



Port Street Condition 13 Technical Note

DATE:	20 July 2023	CONFIDENTIALITY:	Public
SUBJECT:	Condition 13		
PROJECT:	Port Street	AUTHOR:	Harry Hazell, WSP

CIRCULAR ECONOMY AND WHOLE LIFE CARBON PRINCIPLES

This technical note has been developed in order to support discharge of planning condition 13. The content below demonstrates how the proposed development is addressing Circular Economy and WLC principles as per the ES Climate Change Chapter (6), tables 6.22 and 6.33.

Condition 13

“Prior to above ground works, a feasibility study considering the measures detailed in tables 6.22 and 6.23 contained within the ES Climate Change Chapter (6), will be submitted for approval to the local authority. A post construction statement shall be submitted within 12 months of occupation of the development.” A post construction statement should outline any changes made to the final design of the building and include any updates to the End of Life strategy. It should also outline the actual quantities of materials used across the proposed development with commentary discussing how wastes were managed across the works.

Circular Economy Principles

A feasibility study in regard to ES Climate Change Chapter table 6.22 circular economy principles can be found within table 4.1 of the Port Street Circular Economy Statement (CES), which has been provided as an appendix to this technical note. The CES outlines how the proposed development is addressing the key principles of circular economy.

WLC Emission Principles

Whilst the WLC report for the proposed development will contain a section covering ES Climate Change Chapter table 6.23 principles, it is not finalised at the time of writing. To avoid any delays, a summary table has been provided below, outlining how the proposed developed is addressing the key principles (where relevant).

Table 1. Principles for reducing WLC emissions (as per ES Climate Change Chapter table 6.23)

No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
1	Reuse and retrofit of existing buildings	Significant retention and reuse of structures is carbon efficient and reduces construction costs.	Buildings not present on site-not applicable.	
2	Use recycled or repurposed material	Reduces carbon emissions and reduces waste.	Structural systems prioritise recycled materials like steel, aggregates, and cement with high recycled content to reduce material demand.	Circular Economy Statement (Doc Ref. 70108278)



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No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
3	Material selection	Appropriate material choices is key to carbon reduction. Ensuring that there is synchronicity between materials selected and planned life expectancy of the building reduces waste and the need for replacement, thus reducing in use costs.	Structural systems prioritise recycled materials, including steel, aggregates, and cement. The project will reduce material demand by using materials with high recycled content such as GGBS content in concrete, where available, and 90-95% recycled content in rebar and steel components, insofar as possible.	Circular Economy Statement (Doc Ref. 70108278)

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No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
4	Minimise operational energy use	A 'fabric first' approach should be prioritised to minimise energy demand and reduce carbon and in-use costs.	An Energy Statement has been prepared by Futurserv for the Proposed Development. The Statement states that the proposed development will incorporate a fabric first approach using passive energy techniques available in the construction industry to reduce its ongoing energy demand : rockwool insulation, and a low u-value have been specified across the scheme, which will reduce the energy consumption. The development also incorporates a range of energy efficiency measures to reduce the carbon footprint. This would include using highly efficient heat generation plant, heat recovery systems and energy efficient and highly controllable lighting. The approach adopted is also to implement energy saving options which further reduce the requirement for regulated energy, such as a more efficient building envelope, and utilising low carbon technologies which are feasible and appropriate for this type of building.	Energy Statement (PStr-FS-G520-RP-XX-001)

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No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
5	Minimise operational water use	Choice of materials and durability of systems, to avoid leakage and subsequent building damage, contribute to reducing the carbon cost of water use.	Low usage fixtures and fittings (under 100 litres per person).	
6	Disassembly and reuse	Designing for future disassembly ensures that products do not become future waste and maintain their environmental and economic value.	As the development is situated on an existing carpark, there is limited opportunity to recover and reuse materials. However, the use of crushed and graded demolition material from ground floor slabs on site has been considered for use in the piling mat. There are only modest opportunities to recycle it within concrete mixtures. Other measures to promote disassembly and reuse include: ■ Unitised curtain wall can be dismantled at end of life. ■ Lightweight metal internal walls that can be disassembled with ease. ■ Bricks can be reused at end of life. ■ MVHR units within all apartments are fully maintainable, so fans, filters etc can all be replaced without the need to replace the whole unit. All MEP plant and equipment is located in and routed through accessible areas, so it can be removed/replaced without the need to breakdown any part of the building structure.	Circular Economy Statement (Doc Ref. 70108278)

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No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
7	Building shape and form	Compact efficient shapes help minimise both operational and embodied carbon emissions for a given floor area. This means a more efficient building overall resulting in lower construction and in use costs.	Efficient façade to floor plan ratio has been considered throughout all stages to keep the design as efficient as possible. The tower element, almost a perfect square, is a compact design, achieving a near 79% net to gross ratio.	Circular Economy Statement (Doc Ref. 70108278)
8	Regenerative design	Removing CO2 from the atmosphere through materials and systems absorbing it makes a direct positive contribution to carbon reduction.	The existing site is a brownfield line operating as a surface car park. It previously formed part of a number of timber yards in the area with these now demolished. The proposal aims to include landscaped areas at ground floor and green roofs, introducing trees, play areas and connection routes through the site. The landscape proposals introduce a significant amount of planting and trees to the site, comprising a mixture of native and non-native species ranging in characteristics. Of the total external space, approximately 25% is herbaceous and shrub planting. In addition, 51 new trees are proposed. Tree species have been selected for their reliance to challenging urban conditions and are specified as either semi-mature stock or large multi-stems. The quantum and extensive range in planting types will be effective in assisting with carbon sequestration.	

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9	Designing for durability and flexibility	Durability means that repair and replacement is reduced which in turn helps reduce life-time building costs. A building designed for flexibility can respond with minimum environmental impact to future changing requirements and a changing climate, thus avoiding obsolescence which also underwrites future building value.	Adaptability and flexibility has been considered for the design of the ‘Services and Space’ layouts to minimise waste generation during maintenance and future reconfigurations. Commercial units are provided with electrical and gas supplies to allow for any potential tenant and change of use in future. MEP services are generally routed at high level to avoid accidental damage, so prolonging their life and durability. Durable materials have been specified in common areas with more transit (like tiles or timber flooring). Double boarding plasterboard has also been specified on common areas to achieve a robust detail. Corner protection for the car park columns have been included too to reduce life cycle impacts from damage replacement.	Circular Economy Statement (Doc Ref. 70108278)
10	Optimisation of the relationship between operational and embodied carbon	Optimising the operational/embodied carbon relationship contributes directly to resource efficiency and overall cost reduction.	Efficient façade and fabric to reduce operational carbon with minimal impact on embodied carbon. The brick façade has been designed to: -Reduce the number of steel supports required, to 1 every 2 levels -Increase the insulation within the cavity, up to 220 mm and a 0.13 u value.	

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No.	WLC Reduction Principle	Key Benefit	Examples of implementation	Source
11	Building life expectancy	Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value.	Superstructure elements have more than 50 years (façade 60 years for primary untised glazing) of corrosion protection, and substructure elements are designed to last more than 50 years. Concrete elements have a design life of at least 100 years.	Circular Economy Statement (Doc Ref. 70108278)
12	Local sourcing	Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits.	Procurement policy will be developed to ensure local supply chains are established. Where local sourcing is not possible, the design team have (and will continue to) influence supply chain where possible, for example façade anodising is local to italian supplier, to keep supply chain in close proximity, minimising transportation impacts.	
13	Minimising waste	Waste represents an unnecessary and avoidable carbon cost. Buildings should be designed to minimise fabrication and construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs.	A Waste Management Strategy (WMS) has been prepared by Curtins to consider the potential refuse and recyclable waste volumes of the development, and the associated management and collection strategy arrangements. Furthermore, the client has confirmed that the construction phase will follow best practices, including reuse of site-won materials for temporary works, clear labelling systems for waste segregation, just-in-time procurement, correct on-site material storage, plasterboard recycling services, take-back scheme for packaging materials, training and engagement of staff.	Waste Management Strategy (Z0-CUR-A180-Rp-XX-021_Ver1)

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14	Efficient fabrication	Efficient construction methods (e.g. modular systems, precision manufacturing and modern methods of construction) contribute to better build quality, reduce construction phase waste and reduce the need for repairs during post completion and the defects period (snagging).	Resource-efficient methods of manufacturing such as off-site fabrication will be used for elements of the construction e.g: - Partitions constructed with precut metal stud systems. - Unitised curtain wall will be efficient and bespoke designed and pre-cut sizes to reduce waste and excess by stock by manufacturing on demand. - Lift systems pre-manufactured off site.	Circular Economy Statement (Doc Ref. 70108278)
15	Lightweight construction	Lightweight construction uses less material which reduces the carbon footprint of the building as there is less material to source, fabricate and deliver to site.	- Concrete grades will be reviewed to reduce the weight of reinforcement. - Efficient structural design to reduce rebar and concrete requirements via movement and tolerance reports to highlight where savings/efficiencies could be realised. - Internal walls are lightweight SFS construction instead of blockwork. - Lightweight stainless steel swimming pool liner. - Brickwork system re-engineered to reduce support system to 1 every 2 floors.	Circular Economy Statement (Doc Ref. 70108278)



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16	Circular economy	The circular economy principle focusses on a more efficient use of materials which in turn leads to carbon and financial efficiencies.	A Circular Economy Statement has been prepared by WSP for the Proposed Development, based on best practice circularity principles. The Statement lists various sustainable resource management measures being implemented on Site, as well as additional opportunities to further explore measures to reduce waste, encourage recycling and manage waste responsibly.	Circular Economy Statement (Doc Ref. 70108278)