



JUNE 2022

# Environmental Standards Statement

Land to the rear of Chorlton Irish Club, Cross Road

Iceni Projects Limited on behalf of  
Southway Housing

June 2022

ICENI PROJECTS LIMITED  
ON BEHALF OF SOUTHWAY  
HOUSING

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Environmental Standards Statement  
LAND TO THE REAR OF CHORLTON IRISH CLUB,  
CROSS ROAD



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# 1. EXECUTIVE SUMMARY

- 1.1 Icen Projects Ltd was commissioned by Southway Housing to produce an Environmental Standards Statement to support the planning application for the proposed redevelopment of the land to the rear of Chorlton Irish Club, Cross Lane, Chorlton, M21 9DJ, comprising part of the car park.
- 1.2 This application proposes the redevelopment of the site to provide a four-storey apartment scheme comprising up to 29 dwellings (Use Class C3), along with associated car parking, cycle storage and a bin store.
- 1.3 Sustainability is a core consideration of the application and has been incorporated from the project outset. Resource and water efficiency have been maximised, thus ensuring the impact of the proposals on its immediate surroundings and the environment as a whole is minimised.
- 1.4 By designing to rigorous energy standards, the application will respond directly to the Climate Emergency declared by the Council in July 2019. These measures will provide a minimum carbon dioxide emissions saving of 23%, compared to the Part L:2013 baseline, meeting the requirements of Manchester City Council through on-site means alone.
- 1.5 Consideration has been given to the Manchester's Local Development Framework: Core Strategy Development Plan Document in the formulation of this strategy, aiming to minimise the environmental impact of the proposed development during construction and operation, and to ensure the development is constructed to rigorous sustainability standards.
- 1.6 The proposed strategy has been based around the objectives of the Local Plan policies EN 4 (Reducing CO<sub>2</sub> Emissions by Enabling Low and Zero Carbon Development) and EN 6 (Target Framework for CO<sub>2</sub> Reductions from Low or Zero Carbon Energy Supplies). In summary, based on this strategy, the proposed development will achieve a minimum 23% carbon dioxide emissions reduction over Part L1A:2013 of the Building Regulations through the following measures:
- Specification of a high level of building fabric energy performance, a high level of air tightness and the minimisation of thermal bridging to minimise heat loss;
  - Mechanical ventilation with heat recovery to provide fresh air, with heat recovered from extracted air;
  - Specification of highly efficient electric space and water heating systems compliant with the requirements of the Domestic Building Services Compliance Guide; and

- 
- Employment of highly efficient LED lighting throughout to limit artificial lighting energy consumption.

1.7 Section 4 of this Environmental Standards Statement also demonstrates that the proposed development will seek to:

- Minimise the risk of flooding on-site and within the immediate surroundings;
- Minimise internal water consumption, targeting a rate no higher than 105 litres per person per day;
- Ensure waste is managed sustainably both during the construction and operation of the scheme;
- Incorporate low-impact materials, according to the BRE Green Guide to Specification;
- Incorporate measures to improve site biodiversity, including the provision of new tree, hedge and ornamental shrub planting; and
- Ensure potential adverse impacts on the City's main waterways are mitigated.

1.8 Overall, the proposals constitute sustainable development in accordance with national and local policy requirements and will provide a development that seeks to promote these principles in operation.

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## 2. INTRODUCTION

- 2.1 Icen Projects Ltd was commissioned by Southway Homes to produce an Environmental Standards Statement to support the planning application for the proposed redevelopment of the land to the rear of Chorlton Irish Club, Cross Road, Chorlton, M21 9DJ, comprising part of the car park.

### **Report Objective**

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- 2.2 This document details the sustainable design and construction measures adopted by the proposed development and gives an overview of the design proposals that will ensure the development operates in a sustainable manner over the lifespan of the scheme. The Environmental Standards Statement report headlines will provide a framework for the project team to operate consistently within sustainability guidelines set out by Manchester City Council.
- 2.3 The report is structured to meet these guidelines as follows:
- Section 3 discusses the planning context and policies which are relevant to sustainability;
  - Section 4 discusses the development's energy strategy to minimise carbon dioxide emissions; and
  - Section 5 summarises the development's design response.

### **Site and Surroundings**

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- 2.4 The application site is located in the centre of Chorlton, a sub-urban ward of Manchester. The site is comprised of a hardstanding carpark associated with the Chorlton Irish Club.
- 2.5 The northern boundary of the site is formed by the existing Chorlton Irish Club building, which fronts onto High Lane. The site is bounded by Cross Road to the east, with Barlow Moor Road, and a number of associated high street uses, located beyond this. Beech Road Park forms the southern boundary of the site, with mixed residential and retail uses characterising the area further to the south. A Buddhist Centre and residential flats adjoin the existing Chorlton Irish Centre at the western boundary of the site, with additional residential buildings situated beyond this.

**Figure 2.1 Site location**

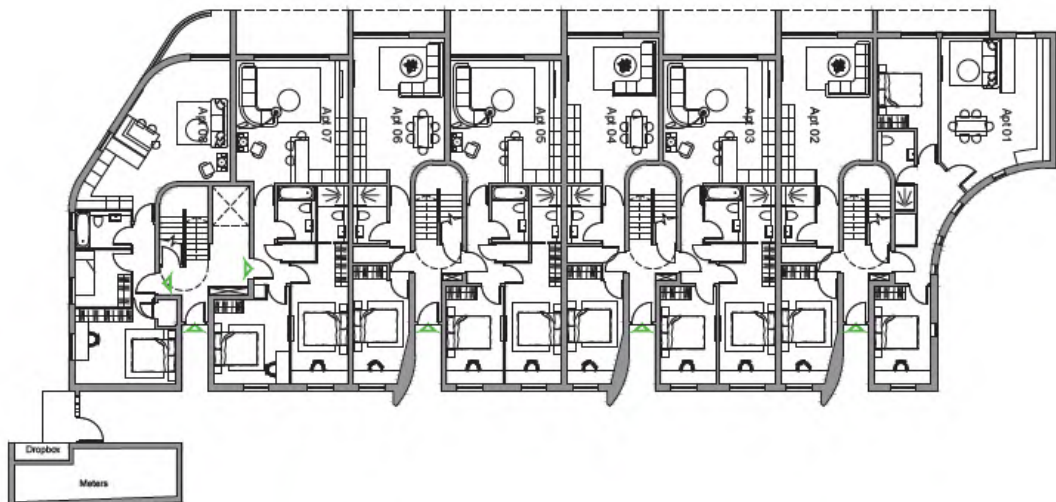
 Site Location



### **The Proposed Development**

- 2.6 The proposed development will provide a four-storey apartment scheme, along with associated car parking, cycle storage and a bin store.
- 2.7 The proposal will comprise the following mix of dwelling types:
- 10 no. 1-bed apartments; and
  - 19 no. 2-bed apartments.
- 2.8 The images below show sample plans and elevations of the scheme based on drawings prepared by the architects, View Associates, in November 2021.

**Figure 2.2 Proposed ground floor plan**



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**Figure 2.3 Proposed north elevation**



**Figure 2.4 Proposed east elevation**



**Figure 2.5 Proposed south elevation**



**Figure 2.6 Proposed west elevation**



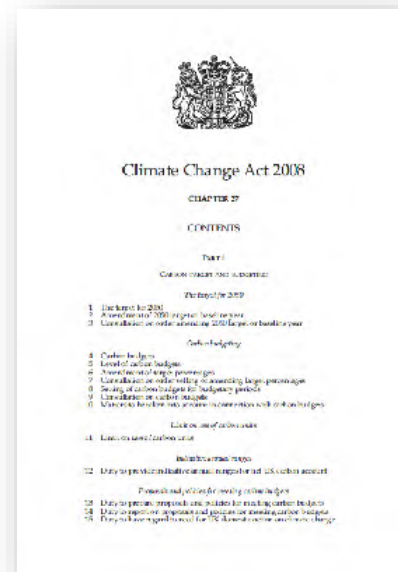
### 3. PLANNING AND REGULATORY CONTEXT

- 3.1 Built environment sustainability is incorporated within policy and regulation at a national and local level, as set out below.

#### National

##### Climate Change Act 2008

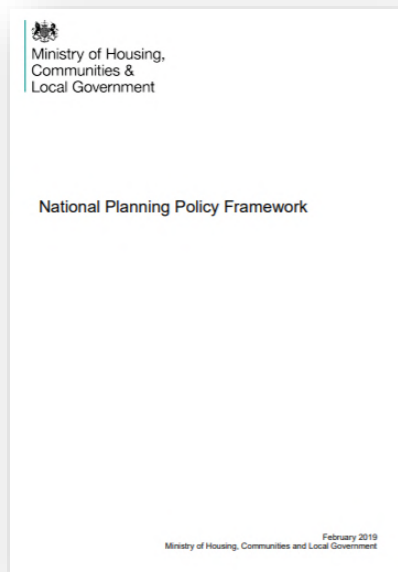
- 3.2 On 26<sup>th</sup> November 2008, the UK Government published the Climate Change Act 2008; the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to increase greenhouse gas emission reductions through action in the UK and abroad from the 60% target set out in the Energy White Paper, to 80% by 2050.



- 3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.
- 3.4 Following a commitment in June 2019, the Climate Change Act has been amended to target net zero carbon emissions by 2050.

##### National Planning Policy Framework

- 3.5 The Ministry of House, Communities & Local Government determines national policies on different aspects of planning and the rules that govern the operation of the system. Accordingly, the National Planning Policy Framework (NPPF), which came into force in March 2012 and was updated in February 2019, aims to strengthen local decision making. Additional updates have since been made through the latter half of 2020 and in January and July 2021 to reflect changes related to use classes, permitted development rights, the calculation of housing need, and requirements to achieve beauty alongside sustainability.



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- 3.6 Paragraphs 10 and 11 of the NPPF confirm that at the heart of this document is a “*presumption in favour of sustainable development*”, and that development proposals that accord with an up-to-date development plan should be approved without delay.

#### **Future Homes Standard 2025 (March 2019)**

- 3.7 Within the Spring Statement 2019, the Chancellor announced the future introduction of the Future Homes Standard 2025. The Standard will mandate the end of fossil fuel heating systems in new homes from 2025 and target “world-leading levels of energy efficiency”. In doing this, the Standard aims to utilise green technology to reduce environmental impacts, as well as reducing consumer energy bills.



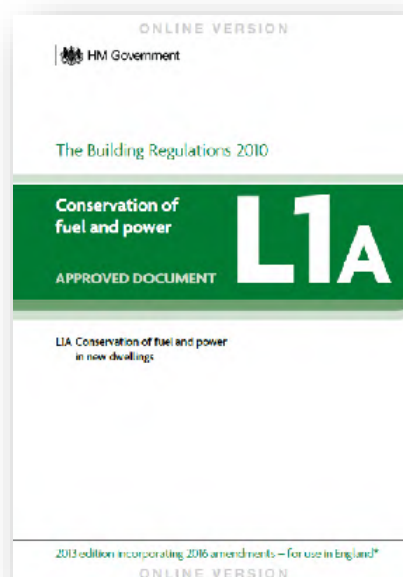
- 3.8 This Standard is expected to build on the Prime Minister’s Clean Growth Grand Challenge mission, which aims to at least halve the energy usage of new build properties by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

#### **Part L:2013 of the Building Regulations**

- 3.9 Part L of the Building Regulations relates to the conservation of fuel and power, and applies to both new and existing buildings. The current edition covers the energy efficiency requirements of the building regulations as set out in Part L of Schedule 1 to the Building Regulations. Technical guidance is contained in four Part L Approved Documents and two building services compliance guides.

3.10 The documents of relevance to this scheme include:

- **Approved Document L1A:2013.** This provides the methodology for new build, domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from domestic appliances (cooking, for example) are considered to be unregulated emissions, and are excluded from the analysis.



- **Domestic Building Services Compliance Guide.** The Domestic Building Services Compliance Guidance came into effect on 6<sup>th</sup> April 2014. It provides guidance for the installation of fixed building services in new and existing buildings in compliance with the energy efficiency requirements of the Building Regulations 2010. Recommended minimum energy efficient standards for components of building service systems are set out within the guide.

The guide contains four fuel-based heating sections: gas-fired, oil-fired, electric and solid fuel. It also contains nine technology-specific sections: community heating, underfloor heating, mechanical ventilation, heat pumps, comfort cooling, solar water heating, lighting, micro-combined heat and power and heating system circulators.



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## Local

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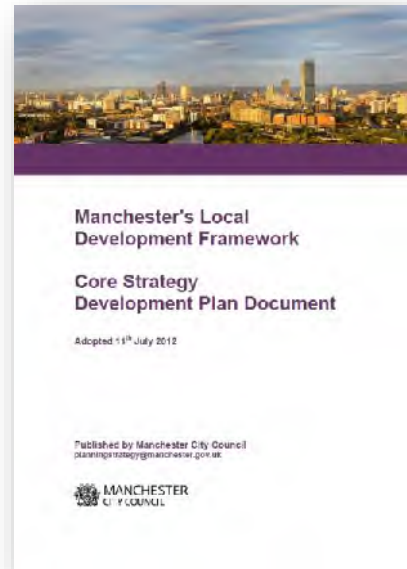
- 3.11 In determining the local context, the Manchester's Local Development Framework: Core Strategy Development Plan Document (July 2012) sets out policy relevant to sustainable development and carbon emissions.

**Manchester's Local Development Framework: Core Strategy Development Plan Document (July 2012)**

- 3.12 Manchester's Local Development Framework: Core Strategy Development Plan Document outlines the Council's vision for Manchester in 2027 along with the planning policies which will be used to deliver that vision. Policies of relevance to this project in the context of energy are as follows:

- 3.13 **Policy EN 4: Reducing CO<sub>2</sub> Emissions by Enabling Low and Zero Carbon Development** states that the Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO<sub>2</sub> emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed:
  - To reduce the need for energy through design features that provide passive heating, natural lighting and cooling;
  - To reduce the need for energy through energy efficient features such as improved insulation and glazing; and
  - To meet residual energy requirements through the use of low or zero carbon energy generating technologies.
- Wherever possible, new development and retrofitted projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.
- Where possible, new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.
- Where appropriate, new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy schemes.



- The use of buildings materials with low embodied carbon in new development and refurbishment schemes.

3.14 **Policy EN 6: Target Framework CO<sub>2</sub> Reductions from Low and Zero Carbon Energy Supplies** states that Applications of residential development for 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target set out in the table below, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO<sub>2</sub> emissions for all phases of the development.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).
- Target 2 Electricity intense areas: Locations where the predominant building type has an all electric fit-out such as retail units and leisure complexes.
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.

**Table 3.1 Domestic CO<sub>2</sub> emissions targets**

| Target                                    | % Minimum requirement                                                                         |
|-------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Target 1: Network development area</b> | CHP/district heating anchor or connection or where not feasible a 15% increase on Part L 2010 |
| <b>Target 2: Electricity intense area</b> | + 15% increase on Part L 2010                                                                 |
| <b>Target 3: Micro-generation area</b>    | + 15% increase on Part L 2010                                                                 |

Where the CO<sub>2</sub> emissions reduction required under any future revision to Part L of the Building Regulations becomes greater than the ‘% Minimum requirement’, the reduction required under Building Regulations would apply.

Where the Council identifies an ‘allowable solution’, for example within an energy proposals plan, that would produce higher carbon reductions at no extra cost than that of achieving the ‘% Minimum requirement’ (or required under Building Regulations if greater), the higher percentage reduction will

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be required. The cost comparison is based on the cost of incorporating the 'allowable solution' at design stage.

The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO<sub>2</sub> mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.

**Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (April 2007)**

3.15 The Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (SPD/SPG) document provides guidance on the preparation of documents to be submitted to Manchester City Council as part of planning applications.

3.16 Chapter 4 of the SPD/SPG states the Council's commitment to making Manchester "the Greenest City in Britain", and provides guidance on the information that should be included within Environmental Standards Statements. The topics that should be covered within these Statements are:



- Energy Efficiency: developers should show how they have considered the steps necessary to reduce energy demand at the earliest stages of design;
- Renewable Energy: developers should aim for at least 20% of final site energy demand to be met by on-site renewable energy technologies;
- Environmental Design: developers should demonstrate energy efficiency through the use of the Department for Communities and Local Government's 'Code for Sustainable Homes' for residential development, or the Building Research Establishment Environmental Assessment Method (BREEAM), for non-residential development;
- Water Management and Weather Resilience: developers should show how water is to be managed in the most environmentally effective way;
- Waste Management: developers should demonstrate how waste arising as a result of development will be managed;

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- Construction Management: developers should demonstrate that environmentally friendly materials will be employed where possible;
  - Biodiversity: developers should demonstrate how biodiversity has been accounted for within proposed developments; and
  - Waterways: developers working in close proximity to the City's waterways should demonstrate how public access, environment and management will be enhanced.

## **Other Considerations**

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### **Declaration of a Climate Emergency (July 2019)**

3.17 On the 10<sup>th</sup> July 2019, Manchester City Council declared a climate change emergency. The Council noted that:

- The serious risks to Manchester's people, of climate change/global heating affecting economic, social and environmental well-being, supply chains – including food security, financial systems and local weather, among many other things.
- That in 2008 the 'Principles of Tackling Climate Change in Manchester' were agreed as a call to action to engage people from all walks of life in climate change action and, build support for a new way of thinking about climate change.
- That Manchester leads the way, with an agreed Paris compliant carbon budget set in December 2018, and an acceleration of the target for becoming a zero-carbon city by 12 years, setting 2038 as the new target for the city, based on research from the world-renowned Tyndall Centre for Climate Change.
- The recent and welcome upsurge of action by the young people of Manchester, exemplifying the radical traditions of which Manchester are proud.

3.18 The Council agreed (or to the extent that the below concern executive functions, recommended to the Executive) to:

- Declare a Climate Emergency.
- Continue working with partners across Manchester and GMCA to deliver the 2038 target, and determine if an earlier target can be possible, through a transparent and open review. Become carbon neutral by the earliest possible date.
- Encourage involvement in all wards by April 2020 through meetings as part of the Our Manchester strategy, to identify residents and partners who want to be actively involved in

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achieving the target, with provision for those who cannot attend. Ensure ward plans contain specific, measurable, achievable steps.

- Review all policies, processes and procedures to ensure the council can become carbon neutral. Present an action plan by March 2020 detailing how the city can stay within its carbon budget. Report back regularly to the NESC. Review the corporate plan.
- Make climate breakdown and the environment, an integral part of activity throughout the Council, including all decision making, ensuring key decisions take into account the impact on achieving the zero-carbon target and including an environmental impact assessment in all relevant committee reports.
- Investigate and introduce measures to help reach domestic zero carbon levels including addressing fuel poverty and retrofitting existing homes.
- Investigate ways to ensure that future local plans place a mandatory requirements for all new development to be net zero carbon by the earliest possible date.

#### **Building Regulations Part L:2021 (January 2021)**

- 3.19 On the 19<sup>th</sup> January 2021, the government announced the proposed changes to Part L of the Building Regulations that are set to be approved in December 2021. In order to achieve the national 2050 net zero greenhouse gas emissions target, it is anticipated that an uplift to the current energy performance requirements in the Building Regulations will be introduced. As a stepping stone to the Future Homes Standard being implemented in 2025, a 2021 interim uplift to Part L is expected to be come into force in 2022. Homes built to the Part L:2021 standard will aim to emit 31% less carbon dioxide when compared to the current standard set out in Part L:2013.

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## 4. ENVIRONMENTAL STANDARDS STATEMENT

4.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, the sustainability features of the proposed development are outlined below. As required within the Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (SPD/SPG) the following topics are addressed:

- Energy Efficiency;
- Renewable Energy;
- Environmental Design;
- Water Management and Weather Resilience;
- Waste Management;
- Construction Management;
- Biodiversity; and
- Waterways.

4.2 For the purposes of the Environmental Standards Statement, energy efficiency and renewable energy are addressed together within the “Energy Strategy” section below. Within this section, a comprehensive energy and carbon dioxide (CO<sub>2</sub>) emissions assessment has been carried out for the proposed development. The energy performance of the scheme has been analysed and evaluated against the most up-to-date iteration of Part L of the Building Regulations and pertinent Manchester City Council policies, accounting for economic, technical and functional feasibility. In addition, a section addressing the proposed development’s approach to minimising internal water consumption is included.

### **Energy Strategy**

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4.3 The proposed energy strategy is based upon the principles of the Council’s Energy Hierarchy on the basis that it is preferable to reduce carbon dioxide emissions through the use of sustainable materials and reduced energy consumption above decarbonisation through alternative energy sources.

4.4 The Manchester City Council Energy Hierarchy requires that all new buildings:

- Reduce the need for energy through design features that provide passive heating, natural lighting and cooling;

- 
- Reduce the need for energy through energy efficient features such as improved insulation and glazing; and
  - Meet residual energy requirements through the use of low or zero carbon energy generating technologies.

4.5 For the purposes of this Environmental Standards Statement, the first and second tiers of the Energy Hierarchy have been addressed together.

#### **Reduce the Need for Energy**

4.6 Passive design utilises daylight, solar energy, shading and stack or wind driven ventilation to illuminate, heat, shade and, where necessary, ventilate/cool the building, thus requiring less (mechanical) energy to achieve the performance standards for health and wellbeing of the residents. This is known as a 'fabric first' approach due to the fact that design improvements to the building fabric should be the primary consideration in delivering carbon dioxide emission reductions.

4.7 Site characteristics relating to local climate, surrounding, scale and size of the development therefore influence the potential energy requirements and savings that can be achieved through the consideration of this. The parameters that most influence the potential to utilise sunlight and solar gains are the orientation and layout of the buildings, however, these are typically influenced by factors other than energy efficiency or bioclimatic design considerations (e.g. aesthetics, function, etc.).

4.8 As shown in Figure 2.2, the dwellings proposed for the site comprise a range of orientations, driven by the layout of the masterplan to facilitate placemaking and good domestic design principles. Nonetheless, the fenestration of the proposed dwellings will provide a good balance of beneficial solar gain to offset heating demand and natural light, without increasing the risk of overheating.

4.9 U-values are a measure of the rate of heat transfer through a building element over a given area, under standardised conditions. They measure the rate at which heat is lost or gained through a fabric.

4.10 The following U-values are proposed for the proposed dwellings, to minimise heat loss/gain, depending on the time of year. As demonstrated in the table below, the proposed values will provide an improved level of building fabric performance beyond the requirements for domestic uses outlined within the Building Regulations.

**Table 4.2 Proposed building fabric U-values**

| Building Fabric Element | Part L1A:2013 backstop U-values (W/m <sup>2</sup> K) | Proposed U-values (W/m <sup>2</sup> K) |
|-------------------------|------------------------------------------------------|----------------------------------------|
| Ground floor            | 0.25                                                 | 0.09                                   |
| External wall           | 0.30                                                 | 0.15                                   |
| Roof                    | 0.20                                                 | 0.09                                   |
| Windows                 | 2.00 (including frame)                               | 1.20 (including frame)                 |

- 4.11 The glazing will be double glazed, argon filled with a low emissivity coating. Although this has yet to be formally specified, it is expected that window U-values will be 1.2 W/m<sup>2</sup>K or better (including frame), with a g-value of 0.63 and light transmission of ~70% to improve natural daylight penetration.
- 4.12 A high level of air tightness is proposed, where a level equal to or below 4 m<sup>3</sup>/h/m<sup>2</sup> shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating demand further reduced.
- 4.13 The other significant means of heat loss from dwellings is due to thermal (or cold) bridging. This is typically a construction detail which has higher thermal conductivity than the surrounding materials, creating a path of least resistance for heat transfer. Thermal bridges result in an overall reduction in thermal resistance of the building elements and should be designed out where possible to minimise unwanted heat loss. In order to minimise heat loss through thermal bridges, accredited construction details have been assumed, with an equivalent  $\psi$ -value of between 0.05 for each dwelling.
- 4.14 High efficiency plant, equipment and controls are proposed to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values were tested and improved in energy models to benchmark the resulting predicted CO<sub>2</sub> reduction.
- Low energy LED lighting will be installed throughout the residential units.
  - Space heating is to be provided by LOT20-compliant electric panel heaters. In order to comply with the Domestic Building Services Guide, the electric panel heater system installed within the development will incorporate:
    - Time control via a programmable time switch integrated into the appliance or by a separate time switch; and

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- Individual temperature control via integral thermostats or by separate room thermostats or programmable room thermostats.
  - It is proposed that individual air source heat pump (ASHP) hot water cylinders be installed within each of the residential dwellings to provide domestic hot water. It is intended that Dimplex EDEL units, or similar systems, will be provided. Typical manufacturer specifications for the proposed system quote a hot water coefficient of performance of 3.30. The proposed system will operate quietly however, as the design progresses, acoustic measures to further limit the noise generated by the proposed system will be considered.
  - Although residential units are provided with opening windows to mitigate against overheating and to provide fresh air, outside air will be provided via mechanical ventilation with heat recovery (MVHR), with a specific fan power (SFP) of no higher than 0.34 for kitchens, plus 0.2 for other wet rooms.

#### **Low and Zero Carbon Energy**

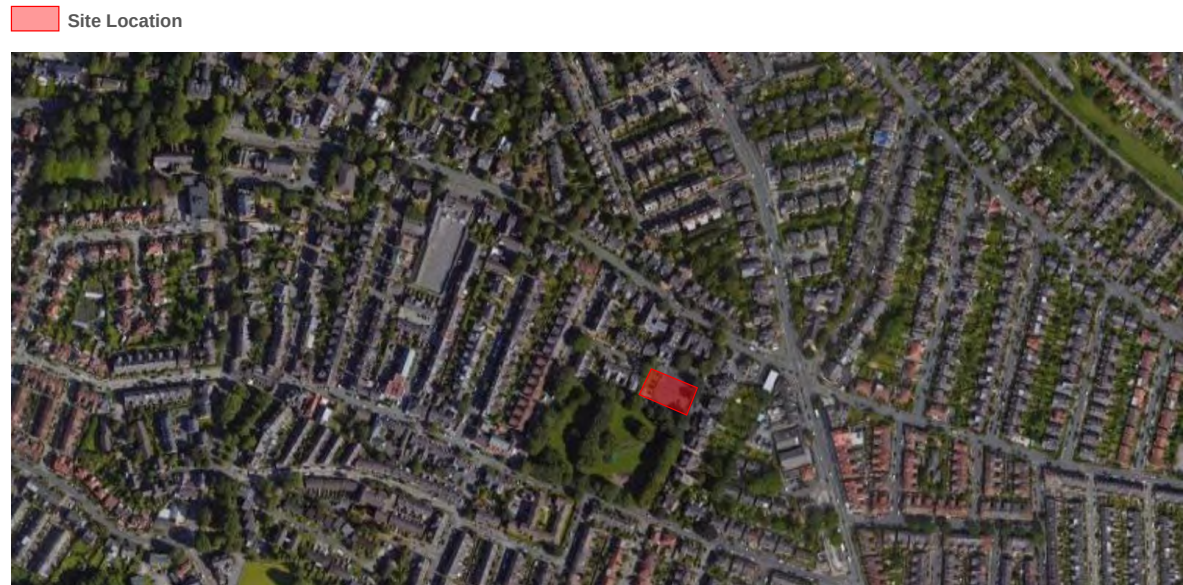
- 4.15 The potential for the proposed development to incorporate a low carbon heating system has been reviewed for the scheme.
- 4.16 Local heat and power sources minimise distribution losses and achieve greater efficiencies when compared to a separate energy system. This in turn reduces the site-wide energy consumption and associated carbon dioxide emissions.
- 4.17 The potential integration of a district heating network or a conventional gas-fired combined heat and power (CHP) plant to provide low carbon heat and power onsite has been evaluated for the development, in compliance with industry best practice and appropriate planning policies.

#### **District Heating Feasibility**

- 4.18 The feasibility of a district heating network is heavily dependent on a location's heat demand. In turn, heat demand in the locality is dependent on building usage and the surrounding area heat demand density.
- 4.19 Figure 4.1 below displays the proposed development site within its surroundings. From this, it can be concluded that the site itself is undeveloped, with areas of low-density light industrial and commercial uses to the north, east and west. The area to the south of the site is characterised by predominantly residential uses. Based on this, the area is concluded to likely have a low heat demand.
- 4.20 There are no existing or proposed district heating networks within close proximity to the development site. In addition, due to the relatively low dwelling numbers proposed by the development, and the

cost of the infrastructure required to connect a location of this nature to a district heat network, it is not deemed cost effective to establish a district heat network on the site.

**Figure 4.1 Site and surroundings**



- 4.21 Based on the anticipated timescale of the proposed development and the predicted trajectory of the national electricity grid decarbonisation, the development of a combined heat and power (CHP) network powered by fossil fuels is not considered to be the most carbon efficient approach.
- 4.22 The incorporation of a gas-fired CHP network will lock the development into relatively carbon intensive gas-fired heating and hot water technology, and will not facilitate the transition to less carbon intensive solutions. All electric space and water heating systems will allow the scheme to decarbonise in line with national grid decarbonisation.

#### **Renewable and Low Carbon Technology Feasibility**

- 4.23 The proposed development has also given consideration to renewable energy technologies that may be applicable to deliver the required level of carbon dioxide savings over the Part L:2013 baseline, and the likely local effects on the environment.
- 4.24 In determining the appropriate renewable technology for the site, a number of factors including carbon dioxide savings, site constraints, and potential visual impacts have been considered. Further details of each technology and its associated assessment in relation to the development are provided below.
- **Biomass** – This technology is not considered a practical solution for reducing carbon dioxide emissions, in the view of limited options available for domestic scale installations, storage space requirements for the combustible material, and the transport related carbon emissions which are not normally accounted for within energy modelling. Furthermore, high nitrous oxide (NO<sub>x</sub>) and

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particulate matter (PM<sub>x</sub>) emissions are associated with the use of biomass fuel, and as the proposed development will form part of a wider urban settlement, permitted emissions will be restricted.

- **Air Source Heat Pumps (ASHP)** – Whilst it is technically viable to provide space heating to the proposed dwellings using this technology, the positioning of the external condensers on the exteriors of the proposed units would have an adverse effect on the aesthetics of the buildings. Furthermore, it is considered that the noise and vibration associated with the external condensers would result in adverse impacts on the future occupants of the scheme. The employment of this technology has therefore been rejected for the proposed scheme. However, as noted above, it is intended that air source heat pump (ASHP) hot water cylinders will be employed to serve the domestic hot water demand of the proposed dwellings. As detailed above, it is intended that Dimplex EDEL units, or similar systems, will be provided, the typical manufactures details for which quote a hot water coefficient of performance of 3.30.
- **Ground Source Heat Pumps (GSHP)** – Due to the nature of the proposed development, the site is not suitable for a horizontal ground collection loop. Furthermore, ground investigation and borehole drilling are likely to be cost prohibitive and may not yield a suitable energy source. In addition to this, the carbon dioxide and energy cost savings arising from the use of this technology are unlikely to be significant when compared to that of the energy efficient gas-fired boilers proposed for the development, particularly as high-grade heat is required to generate domestic hot water. The use of ground source heat pumps for the proposed development is therefore not considered viable.
- **Photovoltaics (PV)** – Whilst the employment of this technology is feasible within the proposed development, for the purposes of this strategy its use has been rejected. This is because the suggested use of a ‘fabric first’ approach to minimise energy demand in the first instance, and the proposed employment of air source heat pump (ASHP) hot water cylinders, will enable the scheme to achieve an improvement over Part L of the Building Regulations that exceeds the requirements of Manchester City Council policies, without the need for additional renewable energy generation.
- **Solar Thermal** – This technology is presently rejected as domestic hot water is proposed to be provided by highly efficient individual electric hot water systems. In addition to this, hot water demand is considered to be outside the energy generating period for the solar thermal panels, meaning its ability to significantly reduce carbon emissions during operation is limited.
- **Wind Turbines** – This technology is rejected on the basis of its potential impact on visual amenity and relatively low efficiency from unpredictable, turbulent wind conditions associated with urban locations.

## Energy Assessment Results

- 4.25 Energy modelling of the proposed scheme has been undertaken by Base Energy in November 2021 using the Standard Assessment Procedure (SAP) for eight of the proposed dwellings. The locations of these dwellings are shown in the image below, with further details given in Table 4.2.

**Figure 4.2 Sample dwellings modelled**

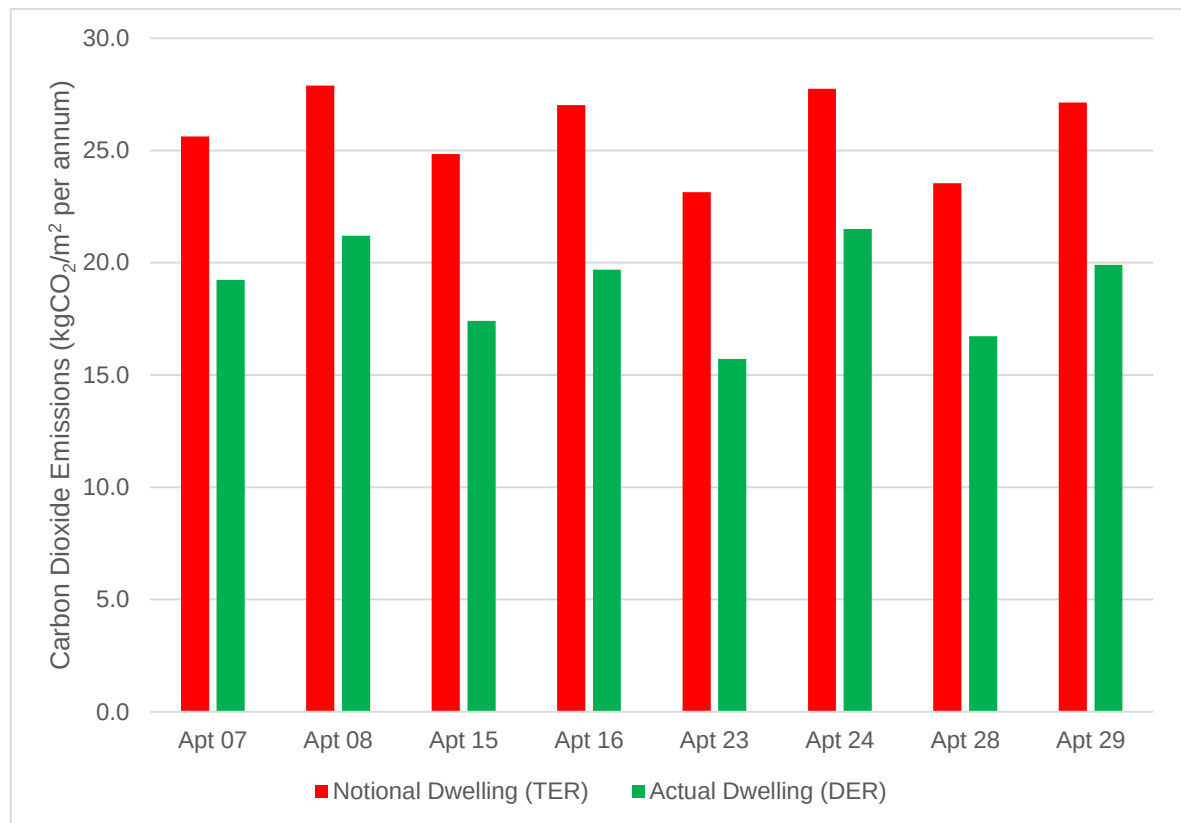


**Table 4.3 Sample dwellings modelled**

| Dwelling Reference | Dwelling Type                | Aspect  |
|--------------------|------------------------------|---------|
| <b>Apt 07</b>      | Ground floor 2-bed apartment | N, S    |
| <b>Apt 08</b>      | Ground floor 1-bed apartment | N, S, W |
| <b>Apt 15</b>      | First floor 2-bed apartment  | N, S    |
| <b>Apt 16</b>      | First floor 2-bed apartment  | N, S, W |
| <b>Apt 23</b>      | Second floor 2-bed apartment | N, S    |
| <b>Apt 24</b>      | Second floor 2-bed apartment | N, S, W |
| <b>Apt 28</b>      | Top floor 2-bed apartment    | N, S    |
| <b>Apt 29</b>      | Top floor 1-bed apartment    | N       |

- 4.26 The carbon dioxide emissions for the sampled dwellings are shown below. SAP compliance worksheets showing the performances of the modelled dwellings are provided in Appendix A1.

**Figure 4.3 Regulated carbon dioxide emissions**



**Table 4.4 Regulated carbon dioxide emissions**

| Dwelling Reference | TER: Baseline: Part L:2013 Emissions (kgCO <sub>2</sub> /m <sup>2</sup> per annum) | DER: Dwelling Emissions (kgCO <sub>2</sub> /m <sup>2</sup> per annum) | Proposed Emissions Savings (kgCO <sub>2</sub> /m <sup>2</sup> per annum) | Emissions Savings (%) |
|--------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------|
| <b>Apt 07</b>      | 25.62                                                                              | 19.24                                                                 | 6.38                                                                     | 25%                   |
| <b>Apt 08</b>      | 27.89                                                                              | 21.21                                                                 | 6.68                                                                     | 24%                   |
| <b>Apt 15</b>      | 24.84                                                                              | 17.41                                                                 | 7.43                                                                     | 30%                   |
| <b>Apt 16</b>      | 27.02                                                                              | 19.70                                                                 | 7.32                                                                     | 27%                   |
| <b>Apt 23</b>      | 23.14                                                                              | 15.72                                                                 | 7.42                                                                     | 32%                   |
| <b>Apt 24</b>      | 27.75                                                                              | 21.50                                                                 | 6.25                                                                     | 23%                   |
| <b>Apt 28</b>      | 23.54                                                                              | 16.73                                                                 | 6.81                                                                     | 29%                   |
| <b>Apt 29</b>      | 27.14                                                                              | 19.91                                                                 | 7.23                                                                     | 27%                   |

4.27 The above analysis shows that the proposed dwellings will achieve a minimum onsite carbon dioxide emissions saving of 23% through energy efficiency measures. As the tested dwellings provide a representative sample of the proposed development, it is expected that the savings presented within this assessment may be scaled across the scheme. This is in compliance with the requirements set out within the Manchester City Council policies.

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## Environmental Design

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- 4.28 The Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (SPD/SPG) requires the energy efficiency of new residential development to be demonstrated through the Code for Sustainable Homes. The Code for Sustainable Homes was withdrawn in April 2015, and has therefore not been applied to this development.
- 4.29 The SPD/SPG, as well as Core Strategy policies EN4 and EN6, require the energy efficiency of new non-residential development to be demonstrated through the Building Research Establishment Environmental Assessment Method (BREEAM). As the proposed development is a new build residential development, a BREEAM assessment has not been applied.

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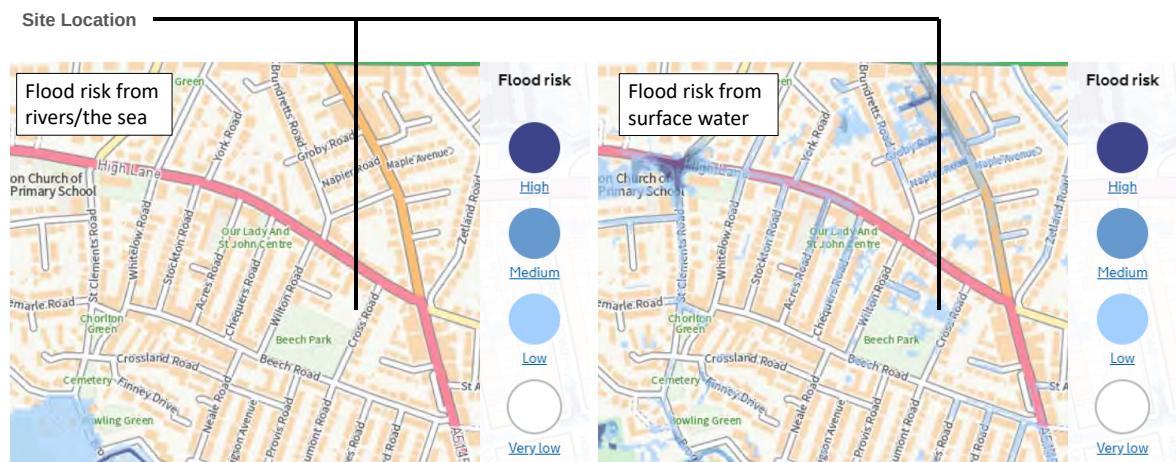
## Water Management and Weather Resilience

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### Flood Risk

- 4.30 Figure 4.4 below confirms that there is a very low risk of flooding on the site from fluvial and tidal sources. The proposed development site is demonstrated to be at low risk of flooding from surface water sources.

**Figure 4.4** Extract from the Environment Agency's online flood map



- 4.31 The incorporation of soft landscaping as part of the proposed development will positively contribute to the management of the 5mm storm event, therefore limiting runoff for the typical everyday rainfall event. This will aid in minimising the risk of surface water flooding on the site.
- 4.32 The management of surface water in this way will reduce the burden on the existing United Utilities sewer network, as well as reducing the risk of flooding on-site and within the immediate surroundings.

---

### **Internal Water Consumption**

- 4.33 The majority of England is under water stress, with more water often being consumed than is available during dry weather. As the population continues to grow, and with changes to the frequency of rainfall events projected as a result of climate change, this situation will be further exacerbated, with even greater pressure exerted on the existing potable water supply.
- 4.34 In order to actively mitigate against this, water saving fittings and appliances shall be installed to target a water consumption rate of 105 litres or less per person per day, based on the DCLG water efficiency calculator for residential dwellings. Full details of the water calculation are provided in Appendix A2.
- 4.35 The following form a basis for the residential element of the proposal, subject to change at later detailed design stages:
- Low volume dual flush toilets of 4 / 3 litres;
  - Water consumption levels not higher than 3 litres / minute in wash hand basins, and 4 litres / minute in kitchen sink taps;
  - Bath with a capacity to overflow not higher than 190 litres; and
  - Showers with a flow rate of 7 litres / minute.
- 4.36 Washing machines and dishwashers, and therefore their associated water consumptions, have not been specified. However, further reductions in water consumption can be achieved by specifying washing machines with a water consumption lower than 18 litres / kilogram, and dishwashers with a water consumption no higher than 4.5 litres per place setting.

### **Waste Management**

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- 4.37 Consideration has been given to the reduction and recycling of waste during both the construction and operation phases.
- 4.38 During the construction phase, the principal contractor will be required to implement a Site Waste Management Plan (SWMP), which will detail who will be responsible for resource management, which types of waste will be generated, how the waste will be managed (i.e. reduced, reused or recycled), which containers will be used, and how the quantity of waste generated by the project will be measured.
- 4.39 To encourage a greater proportion of the operational waste to be diverted from landfill, it is proposed to provide dedicated spaces of sufficient sizes and within convenient locations for the new dwellings.

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Internal storage will be considerate of the Building Regulations, Council and other requirements. Dedicated waste storage areas for refuse and recycling have been allocated at each of the four entrances at the ground flood level. Refuse and recycling are to be collected by Council Waste Operatives from a collection point located on Cross Road.

### **Construction Management**

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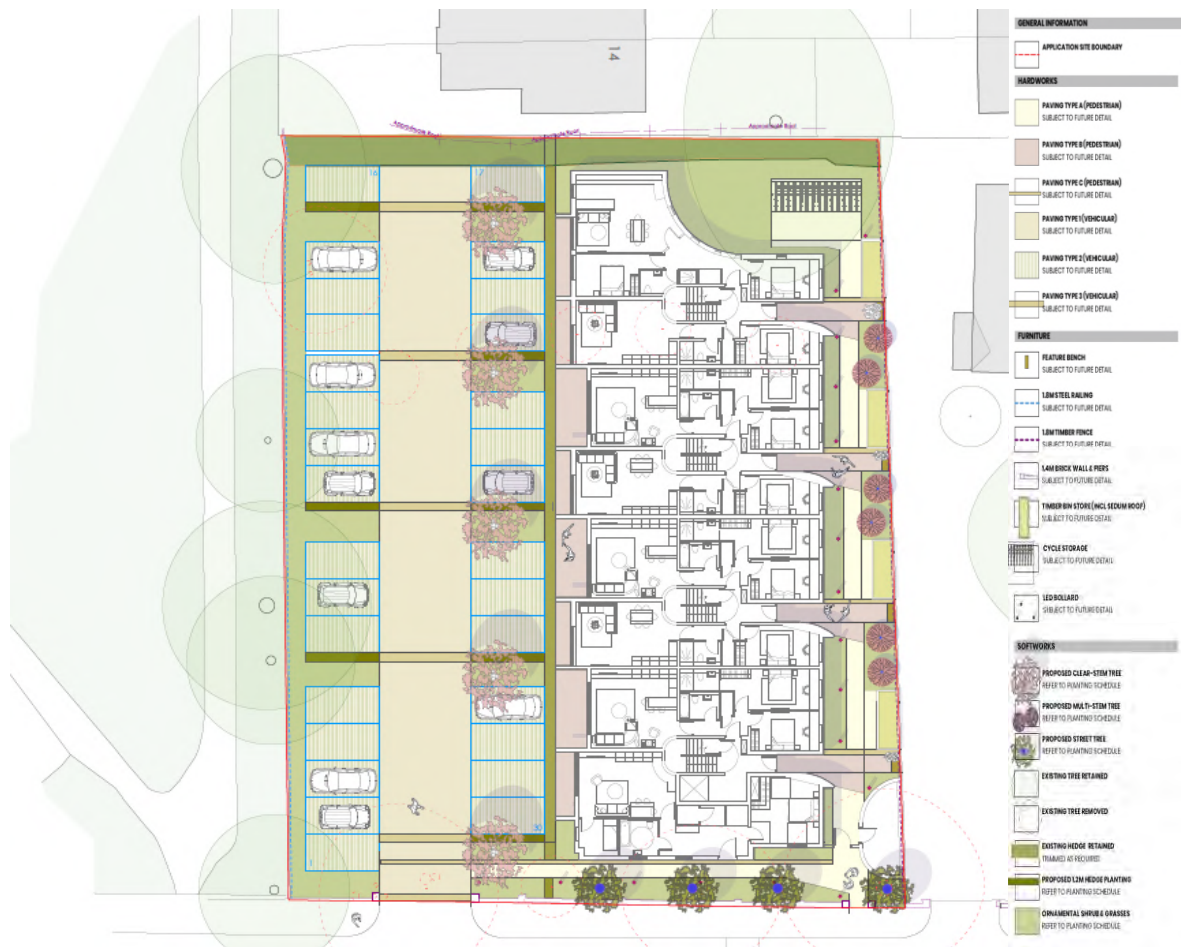
- 4.40 Selection of materials is determined by a variety of factors, such as the architectural context, design rationale, embodied carbon and maintenance requirements. For the proposed development, consideration will be given to the lifecycle environmental performance, with materials selected in consideration of the BRE's Green Guide to Specification, aiming for A or B rated materials where possible.
- 4.41 During detailed design of the building fabric, consideration will be given to minimising the environmental impact of materials, by selecting non-toxic and robust materials to ensure longevity and a minimal impact on the health of occupants.
- 4.42 Timber will be selected and purchased in consideration of sustainability certification. It is intended that all structural timber elements, along with any timber used for temporary uses such as scaffolding, will be sustainably sourced (e.g. from FSC and PEFC sources).

### **Biodiversity**

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- 4.43 As demonstrated within the proposed Landscape Strategy, prepared by Layer Studio and shown in Figure 4.5 below, soft landscaping will be incorporated as part of the proposed development.
- 4.44 Whilst the proposed development will result in the loss of 12 existing trees, it is intended that a total of 15 new trees will be provided. These trees will be provided as a mixture of new clear-stem, multi-stem and street trees. In addition, the proposed Landscape Strategy will seek to retain sections of existing hedges, which will be enhanced through the provision of new hedge planting and ornamental shrub and grass planting. In addition, it is intended that the proposed timber bin stores, located in proximity to each of the four entrances at the ground floor level, will include sedum roof planting.
- 4.45 Considering the current use of the proposed development site as a hardstanding carpark, it is considered that the delivery of the proposed Landscape Strategy will ensure a net gain in biodiversity is achieved.
- 4.46 The delivery of the proposed Landscape Strategy will bring about further benefits, including the provision of access to nature for future residents, with associated health and wellbeing benefits, and the contribution to the management of surface water runoff through the reduction of the area of hardstanding on the site.

**Figure 4.5 Proposed Landscape Strategy**



## Waterways

- 4.47 The proposed development is not located within close proximity to the City's main waterways. However, through the provision of soft landscaping and adequate waste storage facilities, the proposed development will ensure potential adverse impacts on the City's waterways are minimised.

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## 5. SUMMARY

- 5.1 This Environmental Standards Statement provides an overview as to how the proposed redevelopment of the land to the rear of Chorlton Irish Club, Cross Road, Chorlton contributes to sustainable development in the context of the strategic, design and construction considerations.
- 5.2 Consideration has been given to Manchester's Local Development Framework: Core Strategy Development Plan Document in the formulation of this strategy, aiming to minimise the environmental impact of the proposed development during construction and operation, and to ensure the development is constructed to rigorous sustainability standards.
- 5.3 Section 4 of this statement demonstrate that the siting and design of the proposals support relevant policy relating to sustainable development. This shows that the proposed development will achieve a minimum of 23% carbon dioxide emissions reduction over Part L1A:2013 of the Building Regulations through the following measures:
- Specification of a high level of building fabric energy performance, a high level of air tightness and the minimisation of thermal bridging to minimise heat loss;
  - Provision of opening windows, utilising cross ventilation where feasible, to provide a natural ventilation strategy, which will aid in providing effective ventilation without increasing the risk of overheating;
  - Specification of highly efficient electric space and water heating systems compliant with the requirements of the Domestic Building Services Compliance Guide; and
  - Employment of highly efficient LED lighting throughout to limit artificial lighting energy consumption.
- 5.4 Section 4 of this Environmental Standards Statement also demonstrates that the proposed development will seek to:
- Minimise the risk of flooding on-site and within the immediate surroundings;
  - Minimise internal water consumption, targeting a rate no higher than 105 litres per person per day;
  - Ensure waste is managed sustainably both during the construction and operation of the scheme;
  - Incorporate low-impact materials, according to the BRE Green Guide to Specification;

- 
- Incorporate measures to improve site biodiversity, including the provision of new tree, hedge and ornamental shrub planting; and
  - Ensure potential adverse impacts on the City's main waterways are mitigated.

5.5 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the NPPF and Manchester City Council, and will provide a development that seeks to promote these principles in operation.

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## **A1. SAP COMPLIANCE WORKSHEETS**

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |             |               |                       |            |
|------------------------------------|------------------------------------------------------------------------------------------|-------------|---------------|-----------------------|------------|
| Property Reference                 | S9133 7                                                                                  |             |               | Issued on Date        | 30/11/2021 |
| Assessment Reference               | v1                                                                                       |             | Prop Type Ref | Ground floor end flat |            |
| Property                           | Flat 8, Cross Street, Chorlton, Manchester                                               |             |               |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| SAP Rating                         | 86 B                                                                                     | DER         | 19.24         | TER                   | 25.62      |
| Environmental                      | 87 B                                                                                     | % DER<TER   | 24.89         |                       |            |
| CO <sub>2</sub> Emissions (t/year) | 0.97                                                                                     | DFEE        | 37.69         | TFEE                  | 46.54      |
| General Requirements Compliance    | Fail                                                                                     | % DFEE<TFEE | 19.00         |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |             |               | Assessor ID           | L770-0002  |
| Client                             |                                                                                          |             |               |                       |            |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 25.62              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 19.24              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -6.38 (-24.9%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |               |                        |      |
|------------------------------------------|---------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 46.54         | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 37.69         | kWh/m <sup>2</sup> /yr |      |
|                                          | -8.8 (-18.9%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.16 (max. 0.30) | 0.18 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Floor         | 0.09 (max. 0.25) | 0.09 (max. 0.70) | Pass |
| Openings      | 1.30 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

High

Fail

Based on:

Overshading

Average

Windows facing North

3.76 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

0.50 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Floor U-value

0.09

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |             |               |                       |            |
|------------------------------------|------------------------------------------------------------------------------------------|-------------|---------------|-----------------------|------------|
| Property Reference                 | S9133 8                                                                                  |             |               | Issued on Date        | 30/11/2021 |
| Assessment Reference               | v1                                                                                       |             | Prop Type Ref | Ground floor end flat |            |
| Property                           | Flat 8, Cross Street, Chorlton, Manchester                                               |             |               |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| SAP Rating                         | 85 B                                                                                     | DER         | 21.21         | TER                   | 27.89      |
| Environmental                      | 86 B                                                                                     | % DER<TER   | 23.95         |                       |            |
| CO <sub>2</sub> Emissions (t/year) | 1.02                                                                                     | DFEE        | 40.83         | TFEE                  | 52.60      |
| General Requirements Compliance    | Fail                                                                                     | % DFEE<TFEE | 22.37         |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |             |               | Assessor ID           | L770-0002  |
| Client                             |                                                                                          |             |               |                       |            |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 27.89              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 21.21              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -6.68 (-24.0%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |                |                        |      |
|------------------------------------------|----------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 52.60          | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 40.83          | kWh/m <sup>2</sup> /yr |      |
|                                          | -11.8 (-22.4%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.15 (max. 0.30) | 0.15 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Floor         | 0.09 (max. 0.25) | 0.09 (max. 0.70) | Pass |
| Openings      | 1.32 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

High

Fail

Based on:

Overshading

Average

Windows facing North

1.88 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

0.50 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Floor U-value

0.09

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |                |                      |
|------------------------------------|------------------------------------------------------------------------------------------|----------------|----------------------|
| Property Reference                 | S9133 15                                                                                 | Issued on Date | 30/11/2021           |
| Assessment Reference               | v1                                                                                       | Prop Type Ref  | First floor mid flat |
| Property                           | Flat 15, Cross Street, Chorlton, Manchester                                              |                |                      |
| SAP Rating                         | 87 B                                                                                     | DER            | 17.41                |
| Environmental                      | 89 B                                                                                     | TER            | 24.84                |
| CO <sub>2</sub> Emissions (t/year) | 0.87                                                                                     | % DER<TER      | 29.92                |
| General Requirements Compliance    | Fail                                                                                     | DFEE           | 34.15                |
|                                    |                                                                                          | TFEE           | 43.95                |
|                                    |                                                                                          | % DFEE<TFEE    | 22.31                |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |                | Assessor ID          |
|                                    |                                                                                          |                | L770-0002            |
| Client                             |                                                                                          |                |                      |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 24.84              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 17.41              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -7.43 (-29.9%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |               |                        |      |
|------------------------------------------|---------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 43.95         | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 34.15         | kWh/m <sup>2</sup> /yr |      |
|                                          | -9.9 (-22.5%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.16 (max. 0.30) | 0.18 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Floor         | 0.09 (max. 0.25) | 0.09 (max. 0.70) | Pass |
| Openings      | 1.30 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

High

Fail

Based on:

Overshading

Average

Windows facing North

3.76 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

0.50 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Floor U-value

0.09

W/m<sup>2</sup>K

Thermal bridging y-value

0.029

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |             |               |                      |            |
|------------------------------------|------------------------------------------------------------------------------------------|-------------|---------------|----------------------|------------|
| Property Reference                 | S9133 16                                                                                 |             |               | Issued on Date       | 30/11/2021 |
| Assessment Reference               | v1                                                                                       |             | Prop Type Ref | First floor end flat |            |
| Property                           | Flat 16, Cross Street, Chorlton, Manchester                                              |             |               |                      |            |
|                                    |                                                                                          |             |               |                      |            |
| SAP Rating                         | 86 B                                                                                     | DER         | 19.70         | TER                  | 27.02      |
| Environmental                      | 87 B                                                                                     | % DER<TER   | 27.10         |                      |            |
| CO <sub>2</sub> Emissions (t/year) | 0.94                                                                                     | DFEE        | 37.93         | TFEE                 | 49.69      |
| General Requirements Compliance    | Pass                                                                                     | % DFEE<TFEE | 23.67         |                      |            |
|                                    |                                                                                          |             |               |                      |            |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |             |               | Assessor ID          | L770-0002  |
| Client                             |                                                                                          |             |               |                      |            |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 27.02              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 19.70              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -7.32 (-27.1%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |                |                        |      |
|------------------------------------------|----------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 49.69          | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 37.93          | kWh/m <sup>2</sup> /yr |      |
|                                          | -11.8 (-23.7%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.15 (max. 0.30) | 0.15 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Floor         | 0.09 (max. 0.25) | 0.09 (max. 0.70) | Pass |
| Openings      | 1.32 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

Medium

Pass

Based on:

Overshading

Average

Windows facing North

1.88 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

2.00 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Floor U-value

0.09

W/m<sup>2</sup>K

Thermal bridging y-value

0.039

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |             |               |                       |            |
|------------------------------------|------------------------------------------------------------------------------------------|-------------|---------------|-----------------------|------------|
| Property Reference                 | S9133 23                                                                                 |             |               | Issued on Date        | 30/11/2021 |
| Assessment Reference               | v1                                                                                       |             | Prop Type Ref | Second floor mid flat |            |
| Property                           | Flat 23, Cross Street, Chorlton, Manchester                                              |             |               |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| SAP Rating                         | 89 B                                                                                     | DER         | 15.72         | TER                   | 23.14      |
| Environmental                      | 90 B                                                                                     | % DER<TER   | 32.07         |                       |            |
| CO <sub>2</sub> Emissions (t/year) | 0.78                                                                                     | DFEE        | 30.84         | TFEE                  | 38.27      |
| General Requirements Compliance    | Fail                                                                                     | % DFEE<TFEE | 19.42         |                       |            |
|                                    |                                                                                          |             |               |                       |            |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |             |               | Assessor ID           | L770-0002  |
| Client                             |                                                                                          |             |               |                       |            |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 23.14              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 15.72              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -7.42 (-32.1%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |               |                        |      |
|------------------------------------------|---------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 38.27         | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 30.84         | kWh/m <sup>2</sup> /yr |      |
|                                          | -7.5 (-19.6%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.16 (max. 0.30) | 0.18 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Roof          | 0.09 (max. 0.20) | 0.09 (max. 0.35) | Pass |
| Openings      | 1.30 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

High

Fail

Based on:

Overshading

Average

Windows facing North

3.76 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

0.50 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Roof U-value

0.09

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |                |                       |
|------------------------------------|------------------------------------------------------------------------------------------|----------------|-----------------------|
| Property Reference                 | S9133 24                                                                                 | Issued on Date | 30/11/2021            |
| Assessment Reference               | v1                                                                                       | Prop Type Ref  | Second floor end flat |
| Property                           | Flat 24, Cross Street, Chorlton, Manchester                                              |                |                       |
| SAP Rating                         | 84 B                                                                                     | DER            | 21.50                 |
| Environmental                      | 86 B                                                                                     | TER            | 27.75                 |
| CO <sub>2</sub> Emissions (t/year) | 1.04                                                                                     | % DER<TER      | 22.52                 |
| General Requirements Compliance    | Pass                                                                                     | DFEE           | 41.39                 |
|                                    |                                                                                          | TFEE           | 52.14                 |
|                                    |                                                                                          | % DFEE<TFEE    | 20.62                 |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |                | Assessor ID           |
|                                    |                                                                                          |                | L770-0002             |
| Client                             |                                                                                          |                |                       |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 27.75              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 21.50              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -6.25 (-22.5%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |                |                        |      |
|------------------------------------------|----------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 52.14          | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 41.39          | kWh/m <sup>2</sup> /yr |      |
|                                          | -10.7 (-20.5%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.16 (max. 0.30) | 0.18 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Roof          | 0.09 (max. 0.20) | 0.09 (max. 0.35) | Pass |
| Openings      | 1.32 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

Medium

Pass

Based on:

Overshading

Average

Windows facing North

1.88 m<sup>2</sup>, No overhang

Windows facing South

5.60 m<sup>2</sup>, No overhang

Air change rate

2.00 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Roof U-value

0.09

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |             |               |                          |            |
|------------------------------------|------------------------------------------------------------------------------------------|-------------|---------------|--------------------------|------------|
| Property Reference                 | S9133 28                                                                                 |             |               | Issued on Date           | 30/11/2021 |
| Assessment Reference               | v1                                                                                       |             | Prop Type Ref | Third top floor mid flat |            |
| Property                           | Flat 28, Cross Street, Chorlton, Manchester                                              |             |               |                          |            |
|                                    |                                                                                          |             |               |                          |            |
| SAP Rating                         | 88 B                                                                                     | DER         | 16.73         | TER                      | 23.54      |
| Environmental                      | 89 B                                                                                     | % DER<TER   | 28.91         |                          |            |
| CO <sub>2</sub> Emissions (t/year) | 0.89                                                                                     | DFEE        | 32.41         | TFEE                     | 41.09      |
| General Requirements Compliance    | Pass                                                                                     | % DFEE<TFEE | 21.14         |                          |            |
|                                    |                                                                                          |             |               |                          |            |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |             |               | Assessor ID              | L770-0002  |
| Client                             |                                                                                          |             |               |                          |            |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 23.54              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 16.73              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -6.81 (-28.9%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |               |                        |      |
|------------------------------------------|---------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 41.09         | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 32.41         | kWh/m <sup>2</sup> /yr |      |
|                                          | -8.7 (-21.2%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.15 (max. 0.30) | 0.15 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Roof          | 0.09 (max. 0.20) | 0.09 (max. 0.35) | Pass |
| Openings      | 1.30 (max. 2.00) | 1.80 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

Medium

Pass

Based on:

Overshading

Average

Windows facing North

2.00 m<sup>2</sup>, No overhang

Windows facing South

7.60 m<sup>2</sup>, No overhang

Air change rate

2.00 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Roof U-value

0.09

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

|                                    |                                                                                          |                |                          |
|------------------------------------|------------------------------------------------------------------------------------------|----------------|--------------------------|
| Property Reference                 | S9133 29                                                                                 | Issued on Date | 30/11/2021               |
| Assessment Reference               | v1                                                                                       | Prop Type Ref  | Third top floor end flat |
| Property                           | Flat 29, Cross Street, Chorlton, Manchester                                              |                |                          |
| SAP Rating                         | 86 B                                                                                     | DER            | 19.91                    |
| Environmental                      | 87 B                                                                                     | TER            | 27.14                    |
| CO <sub>2</sub> Emissions (t/year) | 0.95                                                                                     | % DER<TER      | 26.63                    |
| General Requirements Compliance    | Pass                                                                                     | DFEE           | 38.59                    |
|                                    |                                                                                          | TFEE           | 50.56                    |
|                                    |                                                                                          | % DFEE<TFEE    | 23.68                    |
| Assessor Details                   | Mr. Peter Kinsella, Base Energy Services Ltd, Tel: 0151 933 0328, peter@baseenergy.co.uk |                | Assessor ID              |
|                                    |                                                                                          |                | L770-0002                |
| Client                             |                                                                                          |                |                          |

### SUMMARY FOR INPUT DATA FOR New Build (As Designed)

#### Criterion 1 – Achieving the TER and TFEE rate

##### 1a TER and DER

|                                             |                    |                                   |      |
|---------------------------------------------|--------------------|-----------------------------------|------|
| Fuel for main heating                       | Electricity        |                                   |      |
| Fuel factor                                 | 1.55 (electricity) |                                   |      |
| Target Carbon Dioxide Emission Rate (TER)   | 27.14              | kgCO <sub>2</sub> /m <sup>2</sup> |      |
| Dwelling Carbon Dioxide Emission Rate (DER) | 19.91              | kgCO <sub>2</sub> /m <sup>2</sup> | Pass |
|                                             | -7.23 (-26.6%)     | kgCO <sub>2</sub> /m <sup>2</sup> |      |

##### 1b TFEE and DFEE

|                                          |                |                        |      |
|------------------------------------------|----------------|------------------------|------|
| Target Fabric Energy Efficiency (TFEE)   | 50.56          | kWh/m <sup>2</sup> /yr |      |
| Dwelling Fabric Energy Efficiency (DFEE) | 38.59          | kWh/m <sup>2</sup> /yr |      |
|                                          | -12.0 (-23.7%) | kWh/m <sup>2</sup> /yr | Pass |

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

| Element       | Average          | Highest          |      |
|---------------|------------------|------------------|------|
| External wall | 0.16 (max. 0.30) | 0.18 (max. 0.70) | Pass |
| Party wall    | 0.00 (max. 0.20) | -                | Pass |
| Roof          | 0.09 (max. 0.20) | 0.09 (max. 0.35) | Pass |
| Openings      | 1.23 (max. 2.00) | 1.40 (max. 3.30) | Pass |

##### 2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

##### 3 Air permeability

|                                |                     |      |
|--------------------------------|---------------------|------|
| Air permeability at 50 pascals | 4.00 (design value) |      |
| Maximum                        | 10.0                | Pass |

##### Limiting System Efficiencies

##### 4 Heating efficiency

|                       |                                                                         |  |
|-----------------------|-------------------------------------------------------------------------|--|
| Main heating system 1 | Room heaters - Electric<br>Panel, convector or radiant heaters          |  |
| Main heating system 2 | Heat pump with warm air distribution - Electric<br>Dimplex EDL200UK-630 |  |

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)

Secondary heating system

None

### 5 Cylinder insulation

Hot water storage

No cylinder

### 6 Controls

Space heating controls 1

Programmer and appliance thermostats

Pass

Hot water controls

No cylinder

### 7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

### 8 Mechanical ventilation

Continuous supply and extract system

Specific fan power

0.78

Maximum

1.5

Pass

MVHR efficiency

85

%

Minimum

70

%

Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)

Medium

Pass

Based on:

Overshading

Average

Windows facing North

2.00 m<sup>2</sup>, No overhang

Windows facing South

7.60 m<sup>2</sup>, No overhang

Air change rate

2.00 ach

Blinds/curtains

None

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m<sup>2</sup>K

Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals

4.00 (design value)

Maximum

10.0

Pass

### 10 Key features

Party wall U-value

0.00

W/m<sup>2</sup>K

Roof U-value

0.09

W/m<sup>2</sup>K

Thermal bridging y-value

0.034

W/m<sup>2</sup>K

*This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.*

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## **A2. WATER USAGE CALCULATOR**



|                   |                     |
|-------------------|---------------------|
| Job no:           | 20-270              |
| Date:             | 15/12/2021          |
| Assessor name:    |                     |
| Registration no:  | N/A                 |
| Development name: | Chorlton Irish Club |

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**PRINTING:** before printing please make sure that in "Page Setup" you have selected the page to be as "Landscape" and that the Scale has been set up to 70% (maximum)

| WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS - (BASIC CALCULATOR) |                             |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |
|--------------------------------------------------------------------|-----------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| House Type:                                                        |                             | Type 1             |                   | Type 2             |                   | Type 3             |                   | Type 4             |                   | Type 5             |                   | Type 6             |                   | Type 7             |                   | Type 8             |                   | Type 9             |                   | Type 10            |                   |
| Description:                                                       |                             | Typical Unit       |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |                    |                   |
| Installation Type                                                  | Unit of measure             | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day | Capacity/flow rate | Litres/person/day |
| Is a dual or single flush WC specified?                            |                             | Dual               |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Click to Select    |                   | Click to Select    |                   | Click to Select    |                   |
| WC                                                                 | Full flush volume           | 4                  | 5.84              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
|                                                                    | Part flush volume           | 3                  | 8.88              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Taps (excluding kitchen and external taps)                         | Flow rate (litres / minute) | 3                  | 6.32              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Are both a Bath & Shower Present?                                  |                             | Bath & Shower      |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   |
| Bath                                                               | Capacity to overflow        | 190                | 20.90             |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Shower                                                             | Flow rate (litres / minute) | 7                  | 30.59             |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Kitchen sink taps                                                  | Flow rate (litres / minute) | 4                  | 12.12             |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Has a washing machine been specified?                              |                             | No                 |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   |
| Washing Machine                                                    | Litres / kg                 |                    | 17.16             |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Has a dishwasher been specified?                                   |                             | No                 |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   |
| Dishwasher                                                         | Litres / place setting      |                    | 4.50              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Has a waste disposal unit been specified?                          |                             | No                 |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   | Select option:     |                   |
| Water Softener                                                     | Litres / person / day       |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |                    | 0.00              |
| Calculated Use                                                     |                             | 106.3              |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   |
| Normalisation factor                                               |                             | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   | 0.91               |                   |
| Code for Sustainable Homes                                         | Total Consumption           | 96.7               |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   |
|                                                                    | Mandatory level             | Level 3/4          |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   |
| Building Regulations 17.K                                          | External use                | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   | 5.0                |                   |
|                                                                    | Total Consumption           | 101.7              |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   | 0.0                |                   |
|                                                                    | 17.K Compliance?            | Yes                |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   | -                  |                   |

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- A3.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.
- A3.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.
- A3.3 No site visits have been carried out, unless otherwise specified.
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