

Element Sustainability – Technical Note

Project: 2023.195
Waterfront Square
Client: Packaged Living
Date: 3rd December 2024

In response to the further comments received by Blewburton, dated 15th November 2024, please see details below relating to each of the sections of the Sustainability Checklist and points raised within the Council's Energy and Sustainability Review document.

As previously noted, it states within the SPD that the checklists are only intended to help provide pointers as to the type of considerations that the development should be taking into account in order to achieve relevant standards. All headings have been addressed within the Sustainability Statement, but specific details are to be progressed at the detailed design stage. However, where details are available at this stage, these have been highlighted to assist wayfinding to the detail included within the Sustainability Statement and other consultants reports, as appropriate.

Energy/CO2

1. How has the development been designed to optimise the use of the energy from the sun and limit heat losses? –

- Several passive measures informed the design development of the current application. Careful consideration was given to the orientation of buildings, the depth of rooms within apartments, the size and position of glazed elements and the form factor of the building amongst others. Whilst it is not possible to provide a fully passive scheme when balancing the competing considerations of site location, opportunities/constraints and viability, the orientation of the homes and other passive measures have been considered and incorporated where possible.
- Referring to Hoare Lea Stage 2 Report (2325365-HLE-XX-XX-RP-ST-402026) Page 5 - A 'fabric first' approach has been taken in order to reduce the energy demand and CO₂ emissions from the Proposed Development. The overriding objective for the façade design of the building will be to achieve the optimum balance between providing natural daylighting benefits to reduce the use of artificial lighting, the provision of passive solar heating to limit the need for space heating in winter and limiting summertime solar gains to reduce space cooling demands.
- Section 4.1 of the Sustainability Statement 2023.195 – Be Lean, provides further details:
 - Fabric first approach;



- Optimised glazing ratio; and,
- Air permeability of 3.00m³/hm² @ 50Pa.

2. How has the development been designed to optimise natural daylighting, energy efficient lighting, external lighting and natural ventilation?

- Section 4.1 and 4.7 in the Sustainability Statement 2023.195, identifies that the optimized glazing ratio of the proposed development makes good use of available daylight and will create good levels of natural daylighting within habitable areas, creating a healthy living environment
- Section 1.3.1 of the Hoare Lea Energy Statement (2325365-HLE-XX-XX-RP-ST-402026) also states that natural daylight has been maximised across the site with reduced external shading unless where appropriate to mitigate against overheating.

3. How will the design of the building make efficient use of energy? (e.g. use of thermally massive materials, levels of insulation, energy efficient white goods and use of green/ brown roofs etc.).

- Refer to Section 4.7 of the Sustainability Statement - Appropriate thermal comfort levels are achieved throughout the design, and controls are selected to maintain a thermally comfortable environment. Packaged Living will aspire to achieve an operative temperature that does not exceed 26 °C for more than 3% of the time;
- Refer to the conclusions of the Sustainability Statement which state *inter alia* that the fossil fuel free scheme proposed will be designed to be resource and energy efficient and include features such as a photovoltaic (PV) array which will integrate with the green roof system and highly efficient Air Source Heat Pump (ASHP) systems.
- Refer to Section 4.4 of Sustainability Statement 2023.195 - SuDS that are proposed to be implemented include blue / green roofs and bioretention rain gardens. Section 4.9 advises that the green roof system will assist in increasing the ecological value of the site, which has been designed to meet required policy standards.
- Refer to Section 3.2 of Hoare Lea Statement (2325365-HLE-XX-XX-RP-ST-402026) - Please note that the corridors are heated while the stairwells, lifts and risers are unheated spaces. Walls to these unheated spaces have been treated as a sheltered external wall and will require additional insulation to minimise heat loss and enable compliance with the Fabric Efficiency measure.



4. Has local energy generation from renewables and/or decentralised energy been considered as part of the scheme?

- Refer to Section 4.1 in the Sustainability Statement 2023.195 – Be Green stage – The site will be fossil fuel free, PV will be provided at roof level, and exhaust air heat pumps (EAHP) will be used for water heating.
- Refer to Section 4.7 in Hoare Lea report (2325365-HLE-XX-XX-RP-ST-402026)- The provision and location of PV panels has been reviewed in detail, with consideration of overshadowing and orientation, A circa 100m² array of PV has been proposed to generate renewable energy onsite. Further details are provided in Section 5.4 of the Hoare Lea report and manufacturers specifications for the PV array are submitted at this stage for the Council's consideration.
- Refer to Section 5.4 in Hoare Lea report (2325365-HLE-XX-XX-RP-ST-402026) - The Proposed Development will look to generate renewable energy on-site through the use of roof-mounted PV panels. An initial assessment of the available roof area suggests a circa 100m² array of photovoltaic panels could be installed on site, offering further CO₂ emission reductions. The proposed PV array on Site has been estimated to generate an annual yield 16,000 kWh/year which could produce a CO₂ saving of 2,176 kgCO₂/year by displacing electricity which would otherwise be taken from the grid (dependant on panel type and configuration). The addition of an 100m² array of PV provides a further reduction to the regulated CO₂ emissions. Details of the proposed PV system are provided for review as part of this submission.

5. How have cycle storage facilities been considered?

- Refer to section 4.10.3 in the Sustainability Statement 2023.195 - The proposed development will include 136 secure cycle parking spaces, plus a further 14 cycle spaces will be provided within the public realm for visitors.





6. Does the development meet the requirements of Policy H5? Is this clearly illustrated? –

All new building housing outside the Central Area as defined on the Proposals Map will comply with the nationally described space standard

- Whilst the site is located within the Central Area, the scheme proposes to provide NDSS compliant units throughout.

All new build housing will be built to the higher water efficiency standard under Regulation 36 of the Building Regulations

- The proposed dwellings will be designed to reduce mains / potable water consumption and will include water efficient designs and equipment. Refer to section 4.2 of the Sustainability Statement 2023.195 for further detail.
- In order to reduce water demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <105 litres/person/day.
 - Refer to the following reports at Appendix 1, which are submitted for the Council's consideration:
 - Water Calc 2 bed Apt - Waterfront Square
 - Water Calc 3 bed Apt - Waterfront Square



Element Sustainability – Technical Note

- A water efficiency strategy will be determined for the site and will include for the provision of 'A' rated appliances as a minimum. It is expected that this matter would be controlled by an appropriately-worded planning condition.
- A water meter on the mains water supply to the buildings will be specified to monitor and manage consumption, and each apartment will be sub-metered to allow water consumption to be further monitored and managed accordingly.

All major new-build residential development should be designed to achieve zero carbon homes. The Sustainable Design and Construction SPD provides the following guidance - (or if unachievable, a minimum 35% improvement in the dwelling emission rate over the target emission rate

- Section 4.1 in the Sustainability Statement 2023.195 identifies a significant 70.23% reduction against Part L 2021 of the Building Regulations against a policy requirement of a minimum of 35% Detailed calculations for the non-residential parts of the scheme are being produced and the results will be updated to reflect this in due course. .
- Refer to Section 5 of the Hoare Lea Energy Statement (2325365-HLE-XX-XX-RP-ST-402026). Which advises that under the Part L 2021 assessment methodology, the above results are observed when comparing the Dwelling Emission (DER) Rate with the Part L Target Emission Rate (TER). The Proposed Development is assessed for block compliance due to the requirements of the Building Regulations.
- The conclusions of the Hoare Lea report state that the proposed development, with the inclusion of passive and active low carbon measures, will achieve a reduction in CO2 emissions beyond the notional building baseline, meaning building regulation compliance is achieved by the scheme. Whilst the performance does not achieve net zero regulated operational carbon, the results nevertheless identify a significant reduction against Building Regulations. The scheme is electrically-led meaning that as the grid continues to decarbonise the proposal represents a route to net zero operational carbon.
- A S106 Carbon Offset Levy of c. £100,000 is proposed to bring the scheme to net zero, the sum being calculated in line with the advice provided in the Sustainable Design and Construction SPD. This detail will be provided upon completion of the non-residential energy calculations.

All other new build housing will achieve at a minimum a 19% improvement in the dwelling emission rate over the target emission rate, as defined in the 2013 Building Regulations.

- As above



- 7. Is a Section 106 contribution required? If so, what amount? - The non-residential areas should be included in the energy statement. Full SAP and SBEM reports for each stage of the energy hierarchy should be provided.**

- As above

Water

How will the development incorporate the use of water saving devices to achieve the higher water efficiency standard under Regulation 36(3) of the Building Regulations?

- The proposed dwellings will be designed to reduce mains / potable water consumption and will include water efficient designs and equipment. Refer to section 4.2 of the Sustainability Statement 2023.195 for further detail.
- In order to reduce water demand, the sanitary fixtures will be specified to achieve a calculated daily consumption of <105 litres/person/day in accordance with the Packaged Living Sustainable Design Brief.
 - Refer to the following reports within Appendix 1:
 - Water Calc 2 bed Apt - Waterfront Square
 - Water Calc 3 bed Apt - Waterfront Square
- A water efficiency strategy will be determined for the site and will include for the provision of 'A' rated appliances as a minimum. It is expected that this matter would be controlled by an appropriately-worded planning condition.
- A water meter on the mains water supply to the buildings will be specified to monitor and manage consumption, and each apartment will be sub-metered to allow water consumption to be further monitored and managed accordingly.

Materials

- 8. How will the selected materials help retain local character, ensure long life and ensure a low environmental impact, including consideration of embodied energy?**

- Refer to Section 4.3 of the Sustainability Statement 2023.195 – Materials with a low environmental impact throughout their life cycle will therefore be prioritised for the main building elements. Plus, materials with associated Environmental Performance



Element Sustainability – Technical Note

Declarations (EPDs) will be favoured;

- Local sourcing of construction materials where feasible and viable will minimise the impact of carbon dioxide emissions associated with the transportation of materials. In addition to this, the building design is to be resource and energy efficient and utilise low carbon materials. This will also support the delivery of the upfront embodied carbon target set out in the Packaged Living Sustainable Design Brief.
- A Whole Life Cycle Assessment (WLCA) has been produced to assess the embodied carbon impact of the scheme and design recommendations have been made to limit the carbon emissions associated with the scheme. This is submitted with this package for the Council's consideration.
- Refer to Turner & Townsend LCA report (Mat01 report Norman Place retail) Section 4.1 – The initial carbon assessment started during RIBA Stage 2 with the aim to inform design development and promote low whole life carbon design.
- Refer to Turner & Townsend LCA report Section 4.3 - These are to be addressed further during the Technical Design stage in relation to all relevant design factors, such as, but not limited to: whole life carbon and environmental impact, cost, delivery time, procurement route and aesthetics.
- Refer to Turner & Townsend LCA report Section 3.1 - The analysis was carried out using LCA software LCA for BREEAM UK under OneClickLCA. This is a dedicated life cycle assessment tool, which allows embodied carbon impact for all specified materials to be modelled.
- Refer to Turner & Townsend LCA report Section 3.2 - Embodied Carbon over Life Cycle (TCO2e) (Aligned with BREEAM Scope) results
- See Section 4.10 Appearance and material of the Design and Access Statement.

Surface Water Run Off

9. How has the development considered flooding and pollution?

- Refer to Section 4.4 of the Sustainability Statement 2023.195 - A Flood Risk Assessment has been produced by Stantec UK Limited and a Drainage Strategy has been prepared by Hexa Consulting Limited, in order to demonstrate the potential flood risk onsite and to show how surface water will be managed. A Technical Note to provide further comments



Element Sustainability – Technical Note

on the Flood Risk strategy further to comments from the Environment Agency is also submitted alongside this document to support our proposals.

- Refer to Section 4.4 of the Sustainability Statement 2023.195 - The proposed surface water drainage system will be controlled using an efficient vortex flow control device. This will require approximately 200m³ of attenuation volume, which is proposed to be provided within cellular storage, rain gardens, permeable paving sub-base and the piped surface water drainage network. Sustainable Drainage Systems (SuDS) are proposed for the management of surface water runoff in accordance with local and national guidance. Surface water discharge is proposed to be restricted to achieve at least 50% betterment compared to the existing conditions and to discharge to the culverted watercourse along the southern boundary of the site. SuDS which are to be implemented include:
 - Blue Green Roofs
 - Bioretention rain gardens
- Refer to Stantec Flood Risk Assessment conclusions and subsequent Technical Note, ref: TN002, identify that the proposed building is outside the 1 in 100 annual probability +35% climate change flood extent and will not impact on floodplain storage capacity. Improvements to the northern boundary treatment and landscaping enhancements will result in a stepped/sloping bank that will improve the local floodplain capacity from the existing conditions and to mitigate against this residual risk the minimum residential floor level will be set above 38.56m AOD, which includes a 300mm freeboard above the 1 in 100 annual probability +35% climate change flood level. To support the Technical Note, cut and fill calculations to help the betterment associated with improvements to the northern boundary treatment are being produced and will be submitted for the Council's consideration shortly.

10. Has the design considered the use of sustainable drainage systems (SuDS) and how will they be incorporated within the development?

- Refer to Section 4.4 of the Sustainability Statement 2023.195 - Sustainable Drainage Systems (SuDS) are proposed for the management of surface water runoff in accordance with local and national guidance. Surface water discharge is proposed to be restricted to achieve at least 50% betterment compared to the existing conditions and to discharge to the culverted watercourse along the southern boundary of the site.
- SuDS which are to be implemented include:
 - Blue Green Roofs



Element Sustainability – Technical Note

- Bioretention rain gardens
- Refer to Section 7.6 in Stantec's report - The associated proposals identify the provision of on-site attenuation in an array of SuDS features including rain garden, permeable paving, green roof and cellular storage. See Section 2.3 of Hexa Consulting Drainage Strategy for further details.
- A surface water drainage strategy has been developed that proposed on site attenuation through a range of SuDS features, and controlled discharge to the Vastern Ditch culverted watercourse at a reduced rate, in accordance with the Lead Local Flood Authority (LLFA) requirements.

11. Does the development meet the requirements of Policy EN18?

All major developments must incorporate sustainable drainage systems (SuDS) as appropriate and in line with the Government's Technical Standards.

- As above

Runoff rates should aim to reflect greenfield conditions and, in any case, must be no greater than the existing conditions of the site.

- Refer to Section 4.4 of the Sustainability Statement 2023.195 - Surface water discharge is proposed to be restricted to achieve at least 50% betterment compared to the existing brownfield conditions and to discharge to the culverted watercourse along the southern boundary of the site.
- Refer to Stantec's Flood Risk Assessment Section 7.6 - The restriction to the discharge rate has been calculated by providing at least 50% betterment to the pre-development 1 in 1 year discharge rate (using the Modified Rational Method) based on a catchment area of 0.377ha and controlling the discharge volume.

Waste

12. How will the development minimise waste sent to landfill?

- Refer to Section 4.5 of the Sustainability Statement 2023.195 - This development will promote the minimisation of waste arising and seek to maximise the use of recycled materials in construction.
- Prior to commencement of the above ground construction phase, a site waste management plan (SWMP) will be produced by the developer to limit the on and off-site



environmental impacts of construction. It is proposed that the detail of this document is subject to control by appropriately-worded planning condition.

- The operational waste strategy for the scheme focuses on the segregation of waste at source, in order to maximise the potential for the residents to recycle. All residents will be informed on collection frequency, as well as guidance on local recycling facilities to assist with the management and storage of waste.
- The proposed layouts and designs will provide adequate, well-designed space to facilitate waste storage, reuse, recycling and composting in accordance with policy CC5 – Waste minimisation and storage.
- Waste will be segregated at source with the help of split bins to receive multiple streams of waste – general, recyclables and compost.

13. How will the development make the maximum use of construction and demolition waste?

- Refer to Section 4.3 of the Sustainability Statement 2023.195 - Demolition and excavation material (such as soil and substructural elements) from construction works will be used, where practical, for landscaping purposes.
- The contractor will undertake a pre-demolition audit to identify opportunities to retain materials in the value chain and minimise disposal to landfill.

14. How will the development make maximum use of re-used and recycled materials?

- Refer to Turner & Townsend WLCA Section 4.3 - The use of cladding made with high recycled content will be considered, the team will engage with suppliers early to verify any possible cost implication.
- Refer to Turner & Townsend WLCA Section 4.1 - LCA Concept Design options appraisal regarding recycled content being reviewed.

15. How will provision be made for the storage and recycling of waste for all users of the site?

- Refer to Section 4.3 of the Sustainability Statement 2023.195 - All residents will be informed on collection frequency, as well as guidance on local recycling facilities to assist with the management and storage of waste.



Pollution

16. What measures have been incorporated to ensure that noise and light pollution will be minimised through the development?

- Refer to section 4.6 of the Sustainability Statement 2023.195 - Measures will be put in place to reduce noise pollution during construction and occupation;
- Good acoustic design will be targeted during the early design stages of the development management process, to reduce noise pollution during occupation;
- In accordance with EN16: Pollution and Water Resources, the proposed development will not be damaging to the environment and sensitive receptors through land, noise or light pollution; and adequate water resources, sewerage and wastewater treatment infrastructure will be in place to support the proposed development prior to occupation.
- An External Lighting Design Statement (ELDS), produced by ME Engineers, was submitted as part of the initial planning submission for the Council's consideration. The proposed strategy set out in that document recognises the relatively sensitive scheme location and whilst it places lighting into the public realm to assist surveillance and public/resident safety in the locality, it also ensure appropriate sensitivity to surrounding properties and ecology. Section 4 of the ELDS provides more detail.

17. What measures have been incorporated to reduce nitrogen oxide emissions and reduce the global warming potential of insulants?

- The proposals are for a fully electric scheme and therefore are no local NOx emissions associated with consumption of energy for heating and/or cooling.
- Low global warming potential insulation will be reviewed at the next design stage..

18. What measures have been incorporated to reduce the release of pollution into the atmosphere?

- Refer to Section 4.5 of the Sustainability Statement 2023.195, which identifies that the principal contractor will implement sound environmental management practices and consideration for neighbouring sites during their activities on-site.
- Other answers are as per questions 16 & 17 above



Health and Wellbeing

19. How has the development been designed to maximise natural lighting, reduce the likelihood of noise complaints, incorporate private outdoor space and ensure the layout of the development can be easily adapted to meet the needs of future occupants?

- Refer to Section 4.7 of the Sustainability Statement 2023.195, which notes the provision of a range of accessible open spaces for residents, including access to a podium garden;.
- The proposed development makes good use of available daylight, and will create good levels of natural daylighting within habitable areas, creating a healthy living environment. Further detail can be found in Section 6 of the GIA Daylight and Sunlight Report and update note dated 2nd December 2024;
- The external lighting strategy will be designed to reduce unnecessary light pollution through effective design, energy consumption and nuisance to neighbouring properties, as set out above;
- Good acoustic design will be targeted during the early design stages of the development management process, to reduce noise pollution during occupation;
- Building forms have been developed to maximise natural light to apartments and communal areas. Building heights reduce towards the river to maximise natural light within the waterfront square. A large communal podium garden has been created for residents to enjoy. A gap has been provided between buildings along Vastern Road to bring light into the podium garden. Further communal amenity is located at the 8th floor to provide a well-lit space with views to the river;
- Private terraces with planted boundaries provide defensible space between the communal podium garden and podium level apartments to minimise the likelihood of noise complaints.

Management

20. What measures have been taken to ensure the construction of the site is managed in an environmentally and socially considerate manner, mitigating environmental impacts?

- This detail will be confirmed during detailed design and pre-construction phases by the appointed Contractor, in line with detail to be submitted to agree the proposed Construction and Environmental Management Plan (CEMP) for the scheme. It is expected that the requirement for a CEMP will be subject to planning condition.



21. How has the development been designed to ensure people feel safe and secure?

- The safety and security of residents and visitor has been carefully considered throughout the design process. The scheme has been designed to Secured by Design principles as set out in the Secured by Design Statement. Public spaces will be covered by CCTV and a well-designed lighting strategy will ensure all external spaces are well lit. Passive surveillance is provided through an active ground floor with a mix of commercial, residential and shared residential amenity spaces lining all external routes.
- A Secured by Design Strategy is included within this submission for review.

Ecology

22. How have the wildlife habitats and natural features on and adjacent to the site been considered and how will they be retained, protected and enhanced?

- Refer to Section 4.9 in the Sustainability Statement 2023.195 - New trees, ground level planters and hedgerows throughout the public realm will be introduced in line with Local Plan Policy EN12: Biodiversity and the Green Network, thereby enhancing the green infrastructure links on site;
- The use of trees and other planting as part of a landscape scheme, will provide shading of amenity areas in accordance with Local Plan Policy CC3- Adaption to Climate Change
- The green and blue roof system will assist in increasing the ecological value of the site;
- The proposed scheme is expected to achieve a net gain of 12.28%, which equates to 0.12 Biodiversity Units (BU) for area-based habitats. Thereby exceeding the 10% required by Schedule 7A of the Town and Country Planning Act (TCPA) 1990 (as inserted by Schedule 14 of the Environment Act 2021). A result of Not Applicable is returned linear habitats, although a net gain of 0.12 BU is achieved (this is because a hedgerow percentage will not show as there is no hedgerow within the baseline to gauge comparison).
- Refer to TEP's Ecological Impact Assessment report - The habitats on site are common and widespread, with the scattered trees being the habitat of highest value. Further ecological surveys have been undertaken in 2024.. Potential impacts on ecological features have been identified and appropriate mitigation proposed. Enhancement features have been recommended.



- It is recommended that on-site trees be retained as much as possible. Retained trees should be protected from accidental damage during construction works in line with BS5837:2012 Trees in relation to design, demolition, and construction.

In response to the additional requests from RBC, the following areas have also been included and addressed:

Has an assessment of the feasibility of rainwater and grey water been carried out? Policy CC2 requires them to be incorporated where they are energy and cost effective.

- The water quality treatment train has been determined based on CIRIA 753.
- The SuDS Manual and industry best practice has been adopted for Norman Place. The appraisal of the potential development characteristics and relevant SuDS components is presented within the Hexa Drainage strategy and demonstrates best practice through the use of rain gardens, permeable paving and storage where appropriate.

Passive measures such as orientation should be assessed.

- Several passive measures informed the design development of the current application. Careful consideration was given to the orientation of buildings, the depth of rooms within apartments, the size and position of glazed elements and the form factor of the building amongst others. Whilst it is not possible to provide a fully passive scheme when balancing the competing considerations of site location, opportunities/constraints and viability, the orientation of the homes and other passive measures have been considered and incorporated where possible
- Passivhaus measures have been fully considered and have informed the good design practice of the current application. Whilst it is not possible to achieve full passivhaus compliance when balancing the competing considerations of site location, opportunities/constraints and viability the orientation of the homes has been considered.
- Solar control glazing will be specified as part of the detailed design.

Has the feasibility of using trees and planting to provide shading been assessed?

- The arrangement of built form provides a variety of areas that benefit from both shade and sunshine to meet varying needs. Within this, trees have been planted to assist, but not overshadow the public realm and landscaped areas.



- If the Council requires further technical analysis to demonstrate site overshadowing based on the current landscape proposals this can be provided.

Has solar shading been incorporated?

- Solar shading was considered during the design development but not incorporated into the final design as the risk of overheating was mitigated through the use of appropriately sized windows and mechanical ventilation.

What measures are proposed to ensure that the development can connect to a future district heat network?

- We are not aware of any current or materially developed future plans for a district heat network in this location.
- The majority of district heat networks use gas fired boilers, or other forms of fossil fuel or high carbon emission source which we cannot include within our plans due to the ESG criteria of the funding being used and aspirations to introduce a highly sustainable development. The proposals are for an all-electric solution.

Communal heating should be assessed.

- Communal heating has been assessed and considered not preferable primarily due to the electric constraints on the site (limited capacity available for central heat pumps) and client ESG requirement to avoid gas heating and aspirations to introduce a highly sustainable development.
- In addition, spatial constraints and associated impact of large central plant, additional risers and impact on corridor distribution, alongside local acoustic and air quality impact due to additional rooftop plant requirements make this a less preferable option.
- The proposals are for an all-electric solution with individual air source heat pumps. This approach is more cost-effective than a communal system and provides highly comparable results with predicated carbon savings of over 70% compared to Part L 2021.

Have targets been set for waste generation and diversion from landfill?

- Yes. BREEAM Credit Wst01c has been targeted which specifically commits to meeting, where applicable, the diversion from landfill benchmarks.



Will the drainage strategy address risk of contamination?

- Yes, as discussed above, the drainage strategy has been generated on the use of industry best practice. Surface water in the event of a flood is managed on site and all surface water is subject to passive treatment prior to discharge to the local network. Works associated with the scheme proposals also create additional surface water storage capacity, providing betterment over the existing on-site scenario.

Will dwellings meet the nationally described space standards?

- Yes – as per application - all homes will be designed to comply with NDSS.

Measures to combat climate change to be identified

- Refer to Section 4.9 of the Sustainability Statement 2023.195 - New trees, ground level planters and hedgerows throughout the public realm will be introduced in line with Local Plan Policy EN12.
- Refer to Section 4.5 of the Sustainability Statement 2023.195 - The principal contractor will implement sound environmental management practices and consideration for neighbouring sites to appropriately control activities on-site.
- Refer to Section 4.3 of the Sustainability Statement 2023.195 - Demolition and excavation material (such as soil and substructural elements) from construction works will be used, where practical, for landscaping purposes.
- The contractor will undertake a pre-demolition audit to identify opportunities to retain materials in the value chain and minimise disposal to landfill.
- Refer to Section 4.4 of the Sustainability Statement 2023.195 - Sustainable Drainage Systems (SuDS) are proposed for the management of surface water runoff in accordance with local and national guidance
- Refer to the conclusions of the Sustainability Statement, which identify that the fossil fuel free scheme will be designed to be resource and energy efficient and include features such as a photovoltaic (PV) array which will integrate with the green roof system and highly efficient Air Source Heat Pump (ASHP) systems
- Referring to Hoare Lea Stage 2 Report (2325365-HLE-XX-XX-RP-ST-402026) Page 5, it is identified that a 'fabric first' approach has been taken in order to reduce the energy demand and CO₂ emissions from the Proposed Development. The overriding objective for the façade design of the building will be to achieve the optimum balance between providing natural daylighting benefits to reduce the use of artificial lighting, the provision of passive solar



heating to limit the need for space heating in winter and limiting summertime solar gains to reduce space cooling demands.

Information regarding shading to be provided

- The Part O model identifies that the thermal comfort criteria of TM59 has been achieved through careful selection of glazing ratios, opening etc. No specific solar shading has been identified as required, however solar control glass will be specified as part of the detailed design.

Information re: residential water use to be provided

- Reducing water usage by residents is an important criterion of the project. We aim to limit usage to <105 litres/person/day in accordance with Packaged Living's Sustainable Design Brief targets for this development and, as in the usual course of events, will design the details of this at the detailed design stage.
- The sanitary fixtures will be specified to achieve a calculated daily consumption of <105 and a water efficiency strategy will be determined for the site, to include the provision of 'A' rated appliances as a minimum.
- This approach will secure the award of the mandatory Water Consumption (Mat01) credit required for the BREEAM 'excellent' certification.

Carbon Offset Levy calculation required

- A Carbon Offset Levy of c.£100,000 is anticipated given calculations undertaken on the residential parts of the scheme. Full details of the expected levy will be provided shortly upon completion of the non-residential energy calculations.

Non-residential energy calculations should be provided (to also assist with above), plus full SAP, SBEM for the energy hierarchy stages to be provided

- Sample SAP reports have been included in the energy strategy.
- Further SAP and SBEM calculations as requested will be provided shortly as part of an updated energy strategy.

Requirement to submit WLCA

- A Whole Life Cycle Assessment (WLCA) has been produced to assess the embodied carbon impact of the scheme and design recommendations have been made to limit the carbon emissions associated with the scheme.



Element Sustainability – Technical Note

- Refer to Turner & Townsend WLCA Section 4.1 – The initial carbon assessment started during RIBA Stage 2 with the aim to inform design development and promote low whole life carbon design.
- Refer to Turner & Townsend WLCA Section 4.3 - These are to be addressed further with the design team during Technical Design stage in relation to all relevant design factors, such as, but not limited to: whole life carbon and environmental impact, cost, delivery time, procurement route and aesthetics.
- Refer to Turner & Townsend WLCA Section 3.1 - The analysis was carried out using LCA software LCA for BREEAM UK under OneClickLCA. This is a dedicated life cycle assessment tool, which allows embodied carbon impact for all specified materials to be modelled.
- Refer to Turner & Townsend WLCA Section 3.2 - Embodied Carbon over Life Cycle (TCO2e) (Aligned with BREEAM Scope) results

Will guidance for non-technical building use be provided to assist efficient building use and environmental use

- Yes, this would be included in the Home User Guides which all residents will have access to. A Property Management Strategy has been produced and forms part of this submission for the Council's consideration.

What consideration has been given to maintenance of the building?

- A Property Management Strategy is submitted for the Council's review. The purpose of this document is to set out the approach to the management and maintenance of internal and external parts of the proposed development, to be further detailed during detailed design stages and construction thereafter. The strategy would be monitored and revised, as necessary, when operational.

How has the building been designed to reduce the opportunity for and the fear of crime?

- The safety and security of residents and visitor has been carefully considered throughout the design process. The scheme has been designed to Secured by Design principles as set out in the Secured by Design Statement. Public spaces will be covered by CCTV and a well designed lighting strategy will ensure all external spaces are well lit. Passive surveillance is provided through an active ground floor with a mix of commercial, residential and shared residential amenity spaces lining all external routes.



Appendix 1 – WAT1 Calculations



Site Information	
Site Name	Waterfront Square
Reg Number	2 Bed Apartment
Street 1	Norman Place
Street 2	
Area	Reading
Town or City	Reading
Post Code	

Installation Type	Average Capacity/Flow Rate	Litres/Person/Day
Single Flush WC's	0	0
Dual Flush WC's	3.06	13.53
All WC's	3.06	13.53
Kitchen/Utility Room Taps	5	12.56
Other Taps	5	9.48
Baths	140	15.4
Showers	8	34.96
Dishwashers	1.25	4.5
Washing Machines	8.17	17.16
Water Softener		
Waste Disposal Unit	Not Present	0
Total Water Use	107.59 Litres/Person/Day	
Contribution from Rain Water	0 Litres/Person/Day	
Contribution from Grey Water	0 Litres/Person/Day	
Normalisation Factor	0.91 Litres/Person/Day	

Code for Sustainable Homes - Consumptions & Credits	
Water Consumption (Code for Sustainable Homes)	97.9 Litres/Person/Day
Credits Scored	3

Building Regulations 2000 AD Part G (2010 Ed) - Consumption	
External Water Use	5 Litres/Person/Day
Water Consumption (Building Regulation 17 K)	102.9 Litres/Person/Day

Kitchen/Utility Room Taps						
Description	Flow Rate	Qty	Total Water	Grey Water	Rain Water	Net Water
Kitchen Tap	5	1	5	0	0	5
Total Litres/Person/Day Gross						12.56
Total Litres/Person/Day Gross						12.56

Other Taps						
Description	Flow Rate	Qty	Total Water	Grey Water	Rain Water	Net Water
WHB Tap	5	2	10	0	0	10
Total Litres/Person/Day Gross						9.48
Total Litres/Person/Day Gross						9.48

Baths						
Description	Capacity	Qty	Total Water	Grey Water	Rain Water	Net Water
Low Capacity Bath	140	1	140	0	0	140
Total Litres/Person/Day Gross						15.4
Total Litres/Person/Day Gross						15.4

Showers						
Description	Flow Rate	Qty	Total Water	Grey Water	Rain Water	Net Water
Shower	8	1	8	0	0	8
Total Litres/Person/Day Gross						34.96
Total Litres/Person/Day Gross						34.96

Washing Machines						
Description	L/Kg Dry Load	Qty	Total Water	Grey Water	Rain Water	Net Water
Default Value	8.17	1	8.17			8.17
Total Litres/Person/Day Gross						17.16
Total Litres/Person/Day Gross						17.16

Dishwashers						
Description	L/Place Setting	Qty	Total Water	Grey Water	Rain Water	Net Water
Default Value	1.25	1	1.25	0	0	1.25
Total Litres/Person/Day Gross						4.5
Total Litres/Person/Day Gross						4.5

Single Flush WC's						
Description	Flush Volume	Qty	Total Water	Grey Water	Rain Water	Net Water
Total Litres/Person/Day Gross						0
Total Litres/Person/Day Gross						0

Dual Flush WC's						
Description	Flush Vol (P/F)	Qty	Total Water	Grey Water	Rain Water	Net Water
Dual Flush WC	2.6/4	2	6.12			0
Total Litres/Person/Day Gross						13.53
Total Litres/Person/Day Gross						13.53

Ion Exchange Water Softener	
% of Total Capacity Used Per	
Water Consumed Per Regeneration	
Average Regeneration Cycles Per Day	
Occupants Served by the System	
Water Consumed Beyond 4%	
Water Consumed Beyond 4%	

Rain Water Collection	
Collection Area	
Yield Co-Efficient	
Hydraulic Filter Efficiency	
Average Rainfall	
Daily Rain Water Collection	
Number of Occupants	
Daily Rain Water Per Person	

Site Information	
Site Name	Waterfront Square
Reg Number	3 Bed Apartment
Street 1	Norman Place
Street 2	
Area	Reading
Town or City	Reading
Post Code	

Installation Type	Average Capacity/Flow Rate	Litres/Person/Day
Single Flush WC's	0	0
Dual Flush WC's	3.06	13.53
All WC's	3.06	13.53
Kitchen/Utility Room Taps	5	12.56
Other Taps	5	9.48
Baths	140	15.4
Showers	8	34.96
Dishwashers	1.25	4.5
Washing Machines	8.17	17.16
Water Softener		
Waste Disposal Unit	Not Present	0
Total Water Use	107.59 Litres/Person/Day	
Contribution from Rain Water	0 Litres/Person/Day	
Contribution from Grey Water	0 Litres/Person/Day	
Normalisation Factor	0.91 Litres/Person/Day	

Code for Sustainable Homes - Consumptions & Credits	
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Other Taps						
Description	Flow Rate	Qty	Total Water	Grey Water	Rain Water	Net Water
WHB Tap	5	3	15	0	0	15
Total Litres/Person/Day Gross						9.48
Total Litres/Person/Day Gross						9.48

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Description	Capacity	Qty	Total Water	Grey Water	Rain Water	Net Water
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Shower	8	2	16	0	0	16
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Total Litres/Person/Day Gross						4.5

Single Flush WC's						
Description	Flush Volume	Qty	Total Water	Grey Water	Rain Water	Net Water
Total Litres/Person/Day Gross						0
Total Litres/Person/Day Gross						0

Dual Flush WC's						
Description	Flush Vol (P/F)	Qty	Total Water	Grey Water	Rain Water	Net Water
Dual Flush WC	2.6/4	3	9.19			0
Total Litres/Person/Day Gross						13.53
Total Litres/Person/Day Gross						13.53

Ion Exchange Water Softener	
% of Total Capacity Used Per	
Water Consumed Per Regeneration	
Average Regeneration Cycles Per Day	
Occupants Served by the System	
Water Consumed Beyond 4%	
Water Consumed Beyond 4%	

Rain Water Collection	
Collection Area	
Yield Co-Efficient	
Hydraulic Filter Efficiency	
Average Rainfall	
Daily Rain Water Collection	
Number of Occupants	
Daily Rain Water Per Person	

