# SUSTAINABILITY STATEMENT

ALBION LAND

NEW DEVELOPMENT AT M40 JUNCTION 10

ALBION LAND

Issued by:

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# ALBION LAND

## OUR PROJECT REF: ESC1717


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# EXECUTIVE SUMMARY

ESC has been appointed by Albion Land to produce a Sustainability Statement for the proposed employment developments, on land adjacent to M40 Junction 10 and A43, Bicester.

This document supports two outline planning applications…

One application for outline planning permission (all matters reserved, excluding access) for the Site located to the **west** of the A43 and south of the B4100 roads. The outline planning applications include the erection of buildings comprising logistics (Use Class B8) and ancillary office (Use Class Eg(i)) floorspace; construction of new site access from the B4100; creation of internal roads and access routes; hard and soft landscaping including noise attenuation measures; and other associated infrastructure.

Another application for outline planning permission (all matters reserved, excluding access) for the Site located to the **east** of the A43 and south of the B4100 roads. The outline planning applications include the erection of buildings comprising logistics (Use Class B8) and ancillary office (Use Class Eg(i)) floorspace and associated infrastructure; construction of new site access from the B4100; creation of internal roads and access routes; and hard and soft landscaping.

The Statement has assessed the development under planning policies ESD 1 – 5, described within The Cherwell Local Plan 2011 – 2031. These policies regard how sustainability should be implemented in both construction of buildings and operation of buildings, which were addressed by implementing/investigating the following…

- Method to display and monitor building energy usage
- Reducing water consumption via installation of water efficient sanitaryware
- Feasibility of incorporating District Energy and Heat Network into the development
- Adaptation and mitigation measures towards climate change
- High-performance building fabric and services to reduce building energy demand
- Sustainable construction methods and materials to reduce Embodied Carbon

BREEAM NC 2018 sustainability assessment was used to comply with the policies as they fall in-line with BREEAM's assessment methods. The development is currently aiming to achieve a rating of 'Very Good' as a minimum, however, there is potential to achieve 'Excellent' as demonstrated in Appendix A – J10, M40 BREEAM NC 2018 Pre-Assessment.

The energy assessment is based on the inclusion of low and zero carbon technologies to further reduce energy demand and achieve Net Zero Carbon in Operation for the office/core's Category A building services fit-out. This is solely a financial option for the Developer(s) to consider.

To assess how the development shall achieve Net Zero Carbon in Operation for the office/core's Category A building services fit-out only, a thermal dynamic simulation software, EDSL Tas Engineering v9.5.1, was used in order to model and simulate a building's office/core predicted operational energy performance.

A single representative unit was modelled, which acted as a benchmark for the other units. It implements highly-efficient building fabric and building services to reduce the office and core

space's energy demand, the reduced energy consumption and carbon emissions achieved is then offset via Photovoltaic Panels.

The representative unit's simulated energy consumption, carbon emission and size of Photovoltaic Panels are then pro-rated for the remaining units, based on their office and core's Gross Internal Floor Area (GIA).

Net zero carbon for the office/core spaces Category A building services fit-out was achieved by implementing passive design solutions (increased building fabric efficiency), high-efficiency Air-Source Heat Pumps (low carbon technology) and Photovoltaic Panels (renewable/zero carbon technology).

Across the development, **10,400 m²** of photovoltaic panels are required to offset all of the units' predicted annual carbon emission for the office and core spaces.

The warehouse spaces for each unit will have their predicted annual energy consumption and carbon emissions showcased for reference purposes only. The regulated and unregulated energy consumptions are based on a previous project's simulation data and Table 20.19(b), CIBSE Guide F, respectively.

# 1. INTRODUCTION

## BACKGROUND

ESC has been appointed by Albion Land to produce a Sustainability Statement for the proposed employment development on land adjacent to the M40 Junction 10 and A43 motorway/roadway, at Bicester.

This document supports two outline planning applications…

One application for outline planning permission (all matters reserved, excluding access) for the Site located to the **west** of the A43 and south of the B4100 roads. The outline planning applications include the erection of buildings comprising logistics (Use Class B8) and ancillary office (Use Class Eg(i)) floorspace; construction of new site access from the B4100; creation of internal roads and access routes; hard and soft landscaping including noise attenuation measures; and other associated infrastructure.

Another application for outline planning permission (all matters reserved, excluding access) for the Site located to the **east** of the A43 and south of the B4100 roads. The outline planning applications include the erection of buildings comprising logistics (Use Class B8) and ancillary office (Use Class Eg(i)) floorspace and associated infrastructure; construction of new site access from the B4100; creation of internal roads and access routes; and hard and soft landscaping.

At the current stage, the Statement shall be based on the indicative masterplan, it is to note that the building layouts, access road and landscape are subject to change. The illustrative masterplan is shown overleaf.

The masterplan indicatively shows five units which illustrates a possible design option that the development may be built towards. The Eastern and Western sites shall follow the sustainability and energy efficiency policies set out within The Cherwell Local Plan 2011 – 2031 document. This document is the Cherwell District Council's legal and planning document applicable to domestic and non-domestic development schemes.

Throughout the Statement, it shall detail the planning policies and also seek to address them through industry standard methods on sustainability and energy efficiency.

## DESCRIPTION OF DEVELOPMENT

The development include two sites (Eastern Site and Western Site), each with multiple units comprising of space for Use Class B8 with ancillary spaces for Use Class Eg(i). The Figure below is an illustrative masterplan of the Eastern and Western sites and represents a possible design option in which the buildings, landscape and road access may be built towards.


*Figure 1: Illustrative Masterplan. Source: Cornish Architects*

The table below highlights each building's floor areas for the illustrative scheme. The floor areas below are indicative and are not for approval.

*Table 1: Building Floor Areas. Source: Cornish Architects*

| Building | Ground Floor Area (m²) | Upper Floor(s) (office) Area (m²) | Total Floor Area (m²) |
|---|---|---|---|
| **Unit 1** | 83,978 | 2,780 | 86,758 |
| **Unit 2** | 34,737 | 1,156 | 35,893 |
| **Unit 3** | 43,642 | 1,454 | 45,096 |
| **Unit 4** | 62,898 | 2,189 | 65,096 |
| **Unit 5** | 31,609 | 1,090 | 32,699 |
| **Totals** | **256,864** | **8,669** | **265,542** |

# 2. AIMS

The Sustainability Statement shall identify the planning policies set out by The Cherwell Local Plan 2011 – 2031 that regards sustainability and energy efficiency and apply them to the new development.

The Statement shall seek to implement the sustainability requirements for BREEAM 'Very Good' that may fall in-line with these planning policies. Requirements to achieve BREEAM 'Excellent' shall also be investigated if it is a feasible option. BREEAM is a world-renowned sustainability assessment method used within the construction industry that implements sustainability within buildings and construction.

Alongside this, an indicative assessment on the Net Zero Carbon in Operation for the office and core area's Category A building services fit-out only shall be provided. The warehouse space shall not be included within the Net Zero Carbon in Operation target. This assessment shall only provide insight to how Net Zero Carbon for the office spaces may be achieved and may be considered an option for the Eastern and Western sites' Developer(s).

A Category A building services fit-out is the industry's standard fit-out for core spaces within a warehouse/industrial building. This typically includes the basic fit-out requirements for the open plan office (optional), reception, toilets and circulation spaces, which are fitted out to include (but not limited to)…

- Air-conditioning,
- Heating,
- Domestic hot and cold water services,
- Mechanical ventilation,
- General and emergency lighting,
- Lifts,
- Fire alarm systems, and
- General power supply

The warehouse/industrial space is often left as a bare structure without any aforementioned services, though may include fire alarms and emergency lighting.

To enable assessment of the above, dynamic thermal modelling shall be undertaken using EDSL Tas v9.5.1 software. EDSL Tas is accredited by the Department of Communities and Local Government for the generation of SBEM and Energy Performance Certificates. It is also a complex modeller of buildings and services systems giving detailed energy consumption and carbon emission figures.

The warehouse space's energy consumption and carbon emissions shall be showcased for reference purposes only and its figures shall be based on a previous project's simulation data (of similar building size and use) and CIBSE Guide F, which is an industry standard document used for estimating energy usage for various building types.

# 3. THE CHERWELL LOCAL PLAN 2011 – 2031

The development plan for the site includes the Cherwell Local Plan 2011 – 2031. The Cherwell Local Plan sets out the planning policies which development proposals will be assessed against. These include policies relating to sustainability and infrastructure.

The upcoming sections shall identify and detail the planning policies that may be applicable to this development.

## POLICY ESD 1: MITIGATING AND ADAPTING TO CLIMATE CHANGE

### REQUIREMENT

The *Cherwell Local Plan 2011-2031,* Policy ESD 1 states:

*Measures will be taken to mitigate the impact of development within the district on climate change. At a strategic level, this will include:*

- *Designing developments to reduce carbon emissions and use resources more efficiently, including water (see Policy ESD 3 Sustainable Construction)*
- *Promoting the use of decentralised and renewable low carbon energy where appropriate (see policy ESD 4 Decentralised Energy Systems and ESD 5 Renewable Energy)*

### MITIGATION

**Reduce Carbon Emissions**

See Section 7 – Energy Demand Assessment.

**Resource Efficiency Inc Water Efficiency**

Please refer to Section 5 – Minimising Water Consumption. This shall also be met via the Wat 01 credits illustrated within the BREEAM NC 2018 Pre-Assessment, Appendix A.

**Decentralised Energy**

Please refer to Policy ESD 4 mitigation in this section

**Low Carbon Energy**

Please refer to Policy ESD 5 mitigation in this section

# POLICY ESD 2: ENERGY HEIRARCHY AND ALLOWABLE SOLUTIONS

## REQUIREMENT

*In seeking to achieve carbon emissions reductions, we will promote an 'energy hierarchy' as follows:*

- *Reducing energy use, in particular by the use of sustainable design and construction measures*
- *Supplying energy efficiently and giving priority to decentralised energy supply*
- *Making use of renewable energy*
- *Making use of allowable solutions*

## MITIGATION

### Reducing Energy Use

Please refer to Section 6 – Energy Demand Assessment. This shall also be met via the Ene 01 and Ene 04 credits illustrated within the BREEAM NC 2018 Pre-Assessment, Appendix A.

### Decentralised Energy Supply

Please refer to Policy ESD 4 in this section

### Renewable Energy

Please refer to Section 7 – Energy Generation Strategy. This shall also be met via the Ene 04 credits illustrated within the BREEAM NC 2018 Pre-Assessment, Appendix A.

# POLICY ESD 3: SUSTAINABLE CONSTRUCTION

## REQUIREMENT

The *Cherwell Local Plan 2011-2031*, Policy ESD 3 states:

*All new non-residential development will be expected to meet at least BREEAM 'Very Good' with immediate effect, subject to review over the plan period to ensure the target remains relevant. The demonstration of this standard should be set out in the Energy Statement.*

*The strategic site allocations identified in this Local Plan are expected to provide contributions to carbon emissions reductions and to wider sustainability.*

*All development proposals will be encouraged to reflect high quality design and high environmental standards, demonstrating sustainable construction methods including but not limited to:*

- *Minimising both energy demands and energy loss*
- *Maximising passive solar lighting and natural ventilation*
- *Maximising resource efficiency*
- *Incorporating the use of recycled and energy efficient materials*
- *Incorporating the use of locally sourced building materials*
- *Reducing waste and pollution and making adequate provision for the recycling of waste*
- *Reducing the impact on the external environment and maximising opportunities for cooling and shading (by provision of open space and water, planting, and green roofs, for example); and*
- *Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment*

## MITIGATION

The proposed development is currently aiming to achieve a BREEAM NC 2018 rating of 'Very Good' as a minimum, with potential to achieve 'Excellent'. The BREEAM UK New Construction scheme (Building Research Establishment Environmental Assessment Method) is an environmental performance standard which new, non-domestic buildings in the UK can be assessed against. Within the scheme, there are rating benchmarks that a building may achieve through good or best practice, these ratings are:

| BREEAM RATING | % SCORE |
|---|---|
| Outstanding | ≥ 85 |
| Excellent | ≥ 70 |
| Very Good | ≥ 55 |
| Good | ≥ 45 |
| Pass | ≥ 30 |
| Unclassified | < 30 |

Each rating represents performance equivalent to:

- Outstanding: Less than the top 1% of UK new non-domestic buildings (innovator)
- Excellent: Top 10% of UK new non-domestic buildings (best practice)
- Very Good: Top 25% of UK new non-domestic buildings (advanced good practice)
- Good: Top 50% of UK new non-domestic buildings (intermediate good practice)
- Pass: Top 75% of UK new non-domestic buildings (standard good practice)

How a building achieves any of the above ratings is by assessing how it is managed, constructed and operated. This is broken down into categories, which are:

- Management,
- Health and Wellbeing,
- Energy,
- Transport,
- Water,
- Materials,
- Waste,
- Land Use and Ecology, and
- Pollution

Another category is 'Innovation', though it is optional. Each category includes criteria a building may meet to achieve one or more credits. These credits will add up to score an overall BREEAM rating.

For this development, each unit is targeting to achieve a BREEAM 2018 rating of 'Very Good', however, there is potential to achieve the 'Excellent' rating. ESC's BREEAM NC 2018 Pre-Assessment for this development accounts for the following…

- Material efficiency (please refer to Section 5 – Reducing Embodied Carbon)
- Use of recycled & sustainably sourced aggregates (please refer to Section 5 – Reducing Embodied Carbon)
- Construction waste management (construction resource efficiency)
- Reduction of energy use & carbon emissions (please refer to Section 6 – Energy Demand Assessment and onwards)
- Energy monitoring
- Low carbon design
- Water consumption (reduction in potable water use, please refer to Section 5 – Minimising Water Consumption)

ESC's BREEAM NC 2018 Pre-Assessment illustrates that the proposed development can achieve an 'Excellent' rating.

Please refer to Appendix A – J10, M40 BREEAM NC 2018 Pre-Assessment document for further information.

In specific response to the itemised sections, the appropriate BREEAM credit has been targeted:

| ITEM | ASSOCIATED AND TARGETED BREEAM CREDIT |
|---|---|
| Minimising both energy demands and energy loss | Ene 01 – Reduction of energy use and carbon emissions |
| Maximising passive solar lighting and natural ventilation | Ene 04 – Low Carbon Design<br>Hea 01 – Visual Comfort<br>Hea 2 – Indoor Air Quality |
| Maximising resource efficiency | Mat 06 – Material Efficiency<br>Wst 01 – Construction Waste Management |
| Incorporating the use of recycled and energy efficient materials | Wst 02 – Use of recycled and sustainably sourced aggregates<br>Mat 01 – Environmental impacts from construction products – Building Life Cycle Assessment |
| Incorporating the use of locally sourced building materials | Mat 3 – Responsible sourcing of construction materials |
| Reducing the impact on the external environment and maximising opportunities for cooling and shading (by provision of open space and water, planting, and green roofs, for example); and | Hea 07 – Safe and healthy surroundings<br>Land use and Ecology Section - |
| Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment | Mat 06 - Material Efficiency<br>Wst 06 – Design for disassembly and adaptability |

# POLICY ESD 4: DECENTRALISED ENERGY SYSTEMS

## REQUIREMENT

The *Cherwell Local Plan 2011-2031,* Policy ESD 4 states the following…

*The use of decentralised energy systems, providing either heating (District Heating (DH)) or heating and power (Combined Heat and Power (CHP)) will be encouraged in all new developments.*

*A feasibility assessment for DH/CHP, including consideration of biomass fuelled CHP, will be required for all applications for non-domestic developments above 1000m$^2$ floorspace.*

*Where feasibility assessments demonstrate that decentralised energy systems are deliverable and viable, such systems will be required as part of the development unless an alternative solution would deliver the same or increased benefit.*

## MITIGATION

Within 3.5km of the Eastern and Western sites is the Ardley Energy Recovery Facility which produces electricity from the incineration of non-recyclable waste. The facility exports the electricity generated to the national grid which is then freely available via the conventional electricity providers. The facility can also generate waste heat which can be utilised locally via heating water mains.

There is no information available that suggests the heat network currently available from the Ardley site routes is in close proximity to the proposed development.

If district heating mains are available from the Ardley Facility, there is potential for the warehouse area to be space heated and/or cooled via this medium.

Heating could be provided using wet heating coils, mounted within air handling units, to deliver heated air into the warehouse spaces.

Cooling could be provided via the use of absorption chillers which convert heating water into chilled water. The chiller then serves wet cooling coils, again mounted in an air handling unit, to deliver cooled air to the warehouse spaces.

This provision is not applicable at the current time as the warehouse spaces of the buildings shall be shell only.

The office spaces are currently proposed to be heated and cooled via an air source heat pump system which represents the most practical system for this size and type of space. Integration to a heat network is not possible for this type of system so the office spaces will not benefit from any heat network. The efficiency of the air source heat pumps system can still achieve very good efficiency ratings, so we don't assess this non interface potential as a negative.

To facilitate the potential for future heat network delivery, the buildings shall be provided with service ducts capable of supporting the routing of heating mains from the site boundary to the building. This means a clear and unobstructed below ground service strip finishing in service ducts routing through the ground floor slab into the warehouse area.

For information, the location of the Ardley Energy recovery facility is shown in the image overleaf.

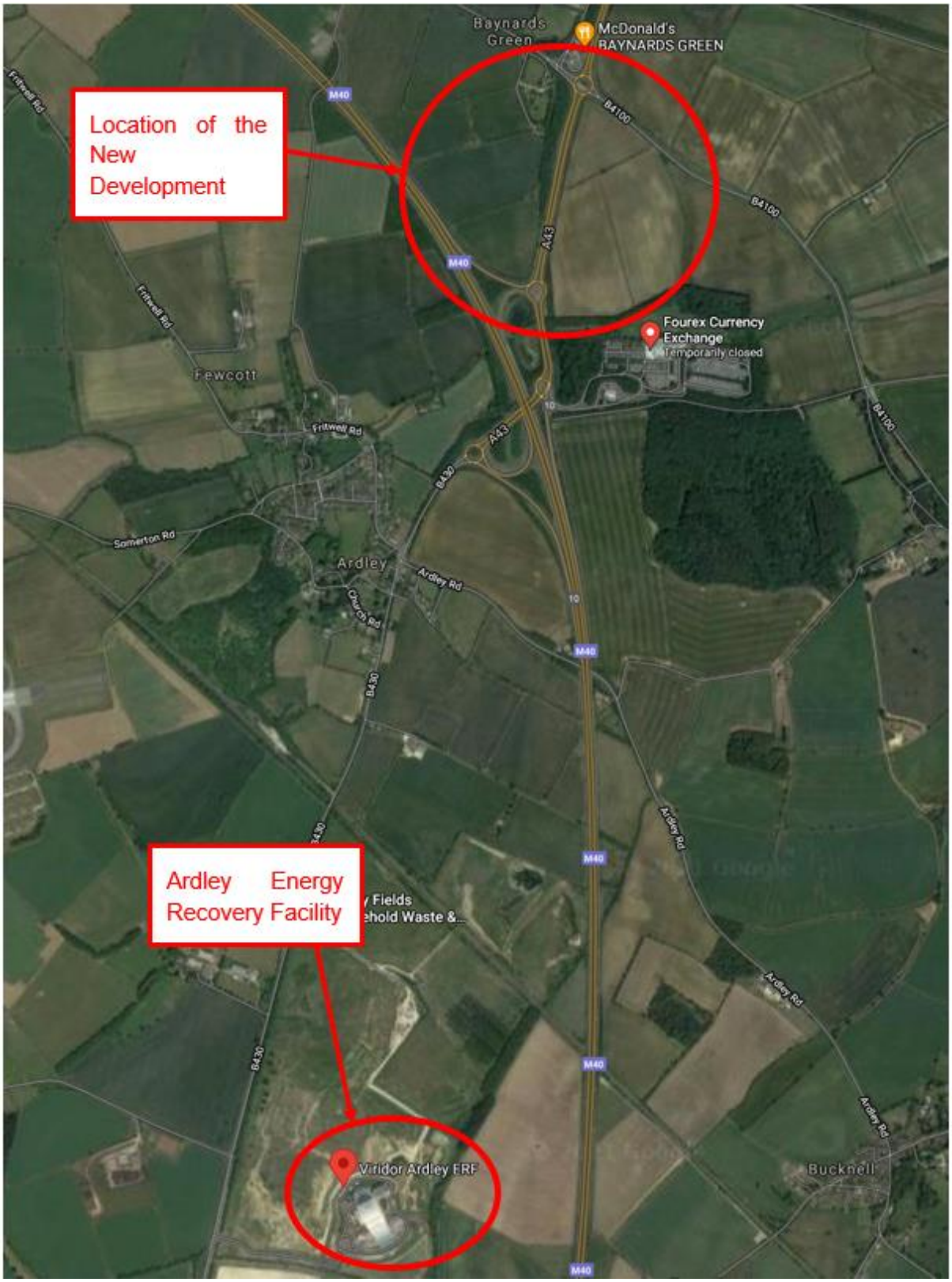



*Figure 2: Relative location of the Ardley Energy Recovery Facility to the New Employment Development*

# POLICY ESD 5: RENEWABLE ENERGY

## REQUIREMENT

The *Cherwell Local Plan 2011-2031*, the Policy ESD 5 states:

*A feasibility assessment of the potential for significant on-site renewable energy provision (above any provision required to meet national building standards) will be require for all applications for non-domestic developments above 1000m$^2$ floorspace*

*Where feasibility assessments demonstrate that on site renewable energy provision is deliverable and viable, this will be required as part of the development unless an alternative solution would deliver the same or increased benefit.*

## MITIGATION

Please refer to Section 8 – Energy Generation Strategy.

# 4. MINIMISING WATER CONSUMPTION

## 4.1 REQUIREMENT

This section aims to address part of the resource efficiency requirement set out within Policy ESD 1…

*Measures will be taken to mitigate the impact of development within the district on climate change. At a strategic level, this will include:*

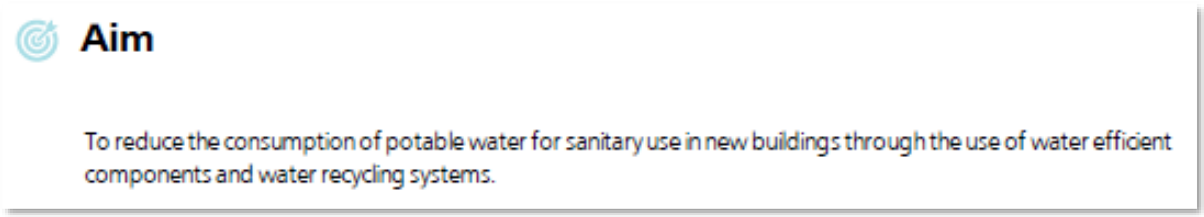
- *Designing developments to reduce carbon emissions and use resources more efficiently, including water (see Policy ESD 3 Sustainable Construction)*

## 4.2 MITIGATION

The Eastern and Western sites of the proposed development are greenfield land and do not require, or draw, a water load. The new development will draw water for public health use as a minimum. To make the development water neutral would be very difficult as we are working from an existing zero water draw. It shall aim to achieve a good reduction in water consumption via the use of water efficient sanitaryware and fittings.

**BREEAM**

The development is aiming to achieve BREEAM 'Very Good', with potential to achieve 'Excellent'. BREEAM offers a method of calculating water consumption and benchmarking this against a 'standard' installation. This calculation forms part of the Wat 01 section. The aim of this section is:




To achieve credits, a water calculator assesses the water demand for the site and grades this use against a notional 'standard' building. Credits are achieved based on the reduction over the 'standard' water consumption.

# 5. REDUCING EMBODIED CARBON

## 5.1 REQUIREMENT

This section aims to address the sustainable construction methods and materials requirements set out within Policy ESD 3…

*All new non-residential development will be expected to meet at least BREEAM 'Very Good' with immediate effect, subject to review over the plan period to ensure the target remains relevant. The demonstration of this standard should be set out in the Energy Statement.*

*The strategic site allocations identified in this Local Plan are expected to provide contributions to carbon emissions reductions and to wider sustainability.*

*All development proposals will be encouraged to reflect high quality design and high environmental standards, demonstrating sustainable construction methods including but not limited to:*

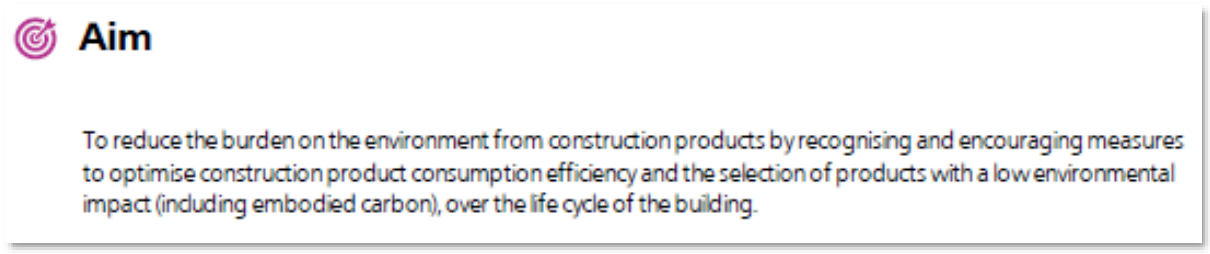
- *Minimising both energy demands and energy loss*
- *Maximising passive solar lighting and natural ventilation*
- *Maximising resource efficiency **
- *Incorporating the use of recycled and energy efficient materials **
- *Incorporating the use of locally sourced building materials **
- *Reducing waste and pollution and making adequate provision for the recycling of waste**
- *Reducing the impact on the external environment and maximising opportunities for cooling and shading (by provision of open space and water, planting, and green roofs, for example); and*
- *Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment **

Elements that are marked with an asterisk are relevant to this section.

## 5.1 MITIGATION

The proposed development is aiming to achieve 'Very Good' with potential to achieve 'Excellent' under BREEAM New Construction 2018. A targeted credit for the achievement 'Very Good' is at least 1 credit for Mat 1 - Environmental impacts form construction products – Building life cycle assessment (LCA) section.

The aim of this BREEAM section is:




To achieve credits, the proposed buildings and its construction materials are each modelled against a benchmark building defined by BREEAM. Based on the level of improvement in life cycle analysis (against the BREEAM benchmark standard) credits are awarded accordingly.

This assessment is currently targeting 1 credit for this section which would highlight the proposed development is meeting the benchmark life cycle analysis targets for the building construction materials.

Overleaf is the preliminary embodied carbon assessment. This highlights the amount of carbon is emitted to the atmosphere during each building's 60 year life cycle, which is from cradle to grave (i.e. from the extraction and processing of materials to the demolishing of the building and disposal of the demolished materials).

Out of the five indicative units in the illustrative scheme, Unit 5 (shown in Figure 1) was selected for the preliminary assessment. Unit 5's embodied carbon was assessed via the One Click LCA web-application, which is a Life Cycle Assessment and Costs tool used for and complies with BREEAM, LEED and many other certification schemes. Unit 5's results are then pro-rated for Unit 1 – 4, based on their gross internal floor area.

It is to note that as the indicative floor areas and number of units are all subject to change, the results shall be illustrated on a per floor area basis. This will allow flexibility in calculating the preliminary embodied carbon for future indicative design.

*Table 2: Indicative Unit 1 - 5's preliminary embodied carbon results*

| Unit | GIA ($m^2$) | kg $CO_2e/m^2/yr$ | kg $CO_2e/yr$ | kg $CO_2e$ | tonnes $CO_2e$ |
|---|---|---|---|---|---|
| **1** | 86,758 | 5.23 | 453,744.34 | 27,224,660.40 | **27,224.66** |
| **2** | 35,893 | 5.23 | 187,720.39 | 11,263,223.40 | **11,263.22** |
| **3** | 45,096 | 5.23 | 235,852.08 | 14,151,124.80 | **14,151.12** |
| **4** | 65,096 | 5.23 | 340,452.08 | 20,427,124.80 | **20,427.12** |
| **5** | 32,699 | 5.23 | 171,015.77 | 10,260,946.20 | **10,260.95** |

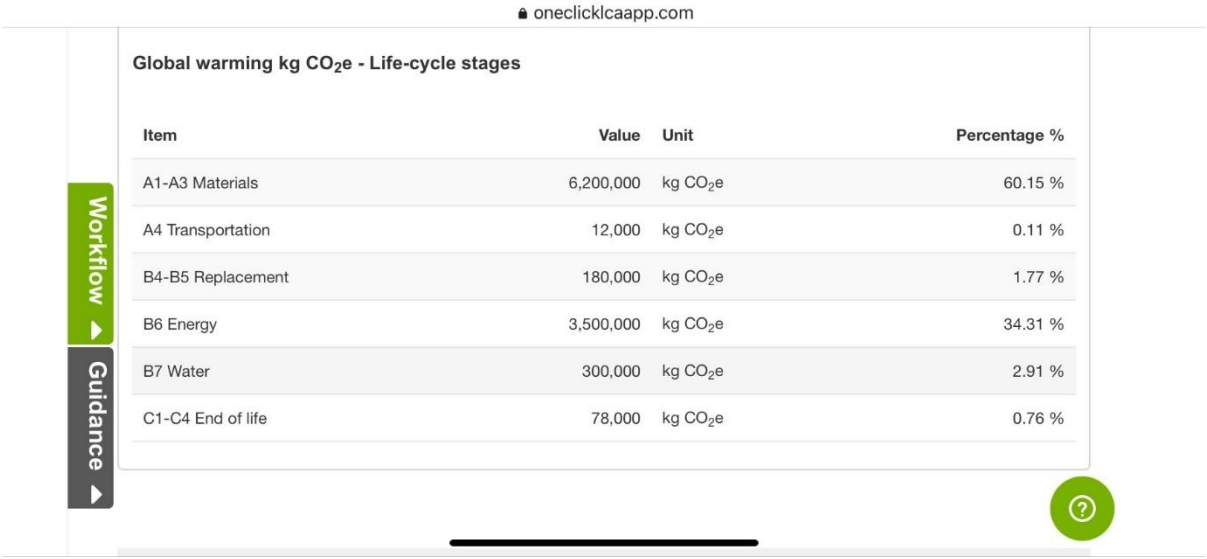



*Figure 3: Indicative Unit 5's preliminary embodied carbon results breakdown*

# 6. ENERGY DEMAND ASSESSMENT

The dynamic simulation performed assesses the predicted annual energy consumption and annual carbon emissions for the development using the high-performance fabric, construction and services in order to achieve energy efficiency in building operation. This assessment and the following assessments will include…

- Predicted regulated energy uses (HVAC equipment, general lighting and daily hot water usage)
- Predicted un-regulated energy uses (Office equipment, lifts and kitchenette appliances)

The upcoming sections will highlight the above.

It is to note that only Unit 1 (shown in Figure 1) will have a thermal dynamic simulation performed, but the remaining units' energy consumption and carbon emissions shall be based on Unit 1's energy consumption per floor area, which shall be used to calculate the remaining units' office/core's total energy consumption. The carbon emissions calculated are based on SAP 2012 carbon factors.

## BUILDING ENVELOPE

Unit 1 shall implement high-performance building fabric in order to reduce the heating and cooling energy demand within the office and core spaces. The proposed building fabric shall also be applied for Unit 2 – 5 (excluding the warehouse P/A Ground Floor U-value, as that figure will be various). Below illustrates what is proposed.

*Table 3: Unit 1 Proposed Building Fabric Performance*

| ELEMENT | FABRIC PERFORMANCE |
|---|---|
| All Units Walls U-value | 0.26 W/m².K |
| All Units Internal Office Fire-rated Walls U-value | 0.31 W/m².K |
| All Units Roof U-value | 0.18 W/m².K |
| All Units Windows U-value | 1.50 W/m².K |
| All Units External Door U-value | 2.20 W/m².K |
| All Units Vehicle Access / Dock Doors U-Value | 1.50 W/m².K |
| All Units Windows g-value | 0.40 |
| All Units Entrance Curtain Wall g-value | 0.18 |
| Office Ground Floor U-value | 0.22 W/m².K |
| Warehouse P/A Ground Floor U-value | 0.072 W/m².K |
| Air Permeability | 3.00 m³/m²/hr @ 50 Pa |

## MECHANICAL & ELECTRICAL SERVICING STRATEGY

Unit 1's thermal model shall implement efficient building services to reduce the building's energy consumption and carbon emissions. The heating and cooling system proposed for the office and reception spaces is the industry's widely recognised low carbon technology, Air-Source Heat Pumps. The following servicing strategy for the office and core spaces was adopted:

- VRV/F air conditioning (air source heat pumps) and mechanical ventilation with heat recovery to the office
- Extract ventilation and electric heating to the toilets
- Local small storage electric water heaters for hot water
- LED lighting to all areas, complete with intelligent occupancy and daylight control, where applicable.

*Table 4: Proposed Mechanical Services Performance used within Unit 1's Thermal Model*

| SYSTEM/ZONE | EFFICIENCY |
|---|---|
| Warehouse Heating | N/A |
| Air Conditioning (VRV/F air source heat pumps) | Heating CoP = 4.00 Cooling EER = 4.00 |
| Toilet Extract Ventilation | SFP = 0.5 W/(l/s) |
| Mechanical Ventilation | SFP = 1.5 W/(l/s). Heat Recovery Efficiency = 73%. Ventilation Rate = 10 l/s per person |
| Domestic Hot Water Services | Local electric water heaters with 10 litres capacity. |

*Table 5: Proposed Electrical Lighting Performance used within Unit 1's Thermal Model*

| ROOM | GAIN (W/M² UNLESS STATED OTHERWISE) | DESIGN ILLUMINANCE (LUX) | OCCUPANCY DETECTION | DAYLIGHT CONTROL | PARASITIC POWER (W/M²) |
|---|---|---|---|---|---|
| Offices | 10.0 | 500 | Absence detection | Photocell dimming | 0.2 |
| Reception | 6.0 | 300 | None | Photocell dimming | 0.2 |
| Landing | 6.0 | 300 | Presence detection | Photocell dimming | 0.2 |
| Toilets | 10.0 | 150 | Presence detection | No daylight control | N/A |

# REGULATED AND UNREGULATED ENERGY CONSUMPTION

The Chartered Institution of Building Services Engineers (CIBSE) provides guidance on estimating the regulated energy consumption for buildings through their CIBSE: Guide A document. The following figures have been assigned within the model.

## OCCUPANT HEAT GAIN

The heat gain derived from the building occupants directly affects the energy consumption of the air conditioning systems. The more gain, the more energy is required to keep the internal temperature to a comfortable level.

Occupants are assumed to be present within the buildings from 0900 hours until 1800 hours 5 days a week.

*Table 6: Occupant Heat Gains*

| AREA | OCCUPANCY DENSITY (PERSON PER $M^2$) | NO. OF PEOPLE | OCCUPANT GAIN PER PERSON (W) | DIVERSITY FACTOR |
|---|---|---|---|---|
| Office | 10 | - | 75 | 1.0 |
| Reception | - | 2 | 75 | 1.0 |

## EQUIPMENT HEAT GAIN AND ENERGY CONSUMPTION

Two factors are assessed regarding equipment within the building – heat gain and direct energy consumption.

Heat gain from the equipment directly affects the energy consumption of the air conditioning systems. The more gain, the more energy is required to keep the internal temperature to a comfortable level. The equipment also draws a direct electrical load to enable it to operate. Both loads have been assessed using the following parameters:

- The heat gain is 100% of the electrical energy consumption
- The building equipment loads share the same operational schedule as the occupants (0900 – 1800)
- Diversity factor of 1.0 is applied to desktop equipment, i.e. personal computers and desk monitors
- Copy machines and printers will have a default diversity factor of 1.0
- The number of computers and monitors will match the corresponding occupancy

*Table 7: Office Equipment Energy Consumption/Heat Gain*

| ENERGY CONSUMPTION/HEAT GAIN PER UNIT (W) | | | | | | |
|---|---|---|---|---|---|---|
| SPACE | COMPUTER | MONITOR | COPY MACHINE | DESKTOP LASER PRINTER | INKJET PRINTER | LCD TV |
| Offices | 77 | 36 | 350 | 22 | - | - |
| Reception | 77 | 36 | - | - | 15 | 11 |

The offices are assumed to have kitchenette equipment that will give off heat and consume energy. The figures used within the modelling are taken from CIBSE TM37: Design for improved solar shading control.

*Table 8: Kitchenette Equipment Energy Consumption/Heat Gain*

| GAINS (W) | | | | |
|---|---|---|---|---|
| **AREA** | KETTLE | MICROWAVE | REFRIGERATOR | AUDIO VISUAL |
| Unit 1 Office Kitchenette | 44 | 50.2 | 16 | 22 |
| Unit 1 Office Kitchenette | 88 | 107.95 | 16 | 22 |

## LIFTS

Energy consumption via lifts is calculated using guidance from CIBSE Technical Memorandum 54: Evaluating Operational Energy Performance of Buildings at the Design Stage (CIBSE TM54) and CIBSE Guide D: Transportation Systems in Buildings.

The following parameters have been assumed within the modelling, based on the current indicative scheme:

- Unit 1 will have first and second floor offices therefore there will be some lift usage. Office floor areas are considered to be ‘small’.
- The assumed number of trips is 2.
- Standby demand of 51 W shall be used for weekends, taken from the lift manufacturer’s data used withing another similar operator logistics distributor. The standby demand is also used for the idle demand.
- Specific travel demand is 0.42 mWh/(kg.m).
- Lift door time is taken to be 8 seconds.

- Lift velocity, acceleration and jerk/jolt are taken to be 1.0m/s, 0.3 $m/s^2$ and 0.5 $m/s^3$, respectively.
- The hourly power consumption was calculated to be approximately 123 W.

## RESULTS

By adopting the above building fabric and mechanical/electrical services, Unit 1's Category A offices and core spaces demonstrated following predicted energy and carbon results within the table and graphs below…

*Table 9: Unit 1 Category A Office & Core Initial Energy and Carbon Emission Result*

| Building | CAT A Office & Core Annual Energy Consumption (kWh/yr) | Approx. Annual Energy Consumption per Floor Area (kWh/$m^2$.yr) | CAT A Office & Core Annual Carbon Emission (kg.$CO_2$/yr) |
|---|---|---|---|
| Unit 1 | 346,185.11 | 44 | 179,670.07 |

The approximate energy consumption per floor area are rounded-up to the first whole number (e.g. 46.2 = 47 kWh/$m^2$.yr).

Using the above approximate energy consumption per floor area, Unit 2 – 5 achieve the following energy consumption and carbon emission…

*Table 10: Unit 2 – 5 Initial Energy and Carbon Emission Result*

| Building | CAT A Office & Core Annual Energy Consumption (kWh/yr) | CAT A Office & Core Annual Carbon Emission ($kg.CO_2/yr$) |
|---|---|---|
| Unit 2 | 159,505.00 | 82,783.10 |
| Unit 3 | 192,136.00 | 99,718.58 |
| Unit 4 | 273,604.00 | 142,000.48 |
| Unit 5 | 152,278.00 | 79,032.28 |

The new development's total energy consumption and carbon emission are 1,123,708.11 kWh/annum and 583,204.51 $kg.CO_2$/annum, respectively.

Unit 1 – 5 warehouse spaces' energy consumption and carbon emission are also illustrated below. The figures are based on a regulated energy consumption of 34 $kWh/m^2$.annum, from another project of similar building type and usage, and a unregulated energy consumption of 2.1 $kWh/m^2$.annum, taken from Table 20.19(b), Type 5: distribution and storage (Good practice), in CIBSE Guide F.

*Table 11: Unit 1 – 5 Initial Warehouse Energy and Carbon Emission Result*

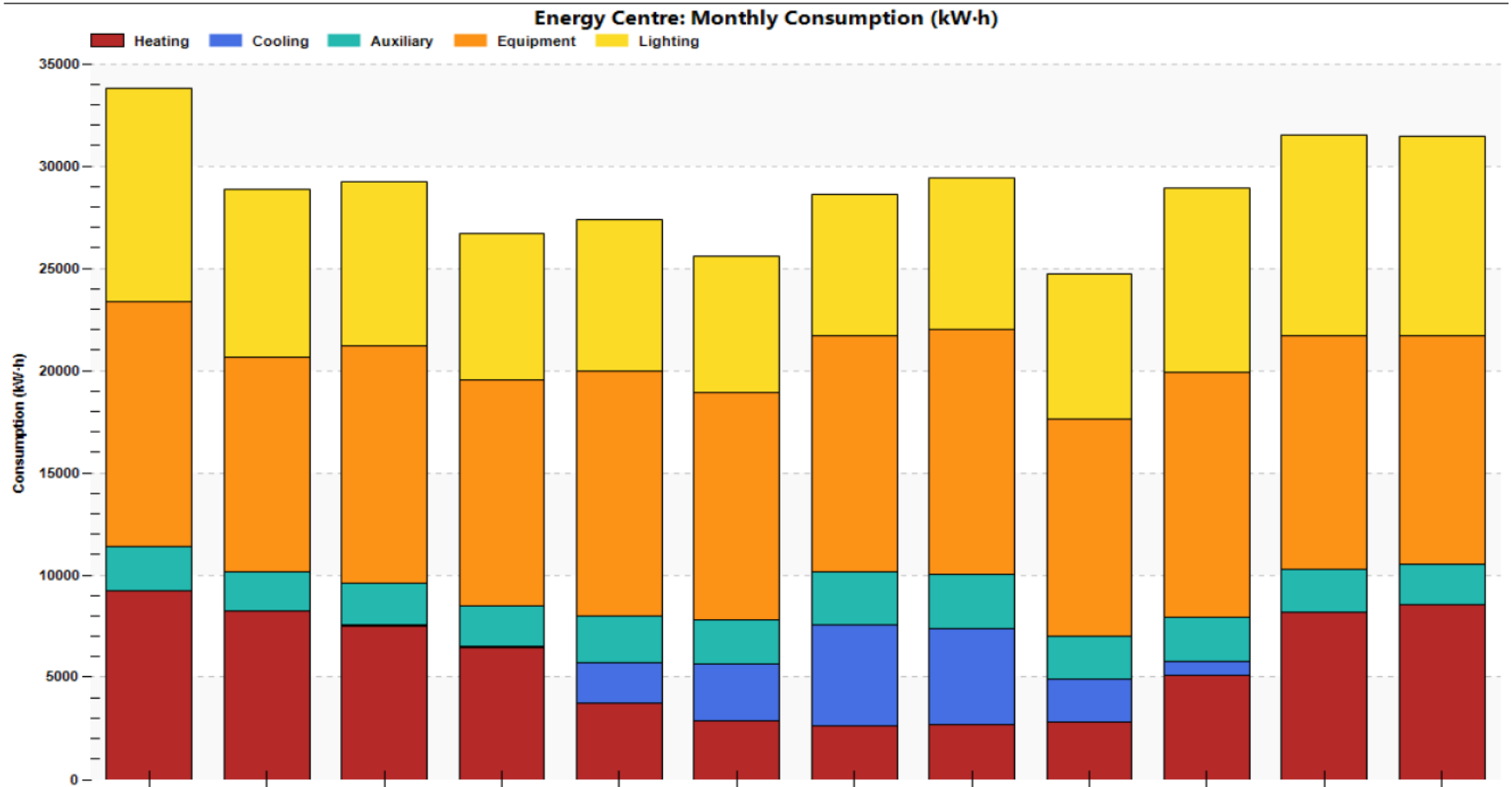
| Building | Warehouse Annual Energy Consumption (kWh/yr) | Warehouse Annual Carbon Emission ($kg.CO_2/yr$) |
|---|---|---|
| Unit 1 | 2,959,478.00 | 1,535,969.08 |
| Unit 2 | 1,216,858.80 | 631,549.72 |
| Unit 3 | 1,532,950.40 | 795,601.26 |
| Unit 4 | 2,214,662.80 | 1,149,409.99 |
| Unit 5 | 1,105,129.30 | 573,562.11 |

The total energy consumption and carbon emission, now including warehouse, are 10,152,787.41 kWh/annum and 5,269,269.67 kg.$CO_2$/annum, respectively.

The graphs overleaf, generated by the EDSL Tas Engineering software, only illustrates Unit 1's office and core spaces results.

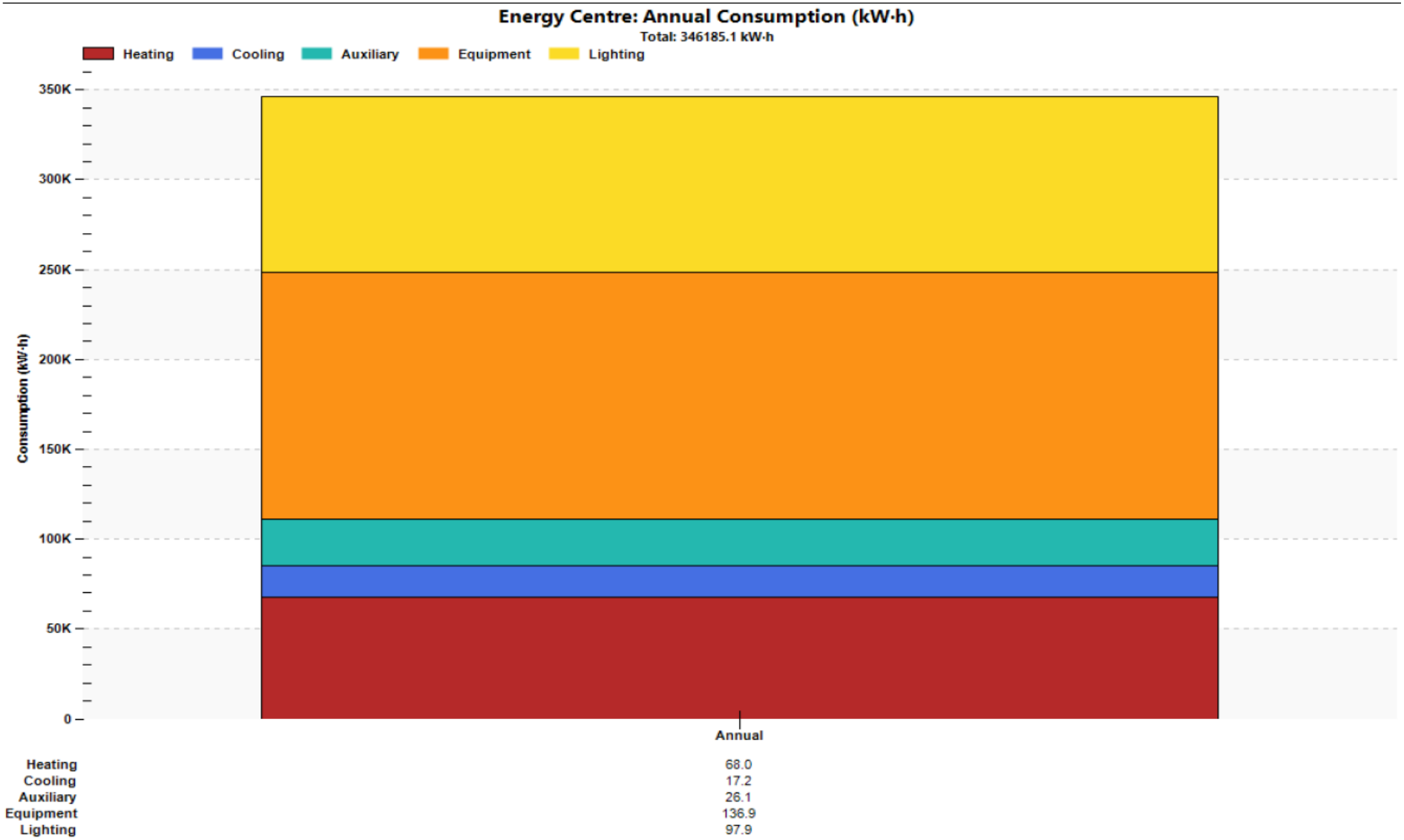
## UNIT 1 ANNUAL ENERGY CONSUMPTION

Tas Systems: Simulation Results




| Month | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heating | 9222.0 | 8244.8 | 7521.8 | 6468.8 | 3739.2 | 2869.7 | 2607.9 | 2700.5 | 2782.7 | 5096.1 | 8172.4 | 8550.9 |
| Cooling | 0.0 | 0.0 | 16.5 | 43.7 | 1962.1 | 2755.9 | 4950.8 | 4693.7 | 2153.4 | 659.9 | 0.0 | 0.0 |
| Auxiliary | 2178.9 | 1902.5 | 2076.8 | 1975.4 | 2294.9 | 2205.8 | 2575.8 | 2629.5 | 2043.5 | 2188.5 | 2075.5 | 1991.1 |
| Equipment | 11967.4 | 10495.6 | 11562.2 | 11071.6 | 11967.4 | 11071.6 | 11562.2 | 11967.4 | 10666.5 | 11967.4 | 11476.8 | 11157.1 |
| Lighting | 10435.4 | 8220.1 | 8076.6 | 7141.5 | 7401.1 | 6653.6 | 6920.8 | 7429.1 | 7047.2 | 9015.7 | 9794.2 | 9765.9 |

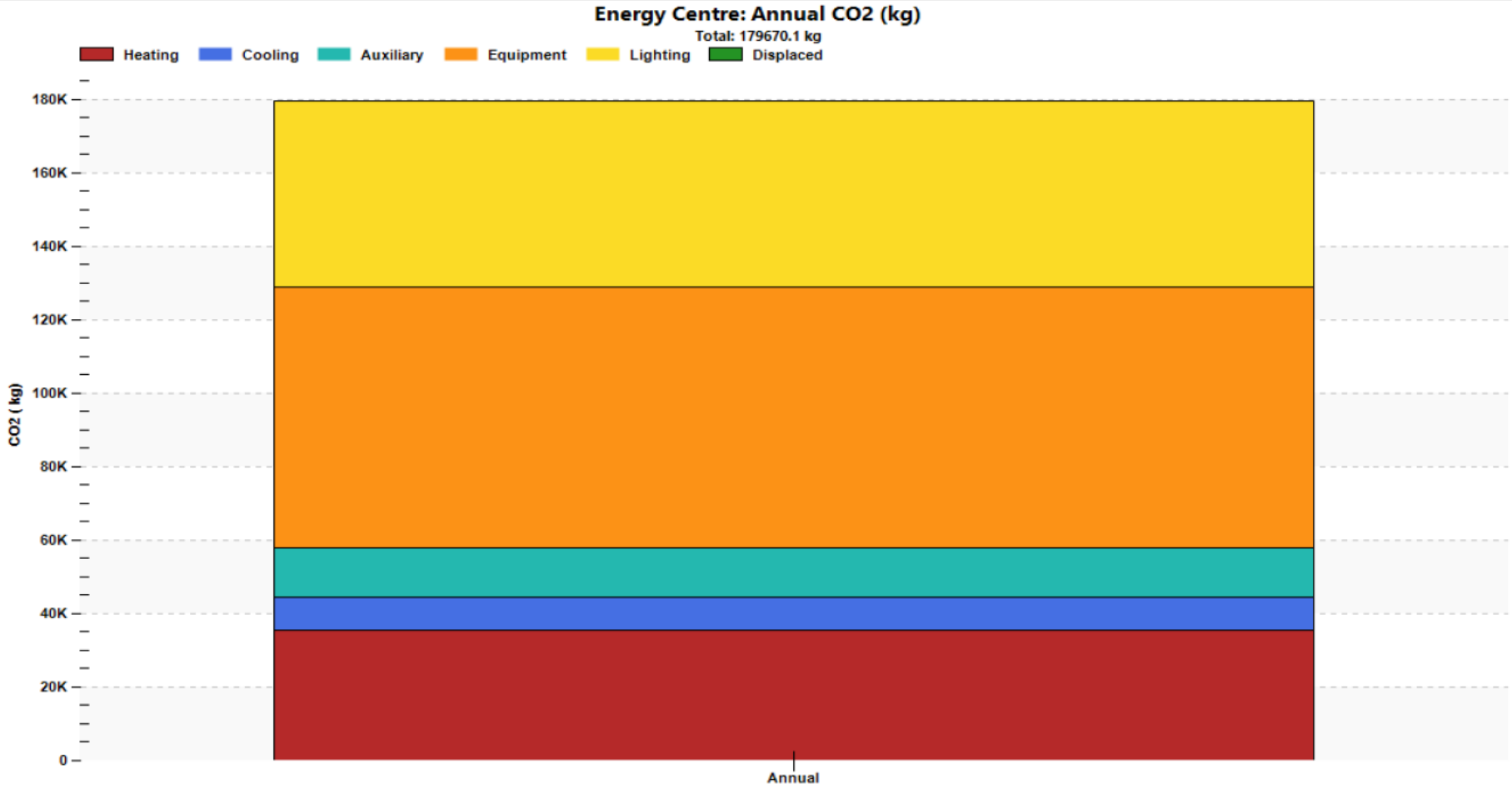
Tas Systems: Simulation Results




| | Annual |
|---|---|
| Heating | 68.0 |
| Cooling | 17.2 |
| Auxiliary | 26.1 |
| Equipment | 136.9 |
| Lighting | 97.9 |

## UNIT 1 ANNUAL CARBON EMISSIONS

Tas Systems: Simulation Results




| | |
|---|---|
| Heating | 35.3 |
| Cooling | 8.9 |
| Auxiliary | 13.6 |
| Equipment | 71.1 |
| Lighting | 50.8 |
| Displaced | -0.0 |

# 7. ENERGY GENERATION STRATEGY

In this section, the Statement shall explore the use of renewable energy generation technology, solely as an option for the Developer(s) to consider.

The energy consumed by the buildings on the proposed development shall be all electrically generated. To offset the electricity consumed by the office and core areas and achieve a zero-carbon status, a renewable technology generating clean electricity is targeted. Photovoltaic panels are well suited to the proposed development due to their simple design and installation features, utilising the large roof area available.

To offset the electricity consumed by the office and core areas, the following photovoltaic panel performance has been allowed:

*Table 12: Photovoltaic panel performance*

| PANEL CRITERIA | VALUE |
|---|---|
| Module Efficiency | 19.0% |
| Surface Reflectance | 0.1 |
| Max Invertor Efficiency | 93% |
| Degradation Factor | 5% |
| Inclination Angle | 6° |
| Orientation from North | 230° |

Based on the modelling of photovoltaic panels, Unit 1's resulting energy generation and carbon offset is shown in the table and graphs below:

*Table 13: Unit 1's PV Energy Generation and Carbon Saving*

| PV provision | Annual Energy Generation (kWh/yr) | Annual Energy Generation per PV Panel Area (kWh/yr) | Annual Carbon Offset ($kg.CO_2/yr$) |
|---|---|---|---|
| 2,400m² | 351,868.19 | 147 | 182,619.59 |

The resulting PV area calculated for the remaining units are then rounded up to the nearest 1000.

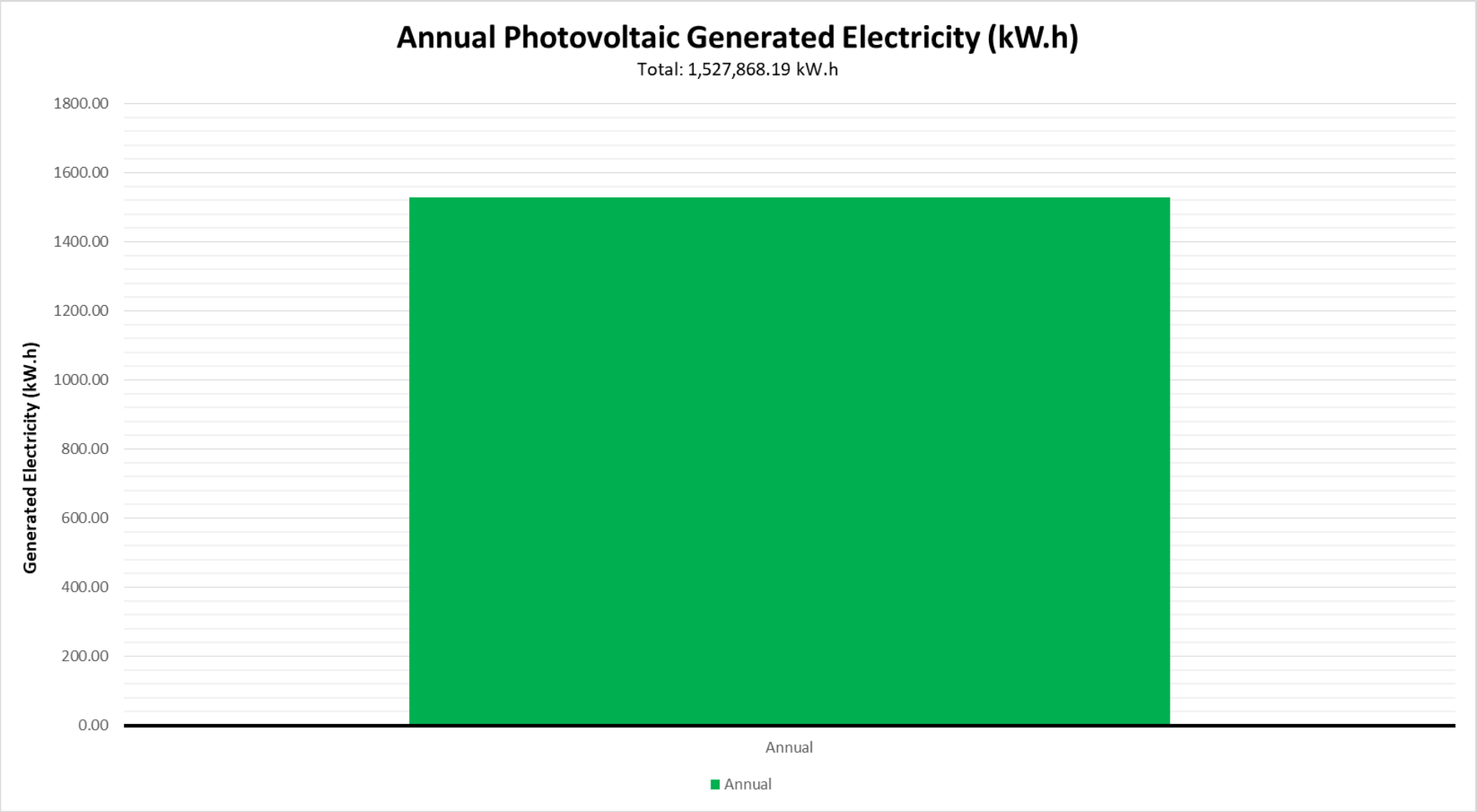
## BREAKDOWN OF PHOTOVOLTAIC PANEL PROVISION

A breakdown of photovoltaic panel areas allocated to each unit is provided below. Using the above energy generation figures, the remaining units' photovoltaic panel areas and energy generation is also shown. Unit 1 – 5's energy generation is based on the Annual Energy Generation per PV Panel Area figures.

*Table 14: Individual Photovoltaic Provision for the Proposed Development*

| Building | Photovoltaic Panels Applied ($m^2$) | Annual Energy Generation (kWh/yr) |
|---|---|---|
| **Unit 1** | 2,400 | 351,868.19 |
| **Unit 2** | 2,000 | 294,000.00 |
| **Unit 3** | 2,000 | 294,000.00 |
| **Unit 4** | 2,000 | 294,000.00 |
| **Unit 5** | 2,000 | 294,000.00 |
| **Total** | 10,400 | 1,528,800.00 |

## ANNUAL ENERGY GENERATION FROM PHOTOVOLTAIC PANELS



# 8. CARBON BALANCE FOR CATEGORY A OFFICE & CORE FIT-OUTS

To achieve zero carbon for the development's Category A building services fit-out, the calculated carbon emissions (using high efficiency building and system performances) needs to be offset by clean energy generation, in the form of photovoltaic panels. Based on the information highlighted previously in the report, the followings carbon balance has been calculated.

*Table 15: Carbon Balance*

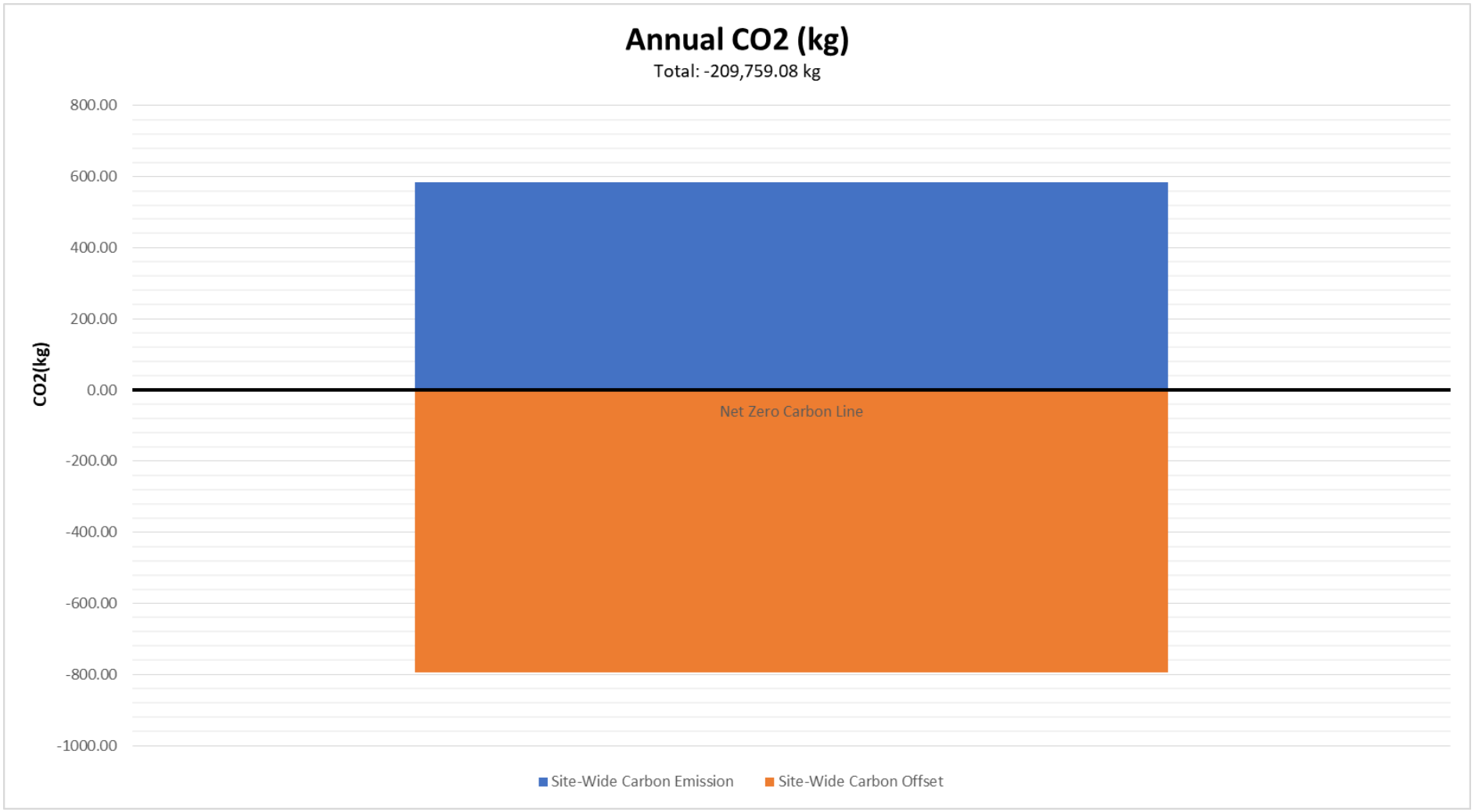
| | **CAT A Office & Core Annual Energy Consumption** (kWh/yr) | **CAT A Office & Core Annual Carbon Emission** (kg.$CO_2$/yr) |
|---|---|---|
| Unit 1 – 5 Category A Building Services Fit-Out | 1,123,708.11 | 583,204.51 |
| Photovoltaic Panels 10,400m² | - 1,527,868.19 | - 792,963.59 |
| **Results** | **-404,160.07** | **-209,759.08** |

*Table 16: Individual Carbon Balance for the New Development's Category A Office & Core spaces*

| Building/Zone | CAT A Office & Core Annual Carbon Emission ($kg.CO_2/yr$) | CAT A Office & Core Annual Carbon Offset via Photovoltaic ($kg.CO_2/yr$) | CAT A Office & Core Carbon Balance ($kg.CO_2/yr$) |
|---|---|---|---|
| **Unit 1** | 179,670.07 | 182,619.59 | **-2,949.52** |
| **Unit 2** | 82,783.10 | 152,586.00 | **-69,802.91** |
| **Unit 3** | 99,718.58 | 152,586.00 | **-52,867.42** |
| **Unit 4** | 142,000.48 | 152,586.00 | **-10,585.52** |
| **Unit 5** | 79,032.28 | 152,586.00 | **-73,553.72** |

The tables above and graph below demonstrate that zero carbon can be achieved with the use of photovoltaic panels and highly efficient building construction and services specifications.

## ANNUAL CARBON BALANCE



# APPENDIX A

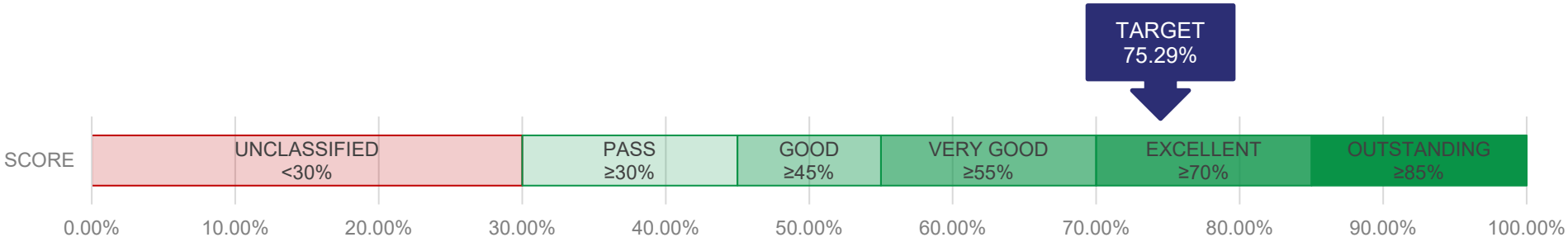
## J10, M40 BREEAM NC 2018 PRE-ASSESSMENT

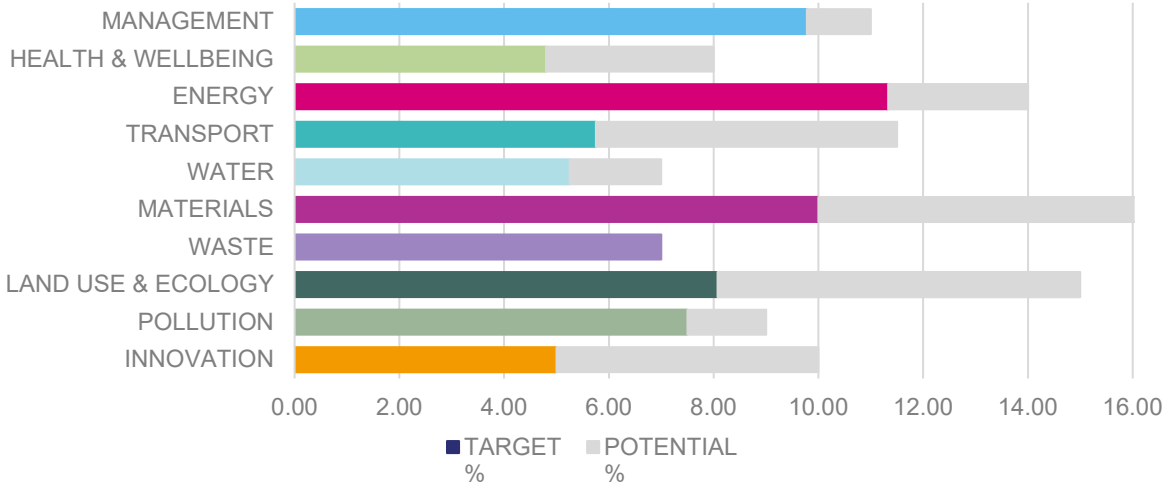
# BREEAM NC 2018 PRE-ASSESSMENT

## J10, M40

AUGUST 2021

The pre-assessment estimator outlines an indicative strategy to achieve a BREEAM NC 2018 rating of Excellent. This requires an overall score of 70%.
Mandatory credits required are written in red. **P** indicates criteria that is a pre-requisite for other credits.



| MANAGEMENT | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Man 01 | Project Brief & Design | Project Delivery Planning | Concept Design | 1 | 1 |
| | | Stakeholder Consultation (Interested Parties) | Concept Design | 1 | 0 |
| | | Formally Agree Strategic Performance Targets | Concept Design | P | P |
| | | BREEAM AP (Concept Design) | Concept Design | 1 | 1 |
| | | BREEAM AP (Developed Design) | Developed Design | 1 | 1 |
| Man 02 | Life Cycle Cost & Service Life Planning | Elemental LCC | Concept Design | 2 | 2 |
| | | Component Level LCC Options Appraisal | Technical Design | 1 | 1 |
| | | Capital Cost Reporting | Technical Design | 1 | 1 |
| Man 03 | Responsible Construction Practices | Legally Harvested & Traded Timber | Construction | P | P |
| | | Environmental Management | Construction | 1 | 1 |
| | | Formally Agree Strategic Performance Targets | Construction | P | P |
| | | BREEAM AP (Site) | Construction | 1 | 1 |
| | | Responsible Construction Management | Construction | 2 | 2 |
| | | Utility Consumption | Construction | 1 | 1 |
| | | Transportation of Construction Materials & Waste | Construction | 1 | 1 |
| Man 04 | Commissioning & Handover | Commissioning - Testing Schedule & Responsibilities | Developed Design | 1 | 1 |
| | | Commissioning - Design & Preparation | Design Stage | 1 | 1 |
| | | Testing & Inspection Building Fabric | Post-Construction | 1 | 0 |
| | | Handover | Handover | 1 | 1 |
| | | | Section Total | 18 | 16 |
| | | | Section Score % | 11.00 | 9.78 |
| | | | Single Credit Value % | 0.61 | |

| HEALTH AND WELLBEING | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Hea 01 | Visual Comfort | Daylighting | Developed Design | 1 | 0 |
| | | View Out | Developed Design | 1 | 1 |
| | | Internal & External Lighting Levels, Zoning & Controls | Technical Design | 1 | 1 |
| Hea 02 | Indoor Air Quality | Indoor Air Quality Plan | Concept Design | **P** | **P** |
| | | Ventilation | Technical Design | 1 | 1 |
| Hea 04 | Thermal Comfort | Thermal Modelling | Developed Design | 1 | 1 |
| | | Design for Future Thermal Comfort | Developed Design | 1 | 1 |
| Hea 05 | Acoustic Performance | Indoor Ambient Noise Level | Developed Design | 1 | 1 |
| Hea 06 | Security | Security of Site & Building | Concept Design | 1 | 0 |
| Hea 07 | Safe & Healthy Surroundings | Safe Access | Developed Design | 1 | 0 |
| | | Outdoor Space | Developed Design | 1 | 0 |
| | | | Section Total | 10 | 6 |
| | | | Section Score % | 8.00 | 4.80 |
| | | | Single Credit Value % | 0.80 | |

| ENERGY | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Ene 01 | Reduction of Energy Use & Carbon Emissions | Energy Performance | Developed Design | 9 | 6 |
| | | Energy Modelling & Reporting | Developed Design | 4 | 4 |
| Ene 02 | Energy Monitoring | Sub-Metering of End-Use Categories | Technical Design | 1 | 1 |
| | | Sub-Metering of High Energy Load & Tenancy Areas | Technical Design | 1 | 1 |
| Ene 03 | External Lighting | External Lighting | Developed Design | 1 | 1 |
| Ene 04 | Low Carbon Design | Passive Design Analysis | Concept Design | 1 | 1 |
| | | Free Cooling | Concept Design | 1 | 0 |
| | | Low & Zero Carbon Technologies | Concept Design | 1 | 1 |
| Ene 06 | Energy Efficient Transportation Systems | Energy Consumption | Developed Design | 1 | 1 |
| | | Energy Efficient Features - Lifts | Technical Design | 1 | 1 |
| | | | Section Total | 21 | 17 |
| | | | Section Score % | 14.00 | 11.33 |
| | | | Single Credit Value % | 0.67 | |

| TRANSPORT | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Tra 01 | Transport Assessment & Travel Plan | Travel Plan | Feasibility | 2 | 2 |
| Tra 02 | Sustainable Transport Measures | Transport Options Implementation | Feasibility | 10 | 4 |
| | | | Section Total | 12 | 6 |
| | | | Section Score % | 11.50 | 5.75 |
| | | | Single Credit Value % | 0.96 | |

| WATER | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Wat 01 | Water Consumption | Reduction in Potable Water Use | Technical Design | 5 | 3 |
| Wat 02 | Water Monitoring | Water Monitoring | Technical Design | 1 | 1 |
| Wat 03 | Water Leak Detection & Prevention | Leak Detection System | Technical Design | 1 | 1 |
| | | Flow Control Devices | Technical Design | 1 | 1 |
| | | | Section Total | 8 | 6 |
| | | | Section Score % | 7.00 | 5.25 |
| | | | Single Credit Value % | 0.88 | |

| MATERIALS | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Mat 01 | Building Life Cycle Assessment | Superstructure | Concept Design | 6 | 2 |
| | | Substructure & Hard Landscaping Options Appraisal | Concept Design | 1 | 1 |
| Mat 02 | Environmental Product Declarations | Specification of Products with a Recognised EPD | Technical Design | 1 | 0 |
| Mat 03 | Responsible Sourcing of Construction Products | Legally Harvested & Traded Timber | Construction | **P** | **P** |
| | | Enabling Sustainable Procurement | Concept Design | 1 | 1 |
| | | Measuring Responsible Sourcing | Construction | 3 | 2 |
| Mat 05 | Designing for Durability & Resilience | Protect Vulnerable & Exposed Elements from Damage & Degradation | Technical Design | 1 | 1 |
| Mat 06 | Material Efficiency | Minimise Environmental Impact of Materials | Preparation & Brief | 1 | 1 |
| | | | Section Total | 14 | 8 |
| | | | Section Score % | 17.50 | 10.00 |
| | | | Single Credit Value % | 1.25 | |

| WASTE | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Wst 01 | Construction Waste Management | Construction Resource Efficiency | Construction | 3 | 3 |
| | | Diversion of Resources from Landfill | Construction | 1 | 1 |
| Wst 02 | Use of Recycled & Sustainably Sourced Aggregates | Project Sustainable Aggregate Points | Construction | 1 | 1 |
| Wst 03 | Operational Waste | Operational Waste | Technical Design | 1 | 1 |
| Wst 05 | Adaptation to Climate Change | Resilience of Structure, Fabric, Building Services & Renewables Installation | Concept Design | 1 | 1 |
| Wst 06 | Functional Adaptability | Design for Disassembly & Functional Adaptability - Recommendations | Concept Design | 1 | 1 |
| | | Design for Disassembly & Functional Adaptability - Implementation | Concept Design | 1 | 1 |
| | | | Section Total | 9 | 9 |
| | | | Section Score % | 7.00 | 7.00 |
| | | | Single Credit Value % | 0.78 | |

| LAND USE AND ECOLOGY | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Le 01 | Site Selection | Previously Occupied Land | Developed Design | 1 | 0 |
| | | Contaminated Land | Developed Design | 1 | 0 |
| Le 02 | Identifying & Understanding the Risks & Opportunities for the Project | Assessment Route Selection | Preparation & Brief | **P** | **P** |
| | | Survey & Evaluation | Preparation & Brief | 1 | 1 |
| | | Determining the Ecological Outcomes for the Site | Concept Design | 1 | 1 |
| Le 03 | Managing Negative Impacts on Ecology | Identification & Understanding the Risks & Opportunities of the Site | Concept Design | **P** | **P** |
| | | Planning, Liaison, Implementation & Data | Concept Design | 1 | 1 |
| | | Managing Negative Impacts of the Project | Concept Design | 2 | 1 |
| Le 04 | Change & Enhancement of Ecological Value | Identification & Understanding the Risks & Opportunities of the Site | Concept Design | **P** | **P** |
| | | Liaison, Implementation & Data Collection | Concept Design | 1 | 1 |
| | | Enhancement of Ecology | Concept Design | 3 | 0 |
| Le 05 | Long Term Ecology Management & Maintenance | Roles & Responsibilities, Implementation, Statutory Obligations | Concept Design | **P** | **P** |
| | | Planning, Liaison, Data, Monitoring & Review Management & Maintenance | Concept Design | 1 | 1 |
| | | Landscape & Ecology Management Plan Development | Concept Design | 1 | 1 |
| | | | Section Total | 13 | 7 |
| | | | Section Score % | 15.00 | 8.08 |
| | | | Single Credit Value % | 1.15 | |

| POLLUTION | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Pol 01 | Impact of Refrigerants | Pre-Requisite - BS EN 378:2018 | Technical Design | **P** | **P** |
| | | Impact of Refrigerants | Technical Design | 2 | 1 |
| | | Leak Detection | Technical Design | 1 | 1 |
| Pol 02 | Local Air Quality | NOx, PPM, VOC Emissions | Technical Design | 2 | 2 |
| Pol 03 | Flood & Surface Water Management | Appropriate Consultant | Developed Design | **P** | **P** |
| | | Flood Resilience | Developed Design | 2 | 2 |
| | | Bespoke Surface Water Run-Off Design Solutions | Technical Design | **P** | **P** |
| | | Surface Water Run-Off - Rate | Technical Design | 1 | 1 |
| | | Surface Water Run-Off - Volume | Technical Design | 1 | 1 |
| | | Minimise Watercourse Pollution | Technical Design | 1 | 0 |
| Pol 04 | Reduction of Night Time Light Pollution | Reduction of Night Time Light Pollution | Technical Design | 1 | 1 |
| Pol 05 | Reduction of Noise Pollution | Reduction of Noise Pollution | Developed Design | 1 | 1 |
| | | | Section Total | 12 | 10 |
| | | | Section Score % | 9.00 | 7.50 |
| | | | Single Credit Value % | 0.75 | |

## INNOVATION

| | | | | AVAILABLE | TARGET |
|---|---|---|---|---|---|
| Exemplary Performance | Man 03 | Responsible Construction Practices - All Criteria | Construction | 1 | 1 |
| | Hea 01 | Visual Comfort - Daylighting | Developed Design | 1 | 0 |
| | Hea 06 | Security - SABRE | Concept Design | 1 | 0 |
| | Ene 01 | Reduction of Energy Use & Carbon Emissions | Concept Design | 5 | 0 |
| | Wat 01 | Water Consumption | Technical Design | 1 | 0 |
| | Mat 01 | Building Life Cycle Assessment | Concept Design | 3 | 3 |
| | Mat 03 | Responsible Sourcing of Construction Products | Construction | 1 | 0 |
| | Wst 01 | Construction Waste Management | Construction | 1 | 0 |
| | Wst 02 | Use of Recycled & Sustainably Sourced Aggregate | Construction | 1 | 1 |
| | Wst 05 | Adaptation to Climate Change | Concept Design | 1 | 0 |
| | Le 02 | Identifying & Understanding the Risks & Opportunities for the Project | Concept Design | 1 | 0 |
| | Le 04 | Change & Enhancement of Ecological Value | Concept Design | 1 | 0 |
| | Inn | BRE Approved Innovations | Developed Stage | 1 | 0 |
| | | | Section Total | 10 | 5 |
| | | | Section Score % | 10.00 | 5.00 |
| | | | Single Credit Value % | 1.00 | |

## SCORE

| | |
|---|---|
| Target Score % | 74.49 |
| Target Rating | **Excellent** |