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| **Title:**  | **Planning Application: Great Wolf Lodge** |
| **Request Date:**  | 2 March 2020 |
| **Due:**  |  |
| **Issued:**  | 4 March 2020 |
| **Name of Cherwell Employee Requesting:** | Clare Whiteheadclare.whitehead@cherwell-dc.gov.uk01295 221650 |
| **Details of Request:**  | Assessment for compliance with ESD sustainable construction policies |
| **Actions:**  | See comments below  |

**Planning application**

This planning application (19/02550/F) relates to the redevelopment of part of the existing golf course at Great Wolf Lodge, on land to the east of the M40 and to the south of the A4095.

The proposed redevelopment into a new leisure resort (sui generis) will incorporate:

* an indoor waterpark
* family entertainment centre (FEC)
* hotel
* conferencing facilities and restaurants
* associated access, parking and landscaping.

**Assessment**

The following planning application documents have been reviewed for this assessment:

* Energy & Sustainability Statement (revision 3, November 2019)

This assessment should be read in conjunction with the Great Wolf Park Lodge Water Review Report, dated 2 March 2020, which considers water resources in more detail. References to that report are made as appropriate in Table 1 below.

The proposed development’s energy needs are split into three categories:

* Family Entertainment Centre (FEC), including restaurants, retail and entertainment areas
* Hotel, containing 498 rooms, conference centre and amenity areas
* Water park

**Table 1**: Water resource requirements and applicant’s response

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| **Item** | **Requirement**  | **Response**  |
| Policy ESD 1: Mitigating and Adapting to Climate Change    | 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 or low carbon energy where appropriate (see Policies ESD 4 Decentralised Energy Systems and ESD 5 Renewable Energy).

The incorporation of suitable adaptation measures in new development to ensure that development is more resilient to climate change impacts will include consideration of the following:* Taking into account the known physical and environmental constraints when identifying locations for development
* Demonstration of design approaches that are resilient to climate change impacts including the use of passive solar design for heating and cooling
* Minimising the risk of flooding and making use of sustainable drainage methods
* Reducing the effects of development on the microclimate (through the provision of green infrastructure including open space and water, planting, and green roofs).
 | **See Great Wolf Park Lodge Water Review Report for details on water resources.****See also ESD 3 below for details on sustainable construction.**The proposals consider connection to the Elmsbrook district heating system and propose a number of renewable energy technologies as part of the design. **The proposals broadly meet policy requirements. However, please also refer to the recommendations made in the Great Wolf Park Lodge Water Review Report regarding clarifications and justifications on water use.**  |
| Policy ESD 2: Energy Hierarchy and Allowable Solutions   | 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.

  | The Energy & Sustainability Statement takes a Be Lean, Be Clean, Be Green energy hierarchy approach. This considers ways in which energy demand can be reduced, energy efficiency measures implemented, and renewable sources of energy incorporated into the proposed development. The following are proposed as part of the development design:* Implementation of a bespoke heating/cooling system to meet the demands of the mixed facilities for the FEC and hotel. This will use reversible air source heat pumps (RASHP) and water source heat pumps (WSHP) as the primary heating and cooling mechanisms. A Low Temperature Hot Water (LTHW) system will utilise any waste heat to generate hot water, and a gas-fired condensing boiler will act as a secondary system to meet peak demand as necessary.
* The water park will utilise a dedicated ASHP system to generate heat with a gas-fired condensing boiler as a secondary system to help meet peak demand.
* All three will implement low-flow and return-temperature systems to maximise efficiency.
* A 1,000m2 PV panel array will be installed on a south-facing water park roof as a renewable energy source for the proposed development.

Use of the district heating centre at Elmsbrook was considered. However, the distance from the site (>3 miles) does not make this a viable option. Furthermore, the centre is powered by gas-fired CHP (combined heat and power) and it is argued that the proposed RA/WSHP system provides greater carbon savings. **The proposals comply with policy requirements**  |
| Policy ESD 3: Sustainable Construction   | 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 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 the impact on the external environment and maximising opportunities for cooling and shading (by the provision of open space and water, planting, and green roofs, for example)
* Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment

  | **See Great Wolf Park Lodge Water Review Report for details on water resources and associated BREEAM credits.****Energy demand and energy efficiency** Reduction of energy use is proposed through building fabric design measures, including: * Walls: 0.18 W/m2/k [0.30 W/m2/k]
* Roof: 0.18 W/m2/k [0.20 W/m2/k]
* Floors: 0.18 W/m2/k [0.25 W/m2/k]
* Glazing: 1.6 W/m2/k [2.00 W/m2/k]
* Doors: 2.2 W/m2/k [2.2 W/m2/k]
* Glazing g value: 0.4
* Fabric air permeability: 3 m3/(m2.h) at 50 Pa [10 m3/(m2.h) at 50 Pa

Additionally, the following are proposed: * A system of mechanical air ventilation with heat recovery, reducing space heating demand
* A low temperature hot water (LTHW) system for the hotel and FEC areas – providing water at a maximum temperature of 50 degrees Celsius instead of 70 degrees Celsius
* Lighting controls, including low-energy and energy-efficient light fittings (including provision of compact fluorescent lamps and LED, or similar)
* Metering and controls to account for 90% of energy use across the proposed development
* Pipework and ductwork insulation to minimise heat losses
* Variable speed fans
* Green roofs (although area size is not specified)
* Net biodiversity gain through provision of new mixed and broadleaf woodland planting (as replacement for woodland habitat to be lost) (although net gain area not specified)

**Sustainable materials**The use of sustainable construction materials is proposed but will be specified at detailed design stage. These will aim to include:* Certified as responsibly sourced
* Low-emitting materials
* Products with environmental declarations
* FSC, PFC or similar timber certifications

The site is currently greenfield land therefore no demolition material is available for reuse in construction. There is no mention of using locally sourced construction materials.**Carbon savings**Carbon reduction calculations[[1]](#footnote-2) are measured against Part L2A standards and utilising the CIBSE TM54 bespoke methodology to account for the mix of facilities, uses and energy demands. Carbon emission factors used include both Part L and SAP 10[[2]](#footnote-3) with savings of 12% and 45% demonstrated respectively, using Part L modelling. Using CIBSE’s TM54 model, the following carbon savings are calculated: * 14% (920 tonnes) with Part L carbon factors
* 39% (1,640 tonnes) with SAP10 carbon factors

**BREEAM**A score of 55% is required to meet the Very Good standards set. A pre-assessment demonstrates that 60.9% can be achieved with the potential to achieve 71.3 (a score of Excellent) using potential additional credits. These will be explored further as detailed design progresses. **The proposals broadly meet policy requirements. However, further clarification could be sought on the green roof and biodiversity gain areas, and commitment (rather than an aspiration) to minimum standards of sustainable construction materials. Alternatively, a planning condition could be considered. Please also refer to the recommendations made in the Great Wolf Park Lodge Water Review Report regarding clarifications and justifications.**   |
| Policy ESD 4: Decentralised Energy Systems   | 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 1000m2 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.    | Consideration of connecting to the Elmsboork District Heating facility was demonstrated in the Energy & Sustainability Statement. However, the distance from the site (> 3 miles) makes it unfeasible. It is also argued that the carbon reductions offered by gas-fired CHP systems are no longer significant as they are compared with outdated Part L 2013 requirements. **The proposals comply with policy requirements**  |
| Policy ESD 5: Renewable Energy   | A feasibility assessment of the potential for significant on-site renewable energy provision (above any provision required to meet national building standards) will be required for all applications for non-domestic developments above 1000m2 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.  | A number of renewable energy technologies were considered including: PV, solar thermal, ASHP, wind turbines and biomass.Of these, the following have been included in the proposed development: * A solar PV array of 1,000m2. This is anticipated to provide a 1% reduction on carbon emissions (150kWp)
* Air and water source heat pumps

**The proposals comply with policy requirements**  |

**Assessment**

*\*Please note that this assessment should be read in conjunction with the Great Wolf Park Lodge Water Review Report, dated 2 March 2020\**

The Energy & Sustainability Statement submitted as of the planning application sets out the ways in which energy efficient and renewable technologies will be incorporated into the proposed development and reduce energy demand and carbon emissions. Using a combination of energy efficiency measures to reduce demand and renewable technologies to meet residual demand, carbon savings of 39% are demonstrated (based on the draft SAP 10 carbon factors). Using Part L carbon emission factors, the carbon savings are calculated to be 12%.

The proposals include the use of reversible air source heat pumps (RASHP), water source heat pumps (WSHP) and low temperature hot water (LTHW) boilers, as well as a solar PV array. Gas-fired condensing boilers are to be used as secondary systems to meet peak demand. Consideration of the potential for connection to the Elmsbrook district heating system was made but rejected on the basis of its distance from the proposed development and its use of gas-fired CHP.

The proposals show how BREEAM Very Good can be met (achieving 60.9%) with the potential to achieve Excellent (71.3%) as additional potential credits are explored further at detailed design stage.

**The proposals meet the requirements of ESD policies 2, 4 and 5.**

There are a few small areas where further clarification or commitment can be made with regard to ESD 3 policy requirements. These include:

* Commitment to using sustainably sourced materials
* Commitment to using locally sourced construction materials
* Details of how the design utilises open space and orientation to reduce energy demand and solar gains

**The proposals broadly meet the requirements of ESD policies 1 and 3, although further details and/or a planning condition is recommended. Reference should also be made to the recommendations made in the Great Wolf Park Lodge Water Review Report regarding clarifications and justifications on water use.**

1. Carbon savings are calculated by comparing the energy efficiency, reduction and renewable measures proposed for the development against a ‘notional’ building which includes heat pumps as opposed to conventional systems (e.g. gas-fired boilers) – the ‘base case’. Given the use of heat pumps in the notional building, savings may appear to be lower than they would be if compared to a traditional notional building (the ‘base case’). [↑](#footnote-ref-2)
2. These are considered to be more demanding as they are more recently developed, compared to Part L which date to 2013. The developments in carbon technology and standards are more stringent, making the SAP 10 carbon factors more realistic. However, they are still in draft form and are not yet widely in force (although they are in London under GLA Guidance since 2019). [↑](#footnote-ref-3)