



## Energy & Sustainability Statement

For  
**Chapel Gate**  
Basildon

**On behalf of:**  
**Sempra Homes**

Date	April 2021
Reference	K200432
Rev	04

St John's House 1a Knoll Rise Orpington Kent BR6 0JX

01689 888 222 [orpington@calfordseaden.co.uk](mailto:orpington@calfordseaden.co.uk)

**[calfordseaden.com](http://calfordseaden.com)**

**ORPINGTON | LONDON | BIRMINGHAM | SOUTHEND-ON-SEA | WINCHESTER | CAMBRIDGE**

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**APPROVAL SHEET & FOREWARD**


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**SUSTAINABILITY STATEMENT**
**For:**
**Sempra Homes**
**At:**
**Chapel Gate**
**Basildon**

Job No: K200432		Date of Issue: 12 <sup>th</sup> April 2021
	Name:	Signature:
Authors:	Yiannis Papanikolaou	
Checked by:	Emily Mansfield	
Issued for and on behalf of Calfordseaden LLP by the above signatories.	St Johns House 1A Knoll Rise, Orpington Kent BR6 0JX	Tel: +44 (0)1689 888 222 Fax: +44 (0)1689 888 299 Email: orpington@calfordseaden.co.uk

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00	18/03/21	First DRAFT issue
01	26/03/21	Revision 01, comments added.
02	26/03/21	Revision 02, comments added.
03	07/04/21	Updates to various sections/paragraphs as received by BTPW
04	12/04/21	References to Overheating Assessment omitted

## 1 EXECUTIVE SUMMARY

This Sustainability Statement has been prepared on behalf of Sempra Homes, in support of the hybrid planning application comprising full planning permission for the comprehensive redevelopment of Chapel Gate located at Basildon Essex. This document details how the proposed development will meet the sustainable design and construction requirements set out in the Basildon Borough Local Plan.

### 1.1 Description of Development

The proposed development consists of the demolition of the existing car park and the construction of 217 flats and 16No. of houses providing the total of 233 new-build dwellings. The proposed accommodation schedule is as follows:

Unit Type	Block A- 5storey	Block B – 7&8 storey	Block C – 6 storey	Block D – 7 storey	Block E – 7&10 storey	House Terraces	
1B2P Flat	13	20	15	18	21	0	
2B3P Flat	18	28	20	25	36	0	
3B5P Flat	1	1	1	0	0	0	
2B4P House	0	0	0	0	0	8	
3B5P House	0	0	0	0	0	8	
<b>Total</b>	<b>32</b>	<b>49</b>	<b>36</b>	<b>43</b>	<b>57</b>	<b>16</b>	<b>233</b>

**Table 1** - Proposed accommodation schedule

### 1.2 Relevant Planning Policies

The relevant planning policies are the:

- National Planning Policy Framework (updated on 10 October 2018).
- Basildon Borough Local Plan (adopted 2018) - Development Strategy 2014, Development Management Policies DPD and supporting guidance documents.
- Regional Planning Policies

This Sustainability Statement demonstrates that the proposed development should meet the requirements outlined within the relevant planning policies contained within the above documents where it is technically and financially feasible.

## 2 INTRODUCTION

This Sustainability Statement has been prepared on behalf of Sempra Homes, in support of the hybrid planning application comprising full planning permission for the comprehensive redevelopment of Chapel Gate located at Basildon Essex.

This document details how the proposed development will meet the sustainable design and construction requirements set out in the Basildon Borough Local Plan (adopted 2018), the Basildon District Local Plan and the National Planning Policy Framework.

The proposed development consists of the demolition of the existing car park and the construction of 217 flats and 16No. of houses providing the total of 233 new-build dwellings. The proposed accommodation schedule is as follows:

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3B5P Flat	1	1	1	0	0	0	
2B4P House	0	0	0	0	0	8	
3B5P House	0	0	0	0	0	8	
<b>Total</b>	<b>32</b>	<b>49</b>	<b>36</b>	<b>43</b>	<b>57</b>	<b>16</b>	<b>233</b>

**Table 2 – Proposed accommodation schedule**

The surrounding area comprises of low-rise buildings, consisting of mainly residential use alongside Laindon Link Road and a BP Garage to the east. The below site location plan from BTPW shows the approximate location of the proposed development.



Figure 1 - Location of the proposed development (property of BTPW Architects)™

Proposed development  
boundaries

### 3 RELEVANT PLANNING POLICIES

#### 3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was updated on 19 February 2019. The NPPF sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which local planning policies can be produced to achieve sustainable developments.

### ***Achieving sustainable development***

Sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

The planning system has three overarching objectives, which are interdependent and need to be pursued in mutual supportive ways:

- a) **An economic objective** - to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- b) **A social objective** - to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- c) **An environmental objective** - to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

### ***Meeting the challenge of climate change, flooding and coastal change***

The NPPF requires that plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.

New development should be planned for in ways that can help reduce greenhouse gas emissions, such as through its location, orientation and design.

### 3.2 Basildon District Local Planning Policies

Basildon District Development Plan comprises of multiple planning documents, including the Basildon Borough Development Strategy 2036 (Adopted in 2014), Development Management DPD (Adopted December 2014) and supporting guidance documents. In conjunction with the National and Regional Planning Policies, they set out the strategy for future development in Basildon.

An outline of the policies relating to sustainable design and construction is provided below:

#### **Development Strategy 2031, Development Plan Document (Adopted in 2014)**

##### **Spatial Vision for Basildon 2031**

It is expected that the design of all development will achieve high standards of sustainability and provide for climate change adaptation and mitigation. In addition new development will be expected to contribute to improving the quality of life in the borough through the reduction of noise pollution, protecting soundscape quality, reducing pollutant emissions and minimising public exposure to pollution.

##### **Delivery of the Vision for Basildon Borough 2026**

(f) To ensure that future development achieves the highest standard of sustainable design and construction, including construction of the public realm, highways and other physical infrastructure. In this regard, the council will seek to reduce energy usage in buildings by requiring all development to demonstrate that it has minimised on-site carbon dioxide emissions by using less energy through maximising energy efficiency, supplying energy efficiently using low carbon heating and cooling systems and using on-site renewable energy generation. The council will work with partners to promote and develop decentralised energy (DE) networks with a particular focus on those parts of the borough with the greatest potential for such networks.

Sustainable design and construction standards are set out in a separate energy evidence base report, Towards Zero Carbon Development in Basildon. This document followed the energy hierarchy 'be lean', 'be clean' and 'be green' and sets minimum advisory targets for reducing CO<sub>2</sub> emissions from all development, while setting requirements for establishing potential low carbon heat distribution networks.

(m) To reduce the overall level of flood risk in the borough and beyond, through the layout and form of new development, and the appropriate application of sustainable drainage techniques. All new development, including the consideration of sites forming part of the Development Sites DPD, will be the subject of a sequential test, which will seek to direct new development to areas of least risk.



## **Development Strategy 2031 (Adopted in 2014) continued...**

### **Protect the Natural Environment - Biodiversity and Geodiversity**

(a) To protect and promote the network of Nature Conservation sites in the borough, through enhancing the natural value of existing sites, and improving access particularly in areas of deficiency. Biodiversity will be considered in the management of all green spaces and the network of waterways, including parks, gardens, private amenity space, cemeteries, green corridors and other incidental areas, and where development is proposed in or adjacent to such spaces.

### **Chapter 6 Ensuring Sustainable Delivery**

Basildon Borough Council will provide appropriate social, physical and green infrastructure in the right locations and at the right time to support the levels of housing and employment growth to be delivered in Ealing. To do this, Basildon Borough Council have produced an Infrastructure Delivery Plan. This comprises:

- Infrastructure Delivery Plan (IDP) - this sets out how infrastructure planning and delivery is working at the local level, drawing upon the service delivery plans/ estates strategies of the council and other infrastructure providers, and an
- Infrastructure Delivery Schedule (IDS) - an evidence-based schedule which summarises the planned infrastructure, phasing, delivery mechanism and contingencies outlined in the IDP.

Infrastructure has been grouped into physical, social and green infrastructure. Chapter 6 sets out the council's aspirations of meeting the infrastructure requirements.

### **Development Management DPD (Adopted in 2014)**

#### **Green Infrastructure: The Network of Open and Green Spaces**

(l) Development should not compromise the visual openness or heritage value of open and green spaces particularly with regard to views within and across these areas. The impact of development upon views to and from open and green spaces is also a material consideration.

#### **Urban Greening**

Development proposals should replace existing trees and plantings on the basis of no net loss of amenity.

#### **Green Roofs and Development Site Environs**

Green roofs are strongly encouraged on all development where it would be appropriate in design, contextual and conservation terms. Green roofs should be provided on major development that falls within 100m of the following designations: Green Belt, Metropolitan Open Lan, Green Corridor, Public Open Space, Community Open Space and Sites of Importance for Nature Conservation.

## **Development Management DPD (Adopted in 2014) continued...**

### **Green Roofs and Development Site Environs**

Green roofs are strongly encouraged on all development where it would be appropriate in design, contextual and conservation terms. Green roofs should be provided on major development that falls within 100m of the following designations: Green Belt, Metropolitan Open Lan, Green Corridor, Public Open Space, Community Open Space and Sites of Importance for Nature Conservation.

### **Flood Risk Management**

(f) All development, including that on land that is not part of a defined floodplain, must ensure that it is not vulnerable to surface water, sewer and groundwater flooding.

(g) New development that reduces the capacity of the floodplain or is in any way vulnerable to flooding will not be permitted within an 8m buffer along all main rivers, and a 5m buffer alongside all ordinary watercourses.

(h) There is a general presumption against the use of treatments that do not take a sustainable approach to drainage in domestic gardens and open space.

### **Parking**

Number of marked spaces - 10% of total off-street parking provision

Number of enlarged but unmarked spaces - 1 space per 10 dwellings

(a) Development which in the course of its operations will cause emissions of any sort must;

- d) Not erode the amenity of surrounding uses or the site itself
- e) Take all reasonable steps to ameliorate these emissions
- f) Provide all necessary evidence of mitigation that is required by the local planning authority

(b) The requirement to properly regulate and ameliorate emissions applies also to functionally separate areas within a given development, for instance between separate flats or dwellings.

(c) Sensitive uses will not be permitted where these would achieve acceptable levels of amenity only by substantially sealing residents or users off from their surrounding environment.

(d) Development that is sensitive to operational emissions of a particular type must avoid locating in areas in which there are established concentrations of such emissions that cannot be properly addressed through the design process.

### **Development Management DPD (Adopted in 2014) continued...**

#### **Design Amenity**

(a) New development must achieve a high standard of amenity for users and for adjacent uses by ensuring:

- o) High quality architecture
- p) Good levels of daylight and sunlight
- q) Good levels of privacy
- r) Coherent development of the site
- s) Appropriate levels of development on site
- t) Positive visual impact
- u) Legibility and accessibility

(b) External treatments, fittings and materials must complement the building and context and must not impair the visual amenity of surrounding uses.

#### **Open Space**

(a) All developments that increase demand for open space will be expected to make an appropriate contribution towards meeting this additional demand (as detailed in Table 7D.2 of the Development Management DPD).

(b) Any development adjacent to or neighbouring existing open space should seek to enhance and not compromise the character of that open space or its function.

#### **Sustainable Transport for New Development SPD**

The Sustainable Transport for New Development Supplementary Planning Document (SPD) outlines what is required within the Transport Assessment and Travel Plan reports. It also provides information cycle storage provision, car clubs and low car developments.

### 3.3 The Basildon Borough Plan Regional Planning Policies

The Regional Planning Policy applicable to Basildon is the Basildon Borough Plan (adopted 2018) which forms part of the Basildon District Local Plan. This document has been structured to follow the thematic approach set out in the *National Planning Policy Framework (NPPF)* published in 2012. The vision and objectives for development and change within Basildon Borough are followed by initial suite of policies that set out the strategic approach to growth and the distribution of the development across the Borough in order to achieve a sustainable pattern of the development.

The below provides a summary of the requirements for sustainable design and construction which are reflected in both the current and new versions of the Basildon District Plan.

#### Sustainable Design and Construction

Current Basildon Borough Plan (2018):

- Chapter 6 – Achieving Sustainable Development

Current Basildon Borough Plan (2018):

- Chapter 15 – Meeting the Challenge of Climate Change and Flooding

Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.

The policies require **major** development proposals to meet the minimum standards outlined in the supplementary planning guidance and that this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies within the planning policies, such as:

- Minimising carbon dioxide (CO<sub>2</sub>) emissions;
- Avoiding internal overheating; efficient use of natural resources;
- Minimising pollution (including noise, air and urban run-off);
- Minimising the generation of waste and maximising reuse or recycling;
- Avoiding impacts from natural hazards;
- Ensuring developments are comfortable and secure for users;
- Securing sustainable procurement of materials, using local supplies where feasible; and
- Promoting and protecting biodiversity and green infrastructure.

## 4 PROPOSED MEASURES

This section provides a summary of the measures that are being applied to meet the sustainable design and construction requirements outlined in the National, Local and Regional Planning Policies.

### 4.1 Energy Strategy

**Aim:** *To minimise operational energy demand, primary energy consumption and CO<sub>2</sub> emissions.*

**Relevant Policies:** *Development Strategy - Policies CC1/CC5/CC6.*

The development shall be designed in accordance with the planning policies outlined above, applying the following energy hierarchy:

- 'Be Lean' - use less energy
- 'Be Clean' - supply energy efficiently
- 'Be Green' - use renewable energy

As the development consists of residential buildings it will be assessed against Part L1A 2013 of the Building Regulations, which relates to the conservation of fuel and power within new-build dwellings. The Standard Assessment Procedure (SAP) 2012 methodology will therefore be applied.

The development will demonstrate best practice performance for fabric and engineering services, targeting compliance with Part L 2013 of the Building Regulations through passive design, energy efficiency and renewable energy.

A full *Energy Strategy Report* has been produced by calfordseaden LLP. The report focuses on the full planning application permission for Chapel Gate development and shows the results achieved for each stage of the energy hierarchy. A summary of the proposals are outlined below:

#### **'Be Lean' Measures**

'Be Lean' looks at the improvements in building fabric in order to reduce the energy consumption for space heating, ventilation and lighting. **Table 3** outlines the proposed building fabric specification, comparing it against the limiting parameters in Part L1A 2013 of the Building Regulations.

Passive measures	PART L 2013	Flats	Houses
<b>U-values (W/m<sup>2</sup>K)</b>	-		
<b>External Walls</b>	0.30	0.18	0.18
<b>Sheltered Wall</b>	0.30	0.20	0.20
<b>Party Walls</b>	0.20	0.00	0.00
<b>Exposed Floor</b>	0.25	0.13	0.13
<b>Exposed Roof</b>	0.20	0.13	0.13
<b>Windows</b>	2.0	1.20	1.40
<b>Solar Transmittance</b>	N/A	0.50	0.63
<b>Doors</b>	2.0	1.00	1.00
<b>Air-tightness (@50Pa)</b>	10 m <sup>3</sup> /(h m <sup>2</sup> )	4 m <sup>3</sup> /hm <sup>2</sup>	4 m <sup>3</sup> /hm <sup>2</sup>
<b>Thermal bridging</b>	0.15	Calculated using ACD	Calculated using ACD
<b>Water (l/person/day)</b>	125	105	25% improvement
<b>Low energy lighting</b>	75%	100%	100%

**Table 3 – Proposed building fabric specification against Part L1A 2013 limiting parameters**

**Table 3** demonstrates the proposed building fabric specification is improved quite significantly over the limiting parameters outlined in Part L1A 2013 of the Building Regulations.

Improving the insulation and air tightness of the building fabric significantly reduces heat loss and infiltration through external elements. Careful detailing around thermal bridging junctions is also important and key to minimising the risk of condensation and mould. Balconies should be externally supported where possible so that supports do not penetrate the insulation in the external wall.

The proposed glazing solar transmittance (g-value) of 0.50 has been applied to the glazing on all elevations to reduce the risk of summer overheating. Allowing sufficient solar gains to enter rooms during the winter months reduces the space heating demand. However, it is also important to ensure that excessive solar gains are not entering the dwelling during the summer months.

Sheltered walls are between heated spaces (i.e. dwellings) and unheated spaces (i.e. common area corridor/lift shaft etc.). The higher U-value of 0.20W/m<sup>2</sup>K has been applied to walls adjacent to lift shafts/stair cores where a concrete wall is required. This reduces the space available for thermal insulation.

Party walls between dwellings and other heated spaces can have a U-value of 0W/m<sup>2</sup>K applied with fully filled cavity and effective edge sealing or solid.

Exposed floors include floors exposed to external and over unheated spaces.

Improving the insulation and air tightness of the building fabric significantly reduces heat loss and infiltration through external elements. Careful detailing around thermal bridging junctions is also

important and key to minimising the risk of condensation and mould. Accredited Construction Details (ACD) have been applied to the applicable junctions. Balconies should be externally supported where possible so that supports do not penetrate the insulation in the external wall. For the purpose of this assessment it has been assumed that balcony supports will penetrate the insulation as a worst case scenario. A psi-value of 0.64W/mK (0.32W/mK per dwelling) has been applied assuming the use of a high performance thermal break. The cold thermal bridging junctions will require thermal modelling during the design to determine the actual psi-value that can be applied for these junctions in the Design Stage SAP calculations.

The proposed air tightness of 4m<sup>3</sup>/hm<sup>2</sup> (@50Pa) to the flatted building and 4.5m<sup>3</sup>/hm<sup>2</sup> (@50Pa) to the houses has been applied.

The proposed glazing solar transmittance (g-value) of 0.50 to the flatted buildings and 0.63 to the houses has been applied to the glazing on all elevations to reduce the risk of summer overheating. Allowing sufficient solar gains to enter rooms during the winter months reduces the space heating demand. However, it is also important to ensure that excessive solar gains are not entering the dwelling during the summer months.

The improvement achieved through the building fabric specification can be indicated through the Dwelling Fabric Energy Efficiency (DFEE) for the dwellings. **Table 9** demonstrates the improvement achieved over the Target Fabric Energy Efficiency (TFEE).

The improvement achieved through the building fabric specification can be indicated through the Dwelling Fabric Energy Efficiency (DFEE) for the dwellings. **Table 4** demonstrates the improvement achieved over the Target Fabric Energy Efficiency (TFEE).

	TFEE (kWh/m <sup>2</sup> /year)	DFEE (kWh/m <sup>2</sup> /year)	Improvement (%)
<b>Houses</b>	55.11	50.24	8.84%
<b>Flats</b>	48.35	42.67	11.74%
Site-Wide	<b>49.03</b>	<b>43.43</b>	<b>11.41%</b>

**Table 4** - Final DFEE and TFEE for the residential units in Chapel Gate Development

## Building Services Specification

### Mechanical Ventilation

System 4 balanced ventilation, Mechanical Ventilation with Heat Recovery (MVHR), will be applied to all apartments. MVHR removes warm stale air from the wet rooms and kitchen whilst drawing fresh air from external to the habitable rooms (living room, bedrooms etc.). The supply air is passed over a plate heat exchanger to transfer heat from the extracted air; thus, reducing the heating demand from the space heating system. The Nuair MRXBOXAB-ECO2 unit has been applied which has a low Specific Fan Power (SFP) of 0.50W/l/s and a high plate heat exchanger efficiency of 90% (for kitchen + 1 wet room).

System 3 continuous Decentralised Mechanical Extract Ventilation (DMEV) will be applied to all houses. Controllable (adjustable or automatically controlled) background ventilators (minimum equivalent area



of 2500mm<sup>2</sup>) should be provided in each room, except wet rooms, in line with Part F of the Building Regulations. The Nuaire MEVDC unit has been applied to the houses which has a low SFP of 0.20W/l/s to kitchens and 24W/l/s to wet rooms where the fan is located within the room.

### Lighting

The lighting design is to consist of 100% low energy lighting.

### 'Be Clean' and 'Be Green' Measures

#### Space and Water Heating - Flats

The London Heat Map was used to determine if there are any existing or potential district heating networks within the local vicinity of the proposed development. The closest planned district heating network is located approximately 23 miles south of the development's location in the area of Romford. Therefore, in the absence of an available district heating network the proposed space heating and hot water strategy is to provide a hybrid community heating system through a central plant room located in Block E.

The plant room located at ground floor level will house the ultra-low NO<sub>x</sub> mains gas boilers and thermal store, whilst on the roof there will be Air Source Heat Pumps (ASHP). A high efficiency (above 95%) gas boilers have been applied providing 40% of the site's total demand. Air Source heat pumps with efficiency of 250% (or CoP of no less than 2.5) have been applied providing 60% of the site's total demand. This hybrid system allows efficiencies of the plant to be optimised throughout the year providing affordable space heating and hot water. During the summer months the ASHPs will be providing a majority of the heating demand as this is when they are most efficient due to the higher external temperatures. The mains gas boilers will provide back-up heating when required to meet the peak demand. During the winter months, when ASHPs become less efficient, the mains gas boilers will operate at a higher output to help meet the space heating and hot water demand.

All occupants will be metered based on their use (i.e. charging system linked to use), with programmers, TRVs and at least one room thermostat.

All flats will be connected to the community heating system.

#### Space and Water Heating - Houses

All houses will be provided with their own individual gas combi boilers to provide space heating and domestic hot water to each property. The combi boiler Vaillant Ecotec Plus 832 come complete with time and temperature control, interlock and delayed start thermostat.

Low temperature heating radiators will be provided in all rooms with thermostatic radiator valves.

### Solar Photovoltaic Array

Solar Photovoltaic (PV) array will be provided across the development. Each house will have their own PV system providing an output of 0.981kWp per house (3no. 327Wp PV panels).

The current roof layout indicates that there is sufficient space available for approximately 166 solar PV panels installed at the roof of Blocks A to E, providing a total output of 54.28kWp based on 327Wp panels. This equals to 0.25kWp per flat.

The PV quantity arrangement we proposed as follow:

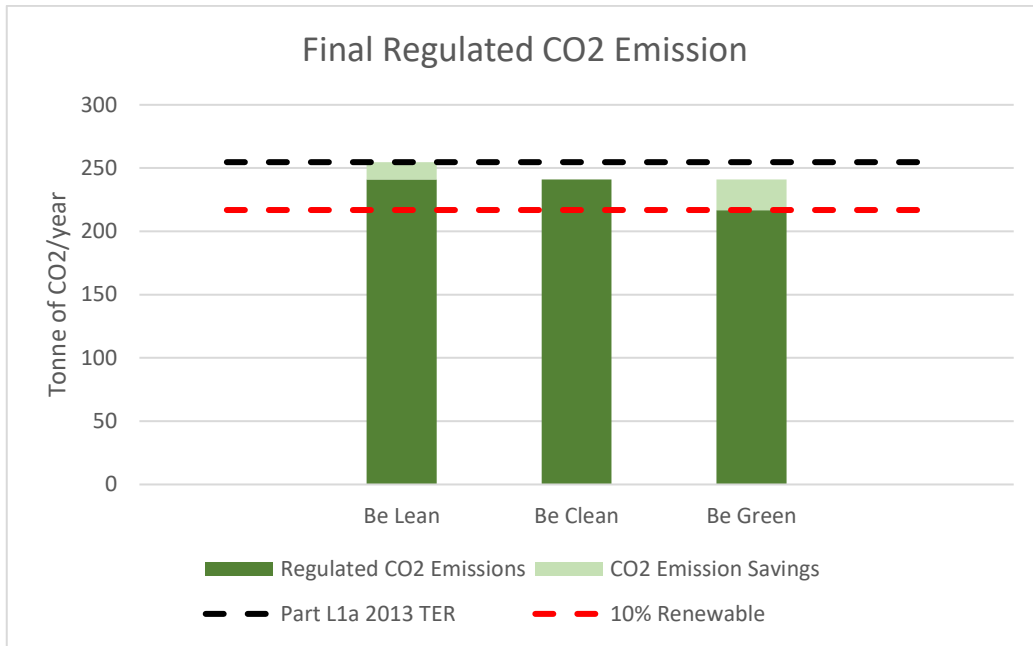
- Block A – 24no. 327Wp panels
- Block B – 37no. 327Wp panels
- Block C – 28no. 327Wp panels
- Block D – 33no. 327Wp panels
- Block E – 44no. 327Wp panels

The amount of solar PV panels may need to be reduced during the design stage should additional space be required for mechanical and electrical services (i.e. Soil Vent Pipes (SVP), Automatic Opening Vents (AOVs) etc.). The solar PV array will be connected to the landlord’s supply to provide electricity for communal lighting and equipment.

**Table 5** and **Figure 2** present the final regulated CO<sub>2</sub> emissions and the percentage of improvement over the baseline emissions for Chapel Gate Development.

Target	Regulated CO <sub>2</sub> emissions	Regulated CO <sub>2</sub> emissions saved	Regulated percentage of CO <sub>2</sub> emissions saved
<b>CHAPEL GATE DEVELOPMENT - Part L</b>	Tonnes CO <sub>2</sub> /annum	Tonnes CO <sub>2</sub> /annum	
<b>Baseline</b>	254.685	-	-
<b>Be Lean</b>	240.971	13.714	5.38%
<b>Be Clean</b>	240.971	0.000	0.00%
<b>Be Green</b>	203.643	37.329	14.66%
<b>Site-Wide Total</b>	203.643	51.043	20.04%
<b>Be Green Improvement over Be Lean: 15.49%</b>			

**Table 5** – Final regulated CO<sub>2</sub> emissions reduction over Part L 2013 TER for Chapel Gate Development



**Figure 2** – Final regulated CO<sub>2</sub> emissions reduction over Part L1a 2013 TER for Chapel Gate Development

The results indicate that through the application of the energy hierarchy a final site-wide CO<sub>2</sub> emission reduction of 20.04% will be achieved over the Building Regulations Part L1a 2013 baselined (Target Emission Rate) with the SAP 2012 CO<sub>2</sub> emission factors applied.

Based on the results above, the renewable technologies (solar PV array and ASHP) will provide a site-wide CO<sub>2</sub> emission reduction of 15.49% over the site-wide 'Be Lean' results.

### Chapel Gate Development 'Be Lean' Emissions

**Table 6** and **Figure 3** demonstrates the progress of the energy hierarchy for the dwellings in Chapel Gate Development:

Target	Regulated CO <sub>2</sub> emissions	Regulated CO <sub>2</sub> emissions saved	Regulated percentage of CO <sub>2</sub> emissions saved
<b>DWELLINGS - Part L1A</b>	Tonnes CO <sub>2</sub> /annum	Tonnes CO <sub>2</sub> /annum	
<b>Baseline</b>	254.685	-	-
<b>Be Lean</b>	240.971	13.714	5.38%

**Table 6** – 'Be Lean' regulated CO<sub>2</sub> emissions reduction for the dwellings in Chapel Gate Development over Part L1A 2013 TER (with SAP 2012 emission factors applied)

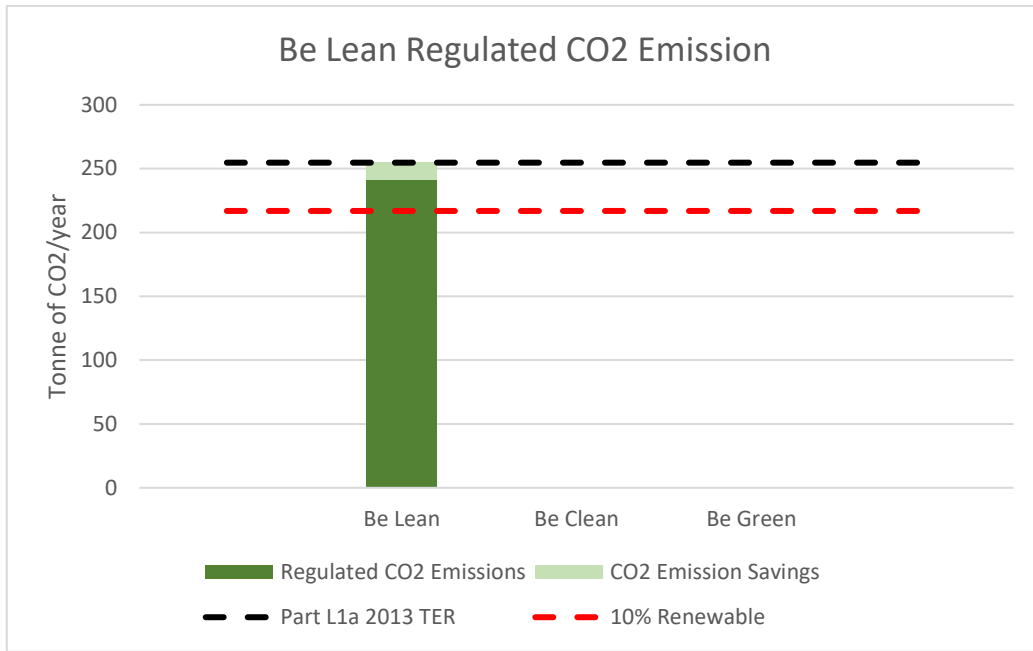


Figure 3 – ‘Be Lean’ regulated CO<sub>2</sub> emissions reduction for the dwellings in Chapel Gate Development over Part L1A 2013 TER (with SAP 2012 emission factors applied)

Table 7 and Figure 4 demonstrates the progress of the energy hierarchy for the Dwellings:

Target	Regulated CO <sub>2</sub> emissions	Regulated CO <sub>2</sub> emissions saved	Regulated percentage of CO <sub>2</sub> emissions saved
<b>DWELLINGS - Part L2A</b>	Tonnes CO <sub>2</sub> /annum	Tonnes CO <sub>2</sub> /annum	
<b>Baseline</b>	254.685	-	-
<b>Be Lean</b>	240.971	13.714	5.38%
<b>Be Clean</b>	240.971	0.000	0.00%

Table 7 – ‘Be Lean’ regulated CO<sub>2</sub> emissions reduction for the Dwellings over Part L2A 2013 TER (with SAP 2012 emission factors applied)

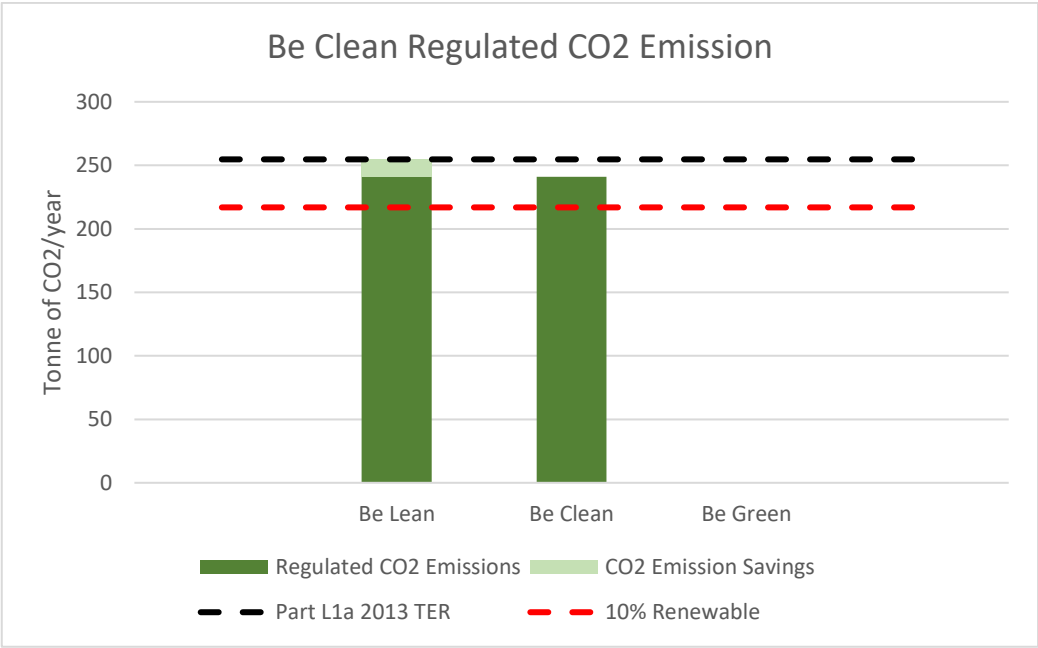
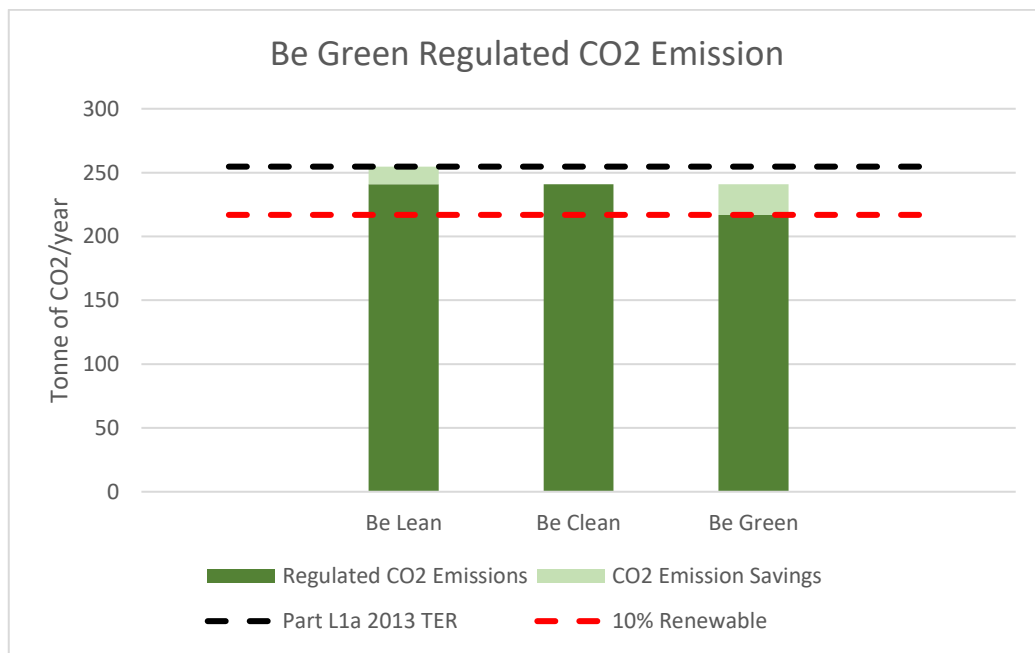


Figure 4 – ‘Be Clean’ regulated CO<sub>2</sub> emissions reduction for the Dwellings over Part L2A 2013 TER (with SAP 2012 emission factors applied)

**Table 8** and **Figure 5** demonstrates the progress of the energy hierarchy for the Dwellings at Chapel Gate Development:

Target	Regulated CO <sub>2</sub> emissions	Regulated CO <sub>2</sub> emissions saved	Regulated percentage of CO <sub>2</sub> emissions saved
<b>CHAPEL DEVELOPMENT - Part L</b>	<b>GATE</b> Tonnes CO <sub>2</sub> /annum	Tonnes CO <sub>2</sub> /annum	
<b>Baseline</b>	254.685	-	-
<b>Be Lean</b>	240.971	13.714	5.38%
<b>Be Clean</b>	240.971	0.000	0.00%
<b>Be Green</b>	203.643	37.329	14.66%

**Table 8 – Estimated site-wide ‘Be Lean’ regulated CO<sub>2</sub> emissions reduction for Chapel Gate Development over Part L 2013 TER (with SAP 2012 emission factors applied)**



**Figure 5 – ‘Be Green’ regulated CO<sub>2</sub> emissions reduction for Chapel Gate Development over Part L 2013 TER (with SAP 2012 emission factors applied)**

## 4.2 Water Efficiency

**Aim:** To reduce the consumption of potable water for sanitary use in new buildings through the use of water efficient components and water recycling systems.

**Relevant Policies:** Development Strategy – Policy CC5 and CC6.

The internal water usage will be reduced to achieve 105 litres/person/day through the use of flow restrictors to taps, dual flush WCs, limited bath capacity and specification of washing machines and dishwashers (where being provided). The following components are to be included as a minimum:

- WCs
- Wash-hand basin taps
- Showers
- Baths
- Kitchen taps
- Washing machines (where being provided)
- Dishwashers (where being provided)

Part G of the Building Regulations states that “*reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water*”. Water efficient fittings and fixtures would be installed in the residential development with the aim of providing betterment to the Building Regulations requirement of 125 litres/person/day for all new dwellings, with an aspiration of achieving 105 litres/person/day.

A water meter on the mains water supply to each dwelling will be installed to allow the internal water use to be measured.

In addition to the above internal measures, water butts will be provided to the rear gardens of the houses to collect rainwater for irrigation purposes. This will therefore reduce mains water usage for external use.

### 4.3 Construction & Operational Waste Management

**Aim:** To reduce construction waste by encouraging reuse, recovery and best practice waste management practices to minimise waste going to landfill. To encourage the recycling of operational waste through the provision of dedicated storage facilities and space.

**Relevant Policies:** Basildon Borough Council – Local Plan 2016 - Development Strategy – Policies CC5 and CC6.

A demolition audit will be carried out to determine what materials can be reused or recycled from the existing hard surfaces considered for demolition. This will maximise the recovery of material during demolition and diversion of non-hazardous waste from landfill.

Waste from construction will be diverted from landfill, recycled and reused on-site where possible. Waste materials are to be sorted into separate key waste groups as listed below:

- Bricks (re-use as Type 6F2)
- Concrete (re-use as Type 6F2)
- Inert (mixed rubble or excavation material, glass)
- Metals
- Gypsum
- Soils (will be reused where possible)
- Liquids (removed by specialist)
- Hazardous (removed by specialist)

Materials such as electrical wiring, electronic equipment, plastics and oils, will be taken off site by the subcontractor to be recycled.

There will be mixed skips for all other waste (e.g. insulation, packaging, timber, plastics, architectural features and other mixed materials) which will be taken away from the skip company and segregated at the depot for recycling/disposal.

A Site Waste Management Plan (SWMP) will be produced which will set out the proposed methods for achieving the above on-site and will be prepared and submitted to the Council for approval prior to works commencing on site.

Each dwelling will be provided with dedicated storage space for the segregation of recyclable. Basildon Borough Council offer a collection service on alternate weeks for recycling and general waste.



#### 4.4 Materials & Green Procurement

**Aim:** *To facilitate the selection of products that involve lower levels of negative environmental, economic and social impact across their supply chain including extraction, processing and manufacture. To encourage availability of robust and comparable data on the impacts of construction products through the provision of Environmental Product Declarations.*

**Relevant Policies:** *Basildon Borough Council – Local Plan 2016 - Development Strategy – Chapter 12*

Materials used in the construction of the proposed building will be responsibly sourced and their embodied energy minimised. All timber and timber-based products used will be sourced from a ‘Legal’ and ‘Sustainable’ source as per the Government’s Timber Procurement Policy (TPP).

Where there is a better performing alternative material, this will be considered over the specified material if technically and economically viable. Materials with an Environmental Product Declaration (EPD) will be selected over alternative materials, where technically and economically viable.

## 4.5 Health & Wellbeing

**Aim:** To provide a safe and secure setting with available open space and amenities to the occupants.

**Relevant Policies:** Basildon Borough Local Plan - Development Strategy – Chapter 5.0 Vision and Objectives

Residents living in the flatted blocks will be provided with a key fob for the main entrance. They will be able to let visitors enter the building through the door entry system. External lighting will be provided across the development to ensure that adequate lighting is provided when dark.

Each house will be provided with their own private rear garden and each apartment will be provided with their own private balcony.

A new pedestrian and cyclist route runs East-West across the middle of the site. There is an existing cycle path running North-South to the east of the site which the Scheme will be connected to. There is also an existing pedestrian (via steps) access to the North East of Block E.

Please refer to the BTPW Design and Access Document number CPK-BTPW-XX-XX-DO-A-0630.

The development is also within a short walking distance (15 minutes) of Gloucester Park with a number of facilities, such as all-weather stadium and sport pitches. The following amenities are also available within a mile radius of the proposed development:

- Primary and Secondary schools
- Nurseries
- Basildon train stations
- Basildon Golf Course Club
- Restaurants (eat in and takeaway)
- Supermarkets
- Pharmacies and opticians
- Doctor surgeries
- Places of worship
- Post office

There are also other facilities just outside of the mile radius such as libraries and leisure centres.

#### 4.6 Flood Risk & Drainage Strategy

**Aim:** *To assess the potential flood risk on the development and surrounding area. To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, thereby minimising the risk and impact of localised flooding on-site and off-site, watercourse pollution and other environmental damage.*

**Relevant Policies:** *Basildon Borough Local Plan - Development Strategy – Policies CC1 and CC2*

##### **Flood Risk Assessment**

The Flood Risk Assessment report issued 17<sup>th</sup> March 2021 by Tully De Ath's indicates that surface flood risk is imminent towards the east of the site. As a result, 2 of the flat blocks (Blocks B and D) GF FFL have been raised by the addition of external ramps and steps. Block E is also within the surface flood risk area however, as there are no residential units on ground floor the flood risk is minimized. Flood defence doors will be provided for the plant energy centre located at Block E.

For full details of the flood risk assessment, please see Tully De Ath report submitted as part of the planning proposal.

#### 4.7 Land Use & Ecology

**Aim:** *To encourage the use of previously occupied contaminated land and avoid land which has not been previously disturbed. To determine the existing ecological value associated with the site, including surrounding areas, and the risks and opportunities for ecological protection and enhancement as part of the project.*

**Relevant Policies:** *Basildon Borough Local Plan - Development Strategy – Policies NE1 and NE5*

DF Clark Bionomique Ltd Ltd have been appointed to carry out a *Ecological Appraisal* report for the scheme. The ecological appraisal was completed based on a desk study and walkover survey. It has been submitted in support of the planning application. The report outlines the planning policy requirements and the proximity to nature conservation sites and presence of fauna and flora species within the site boundary. Recommendations have been provided that should be implemented to help protect the habitats and their species and reduce the spread of invasive plant species.

For full details and recommendations, please refer to the Final Ecological Impact Assessment report.

**Proposed Landscaping**

The existing site consist of a hardstanding carpark on the east and woodland and semi improved grassland to the west. The carparking and hardstanding and semi improved grassland are to be demolished for the construction of Blocks A-E and 16no houses. The majority of the woodland will be retained as part of the development proposal.

Matt Lee Landscape Architects have been appointed to provide the landscaping design. They have produced a *Landscape Masterplan* for the development as a whole which indicates existing trees, proposed trees and proposed green areas. A Townscape and Visual appraisal study has been prepared by Barton Willmore and will form part of the planning submission.

A landscape master plan is presented on the figure below.



## 4.8 Transport

**Aim:** *To reward awareness of existing local transport and identify improvements to make it more sustainable. To maximise the potential for local public, private and active transport through provision of sustainable transport measures appropriate to the site.*

**Relevant Policies:** *Basildon Borough Local Plan - Development Strategy – Policies TS1*

Intermodal Transportation Ltd have been appointed to carry out a *Transport Assessment* report and a *Travel Plan* report. The *Transport Assessment* report provides details on the accessibility and public transport facilities in the local vicinity of the proposed development. The *Travel Plan* report provides details on the measures and the targets that will assist in promoting the uptake of sustainable travel modes.

For a detailed analysis of the transportation proposals, please see Intermodal's report dated March 2021.

#### 4.9 Air Quality

**Aim:** *To minimise the impacts in the local air quality and contribute to a reduction in local air pollution through the use of low emission combustion appliances in the building.*

**Relevant Policies:** *Basildon Borough Local Plan - Development Strategy – Policies SD1*

Miller Goodall Consultants Ltd have been appointed to carry out an *Air Quality Assessment* report to provide details on the local air quality and assess the impacts of the proposed development in the local air quality. The proposed development is located within a borough-wide Air Quality Management Area (AQMA) declared by the Basildon Borough.

Please see below the recommendations as proposed by Miller Goodall:

- The assessment considered whether the proposed development could significantly change air quality during the construction and operational phases.
- With the implementation of mitigation measures, the dust impacts from the construction are considered to have no residual effects in accordance with IAQM guidance.
- Concentrations of NO<sub>2</sub> and PM<sub>10</sub> are likely to be below their respective long-term and short-term objectives at the proposed development site which is therefore considered suitable for residential use with regards to air quality. The proposed development is also expected to experience levels of PM<sub>2.5</sub> below the PM<sub>2.5</sub> target.
- The traffic associated with the proposed development is not expected to have a significant impact on local air quality when considered in accordance with IAQM Guidance 9.
- Therefore, there is no reason for this application to be refused on the grounds of air quality.

During construction, a range of appropriate measures will be put in place to ensure that dust emissions and related pollutants are reduced and that the overall effect of construction works to the local air quality will be 'not significant'. The mitigation measure will be written into a dust management plan (DMP). The mitigation measures are set out in Section 7 of the *Air Quality Assessment* report.

#### 4.10 Noise Pollution

**Aim:** *To assess the risk of disturbance to occupants from high levels of external noise. To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.*

**Relevant Policies:** *Basildon Borough Local Plan - Development Strategy – Policies NE7*

Cass Allen have been appointed to undertake a *Noise Assessment Study* report to assess the site wide scheme in terms of noise and determine an appropriate acoustic performance specification for the building envelope. The report indicates that two different position across the development site were selected to assess the external noise. One position located on the proposed façade overlooking railway lines and one to proposed façades facing the roundabout.

Please see below recommendation proposed by Cass Allen, for the full report please check Cass Allen Noise Assessment report dated 15<sup>th</sup> March 2021.

- The assessment was carried out in accordance with relevant local and national planning guidance.
- A noise and vibration survey was carried out at the site. Average noise levels at the site are dictated by road traffic noise emissions from Laindon Link and the A176. Maximum noise levels at the south of the site were dictated by train passes on the adjacent railway. Maximum noise levels at the north and east were dictated by road traffic on the surrounding roads.
- Noise affecting the development has been assessed in accordance with the ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of suitable double glazing and acoustically enhanced ventilation louvres. This can be investigated further at the detailed design stage and may be controlled by the Local Planning Authority with a suitable planning condition.
- Ground-borne vibration levels at the site have been measured to be compliant with BS6472-1:2008 and are considered acceptable for the development.
- In summary of the above it is our view that the site is suitable for the development in terms of noise and vibration levels and that planning permission should be granted.



#### 4.11 Summer Overheating

**Aim:** To assess the risk of summer overheating and apply measures required in order to reduce the extent of overheating.

**Relevant Policies:** Basildon Borough Local Plan - Development Strategy – Policy CC1

A *Summer Overheating Assessment* has been carried out by calfordseaden LLP to assess the risk of summer overheating within the dwellings against CIBSE TM59:2017 criteria, as follows:

##### **Criterion (a)**

*For living rooms, kitchens and bedrooms:* the number of hours during which the difference in operative temperature ( $\Delta T$ ) is greater than or equal to one degree (K) (over the maximum adaptation temperature) during the period May to September inclusive shall not be more than 3% of occupied hours. (CIBSE TM52:2013 Criterion 1: *Hours of exceedance*).

##### **Criterion (b)**

*For bedrooms only:* to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26°C for more than 1% of annual hours. (*Note:* 1% if the annual hours between 22:00 and 07:00 for bedrooms are 32 hours, so 33 or more hours above 26°C will be recorded as fail.)

##### **Cooling Hierarchy**

As required in the Regional and Local Planning Policies, the *Summer Overheating Assessment* tool demonstrates how the risk of summer overheating can be reduced through passive measures, avoiding the reliance on air conditioning systems in accordance with the following cooling hierarchy:

1. Reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure.
2. Minimise internal heat generation through energy efficient design.
3. Manage the heat within the building through exposed internal thermal mass and high ceilings.
4. Provide passive ventilation.
5. Provide mechanical ventilation.
6. Provide active cooling systems.

##### **Acoustic and Air Quality Considerations**

a) Unless there are site specific restrictions to ‘regular’ (rather than intermittent) window opening, windows must be openable. Acoustic and Air Quality reports should include a statement acknowledging that windows can be used for Part F ‘Purge’ ventilation and where suitable to control overheating.

b) Where Air Quality analysis states windows cannot be used for background ventilation or mitigation of overheating, active systems will need to be considered including filtered supply air (MVHR) and comfort cooling.

c) Where Acoustic analysis states that windows cannot be opened, acoustic ventilation panels will need to be utilised. The acoustic panels should be sized to provide a minimum free area in accordance with Part F.

### Ventilation Panels

Where security (level access apartments) or safety (fall from height) prevents the opening of windows greater than 100mm, a secure ventilation panel will be required. The panel must provide sufficient free area (m<sup>2</sup>) ventilation to comply with Building Regulations Part F.

Where Acoustic analysis requires noise mitigation, ventilation panels will need to be acoustic type which can increase the size and complexity of the panel. Where possible panels should be as tall as possible to promote air movement.

Figure 7.3.1: Part F Purge Ventilation

**Windows**

- For a hinged or pivot window that opens 30° or more or for parallel sliding windows (e.g. vertical sliding sash windows), the height x width of the opening part should be at least 1/20th of the floor area of the room.
- For a hinged or pivot window that opens between 15° and 30°, the height x width of the opening part should be at least 1/10th of the floor area of the room.
- If the window opens less than 15° it is not suitable for providing **purge ventilation** and other arrangements should be made.

Figure 7.3.2: Example of Ventilation Panel (not acoustic)



Figure 7.3.3: Example of Acoustic Ventilation Panel (TEK Ltd)



**Conclusion for Dwellings**

(Cooling hierarchy measures applied - 1, 2, 4 and 5)

**Conclusion for Communal Corridors**

(Cooling hierarchy measures applied - 1, 2, 4 and 5)

## Overheating Checklist

The following overheating checklist has been completed for the proposed development as outlined below:

<b>Section 1 - Site Features affecting vulnerability to overheating</b>		<b>Yes or No</b>
Site Location	Urban - within central London <sup>29</sup> or in a high density conurbation	No - the proposed development is within Basildon and is therefore classified as outside London
	Peri-urban - on the suburban fringes of London <sup>30</sup>	No - the proposed development is within Basildon and is therefore classified as outside London
Air quality and/or Noise sensitivity - are any of the following in the vicinity of buildings?	Busy roads / A roads	Yes
	Railways / Overground / DLR	Yes
	Airport / Flight path	No
	Industrial uses / waste facility	No
Proposed building use	Will any buildings be occupied by vulnerable people (e.g. elderly, disabled, young children)?	Yes
	Are residents likely to be at home during the day (e.g. students)?	With a mixture of dwelling types, and being affordable housing it is possible that some residents are likely to be home during the day.
Dwelling aspect	Are there any single or dual aspect units?	Yes. 33No. flats - this amounts to 14% single aspect and 86% dual aspect.
Glazing ratio	Is the glazing ratio (glazing: internal floor area) greater than 25%?	No
	If yes, is this to allow acceptable levels of daylighting?	N/A
Security - Are there any security issues that could limit opening of windows for ventilation?	Single Storey ground floor units	Yes - Ground Floor apartments on Blocks A to D.
	Vulnerable areas identified by the Police Architectural Liaison Officer	N/A
	Other	

<sup>29</sup> Urban - as defined in CIBSE Guide TM29. Broadly equivalent to Central Activities Zone and Inner London areas in Map 2.2 of the London Plan

<sup>30</sup> Peri-urban - as defined in CIBSE Guide TM29. Broadly equivalent to Outer London areas in Map2.2 of the London Plan

Section 2 - Design features implemented to mitigate overheating risk		Please respond
Landscaping	Will deciduous trees be provided for summer shading (to windows and pedestrian routes)?	Yes - see landscape plan for location of planting
	Will green roofs be provided?	Yes - Block A, B and C will have green/brown roof (mix specified by Ecologist)
	Will other green or blue infrastructure be provided around buildings for evaporative cooling?	Yes - PV panels are spread across all flats
Materials	Have high albedo (light colour) materials been specified?	Yes. All walls and ceilings to be white colour.
Dwelling aspect	% of total units that are single aspect	14% - 33No. units
	% single aspect with N / NE / NW orientation	0%
	% single aspect with E orientation	4% - 10No. units
	% single aspect with S / SE / SW orientation	0%
	% single aspect with W orientation	10% - 23No. units
Glazing ratio - What is the glazing ratio (glazing: internal floor area) on each façade?	N / NE / NW	N/A
	E	Approximately 8-15% depending on floor area of dwelling
	S / SE / SW	N/A
	W	Approximately 8-15% depending on floor area of dwelling
Daylighting	What is the average daylight factor range?	Up to 7.8% - Right of Light Consulting Daylight and Sunlight Report indicates 99.2% of habitable rooms will achieve BRE guidelines with 1.8% ADF target applied to LKDs.
Windows opening	Are windows openable?	Yes - some fixed panes adjacent to openable windows
	What is the percentage of openable area for the windows?	Varies per window type. Please refer to elevations.

Section 2 - Design features implemented to mitigate overheating risk		Please respond
Windows opening	Fully openable	Top hung fully reversible specified
- What is the extent of the opening	Limited (e.g. for security, safety, wind loading reasons)	30° top hung windows on upper floors, 20° top hung windows on ground floor
Security	Where there are security issues (e.g. ground floor flats) is the planting provides a buffer between the public and private areas to eliminate security issues for night time natural ventilation been provided (e.g. ventilation grates)?	Yes - see landscape plan for location of planting
Shading	Is there external shading?	Yes - local balconies
	Is there internal shading?	Yes - blinds
Glazing Specification	Is there any solar control glazing?	Yes
Ventilation - What is the ventilation strategy?	Natural - background	No
	Natural - purge	Yes
	Mechanical - background (e.g. MVHR)	Yes (MVHR)
	Mechanical - purge	No
	What is the average design air change rate	As Per Approved Document F
Heating System	Is communal heating present?	Yes
	What is the flow/ return temperature?	70°C/40°C
	Have horizontal pipe runs been minimised?	Yes
	Do the specification include insulation levels in line with the London Heat Network Manual <sup>31</sup>	N/A

<sup>31</sup> [http://www.londonheatmap.org.uk/Content/uploaded/documents/LHNM\\_Mnual2014Low.pdf](http://www.londonheatmap.org.uk/Content/uploaded/documents/LHNM_Mnual2014Low.pdf)


**Table 9 – Overheating checklist**

## 5 CONCLUSION

This Sustainability Statement demonstrates that the proposed development should meet the sustainable design and construction requirements outlined in the National, Regional and Local Planning Policies where it is technically and financially feasible.

The following measures have been applied to the designs:

- Relevant specialists have been appointed to assess and provide recommendations on transport, flood risk, drainage, ecology, landscaping, energy use and CO<sub>2</sub> emissions reduction, air quality and noise pollution.
- Enhanced building fabric specification and passive solar design has been implemented to reduce the space heating demand.
- Hybrid community heating with ASHP and mains gas boilers has been implemented into the design to provide the annual space heating and hot water demand across the development.
- Solar PV array provided across the development.
- A final CO<sub>2</sub> emission reduction of 20.04% is achieved over Part L 2013 of the Building Regulations with the SAP 2012 CO<sub>2</sub> emission factors applied for Chapel Gate Development. Please see Appendices for the full summary.
- It is estimated that the solar PV array and ASHPs will provide a 15.49% reduction in CO<sub>2</sub> emissions.
- Construction waste will be diverted from landfill where possible and segregated into material types for ease of reuse and recycling.
- Dedicated storage will be provided to allow easy separation and collection of recyclable and compostable waste during operation.
- All timber and timber-based products will be responsibly sourced as per the Government's TPP.
- All other materials will be responsibly sourced. Materials with EPDs available will be specified where possible.
- Access to local amenities are within a short distance of the proposed development, including open parkland, supermarket, restaurants, doctor surgeries, nurseries, schools and post office.
- Flood risk is considered low. SuDS have been implemented into the design to reduce the surface water run-off and to ensure there is no increase in risk on-site or elsewhere as a result of the proposals.
- New landscaping will provide new species of trees and shrubbery across the development.
- Bat mitigation measures and provision of bat boxes.
- Multiple landscape green areas will be provided.
- Secure, covered cycle storage will be provided to the flats and houses.
- The development will have a negligible/low impact on the noise and air quality in the local area.
- 167 car parking bays will be provided with 10No. of those bays designated as disabled parking. The proposed strategy for EVCP is to have 40% active. 10% passive and 50% ducted infrastructure.

Signed: 

Emily Mansfield LCEA, OCDEA, BREEAM AP, CEPHC

Senior Sustainability Engineer, for and on behalf of Calfordseaden LLP

**NOTES: All information within this report has been based on information received to date.**