HODKINSON

Bellway Homes Limited

Sustainability Statement

Southern Gas Network Belvedere Holders Stations, Yarnton Way, DA17 6JP

Final

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ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

Executive Summary

The purpose of this Sustainability Statement is to demonstrate that the proposed development at Southern Gas Network Belvedere Holders Stations by Bellway Homes Limited in the London Borough of Bexley is considered sustainable, as measured against relevant local, regional and national planning policies.

The proposed development will comprise redevelopment of the site to provide residential units including affordable housing (Use Class C3) and commercial floorspace (Class E) in new buildings ranging between 3 to 5 storeys in height, together with associated car parking and cycle storage, landscaping including new areas of public open space and a reptile retention zone, associated infrastructure including new junctions off Yarnton Way, drainage and land raising.

Through the incorporation of sustainable design and construction methods, energy and water saving measures, sustainable transport methods, waste reduction techniques and measures to enhance the ecological value of the site, a good quality and sustainable development is proposed.

The key sustainability features outlined in this Sustainability Statement are listed below:

- **BREEAM:** All commercial units will be designed and built to achieve a BREEAM 'Very Good' rating under the New Construction 2018 scheme.
- **Energy efficiency:** The proposed development will deliver a 98% reduction in overall CO_2 emissions over the Part L 2021 baseline through energy efficiency measures such as connecting to an existing heat network and solar PV.
- **Overheating:** The scheme has been designed to ensure overheating risk is reduced to acceptable levels in accordance with CIBSE TM59:2017 requirements.
- **Water efficiency:** Flow control devices and water efficient fixtures and fittings will be installed in all dwellings to target a maximum internal daily water consumption of 105 litres/person/day.
- **Waste and recycling:** Adequate facilities will be provided for domestic and construction related waste, including segregated bins for refuse and recycling.
- **Circular Economy:** The principles of a circular economy shall be incorporated into the development, where possible.
- **Materials:** Where practical, new building materials will be sourced locally to reduce transportation pollution and support the local economy. New materials will be selected based on their environmental impact and responsible suppliers will be used where possible.
- **Pollution:** Acceptable air and noise quality levels will be achieved on site with proper mitigation measures.

- **Flood Risk and Sustainable Urban Drainage Systems (SuDS):** The proposed development site lies in a high flood risk zone but will benefit from flood defences and SuDs such as ponds, attenuation tanks, permeable paving.

- **Security:** Consultation with a Security Specialist will take place to ensure the development is safe and secure for its residents.

- **Sound insulation:** The dwellings are to target an improvement on Building Regulations Part E through party walls and floors.

- **Inclusive access:** 90% of the new dwellings will be designed to meet Building Regulations Approved Document M4(2) and 10% will meet Part M4(3).

- **Sustainable transport:** The site will benefit from close proximity to the Belvedere railways station and sustainable modes will be encouraged through the provision of 728 cycle storage spaces.

- **Biodiversity and ecology:** Enhancements will be implemented through the provision of landscaped areas, a 'Tiny Forest' and additional tree and shrub planting across the site.

- **Sustainable construction:** The site will aim to achieve a Very Good score with the Considerate Constructors Scheme and will closely monitor construction site impacts.

CONTENTS

1. INTRODUCTION

1.1 This Sustainability Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Bellway Homes Limited.

1.2 This Statement sets out the sustainable design and construction measures included in the planning application for the proposed development at Southern Gas Network Belvedere Holders Stations in the London Borough of Bexley.

Sustainability Statement Structure and Methodology

1.3 The formulation of the Sustainability Strategy for the proposed development has taken into account several important objectives, including:

> To address all national, regional and local planning policies and requirements;

> To achieve a viable reduction in CO_2 emissions with an affordable, deliverable and technically appropriate strategy;

> To provide a high quality development that is adaptable to future changes in climate;

> To minimise the negative impact of the proposed development on both the local and wider climate and environment;

> To achieve the highest viable levels of sustainable design and construction;

> To minimise emissions of pollutants such as oxides of nitrogen and particulate matter; and

> To create a pleasant, safe and friendly working and living environment that will be flexible to its occupants' needs.

1.4 This Sustainability Statement does not duplicate the work of the technical reports prepared in support of the application, but presents the findings in the overall context of sustainability.

1.5 **Chapter 2** provides an introduction to the site and the proposed development. **Chapter 3** sets out the relevant national, regional and local policy documents which have been used to guide and inform the sustainability strategy for the proposed development.

1.6 **Chapters 4 to 15** outline the sustainability strategy of the proposed development in relation to the policy documents listed in Chapter 3. **Chapter 16** provides a summary of the key sustainability features associated with the proposed development.

2. DEVELOPMENT OVERVIEW

Site Location

2.1 The proposed development site at Southern Gas Network Belvedere Holders Stations in the London Borough of Bexley is shown in Figure 1 below. Please note, the eastern gas holder is now removed.

Figure 1: Site Location – Map data © 2023 Google

Proposed Development

2.2 The proposed development is described as follows:

"Redevelopment of the site to provide residential units including affordable housing (Use Class C3) and commercial floorspace (Class E) in new buildings ranging between 3 to 5 storeys in height, together with associated car parking and cycle storage, landscaping including new areas of public open space

and a reptile retention zone, associated infrastructure including new junctions off Yarnton Way, drainage and land raising."

2.3 Figure 2 below illustrates the proposed site layout.

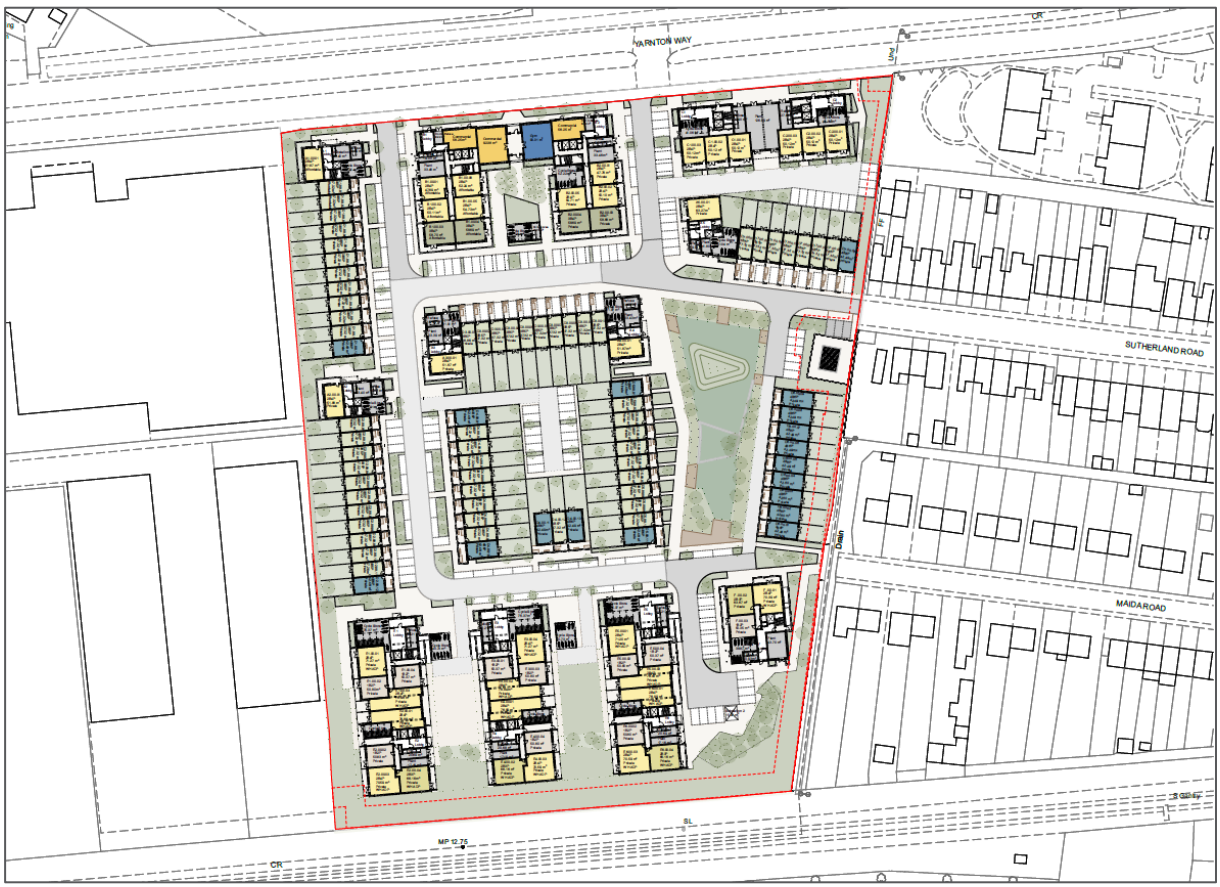


Figure 2: Proposed Site Layout – Stockwool (August, 2023)

3. RELEVANT PLANNING POLICY

3.1 The following planning policies and requirements have informed the sustainable design of the proposed development.

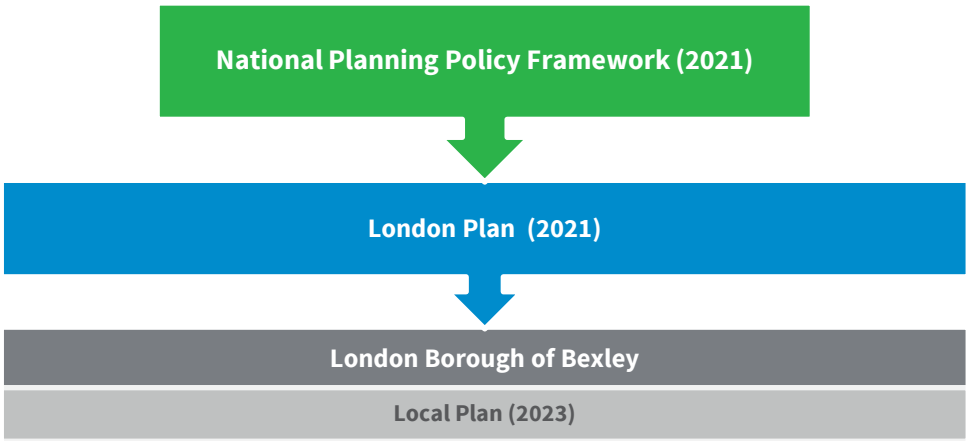


Figure 3: Relevant Planning Policy Documents

National Policy: NPPF

3.2 The revised National Planning Policy Framework (NPPF) was published on the 20th July 2021 and sets out the Government's planning policies for England.

3.3 The NPPF provides a framework for achieving sustainable development, which has been summarised as "*meeting the needs of the present without compromising the ability of future generations to meet their own needs*" (Resolution 42/187 of the United National General Assembly). At the heart of the framework is a **presumption in favour of sustainable development**.

3.4 The document states that the planning system has three overarching objectives which are interdependent and need to be pursued in mutually supportive ways:

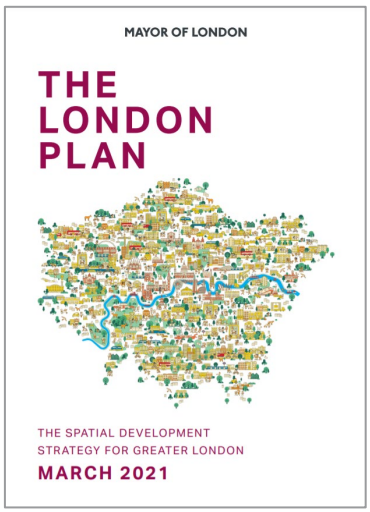
a) **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) **An environmental objective** – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Regional Policy: The London Plan

The London Plan (2021)



3.5 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

3.6 **Policy G5 Urban Greening** states that urban greening should be included as a fundamental element of site and building design by incorporating measures such as landscaping, green roofs, green walls and nature-based sustainable drainage. Boroughs should develop an Urban Greening Factor and in the interim, the Mayor recommends a target score of 0.4 for residential development 0.3 for commercial development.

3.7 **Policy SI1 Improving Air Quality** states that development should seek opportunities to identify and deliver further improvements to air quality. Where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site.

3.8 **Policy SI2 Minimising Greenhouse Gas Emissions** states that major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand.

3.9 **Policy SI3 Energy Infrastructure** states that energy masterplans should be developed for large-scale development locations which establish the most effective energy supply options.

3.10 **Policy SI4 Managing Heat Risk** states that major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the cooling hierarchy.

3.11 **Policy SI5 Water Infrastructure** states that in order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner. Development proposals should minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development) achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption).

Commercial development should achieve at least the BREEAM excellent standard for the 'Wat 01' category.

3.12 **Policy SI7 Reducing Waste and Supporting the Circular Economy** states that referable applications should promote circular economy outcomes and aim to be net zero-waste.

3.13 **Policy T2 Healthy Streets** states that development should deliver patterns of land that facilitate residents making shorter, regular trips by walking or cycling. Development Plans should demonstrate the application of the Mayors Healthy Streets Approach.

Local Policy: London Borough of Bexley

3.14 The London Borough of Bexley's Local Plan document was adopted in April 2023. It outlines how the Council will seek to achieve the principles of sustainable development. The following policies are considered relevant to this Statement:

3.15 **Policy SP5 - Placemaking through good design** states that the Council will seek to ensure that:

> All development within the borough is of high quality design and contributes positively to the local environment;

> Design enhances social cohesion and health and wellbeing, and considers the principles of inclusive and active design, in order to support good physical and mental health; and

> Design considers the relationships between building and spaces, including its contribution to shaping the public realm.

3.16 **Policy SP8 - Green infrastructure including designated Green Belt** states that Bexley's green infrastructure, including open spaces and waterways, will be protected, enhanced, restored, and promoted as valuable resource to provide a health integrated network for the benefit of nature, people, and the economy.

3.17 **Policy SP9 - Protecting and enhancing biodiversity and geological assets** states that the Council will protect and enhance biodiversity and geodiversity assets by:

> Resisting development that will have a significant adverse impact on the population or conservation status of protected priority species;

> Protecting and enhancing the natural environment, seeking biodiversity enhancements, net gains for biodiversity, and improved access to nature, particularly in areas of deficiency;

> Investigating opportunities to involve the wider community in biodiversity or geodiversity restoration and enhancement through projects;

> Ensuring landscaping schemes in development proposals use native plant species of local provenance; and

> Seeking opportunities to provide for greening of the built environment.

3.18 **Policy DP20 - Biodiversity and geodiversity in developments** states that development proposals will only be permitted when it can be demonstrated that:

> A strict approach to the mitigation hierarchy has been taken and all unavoidable impacts on biodiversity can be justified;

> Completion of the development will result in a measurable long-term net gain for biodiversity, as demonstrated through the application of an acceptable method of measurement and/or impact assessment;

> Biodiversity enhancement measures and where appropriate mitigation measures have been incorporated within the design, layout, and materials used in the built structure and landscaping;

> Opportunities to help connect and improve the wider ecological network, wildlife corridors, and steeping stones for wildlife have been taken by creating linkages through the development site;

> Deficiencies in access to nature conservation are reduced; and

> Opportunities to increase wildlife aesthetic value and visual connections with important features have been considered.

3.19 **Policy DP21 - Greening of development sites** states that development proposals should set out what measures have been taken to achiever urban greening on site and should quantify what urban greening factor score has been achieved. Development proposals will be required to provide a high standard of landscape design, having regard to the well-being, water, wildlife, and character of the surrounding area, ensuring sustainable planting for the long term and be supported by appropriate management and maintenance measures.

3.20 **Policy DP22 - Sustainable transport** states that the Council will expect to see measures in all development proposals that facilitate and promote walking, cycling, public transport and shared mobility. Development proposals should incorporate the following:

> Identify and implement accessible, safe, and convenient direct walking to Town Centres, transport nodes, and other key destinations;

> Provide secure, integrated, convenient, and accessible cycle parking facilities in line with the standard set out in the London Plan;

> Provide on-site changing facilities, including lockers and shower for cyclists;

> Ensure good access to public transport networks;

> Ensure direct, safe, accessible, and pleasant walking routes to stops;

> Provide electric vehicle charging infrastructure in line with the London Plan minimum; and

> Provide spaces for car clubs/pool cars, to be made publicly available, where possible.

3.21 **Policy DP23 - Parking management** states that the Council will seek to balance the need for parking and the environmental, economic and social impacts of traffic movement and parked vehicles and therefore provide parking within the lowest applicable maximum set out in the London Plan.

3.22 **Policy DP24 - Impact of development on the transport network** states that proposals that reduce the need to travel and improve access to sustainable modes of transport will be supported.

3.23 **Policy SP12 - Sustainable waste management** states that in new development, the Council will ensure that waste is managed in ways that protect human health and the environment and will follow the principles of the circular economy by applying the waste hierarchy. The Council will support waste management by:

> Implementing the waste hierarchy in its approach to future waste management;

> Meeting its waste apportionments and other requirements, such as the Mayor's recycling or composting targets; and

> Supporting the development of the circular economy by encouraging waste and construction industries to: (a) make resource use more efficient; (b) reduce the production of waste; (c) maximise the recycling of waste; and (d) identify alternative business models.

3.24 **Policy DP26 - Waste management in new development** states that all proposals for major development should promote circular economy outcomes and aim to be net-zero waste. Applications should include a circular economy statement. Residential proposals should ensure:

> There is adequate space within each flat/apartment for the temporary storage of waste generated allowing for the separate storage of recyclable materials;

> There is adequate communal storage for waste;

> Storage and collection systems are of high quality design and are incorporated in a manner which will ensure there is adequate and convenient access for all resident and waste collection operatives; and

> Measures are incorporated to manage impacts on amenity including those that may be caused by odour, noise, and dust;

> The proposal is accompanied by a recycling and waste management strategy that considers above matters and demonstrates the ability of the new development to meet local authority waste management recycling targets.

3.25 **Policy DP28 - Contaminated land and development** states that where development is proposed on contaminated land or potentially contaminated land, a desktop study and site investigation, including appropriate proposals for remediation will need to be carried out.

3.26 **Policy SP14 - Mitigating and adapting to climate changes** states that the Council will pursue the delivery of sustainable development by:

> Supporting developments that achieve net-zero carbon and demonstrate a commitment to drive down greenhouse gas emissions to net zero;

> Investigating opportunities for the funding and development of decentralised energy networks in the borough, and supporting the provision of infrastructure;

> Supporting new and enhanced green infrastructure including greening of development sites such as living roofs and the contribution green infrastructure can make to managing flood risk and surface water and to the mitigation of the urban heat island effect;

> Supporting integrated water management through a coordinated and holistic approach to land a water management;

> Applying the recommendation of Bexley's Strategic Flood Risk Assessment, Local Flood Risk Management Strategy, and Integrated Water Management Strategy; and

> Following the sequential approach to flood risk management advocated in the national planning policy.

3.27 **Policy DP30 - Mitigating climate change** states that major development proposals must:

> Meet the London Plan requirements and calculate whole life-cycle carbon emissions through a national recognised Whole Life Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions;

> All new non-residential development over 500m^2 of floor space must meet or exceed BREEAM 'Excellent' rating; and

> Be designed to be water efficient and reduce water consumption. Residential development must not exceed a maximum water use of 105 litres/person/day (excluding the allowance of up to 5 litres for external water consumption).

3.28 **Policy DP21 - Energy infrastructure** states that development within heat network priority areas should be designed to facilitate cost-effective connections into the existing or proposed network in accordance with the London Plan.

3.29 **Policy DP32 - Flood risk management** states that development must not increase flood risk on-site or off-site, and exceedance flows must be considered and appropriately managed.

3.30 **Policy DP33 - Sustainable drainage systems** states that all development proposals will be required to manage surface water through sustainable drainage systems (SuDS) in line with all national, regional, and local policies in order to minimise flood risk, improve water quality, and enhance biodiversity and amenity.

4. BREEAM SUMMARY

4.1 In accordance with Policy DP30 of London Borough of Bexley's Local Plan, the commercial units within the proposed development will be assessed under the BREEAM New Construction 2018 assessment with a target of achieving the required 'Very Good' rating.

4.2 A full BREEAM Pre-Assessment has been presented in **Appendix A** and provides an illustrative route to achieving the 'Very Good' rating. The predicted score at this stage is 59.81%, where a 'Very Good' score is ≥55% and an 'Good' score is ≥45%. This represents a high level of sustainable design and construction.

4.3 The principles and requirements of many of the individual credits feature throughout this Sustainability Statement, where appropriate, however the mandatory credits for BREEAM 'Very Good' are listed as follows:

> **Wat 02: Water Monitoring** – A water meter is to be provided on the mains water supply which should have a pulsed output connected to a Building Management System (BMS).

> **Mat 03: Responsible Sourcing** – All timber used on the project must be sourced in accordance with the UK Government's Timber Procurement Policy.

4.4 Whilst this has been determined as the most appropriate route to certification, the actual route to certification may vary as the detailed design progresses.

5. ENERGY AND CO_2 REDUCTION

Energy Strategy

5.1 An Energy Statement has been prepared by Hodkinson Consultancy (August, 2023) and is submitted as part of this planning application. A summary of this statement has been outlined as follows however this document should be referred to for greater detail.

5.2 The energy strategy has been formulated following the current London Plan Energy Hierarchy: ***Be Lean, Be Clean, Be Green*** and ***Be Seen***. The overriding objective in the formulation of the strategy is to maximise the reductions in Regulated CO_2 emissions through the application of this Hierarchy with a cost-effective, viable and technically appropriate approach.

5.3 The site will deliver an overall CO_2 reduction of 98% over the Part L 2021 baseline. This is achieved through the following measures:

> Energy efficient lighting and appliances;

> Enhanced fabric specification;

> Connection to an existing heat network (Cory Riverside Heat Network); and

> Solar PV on the roofs of the flats.

5.4 Please refer to the full Energy Statement for further detail.

Lighting

5.5 All external lighting, and any security lighting, will be energy efficient and adequately controlled using PIR sensors, daylight cut-off sensors or time switches where possible. This will ensure the conservation of energy when the lighting is not in use.

Appliances

5.6 Where applicable, energy efficient white goods will be provided. The purchasing of energy efficient white goods will also be promoted through the provision of information on the EU Labelling Scheme contained within the Home Information Manual.

Energy Efficient Lifts

5.7 All lifts will be designed to have the following energy efficient features:

> A stand-by function during off-peak periods;

> Lighting with an average lamp efficacy of >55 lamp lumens/circuit Watt which will switch off once lift left idle; and

> A drive controller capable of variable speed, voltage and frequency.

Energy Monitoring

5.8 Energy display devices, which can monitor electricity and primary heating fuel consumption, will be provided to each of the dwellings. This can empower the occupants to be more aware of their usage and therefore make energy and cost savings, where possible.

6. WATER REDUCTION

Internal Water Efficiency

6.1 Increased frequency of drought across Europe lines up with climate change projections and water companies in the UK capture much less rain for our use than people assume.

6.2 The Environment Agency updated their determination of areas of water stress in 2021[1]. The water stress method takes a long-term view of the availability and the demand for public water supply, rather than a snapshot of shorter or peak periods. It accounts for future population growth, climate change, environmental needs and increased resilience. As of 2021, 15 out of the 23 water companies operating in areas of England were classified as being under 'serious' stress, including Thames Water where the site is located. This indicates the need to reduce internal water use where possible and specify water efficient fixtures and fittings in new development.

6.3 Reducing water consumption will not only help to preserve our water sources but will also save energy. Approximately 15% of a typical gas-heated household's heating bill is from heating water for showers, baths and taps and the energy used to heat water for devices and appliances emits an average of 875 kg of CO_2 per household per year (Energy Saving Trust, 2013). As such, internal water consumption will be significantly reduced through the use of practical and hygienic water saving measures.

[1] https://www.gov.uk/government/publications/water-stressed-areas-2021-classification

Residential Water Use

6.4 All new dwellings will target a minimum water efficiency standard of **105 litres/person/day** in accordance with Policy DP30 of the London Borough of Bexley's Local Plan and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day). An evaluation of the proposed fixtures and fittings will be undertaken during the detailed design however an illustrative strategy to achieve this water target is set out in the Water Efficiency Calculator in **Appendix B.**

Leak Detection and Prevention

6.5 Another method of reducing water consumption is to ensure that water leaks do not go undetected. In accordance with the BREEAM Assessment, a leak detection system may be installed which will be capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter.

Water Metering

6.6 In accordance with the BREEAM Assessment, a water meter with a pulsed output will also be installed on the mains supply. This will allow the water consumption of the development to be monitored and managed and therefore encourage reductions.

7. WASTE MANAGEMENT

7.1 Waste reduction and recycling is another key challenge of sustainable development and something which is strongly encouraged in the London Plan (Policy SI7). The waste hierarchy, illustrated in Figure 4 below, prioritises those waste management options which are best for the environment.

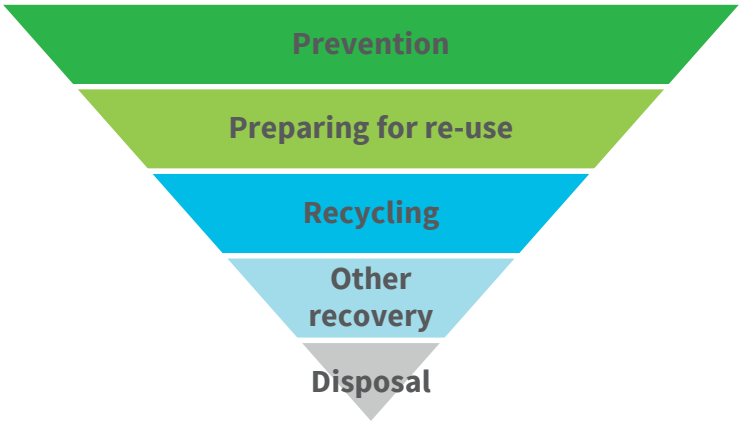


Figure 4: Waste Hierarchy

7.2 The waste hierarchy establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing it for re-use, then recycling, recovery and lastly disposal (e.g. landfill).

Construction Waste

7.3 The reduction of construction waste not only minimises environmental impacts through ensuring the responsible use of resources and waste disposal but can also significantly reduce construction costs for the developer.

7.4 Prior to demolition, Bellway Homes Limited will undertake a pre-demolition audit as part of the BREEAM assessment to determine if refurbishment or reuse is feasible and, if not, to maximise the recovery of material from demolition.

7.5 Prior to construction, Bellway Homes Limited will develop a Site Waste Management Plan which will establish ways of minimising waste at source, assess the use, reuse and recycling of materials on and off-site and prevent illegal waste activities. This plan will then be disseminated to all relevant personnel on and off-site.

7.6 The following waste minimisation actions will be considered:

> Consider opportunities for zero cut and fill to avoid waste from excavation or groundworks;

> Design for standardisation of components and the use of fewer materials;

> Design for off-site or modular build;

> Return packaging for reuse;

> Consider community reuse of surplus materials or offcuts; and

> Engage with supply chains and include waste minimisation initiatives and targets in tenders and contracts.

7.7 As part of their commitment to divert construction waste from landfill, Bellway Homes Limited will regularly monitor and record the site's waste reduction performance. This will be compared against a target benchmark where at least 85% (by volume) of non-hazardous waste is to be diverted from landfill.

Household Waste

7.8 Bellway Homes Limited is committed to following the above waste hierarchy and reducing waste sent to landfill. As such, adequate storage is to be provided at ground floor level on all the blocks, where both recyclable and non-recyclable waste can be stored in accordance with London Borough of Bexley's waste collection service.

7.9 In addition, space will be provided for segregated recycling waste bins within the kitchen areas. This will involve the installation of recycling bins, where waste can be segregated into paper, glass, cans, plastic and cardboard, if necessary.

Organic Waste

7.10 Adequate internal and external food and garden waste storage will be provided in accordance with the London Borough of Bexley's collection service.

Commercial Waste

7.11 Adequate space for the segregation and storage of commercial waste and recycling will be provided in designated communal stores at ground floor level. This space will meet the following BREEAM requirements:

> Bins will be clearly labelled to assist with waste segregation, storage and collection;

> The stores will be accessible to building occupants and facilities operators; and

> The storage will be of a capacity that is appropriate to the building's type, size and predicted volumes of waste.

8. CIRCULAR ECONOMY

8.1 Current and future trends point toward the need for a fundamental shift in the way resources are consumed. A shift to a circular economy will provide considerable economic opportunities as a result.

8.2 In contrast to a linear economy (take, make, dispose), a circular economy keeps products and materials circulating through the system at their highest value for as long as possible, through re-use, recycling, refurbishment and remanufacturing. As 60% of total UK waste is generated from construction, demolition and excavation (Defra and Government Statistical Service, 2019) this transition from linear to circular is essential.

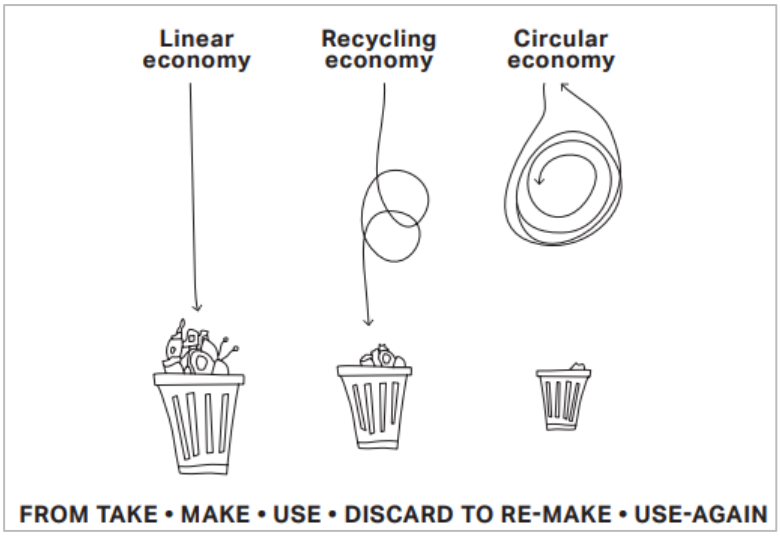


Figure 5: Linear, Recycling and Circular Economies (GLA, 2019)

8.3 The circular economy refers to a state whereby resources are kept in a continuous cycle of use so that:

> Virgin resources are no longer extracted;

> Existing products, once used, are reused or recycled to make new products without loss of value; and

> No resources are disposed of and no value is lost.

8.4 The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental change in the way that buildings are designed, built, operated, and deconstructed.

8.5 Applying circular economy thinking to the built environment is complex, with many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole system approach that should be applied on every project. These are as follows:

> Conserve resources and source ethically;

> Design to eliminate waste (and for ease of maintenance); and

> Manage waste sustainably and at the highest value.

8.6 Bellway Homes Limited will adopt these three core principles in order to significantly reduce the amount of raw and new materials required for the development. Alongside this, a reduction in vehicle movements, air pollution, noise and greenhouse gas emissions will also be beneficial.

8.7 Please refer to the full Circular Economy Statement (Hodkinson Consultancy, August 2023) submitted alongside this application for further detail.

9. MATERIALS

Environmental Impact

9.1 New building materials will be selected, where possible, to ensure that they minimise environmental impact and have low embodied energy – from manufacture, transportation and operational stages, through to eventual demolition and disposal.

9.2 All insulation materials will have an Ozone Depleting Potential (ODP) of zero and a Global Warming Potential (GWP) of less than 5. In addition, all decorative paints and varnishes will meet the relevant standards in order to reduce the emission levels of volatile organic compounds (VOCs).

Local and Responsible Sourcing

9.3 Preference will be given to the use of locally sourced materials and local suppliers, where viable. This will benefit the local economy as well as having environmental benefits through reduced transportation.

9.4 The main building materials will be responsibly and legally sourced from manufacturers with environmental management systems and/or responsible sourcing credentials, such as BES 6001.

9.5 Timber used on site, including timber used in the construction phase, such as hoarding, fencing and scaffolding, will be sourced from sustainable forestry sources (e.g. PEFC and FSC) where possible.

Recycled Materials

9.6 Where feasible, Bellway Homes Limited will commit to using materials that have been recycled. The use of recycled materials (e.g. crushed concrete from waste, used for hard-standing) has less embodied energy impact, other than that expended in their processing or transport.

Life Cycle Impacts

9.7 Whole Life Cycle Carbon Emissions (WLCCE) are the carbon emissions resulting from the construction and the use of a building over its entire life, through four stages described as life-cycle modules;

> Module A1 – A5 (product sourcing and construction);

> Module B1 – B7 (use);

> Module C1 – C4 (end of life);

> Module D (benefits and loads beyond the system boundary).

9.8 A full Whole Life Cycle Carbon Assessment has been undertaken for the planning application, please refer to the report by Hodkinson Consultancy (August 2023).

Designing for Durability and Resilience

9.9 Appropriate durability and protection measures will be incorporated in vulnerable parts of the internal and external building so as to minimise the frequency of replacing materials and therefore optimising material use. These measures are likely to include:

> Bollards and barriers to delivery areas;

> Hard-wearing floor finishes; and

> Kick plates on doors.

10.POLLUTION

Noise Pollution

10.1 Bellway Homes Limited are committed to reducing noise disturbance to internal and external areas of dwellings to improve the health and wellbeing of the occupants and to help protect community cohesion.

10.2 A Noise Assessment was undertaken by Ardent Consulting Engineers (August 2023). The assessment concluded that the facades in close proximity to Yarton Way and the railway line are considered to be at medium to high risk while all other facades are considered to low to medium risk. Glazing and ventilation should be used in noise sensitive areas.

10.3 The change in noise levels due to traffic generated during the operational stage of the proposed development have been compared to the suture baseline traffic flows. The change in noise level is negligible in all cases.

10.4 The Assessment concluded that the site is suitable for residential development subject to the recommendations outlined in the report. Please refer to the full Noise Assessment for further detail.

Reduction of Night Time Light Pollution

10.5 The external lighting strategy will be designed in accordance with the ILP Guidance notes for the reduction of obtrusive light (2011). All external lighting, except from security lighting, will be automatically switched off between the hours of 23:00 and 07:00. This will aim to ensure that lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

Air Quality

10.6 Poor air quality is the greatest environmental risk to public health in the UK and is known to exacerbate the impact of pre-existing health conditions. It is not only a major risk to human health, but it also has significant damaging impacts on both plants and animals.

10.7 Between 1990 and 2017, the UK's estimated emissions of nitrogen oxides reduced by 70%, and the estimated emissions of PM_{10} particulate matter reduced by 55% (DEFRA, 2018). This must continue to fall in future years. Bellway Homes Limited are committed to reducing the proposed development's negative impact on air quality during construction and operation.

10.8 An Air Quality Assessment was undertaken by Ardent Consulting Engineers (August 2023). During the construction phase, the Assessment found that there is the potential for dust and PM_{10}

impacts. An Air Quality and Dust Management Plan should be submitted prior to commencing works on site in order to reduce the impact on air quality to a level that is 'not significant'.

10.9 The proposed development is better than 'air quality neutral' in terms of building emissions and does not require mitigation measures. In terms of transport emissions, the proposed development is worse than 'air quality neutral' and requires the following mitigation measures:

> Implementation of the Travel Plan to promote walking, cycling, and public transport;

> The provision of extensive cycle parking; and

> The provision of electric vehicle charging.

10.10 Please refer to the full Air Quality Assessment for further detail.

Air Tightness and Ventilation

10.11 Air leakage is to be minimised and an air permeability of 10 $m^3/hr/m^2$ to 3 $m^3/hr/m^2$ or less for apartments and 10 $m^3/hr/m^2$ to 4 $m^3/hr/m^2$ or less for houses will be targeted.

10.12 It is proposed to install higher performance Mechanical Ventilation with Heat Recovery (MVHR) systems to all apartments to assist in background ventilation, including peak lopping units in ground floor and high noise risk units.

11. FLOOD RISK & SURFACE WATER RUN-OFF

Flood Risk

11.1 According to the Flood Risk Assessment by Ardent Consulting Engineers (August 2023) and the Environment Agency's Flood Map shown in Figure 6 below, the proposed development lies in a high risk flood zone (Flood Zone 3). However, the site is protected by a series of flood defences along the River Thames.

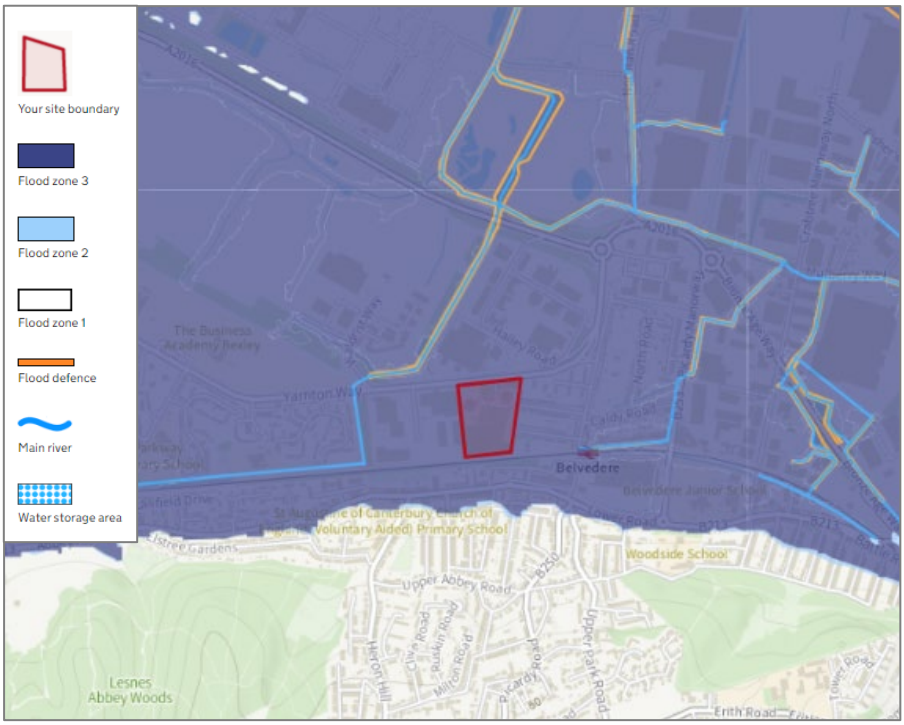


Figure 6: Environment Agency Flood Map – https://flood-map-for-planning.service.gov.uk

Sustainable Drainage Systems

11.2 Sustainable drainage systems (SuDS) can deliver multiple benefits which broadly fit into four categories: water quantity, water quality, amenity and biodiversity, shown in Figure 7 below. The overarching principle of SuDS design is that surface water runoff should be managed for maximum benefit.

11.3 Long term environmental and social factors must be included in decisions regarding sustainable drainage. Sustainable drainage takes account of the quantity and quality of runoff, and the amenity and aesthetic value of surface water in the urban environment.

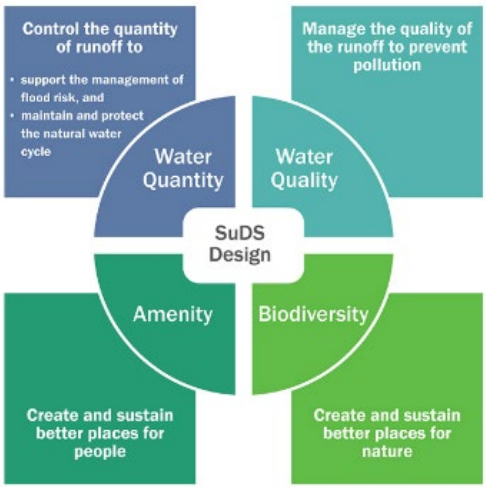


Figure 7: The four 'pillars' of SuDS – CIRIA SuDS Manual (2015)

11.4 The following listed SuDS are proposed. These will not only help to attenuate surface water but will provide the necessary water treatment.

> **Living roofs** will help to intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows.

> **Feature ponds** will provide both stormwater attenuation as well as treatment using bacteria and sunlight to break down pollutants before the water eventually flows into downstream watercourses.

> **Geo-cellular storage** will be used to control and retain excess surface water run-off until it can infiltrate into the ground naturally.

> **Permeable paving** will allow rainwater to infiltrate downwards and be temporarily stored before infiltration to the ground, reused or directed towards the cellular attenuation tanks.

11.5 The proposed Drainage Strategy (Ardent Consulting Engineers, August 2023) will reduce the runoff from the site greenfield rates in line with the London Plan, reducing the risk of surface water flooding in the area of and surrounding the site. The surface water drainage arrangements will be sized to accommodate storm water flows for rainfall events up to and including the 1 in 100 year plus 40% climate change event with flows to the Thames Water sewer network restricted to greenfield rates. Therefore, the proposed surface water drainage strategy is considered robust and does not increase flood risk on or off-site. Please refer to the drainage strategy for further detail.

12. BUILDING QUALITY

Security

12.1 Bellway Homes Limited are committed to ensuring the development is safe and secure for the occupants; reduce the risks and costs associated with crime; and improve occupiers' quality of life by reducing the fear of crime.

12.2 As such, the proposed development will be aiming to incorporate the principles of Secured by Design where appropriate. This may involve consultation with a Security Consultant during the detailed design stage.

Sound Insulation

12.3 In order to reduce the likelihood of noise complaints and to ensure a high quality development is created, the development will be aiming to achieve airborne sound insulation values that will improve upon the performance standards outlined within the Building Regulations for England and Wales, Approved Document E.

Inclusive Design

12.4 Bellway Homes Limited's commitment to inclusivity will ensure that the proposed development is scaled appropriately so as to respond to the needs of all its users. They will endeavour to incorporate the requirements of the Equality Act (2010) into their design, making reasonable adjustments to enable disabled access, regularly reviewing whether the buildings are accessible and effective, and providing necessary design adjustments where it is practical to do so.

12.5 In addition, 90% of the new dwellings will be designed and built to Building Regulations Approved Document M4(2) standards, with 10% to Part M4(3) in accordance with London Plan Policy D7. These standards will ensure accessible and adaptable accommodation for everyone; young families, older people, individuals with a temporary or permanent physical impairment, and allow residents to stay in their home despite developing disabilities. They also enable flexibility, visitability (facilitating ease of visiting access to the homes by everyone, regardless of mobility or disability) and future-proofing i.e. the accommodation will be adaptable and able to respond to changing technological and environmental conditions.

Daylight and Sunlight

12.6 The promotion of good daylighting levels contributes to sustainability through improving the occupant's quality of life and reducing the building's energy consumption by minimising the need for artificial lighting.

12.7 A Daylight and Sunlight Assessment was undertaken by EB7 (August 2023). The Assessment concluded that there will be an excellent level of compliance with the BRE guidelines for internal daylight. Where levels do fall short, these are predominantly to windows set beneath balconies or units which are orientated outside of 90° of south. Please refer to the full report for further detail.

Visual Comfort

12.8 All external lighting will be designed in accordance with BS5489-1:2013 'Code of practice for the design of road lighting' and will provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately.

Overheating

12.9 Minimising the risk of summer overheating and high uncontrollable temperatures is important so as to ensure that homes are comfortable for their occupants and remain comfortable in the future. Bellway Homes Limited commits to ensuring that all dwellings will not have a high risk of summer overheating and will adopt appropriate measures to ensure this is delivered.

12.10 A Dynamic Overheating Assessment of representative units across the proposed scheme has been undertaken by Hodkinson Consultancy (August 2023). The analysis has been undertaken in line with the Greater London Authority's guidance on preparing energy assessments and the Cooling Hierarchy in Policy SI4 of the London Plan (2021).

12.11 The representative units tested demonstrate an acceptable level of overheating based on the London Plan Cooling Hierarchy and CIBSE TM59:2017 criteria. The results were based on some key design features:

> Efficient building fabric and air tightness standards;

> Solar control glazing with a G-value ranging from 0.40 – 0.30;

> Eternal shading provided by balcony overhangs;

> Energy efficient design of building services;

> Concrete floor slab between dwellings in apartment blocks;

> Openable windows used as the primary means of ventilation; and

> Background mechanical ventilation rate in line with minimum Part F.

13. TRANSPORT AND LOCAL AMENITIES

Sustainable Transport

13.1 Sustainable transport links are central to the sustainability debate. They provide a positive contribution to environmental, societal and economic sustainability of the places they serve.

13.2 The provision of alternative sustainable transport options and associated facilities reduces dependency on traditionally fuelled cars and has the following benefits:

> Encourages active travel and helps improve people's health and wellbeing;

> Reduces congestion and encourages clean travel which helps to improve the air quality of the local area; and

> Provides cost savings compared with maintaining and running traditionally fuelled cars.

13.3 A Transport Assessment was undertaken by Ardent Consulting Engineers (August 2023). The Assessment concluded that a modest increase of people utilising public transport and additional vehicular traffic would not lead to severe impact on the local highway. Please refer to the full Assessment for further detail.

Local Amenities

13.4 The proposed development has access to the following key amenities in the local area which will help to reduce dependency on private transport:

> Administrative services (e.g. post office, banks and cash points);

> Health services (e.g. GP practices, health centres and pharmacies);

> Small/large scale retail services (e.g. shops and restaurants);

> Recreation and leisure facilities (e.g. sports centres and cinemas); and

> Education and community facilities (e.g. nurseries, schools and community centres).

Public Transport

13.5 The site is well located within close proximity to a number of transport links, such as:

> **Belvedere Rail Station** which provides access to Southeastern Railway services;

> **Local bus services** within the immediate vicinity of the site, providing frequent trips in all directions.

Cycle Parking

13.6 Encouraging cycling not only makes a positive contribution to health and well-being, but also reduces pressure on existing transport systems in accordance with Policy T5 of the London Plan.

13.7 The proposed development will provide 728 cycle spaces for residents and 17 spaces for visitors, exceeding the maximum requirements. Of the long-stay spaces, 150 spaces are associated with the houses and will include individual cycle parking facilities within the plot boundary. The remaining 577 spaces are associated with the flats and will be provided within secure communal cycle stores at each block.

Car Parking

13.8 A total of 157 car parking spaces are to be provided across the development. Eleven spaces are to be for disabled use and 1 space is proposed for Car Club use, with the potential to increase this provision to 3 if demand were to arise.

13.9 Car Club schemes contribute to the sustainability of the scheme as they reduce the need for car ownership and discourage unnecessary car travel. In addition, car club vehicles are usually energy efficient and cleaner than the average car which helps to further reduce emissions.

Travel Plan

13.10 A Travel Plan was developed by Ardent Consulting Engineers (August 2023). Transport for London define a Travel Plan as a ‘long term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed’.

13.11 The following measures have been proposed:

> Appointment of a Travel Plan Coordinator;

> Provision of Travel Information Packs to each residential/commercial unit to promote the existence of alternative modes of transport;

> Promotion of walking and cycling by ensuring suitable pedestrian/cycle route linked are provided and negotiating discounts for residents and employees on the purchase of bikes and equipment with local cycle outlets;

> Promotion of public transport service through liaison with local providers and vouchers that promote sustainable travel;

> Provision of travel information through a travel information board within communal areas;

> Vehicular/cycle parking management that will be regularly monitored; and

> Encouraging residents to sign up for car share/car club schemes.

14. BIODIVERSITY AND ECOLOGY

Brownfield Site

14.1 The site has been previously used for development which is predominantly covered in hard standing and is therefore considered 'brownfield'. Redeveloping and revitalising vacant and under-used sites is supported by the NPPF.

Protection of Ecological Value

14.2 A Preliminary Ecological Appraisal was undertaken by Phlorum (August 2023). To protect existing biodiversity, a series of measures will be implemented to reduce any impact on local wildlife. These include the following:

> All site operatives to be made aware of current legislation, including the protection of certain species;

> Site clearance works to be timed to avoid the main bird nesting season. If this is not possible, a check should be carried out prior to the works to determine the presence of any active nests;

> Suitable fencing should be erected to reduce the possibility of any damage to established vegetation; and

> Native species, or species of known wildlife value, should be used for the proposed new planting

14.3 Please refer to the full report for further detail.

Enhancement of Ecological Value

14.4 Enhancing a site's ecological value not only helps to reduce a development's environmental impact but improves the health and wellbeing of the occupants through their interaction with the natural environment.

14.5 A Landscaping Strategy was produced by Macfarlane and Associates (August 2023). The strategy will include the following:

> Native tree planting in the open spaces and along the streets;

> Native shrub and wildflower planting across the site;

> Retention of established scrub; and

> Provision of a 250m^2 'Tiny Forest', which is a dense, fast-growing native woodland in the southern corner of the site.

Living Roofs

14.6 5,783m^2 of living roof is to be provided in order to meet Policy G5 of the London Plan. Living roofs have demonstrable sustainability benefits, including:

> Reduction in urban heat island effect (localised cooling through increased evaporation);

> Provision of ecological habitats for fauna and flora, particularly where these roofs can replicate pre-existing ecological conditions; and

> Reduction in surface water run-off.

15. SUSTAINABLE CONSTRUCTION

15.1 Sustainable construction involves the prudent use of existing and new resources and the efficient management of the construction process. This includes the following measures:

> Reducing waste during construction and demolition and sorting waste on site where practical;

> Reducing the risk of statutory nuisance to neighbouring properties as much as possible through effective site management;

> Controlling dust and emissions from demolition and construction; and

> Complying with protected species legislation.

Considerate Constructors Scheme

15.2 The development site will be registered with the Considerate Constructors Scheme. This is designed to encourage environmentally and socially considerate ways of working, to reduce any adverse impacts arising from the construction process. As commonly known, the Considerate Constructors Scheme aims are as follows:

> Respecting the community (includes appearance)

> Care for the environment;

> Value their workforce (includes site safety).

15.3 The site will target a Very Good score of at least 33 out of 50, with all three sections scoring at least eleven points.

Monitoring Construction Site Impacts

15.4 During the construction processes, control procedures will be put in place to minimise noise and dust pollution and roads will be kept clean. The management systems will generally comprise procedures and working methods that are approved by the development team together with commercial arrangements to ensure compliance.

15.5 Further to the above, additional measures will be adopted to minimise the impact on the local area during construction. This will include the limiting of air and water pollution in accordance with best practice principles, as well as the recording, monitoring and displaying of energy and water use from site activities during construction.

15.6 In terms of construction traffic, this will be minimised by restricting deliveries and arrival times in order to manage potential impacts on existing and future occupants. Work will be limited to appropriate hours to be agreed with the Council, and suppressors will be used to reduce noise from machinery.

16.CONCLUSION

16.1 The issue of sustainable development has been considered throughout the design of the proposed development at Southern Gas Network Belvedere Holders Station by Bellway Homes Limited in the London Borough of Bexley.

16.2 The key sustainability features outlined in this Sustainability Statement are listed below:

> **BREEAM:** All commercial units will be designed and built to achieve a BREEAM 'Very Good' rating under the New Construction 2018 scheme.

> **Energy efficiency:** The proposed development will deliver a 98% reduction in overall CO_2 emissions over the Part L 2021 baseline through energy efficiency measures such as connecting to an existing heat network and solar PV.

> **Overheating:** The scheme has been designed to ensure overheating risk is reduced to acceptable levels in accordance with CIBSE TM59:2017 requirements.

> **Water efficiency:** Flow control devices and water efficient fixtures and fittings will be installed in all dwellings to target a maximum internal daily water consumption of 105 litres/person/day.

> **Waste and recycling:** Adequate facilities will be provided for domestic and construction related waste, including segregated bins for refuse and recycling.

> **Circular Economy:** The principles of a circular economy shall be incorporated into the development, where possible.

> **Materials:** Where practical, new building materials will be sourced locally to reduce transportation pollution and support the local economy. New materials will be selected based on their environmental impact and responsible suppliers will be used where possible.

> **Pollution:** Acceptable air and noise quality levels will be achieved on site with proper mitigation measures.

> **Flood Risk and Sustainable Urban Drainage Systems (SuDS):** The proposed development site lies in a high flood risk zone but will benefit from flood defences and SuDs such as ponds, attenuation tanks, permeable paving.

> **Security:** Consultation with a Security Specialist will take place to ensure the development is safe and secure for its residents.

> **Sound insulation:** The dwellings are to target an improvement on Building Regulations Part E through party walls and floors.

- **Inclusive access:** 90% of the new dwellings will be designed to meet Building Regulations Approved Document M4(2) and 10% will meet Part M4(3).
- **Sustainable transport:** The site will benefit from close proximity to the Belvedere railways station and sustainable modes will be encouraged through the provision of 728 cycle storage spaces.
- **Biodiversity and ecology:** Enhancements will be implemented through the provision of landscaped areas, a 'Tiny Forest' and additional tree and shrub planting across the site.
- **Sustainable construction:** The site will aim to achieve a Very Good score with the Considerate Constructors Scheme and will closely monitor construction site impacts.

17.REFERENCES

> Greater London Authority (2021) The London Plan

> Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework. MHCLG: London

> HM Government (2016) The Building Regulations Approved Document L1A: Conservation of Fuel and Power. NBS: London

> Energy Saving Trust (2013) *At home with water*

> Department for Environmental Food and Rural Affairs (2018) *Air Pollution in the UK 2017*

APPENDICES

Appendix A

BREEAM New Construction 2018 Retail 'Very Good' Pre-Assessment

Appendix B

Water Efficiency Calculator

Appendix A

BREEAM New Construction 2018 Retail ‘Very Good’ Pre-Assessment

BREEAM 2018 TRACKER

Southern Gas Network Holders Stations, Yarnton Way, DA17 6JP, London Borough of Bexley

Project name & number	Southern Gas Network Belvedere Holders Stations, Yarnton Way, DA17 6JP	**BREEAM assessor**	Leah Bisson
Client	Bellway Homes Limited	**Project manager**	Zoe Croft
Local authority & postcode	London Borough of Bexley, DA17 6JR	**Rating required**	Very Good
Reason for BREEAM	For planning	**Building type**	Retail
Status of project	Pre Assessment	**Assessment scope**	Shell only
Development description	Commercial units on the ground floor of Block B, total floorspace 290 sqm.		

BREEAM assessment details	
Reference number	N/A
Scheme	New Construction 2018
Version	v6
GIFA (m^2)	290
Part L	2021

Target score
56.66%
Very Good

Awarded score
0.00%

BREEAM rating benchmarks	
Pass	≥ 30
Good	≥ 45
Very Good	≥ 55
Excellent	≥ 70
Outstanding	≥ 85

Meeting log

Date	Location	Key actions from DTM

BREEAM credits

Section	Available credits	Target credits	Section weighting	% credits targeted	Category score
Management	15	7	12.00%	46.67%	5.60%
Health & Wellbeing	8	3	7.00%	37.50%	2.62%
Energy	13	4	9.50%	30.77%	2.92%
Transport	12	8	14.50%	66.67%	9.66%
Water	3	3	2.00%	100.00%	2.00%
Materials	14	3	22.00%	21.43%	4.71%
Waste	10	7	8.00%	70.00%	5.60%
Land Use & Ecology	13	12	19.00%	92.31%	17.53%
Pollution	6	5	6.00%	83.33%	5.00%
Innovation	10	1	10.00%	10.00%	1.00%
Rating	**Very Good**				

Revision	Date	Revision details	Author	QA	PM sign off
v1	27.07.23	Planning Pre Assessment	LB	ZL	ZL
v2	18.08.23	Planning Pre Assessment	LB	ZC	ZC

Producing BREEAM Evidence:
- All pieces of information need to have a clear source for the audit trail i.e. company branding, name of author and date;
- The BRE require calculator tools to be completed for specific issues. These will be completed by the assessor once all information required for the calculation is provided;
- Drawings produced for BREEAM should be annotated to show how each criterion is met. Notes can be added directly to the drawing, or annotated by hand.

Hodkinson Consultancy can provide you with a wide range of templates to help demonstrate compliance. Your assessor will discuss these with you.

For best results please print this document in A3 format.

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BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
Management	Man 01	Project brief and design	Project delivery planning	RIBA 2	The project delivery stakeholders will meet to identify and define roles, responsibilities and contributions for each key phase of project delivery. The following will be considered: - End user requirements; - Aims of the design and design strategy; - Particular installation and construction requirements or limitations; - Occupiers' budget and technical expertise in maintaining any systems; - Maintainability and adaptability of the proposals; - Operational energy; - Requirements for the production of project and end user documentation; - Requirements for commissioning, training and aftercare support. The project team will demonstrate how the project delivery stakeholders' contributions and the consultation process outcomes influence the Initial Project Brief, Project Execution Plan, Communication Strategy and Concept Design.	1	1		
			Stakeholder consultation	RIBA 2	All interested parties will be consulted and the design team will demonstrate how the consultation exercise influences the Project Brief and Concept Design. Prior to completion of the detailed design all interested parties give and receive consultation feedback.	1	1		
			Pre-requisite - BREEAM Advisory Professional	RIBA 1	The project team, including the client, formally agree strategic performance targets early in the design process.	-	-		
			BREEAM Advisory Professional - Concept Design	RIBA 2	A BREEAM AP will work with the project team to maximise the project's overall performance against BREEAM. They will monitor progress against the performance targets and identify risks and opportunities related to the achievement of the rating.	1	0		
			BREEAM Advisory Professional (AP) - Detailed Design	RIBA 3	A BREEAM AP will continue to work with the project team to maximise the project's overall performance against BREEAM. Feedback will be provided to support them in taking corrective actions and achieving their agreed rating.	1	0		
	Man 02	Life cycle cost and service life planning	Elemental Life Cycle Cost (LCC)	RIBA 2	An entire asset LCC Plan will be produced with design options appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865: 2008. This will include an indication of future replacement costs over a period of analysis and will include service life, maintenance and operation cost estimates. Details of how the LCC Plan has been used to influence building and systems design and specifications to minimise life cycle costs and maximise critical value will be demonstrated by the team.	2	0		
			Component level life options appraisal	RIBA 4	A component level LCC options appraisal will be produced in line with PD 156865: 2008 and will include details on the building envelope, building services, finishes and external spaces. Appropriate examples provided by the design team will be used to demonstrate how this appraisal has been used to influence building and systems design and specification to minimise life cycle costs and maximise critical value.	1	0		
			Capital cost reporting		Report the capital cost for the building in pounds per square metre of gross internal floor area (£k/ m^2).	1	1		
	Man 03	Responsible construction	**Pre-requisite -** Legally harvested and traded timber		All timber and timber-based products used during the construction process of the project are 'legally harvested and traded timber'.	-	-		
			Environmental management		The principal contractor will operate an Environmental Management System covering their main operations (e.g. ISO 14001). All parties who manage the construction site will also implement best practice pollution prevention policies and procedures on site.	1	0		
			Pre-requisite - BREEAM Advisory Professional		The client and the contractor formally agree performance targets.	-	-		
			BREEAM Advisory Professional - Site		The BREEAM AP will also monitor construction progress throughout all stages where decisions critically impact BREEAM performance and will proactively identify risks and opportunities related to the procurement and construction process.	1	0		
			Responsible construction management		The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks. Compliance with Considerate Constructors is required for 1 credit.	1	1	1 credit - Excellent 2 credits - Outstanding	
					Compliance with Considerate Constructors is required whilst also undertaking additional responsible construction practices.	1	1		
			Monitoring of construction site impacts - Utility		Assign responsibility to an individual for monitoring, recording and reporting energy use and water consumption from all on-site construction processes throughout the build programme.	1	1		
			Monitoring of construction site impacts - Transport		Assign responsibility to an individual for monitoring, recording and reporting transportation data resulting from all on-site construction processes throughout the build programme.	1	1		
	Man 04	Commissioning and handover	Testing and inspecting building fabric		Post-construction testing and inspection will be undertaken by a suitably qualified professional who will undertake the survey and testing in accordance with the appropriate standard. Any defects identified during post-construction testing and inspection will be rectified prior to building handover and close out.	1	0		
					Total for management	15	7		

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BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
Health and wellbeing	Hea 01	Visual comfort	Daylighting		At least 80% of floor area in occupied spaces (or 35% in retail sale areas) is adequately day lit with an average daylight factor of 2% or more.	2	0		
			View Out		95% of the floor area in 95% of spaces for each relevant building area will be within 8m of an external wall. The external wall must have a window or permanent opening that provides an adequate view out. The window or opening must be ≥ 20% of the surrounding wall area.	1	0		
			External lighting		All external lighting located within the construction zone will be specified in accordance with BS 5489-1:2013 Code for the practice for the design of road lighting. Lighting of roads and public amenity areas and BS EN 12464-2:20145 Light and lighting - Lighting of work places - Part 2: Outdoor work places.	1	1		
	Hea 05	Acoustic performance	Acoustic performance		Demonstrate that all spaces in the building achieve, and for the relevant areas exceed, the performance standards required by BS for sound insulation, indoor ambient noise levels and reverberation times.	1	1		
	Hea 06	Security	Security of site and building	RIBA 2	A Suitably Qualified Security Specialist (SQSS) will conduct an evidence-based Security Needs Assessment (SNA). This SNA will be used to identify attributes of the site and surroundings which may influence the approach to security for the development. The SQSS will develop a set of security controls and recommendations and these will be incorporated in the design.	1	0		
	Hea 07	Safe and healthy surroundings	Safe access		Dedicated and safe cycle paths will be provided from the site entrance to any cycle storage, and connect to off-site cycle paths where applicable. Also, dedicated and safe footpaths are provided on and around the site providing suitable links. Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths and it will ensured that any delivery areas are not accessed through general parking areas and do not cross or share pedestrian and cyclist paths. There will be dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. Also, parking and turning areas will be designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.	1	0		
			Outdoor space		There will be outside space providing building users with an external amenity area.	1	1		
					Total for health and wellbeing	8	3		
Energy	Ene 01	Reduction of energy use and carbon emissions	Energy performance		An Energy Performance Ratio for New Construction (EPR_{NC}) will be calculated. The EPR_{NC} achieved will be compared with the benchmarks below in order to award the corresponding number of BREEAM credits.	9	2	4 credits - Excellent 6 credits - Outstanding	
	Ene 03	External lighting	External lighting		No external lighting will be installed (which includes lighting on the building, at entrances and signs) OR External light fittings within the construction zone will have an average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt, automatic control to prevent operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.	1	1		
	Ene 04	Low carbon design	Passive design analysis	RIBA 2	Note - To achieve this the first credit under Hea 04 Thermal Modelling must be achieved. The project team will analyse the proposed building design and development during Concept Design to identify opportunities for the implementation of passive design measures. As a minimum this must include; Site location, site weather, microclimate, building layout, building orientation, building form, building fabric, thermal mass or other fabric thermal storage, building occupancy type, daylighting strategy, ventilation strategy and adaptation to climate change. Passive design measures will be implemented to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption in line with the passive design analysis findings and the reduced total energy demand and carbon dioxide (CO_2) emissions resulting from the passive design measures will be calculated.	1	0		
			Free cooling		Note - To achieve this credit the passive design analysis credit must be awarded. A free cooling analysis will be included in the passive design analysis and it will identify opportunities for the implementation of free cooling solutions. The building will be naturally ventilated or will use a combination of the free cooling strategies as follows: - Night time cooling; - Ground coupled air cooling; - Displacement ventilation; - Ground water or surface water cooling; - Evaporative cooling, direct or indirect; - Desiccant dehumidification and evaporative cooling, using waste heat; - Absorption cooling, using waste heat.	1	0		

BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
			Low and zero carbon technologies	RIBA 2	An energy specialist will completes a feasibility study by the end of Concept Design, this will establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy sources for the building or development. The LZC technologies for the building will be specified in line with the feasibility study recommendations. The reduced regulated carbon dioxide (CO_2) emissions resulting from the feasibility study will be quantified.	1	1		
					Total for energy	**13**	**4**		
Transport	Tra 01	Transport assessment and travel plan	Travel plan	RIBA 1	A travel plan is developed based on a site-specific travel assessment or statement. This statement should include: - Existing travel patterns and opinions of existing building or site users towards cycling and walking; - Travel patterns and transport impact of future building users; - Current local environment for walkers and cyclists; - Reporting of the number and type of existing accessible amenities within 500m of the site; - Disabled access; - Calculation of the existing public transport Accessibility Index (AI); - Current facilities for cyclists.	2	2		
	Tra 02	Sustainable transport	Transport options implementation		Note - At least one credit must be achieved for Tra 01 for any credits to be awarded in this issue. Credits will be awarded based on the Accessible Index (AI) of the project, and the number of transport measures implemented.	10	6		
					Total for transport	**12**	**8**		
Water	Wat 02	Water meter	Water meter		A pulsed water meter is installed on the mains water supply to each building. This includes instances where water is supplied via a borehole or other private source. The water meter should connect to a BMS or utility monitoring system or should be capable of connecting to one.	1	1	Good Very Good Excellent Outstanding	
	Wat 02	Leak detection	Leak detection system		A leak detection system capable of detecting a major water leak on the utilities water supply within the building will be installed AND A leak detection will be installed between the buildings and the utilities water supply. This leak detection will be a permanent automated water leak detection system that alerts the building occupants to the leak and is activated when the flow of water passing through the water meter. Also, it will be able to identify different flow and therefore leakage rates and also programmable to suit the owner's or occupier's water consumption criteria.	1	1		
	Wat 04	Water efficient equipment	Water efficient equipment		Identify all water demands from uses that could be realistically mitigated or reduced and establish a demonstrable reduction in the total water demand of the building.	1	1		
					Total for water	**3**	**3**		
Materials	Mat 01	Environmental impacts - LCA	Environmental impacts from construction products - Building life cycle assessment (LCA)		During the Concept Design and Technical Design, demonstrate the environmental performance of the building as follows: - Carry out a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool according to the methodology Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).	7	0		
	Mat 02	Environmental impacts – EPD	Specification of products with a recognised environmental product declaration (EPD)		Construction products with an EPD that achieve a total EPD points score of at least 20 will be undertaken. Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The Mat 01/02 Results Submission Tool will verify the EPD points score and credit award.	1	0		
	Mat 03	Responsible sourcing of construction products	**Pre-requisite**		All timber and timber-based products used on the project will be legally harvested and traded as per the UK Government's Timber Procurement Policy (TPP)	-	-	All ratings	
			Enabling sustainable procurement	RIBA 2	A sustainable procurement plan will be used to guide the specification towards sustainable construction products. This plan will include sustainability aims, objectives and strategic targets to guide procurement activities and will also include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible. Details of the checking and verifying the effectiveness of the procurement plan will also be included. In addition, if the plan is applied to several sites or adopted at an organisational level it will identify the risks and opportunities of procurement against the process set out in BS ISO 20400:2017.	1	1		
			Measuring responsible sourcing		Superstructure, internal finishes, substructure and hard landscaping are responsibly sourced in accordance with the below targets: 3 credits > 30% of points achieved 2 credits > 20% of points achieved 1 credit > 10% of points achieved	3	1		

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BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
	Mat 05	Designing for durability and resilience	Protecting vulnerable parts of the building from damage		Protection measures will be incorporated into the building's design and construction to reduce damage to the building's fabric or materials.	1	1		
			Protecting exposed parts of the building from material degradation		Provide a detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors and provide convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design will be implemented and the design the roof and façade to prevent water damage, ingress and detrimental ponding will also be undertaken.				
	Mat 06	Material efficiency	Material efficiency	RIBA 1	Targets will be set and opportunities and methods to optimise the use of materials will be reported for all RIBA stages. The implementation of material efficiency will be reported on during developed design through to construction.	1	0		
					Total for materials	**14**	**3**		
Waste	Wst 01	Construction waste management	Pre demolition audit	RIBA 2	A pre-demolition audit of any existing buildings, structures or hard surfaces will be carried out This will be used to determine whether refurbishment or reuse is feasible and to maximise the recovery of material for subsequent high grade or value applications.	1	1	1 credit - Outstanding	
			Construction resource efficiency		A compliant Resource Management Plan (RMP) covering non-hazardous waste materials, demolition and excavation waste will be produced. The site will meet or improve on the benchmarks as shown below: - One credit - <11.1 tonnes per 100m^2 - Two credits - <6.5 tonnes per 100m^2 - Three credits - <3.2 tonnes per 100m^2	3	1		
			Diversion of resources from landfill		Waste materials will be sorted into separate key waste groups either on-site or through a licensed contractor for recovery. The diversion from landfill benchmarks for non-hazardous construction waste and demolition and excavation waste generated will meet the following: - Non Demolition - 80% (tonnage) - Demolition - 90% (tonnage)	1	1		
	Wst 02	Recycled aggregates	**Pre-requisite**	RIBA 2	To encourage the reuse of site material, a pre demolition audit of any existing buildings, structures or hard surfaces will be undertaken.	-	-		
			Project Sustainable Aggregate Points		Aggregate uses, types and quantities will be identified for each identified use and aggregate type. The region in which the aggregates are sourced will be calculated (km).	1	0		
	Wst 03	Operational waste	Operational waste		Provide a dedicated space for the segregation and storage of operational recyclable waste generated. This will be appropriately labelled, accessible to building users and waste management contractors and be of a sufficient size. If large amounts of waste are expected, waste compactors or balers will be provided and if appropriate, organic waste facilities (with a water outlet).	1	1	Excellent Outstanding	
	Wst 05	Adaptation to climate change	Resilience of structure, fabric, building services and renewables installation	RIBA 2	A climate change adaptation strategy appraisal will be undertaken using a systematic risk assessment to identify the impact of expected extreme weather conditions arising from climate change on the building over its projected life cycle. The assessment will include the following: - Hazard identification - Hazard assessment - Risk estimation - Risk evaluation - Risk management Following this study develop recommendations or solutions based on the climate change adaptation strategy appraisal that aim to mitigate the identified impact.	1	1		
				RIBA 4	An update will be provided during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective.				
	Wst 06	Design for disassembly and functional adaptability	Design for disassembly and functional adaptability - recommendations	RIBA 2	A study to explore the ease of disassembly and the functional adaptation potential of different design scenarios will be carried out. Following this recommendations or solutions will be developed, based on the study that aim to enable and facilitate disassembly and functional adaptation.	1	1		
			Disassembly and functional adaptability – implementation	RIBA 4	The team will provide an update on how the recommendations or solutions have been implemented where practical and cost effective. Omissions will also justified in writing to the assessor. Any changes to the recommendations and solutions during the development of the Technical Design should also be recorded. A building adaptability and disassembly guide will be produced to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.	1	1		
					Total for waste	**10**	**7**		

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BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
Land Use and Ecology	Le 01	Site selection	Previously occupied land		At least 75% of the proposed development's footprint is on an area of land which has previously been occupied.	1	1		
			Contaminated land		A contaminated land professional's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination. The site investigation, risk assessment and appraisal have identified the degree of contamination, contaminant sources or types and the options for remediating sources of contamination. The remediation of the site will be carried out in accordance with the remediation strategy.	1	1		
	Le 02	Risks and opportunities	**Pre-requisite -** Assessment route selection		An assessment route for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist.	-	-		
			Survey and evaluation	RIBA 1	Route 1 only: Completion of the BREEAM Ecological Risk Evaluation Checklist indicates Assessment route 1 can be used as the assessment OR	1	1		
				RIBA 1	Route 2 only: An appropriate individual is appointed at an early stage for the involvement of site configuration and to ensure that they can influence strategic planning decisions. An appropriate level of survey and evaluation will be carried out to determine the ecological baseline of the site, taking account of the zone of influence to establish: - Current and potential ecological value and condition of the site, and related areas within the zone of influence; - Direct and indirect risks to current ecological value; - Capacity and feasibility for enhancement of the ecological value of the site and areas within the zone of influence.				
			Determining the ecological outcomes for the site	RIBA 2	To achieve this credit the survey and evaluation criteria must have been achieved. The project team will liaise and collaborate with representative stakeholders to identify and consider ecological outcome for the sites for the project. When determining the ecological impact of the site this will involve the identification, appraisal and selection of specific solutions and measures sufficiently early to influence key project planning decisions. The optimal ecological outcome for the site will be selected after liaising with representative stakeholders and the project team.	1	1		
	Le 03	Managing negative impacts on ecology	**Pre-requisite –** Identification and understanding the risks and opportunities		To achieve this credit the credits under LE 02 must be achieved.	-	-		
			Planning, liaison, implementation and data	RIBA 2	Roles and responsibilities will be clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. Site preparation and construction works will be planned and implemented at an early project stage to optimise benefits and outputs. The project team will implement the solutions, and measures that have been selected (see LE 02) during site preparation and construction works.	1	1		
			Managing negative impacts of the project		Route one only: Negative impacts from site preparation and construction works will be managed according to the hierarchy and no net impact has resulted.	2	2		
			Managing negative impacts of the project		Route two only: Negative impacts from site preparation and construction works will be managed according to the hierarchy and either: - No overall loss of ecological value has occurred (2 credits) OR - The loss of ecological value has been limited as far as possible (1 credit)				
	Le 04	Change and enhancement of ecological value	**Pre-requisite -** Identifying and understanding the risks and opportunities		To achieve this credit the credits under LE 03 must be achieved.	-	-		
			Enhancement of ecology		Route one only: The project team will implement solutions and measures based on recommendations from recognised 'local' ecological expertise, specialist input and guidance to inform the adoption of locally relevant ecological solutions and measures which enhance the site. Data collated will be provided to the local environmental records centres nearest to, or relevant for, the site.	1	1		
			Liaison, implementation and data collation		Route two only: The project team will implement the solutions and measures selected in a way that enhances ecological value in the following order: - On site, and where this is not feasible; - Off site within the zone of influence.				
			Enhancement of ecology		Route two only: Credits will be awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.	3	2		

BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
	Le 05	Long term ecology management and maintenance	**Pre-requisite -** Roles and responsibilities, implementation, statutory obligations		The client or contractor will confirm that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site.	-	-		
			Planning, liaison, data, monitoring and review management and maintenance		The project team will liaise and collaborate with representative stakeholders to: - Monitor and review implementation and the effectiveness; - Develop and review management and maintenance solutions, actions or measures. The monitoring and reporting of on the ecological outcomes/successes for site implemented at the design and construction stage and the arrangements of ongoing management of the new landscape and habitats will be reviewed. Also, he ecological value of the site and its relationship to its zone of influence and any linked sustainable activities will be maintained. As part of the tenant or building owner information supplied a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features will be included.	1	1		
			Landscape and ecology management plan		A landscape and ecology management plan will be developed in accordance with BS 42020:20131 covering the first five years. The landscape and management plan will be updated as appropriate to support maintenance of the ecological value of the site.	1	1		
					Total for land use and ecology	**13**	**12**		
Pollution	Pol 03	Flood and surface water management	**Pre-requisite**		An appropriate consultant is appointed to carry out the following requirements; an appropriate consultant is one who has qualifications and experience relevant to designing SuDS and flood prevention measures and completing peak rate of run-off calculations.	-	-		
			Flood resilience		A site-specific flood risk assessment (FRA) confirms the development is in a flood zone that is defined as having a low annual probability of flooding. The FRA takes all current and future sources of flooding into consideration.	2	2		
			Flood resilience		A site-specific FRA confirms the development is in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain. The FRA must take all current and future sources of flooding into consideration. To increase the resilience and resistance of the development to flooding the ground level of the building and access to both the building and the site will be designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone .				
			Pre-requisite - Surface water run-off		Surface water run-off design solutions must be bespoke.	-	-		
			Surface water run-off - volume		Drainage measures will be specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the pre-developed site. This should comply at the 1-year and 100-year return period events. Relevant maintenance agreements for the ownership, long term operation and will also be in place and all calculations will include an allowance for climate change.	1	1		
			Surface water run-off - volume		Flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND Drainage design measures will be specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event will be prevented from leaving the site by using infiltration or other SuDS techniques.	1	1		
			Minimising watercourse pollution		Drainage strategy confirms that there is no discharge from the developed site for rainfall up to 5 mm and that areas with a low risk source of watercourse pollution will have an appropriate level of pollution prevention treatment provided. Areas with a high risk of contamination or spillage of substances have separators installed in surface water drainage systems. All water pollution prevention systems will be designed and installed in accordance with the recommendations of documents such as the SuDS manual and other relevant industry best practice. Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS will also be in place.	1	0		
	Pol 04	Reduction of night time light pollution	Reduction of night time light pollution		External lighting pollution has been eliminated through effective design that removes the need for external lighting. This does not adversely affect the safety and security of the site and its users OR The external lighting strategy has been designed in compliance with Table 2 (ILP) Guidance notes for the reduction of obtrusive light, 2011. Also All external lighting will have the capabilities to be automatically switched off between 23:00 and 07:00. If safety or security lighting is provided and will be used between 23:00 and 07:00, this will comply with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes. Illuminated advertisements will be designed in compliance with ILP PLG05 The Brightness of Illuminated Advertisements.	1	1		
					Total for pollution	**6**	**5**		
	Man 03	Responsible construction	Responsible construction management		The principal contractor evaluates the risks (on site and off site), plans and implements actions to minimise the identified risks, covering the items included in the Responsible Construction Management Template. All criteria must be met to achieve this credit.	1	1		
	Hea 01	Visual comfort	Daylighting		At least 80% of floor area in occupied spaces (or 50% in retail sale areas) is adequately day lit with an average daylight factor of 3% or more.	1	0		
	Hea 06	Security	Security of site and building		A compliant risk based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification.	1	0		

BREEAM New Construction 2018 Tracker

	Issue				Credits				
	Issue		Issue sub-title	RIBA Stage	Credit description	Available	Targeted	Minimum standards	Notes
Innovation	Ene 01	Reduction of energy use	Beyond zero net regulated carbon		The building will achieve an EPR NC ≥ 0.9 and zero net regulated CO_2 emissions. Energy generation from on-site and near-site LZC sources will be sufficient to offset carbon emissions from regulated energy use plus a percentage of emissions from unregulated energy use. The exemplary credits will be awarded as follows: 1 credit - 10% 2 credits - 50% 3 credits - 100% (carbon negative)	3	0		
	Mat 01	Environmental impacts	Third party verification		A suitably qualified third party will carry out the building LCAs OR produces a report verifying the building LCAs accurately represent the designs under consideration during Concept Design and Technical Design. For each LCA option, the findings of the verification checks made by the suitably qualified third party will be itemised in the report including. The suitably qualified third party's relevant skills and experience will be provided and a declaration of their third party independence from the project client and design team will be included in their report.	1	0		
	Mat 03	Responsible Sourcing	Measuring responsible sourcing		Superstructure, internal finishes, substructure and hard landscaping and core services are responsibly sourced in accordance with the below targets: 3 credits plus 1 exemplary credit > 50% of points achieved.	1	0		
	Wst 01	Construction waste management	Construction waste management		Prepare a compliant Resource Management Plan (RMP) covering non-hazardous waste materials, demolition and excavation waste and less than <1.9 tonnes of waste per $100m^2$ will be generated. Sort waste materials into separate key waste groups either on-site or through a licensed contractor for recovery. Meet the diversion from landfill benchmarks for non-hazardous construction waste and demolition and excavation waste generated: Non Demolition - 95% (tonnage) Demolition - 85% (tonnage)	1	0		
	Wst 02	Recycled aggregates	Project sustainable aggregate points		Identify all aggregate uses and types on the project and determine the quantity in tonnes for each identified use and aggregate type. Identify the region in which the aggregate source is located and calculate the distance in kilometres travelled by all aggregates by transport type.	1	0		
	Wst 05	Adaptation to climate change	Responding to climate change		In addition to the Wst 05 criteria the following credits will also need to be achieved: - Hea 04 thermal comfort; - Ene 01 reduction of energy use and carbon emissions; - Ene 04 low carbon design; - Wat 01 water consumption; - Mat 05 designing for durability and resilience; - Pol 03 Flood and surface water management.	1	0		
	Le 02	Risks and opportunities	Determine the ecological outcomes for the site		When determining the optimal ecological outcome for the site the wider site sustainability-related activities and the potential for ecosystem service related benefits will be considered. This will include opportunities for integrating ecology with wider site sustainability-related activities and ecosystem service related benefits, including as a minimum: - Landscape; - Health and wellbeing; - Resilience; - Infrastructure; - Community and end user involvement. The following must also be achieved: - Hea 07 Safe and healthy surroundings; - Pol 03 Flood and surface water management - Achieve credits for 'Surface water run-off' and 'Minimising watercourse pollution'; - Pol 05 Reduction of noise pollution.	1	0		
					Total for Innovation	**10**	**1**		

Appendix B
Water Efficiency Calculator

Water Efficiency Calculator
SGN Belvedere

	Internal Water Consumption			
Installation Type	**Unit of Measure**	**Capacity / Flow Rate**	**Litres/person/day**	**Notes**
WC	Full Flush Volume (Litres)	**6**	8.76	Low flush WCs will be installed to reduce the volume of water consumed during flushing. All WCs will have dual flush cisterns which will provide both part (4L) and full (6L) flushes.
	Part Flush Volume (Litres)	**4**	11.84	
Basin Tap	Flow Rate (Litres/minute)	**4**	7.90	All taps (excluding kitchen taps) will be reduced to 4 litres/minute using flow restrictors. Where multiple taps are to be provided the average flow rate will be used.
Bath	Capacity (Litres to overflow)	**160**	17.60	All baths will have reduced capacities of 160 litres (excluding displacement). The bath taps are not included in this calculation as they are already incorporated into the use factor for the baths.
Shower	Flow Rate (Litres/minute)	**8**	34.96	Shower flow rates will be reduced to a maximum of 8 litres/minute using flow restrictors fixed to the shower heads. These contain precision-made holes or filters to restrict water flow and reduce the outlet flow and pressure.
Kitchen Tap	Flow Rate (Litres/minute)	**5**	12.56	Kitchen taps will be reduced to 5 litres/minute using flow restrictors which will be fitted within the console of the tap or in the pipework.
Washing Machine	Water Consumption (Litres/kg)	**8.17**	17.16	Water efficient washing machines or washer-dryers will be specified. The make and model numbers of the appliances are unknown at this stage therefore a default figure of 8.17 litres/kg has been assumed.
Dishwasher	Water Consumption (Litres/place setting)	**1.25**	4.50	All dishwashers will be water efficient. The make and models numbers are unknown therefore a default figure of 1.25 litres/place setting has been assumed at this stage.
		Net Internal Water Consumption (Litres/person/day)	**115.3**	
		Normalisation Factor	**0.91**	
		Total Internal Water Consumption (Litres/person/day)	**104.9**	The total *internal* water consumption target of ≤105 litres/person/day will be achieved in accordance with Regulation 36 para (2)b optional requirement Approved Document G.
		Allowance for External Water Consumption (Litres/person/day)	**5**	
		Total Water Consumption (Litres/person/day)	**109.9**	The *total* water consumption target of ≤110 litres/person/day will be achieved in accordance with Regulation 36 para (2)b optional requirement of Approved Document G.