

Eco Impact Checklist

Title of Report: Scheme approval for the procurement of ZEDpods at Chalks Rd Car Park, St George				
Report Author: Jon Feltham, Programme Director (Estate Regeneration)				
Anticipated Date of Key Decision: 1 st October 2019				
<p>Summary of Proposals: To seek scheme approval for the development of the Chalks Rd Car Park with 11 no. 'affordable' ZEDpods. These will be located on stilts over the existing car park (to be retained) and will be developed directly by the Council as part of its ongoing house building programme of new council owned homes.</p> <p>The report sets out recommendations for the approval of a capital scheme through a turnkey housing development, and seeks approval to proceed to procurement of the modular built homes.</p>				
Will the proposal impact on...	Yes/No	+ive or -ive	If Yes...	
			Briefly describe impact	Briefly describe Mitigation measures
Emission of climate changing gases?	Yes	+ive	<p>The transport and production of building materials and the building process itself (inc. associated transport of labour, building techniques, waste, use of renewables etc.) will have an environmental impact and will ultimately cause climate changing gases.</p> <p>The completed new homes have the potential to increase greenhouse gas emissions.</p>	<p>The planning application had to be accompanied by a <i>Sustainability Statement</i> and <i>Energy Statement</i> to address Policies BCS13-15. This included a need to reduce the development's carbon generation by 20% through the use of renewable technologies. This was significantly exceeded so that the buildings offset all carbon emissions, as evidenced in the SAP reports.</p> <p>https://planningonline.bristol.gov.uk/online-applications/files/7D370533FF3694EA084F2CC711645F27/pdf/19_02090_F-SUSTAINABILITY_STATEMENT-2082558.pdf</p> <p>The proposed Contractor will need to complete an <i>Environmental Method Statement</i> during</p>

			<p>tendering which will include details relating to:</p> <ul style="list-style-type: none"> • sustainable material use; • local resources and materials; and • how the travel impacts associated with the works will be reduced. <p>The ZEDpods are constructed off-site in the UK and can be erected on-site in a matter of days with a forklift.</p> <p>Transportation of the finished buildings will produce emissions, but all vehicles will be Eurocode 6 compliant.</p> <p>There will be no gas fuel in the new homes.</p> <p>The buildings are fully electric and produce no carbon, NOx, Sox, etc. on site.</p> <p>Low embodied energy and carbon of materials used in the design of the ZEDPods has been incorporated into its core design. The off-site manufacture methodology reduces construction waste and construction time to reduce energy and carbon emissions. The structure is made of CLT which is a low embodied carbon building material.</p> <p>Each ZEDpod property will be constructed to the energy efficient</p>
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				<p>construction specification so that target CO₂ emissions are negative.</p> <p>The buildings have zero operational carbon emissions. The averaged emissions across the terrace, evidenced in the SAP reports, are below 0 t/annum.</p> <p>The buildings are constructed of cross-laminated timber. This is a carbon store. The factory produces an almost closed loop, with waste material used to power a combined heat and power plant on site.</p>
Bristol's resilience to the effects of climate change ?	Yes	+ive	<p>The development has the potential to increase flood risk in the area through placing additional demand on the mains drainage system.</p> <p>The completed development has the potential to worsen the urban heat island effect and the City's resilience against heat waves.</p>	<p>As part of the Planning process, the consultee stated they were "satisfied that the flood risk assessment provided evidences that the development of the site will not increase the risk of flooding to this area or its surrounding areas as the development site is already hard surfaced (impermeable)".</p> <p>https://planningonline.bristol.gov.uk/online-applications/files/C9B2BC2C55BCB6E6CB952761C9180EFE/pdf/19_02090_F-FLOOD_RISK_AND_DRAINAGE_STRATEGY-2082559.pdf</p> <p>We will consider a Sustainable Urban Drainage system (SUD's).</p>

				<p>The ZEDpods have extremely low running costs through the use of triple glazed windows with lots of daylight, super levels of insulation, roof mounted solar photovoltaics, and mechanical ventilation with heat recovery.</p> <p>The homes will have the benefit of the inclusion of future proofing provision of passive and low energy cooling measures to mitigate risk of overheating. Window positions will encourage stack ventilation and cross ventilation in the summer. Large solar canopies will shade windows to prevent overheating in summer and the need to open windows to stay cool inside.</p> <p>The ZEDpods will provide shading to the parked cars underneath and this could reduce the need to run air conditioning to cool vehicles that would otherwise have been heated by the sun and may also provide some frost protection in the winter.</p>
Consumption of non-renewable resources?	Yes	+ive	The development will incur short-term use of fossil fuels and other non-renewable resources through the use of energy, transport and materials during the	Building materials will be procured to take into account the leading industry standards such as all timber being FSC Registered, and the appropriate building materials being BRE

		<p>construction works.</p> <p>The completed development has the potential to add to the consumption of non-renewal resources through the provision of heating and power to the homes.</p>	<p>Green Guide rated. The materials used in the structure, the CLT, is a carbon sink.</p> <p>The use of modular housing significantly reduces construction traffic both on-site and in the factory.</p> <p>The use of Design for Manufacturing (DFM) significantly reduces the waste in the factory and almost eliminates on-site construction waste.</p> <p>The completed homes will have renewable energy generation included and consideration of sustainable transport (e.g. provision for bike storage), thus reducing dependence on non-renewable resources.</p> <p>The heating and hot water strategy will need to be in accordance with the Heat Hierarchy set out within Policy BCS14. The ZEDpods use a solar assisted heat pump which does not require any external air handling unit of fans. The buildings have high levels of airtightness and have mechanical ventilation heat recovery units installed.</p> <p>The ZEDpods are net zero carbon, and use integrated roof mounted solar panels which generate more energy</p>
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				<p>than the homes consume in the year.</p> <p>The effects of utilising this technology will be reduced energy consumption, reduced service utility bills and a more sustainable way of living with the future proofed homes.</p>
Production, recycling or disposal of waste ?	Yes	+ive and -ive	<p>Waste will arise during the demolition and construction of the new homes.</p> <p>Waste will also arise from the normal occupation of homes.</p>	<p>The Contractor will be required to prepare a <i>Site Waste Management Plan</i> that will detail how site waste will be minimised and recycling promoted.</p> <p>The Contractor will need to demonstrate compliance with the waste hierarchy by:</p> <ul style="list-style-type: none"> • Preparing and adhering to a <i>Site Waste Management Plan</i>. • Reducing waste (e.g. through effective material storage). • Re-using waste (e.g. re-use of off-cuts). • Recycling as much waste as possible and using readily recyclable products. • Avoiding landfill wherever possible through schemes such as the Community Wood Project. <p>There will be no demolition on-site. The foundations require shallow pads which dramatically reduces the amount of below ground works.</p>

			<p>Off-site manufacture (OSM) reduces the site generated waste to incredibly low levels. DFM reduces the factory-based site waste. The use of natural building materials increases recyclability.</p> <p>We will be able to monitor waste through specific monthly project KPIs.</p> <p>Regular inductions and toolkit talks to all contractors and sub-contractors are standard which includes waste management talks.</p> <p>In the completed homes, waste will be managed through the provision of appropriate internal and external recycling and waste storage facilities. These will be in line with the Council's requirements for new homes.</p> <p>Offsite construction enables manufacturers to operate efficient processes and waste reduction management plans. At least 90% of the waste generated in the ZEDpods factory is recyclable.</p> <p>The ZEDpods have a 100% sustainable end-of-life construction solution with fully re-usable/recyclable</p>
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				materials.
The appearance of the City?	Yes	+ive and -ive	New homes will change the appearance of the area.	<p>As the scheme is being delivered 'directly' by the Council, we will have more influence over the design and 'place-making' principles for the scheme.</p> <p>The appearance of the new homes has been carefully considered as part of the Planning process. An extensive pre-app consultation process was undertaken with the LPA to ensure the right design for the locality within the City.</p> <p>It is hoped the scheme will have a positive impact on the appearance of the City.</p>
Pollution to land, water, or air?	Yes	+ive and -ive	<p>During construction there will be increased noise, dust and emissions.</p> <p>If the development includes increased vehicle parking it will worsen air pollution.</p> <p>NOx emissions causing air pollution may be emitted by the new homes depending on the chosen heating system.</p>	<p>The Contractor will need to complete an <i>Environmental Method Statement</i> that will include scheme specific details relating to:</p> <ul style="list-style-type: none"> • Securely storing any potentially polluting materials and keeping them away from watercourses and surface water drains. • Avoiding washing out containers of paint or similar materials into drains. • Reducing dust. • Reducing noise pollution. <p>Pollution associated with construction is controlled via the Planning and Building Regulation processes. The LPA will</p>

				<p>require the approval of a <i>Construction Management Plan</i>.</p> <p>Approximately 90% of construction works occurs offsite. The building works onsite are erection of dry construction materials' (i.e. finished pods and raised steel works). Below ground works and excavation is minimised by using shallow foundations</p> <p>The proposed homes will discourage the ownership of a car by not providing a designated parking area for residents.</p> <p>The proposed location is good for public transport connections. There is also a cycle route running close to the site and into the City. The contractor will need to include dedicated cycle storage facilities and electric car charging points.</p> <p>The specification of the ZEDpods includes no toxic materials, no Urea based insulation systems, low VOC paints and adhesives, vapour permeable, breathing wall construction all improve environmental air quality.</p>
Wildlife and habitats ?	Yes	+ive and -ive	The development gives rise to the potential loss/disturbance of	An <i>Ecological Report</i> has been undertaken to establish the ecological merits of the site and any

			wildlife and habitats.	mitigation measures required prior to construction. The approved landscaping scheme will be developed to include a variety species that encourage diversity of wildlife and ensure a sustainable habitat for years to come.
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Consulted with: Internal consultation has included Officers from City Design, Ecology, Planning, Public Health, Property, Energy and the Housing Delivery Team.

Summary of impacts and Mitigation - to go into the main Cabinet/ Council Report

The net effects of the proposals are... This development is an example of an innovative approach to housing provision, with many sustainable features. The use of renewable, sustainably sourced, low embodied carbon, and insulating materials, along with renewables that can generate more energy than the site uses (depending on the conditions) is beneficial. Providing additional housing without taking up any land, or increasing demand on either power infrastructure, or the City's road network (there is no provision for car parking), will contribute to a number of the city's key targets, including carbon neutrality, housing provision, and reducing fuel poverty.

Checklist Completed by:

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Date:	16 th September 2019
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