

Energy and Sustainability Statement

Billingbear Park Golf Course

December 2025

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Contents

1	Executive Summary	4
1.1	Energy Strategy	4
1.2	Sustainability Strategy	4
2	Introduction	6
2.1	Site	6
2.2	Planning policies	6
3	Energy Strategy	7
3.1	Be Lean	7
3.2	Be Clean	9
3.3	Be Green	10
3.4	Results	11
4	Sustainability Strategy	13
4.1	Optimising Land Use	13
4.2	Health and Wellbeing	13
4.3	Nature, Landscape and Biodiversity	14
4.4	Climate Resilience	15
4.5	Water and Surface Water Runoff	15
4.6	Materials and Waste	16
4.7	Sustainable transport	16
5	Conclusions	17
	Appendix A – Calculation assumptions	A
	Appendix B – Planning stage SBEM output	B
	Appendix C – RBWM policies	C

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1 Executive Summary

This Energy and Sustainability Statement presents the key measures proposed to meet Royal Borough of Windsor and Maidenhead’s carbon reduction targets and the sustainability strategy in support of the planning application for Billingbear Park Golf Course.

The proposed development includes the addition of two pickleball courts and three padel tennis courts, creating enhanced opportunities for racket sports at the site. It also features an outdoor putting course and an upgrade to the clubhouse, replacing the existing marquee with a permanent extension. Furthermore, a new simulator building is proposed, housing six bays, a dedicated teaching room, and a staff office to support advanced training and recreational activities.

The energy and sustainability strategy for the proposal has been developed in accordance with relevant policies within Royal Borough of Windsor and Maidenhead’s (RBWM’s) Local Plan and the Sustainability Supplementary Planning Document (SPD).

Table 1 on the following page shows where each of the relevant policies and SPD best practice considerations are responded to within this report.

1.1 Energy Strategy

The energy strategy for the project has been developed in line with RBWM’s Sustainability SPD and the Local Plan.

The CO₂ emissions for the new-build extension and new simulator building have been assessed using the Simplified Building Energy Model (SBEM). Proposed energy measures for the new-build extension include:

- **Be Lean:** Passive design with a fabric first approach (enhanced u-values, solar control glazing, low air tightness target) together with low energy lighting.
- **Be Clean:** No District Heating Networks (DHN) are available in the vicinity of the proposed development.
- **Be Green:** High efficiency Air Source Heat Pumps (ASHPs) will generate both space heating, cooling and domestic hot water.

The site currently benefits from extensive PV which evidently provides significant surplus energy which is exported to the grid. It is anticipated that the new development will utilise this excess energy. Furthermore, additional PV is also proposed on the roof of the simulator building.

The new-build structures will achieve a 12% reduction in regulated CO₂ over the baseline at the Be Lean stage with building fabric and system efficiencies measures alone. The fabric efficiency has been maximised as far as technically feasible.

Overall, the new-build structures are anticipated to achieve >100% reduction in regulated CO₂ emissions over the Part L 2021 notional building. Therefore, carbon offset payments are not applicable for this scheme.

The GLA’s carbon reporting spreadsheet has been filled in as required by the Sustainability SPD and the respective data is shown in section 3.4.2 of this report. The carbon reporting spreadsheet can be provided in its native format if required.

1.2 Sustainability Strategy

The sustainability strategy for the proposal has been developed in accordance with relevant policies set out within RBWM’s Local Plan.

Key considerations include the optimisation of land use, social impact, health and wellbeing for future building users, retention of important features, consideration of climate resilience, reduction of waste and use of appropriate materials.

Table 1. Planning policies applicable for the proposed development, and the report sections where they are responded to.

	3 Energy Strategy	4.1 Optimising Land Use	4.2 Health and Wellbeing	4.3 Nature, Landscape and Biodiversity	4.4 Climate Resilience	4.5 Materials and Waste	4.6 Materials and Waste	4.7 Sustainable transport
Royal Borough of Windsor and Maidenhead Local Plan (2022)								
Policy SP2 Climate Change	◆	◆			◆	◆	◆	
Policy QP2 Green and blue infrastructure		◆	◆		◆	◆		
Policy NR1 Managing flood risk and waterways		◆			◆			
Policy NR2 Nature conservation and biodiversity				◆				
Policy NR3 Trees, woodlands and hedgerows				◆				
Policy EP1 Environmental protection			◆	◆			◆	
Policy EP3 Artificial lighting pollution			◆					
Policy EP4 Noise			◆					
Policy EF2 Sustainable transport								◆
Sustainability SPD (2024)								
Energy and carbon: best practice benchmarks	◆			◆				
Climate adaptation: cooling hierarchy, green infrastructure, flood risk, SuDS, water efficiency	◆			◆	◆	◆		
Sustainable materials: circular economy, best practice for managing waste, embodied carbon							◆	
Biodiversity: Biodiversity Net Gain (BNG), Urban Greening Factor (UGF), best practices				◆				
Sustainable Transport								◆

2 Introduction

2.1 Site

The proposed development is situated on The Straight Mile in Wokingham (RG40 5SJ), a rural area within Berkshire. It lies close to major routes including the M4 motorway and is easily accessible from Wokingham town centre, approximately 4 km away. The site is surrounded by countryside, offering a tranquil setting while remaining well-connected to nearby villages such as Binfield and Shurlock Row. The area falls within the jurisdiction of the Royal Borough of Windsor and Maidenhead (RBWM).

The site location is presented in Figure 1.

The proposed development includes the addition of two pickleball courts and three padel tennis courts, creating enhanced opportunities for racket sports at the site. It also features an outdoor putting course and an upgrade to the clubhouse, replacing the existing marquee with a permanent extension. Furthermore, a new simulator building is proposed, housing six bays, a dedicated teaching room, and a staff office to support advanced training and recreational activities.

2.2 Planning policies

A review of the applicable policies for the proposed development has been undertaken. A full summary of the relevant Royal Borough of Windsor and Maidenhead policies are presented in Appendix C.

The proposed development has been designed considering the following main policy drivers as far as possible.

2.2.1 RBWM Local Plan (2022)

Energy and carbon:

- Incorporate measures to adapt to and mitigate climate change.
- Maximise the opportunities for both natural heating and ventilation and reducing exposure to wind and other elements.
- Provide shading.

Sustainability:

- Maintain, protect and enhance biodiversity.
- Avoid impacts to trees, woodlands, hedgerows and noise, light and air pollution.
- Provide sustainable transport options.

2.2.2 Sustainability SPD (2024)

Energy and carbon:

- Although not within London, RBWM expect developments to achieve CO₂ emission targets set out within the London Plan.
- Non-residential development over 100sqm should achieve 15% improvement over the Target Emissions Rate (TER) from energy efficiency measures alone.
- Achieve 35% improvement over TER on site with the use of low carbon technologies.
- Aim to exceed 50% improvement over the TER as best practice.
- Provide renewable energy generation technologies on site which produce at least 12% of the site's total energy demand.
- Provide PV panels to generate electricity.

Sustainability:

- Incorporate climate adaptation strategies.
- Use sustainable materials.
- Reduce waste and follow circular economy principles.
- Reduce flood risk and incorporate Sustainable Urban Drainage systems.
- Increase biodiversity.
- Promote sustainable transport.

The proposed Energy and Sustainability strategies for the proposed development are presented in the following chapters.



Figure 1. Approximate site location of Billingbear Park Golf Course (courtesy of Lewandowski architects).

3 Energy Strategy

The Energy Strategy for the proposed development at Billingbear Park Golf Course has been developed in line with the Energy Hierarchy set out in Policy SI 2 of the London Plan, which is encouraged to be followed by RBWM’s Sustainability SPD:

- 1. Be Lean: use less energy.
- 2. Be Clean: supply energy efficiently.
- 3. Be Green: access low or zero carbon (LZC) energy sources.
- 4. Be Seen: monitor and report operational energy.

The CO₂ emissions at each stage of the Hierarchy are compared to a Building Regulations Part L 2021 compliant baseline. The assessment and modelling have been carried out for the new-build extension of the Clubhouse which is thermally separated from the existing building (Figure 2) and the proposed new simulator building.

The existing Clubhouse building is excluded from the detailed energy assessment. Other structures proposed as part of this application (padel/pickleball courts, putting course) are unconditioned and external, and are therefore considered exempt from Part L.

It should be noted that the estimations presented within this statement are based on the Part L calculation methodology and the associated standard assumptions regarding occupancy, space/system usage and climatic conditions and should not be considered as a predictive assessment of the likely in-use energy requirements for the development.

The following sections present the measures adopted at each stage of the Energy Hierarchy at the proposed development.

3.1 Be Lean

Energy efficiency measures have been applied to the design of the building fabric and building services systems to minimise energy demand and CO₂ emissions at the Be Lean stage.

3.1.1 Passive Design

The new simulator building is proposed to benefit from external shading, which will limit the amount of solar gains entering the spaces during the warmer months of the year. The glazing ratios proposed are reasonable, which helps to limit both heat losses in the winter and excessive solar gains in the summer.

The Clubhouse’s extension mirrors the design of the existing building but is also relatively compact in nature which promotes heat retention over a given floor area. The proposed extension is a notable improvement over the existing marquee from passive design and thermal comfort perspectives.

3.1.2 Fabric Performance

A fabric first approach has been adopted as far as feasible to minimise unwanted heat loss through the building fabric and reduce heating energy demand over the cooler months.

The proposed building fabric specification of new-build elements will go beyond the notional building standards set out within Building Regulations Part L 2021. This is illustrated in Table 2. Further details regarding targeted u-values, air permeability and system efficiencies are presented in Appendix A.

3.1.3 Efficient lighting

All light fittings within the proposed development will be specified as low energy lighting with an average efficacy of more than 120 lm/W.

3.1.4 Controls and Energy Monitoring

Lighting and space conditioning controls are proposed, such as occupancy sensing, dimming and constant illuminance control where appropriate. All building areas will have accessible energy sub-meters to enable data to be monitored, verified and reported.

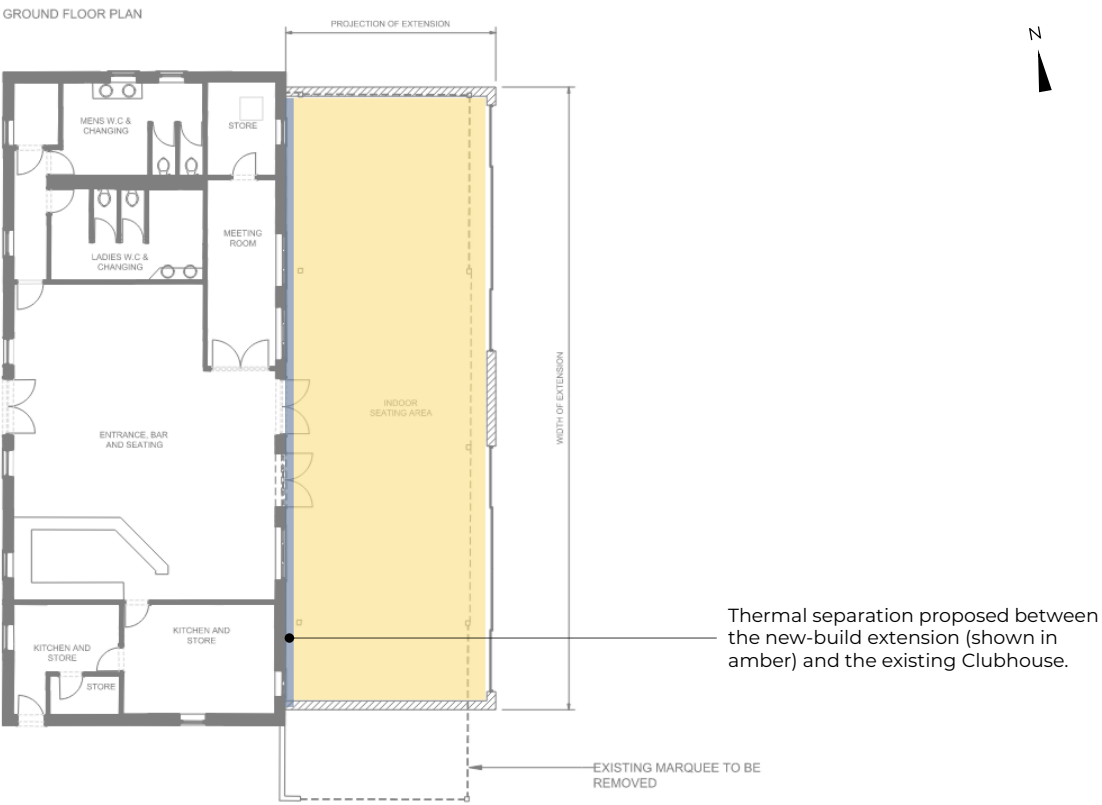


Figure 2. Proposed new-build extension to be thermally separated from the existing Clubhouse.

Table 2. Proposed u-values at Billingbear Park Golf Course for the Clubhouse extension and the simulator building.

Element	Part L 2021 limiting u-values (W/m².K.)	Part L 2021 Notional Building u-values (W/m².K.)	Proposed u-values (W/m².K.)
External walls	0.26	0.18	0.15
Roof	0.16	0.15	0.1
Floor	0.18	0.15	0.1
Windows	1.6	1.4	1.2

3.1.5 The Cooling Hierarchy

The scheme has been designed in line with the Cooling Hierarchy of RBWM's Sustainability SPD.

1. Reduce the amount of heat entering the building

- All new external glazing will be thermally efficient and will have an appropriate specification for solar control.
- External shading is designed for solar protection of the simulator building.

2. Minimise internal heat generation through energy efficient design

- Energy efficient lighting and equipment is proposed for the new build extension and simulator building which will result in lower internal heat gains.

3. Manage the heat within the building through exposed internal thermal mass and high ceilings

- Exposed thermal mass is more effective when it can be combined with night purge ventilation. Security constraints to ground floor buildings will likely limit the opportunity for passive ventilation during night-time. Therefore, the application of thermal mass is unlikely to be significantly beneficial for this scheme.
- The proposed Clubhouse extension will benefit from high ceilings which will enable an element of thermal stratification, improving thermal comfort at occupant level. The simulator building will also benefit from a reasonable floor to ceiling height to support internal thermal stratification.

4. Provide passive ventilation

- Windows to the proposed Clubhouse extension will be openable (sliding) to provide passive ventilation to the newly proposed seating area. Additional wall mounted ventilation

systems will be considered during detailed design where deemed appropriate.

- The simulator building will also benefit from openable windows, specifically at the office space.
- This passive design approach is supported by guidance within the Sustainability SPD.

5. Provide mechanical ventilation

- Mechanical ventilation with heat recovery (MVHR) and summer bypass will be considered in conjunction with airtight constructions during the detailed design stage of the project and with input from an M&E consultant. MVHR is likely to be adopted for the simulator building which is anticipated to have more strict requirements on environmental conditions.

6. Provide active cooling systems

- The existing Clubhouse will maintain and where required increase the capacity of the installed Air Source Heat Pump system.
- An energy efficient cooling system is proposed for space conditioning during peak summer months for the simulator building to ensure a desirable indoor environment.

During detailed design stage and upon appointment of an M&E consultant to size the relevant services systems, a detailed overheating risk assessment in line with CIBSE TM52's guidance can be carried out to confirm the final strategy for both passive and active measures for the scheme.

Table 3. Design measures proposed in line with the Cooling Hierarchy

Cooling hierarchy steps	Proposed design measures
1 – Reduce the amount of heat entering the building	Solar control glazing with appropriate g-value. External shading will be provided for the simulator building.
2 – Minimise internal heat generation through energy efficient design	Energy efficient lighting and equipment.
3 – Manage the heat within the building through exposed internal thermal mass and high ceilings	High ceilings are included in the design as far as practical.
4 – Provide passive ventilation	Openable areas of windows are maximised.
5 – Provide mechanical ventilation	Strategy to be considered for new-build simulator building.
6 – Provide active cooling systems	Energy efficient cooling system proposed for the simulator building.

3.2 Be Clean

Proposed major developments that are in proximity to existing or planned district heat networks (DHNs) are encouraged to implement a communal heating system to enable connection to a DHN or to other low/zero emission local heat sources onsite.

A review of the Government’s Heat Network Planning Database Map shows that there are no existing and proposed district heating networks in proximity to the site (Figure 3). The proposed development is also located in an area considered to have low overall heat demand. This evidence is further supported by the map presented within the Sustainability SPD (paragraph 110 and Figure 3 on page 20 of the SPD). The proposed development is not within 500m of any existing or proposed DHN.

Fossil fuel based heating solutions are not recommended as they do not future-proof the development as the UK transitions to a low carbon economy.

The proposed energy strategy utilises electrically driven Air Source Heat Pumps (ASHP) as a low carbon technology for the proposed development. The attainable carbon savings are discussed in the following section of the report.

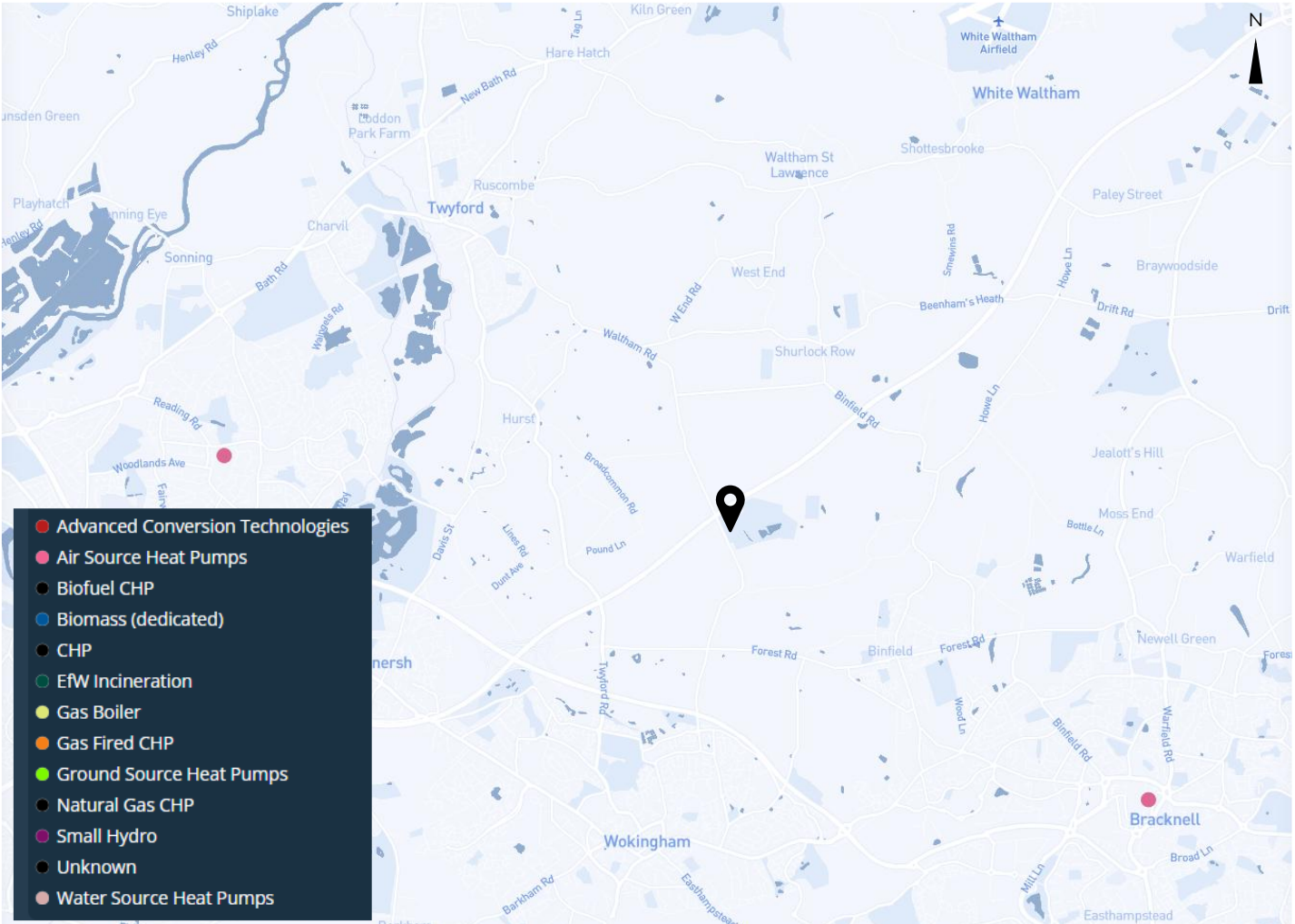


Figure 3. Heat Network Planning Database Map showing existing and planning district heat network heat sources (source: Department for Business, Energy & Industrial Strategy (accessed: November 2025)).

3.3 Be Green

The opportunity for producing and utilising renewable energy onsite will be maximised for the proposed development, in line with paragraph 3.5 of the Sustainability SPD.

An outline feasibility study for Low and Zero Carbon technologies (LZC) has been undertaken (see Table 4), which identified air source heat pumps and photovoltaics as the most suitable LZC technologies for the scheme.

The existing Clubhouse already benefits from the use of ASHP, the capacity of which may be extended if required. A new ASHP system is proposed for the new simulator building. The external condensers of the new ASHP systems will be located as close to the building as possible to minimise distribution heat losses and to reduce distribution pipework lengths. Indicative location of the ASHP external unit is shown in Figure 5.

An extensive quantum of PV has already been installed and has been operational on site. The site data from the past two years provided by the client show that approximately 10-12MWh of electricity produced by the existing PV panels is exported to the grid (Figure 4). When expressed in kWh per m² of the Clubhouse extension and simulator building, this surplus energy is circa 25.8 kWh/m².year. The Part L assessments show that 55.8 kWh/m².year of energy is required from the PVs to enable the extension and simulator building to be zero carbon (please see BRUKL reports in appendix A). Therefore, any additional PV array proposed for the simulator building should be capable of generating circa 30 kWh/m².year (total new floor area) to enable the Clubhouse extension and the simulator building to be zero regulated operational carbon. Initial estimates from Part L modelling indicate that circa 17.2 kWp of PV (43no. 400W panels) should be provided on the roof of the simulator building to achieve zero carbon.

The indicative PV zone is shown in the architects' drawings and in Figure 5, with the final quantum and design of PV to be confirmed by the PV specialist/supplier post-planning.

The proposed development has been designed to achieve zero regulated operational carbon on site, complying with RBWM's policies and SPD.

Table 4. Outline LZC feasibility.

LZC Technology	Feasibility
Photovoltaics (adopted)	Significant quantum of PV panels is already installed in existing buildings generating surplus energy. Additional PV is proposed to be installed to the simulator building.
Solar thermal (not adopted)	The development does not have significant hot water demand. Solar thermal systems require additional plumbing and thermal stores and generally produce hot water during warmer months; therefore, they are not considered suitable for scheme.
Wind turbines (not adopted)	The installation of wind turbines at the proposed building/site will have a notable visual impact on the site and surroundings.
Ground source heat pump (GSHP) (not adopted)	Ground source heat pump is not deemed suitable for a scheme of this nature due to additional excavation, which is a carbon intensive process, and implications on the construction programme for the installation of ground loops.
Air source heat pump (ASHP) (adopted)	ASHP provides an effective way of providing low carbon heating, hot water and cooling.
Biomass (not adopted)	Biomass systems emit high NOx levels and are not supported due to air pollution.

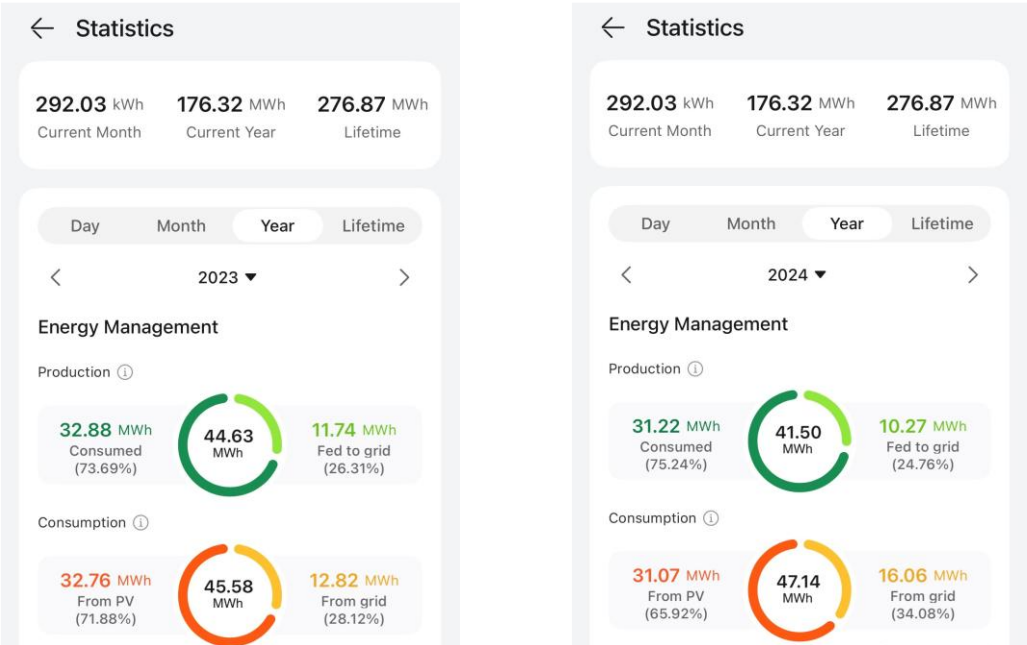


Figure 4. Output from PV monitoring programme on site, showing surplus electricity being generated by PV currently on site (provided by Billingbear Park Golf Course).

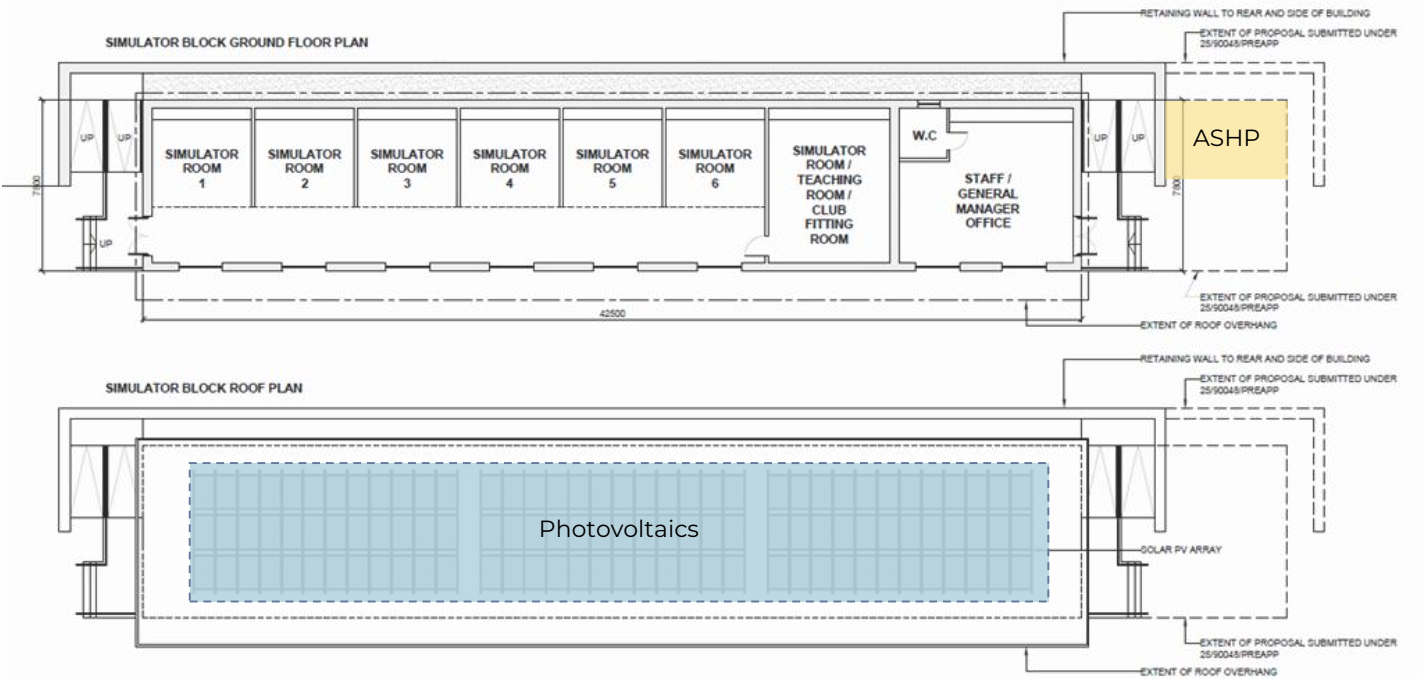


Figure 5. Indicative location of ASHP for simulator building (top) and indicative PV zone for the roof of simulator building (bottom).

3.4 Results

3.4.1 Energy demand

Table 5 presents the energy demand by end use for the proposed Clubhouse extension and new simulator building. It should be noted that this is the total energy demand including both regulated and unregulated end-uses.

With space heating, hot water and cooling being provided by Air Source Heat Pump as a low and zero carbon technology, the proportion of the development’s energy demand met by this LZC technology will be 62%, as shown in Table 6. An additional 27% of the total energy demand will be provided by photovoltaics.

The proportion of energy demand met by renewable technologies is significant and exceeds the 12% requirement stipulated in the SPD (Requirement Box 1, paragraph e).

The Energy Use Intensity (EUI) and space heating demand are presented in (Table 7). Fabric, energy efficiency and renewable integration measures have been maximised for the site as far as possible. This is reflected in the U-values proposed in Table 2 and the detailed specifications provided in Appendix A.

Table 5. Energy demand for the Clubhouse extension and simulator building.

Space heating (kWh/ year)	Hot water (kWh/ year)	Cooling (kWh /year)	Auxiliary, Lighting and Equipment (kWh/ year)	Total energy demand (kWh / year)
9,600	20,800	23,500	33,300	87,100

Table 6. Energy demand met by renewable technology for the Clubhouse extension and simulator building.

LZC technology proposed	Demand met by LZC technology (kWh/ year)	% Energy demand met by LZC technology
Air Source Heat Pump	53,800	62%
Photovoltaics	23,800	27%

Table 7. EUI and space heating demand for the Clubhouse extension and simulator building.

EUI (kWh/m².yr excluding renewable energy)	EUI (kWh/m².yr with PV accounted for)	Space heating demand (kWh/m².yr)	Methodology used	Explanatory notes
113	57	22.5	SBEM	EUI has been reduced as far as possible given the constraints of the site. The anticipated unregulated energy use is high for the proposed space uses, based on NCM templates.

3.4.2 Carbon emissions

Through the measures outlined for each stage of the Energy Hierarchy, it is anticipated the proposed development can achieve 100% reduction in regulated CO₂ emissions over the Part L 2021 baseline.

The scheme is also anticipated to achieve a 12% reduction in regulated CO₂ over the Part L 2021 baseline at the Be Lean stage with building fabric and system efficiencies measures alone. Fabric efficiency measures have been maximised as far as practical given the constraints of the site and the performance is broadly in line with the best practice guidance of RBWM's Sustainability SPD.

As the proposed strategy with fabric efficiency, ASHP and additional PV results in zero regulated operational carbon on site, carbon offset payments are not applicable for this scheme.

Table 8, Table 9 and Figure 6 present the anticipated CO₂ emissions and savings at each stage of the Energy Hierarchy.

Table 8. Carbon emissions after each stage of the Energy Hierarchy for Billingbear Park Golf Course Café.

	Carbon Dioxide Emissions (tCO ₂ /yr)	
	Regulated	Unregulated
Baseline: Part L 2021 Compliant Development	3.6	3.6
After energy demand reduction (be lean)	3.1	3.6
After heat network connection (be clean)	3.1	3.6
After renewable energy (be green)	0.0	3.6

Table 9. Regulated carbon savings from each stage of the Energy Hierarchy for Billingbear Park Golf Course.

	Regulated carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Be lean: Savings from energy demand reduction	0.4	12%
Be clean: Savings from heat network	0.0	0%
Be green: Savings from renewable energy	3.1	88%
Cumulative on-site savings	3.6	100%
Annual savings from off-set payment	0.0	-
Cumulative savings for off-set payment	0 tonnes over 30 years	
Potential carbon offset payment	£ 0	

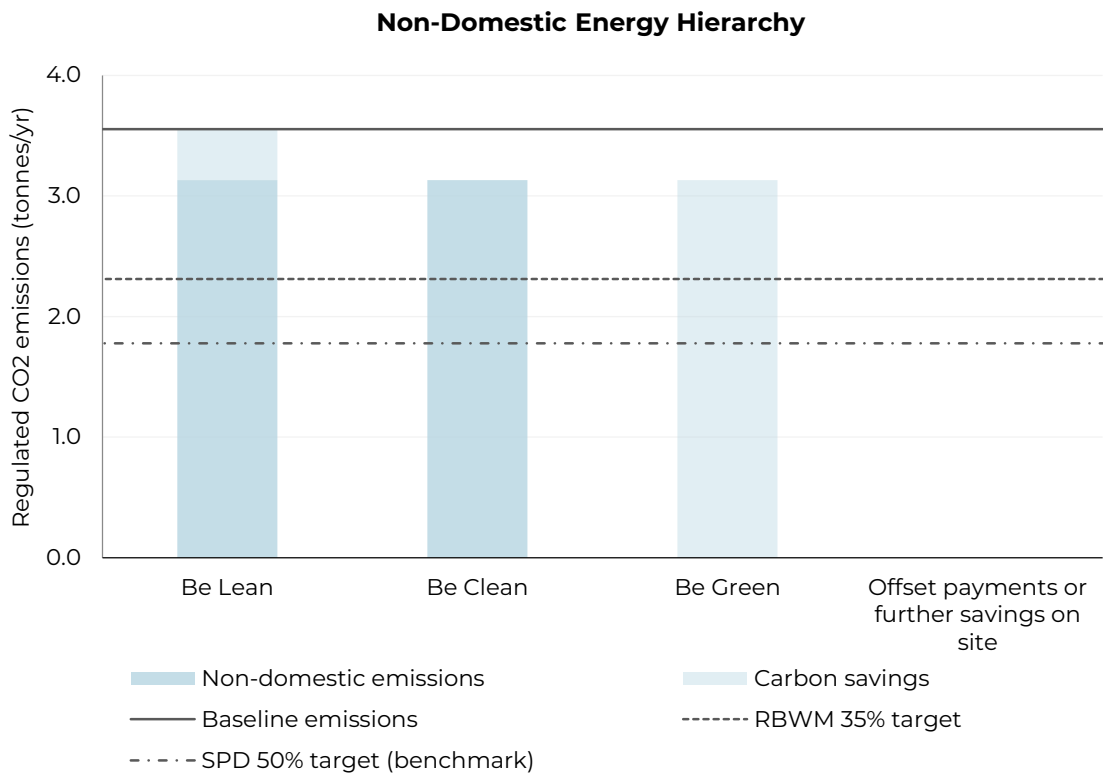


Figure 6. Regulated carbon emissions at each stage of the Energy Hierarchy.

4 Sustainability Strategy

This section of the report presents the key elements of the scheme in response to relevant sustainability policies set out within the RBWM Local Plan.

4.1 Optimising Land Use

The proposed development makes efficient use of the existing site by enhancing underutilised areas and consolidating facilities to support a wider range of activities. By introducing pickleball and padel courts alongside an outdoor putting course, the scheme diversifies recreational options without significantly expanding the site’s footprint.

Replacing the temporary marquee with a permanent clubhouse extension improves functionality and aesthetics, while the simulator building adds year-round training capacity in a compact form.

Together, these elements optimise land use by integrating complementary amenities within the current layout, ensuring the site delivers improved value for members and visitors.

4.2 Health and Wellbeing

4.2.1 Air Quality

Any potential dust and stationary plant emissions during the construction period, and any potential impact from traffic flows on the local road network, during and after construction will be mitigated. A fully electric energy strategy with air source heat pumps is proposed, with no additional onsite building related emissions that could impact on local air quality.

4.2.2 Noise

The development will incorporate building fabric measures to ensure the impact of any external sources on internal ambient noise levels are within acceptable limits in line with latest standards and best practice. Any potential noise impacts arising from the proposal, such as that from the air source heat pump units, will be mitigated by acoustic attenuation measures where required.

4.2.3 Daylight and Sunlight

There are no neighbouring properties in close proximity to the site. No daylight and sunlight impacts are expected as a result of the proposed development. The Clubhouse extension benefits from generous glazing that will provide daylight into the space and reduce artificial lighting use. The simulator building is designed with a proportionate amount of glazing for its use, and its relatively narrow depth is anticipated to enable adequate daylight levels internally.

4.2.4 External Lighting

The external lighting design and specification will be in accordance with the ILP’s Guidance Note for The Reduction of Obtrusive Light (2021). The scheme will limit the amount of up-lighting and all external lighting (aside from security lighting) will be connected to daylight sensors and be time controlled.

4.2.5 Safety and Security

Secure by Design principles have been incorporated into the design to ensure safe and secure spaces are provided to all users.

4.2.6 Accessibility and Inclusiveness

Vehicle access will remain via The Straight Mile, with visibility splays confirmed as acceptable by RBWM’s Highway Development Control team under pre-application reference 25/90163.

The proposals incorporate dedicated pedestrian routes linking all key facilities, ensuring safe and convenient movement across the site. Inclusive design principles have been applied throughout, providing step-free access and fully accessible entrances to the clubhouse, courts, putting course, and simulator building. The proposed development is designed to be welcoming and usable for all visitors, including those with mobility impairments.

For further details, please refer to the accompanying Design and Access Statement prepared by Lewandowski Architects for the planning application.

4.3 Nature, Landscape and Biodiversity

4.3.1 Trees

An Arboricultural Assessment by Merewood Arboricultural accompanies this application. The site contains mainly Category B and C trees, with five low-quality ornamental cherries proposed for removal to accommodate the pickleball courts. All Category A and B oaks will be retained, and protective measures will follow BS5837:2012. No TPO-protected trees are affected. The Ancient Woodland buffer has been increased to 16m, with pathways repositioned accordingly.

4.3.2 Landscape

A Landscape Strategy prepared by UBU Design complements the proposals, introducing perimeter planting, habitat enhancements, and long-term management to deliver biodiversity net gain.

4.3.3 Ecology

A Preliminary Ecological Appraisal, Phase 2 Bat Emergence Survey, and Biodiversity Net Gain (BNG) Assessment, including statutory metrics and condition assessment sheets, have been prepared by LHB Ecology and submitted in support of this application.

The outcomes of these surveys, together with the BNG results confirming a minimum 10% net gain, have been fully integrated into the scheme design and inform the proposed landscape strategy.



Figure 7. Proposed landscape strategy (courtesy of UBU Design).

4.4 Climate Resilience

4.4.1 Managing risk of overheating

The proposed development has been designed in line with the Cooling Hierarchy. Refer to the Energy Strategy section (3.1.5) of this report for further details.

4.4.2 Managing flood risk

The site is located at an area with a medium probability of flooding, within Flood Zone 2, as shown in Figure 8 from the government's online flood maps.

For further details, please refer to the Flood Risk Assessment prepared by GSE for the planning application.

4.5 Water and Surface Water Runoff

4.5.1 Water Efficiency

The proposed development will aim to improve water efficiency. Dual flush toilets and low flow taps are proposed to be implemented on site. Water use will be metered so that future building users can monitor their water consumption.

4.5.2 Surface water runoff

Foul water is currently managed via an on-site septic tank, while surface water is pumped from an underground tank south of the clubhouse into an established drainage ditch along the site's western boundary.

For further details, please refer to the Drainage Strategy prepared by GSE for the planning application.

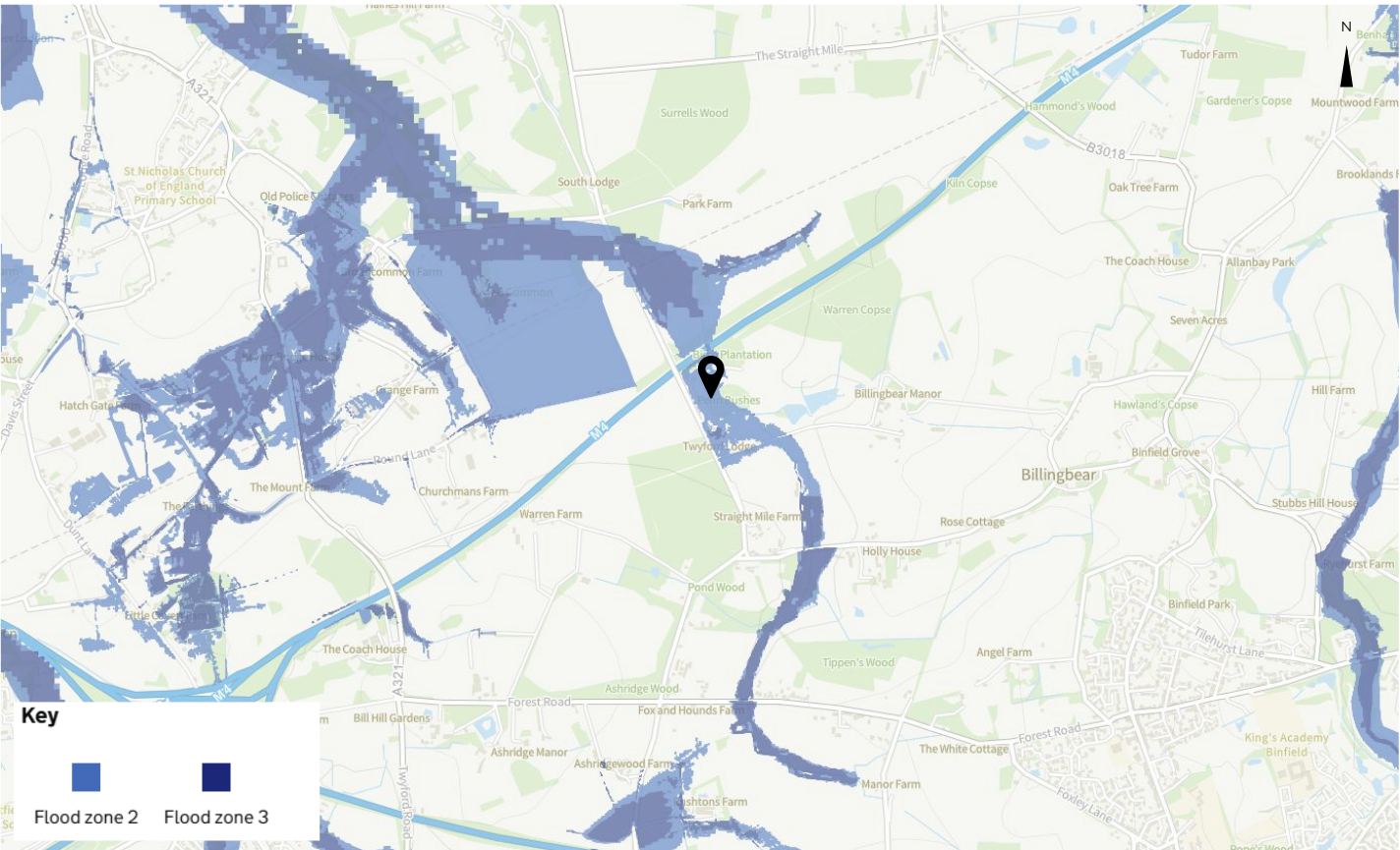


Figure 8. Flood risk map (Accessed: November 2025).

4.6 Materials and Waste

4.6.1 Material Selection and Procurement

The layout of the proposal has been rationalised and forms an efficient extension to the existing Clubhouse which minimises associated structural requirements and resources. The existing Clubhouse will be retained and improved which makes the approach to the site inherently sustainable, reducing the need for substantial new materials. The simulator building is modest in scale and single storey which would not typically necessitate substantial amount of materials for structural stability and is anticipated to result in low embodied carbon relative to the floor area proposed.

Any materials to be used for the scheme will be selected for longevity and durability as well as recoverability and recyclability at end of life as far as possible. To minimise potential sources of indoor air pollution, low VOC materials, paints and finishes will be prioritised where possible.

To further reduce embodied carbon of the proposed development, materials with recycled content will be prioritised where feasible during detailed design stage specification.

All timber used on the site will be FSC or PEFC certified. Where feasible, all other construction materials utilised at the development will be responsibly sourced as far as feasible.

Where practicable, the contractor will source items locally, and where possible amalgamate deliveries to reduce the overall number of vehicle movements taking place which will reduce associated embodied carbon emissions.

4.6.2 Waste Management and Circular Economy

Waste streams will be efficiently segregated (offsite) and processed during both construction and operation stages, with a target to maximise potential re-use of materials and diversion from landfill in line with best practice guidance set out within RBWM's Sustainability SPD.

All waste that cannot be reused or recycled will be disposed of in accordance with legislation and best practice.

In line with best practice guidance in the Sustainability SPD, the development will target a 95% reuse/recycling rate for demolition and construction waste where feasible.

4.7 Sustainable transport

The proposed development is a minor scheme which would not result in significant transport implications.

The development supports sustainable travel through the installation of short-stay cycle parking and dedicated pedestrian routes linking all key facilities, encouraging the uptake of active modes of travel by visitors.

The proposals retain 125no. visitor parking spaces and introduce 6no. electric vehicle charging points, significantly improving provision for low-emission vehicles and reinforcing the scheme's sustainability credentials.

For further details, please refer to the Transport Plan and Assessment prepared by Highway Planning to support the planning application.

5 Conclusions

Through the adoption of the energy and sustainability strategies presented in this report, the client and design team demonstrate that the proposed development has considered the relevant policy requirements stipulated within RBWM’s Local Plan and the complimentary Sustainability SPD as far as technically possible.

The proposal will positively contribute to sustainable development at the site and its surroundings.

Appendix A – Calculation assumptions

The items listed below are assumptions only, based on a combination of best judgement at planning stage and information from the design team where appropriate. Throughout the design and construction stages the fabric and system requirements (including provisions of renewable technologies) may change whilst the building designs are being progressed. All information detailed in this summary sheet is preliminary recommendation at the Planning Stage for the new-build extension elements of the scheme. It should be noted that this document is not exhaustive, and the design and construction teams should allow for flexibility on site where necessary.

Building fabric parameter	Part L 2021 notional	Proposed specification	Unit	Note
New-build ground floor				
ground floor	0.15	0.10	W/m²K	1
New-build walls				
External walls	0.18	0.15	W/m²K	1
New-build roof				
Pitched (Clubhouse ext) and flat (Simulator)	0.15	0.10	W/m²K	1
Air permeability for new-build extension				
Max target, test required prior to handover	3	3	m³/m².h	1
Openings (new-build extension)				
Windows - pane and frame	1.4	1.2	W/m²K	1
Windows transmittance factor (g-value)	0.29	0.3		1
Windows frame factor	0.1	0.1		1

Notes	
1	Planning stage assumption to achieve planning policy or Building Regulations targets
2	Subject to MEP Design
3	Subject to specialist input, final quantum and capacity to be determined post-planning
NB. Please refer to Approved Document L2 2021 for all requirements to comply with Building Regulations Part L.	

Building services	Proposed specification	Unit	Note
Ventilation			
Type (simulator building)	Heat recovery ventilation		1, 2
Specific fan power	0.6	W/l.s	1, 2
Heat recovery efficiency	>80	%	1, 2
Type (Clubhouse extension)	Natural		1, 2
Heating and cooling			
HVAC system type	Electrically driven, split or multi-split system		1, 2
Seasonal COP in heating mode	350	%	1, 2
Seasonal EER in cooling model	600	%	1, 2
Hot Water			
Hot water generation type	Dedicated, electric air source heat pump		1, 2
Generator efficiency	300	%	1, 2
Storage losses (if storage present)	Default		1, 2
Metering			
The system has provision for metering	Yes		1, 2
The metering warns 'out of range' values.	Yes		1, 2
Lighting			
Lamp efficacy	120	lm/cW	1, 2
Photoelectric and occupancy controls	Yes, where applicable		1, 2
Photovoltaics			
Capacity of new PV system (on simulator building)	17.2	kWp	1, 2, 3
Panel capacity	400	W/panel	1, 2, 3
Orientation	South		1, 2, 3
Tilt from horizontal	10°		1, 2, 3

Appendix B – Planning stage SBEM output

Project name

Be Lean Assessment**As designed**

Date: Wed Dec 03 17:18:52 2025

Administrative information

Building Details

Address: Billingsbear Park Golf Club, Straight Mile,
Wokingham, RG40 5SJ

Certifier details

Name: Ecolytik

Telephone number: 0203 835 4114

Address: 86-90 Paul Street, London, EC2A 4NE

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.28

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 426.69

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	8.35
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	7.29
Target primary energy rate (TPER), kWh _{PE} /m ² annum	90.6
Building primary energy rate (BPER), kWh _{PE} /m ² annum	79.39
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.15	0.15	0F000001_W1
Floors	0.18	0.1	0.1	0F000001_F
Pitched roofs	0.16	0.1	0.1	0F000007_C
Flat roofs	0.18	0.1	0.1	0F000001_C
Windows** and roof windows	1.6	1.2	1.2	0F000001_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]

U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]

U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.7	5.9	-	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- SYST0000-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
0F WC	-	-	-	-	0.6	-	-	-	-	0.8	N/A	
0F Office	-	-	-	-	0.6	-	-	-	-	0.8	N/A	
0F Simulator Teaching Room	-	-	-	-	0.6	-	-	-	-	0.8	N/A	
0F Simulators	-	-	-	-	0.6	-	-	-	-	0.8	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3	
0F WC	120	-	-	
0F Office	120	-	-	
0F Simulator Teaching Room	120	-	-	
0F Simulators	120	-	-	
0F Circulation	120	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
0F Indoor seating area		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
0F WC	NO (-79.2%)	NO
0F Office	NO (-57.8%)	NO
0F Simulator Teaching Room	N/A	N/A
0F Simulators	N/A	N/A
0F Circulation	NO (-23.6%)	NO
0F Indoor seating area	NO (-7%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	426.7	426.7
External area [m ²]	1276.1	1276.1
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	253.5	402.07
Average U-value [W/m ² K]	0.2	0.32
Alpha value* [%]	33.8	20.55

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
100 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	8.5	11.43
Cooling	12.5	11.34
Auxiliary	7.66	9.53
Lighting	8.91	8.96
Hot water	16.19	19.98
Equipment*	61.46	61.46
TOTAL **	53.77	61.24

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	279.32	288.24
Primary energy [kWh _{PE} /m ²]	79.39	90.6
Total emissions [kg/m ²]	7.29	8.35

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	80.9	198.4	8.5	12.5	7.7	2.64	4.41	2.7	5.9
	Notional	108.6	179.6	11.4	11.3	7.3	2.64	4.4	----	----

Key to terms	
Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

Be Green Assessment**As designed****Date:** Wed Nov 26 11:12:50 2025**Administrative information****Building Details****Address:** Billingsbear Park Golf Club, Straight Mile,
Wokingham, RG40 5SJ**Certifier details****Name:** Ecolytik**Telephone number:** 0203 835 4114**Address:** 86-90 Paul Street, London, EC2A 4NE**Certification tool****Calculation engine:** SBEM**Calculation engine version:** v6.1.e.2**Interface to calculation engine:** Virtual Environment**Interface to calculation engine version:** v7.0.28**BRUKL compliance module version:** v6.1.e.1**Foundation area [m²]:** 426.69**The CO₂ emission and primary energy rates of the building must not exceed the targets**

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	8.35
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	-0.03
Target primary energy rate (TPER), kWh _{PE} /m ² annum	90.6
Building primary energy rate (BPER), kWh _{PE} /m ² annum	-5.43
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.15	0.15	0F000001_W1
Floors	0.18	0.1	0.1	0F000001_F
Pitched roofs	0.16	0.1	0.1	0F000007_C
Flat roofs	0.18	0.1	0.1	0F000001_C
Windows** and roof windows	1.6	1.2	1.2	0F000001_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.5	6	-	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- SYST0000-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		Zone	Standard
0F WC	-	-	-	-	0.6	-	-	-	-		0.8	N/A
0F Office	-	-	-	-	0.6	-	-	-	-		0.8	N/A
0F Simulator Teaching Room	-	-	-	-	0.6	-	-	-	-		0.8	N/A
0F Simulators	-	-	-	-	0.6	-	-	-	-		0.8	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3	
0F WC	120	-	-	
0F Office	120	-	-	
0F Simulator Teaching Room	120	-	-	
0F Simulators	120	-	-	
0F Circulation	120	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
0F Indoor seating area		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
0F WC	NO (-79.2%)	NO
0F Office	NO (-57.8%)	NO
0F Simulator Teaching Room	N/A	N/A
0F Simulators	N/A	N/A
0F Circulation	NO (-23.6%)	NO
0F Indoor seating area	NO (-7%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	426.7	426.7
External area [m ²]	1276.1	1276.1
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	253.5	402.07
Average U-value [W/m ² K]	0.2	0.32
Alpha value* [%]	33.8	20.55

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
100 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	6.54	11.43
Cooling	12.29	11.34
Auxiliary	7.66	9.53
Lighting	8.91	8.96
Hot water	16.19	19.98
Equipment*	61.46	61.46
TOTAL **	51.6	61.24

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	55.8	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>55.8</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	279.32	288.24
Primary energy [kWh _{PE} /m ²]	-5.43	90.6
Total emissions [kg/m ²]	-0.03	8.35

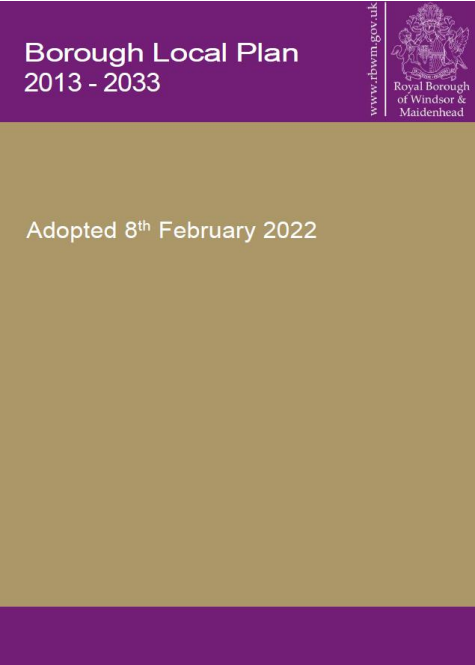
HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	80.9	198.4	6.5	12.3	7.7	3.43	4.48	3.5	6
	Notional	108.6	179.6	11.4	11.3	7.3	2.64	4.4	----	----

Key to terms

- Heat dem [MJ/m2] = Heating energy demand
- Cool dem [MJ/m2] = Cooling energy demand
- Heat con [kWh/m2] = Heating energy consumption
- Cool con [kWh/m2] = Cooling energy consumption
- Aux con [kWh/m2] = Auxiliary energy consumption
- Heat SSEFF = Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
- Cool SSEER = Cooling system seasonal energy efficiency ratio
- Heat gen SSEFF = Heating generator seasonal efficiency
- Cool gen SSEER = Cooling generator seasonal energy efficiency ratio
- ST = System type
- HS = Heat source
- HFT = Heating fuel type
- CFT = Cooling fuel type

Appendix C – RBWM policies

Local Plan (2022)



The Borough Local Plan (BLP) serves as the essential document outlining the framework to steer the prospective development of the Royal Borough of Windsor and Maidenhead. This plan delineates a spatial strategy and policies designed to oversee the development and infrastructure management, addressing environmental, social, and economic opportunities and challenges in the region until 2033. Not only does the plan consider the extent and distribution of development, but it also elucidates the sustainable approach through which the Council and its collaborators will implement it, aiming to preserve and improve the quality of the various locations within the Royal Borough of Windsor and Maidenhead.

The energy and sustainability policies within the BLP relevant to the proposed development at Billingbear Park Golf Course are summarised below.

Policy SP2 Climate change

- Incorporate measures to adapt to and mitigate climate change.

- Maximise the opportunities for both natural heating and ventilation and reducing exposure to wind and other elements.
- Provide shading of amenity areas, buildings and streets and to help to connect habitat, designed with native plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions.
- Minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change.

Policy QP2 Green and blue infrastructure

- Contribute to the maintenance, enhancement, and, where possible, enlargement, of the Borough's existing green and blue infrastructure network, in terms of both quantity and quality.
- Pay particular attention to the provision of blue infrastructure.

Policy NRI Managing flood risk and waterways

- Development should not itself, or cumulatively with other development, materially, impede the flow of flood water, reduce the capacity of the floodplain to store water, increase the number of people, property or infrastructure at risk of flooding, cause new or exacerbate existing flooding problems, either on the proposal site or elsewhere, reduce the waterway's viability as an ecological network or habitat for notable species of flora or fauna.

Policy NR2 Nature conservation and biodiversity

- Maintain, protect and enhance the biodiversity of application sites.
- Avoid impacts on habitats and species of principal importance.
- Apply the mitigation hierarchy to avoid, mitigate or as a last resort compensate for any adverse biodiversity impacts.

Policy NR3 Trees, woodlands and hedgerows

- Maximise opportunities for creation, restoration, enhancement and connection of natural habitats as an integral part of proposals.
- Carefully consider the individual and cumulative impact of proposed development on existing trees, woodlands and hedgerows.
- Protect and retain trees, woodlands and hedgerows.
- Provide appropriate mitigation measures that will enhance or recreate habitats and new features where harm is unavoidable.
- Plant new trees, woodlands and hedgerows and extend existing coverage where possible.

Policy EP1 Environmental protection

- Developments should not have an unacceptable effect on environmental quality or landscape, both during the construction phase or when completed.
- Conserve, enhance and maintain existing environmental quality in the locality, including areas of ecological value.
- Residential amenity should not be harmed by reason of noise, smell or other nuisance.

Policy EP2 Air pollution

- Development proposals will need to demonstrate that they do not significantly affect residents within or adjacent to an Air Quality Management Area (AQMA) or to residents being introduced by the development itself.
- Development proposals which may result in significant increases in air pollution must contain appropriate mitigation measures, (such as green infrastructure, sustainable travel, electric vehicle charging parking points, limited vehicle parking, awareness raising, and enabling smarter travel choices) thus reducing the likelihood of health problems for residents.

- Contribute to conserving and enhancing the natural and local environment, by avoiding putting new or existing occupiers at risk of harm from unacceptable levels of air quality.

Policy EP3 Artificial light pollution

- Avoid generating artificial light pollution where possible and development proposals for new outdoor lighting schemes that are likely to have a detrimental impact on neighbouring residents, the rural character of an area or biodiversity, should provide effective mitigation measures.
- All artificial lighting must be directional and focused with cowlings to reduce light spill into river corridors and other wildlife corridors.

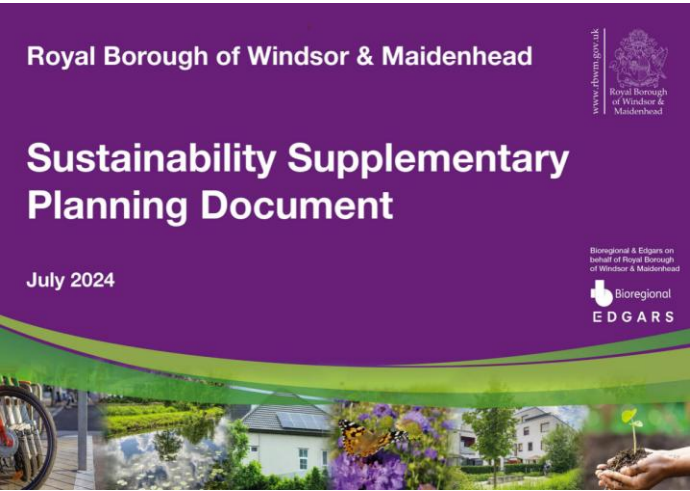
Policy EP4 Noise

- Development proposals should consider the noise and quality of life impact on recipients in existing nearby properties and also the intended new occupiers ensuring they will not be subject to unacceptable harm.
- Effective mitigation measures will be required where development proposals may generate significant levels of noise (for example from plant and equipment) and may cause or have an adverse impact on neighbouring residents, the rural character of an area or biodiversity.

Policy EF2 Sustainable Transport

- New development should be located close to offices and employment, shops and local services and facilities and provide safe, convenient and sustainable modes of transport. Development proposals that help to create a safe and comfortable environment for pedestrians and cyclists and improve access by public transport will be supported.

Sustainability SPD (2024)



In June 2019, the Royal Borough of Windsor & Maidenhead (RBWM) declared an environment and climate emergency, aiming for net zero carbon emissions by 2050, in line with government policy. Following this declaration, the Council developed the Environment and Climate Strategy 2020-2025, outlining a vision and five-year action plan to tackle climate change, with a goal of reducing emissions by 50% by 2025. The strategy emphasizes reducing carbon emissions through key themes such as Circular Economy, Energy, Natural Environment, and Transport.

Actions to address climate change and reduce carbon emissions are necessary across all sectors. This planning guidance is a key action identified in the strategy, aiming to achieve significant reductions in greenhouse gas emissions, shape development towards net zero carbon, protect and enhance the natural environment, encourage active travel, reverse biodiversity decline, and drive carbon reductions in the borough, contributing to broader climate change mitigation and adaptation.

Applicants, developers, planning officers, planning committees, and other decision-makers are expected to consider the SPD when designing or making decisions on new developments in the borough. The SPD enhances the Borough Local Plan (BLP) by providing detailed guidance on policy requirements, ensuring consistent submission of compliance information, helping assess the environmental credentials of developments, and

encouraging developers to exceed current policy standards for sustainable development. The SPD was prepared by the Council in collaboration with industry experts, Councillors, and the local community, incorporating industry expertise, best practices, and case studies.

The SPD includes key considerations across the following topics:

- Energy and Carbon
- Climate Adaptation
- Sustainable Construction
- Biodiversity
- Sustainable transport.

The energy and carbon related guidance for planning applications is presented in this appendix, as they are the most pertinent to the Energy and Sustainability Statement.

In summary, the following key points are to be addressed:

For new residential dwellings, and non-residential floorspace over 100sqm:

- a) The Council requires that applicants submit a Sustainability and Energy Statement containing, as a minimum:
- b) calculation of the energy demand and carbon dioxide emissions covered by Building Regulations using the energy hierarchy;
- c) Calculation of the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations at each stage of the energy hierarchy;
- d) calculation of the estimated annual energy costs to the occupants of the development;
- e) proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services (including heat recovery solutions);
- f) proposals to further reduce carbon dioxide emissions through the use of onsite renewable energy technologies. There is an expectation that developments maximise renewable energy generation regardless of

whether minimum standards are met through other measures, as such there is an expectation that 12% of the total energy demand will be met by on-site renewables, unless this is demonstrated to be unfeasible;

- g) proposals for the storage and use or export of excess energy arising from renewable energy technologies; and
- h) once on-site reductions have been maximised, the remainder of carbon emissions (i.e.: the carbon shortfall) should be met via a carbon offset payment where viable in order to meet net zero carbon. The Council requires all applicants to demonstrate how net zero carbon will be achieved by the proposed development.

Additional requirements include:

- Following the cooling hierarchy.
- Use of green roofs to mitigate urban heat island.
- Combination of green roofs and PVs.
- Promotion of outdoor recreation.
- Flood risk and SuDS for certain types of site in higher flood risk areas.
- Water efficiency and saving measures.
- Waste minimisation, circular economy and following the waste hierarchy.
- Use of sustainable materials and balancing local and responsible sourcing.
- Shared green space should have a long-term maintenance plan.
- Promote sustainable transport for developments with significant transport implications.

Best practice includes the following:

- 50% improvement over the Target Emissions Rate (TER)
- 15% improvement over the TER by fabric efficiency measures alone.
- Energy Use Intensity of less than 75 kWh/m².year for offices.
- Space heating demand of 15 kWh/m².year.
- Air permeability of 3m³/m².h or lower.
- Connection to District Heating Networks.
- Maximisation of PV provision

- Carbon offsetting any residual emissions at a rate of £252 per tonne over 30 years. Carbon emissions to be calculated based on SBEM and GLA's carbon reporting spreadsheet.
- Demolition, excavation and construction waste to target 95% diversion from landfill.
- Municipal waste to achieve minimum 65% recycling rate by 2030.
- Recycled content of materials to be a minimum of 25%.
- Follow LETI's guidance for embodied carbon.
- Achieve BNG of 20% and UGF of 0.4.
- Promote active travel.

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