btp sustainability

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# ENERGY STRATEGY

**20-24 Kirby Street, London**

Prepared for: Morgan Capital

Project Ref: 40991

Submitted: 28th October 2022

# 1.ISSUE REGISTER

| Rev | Reason for Issue | Date | Issued By |
|---|---|---|---|
| 1.0 | Stage 2 Energy Strategy Draft for Comment | 31/08/2021 | AG |
| 1.1 | Stage 2 Energy Strategy Draft for Comment - Incorporating Morgan Capital comments | 09/09/2021 | AG |
| 1.2 | Stage 2 Energy Strategy Draft for Comment - Incorporating DP9 comments | 09/09/2021 | AG |
| 2.0 | Stage 2 Energy Strategy Draft for Comment – Revised Scheme | 14/10/2022 | AG |
| 2.1 | Stage 2 Energy Strategy – Revised Scheme | 28/10/2022 | AG |
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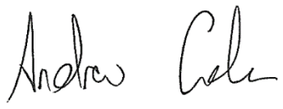


Andrew Galea, Sustainability Lead

# 2. CONTENTS

# 3. EXECUTIVE SUMMARY

This Energy Strategy document reports on the refurbishment of the 20-24 Kirby Street building. It reflects the design at RIBA Stage 2. It is situated in the London borough of Camden. The document responds to planning policy in respect to Energy Consumption and Carbon Emissions.

The development is classed as a minor development and is the refurbishment and extension of an existing building.

However, in order to achieve over and above that expected for such a development, the Energy Strategy for 20-24 Kirby Street looks to implement the same guidance regarding a 'Be Lean, Be Clean, Be Green' approach to carbon savings.

Applying the 'Be Lean, Be Clean, Be Green' methodology to reduce carbon emissions, the development achieves a 49% improvement in carbon emissions.

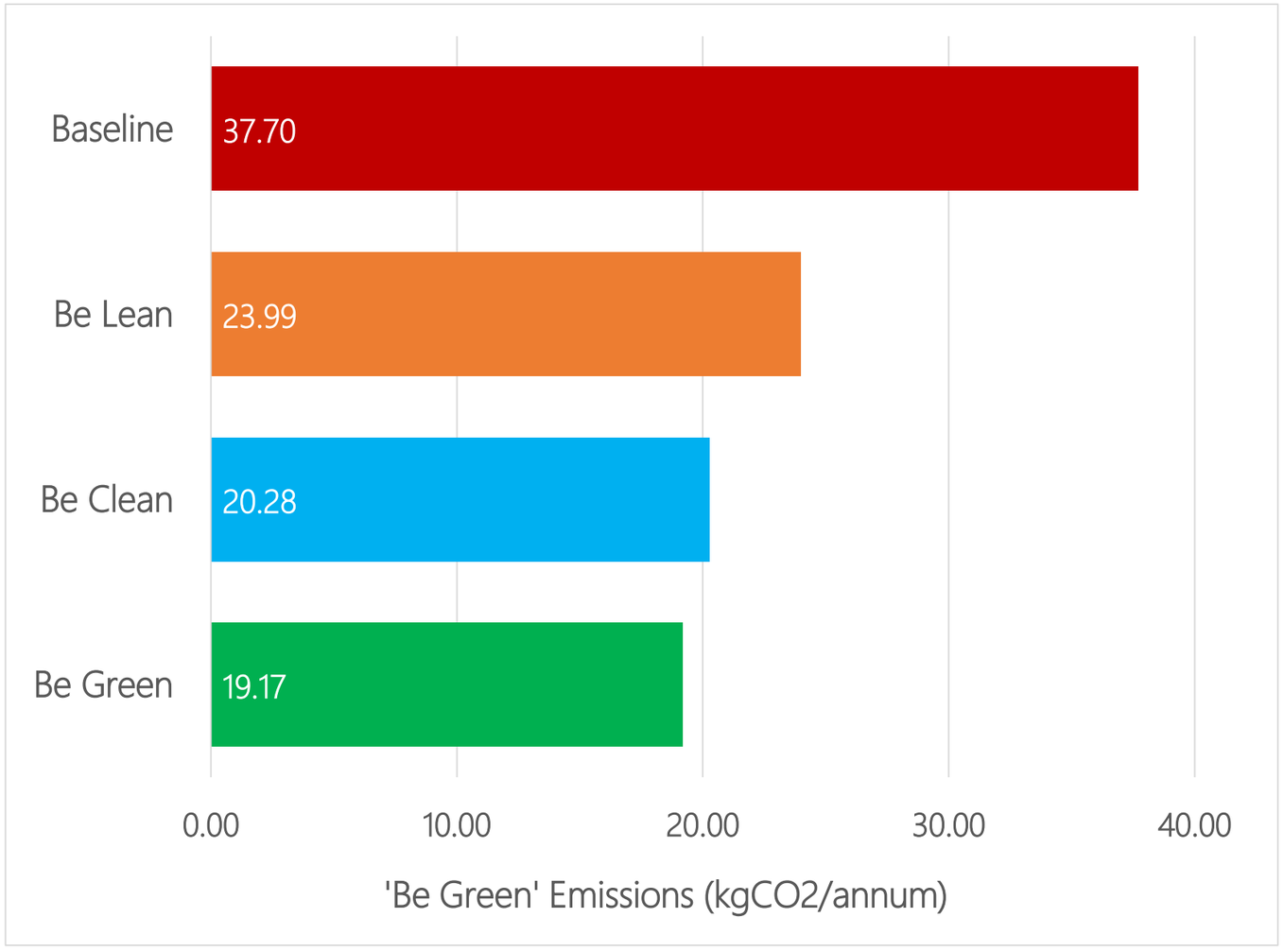
This is in excess of the 35% on-site carbon reduction targets set for new build major development in the London Plan Policy SI 2 – Minimising Green House Gas Emissions, and the Camden Local Plan Policy CC1 - Climate Change Mitigation.

Renewable Energy Technology Contribution

We can see the development makes large improvements over the existing building using passive measures, energy efficient specification and LZC technology. This has been modelled using Part L modelling methodology.

The Low and Zero Carbon technologies employed on the development contribute 34% of the energy consumption of the development: 23% if only considering energy for heat requirements.

The Part L performance for the development can be seen in table and graph to the right:




| Regulated Emissions | Baseline Emissions ($kgCO_2/annum/m^2$) | Emission Rate ($kgCO_2/annum/m^2$) | Total % $CO_2$ reduction |
|---|---|---|---|
| Be Lean | 37.70 | 23.99 | 36.37% |
| Be Clean | | 20.28 | 46.21% |
| Be Green | | 19.17 | 49.15% |

# 4. INTRODUCTION

### The Development

The proposed development is the refurbishment of 20-24 Kirby Street, an office building built in the mid-20th Century in Farringdon, in the London Borough of Camden.

These works encompass the refurbishment of the existing building.

To enhance the building fabric, it is intended for the building as a whole to undergo window replacement. The existing building fabric will be brought up to current building regulations where practically feasible.

There will be full refurbishment of HVAC and lighting systems for the building.

In addition, the development proposes to add an additional storey to the building, which will be built to meet and exceed Part L building regulations for new buildings.

### Aim of the Analysis

This report forms part of the planning application for the 20-24 Kirby Street works.

The aim of this report is to document the development of the Energy Strategy for the project.

This report will look at the energy, planning and site context of the 20-24 Kirby St Development, and summarises the design process leading to the design options taken, and the impact on the energy consumption and carbon emissions of the building, according to the Part L compliance process.

This report details the investigations undertaken so far to RIBA Stage 2. Design is ongoing, and the Energy Strategy will continue to develop through Stage 3 and 4.

# 5. ENERGY SECTOR CONTEXT

The Energy Sector in the UK is currently going through a large amount of change. The mix of sources from which our electricity is generated is rapidly changing to one with an ever-increasing amount of Renewable and Low Carbon sources.

Renewable sources are grouped as Solar, Wind and Hydro, and added to this are Biomass and Nuclear to make up the Low Carbon electricity sources.

As the headlines to the right elude to, the last few years have proved a breakthrough in terms of provision of green energy. Whilst this has been on the agenda for the last decade or so, it is only recently massive infrastructure projects such as the Thames Array wind farm are functional after years of planning and construction, and thus are now contributing to the change in national energy provision.

2017 saw the first ever coal free days in electricity generation, and the amount coal provides to the generation mixed continues to fall dramatically, a pattern accelerated recently by the Covid-19 crisis.

Whilst progress is being made, there is further to go, and the energy sector is moving closer and closer to a low carbon electricity grid, with the aim of carbon neutrality by 2050.

Power generation will come from increasingly greener but more variable power sources, with a larger proportion of micro generation. This means the grid will need to work in a smarter fashion, employing battery storage and intelligent control.

Ultimately, this leads to the carbon cost of electricity production falling, and a new way in which the national grid and power generation must function; both important factors when considering the design of developments, most importantly that electricity is the choice supply of energy for a building to lock in future carbon reductions from the decarbonisation of the grid.

Renewables beat fossil fuels on 137 days in greenest year for UK energy

75% of the UK's electricity came from coal in 1990, last year, it had fallen to just 2.1%

Climate crisis: UK hits coal-free record for power generation amid coronavirus lockdown

Closure of fossil-fuel plants and fall in demand due to Covid-19 sees CO2 emissions cut by one-third

Business

UK sets new renewable energy record as wind and solar surge

share

Covid-19 crisis will wipe out demand for fossil fuels, says IEA

Renewable electricity may be only source to withstand biggest shock in 70 years

# 6. PLANNING POLICY CONTEXT

## 6.1. National Policy

### Climate Change Act 2008

The Climate Change Bill became law on 26 November 2008. The two key aims of the Act are as follows:

- Improve carbon management, helping the transition towards a low-carbon economy in the UK.

- Demonstrate UK leadership internationally, signalling we are committed to taking our share of responsibility for reducing global emissions in the context of developing negotiations on a post-2012 global agreement at Copenhagen in December 2009.

The key provision of the Act is a legally binding target of at least an 80% cut in greenhouse gas emissions by 2050, to be achieved through action in the UK and abroad, including a reduction in emissions of at least 34% by 2020.

Both targets are against a 1990 baseline. This provision is to be achieved over five-year carbon budgets, with three budgets set at a time. The first three Carbon budgets run from 2008-12, 2013-17 and 2018-22, and were set in May 2009.

### Net Zero Carbon by 2050

Building on the 80% target reduction by 2050, In 2019, the Committee on Climate Change recommended the UK become a net zero carbon emitter by 2050. This was adopted into UK legislation in June 2019. Any emissions must be balanced by negative emissions policy.

### National Planning Policy Framework (NPPF)

NPPF states that planning should support the 'transition to a low carbon future in a changing climate' (Paragraph 152).

155. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for collocating potential heat customers and suppliers.

157. In determining planning applications, local planning authorities should expect new development to:

a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

b) take account of landform, layout, building orientation, massing, and landscaping to minimise energy consumption.

158. When determining planning applications for renewable and low carbon development, local planning authorities should:

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

### Part L Building Regulations

Part L of the Building Regulations refers to the Conservation of Fuel and Power. Part L1 relates to residential development and Part L2 to non-residential. The suffix A relates to new construction and B to existing buildings.

The proposed works are the refurbishment of an office building.

## 6.2. Regional Policy

Planning policy for the London region is overseen by policies presented in the London Plan. The latest edition came into policy in March 2021.

### Policy SI 2 – Minimising Green House Gas Emissions

A) Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation

and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

1) be lean: use less energy and manage demand during operation

2) be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly

3) be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site

4) be seen: monitor, verify and report on energy performance.

B) Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

C) A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1) through a cash in lieu contribution to the borough's carbon offset fund, or

2) off-site provided that an alternative proposal is identified and delivery is certain.

D) Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E) Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F) Development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

## 6.3. Local Policy

The London Borough of Camden sets out its policy for Sustainable Construction in Section 8 of the Camden Local Plan Document, which came into effect in 2017.

The document adopts the London Plan targets for major development through:

Policy CC1 - Climate Change Mitigation.

The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

We will:
a) promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;
b) require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;
c) ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
d) support and encourage sensitive energy efficiency improvements to existing buildings;
e) require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and
f) expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:
g) working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;
h) protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and
i) requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.
To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

## 6.4. Implications for 20-24 Kirby Street

The Policies detailed above are for major developments and are primarily aimed at new construction. This proposal is classed as a minor development, the refurbishment and extension of an existing building, and so does not fall under the policies detailed here.

However, in order to achieve over and above that expected for such a development, the Energy Strategy for 20-24 Kirby Street looks to implement the same guidance regarding a 'Be Lean, Be Clean, Be Green' approach to carbon savings.

The development also aims to achieve carbon reductions in excess of the 35% on-site carbon reduction target detailed in the London Plan and the Camden Local Plan.

As per Camden guidance for refurbishment projects as opposed to new construction, these savings will be shown over a baseline established from the existing building in its current form.

# 7. ENERGY STRATEGY METHODOLOGY

To better understand the 20-24 Kirby Street building and how it behaves, a detailed dynamic thermal modelling exercise was undertaken.

This was then used to inform the design strategy, to provide quantitative analysis on the impact of the options and measures under consideration to help improve the energy and carbon performance of the building.

## 7.1. Energy Hierarchy

This report draws on the information and approach set out in national, regional and local policy, which recommends a 3-step process; "Be Lean, Be Clean, Be Green". The aim of the study is to reduce carbon dioxide emissions, whilst providing an efficient and cost-effective energy strategy site wide.

'Be Lean'

This step is to look at, as a priority, how energy consumption can be reduced. This is particularly pertinent for this development, as the modelling exercise showed the current building fabric performance to be poor, leading to a heat lead energy dynamic for the building. This means without building fabric improvement, any subsequent measures such as application of heat pumps or improved lighting is compromised. This is discussed in Section 8 of this report.

'Be Clean'

Once we have reduced the amount of energy required as much as possible, the next step is to provide the energy that is needed as efficiently as possible.

This is covered in Section 9 of this report.

'Be Green'

This step then considers the application of LZC technologies for the development to further reduce carbon emissions.

For details, please see Section 10.

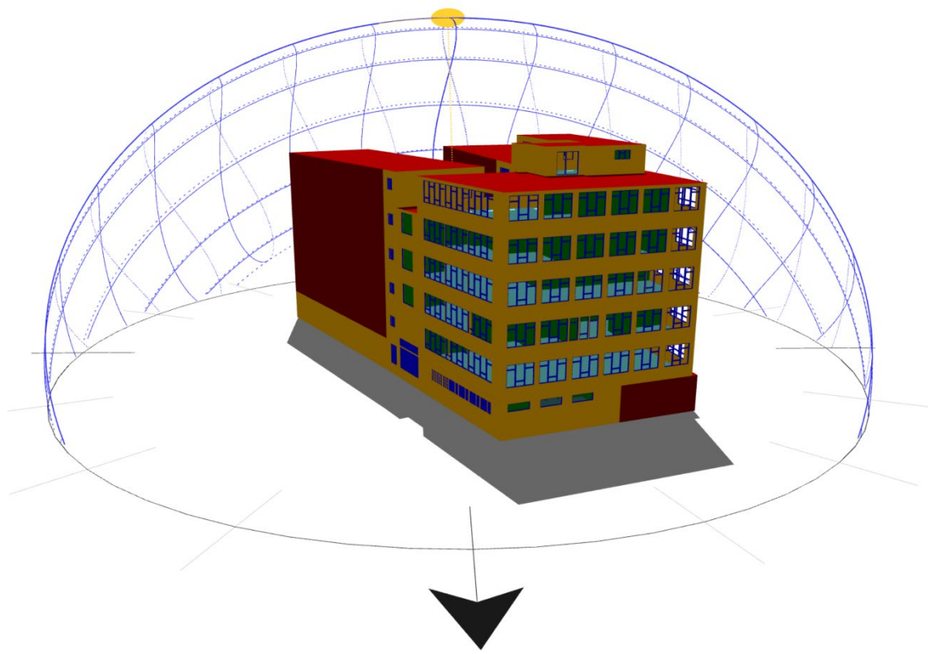
## 7.2. Energy Modelling

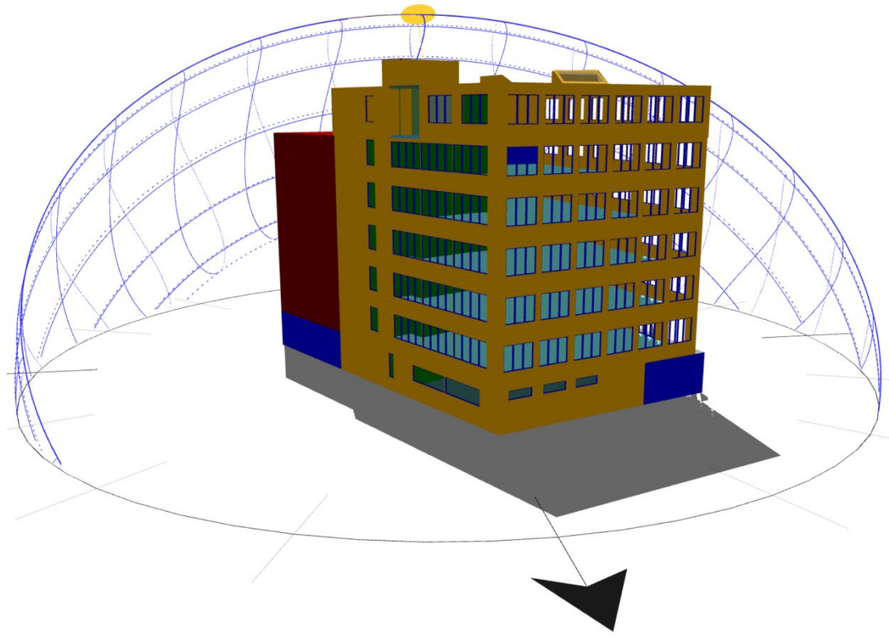
As mentioned, a detailed thermal modelling exercise was undertaken for the 20-24 Kirby Street building.

EDSL TAS software was used to conduct the modelling. This is a fully dynamic software giving a detailed picture of the building physics characteristics and energy performance of a building.

The building modelled in its existing state forms the baseline building for this development, and energy and carbon savings gained as a result of the proposed works will be expressed as gains over this baseline model. The building modelling methodology follows the guidance for Part L, complying with the London Plan and Local authority policy.

The modelling work is ongoing and will continue to develop.





# 8. ‘BE LEAN’

This section of the report sets out how we can look at reducing energy consumption for the development.

## 8.1. Passive Measures

Review of the old construction information for the building and site inspection revealed the building fabric standard of the building was poor. Not all information was available, and only a certain proportion of the building was accessible at the time of the site visit, so a number of educated assumptions were made regarding the building fabric performance for the modelling exercise.

The modelling exercise undertaken for 20-24 Kirby Street building showed the poor building fabric standards meant the building was heat lead, with the consumption of gas for heating being the dominant characteristic of the building. Further modelling showed without this being addressed, actions such as installing energy efficient lighting would be compromised, as the building in its current state was reliant on gains from lighting, solar gains, etc. to heat the building.

As a result, the first design decisions informed by the modelling exercise were to look at the most effective options for improving the thermal performance of the building and implementing these as a priority in the scope of works.

The table opposite shows the suggested measures to be implemented to the existing building fabric, to achieve Part L2B requirements where practically feasible. It also details the constructions for the additional 2 floors, meeting and improving upon Part L building fabric requirements.

| Building Fabric Improvements | | |
|---|---|---|
| BUILDING ELEMENT | BASELINE ASSUMPTION | ELEMENT IMPROVEMENT |
| Existing Roof | 40mm internal wood wool covered by 10mm plaster, assumed 200mm Concrete Slab, Asphalt<br>**U-value – 1.00** | Addition of new insulation externally underneath the new terrace to meet the Part L2B U-value.<br>**U –Value - 0.18** |
| New Roof | N/A | Bauder roof System or similar consisting of 140mm insulation with VCL and Waterproofing to the bottom and top respectively, covered in raised pavers.<br>**U-value - 0.15** |
| Existing Walls | Non cavity wall panels – External brickwork, 150mm concrete, circa 40mm wood wool, finishes. **U-value – 0.86**<br>Cavity Wall – Cavity brick wall with circa 50mm air gap. **U-value – 1.29** | Non-cavity wall – Replacement of wood wool and finishes with insulation to meet Part L2B requirements and plaster. **U-value – 0.30**<br>Cavity Wall – Filled cavity with blown cellulose insulation. **U-value – 0.55** |
| New Walls | N/A | Brick outer leaf with 50mm air cavity, 230mm of mineral wool insulation waterproofing, VCL and finishes<br>**U-value - 0.15** |
| Air Tightness/ Infiltration | 0.55 ACH / **AP of 20** $m^3/h.m^2$ @ 50Pa (assumed) | Improve leaks and permeability of the building to achieve 0.25 ACH / **AP 10** |
| Windows | Original single glazed ‘Crittal’ style steel framed window system<br>**U-value – 5.65** | All windows to be replaced with a modern double-glazed unit. Target spec below.<br>**U-1.6 g-0.35 LT-0.65** |
| Existing Floor | Assumed 200mm concrete slab with 50mm screed on hardcore to clay.<br>**U-value – 0.54** | Addition of insulation internally, new screed.<br>**U-value – 0.25** |

## 8.2. Results

The results from the 'Be Lean' stage calculation are presented in the graph to the right. They have been presented on an area weighted basis, as the proposed building has an increased area.

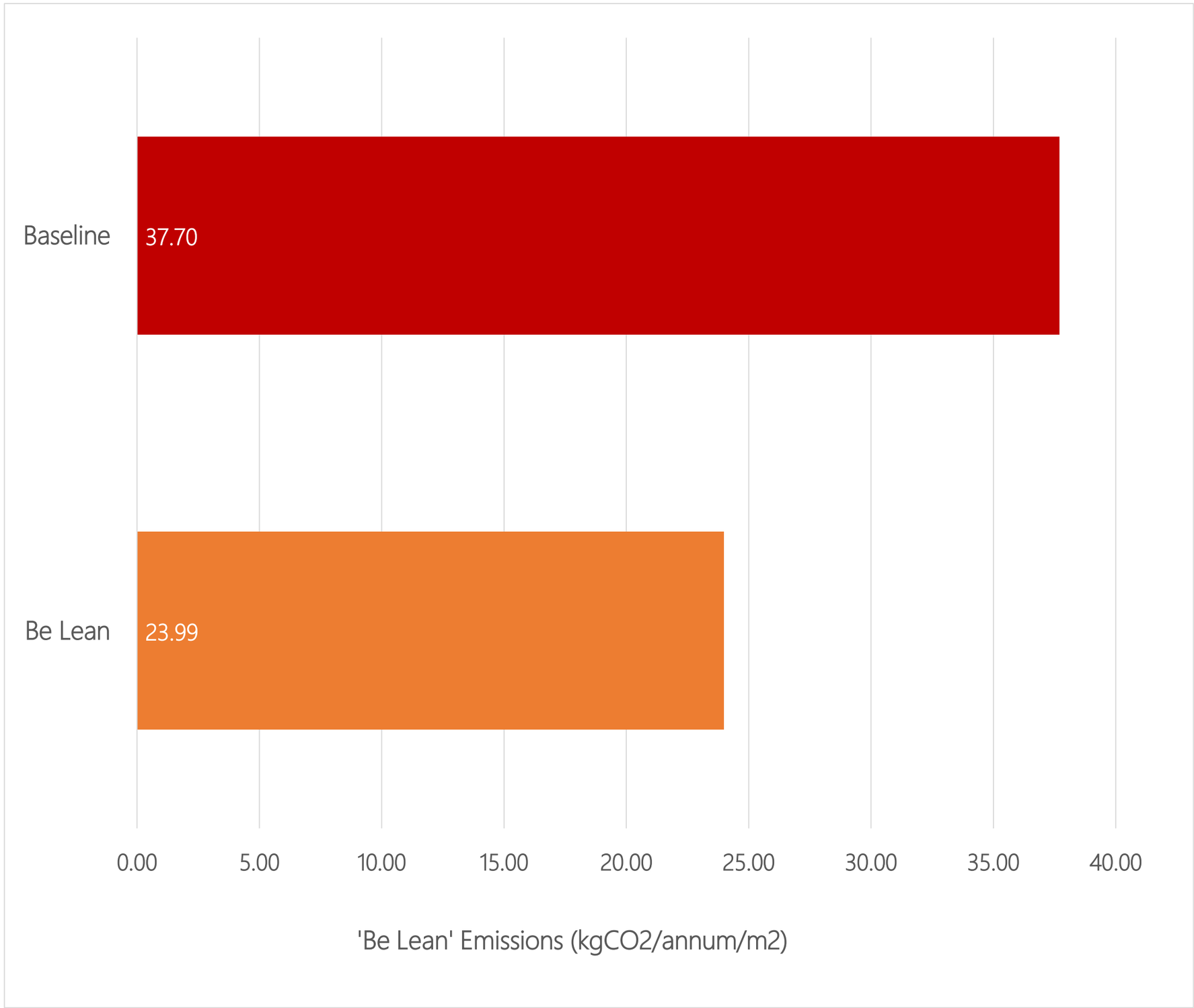
They are as follows:

The Baseline Building Emission Rate (calculated using Part L modelling procedures and applied to the existing building specification) for the building is **37.70 $kgCO_2/annum/m^2$**

The Emission Rate (calculated using Part L modelling procedures) for the building with the 'Be Lean' measures introduced is **23.99 $kgCO_2/annum/m^2$**

Therefore the 'Be Lean' measures implemented in the design of the development lead to an improvement in carbon emissions.

This reduction in emissions at the 'Be Lean' stage is **36.37%**



# 9. ‘BE CLEAN’

This section of the report looks at whether district or communal systems are applicable for the development.

## 9.1. District Energy Networks

Given the national energy context discussed in section 5, the best solution for the 20-24 Kirby Street building, as a minor development, is to move from a heating lead building to a cooling lead building by implementing the measures set out in Section 8. This allows the building to move to a fully electric energy supply.

This is achieved by implementing an electric Heat Pump VRF with Heat Recovery heating and cooling system, thus future proofing the building and enabling it take advantage of further carbon reductions as the grid continues to decarbonise. This will be discussed further in the next section.

The Carbon cost of electricity is decreasing rapidly. Whilst this is not currently reflected in carbon factors used for Part L compliance, the reality is that the greenest solution over the lifetime of the building is for design is to move to all electric systems.

## 9.2. Lighting

Lighting is often the largest consumer of energy in an office building designed to modern standards, and so specification and control of lighting systems is a major factor in reducing carbon emissions.

Full LED lighting systems are proposed throughout the building, with daylight control to perimeter zones and occupancy control. The rearrangement of the core and office areas for the building has been design ed to allow a large percentage of the floor plate to use daylight control for relevant functions.

| District Energy Networks (DENs) | |
|---|---|
| With the ongoing and future decarbonisation of the grid, District Energy Networks only make sense if using low carbon technologies and electricity as a fuel. This is not available locally, so the development will use a centralised heat pump VRF solution for heating and cooling. |  |

| Building Energy Improvements | | |
|---|---|---|
| BUILDING ELEMENT | BASELINE ASSUMPTION | ELEMENT IMPROVEMENT |
| Light Fittings | Fluorescent fittings – T tubular fittings to Offices, various to ancillary areas.<br>Efficiency assumed as **60 lm/cW** | All LED lighting schemes to all areas of the building.<br>Efficiency to offices **75 lm/cW**<br>Efficiency to ancillary areas **60 lm/cW** |
| Lighting Control | No Occupancy or Daylighting control | Office areas to be designed with Occupancy control and Daylight Control to perimeter areas.<br>Ancillary areas to have occupancy control. |

## 9.3. Results

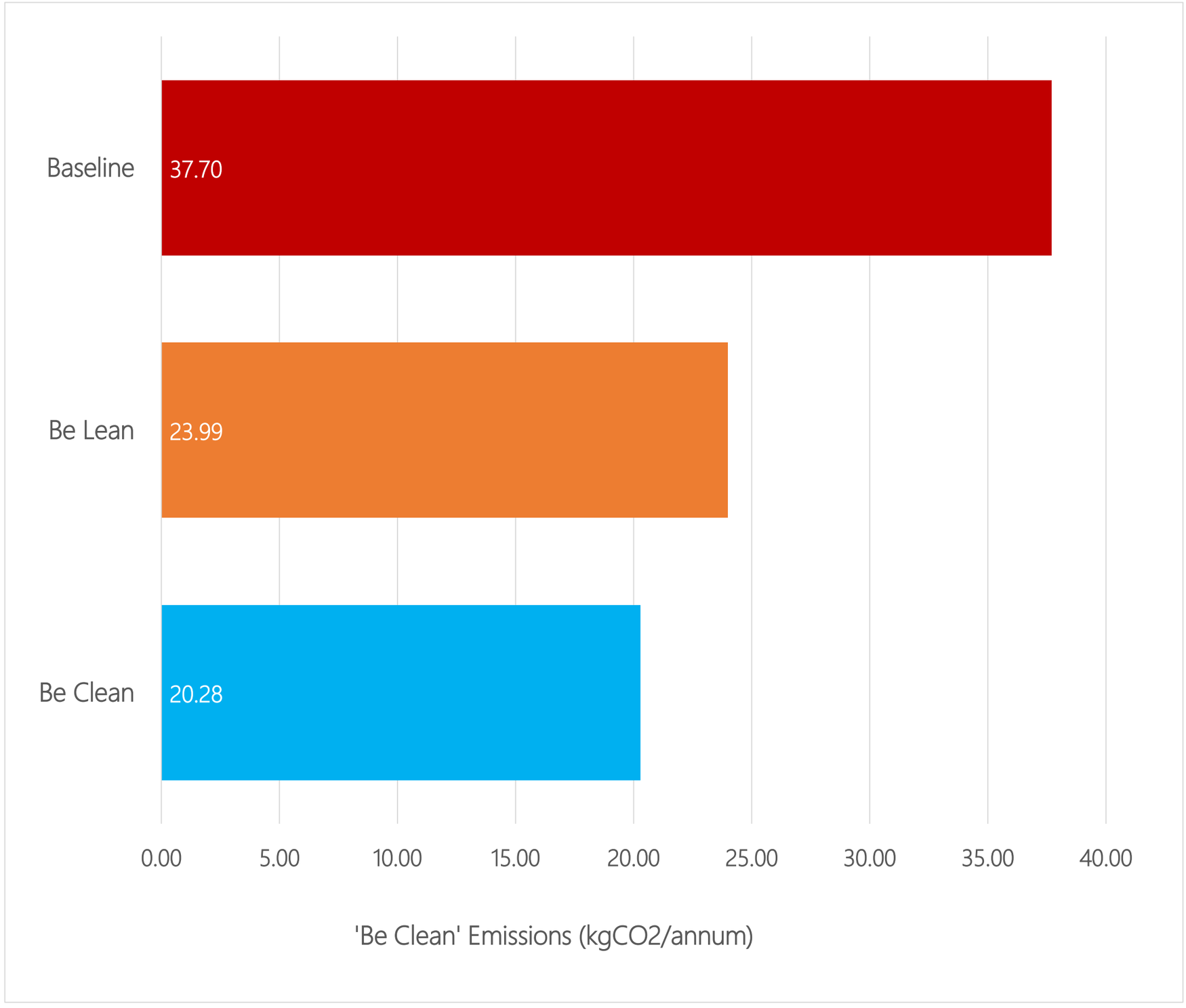
The results from the 'Be Clean' stage calculation are presented in the graph to the right. They have been presented on an area weighted basis, as the proposed building has an increased area.

They are as follows:

The Baseline Building Emission Rate (calculated using Part L modelling procedures and applied to the existing building specification) for the building is **37.70 $kgCO_2/annum/m^2$**

The Emission Rate (calculated using Part L modelling procedures) for the building with the 'Be Clean' measures introduced is **20.28 $kgCO_2/annum/m^2$**

This reduction in emissions at the 'Be Clean' stage is **46.21%**



# 10. BE GREEN

This section of the report is aimed at identifying and summarising the applicable Low and Zero Carbon technologies for the development.

The report has discussed in the previous section the aim to move the building towards all electric energy provision.

## 10.1. Centralised VRF

The current and future decarbonisation of the electricity grid has made a centralised VRF system with Heat Recovery the sensible choice to provide heating and cooling.

This type of system allows heat recovery and the use of waste heat from cooling to serve the year-round heat requirements for the building, including hot water.

The system uses heat pump technology to provide heating and cooling to the required areas of the building, thus providing energy from a low carbon source.

It means the building can be run as an all-electric building, thus locking in future carbon savings as the grid further decarbonises, with carbon neutrality by 2050 the end goal.

The savings realised by the technology can be seen in the results below. In reality, the savings are in fact greater, as the Part L methodology being used for the modelling exercise uses out of date carbon factors for grid electricity; it is now less than half of the figure used by the Part L methodology.

### Air Source Heat Pumps (ASHP)

Heat Pump technology, In the form of a centralised VRF system, will provide the all-electric heating and cooling for the building. A centralised system will allow the benefit of heat recovery and use of waste heat from cooling for year-round heat requirements in the building.

### Photovoltaic Panels (PV)

PV Panels have been deemed not practically feasible for this development, as roof space is limited and houses the centralised HVAC equipment for the building. Space and ventilation requirements for this plant equipment limit the ability to install PV.

| Building Energy Improvements | | |
|---|---|---|
| BUILDING ELEMENT | BASELINE ASSUMPTION | ELEMENT IMPROVEMENT |
| Heating System | Remeha Gas Boiler System.<br>Efficiency Assumed as 92% | Centralised VRF (Heat Pump) System with Heat Recovery to refurbished office areas<br>Efficiency a minimum of 300% |
| Cooling System | Proprietary AC Split Systems to different tenant areas.<br>Efficiency assumed as 360%. Applied to all Office areas | Centralised VRF (Heat Pump) System with Heat Recovery to refurbished office areas<br>Efficiency a minimum of 400% |
| Hot Water Systems | Local Direct Electric Calorifiers assumed | Centralised Heat Pumps solution<br>Efficiency a minimum of 200% |

## 10.2. Results

The results from the 'Be Green' stage calculation are presented in the graph to the right. They have been presented on an area weighted basis, as the proposed building has an increased area.

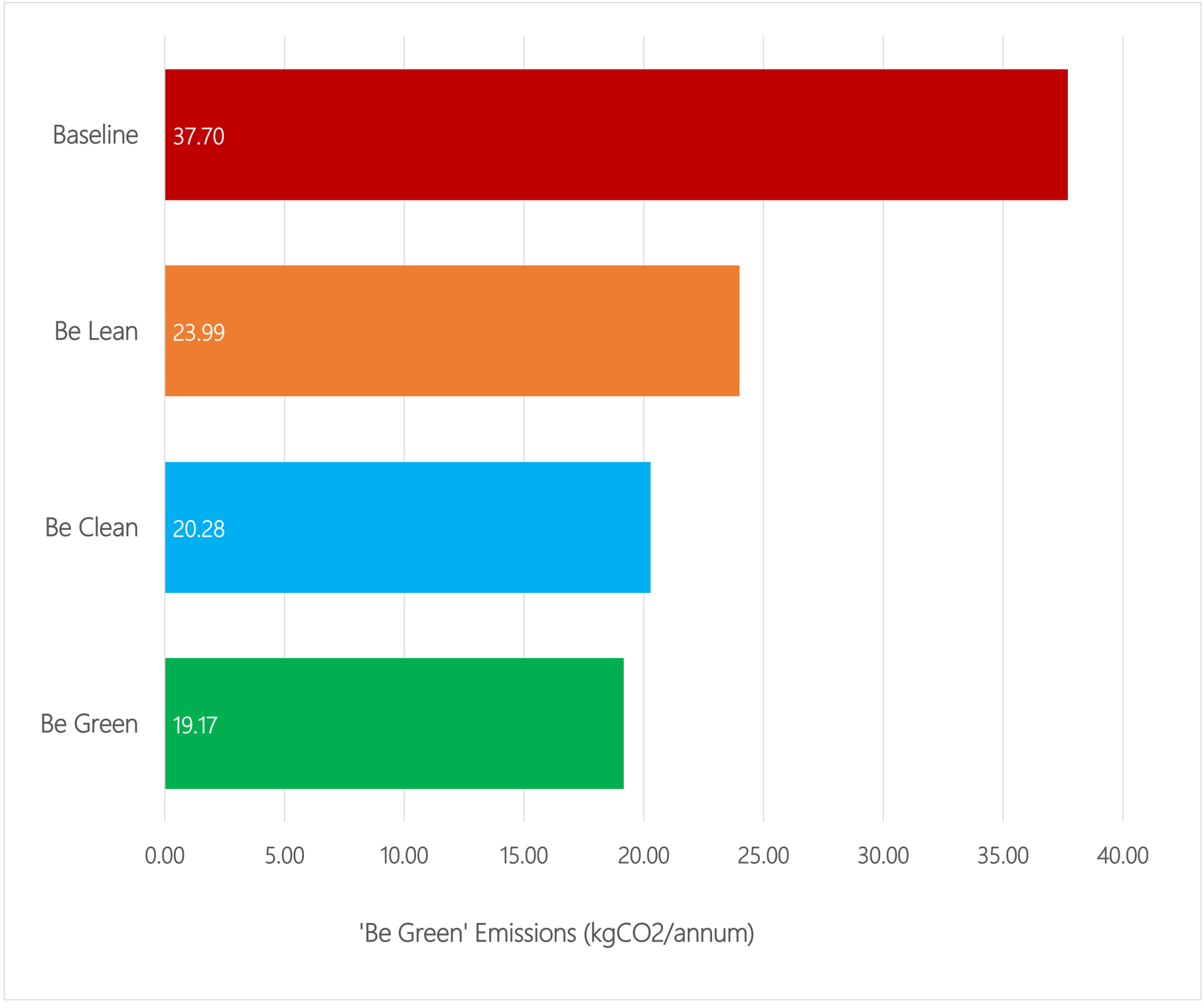
They are as follows:

The Baseline Building Emission Rate (calculated using Part L modelling procedures and applied to the existing building specification) for the building is 37.70 $kgCO_2/annum/m^2$

The Emission Rate (calculated using Part L modelling procedures) for the building with the 'Be Green' measures introduced is 19.17 $kgCO_2/annum/m^2$

Therefore the 'Be Green' measures lead to a further improvement in carbon emissions. As discussed above, the savings at this stage should be greater, given the further reduction in the carbon cost of electricity from the factor used in Part L calculation.

This reduction in emissions at the 'Be Lean' stage is 49.15%



# 11. SUMMARY OF RESULTS

## 11.1. Part L Performance

The performance, as measured using Part L methodology, for the development can be seen in table and graph to the right:

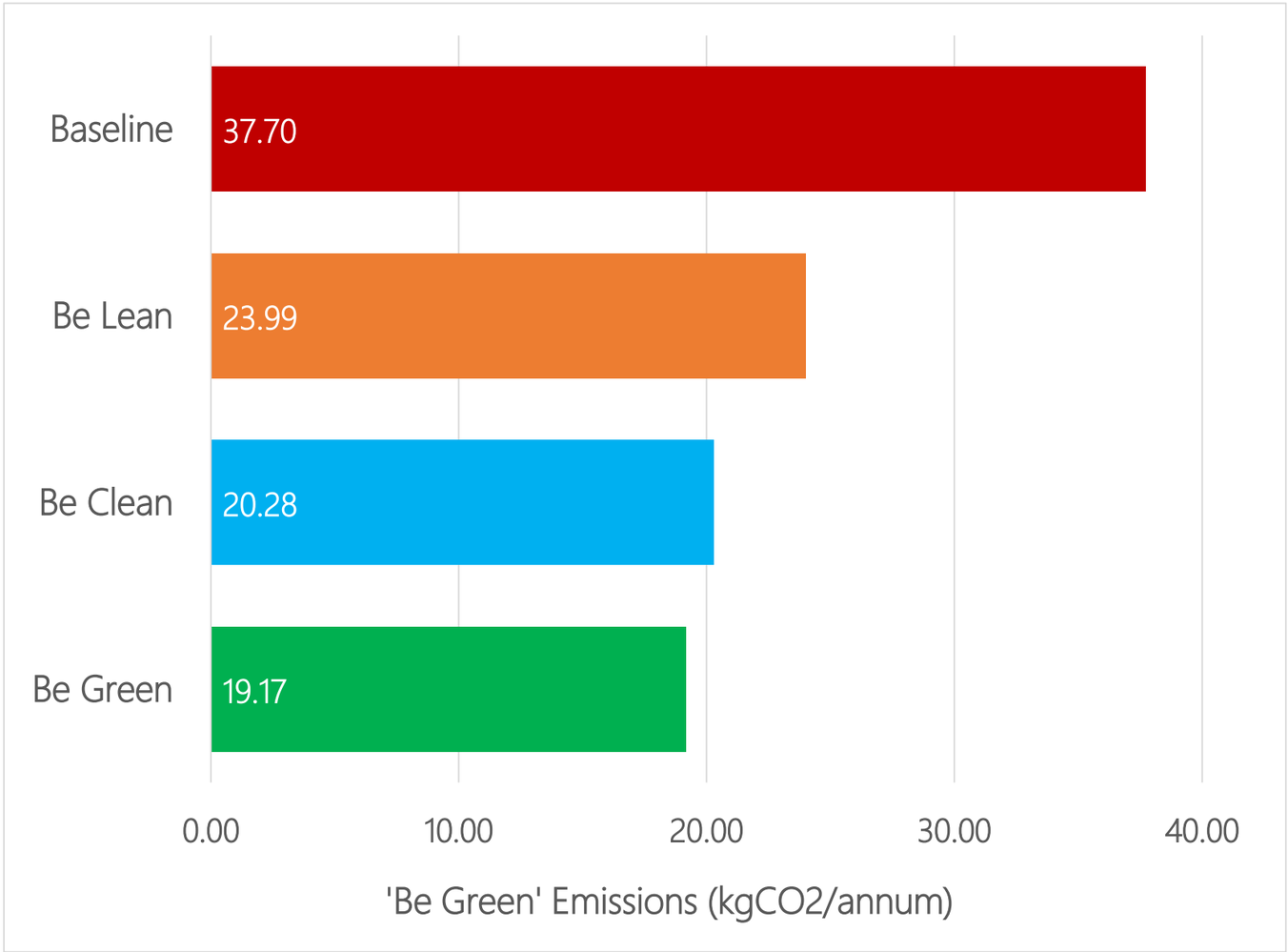
Overall, a reduction in carbon emissions of 49% is achieved over the baseline building.

This is in excess of the 35% on-site carbon reduction targets set for new build major development in the London Plan Policy SI 2 – Minimising Green House Gas Emissions, and the Camden Local Plan Policy CC1 - Climate Change Mitigation.

Renewable Energy Technology Contribution

We can see the development makes large improvements over the existing building using passive measures, energy efficient specification and LZC technology. This has been modelled using Part L modelling methodology.

The Low and Zero Carbon technologies employed on the development contribute 34% of the energy consumption of the development: 23% if only considering energy for heat requirements.




| Regulated Emissions | Baseline Emissions ($kgCO_2/annum/m^2$) | Emission Rate ($kgCO_2/annum/m^2$) | Total % $CO_2$ reduction |
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| Be Lean | 37.70 | 23.99 | 36.37% |
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# Energy Performance Certificate

Non-Domestic Building

HM Government

**20-24 Kirby Street**
**London**

**Certificate Reference Number:**
9215-8048-1223-7647-3874

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

## Energy Performance Asset Rating

More energy efficient

A+

Net zero $CO_2$ emissions

A 0-25

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

27 **This is how energy efficient the building is.**

Less energy efficient

## Technical information

| | |
|---|---|
| **Main heating fuel:** | Other |
| **Building environment:** | Unconditioned |
| **Total useful floor area ($m^2$):** | 3099 |
| **Building complexity:** | Level 5 |
| **Building emission rate ($kgCO_2/m^2$ per year):** | 19.17 |
| **Primary energy use ($kWh/m^2$ per year):** | 113.4 |

## Benchmarks

**Buildings similar to this one could have ratings as follows:**

29 If newly built

85 If typical of the existing stock

## Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

| | |
|---|---|
| **Assessment Software:** | TAS v9.5.4 using calculation engine TAS v9.5.4 |
| **Property Reference:** | UPRN-123456789012 |
| **Assessor Name:** | Andrew Galea |
| **Assessor Number:** | LCEA130397 |
| **Accreditation Scheme:** | CIBSE Certification Limited |
| **Assessor Qualifications:** | NOS5 |
| **Employer/Trading Name:** | BTP Consultants |
| **Employer/Trading Address:** | The Limes, Bayshill Road, Cheltenham, GL50 3AW |
| **Issue Date:** | 13 Oct 2022 |
| **Valid Until:** | 12 Oct 2032 (unless superseded by a later certificate) |
| **Related Party Disclosure:** | Not related to the owner |

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 3876-6771-3707-5148-2457

## About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by CIBSE Certification Limited. You can obtain contact details of the Accreditation Scheme at www.cibsecertification.com.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

This certificate and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. For further information about how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document and advises on how to identify the authenticity of a certificate and how to make a complaint.

## Opportunity to benefit from a Green Deal on this property

The Green Deal can help you cut your energy bills by making energy efficiency improvements at no upfront costs. Use the Green Deal to find trusted advisors who will come to your property, recommend measures that are right for you and help you access a range of accredited installers. Responsibility for repayments stays with the property - whoever pays the energy bills benefits so they are responsible for the payments.

To find out how you could use Green Deal finance to improve your property please call 0300 123 1234.

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