent) or BREEAM 'Very Good' plus 'Passivhaus' certification including a 15% improvement in predicted carbon emissions, compared with the building regulations current at the time, through low or zero carbon energy generation on site or in a Borough location agreed by the Council.
- All larger developments (above 150 dwellings or 10,000sq.m of floor space) must:
  - Address sustainable development issues at the masterplan stage through BREEAM Communities 'Excellent' certification commencing at the masterplanning or outline planning stage in accordance with the latest BREEAM Communities Technical Manual or any subsequent legislation or technical guidance; and
  - Fund post occupancy evaluation studies.

In addition to the above, all new residential development, and non-residential and multi-residential development above 500sqm of floor space measured externally (including extensions and conversions to existing buildings) and external spaces within the curtilage serving developments of this size should where practical and viable:

- Incorporate energy-efficient passive design principles, the best use of natural daylight and natural ventilation systems wherever possible;
- Connect to any existing near or adjacent low carbon local energy network unless this is proved unviable
- Use recycled, low embodied carbon, low environmental impact and locally sourced materials in construction where possible
- Be designed with sufficient flexibility to enable the life of the building to be extended by re-use for other purposes where feasible;
- Aim to deliver at least 1% of all residential units which achieve full 'Passivhaus' certification.



#### 2.3.4. Eastleigh Borough Council SPD on Environmentally Sustainable Development

This document was issued by the Council in 2009, and despite the Deregulation Act of March 2015 which meant that the requirement to certify new dwellings against the Code for Sustainable Homes could no longer be required, the policies ESD2-ESD8 of this document still apply.

**ESD 2 Rainwater harvesting and Greywater recycling;** requires that all possible ways of recycling water have been looked at and incorporated into new buildings (unless green roofs are provided).

**ESD 3 External water consumption;** Water for irrigating private or communal gardens is to come from rainwater.

**ESD 4 Reducing surface water runoff;** Proof is required that storm water will not drain from the development too rapidly

**ESD 5 Passive solar heat gain;** Buildings should make use of winter solar gain to reduce heating requirements (while avoiding excessive summer heat gain).

**ESD 6 Carbon Dioxide reduction;** At least 10% of the energy used should come from local green energy systems

**ESD 7 Green infrastructure;** At least 80% of new roof area should be green roof (unless rainwater harvesting is provided).

**ESD 8 Trees;** A minimum number of new trees should be planted on street and in gardens

### 3. BREEAM Communities

The BREEAM certification scheme is designed to encourage, assess and reward environmental, social and economic sustainability throughout the built environment.

The draft Local Plan (2016-2036) requires larger developments (above 150 dwellings or 10,000sq.m of floor space) to address sustainable development issues at the masterplan stage through BREEAM Communities 'Excellent' certification. The assessment process has been initiated for the proposed development at Horton Heath.

The BREEAM Communities certification process assesses the sustainability of large scale developments at the masterplan level. This includes three steps:

- Step 1: Establishing the Principals
- Step 2: Determining the Layout
- Step 3: Designing the details

The first part of the assessment process requires a number of the mandatory elements in Step 1 to be achieved. Once this stage is passed and as the design progresses, the proposed scheme can go on to secure credits in Steps 2 and 3 of the assessment and work towards the targeted rating.

#### 3.1. Step 1 Establishing the Principals

The first stage in a BREEAM 2012 Communities assessment is called Step 1 and this establishes the principals of the proposed development. All of the requirements in this stage are mandatory, and if the requirements are satisfactorily met, then the Interim Stage BREEAM Communities certificate is awarded. This is awarded on a Pass / Fail basis, dependant on the mandatory requirements being achieved.

Consultation plays an important part in the BREEAM Communities assessment process, and there are a number of issues within the assessment which require some form of consultation.

##### 3.1.1. Phased Projects

Phased projects can be assessed in two ways by BREEAM Communities. Each phase can either be assessed as a separate BREEAM Communities assessment, or the whole site can be assessed to achieve the Interim stage certification, and then assess each separate phase at the appropriate time to achieve the final certification.

For One Horton Heath the second approach was recommended due to the proposed programme and is the basis of Hilson Moran's scope of works.

### 3.1.2. Mandatory Requirements

The majority of the *mandatory* requirements in BREEAM Communities are in Step 1 of the assessment. The table below shows which of the credits have mandatory requirements associated with them.

| Step   | Credit Identifier | Assessment Issue                    | Criteria | Responsibility                        |
|--------|-------------------|-------------------------------------|----------|---------------------------------------|
| Step 1 | GO 01             | Consultation Plan                   | 1-3      | Newgate Communications Ltd            |
|        | SE 01             | Economic Impact                     | 1        | Eastleigh Borough Council             |
|        | SE 02             | Demographic Needs & Priorities      | 1-2      | Eastleigh Borough Council             |
|        | SE 03             | Flood Risk Assessment               | 1-3      | PFA Consulting Ltd / Odessey          |
|        | SE 04             | Noise Pollution                     | 1        | Hydrock Consultants Ltd.              |
|        | RE 01             | Energy Strategy                     | 1        | Hilson Moran                          |
|        | RE 02             | Existing Buildings & Infrastructure | 1-2      | Hilson Moran                          |
|        | RE 03             | Water Strategy                      | 1-2      | Hilson Moran                          |
|        | LE 01             | Ecology Strategy                    | 1-6      | Johns Associates Ltd.                 |
|        | LE 02             | Land Use                            | 1-2      | Thrive Architects & Clague Architects |
|        | TM 01             | Transport Assessment                | 1-3      | Paul Basham Associates                |
| Step 2 | GO 02             | Consultation & Engagement           | 1-3      | Newgate Communications Ltd            |
| Step 3 | None              |                                     |          |                                       |

The first step of a BREEAM Communities Assessment looks at the effect the proposed development will have on the wider community, and the constraints and opportunities which relate to sustainability on the site.

Step 1 brings together processes and outputs that are often considered as standard practise as part of the master-planning process and required as part of the Environmental Impact Assessment. Therefore, there is unlikely to be an additional burden of information required in order to achieve the mandatory assessment criteria set out in this step of BREEAM Communities.

The scoring sheet which shows the current proposed method to achieve the required BREEAM communities Excellent rating is included in Appendix A of this statement.

### 3.2. BREEAM for non-residential buildings

The emerging Local Plan (2016-2036) requires all *non-residential and multi-residential* development above 500 sqm of floor space measured externally (including extensions to existing buildings) to achieve building-level BREEAM New Construction (NC) 'Excellent' (or equivalent) or BREEAM 'Very Good' ratings. Note that any retained buildings would be assessed under the BREEAM Refurbishment and Fit-out (RFO) scheme. BREEAM assessments at a building level would take place between RIBA Work Stages 1 'Preparation and Brief' and Stage 6 'Handover and Close-out' of the building design and construction, including commitments for post-occupancy actions. Evidence is assessed during design (typically at the end of RIBA Stage 4 'Technical Design' and at Practical Completion.

## 4. Energy Statement

### 4.1. Background

In January 2020, Hilson Moran produced a 'Net Zero Carbon feasibility study' for the Horton Heath Project. The following measures form part of the energy strategy as a direct outcome of this study:

- Passive design measures, energy efficiency and smart systems requirements will form part of detailed and technical requirements to be delivered across the One Horton Heath masterplan;
- Due to the low development density, grouped or individual heating systems are more viable than a centralised heating solution;
- Community energy heating systems will be considered for higher density areas of the Project (e.g. shared central heating in apartment blocks);
- Heat pump technologies with a high performance energy efficiency are the heating system of choice due to the rapid decarbonisation of grid electricity;
- Solar power generation will be deployed across usable roof areas across the site;
- Smart meters/sub-metering arrangements and smart energy management will be installed to enable operational monitoring of energy consumption and generation;

The type of heating system was informed by the outcome of a separate study, 'Heat and Energy Optimisation Strategy' (Hilson Moran, July 2020) that considered low and zero carbon options in the context of current and emerging policy, the development's Project Brief and the conclusions of the feasibility study above. The options assessed include building fabric, central heating and heat emitter variants. The energy assessments used both current and emerging carbon intensity figures i.e. using SAP 2012 and SAP 10.1 carbon factors for electricity (and for gas in a baseline scenario).

For the reduction of unregulated carbon emissions by home occupants, Home User Guides and educational initiatives will be implemented.

Eastleigh Borough Council (EBC) is also exploring opportunities to use the local Solar Farm, roof solar panels and battery technology (home of EV vehicles) to own and/or manage a renewable power network across the development site.

### 4.2. Residential Energy Assessments

The assessments have been based on an illustrative sample of house type layouts issued by Clague Architects, as presented in the DAS / Design Code. The illustrative sample includes a range comprising flats and houses at varying degrees of exposure and for every orientation.

A total of 9 dwellings and 546 fabric and system combinations were modelled representing a full range of thermal exposure and orientations based on a size range represented by 3 typologies, namely Flat 1B2P ground, mid and upper floors, and Houses A1, C1, and H1 end and mid-terrace. This amounts to a representative sample of 36 dwellings.

#### 4.2.1. Building fabric performance

The following target fabric standards are proposed for One Horton Heath:

**Table 3 Proposed building fabric thermal performance for One Horton Heath residences**

| Building fabric                                             | One Horton Heath target fabric thermal performance |
|-------------------------------------------------------------|----------------------------------------------------|
| External wall, U-value W/m <sup>2</sup> K                   | 0.17                                               |
| Party wall, U-value W/m <sup>2</sup> K                      | 0.00*                                              |
| Ground floor and exposed floors, U-value W/m <sup>2</sup> K | 0.13                                               |
| Roof and exposed ceiling, U-value W/m <sup>2</sup> K        | 0.13                                               |
| Windows including frames, U-value W/m <sup>2</sup> K        | 1.10                                               |
| Doors including frames, U-value W/m <sup>2</sup> K          | 1.10                                               |
| Thermal bridging (calculated $\psi$ -value)                 | 0.03                                               |
| Glass g-value                                               | 0.43*                                              |
| Air-tightness, m <sup>3</sup> /h/m <sup>2</sup> @ 50Pa      | 4.00                                               |

\*A party wall U-value of 0.00 W/m<sup>2</sup>K represents either of the following constructions:

- Solid (including structurally insulated panel); and
- Fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements.

As the effective filling and sealing of cavity party walls has such a large effect on energy efficiency, it is strongly recommended that any cavity party wall is effectively filled and sealed. Care should be taken to ensure that the requirements of Building Regulations Part E regarding sound transmission between dwellings are not affected as a result of this.

**\*\*Glazing:** The g-value (solar control) can be varied with orientation. South-facing windows are more sensitive to achieving the right balance between beneficial passive solar gains in winter and preventing overheating summer, particularly in south-facing flats. In these cases, g-values <0.40 starts to increase heating demand in winter and should therefore be avoided. The models assume a minimum g-value of 0.43. In south facing

**Thermal bridging:** Thermal bridging is an area or a component of an object has higher thermal conductivity than the surrounding material and so creates a path of least resistance for the heat. The larger the thermal bridge value the more conductive it is and so increasing the amount of heating needed. If the thermal bridging is not carefully calculated, condensation and therefore mould can form. Table 3 below shows the elemental  $\psi$  (psi) values (measured in W/mK) targets for One Horton Heath. The default can be replaced where Accredited Construction Details are used or where the  $\psi$ -values are individually calculated for every junction by a specialist consultant.

**Table 4 Comparison of elemental thermal bridging values with default values**

| Junction   | Default $\psi$ value | One Horton Heath targets |
|------------|----------------------|--------------------------|
| E2 Lintels | 1.00                 | 0.27                     |
| E3 Sill    | 0.08                 | 0.03                     |
| E4 Jamb    | 0.10                 | 0.03                     |

| Junction                                                     | Default $\psi$ value | One Horton Heath targets |
|--------------------------------------------------------------|----------------------|--------------------------|
| E5 External wall                                             | 0.32                 | 0.06                     |
| E6 Intermediate floor within a dwelling                      | 0.14                 | 0.07                     |
| E7 Party floor between dwellings in blocks of flats          | 0.14                 | 0.07                     |
| E9 Balcony between dwellings, wall insulation continuous     | 0.04                 | 0.02                     |
| E10 Eaves Insulation at ceiling level                        | 0.12                 | 0.04                     |
| E12 Gable insulation at ceiling level                        | 0.48                 | 0.2                      |
| E 14 Flat roof                                               | 0.08                 | n/a                      |
| E16 Corner normal                                            | 0.18                 | 0.09                     |
| E17 Corner inverted                                          | 0.00                 | -0.09                    |
| E18 Party wall between dwellings                             | 0.12                 | 0.06                     |
| P1 Party wall ground floor                                   | 0.16                 | 0.06                     |
| P2 Party intermediate floor within a dwelling                | 0.00                 | 0.00                     |
| P3 Intermediate floor between dwellings - in blocks of flats | 0.00                 | 0.00                     |
| P4 party roof, insulation at ceiling                         | 0.24                 | 0.06                     |

#### 4.2.2. Heating System

Development densities at Horton Heath are unlikely to exceed 40-55 dwellings per hectare, due to the site character and existing constraints. Hilson Moran's feasibility study concluded that this would result in a low heat density making a communal heat network unviable. Therefore, individual and grouped dwellings heating systems are proposed for One Horton Heath.

The preferred options include individual air source heat pumps and grouped ground source heat pumps. Other energy efficient options are currently under consideration in a market review. Table 4 summarises the target energy performance of the preferred options.

Table 5 Target energy performance of heating systems at One Horton Heath

| Energy Efficiency % |         |
|---------------------|---------|
| ASHP                | 443     |
| GSHP                | 158-261 |

Radiators with thermostat and programmable controls are assumed in the energy assessments (see Table 5).

#### 4.2.3. Other building services

The table below lists the parameters that have been assumed for other building services.

Table 6 Fixed building services

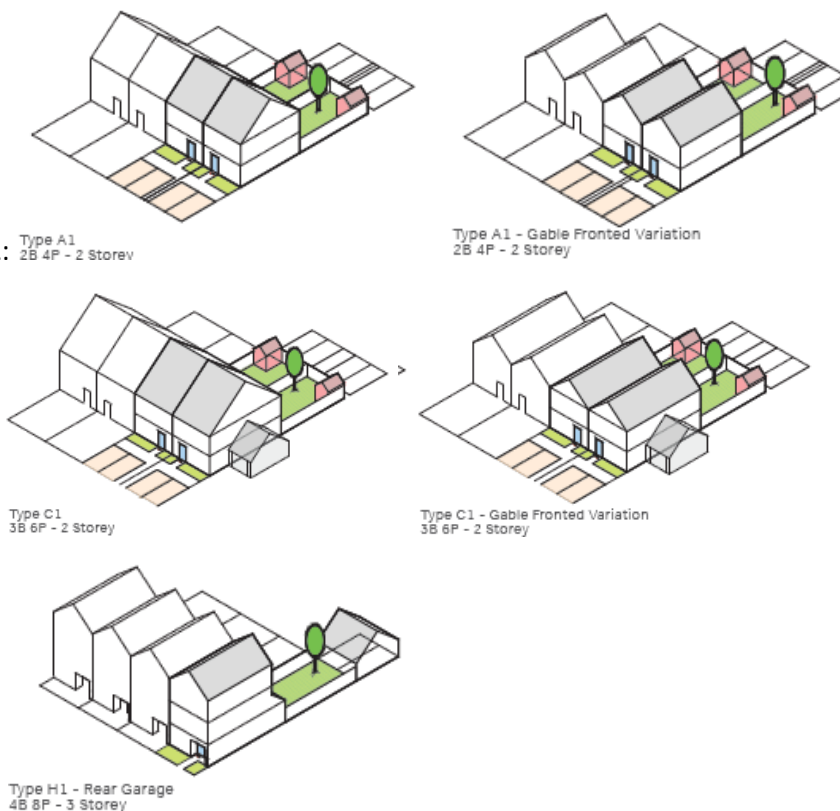
| System           | Type                                        | Comments                            |
|------------------|---------------------------------------------|-------------------------------------|
| Lighting         | LED lighting or high efficiency alternative | 100% of lights are energy efficient |
| Ventilation      | Mechanical ventilation with heat recovery   | Requires high efficiency fan power  |
| Hot water        | Storage type varies                         | <125 L/person/day                   |
| Heating controls | Programmer and at least 2 room thermostats  |                                     |

#### 4.2.4. Photovoltaics

The benefits of renewable power generation for reducing and/or offsetting carbon emissions were assessed. The following areas are assumed to be feasible for each house type. In the case of flats, the renewable power generation needs to be maximised.

Table 7 Estimated active PV area, energy generation and CO<sub>2</sub> emissions savings for a range of indicative house types

| House               | Active PV area (m <sup>2</sup> ) | Array size (kWp) | Est. electricity generation (kWh/annum) | Total emissions reduction (kgCO <sub>2</sub> /annum) |
|---------------------|----------------------------------|------------------|-----------------------------------------|------------------------------------------------------|
| House Type A1       | 9                                | 2                | 1,691                                   | 394                                                  |
| House Type A1 Gable | 9                                | 2                | 1,691                                   | 394                                                  |
| House Type C1       | 16                               | 3                | 2,818                                   | 657                                                  |
| House Type C1 Gable | 14                               | 2                | 2,536                                   | 591                                                  |
| House Type H1       | 9                                | 2                | 1,691                                   | 394                                                  |



Type A1: Type A1  
2B 4P - 2 Storey

Type A1 - Gable Fronted Variation  
2B 4P - 2 Storey

Type C1: Type C1  
3B 6P - 2 Storey

Type C1 - Gable Fronted Variation  
3B 6P - 2 Storey

Type H1: Type H1 - Rear Garage  
4B 8P - 3 Storey

Figure 4 Indicative house types

Monocrystalline 270 W panels are assumed and the usable area for the PV system includes a 1m clearance from the roof edges. The calculation assumes a south-facing orientation for the panels and does not account for shading of other structures or objects (e.g. trees).

### 4.3. Residential Energy Assessment Results

The energy assessment was carried out using current building regulations, Approved Document L1A: Conservation of fuel and power in new dwellings (2013 edition with 2016 amendments) and the Standard Assessment Procedure (SAP) 2012.

However, on 1<sup>st</sup> October 2019 the government issued the first consultation documents for the revision of Part L of the Building Regulations. These documents set out the proposals on how the regulations will be amended to achieve the improvements required to set the UK on the track to meet the net zero greenhouse gas emissions by 2050. The updated Part L was expected to come into force in mid to late 2020, but has been delayed. The Department for Business, Energy & Industry Strategy (BEIS) issued SAP version 10.1 in October 2019 alongside the Building Regulations Part L consultation documents which demonstrated a significant decarbonisation of grid electricity.

For this reason, the results of this energy strategy are presented in the context of both SAP 2012 and SAP 10.1. The following results do not include the contribution of roof-mounted PV on the roof of the houses and blocks of apartments. These are presented separately.

Table 8 Residential element, energy assessment results (without PV)

|      | Dwelling                                | SAP 2012                                                      | SAP 10.1                                                            |
|------|-----------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------|
|      |                                         | % Carbon Savings beyond Part L1A (2013) Target Emissions Rate | Indicative* % Carbon Savings beyond estimated Target Emissions Rate |
| ASHP | 1B2P Flat                               | 9%                                                            | 19%                                                                 |
|      | 2B4P Flat                               | 15%                                                           | 20%                                                                 |
|      | 2B4P House                              | 18%                                                           | 26%                                                                 |
|      | 3B6P House                              | 23%                                                           | 28%                                                                 |
|      | 4B8P House                              | 23%                                                           | 30%                                                                 |
|      | One Horton Heath Area- Weighted Average | 19%                                                           | 27%                                                                 |

\* The SAP 10.1 results do not comprise of a full Part L1A 2020 Energy Assessment. They are estimates that apply the updated carbon intensity factors for electricity and the proposed 31% tightening of the Target Emissions Rate.

The following table includes the area-weighted average carbon saving relative to the Target Emission Rate for the First Residential Parcel, including PV. A 2kWp, south-east facing array at 30 degree tilt adds a saving of 30% under current Building Regulation (SAP 2012) and indicatively 20% under future regulation (SAP 10.1), applying the same assumptions as above to the latter.

Table 9 Residential element, energy assessment results, including PV

| Dwelling                                | SAP 2012                                                      | SAP 10.1                                                            |
|-----------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------|
|                                         | % Carbon Savings beyond Part L1A (2013) Target Emissions Rate | Indicative* % Carbon Savings beyond estimated Target Emissions Rate |
| One Horton Heath Area- Weighted Average | 49%                                                           | 47%                                                                 |

#### 4.4. Non-residential Design Parameters

The outline proposals for the non-residential buildings at One Horton Heath allow for a range of uses.

Passive measures to improve the energy efficiency and reduce CO<sub>2</sub> emissions for each building type vary due to their different function, occupancy patterns, equipment, etc. While similar fundamental principles apply to the ones described for the design of residential buildings, specific characteristics, such as significantly higher internal heat gains in office buildings and schools, need to be taken into account in the development of a low energy strategy.

The following table recommends fabric thermal properties for non-residential buildings. The developer will need to ensure that the current Part L2A pass margin is achieved and ideally surpassed to contribute to the overall Baking Riverside target CO<sub>2</sub> emissions reduction.

Table 10 Non-residential building fabric limiting and recommended performance values

| Building elements                                           | Building Regulations Part L2A 2013 Limiting values | One Horton Heath recommended values (non-residential) |
|-------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------|
| External wall, U-value W/m <sup>2</sup> K                   | 0.35                                               | 0.18                                                  |
| Ground floor and exposed floors, U-value W/m <sup>2</sup> K | 0.25                                               | 0.22                                                  |
| Roof and exposed ceiling, U-value W/m <sup>2</sup> K        | 0.25                                               | 0.26                                                  |
| Windows including frames, U-value W/m <sup>2</sup> K        | 2.20                                               | 1.60                                                  |
| Glass g-value                                               | -                                                  | 0.55*                                                 |
| Air-tightness, m <sup>3</sup> /h/m <sup>2</sup> @ 50Pa      | 10.0                                               | 3.00                                                  |

\*G-value to be determined from compliance with Part L2A Criterion and CIBSE Guide A Thermal Comfort using Dynamic Thermal Modelling.

##### 4.4.1. Building services

High efficiency heating, lighting, ventilation/extraction and equipment should be installed to limit the energy consumed to provide the required and best practice indoor environment performance and control.

On site combustion by heating systems should be avoided.

The following design opportunities for reducing energy demand and carbon emissions are associated with each of the anticipated future non-residential land uses (please note these land uses are not fixed at this stage):

| Land use                              | Low energy/ low operational carbon opportunities                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community building                    | Community buildings are likely to be used intermittently and occupancy levels can be unpredictable. The key to low energy design is to limit both heat loss and solar gain by optimising the thermal envelope of the building, the size of openings and shading. In addition, lighting, heating and cooling controls should be adjustable to occupancy levels to adjust comfort to use without over consumption of energy.                                                                                              |
| Primary school<br>Early Years Nursery | Schools are heating-led buildings, therefore high levels of insulation are key to energy conservation. In addition, natural ventilation and natural light are important design considerations, therefore the location of windows and the type of openings (e.g. to enhance the 'stack effect') need to be optimised to maximise these passive features. Educational spaces and buildings will benefit from connecting to heat networks/ shared central heating systems in denser and mixed use parts of the masterplan. |
| Supermarket                           | Supermarkets are cooling-led due to the high levels of refrigeration required for food storage and present an opportunity for secondary heat recovery for use by adjacent heat-led buildings.                                                                                                                                                                                                                                                                                                                           |

| Land use                                      | Low energy/ low operational carbon opportunities                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cafés/coffee shops<br>Restaurants, family pub | Kitchen extract fans to be specified at high efficiency. In denser areas of masterplan, retail units could be supplied with recovered secondary heat e.g. from cooling led building, to enable low energy and low carbon heating and cooling.                                                                                                                                                                                              |
| Retail units, Convenience store               | Limit glass to area required for show casing merchandise and maximise U-value to reduce heat loss. Shade retail frontage with canopy where possible to reduce solar gain. In denser areas of masterplan, retail units could be supplied with recovered secondary heat e.g. from cooling led building, to enable low energy and low carbon heating and cooling                                                                              |
| Industrial buildings                          | Industrial buildings could include substantial operating machinery, which could require cooling or present an opportunity for heat recovery to be used by adjacent heat-led uses, or uses that add value to the community, e.g. heat recovered for use in a greenhouse. In logistical uses, such as storage and distribution, attention should be given to thermally isolating occupied and heated spaces from storage and delivery areas. |
| Offices                                       | Cooling-led buildings, therefore attention to limiting solar gain through the sizing, shading and specification of windows. Shallow plans and natural ventilation as part of a mixed-mode strategy are encourage to reduce energy consumption.                                                                                                                                                                                             |

A minimum carbon emission rate of 35% beyond the current Part L2A Building Regulations Target Emission Rate is targeted at One Horton Heath.

#### 4.4.2. Unregulated energy

Equipment or plug-in energy consumption are not regulated by Building Regulations. However, at One Horton Heath unregulated emissions will be managed in the following ways:

- Where white goods are provided, these will be in line with the requirements of the Code for Sustainable Homes criteria 'Ene 5 Energy Labelled White Goods'; all white goods are to have an A or A+ rating under the EU Energy Labelling Scheme.
- A similar approach will also be taken for the retail and commercial elements of the scheme to minimise the energy use associated with unregulated equipment, including small power, office equipment, white goods and other ancillaries. Green purchasing regimes will be encouraged; these may include standards such as Government Buying Standards (GBS) contained under sustainable development policy.

In addition, building owners, tenants and building managers, will have to be provided with a Building User Guide or Home Use Guide that is compliant with the current versions of BREEAM and Code for Sustainable Homes respectively.

#### 4.5. Overall building operational carbon savings

| Land use                                       | SAP 2012<br>% Carbon Savings beyond<br>Part L1A (2013) Target<br>Emissions Rate | SAP 10.1<br><i>Indicative*</i> % Carbon<br>Savings beyond estimated<br>Target Emissions Rate |
|------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Residential                                    | 49%                                                                             | 47%                                                                                          |
| Non-residential                                | 35%                                                                             | 35%                                                                                          |
| <b>One Horton Heath (area-weighted target)</b> | 47%                                                                             | 46%                                                                                          |

#### 4.6. External lighting

All external lighting around the site will be low energy and will be designed to avoid night time light pollution. Any external lighting strategy should be designed in compliance with the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2020.

All street lighting will be controlled in accordance with the requirements set by Hampshire County Council's Specification for Street Lighting. Any other external lighting (except for safety and security lighting) will be fitted with timers so that it can be switched when not required, say between 23:00 and 07:00.

Any safety or security lighting provided to be used between 23:00 and 07:00, will comply with the lower levels of lighting recommended during these hours in Table 4 of the ILP guidance notes.

## 5. Water Conservation

The UK is expected to face a shortfall of up to 16% of the total water demand in the 2050s and up to 29% in the 2080s leading to major effects on costs and resource levels.<sup>4</sup>

The South East of England is an area of high water stress and Eastleigh Borough Council (EBC) wish to deliver an exemplar scheme at One Horton Heath, achieving ambitious water efficiency targets well below those prescribed by Building Regulations. The aim is to minimise water use to no more than 110 litres/person/day, but with an aspiration to achieve less than 100 l/d per capita consumption (PCC).

Hilson Moran issued a 'Net Zero Carbon Feasibility Study' including a low water consumption strategy for the One Horton Heath development on 21 October 2019. Said report concluded that such ambitious water usage targets cannot be achieved solely through the specification of water efficient fittings, and some form of water recycling would be required in order to meet these levels. It also identified that pressures on sewage outfall capacity and the requirement to achieve nitrate-neutrality with respect to waterways and the Solent Maritime SAC would influence the strategy adopted.

The selection of a preferred water strategy for the One Horton Heath development is dependent on a number of influencing factors and is ultimately for Eastleigh Borough Council to determine. Perhaps the most significant consideration is the need to achieve nitrate neutrality, followed by the aspiration to achieve ambitiously lower water consumption targets. As a result of financial technical and programme considerations, it is proposed to discharge all foul water to the Chickenhall Lane WWTW.

Internal water consumption in dwellings will be reduced by the installation of low flow rate sanitaryware. Approved Document G provides information on maximum flow rates for fittings to enable the target of less than 100 litres / person / day to be achieved.

The recommended flow rates to achieve this target are as follows:

| Water fitting   | Maximum consumption to achieve no more than 100 l/p/d |
|-----------------|-------------------------------------------------------|
| WC              | 4/2.6 litres dual flush                               |
| Shower          | 8 l/min                                               |
| Bath            | 170 litres                                            |
| Basin taps      | 5 l/min                                               |
| Sink taps       | 6l/min                                                |
| Dishwasher      | 1.25 l/place setting                                  |
| Washing machine | 8.17 l/kg load                                        |

Eastleigh Borough Council supplementary policy requirement ESD 2 requires that new dwellings incorporate rainwater or greywater recycling systems for all WC flushing and other appropriate uses unless green roofs are provided. The feasibility study produced by Hilson Moran found that the infrastructure requirements for this scale of water recycling would be cost prohibitive.

It is likely that water butts will be provided on houses to allow rainwater to be used for irrigation purposes. This will help to achieve Eastleigh Borough Council's requirement ESD3, which requires that rainwater is used to irrigate private or communal gardens.

## 6. Sustainable Materials

Consideration will be given to material selection for the Proposed Development. The use of materials with low embodied carbon will assist in reducing the environmental impact of the development. During the Detailed Design stages the potential to source materials locally and use materials with responsible sourcing certification of recycled content will be fully investigated.

Where possible materials will be locally sourced. The feasibility of this will be investigated during the detailed design stages.

### 6.1. Circular Economy

Circular economy principles will be adopted in the technical development of design details to consider the life cycle of dwellings, including measures to reduce damage to material, material use during maintenance and end of life re-usability, e.g. by enabling demountability.

Throughout the design process, the design team will work to identify ways by which materials can be used as efficiently as possible, this will help to reduce the amount of waste produced during the construction process. This could include the use of off-site construction, or the use of standardised materials and designs where possible.

A standardised set of apartment and house types have been developed for the masterplan. This is an opportunity to optimise material resources and reduce construction waste.

The current preferred construction system consists of (starting internally) 15mm plasterboard, 25mm timber batten, reflective Vapour Control Layer (VCL), 140mm closed panel Timber Frame (TF) (partial fill 100mm polyurethane insulation), 9mm Oriented strand board (OSB), reflective breather membrane, 50mm air cavity, 102.5mm brickwork.

### 6.2. Durability

Consideration should be given to the selection of materials to ensure that building elements last their intended lifetime and minimise the need for repair and replacement. It is important to consider the effects of climate change, as these can significantly speed up the deterioration of materials. The effect can be reduced by good design and specification so that householders have increased confidence that their home is hard-wearing and long-lasting.

### 6.3. Low carbon

With the increase in restrictions on carbon emissions through the updating of the Building Regulations Part L, the contribution building materials make to the embodied carbon of homes is becoming more significant. It is now estimated that this now accounts for around 69% of the emissions over the lifetime of the dwelling.<sup>5</sup> Therefore it is increasingly important to reduce the embodied carbon of new developments.

A Life cycle assessment (LCA) can be used to measure and evaluate the environmental impact of a product or activity by assessing the energy and raw materials used and pollutants released to the environment over its life cycle. An LCA can help people understand the impact of different materials

<sup>4</sup> HR Wallingford. CCRA2:Updated projections for water availability for the UK Final Report [Internet]. 2015. Available from: <https://www.theccc.org.uk/wp-content/uploads/2015/09/CCRA-2-Updated-projections-of-water-availability-for-the-UK.pdf>

<sup>5</sup> RICS.2017. Whole life carbon assessment for the built environment. :RICS, 2017

based on how (and in what quantities) they are used in a building and can help in decision-making by identifying designs with the lowest environmental impact over the whole life of the building.

Environmental Product Declarations (EPDs) provide measurable environmental information about a specific product that has been checked by a third party. It communicates the environmental performance or impact of any product or material over its lifetime, and makes it possible to compare the impacts of different materials and products in order to select the most sustainable option. Construction product manufacturers are producing increasing numbers of EPDs. Using products which are covered by an EPD can help make LCAs more accurate and improve understanding of a home's environmental impact.

#### 6.4. Responsible sourcing

The use of responsibly sourced materials in the construction process will ensure that sustainable development principals have been followed across the supply chain. Certification can be obtained for materials through the extraction, processing and manufacture of products.

It is good practice that all timber used in construction and any temporary site timber is sourced from legally harvested and traded sources.

## 7. Flood Risk & Drainage

The flood risk and drainage for the Outline Planning Application is being designed by PFA Consulting.

A full range of SuDS techniques have been considered for use on the wider site. The Flood Risk and Coastal Change Planning Practice Guidance to the NPPF advises that, generally, the aim should be to discharge surface water runoff as high up the following hierarchy of drainage as reasonably practicable:

- Into the ground (infiltration);
- To a surface water body;
- To a surface water sewer, highway drain, or another drainage system;
- To a combined sewer.

The Ground Investigation Report for the site concludes that *“Soakaway drainage is considered unsuitable for the site”*. There is a network of Ordinary Watercourses crossing the site. It is therefore proposed that surface water runoff is discharged to the onsite watercourses at, or below, greenfield runoff rates.

Through early discussions with the Lead Local Flood Authority and other stakeholders it was agreed that the strategic SuDS features on the site should comprise above ground storage within the green corridors that follow the onsite watercourses. The Flood Risk Assessment and Drainage Strategy Report will provide advice on what additional source control measures could be utilised within the upstream development parcels. This approach provides flexibility for the detailed design of individual development parcels while maximising the water quality, water quantity, amenity and biodiversity benefits of the overall SuDS strategy.

The FRA and Drainage Strategy recommend that a SuDS ‘Management Train’ approach is followed to address the quality and quantity of runoff from the individual parcels as follows:

### 7.1. Prevention

Prevention is the use of good site design and housekeeping measures to prevent pollution. Good site design could include:

- Minimising the impermeable areas created on the site by providing soft landscaping and planting wherever possible.
- Good site wide housekeeping and maintenance to minimise blockages and prevent pollution arising.
- Water butts for rear gardens.
- Green roofs for public / commercial buildings where appropriate.
- Rainwater harvesting / reuse systems for public / commercial buildings and sports pitches where appropriate.
- Separators and other proprietary pollution control systems where land use requires.
- Silt traps and trapped gullies to retain sediment.
- Planting within landscaped areas to encourage nutrient / pollutant uptake and evapotranspiration.

An example maintenance strategy for the strategic SuDS features is included with the FRA/Drainage Strategy. This should become a living document that is continuously reviewed following the detailed design of the upstream, on parcel SuDS elements.

## 7.2. Source Control

Source control is defined in The SuDS Manual 2015 (CIRIA C753) as the control of runoff at or near its source, so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system. Source Control techniques that will be used within development parcels include the following:

- Pervious Paving. Pervious paving intercepts rainfall that lands on its surface before it can run overland into the downstream drainage system. This provides a degree of interception, particularly in the most polluted first-flush events, as well as filtration through the various layers of construction and through the stone sub-base. Pervious paving would typically be used for parking areas such as driveways, parking courts and car parks.
- Bioretention Areas / Rain Gardens. Bioretention areas utilise planting and constructed soils to intercept rainfall from their contributing catchment areas and contribute to interception storage, evapotranspiration and pollution removal. They can be placed around downpipes to intercept roof runoff, particularly from larger commercial buildings where they can form part of the landscaping design. They can also be incorporated into traffic calming infrastructure such as build outs and into roadside planting and tree pits.
- Other filtration techniques. Filter Trenches and French Drains can be used to intercept runoff from larger parking areas and highway areas. These will provide interception storage and filtration through the stone fill within the trenches.

## 7.3. Site Control

Site control is the management of water from several sub-catchments within a development parcel. Through close consultation with the layout designers flow conveyance measures such as swales and filter trenches should be incorporated into the development parcels to provide additional attenuation, treatment, amenity and opportunities for habitat creation.

## 7.4. Regional Control

Regional control is the strategic management of runoff across the wider site.

The strategic SuDS features will provide the attenuation volume and flow control required to reduce post-development flow rates to below greenfield runoff rates. Strategic SuDS features will incorporate erosion control and sediment forebays, designed in accordance with the guidance given in The SuDS Manual, to enhance water quality. The creation of micro-pools and the use of wetland planting within the strategic SuDS features will further contribute to the sediment and nutrient removal capacity of the site wide sustainable drainage systems.

## 8. Waste Management

### 8.1. Residential land uses

Household waste generation from the Wider OPA proposals has been estimated using gov.uk municipal waste statistics and Eastleigh Borough Council (EBC) data. The estimated average household waste generation rate is 0.86 tonnes per household.

It is estimated that the Wider OPA proposals would generate approximately 2,150 tonnes of household waste per annum (approximately 41 tonnes per week) should all units be constructed and occupied. Of this tonnage, a significant proportion will be separated by EBC for recycling and composting. Eastleigh Borough Council collect mixed recyclable waste (paper, card plastics and cans) on a fortnightly basis. Glass and batteries are collected monthly, and food waste is segregated and collected on a weekly basis. General waste is collected fortnightly on alternate weeks to the mixed recyclables. Garden waste can also be collected on a fortnightly basis, and is an additional paid subscription service.

During the detailed design, space provision will be allocated to ensure that householders have adequate space to segregate recyclable materials from general waste.

### 8.2. Non-residential land uses

A similar approach will be adopted for non-residential buildings, for which the provision of dedicated storage facilities for a building's operational-related recyclable waste streams, so that this waste is diverted from landfill or incineration. This includes:

- Dedicated space(s) for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. This space will be:
  - Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams
  - Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors
  - Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates.
- Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities will be provided:
  - Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space.
  - Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility.

- Where organic waste is to be stored/composted on-site, a water outlet will be provided adjacent to or within the facility for cleaning and hygiene purposes.

### 8.3. Construction waste

The construction industry is the UK's largest consumer of natural resources, and there is a significant amount of waste associated with the construction process. It is estimated that more than one third of the total UK annual waste is from the construction industry.<sup>6</sup>

Building Research Establishment (BRE) benchmark data (2017) have been used to measure construction waste generation from the Wider OPA and relate to waste generation rates where no minimisation, reuse or recycling has taken place. It is the baseline from which a reduction in waste arisings will be established.

The estimations show that, in total, approximately 29,539 tonnes of waste may arise from the construction of the residential elements and approximately 3,864 tonnes from the non-residential elements of the Wider OPA proposals. Site waste management plans will be used to set targets and monitor against these targets to ensure that waste produced as a result of the construction process is monitored and managed.

At least 90% of non-hazardous waste generated during construction should be diverted from landfill (by weight or volume) Where space allows on site, waste materials should be segregated to improve recycling rates and avoid waste being sent to landfill.

It will be a condition of contract for the contractors to agree target waste recovery rates. A monitoring report will need to be generated on a regular basis which will include details of the progress made in diverting waste materials from landfill against these pre-agreed targets.

### 8.4. Demolition waste

The Wider OPA proposals includes the demolition of Victoria Farmhouse as part of the comprehensive redevelopment of the Wider OPA Site. The quantum and composition of waste generated through the demolition of this building will be established as part of the design of the detailed demolition programme in the Construction Environmental Management Plan (CEMP) for the relevant construction phase (to be secured by condition). However, consideration has been given at this stage to the waste management principles that should be employed and the potential management routes for demolition waste arisings.

## 9. Transport

### 9.1. Pedestrian and Cyclist Provision

The Concept Masterplan and Access Parameter Plan highlights the opportunities for users of the development to access/exit the site via sustainable modes including walking and cycling. There are several existing PROW routes which route through the site and also connect the site with the wider pedestrian/cyclist infrastructure. The site's link road and main distributor roads would be supported by footway/cycleways on at least one side which connects to the existing pedestrian infrastructure on Allington Lane to the north and Bubb Lane to the south. In addition, improvements are proposed to upgrade Fair Oak and Horton Heath Footpath 7 and the eastern stretch of West End Footpath 3 in particular to provide attractive active travel corridors which support pedestrians and cyclists.

Further pedestrian and cyclist infrastructure improvements are likely to be secured through the planning application including the route towards the catchment secondary school: Deer Park which also supports access to Hedge End Railway Station. In addition, upgrades to the existing Public Rights of Way which route through the site are likely to be secured to better accommodate all year round use, but still retain their natural character and are thus more suited to leisure users, such as dog walker as opposed to commuter facilities for all routes.

### 9.2. Electric Vehicle Charging Facilities

The development will be supported by a strategy that maximises access to electric vehicle charging points (EVCPs) for all residents of all house types and tenures, and a car club to accelerate the take-up of electric vehicles as an alternative to internal combustion engine (ICE) vehicles. To do this the development will include the provision of both ready to use 'active' charging infrastructure in-built immediately into the development during construction, and 'passive' infrastructure, whereby homes are pre-wired for 'plug and play' at post-occupation; all resident parking will be based upon the provision of 7.2kW 'fast' charging points.

On-plot parking spaces (each private driveway or garage) will be fitted with passive infrastructure rated to supply a 7.2kW fast-charger, so that actual charge points can easily be fitted post-occupation by the occupier. Unallocated off-street parking space (all spaces with the designated parking areas/courts) will be fitted with a 7.2kW fast-charger so that residents without on-plot private driveway have full access to charging infrastructure. The car-club operator will determine the percentage of spaces that need active EV charging infrastructure at handover, but 22kW or 50kW 3-phase fast/rapid chargers will be allowed.

Parking allocated to retail areas will include rapid charging facilities and parking spaces provided to commercial premises will include fast charging for employees and rapid charging for operational needs.

Should a new Building Regulation mandate that a charging unit is installed pre-occupation to private on-plot parking spaces, then this will be adopted instead of the 'plug and play' mechanism stated above. Due to the fact that electric vehicle charging points are a relatively new technology, and are constantly changing, the design development will incorporate the most appropriate and relevant technology at the time.

<sup>6</sup> <http://www.wrap.org.uk/sites/files/wrap/Reducing%20your%20construction%20waste%20-%20a%20pocket%20guide%20for%20SME%20contractors.pdf>

### 9.3. Public Transport

The Concept Masterplan has also been developed with consideration to local bus operators with the main travel corridor carriageways measuring 6.5m in width to accommodate buses. The development is also likely to secure a bus route through the proposed development with support of a financial contribution to encourage bus travel which is likely to involve re-routing of existing services, such as the Bluestar 3. The development would also provide attractive bus stops which include seating and shelter to encourage users to travel via bus.

Any upgrades to the walking and cycling route towards Hedge End Railway Station is also likely to increase the use of rail journeys by providing an attractive all year-round route.

### 9.4. Framework Travel Plan

To support the outline planning application a Framework Travel Plan has been prepared which seeks to facilitate and promote the use of sustainable transport modes, by providing a package of soft measures, supported by investment in infrastructure. The Framework Travel Plan includes an indicative action plan which sets out proposed measures and associated timescales to help encourage sustainable travel as well as proposing modal shift targets which have been informed by Hampshire County Council Travel Plan guidance. The Framework Travel Plan is likely to be secured through the Section 106 agreement or planning conditions, with more detailed Full Travel Plans provided for each subsequent Reserved Matters planning application which provides more details on the layout specifics and end users.

## 10. Ecology

A wide range of additional ecological mitigation and enhancement measures will provide additional ecological functionality of habitats in the wider local area and these measures will be implemented as part of the Proposed Development. These are summarised in the EIA in Section 10.7 and Table 10.11 and illustrated on the Integrated / Embedded Landscape, Visual, Ecological Mitigation drawing location in Appendix 10.12 of this chapter of the EIA. This assessment concludes that there will be no likely significant negative effects on biodiversity as a result of the construction and operation of the wider OPA and Link Road.

### 10.1. Construction

Retained features such as hedgerows will be protected during construction by the implementation of a Construction Environmental management Plan (CEMP) including measures to prevent direct damage (via pollution, impacts etc.) and indirect impacts (such as changes in hydrology)

The habitats to be lost are largely of low ecological value and the loss of higher value habitat has been minimised where impacts are unavoidable. Particular attention has been given to any activities with the potential to affect the watercourses and water quality for designated sites for nature.

A comprehensive system of ecologically designed SuDS and watercourse enhancement measures will effectively ensure that the development does not result in any increase of nitrate, phosphate or sediment into the Itchen catchment.

No effects are predicted on this habitat from air quality, hydrology or noise and vibration, as described in the relevant chapters of this EIA.

A number of species have been recorded on or near the site including breeding birds, bats, great crested newts and common reptile species. Proposed mitigation and enhancement measures. For these species are summarised in Chapter 10, Section 10.7 and Table 10.11 of this ES.

Large areas of priority habitats, including species rich hedgerows and broadleaved woodland and will enhance existing features such as ponds, grasslands and watercourses.

### 10.2. Operation

A specification has been agreed with key statutory consultees (including Natural England and the Environment Agency) for suitable ecological buffers has been delivered throughout the masterplan and these measures are designed to absorb the impact of the presence of the additional residents to protect the valuable habitats on, and adjacent to the site.

Measures have also been included to guide the design of the link road, in particular the locations where the road severs key connective habitats for species such as bats, dormice and great crested newts.

A key component of the management of the potential impact of increased human disturbance is to deliver a suite of educational material to new residents to engender a sense of value in the natural habitats in and around the development. Measures will be included to manage unrestricted access to sensitive areas of the site by people and their pets.

## 11. Health and Wellbeing

### 11.1. Thermal comfort

It is important to achieve a comfortable home environment by regulating temperature effectively and reducing the risk of excessive and / or prolonged exposure to high temperatures. Homes are becoming increasingly at risk of overheating<sup>7</sup> for a number of reasons, including climate change, and high standards of energy efficiency. New homes are at a greater risk of overheating as they are designed to be more airtight and have greater levels of insulation. This results in less air getting in and out and therefore gives people less control over temperature.

If the risk of a home overheating is not managed appropriately, the results can be very harmful to health and could be fatal for more vulnerable occupants.<sup>8</sup>

The house and apartment types were assessed using the Building Regulations Part L Standard Assessment Method, which includes a high level check for overheating risk. All windows are assumed to have a sill height of 1,050mm, a lintel height of 2,100mm and window height of 1,050mm. These dimensions were provided by Clague Architects.

The balance between passive solar gain and overheating risk mitigation is a critical one in highly insulated houses, particularly for single-sided apartments with limited opportunity for cross-ventilation. The UK's Passivhaus Trust recommends aiming for windows in a south-facing wall to be a maximum of 25% of the external wall area, while UK adaptations have seen 30% being an optimal maximum.

The SAP assessment provides an indication of overheating risk, but it is widely accepted that this is not a reliable indication of the actual risk. Recent planning policy updates and the Good Homes Alliance recommend the adoption of the CIBSE Technical Manual 59 requiring dynamic thermal modelling, and applying weather data that represents Climate Change scenarios. A CIBSE TM59 Assessment is recommended for the Detailed Design stage.

The following set of SAP results for seasonal overheating risk is concurrent with expectation, i.e. that the risk is higher for apartments with higher thermal exposure. However, although further analysis in line with best practice is recommended for an understanding of the real level of risk and to identify effective passive mitigation measures. In addition it is recommended that the design team seek the guidance of the Good Homes Alliance, 'Overheating in New Homes' (July 2019).

**Table 11 Indication of overheating risk derived from SAP models**

| Dwelling                         | overheating June | overheating July | overheating August |
|----------------------------------|------------------|------------------|--------------------|
| Flat 1B2P N Corner ground floor  | Not significant  | Medium           | Medium             |
| Flat 1B2P N Corner Mid floor     | Not significant  | Slight           | Slight             |
| Flat 1B2P N Corner upper floor   | Not significant  | Medium           | Medium             |
| Flat 1B2P N Terrace ground floor | Slight           | Medium           | Medium             |
| Flat 1B2P N Terrace Mid floor    | Not significant  | Slight           | Slight             |
| Flat 1B2P N Terrace Upper floor  | Not significant  | Medium           | Medium             |
| Flat 1B2P E Corner ground floor  | Slight           | Medium           | Medium             |
| Flat 1B2P E Corner Mid floor     | Not significant  | Slight           | Slight             |

| Dwelling                         | overheating June | overheating July | overheating August |
|----------------------------------|------------------|------------------|--------------------|
| Flat 1B2P E Corner upper floor   | Slight           | Medium           | Medium             |
| Flat 1B2P E Terrace ground floor | Slight           | Medium           | Medium             |
| Flat 1B2P E Terrace Mid floor    | Not significant  | Slight           | Slight             |
| Flat 1B2P E Terrace Upper floor  | Slight           | Medium           | Medium             |
| Flat 1B2P S Corner ground floor  | Not significant  | Medium           | Medium             |
| Flat 1B2P S Corner Mid floor     | Not significant  | Slight           | Slight             |
| Flat 1B2P S Corner upper floor   | Not significant  | Medium           | Medium             |
| Flat 1B2P S Terrace ground floor | Not significant  | Medium           | Medium             |
| Flat 1B2P S Terrace Mid floor    | Not significant  | Slight           | Slight             |
| Flat 1B2P S Terrace Upper floor  | Not significant  | Medium           | Medium             |
| Flat 1B2P W Corner ground floor  | Slight           | Medium           | Medium             |
| Flat 1B2P W Corner Mid floor     | Not significant  | Slight           | Slight             |
| Flat 1B2P W Corner upper floor   | Slight           | Medium           | Medium             |
| Flat 1B2P W Terrace ground floor | Slight           | Medium           | Medium             |
| Flat 1B2P W Terrace Mid floor    | Not significant  | Slight           | Slight             |
| Flat 1B2P W Terrace Upper floor  | Slight           | Medium           | Medium             |
| House Type A1 NS end terrace     | Not significant  | Not significant  | Not significant    |
| House Type A1 NS mid terrace     | Not significant  | Not significant  | Not significant    |
| House Type C1 NS end terrace     | Not significant  | Not significant  | Not significant    |
| House Type C1 NS Mid terrace     | Not significant  | Not significant  | Not significant    |
| House Type H1 NS end terrace     | Not significant  | Not significant  | Not significant    |
| House Type H1 NS Mid terrace     | Not significant  | Not significant  | Not significant    |
| House Type A1 EW end terrace     | Not significant  | Not significant  | Not significant    |
| House Type A1 EW mid terrace     | Not significant  | Not significant  | Not significant    |
| House Type C1 EW end terrace     | Not significant  | Not significant  | Not significant    |
| House Type C1 EW Mid terrace     | Not significant  | Not significant  | Not significant    |
| House Type H1 EW end terrace     | Not significant  | Not significant  | Not significant    |
| House Type H1 EW Mid terrace     | Not significant  | Not significant  | Not significant    |

For non-residential buildings, it is recommended that summer and winter thermal comfort are assessed using dynamic thermal modelling in line with CIBSE recommendations and BREEAM requirements.

It is expected that the occupants of dwellings will have control over the window operation, and will be able to open windows for ventilation in rooms which are less acoustically sensitive, such as kitchens, bathrooms and hallways without causing acoustic issues. The appropriate guidelines from the AVO Residential Design Guide January 2020 v1.1 will be followed where required.

### 11.2. Air quality

The quality of the air we breathe affects our health and the health of people in our community, particularly the young. There are significant numbers of early deaths and diseases (such as asthma)

<sup>7</sup> Zero Carbon Hub. March 2015. Overheating in homes- drivers of change. March 2015

<sup>8</sup> NHBC. 2012. Overheating in new homes- a review of the evidence. 2012

associated with poor air quality. The World Health Organisation estimates that, each year, there are 500,000 early deaths across Europe associated with, or as a result of, poor air quality. Combustion processes in vehicle engines, power generation, homes and industry generate air pollutants, including carbon dioxide (CO<sub>2</sub>), nitrous oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>) and small particulates, (particles smaller than 10 and 2.5 microns). These emissions are managed by local authorities through the Local Air Quality Management (LAQM) framework, as part of the Environment Act (1995). While the main sources of air pollutants are road transport and large combustion plants, homes and the choice of heating and hot water systems do have an impact.

For this development, the proposals exclude natural gas combustion, or other burning appliances used for heating systems.

Health can be impacted by poor air quality both within and outside the home. Building materials, finishes and furnishings can be significant sources of indoor air pollution, in particular, formaldehyde and volatile organic compounds (VOCs). Building materials can release a wide range of VOCs, especially during the first two years of a new building.

The amount of pollution released into indoor air will be reduced by specifying building materials, finishes and furnishings with low pollutant content.

### 11.3. Acoustics

A noise impact assessment has been carried out for the development by Hydrock who are the appointed acoustic consultants for the scheme. Any noise attenuation measures recommended in the noise impact assessment report are incorporated into the site layout. Building locations and orientations within the masterplan will be informed by the noise impact assessment to ensure that the effects of external noise on the building occupants are minimised and potential issues are reduced.

Indoor ambient noise levels in buildings and where appropriate external noise levels in private gardens, will achieve noise levels from environmental noise sources 5dB (or a meaningful and reasonable dB) below targets set out in BS8233 or other appropriate good practice standards or regulations.

The potential provision of air source heat pumps in dwellings to provide space and water heating provides a potential to significantly increase ambient noise levels on site. A full assessment would be carried out and mitigation measures proposed, if this is the solution opted for and once detailed information is available, in accordance with BS4142.

The development will aim to achieve a rating noise level difference no greater than the background noise level as measured in the locality of the nearest or most exposed noise-sensitive area from all fixed installations or sources of an industrial nature in commercial premises within the Proposed Development.

## 12. Impacts of Constructions

The following measures will be adopted during construction to ensure that the sites are managed in an environmentally and socially considerate, responsible and accountable manner.

- The principal contractor will need to demonstrate sound environmental management practices and consideration for neighbours across their activities on-site.
- Site related energy, water and transport impacts will need to be monitored and reported to ensure ongoing compliance during the Construction, Handover and Close Out stages and to improve awareness and understanding for future projects.

### 12.1. Environmental Management

The principal contractor will need to operate under an environmental management system (EMS) covering their main operations. The EMS must be either:

- Third party certified, to ISO 14001/EMAS or equivalent standard; or
- Have a structure that is in compliance with BS 8555:2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555:2003.

The principal contractor will need to implement best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.

### 12.2. Considerate Construction

The principal contractor will need to use a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification.

### 12.3. Monitoring of construction site impacts

Responsibility will be assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme.

To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required.

## Appendix A: BREEAM Communities Scoring Tool for One Horton Heath

### BREEAM 2012 Communities Scoring Tool for One Horton Heath



| Identifier                                    | Issue name                         | Brief Requirement summary                                                                                                                                                                                                                                                                                                                                                              | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                                                                                                                                                         |
|-----------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Governance                                    |                                    |                                                                                                                                                                                                                                                                                                                                                                                        |        |                                         |                  |                   |                                                                                                                                                                                                  |
| GO 01                                         | Consultation plan                  | Identify appropriate stakeholders to consult. Develop a consultation plan which covers the minimum content in the guidance                                                                                                                                                                                                                                                             | Step 1 | Yes                                     | 1                | 1                 | HHPT & FERIA urbanism have been responsible for the consultation for the masterplan. The consultation plan will cover these requirements. A statement of Community Involvement has been produced |
| GO 02                                         | Consultation and engagement        | The consultation plan is used to determine timing of the consultation, good practice consultation methods are used to engage stakeholders. Feedback is given to consultees                                                                                                                                                                                                             | Step 2 | Yes                                     | 2                | 2                 | HHPT and FERIA urbanism have been responsible for the consultation for the masterplan. The consultation plan will cover these requirements                                                       |
| GO 03                                         | Design review                      | Consultation led by an independent facilitator, is used to demonstrate how the development addresses key issues in urban design. Opinions from the consultation are included in the design. Feedback is provided to consultees. A design review is carried out by independent experts.                                                                                                 | Step 2 | N/A                                     | 2                | 2                 | HHPT and FERIA urbanism have been responsible for the consultation for the masterplan. The consultation plan will cover these requirements                                                       |
| GO 04                                         | Community management of facilities |                                                                                                                                                                                                                                                                                                                                                                                        | Step 3 | N/A                                     | 1                | 3                 |                                                                                                                                                                                                  |
| Social and economic wellbeing - Local economy |                                    |                                                                                                                                                                                                                                                                                                                                                                                        |        |                                         |                  |                   |                                                                                                                                                                                                  |
| SE 01                                         | Economic impact                    | An economic study is completed and clearly identifies the needs and opportunities within the local area and surrounding economy. This study should be focused on understanding how the proposed development can enhance the economic well-being of future occupants. It should also ensure that the development complements and enhances existing economic activity in the local area. | Step 1 | Yes                                     | 2                | 2                 | Savills are responsible for the economic study, details in Economic regeneration Statement                                                                                                       |
| SE 17                                         | Training and skills                | The developer consults with the community, local businesses, training providers and relevant authorities to identify training and skills initiatives that would be beneficial to the local area.                                                                                                                                                                                       | Step 3 | N/A                                     | 1                | 3                 | It is thought 1 credit will be achieved                                                                                                                                                          |

| Identifier                                                      | Issue name                 | Brief Requirement summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                           |
|-----------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|--------------------------------------------------------------------|
| <b>Social and economic wellbeing - Environmental conditions</b> |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                         |                  |                   |                                                                    |
| SE 03                                                           | Flood risk assessment      | A site-specific flood risk assessment is carried out in accordance with current best practice and planning policy, and includes the requirements listed in the manual                                                                                                                                                                                                                                                                                                                                                                                                                                     | Step 1 | Yes                                     | 2                | 2                 | Flood risk consultant PFA confirmed 2 credits available            |
| SE 04                                                           | Noise pollution            | A noise impact assessment has been carried out by a suitably qualified acoustician to determine the sources and nature of existing noise on and around the site. The suitably qualified acoustician has prepared a report setting out recommendations for addressing all identified site issues and, if necessary, attenuation of on-site noise to prevent disturbance to neighbouring noise sensitive areas                                                                                                                                                                                              | Step 1 | Yes                                     | 3                | 3                 | Hydrock has confirmed that 3 credits achievable                    |
| SE 08                                                           | Microclimate               | A microclimatic simulation or study shows the effect of urban morphology on the external microclimate of the development and surrounding area                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Step 2 | N/A                                     | 0                | 3                 | Credits not sought                                                 |
| SE 10                                                           | Adapting to climate change | Evidence has been used from the local authority and statutory bodies to understand the known and predicted impacts of climate change on the site                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Step 2 | N/A                                     | 1                | 3                 | There is potential to pick up additional credits for this issue    |
| SE 13                                                           | Flood risk management      | The recommendations of the appropriate statutory bodies within the site-specific flood risk assessment are incorporated into the masterplan. An appropriately qualified professional is appointed to carry out the calculations and provide design details for all elements regarding the surface water run-off drainage strategy in a report. The report confirms that the peak rate of surface water run-off over the development's lifetime, allowing for climate change, is no greater for the developed site than it was for the pre-development site. This should comply for a 1 in 100 year event. | Step 2 | N/A                                     | 3                | 3                 | Flood risk consultant PFA Consulting confirmed 3 credits available |
| SE 16                                                           | Light pollution            | The lighting design guide for the development has been completed in line with local authority guidance (where available). As a minimum the lighting design guide must refer to street lighting and any security lighting that will be provided by the developer on the site                                                                                                                                                                                                                                                                                                                               | Step 3 | N/A                                     | 3                | 3                 | This can be achieved with good lighting design                     |

| Identifier                                              | Issue name                                     | Brief Requirement summary                                                                                                                                                                                                                                                                                                                                                                                                                         | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                                                         |
|---------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|--------------------------------------------------------------------------------------------------|
| <b>Social and economic wellbeing - Social wellbeing</b> |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                                         |                  |                   |                                                                                                  |
| SE 02                                                   | Demographic needs and priorities               | The scope of the proposed development, including housing mix, community facilities and employment opportunities, has been informed by a review of the current demographic profiles and future trends of the local area. The review has been conducted based on the following: Economic study, planning policies, local consultation                                                                                                               | Step 1 | Yes                                     | 1                | 1                 | This has been achieved through the consultation process and development of the masterplan by EBC |
| SE 05                                                   | Housing provision                              | The housing types and tenures for the development are determined based on the needs in the local area and any information held by the local authority regarding the type and tenure of housing required in the area.                                                                                                                                                                                                                              | Step 2 | N/A                                     | 2                | 2                 | This has been achieved through the consultation process and development of the masterplan by EBC |
| SE 06                                                   | Delivery of services, facilities and amenities | The list of local needs & requirements from SE 02 demographic needs and priorities is used to confirm which services facilities and amenities will be provided and to what timescales                                                                                                                                                                                                                                                             | Step 2 | N/A                                     | 6                | 7                 | This has been achieved through the consultation process and development of the masterplan by EBC |
| SE 07                                                   | Public realm                                   | Consultation has taken place with the local authority and potential users of the development to understand the activities, uses and local identities that the public realm can promote. Where appropriate, the consultation also considers how existing residents currently use this space                                                                                                                                                        | Step 2 | N/A                                     | 1                | 2                 | This has been achieved through the consultation process and development of the masterplan by EBC |
| SE 09                                                   | Utilities                                      | The number of access points for services is minimised & utility companies co-ordinate the installation of services                                                                                                                                                                                                                                                                                                                                | Step 2 | N/A                                     | 0                | 3                 | It is hoped that the first credit can be achieved                                                |
| SE 11                                                   | Green infrastructure                           | Consultation has taken place with the local authority, existing residents and potential users of the development to understand the desired uses, design, quantity and location of accessible and natural greenspace. A green infrastructure plan is developed as a part of the masterplan. A summary of the consultation responses and any constraints restricting the provision of natural accessible greenspace are explained in this document. | Step 2 | N/A                                     | 4                | 4                 | This will be developed by Johns Associates in conjunction with the architects                    |

| Identifier                  | Issue name                            | Brief Requirement summary                                                                                                                                                                                                                                                                                                                       | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                                                                                                                                                        |
|-----------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SE 12                       | Local parking                         | Consultation has taken place between the local authority, other authorities with responsibility for road networks in the area, developer, community representatives and other stakeholders. The consultation considers parking in relation to the size of the development, expected levels of car ownership etc.                                | Step 2 | N/A                                     | 1                | 1                 | Demonstrated within Masterplan – although detailed parking provision will not be considered at outline planning stage and would only be clearer in the individual Reserved Matters applications |
| SE 14                       | Local vernacular                      | To ensure that the development relates to the local character whilst reinforcing its own identity                                                                                                                                                                                                                                               | Step 3 | N/A                                     | 2                | 2                 | These requirements will be considered by the architect                                                                                                                                          |
| SE 15                       | Inclusive design                      | To create an inclusive community by enhancing accessibility for as many current and future residents as possible.                                                                                                                                                                                                                               | Step 3 | N/A                                     | 2                | 3                 | This will be considered as part of the design development process                                                                                                                               |
| <b>Resources and energy</b> |                                       |                                                                                                                                                                                                                                                                                                                                                 |        |                                         |                  |                   |                                                                                                                                                                                                 |
| RE 01                       | Energy strategy                       | An energy strategy has been written for the proposed development by an energy specialist. Credits are awarded based on the reduction in CO2 emissions achieved                                                                                                                                                                                  | Step 1 | Yes                                     | 8                | 11                | Hilson Moran, calculation for the outline permission shows potential for zero CO2 emissions, the number of credits targeted here is conservative                                                |
| RE 02                       | Existing buildings and infrastructure | An assessment of any existing buildings and infrastructure is carried out to determine what can be refurbished, re-used, recycled or maintained and those of significant value. The assessment considers heritage, location & condition of existing buildings, embodied carbon, potential use of buildings and materials                        | Step 1 | Yes                                     | 1                | 2                 | Heritage report & heritage sensitivities and opportunities document produced by Cotswold Archaeology                                                                                            |
| RE 03                       | Water strategy                        | The developer engages with water suppliers, the local authority and the appropriate regulatory body to develop overall water consumption targets for the development taking account of current water availability, future predicted water availability and demands accounting for growth and climate change. A water strategy must be developed | Step 1 | Yes                                     | 1                | 1                 | A recycled water strategy has been produced by HM                                                                                                                                               |
| RE 04                       | Sustainable buildings                 | The developer and design team have committed to designing new or refurbished buildings on site to comply with recognised industry best practice standards in sustainable design for one or more of the following key sustainability areas: energy, water, waste, embodied impacts of materials, and occupant health and wellbeing.              | Step 3 | N/A                                     | 4                | 6                 | Sustainability of the development is a fundamental aspect for EBC                                                                                                                               |

| Identifier                  | Issue name                 | Brief Requirement summary                                                                                                                                                                                                                                           | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RE 05                       | Low impact materials       | Contractors and sub-contractors have environmental management policies and procedures, such as EMAS/ISO14001, in place to ensure the sustainable management and supply of materials used in the public realm                                                        | Step 3 | N/A                                     | 2                | 6                 | This can be required in the contractor's prelims                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| RE 06                       | Resource efficiency        | To promote resource efficiency by reducing waste during construction and throughout the life cycle of the development                                                                                                                                               | Step 3 | N/A                                     | 1                | 4                 | This is good practice and waste will be minimised, additional credits will be targeted if possible                                                                                                                                                                                                                                                                                                                                                                                                                  |
| RE 07                       | Transport carbon emissions | To reduce pollution associated with car use and provide viable alternatives to car ownership.                                                                                                                                                                       | Step 3 | N/A                                     | 1                | 1                 | Transport Assessment and Travel Plan – However will need Eastleigh Borough Council as the client to confirm they would be happy with a cycle hire scheme on the site or a car pool/car club which has been briefly discussed                                                                                                                                                                                                                                                                                        |
| <b>Land use and ecology</b> |                            |                                                                                                                                                                                                                                                                     |        |                                         |                  |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| LE 01                       | Ecology strategy           | A suitably qualified ecologist has been appointed and has undertaken an Ecological Impact Assessment to identify ecological features of value and potential impacts from the development                                                                            | Step 1 | Yes                                     | 1                | 1                 | As this is a detailed application that is based on a wider outline application for the whole site, the ecology documents for this submission will be drawn heavily from the ES Biodiversity/Ecology chapter that will be prepared as part of the outline (OPA) application. We will be preparing a document to support this specific detailed application (FRP) based on the extensive survey work that we have done on the site over the last 2.5 years. This will also satisfy the 2nd stage 2 masterplan credit. |
| LE 02                       | Land use                   | A study is carried out to identify potential land contamination on the site                                                                                                                                                                                         | Step 1 | Yes                                     | 2                | 3                 | Ground investigation report produced by Hydrock                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| LE 03                       | Water pollution            | A comprehensive and up-to-date drainage plan of the site is produced by an appropriately qualified professional. Measures are put in place to avoid any potential water pollution during construction in accordance best-practice guidance for pollution prevention | Step 2 | N/A                                     | 3                | 3                 | FRA consultant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Identifier                    | Issue name                      | Brief Requirement summary                                                                                                                                                                                                                                                                                                                                                                                    | Step   | Have mandatory standards been targeted? | Credits targeted | Credits available | Comments                                                                                                                                                                                                        |
|-------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LE 04                         | Enhancement of ecological value | The masterplan enhances ecological value through the creation of appropriate new habitats or through the increase in scale of existing habitats on the site in accordance with the recommendations of the suitably qualified ecologist and appropriate statutory or wildlife bodies                                                                                                                          | Step 2 | N/A                                     | 3                | 3                 | see LE 01                                                                                                                                                                                                       |
| LE 05                         | Landscape                       | The suitably qualified ecologist confirms that the detailed landscaping and planting design and site-specific protection measures conform with the ecology strategy prepared under LE 01                                                                                                                                                                                                                     | Step 2 | N/A                                     | 5                | 5                 | The ecologist / landscape architect will ensure the landscape design complies with the ecology strategy                                                                                                         |
| LE 06                         | Rainwater harvesting            | To ensure that surface water run-off space is used effectively to minimise water demand.                                                                                                                                                                                                                                                                                                                     | Step 3 | N/A                                     | 0                | 3                 | If feasible for the development, rainwater will be collected for use on site. Potential to achieve credits tbc                                                                                                  |
| <b>Transport and movement</b> |                                 |                                                                                                                                                                                                                                                                                                                                                                                                              |        |                                         |                  |                   |                                                                                                                                                                                                                 |
| TM 01                         | Transport assessment            | A transport assessment or transport statement is developed following scoping discussions with the local authority and local, national and regional authorities (where applicable) responsible for roads and other transport networks. A travel plans is developed by a travel plan coordinator for the site outlining the design methods used to encourage and implement sustainable transport and movement. | Step 1 | Yes                                     | 2                | 2                 | Transport Assessment and Framework Travel Plan, each of which will cover each land use on site                                                                                                                  |
| TM 02                         | Safe and appealing streets      | The transport assessment or statement and travel plans are used to inform the objectives for the design of streetscape                                                                                                                                                                                                                                                                                       | Step 2 | N/A                                     | 4                | 4                 | Transport Assessment, Access/Movement Parameter Plans (Thrive), Design and Access Statement (Thrive), Landscape Plans (Tyler Grange), Noise Assessment (Hydrock), Maintenance Plans (Eastleigh Borough Council) |
| TM 03                         | Cycling network                 | Cycle routes should be developed to connect with the surrounding area and link areas within the development, they need to be safe, well lit and signed                                                                                                                                                                                                                                                       | Step 2 | N/A                                     | 1                | 1                 | Transport Assessment, Access/Movement Parameter Plans (Thrive) and Masterplan (Thrive)                                                                                                                          |
| TM 04                         | Access to public transport      | Credits are awarded based on the building's proximity to transport nodes                                                                                                                                                                                                                                                                                                                                     | Step 2 | N/A                                     | 1                | 4                 | Transport Assessment and Masterplan – this is a conservative estimate as some plots are further away from the spine/link road.                                                                                  |

| Identifier | Issue name                  | Brief Requirement summary                                                                                                 | Step   | Have mandatory standards been targeted? | Credits targeted   | Credits available | Comments                                                                                                                                                                                  |
|------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|--------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TM 05      | Cycling facilities          | To promote cycling by ensuring the adequate provision of cyclist facilities                                               | Step 3 | N/A                                     | 2                  | 2                 | Transport Assessment and Masterplan (Thrive). The residential element would be met, the non-residential side is TBC                                                                       |
| TM 06      | Public transport facilities | To encourage frequent use of public transport throughout the year by providing safe and comfortable transport facilities. | Step 3 | N/A                                     | 1                  | 2                 | Transport Assessment and Travel Plan –EBC would want to ensure the criteria associated with the first credit is met, the second credit including CCTV and renewable energy supply is TBC. |
| Innovation |                             |                                                                                                                           |        |                                         |                    |                   |                                                                                                                                                                                           |
| Inn        | Innovation                  |                                                                                                                           | N/A    | N/A                                     | 0                  | 7                 |                                                                                                                                                                                           |
|            |                             |                                                                                                                           |        |                                         | Final BREEAM Score |                   | Excellent                                                                                                                                                                                 |
|            |                             |                                                                                                                           |        |                                         | BREEAM Rating      |                   | 72.50%                                                                                                                                                                                    |