

Sustainability and Energy Statement

In respect of

Building 7, Oxford Technology Park
Technology Drive,
Kidlington, OX5 1GN

Planning Application Reference: 22/01683/F

Prepared by Lauren Bates, MSc Environmental Technology, Centre For Environmental Policy, Imperial College London

This Statement addresses the points raised by the following draft planning condition, in order to negate the need for the condition in the final consent notice for resolution:-22/01683/F;

“..... a Sustainability and Energy Statement, outlining how sustainability will be built into the approved development including a scheme to allow for significant renewable energy provision and to allow for the easy expansion of the EV charging shall be submitted to and approved in writing by the Local Planning Authority. Thereafter, and prior to the first use of the development, these sustainability measures will be implemented in accordance with the approved details.

Reason: To ensure sustainable construction and reduce carbon emissions and to comply with Policies ESD1, ESD2, ESD3, ESD4 and ESD5 of the Cherwell Local Plan Part 1 and Government guidance contained within the National Planning Policy Framework.”

The Statement does so by addressing all items noted in Cherwell District Council’s document titled “Information requirements for policies ESD 2, 3, 4, and 5 of the Cherwell local plan part 1 – Energy Statement – Best practice”, alongside the specific measures noted above.

Since the initial concept the ethos and design of the buildings at Oxford Technology Park have been focused on highly energy efficient and sustainably constructed buildings. Hence our very early commitment to the BREEAM accreditation, and of achieving the BREEAM ‘Excellent’ status.

The BREEAM commitment builds sustainability into every stage of the design and construction process, ensuring a highly considered development and sustainable building. The following elements are key to the BREEAM process;

- Early scoping exercises to all elements of design
- Considered construction techniques and methodologies
- Adopting sustainable practices in every element of the construction, to ensure sustainability throughout the lifecycle of the building.

Examples of the Best Practice activities adopted include:

- The implementation of a ‘Cut and Fill’ earthworks scheme; to minimise the transport off site of sub-soil
- The implementation of ‘soil screening’ onsite, in order to prepare site won top soil for use in the soft planting areas rather than removing it from site by transport, requiring soil to be brought in separately for soft landscaping

- The implementation of a zero run-off SuDS surface water drainage scheme to each unit plot, ensuring each plot has sufficient surface water storage capacity for any surface water arising within that plot
- Selection of recyclable construction materials, such as steel (the building frame) and glass (windows and glazing)
- As well as the selection of the most efficient material of its class, such as the Composite Cladding panels selected for the building envelope; The Kingspan fire-resistant core composite cladding panels provide a highly efficient and consistent building envelope ensuring the same levels of air-seal and thermal rating for many years to come. Resulting in an energy efficient building envelope shell throughout it's lifecycle.

Specifically focusing on the M&E services specified for the project, as the main driver of energy use within the occupied buildings, we note that energy efficiency as a principle is prioritised in the design as follows;

- All lighting specified is high efficiency LED
- Heating and comfort cooling provision to the office spaces is provided by a refrigerant based, variable refrigerant flow with heat recovery offering COPs (coefficients of performance in excess of 4)
- Ventilation to office spaces incorporates a heat recovery system capable of achieving 80% heat recovery coupled with low SFPs
- To assist in the recovery of heat from ventilation systems all ductwork is specified to be insulated with high performance insulation Green Guide A+ rated.
- Building envelope leakage rates specified are in excess of the Building Regulation requirements with a target of $4.0\text{m}^3 / \text{m}^2 @ 50\text{Pa}$
- Building U values target values equal or better than minimum standards required by Part L 2013 of the Building Regulations
- All of the above elements have resulted in the building achieving a BER of $12.3\text{kgCO}_2 / \text{m}^2 / \text{annum}$ against a target of $16.7 \text{kgCO}_2 / \text{m}^2 / \text{annum}$
- The energy performance of the fixed Mechanical and electrical services meets the mandatory credit requirements for ENE-01, BREEAM Excellent
- Electrical installations are configured to allow for the future installation and connection of a PV array
- Energy monitoring systems are specified to comply with BREEAM requirements.

This statement will now consider the design and energy efficient of 'Building 7, Oxford Technology Park' in the terms of the requirements of Cherwell District Councils policies ESD 2, 3, 4 & 5.

Policy ESD 2

This scheme takes a pro-active approach to energy demand of the proposed buildings, and as such has approached the topic of energy usage in a logical and practical manner. The buildings have been designed with principles of sustainability and efficiency, both of energy and materials, from the beginning of the design process; in accordance with the regulated BREEAM process. As such the simplistic test suggested by ESD 2, does not apply to these buildings. They were not designed and then amended in order to accord with an energy target, which is what this policy assumes. Rather they were designed from the start to meet aspirational energy and sustainability targets. Hence the inclusion of a BREEAM pre-assessment with the outline application submission, including this plot, in December 2014.

The BREEAM process has been followed fully through the planning and design stages, to ensure targets are met the BREEAM process requires a very thorough design plan and pathways to achieving targets. In accordance with our own aspirations to achieve BREEAM 'Excellent' over and above the outline planning condition to achieve BREEAM 'Very Good'. We have had SBEM models run on the designs to ensure that our target of BREEAM 'excellent' can be met and to give specific feedback on the materials included in the design. The SBEM models re-iterate principles that have been accorded with, such as the overall efficiency of buildings in terms of their design and materials used, as well as the unsuitability of de-centralised heat networks in such locations. Also noted is the suitability of the buildings roofs for solar PV electricity generation.

Furthermore the 'Low and Zero carbon feasibility study for this Building noted that the heating and cooling system proposed for the Building with heat recovery and regular air changes to each occupied zone is the best system available in terms of energy efficiency, health of the occupiers (not recirculating air within the building) and for the science & technology occupiers of the Buildings.

Policy ESD 3

As noted in the commentary to ESD 2, it has been demonstrated that these buildings have been designed in accordance with BREEAM 'Excellent' standards from the very beginning of the design process. In any event, we note that the proposal with regard to this stand-alone planning consent is to apply a condition to achieve BREEAM 'very good' standards as a minimum, which is consistent with the outline planning consent.

Policy ESD 4

The energy demand will be met through the use of electricity for all Landlord's building specification, including the heating and cooling to the fitted office spaces, the natural gas supply to the park is purely for laboratory uses that cannot use an electrical energy supply. Where possible renewable sources will be utilised for the electrical supply, and where possible electricity will be generated via Solar PV panels on the roofs of the hybrid units (shown as 3 to 11 on the outline master-plan). It should be noted that the Park is currently going through a scoping exercise with the Electricity distribution grid to agree the capacity of electricity generated that can be supplied back to the main electricity network.

The energy supply to the park is far more complex than the heating, lighting and IT requirements of residential and simple office buildings. The gas supply as required by a range of laboratory, R&D and production uses that the park has been designed to accommodate and that the outline planning permission grants consent for. It is noted that natural gas supplied via the mains gas distribution network produces less carbon and nitrate pollution than other non-renewable sources, as such it is foreseen that this fuel will be utilised in the medium term. It is also noted that there are many renewable alternatives to coming through the market, it is envisaged that these will play a role as energy sources where gas is currently utilised.

The feasibility of district heating/ combined heat and power was considered during the BREEAM pre-assessment process conducted previously and considered to be not feasible for the reasons discussed above. These reasons included;

- extremely low heating/ cooling requirement because of the materials chosen for the construction of the units and their efficient thermal insulation.
- In this type of development it is far more efficient for the electricity supply to be procured separately, whether this is via a renewable based supplier or from solar P.V. panels or a combination of both.
- Specific fuel requirements of occupier for laboratory and R&D based processes.

Policy ESD 5

The only renewable energy generation technology that is practical and feasible to operate on this park is solar PV electricity generation. Due to the design of the hybrid units, these panel can be accommodated on the roofs with no impact on visual impact, air quality or increase to traffic generation. In addition, there would be no further planning issue in doing so.

Detailed analysis of potential renewable energy technology and provision has been conducted through-out the BREEAM process thus far, as we have moved forward from the pre-assessment previously submitted, and conducted SBEM analyses, designs and strategies.

As noted above, a scoping exercise is currently on-going with the electricity distribution network with regard the capacity that can be accepted by the grid.

Wider Sustainability

Overall the park has been designed in order to strive for sustainable development in all areas.

- The drainage strategy is fully SUDS compliant, in order that the surface (storm) water drainage is equivalent to green field run-off rates.
- The materials used in the construction of the buildings will be recycled and recyclable where possible.
- The travel plan formed in accordance with the county highways strategy encourages the use of public transport through the bus that links to the park & ride, and parkway train station. This bus will be supported by the park through S106 contributions for the first five years of occupation as a 'pump priming' exercise.
- The travel plan also encourages cycling to the park through suggesting practical routes, and providing plenty of covered cycle parking racks. The park will also provide a cycle path link from the main access road to the A44 and the international cycle route which runs along the A44, as per the county highways S106 requirement.
- Further to the cycle link we will be providing above the park aims to encourage cycling through researching and assisting with the implementation of further cycle routes around the local area.
- During the occupation of the park, recycling will be facilitated on a site wide basis
- Onsite provision of food and drink with an informal meeting space through the provision of an onsite coffee shop, restaurant and bar (part of the current hotel in building 2) will encourage people to meet, eat and socialise onsite during the working day and reduce travel

in order to procure food and drinks. As well as a Park Hub space in Building 4B, the 'Innovation Quarter' to create a community within the Park.

EV Charging Provision

The EV charging provision currently designed for the unit consists of 10 charging points, this is in excess of the County Highways requirements at the time that this planning application was submitted. However, 10 charging points have been selected in order to align with our aspirations in terms of supporting low carbon travel and to align with the recommendations under the BREEAM scheme.

Nonetheless, future expansion of the EV charging provision is allowed for through the installation of an electrical feeder pillar for the EV charging which will have the capacity to supply electricity for up to double the day one installation (20 charging spaces) as maybe required by the building user. This is achieved technically via a 'daisy chain' installation of the EV points which allow additional charging points to be added to the initial installation up to capacity of the feeder pillar.

Conclusion

In summary, this statement examines the energy and sustainability targets and principles of Building 7 as-designed in the context of Cherwell policies ESD 2 – 5. It also explores the specific energy and sustainability strategy of the as-designed M&E building systems, alongside noting the specific strategies around EV charging at this Building on Oxford Technology Park as a particular focus within the sphere of low carbon travel. This report also explores low carbon technologies within the scheme, and the technical challenges around incorporating renewal energy generation, despite the aspiration to do so.