Appendix 10: OBC Sustainability Opportunities

Old Oak West OBC | Version 2: Revised December 2023

OPDC OLD OAK AND PARK ROYAL DEVELOPMENT CORPORATION

Homes England

Department for Transport

Department for Levelling Up, Housing & Communities

Appendix 10: OBC Sustainability Opportunities

Contents

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OBC Sustainability Opportunities

Carrie Behar, 06/04/23

Introduction

This text summarises the opportunities and benefits of adopting an exemplar approach to sustainable development.

The built environment and construction sector accounts for over a third of global carbon emissions[1], and contributes to a worsening climate and biodiversity crisis. Sustainable development has the potential to not only mitigate this damage and create a positive legacy for people and planet, but can also generate social and economic benefits, maintain property values, and reduce the risk to investors of stranded assets.

At Old Oak West (OOW) there is an enormous potential to respond positively to these crises, by mitigating carbon, embedding resilience in our urban fabric and creating a piece of city where communities can prosper, while nature thrives.

Opportunities arising from comprehensive development

Developing the area comprehensively brings further opportunities to embed best practice sustainable design and construction. Taking a 'joined up' approach enables local and national needs to be met more strategically, benefitting from:

- economies of scale, including material efficiencies as well as the potential to engage with and influence the supply chain,
- the ability to plan and deliver key physical and social infrastructure in an integrated and efficient way, and
- a more integrated approach to optimising for health and wellbeing, through urban massing, green infrastructure, and a considered range of local amenities.

At OOW, a number of strategic initiatives have been identified which are made possible, or more cost effective, through comprehensive development, and which will add significant value to the project in terms of social and environmental sustainability. These initiatives are summarised in the appended *Strategic Sustainability Initiatives – Summary* table.

Some specific opportunities are highlighted below:

Low carbon heat network

There is an opportunity to create an ambient network, sourcing waste heat from local data centres to provide low carbon heating for the development. At King's Cross, a site-wide heat network contributed to the development achieving carbon neutrality, while a strategic approach to meanwhile programming, including the 'garden of a thousand hands' ('Skip Garden'), generated social value, while conserving resources and materials and positioning the area as a new 'destination' for London.

[1] Construction Industry Council. *Climate Change*. Accessed: https://www.cic.org.uk/policy-and-public-affairs/climate-change (May 2023).

Soil remediation
Much of the brownfield site has been contaminated by historic uses and will need to be remediated. At the London 2012 Games, a 'soil hospital' was built onsite, contributing to a cleaner and safer environment, whilst providing a substantial return on investment.

Circular economy
Embedding circularity requires a 'systems' approach to material flows which can only be achieved if the opportunity area and development site are considered as a whole, rather than a series of fragmented plots. The Excess Materials Exchange at Meridian Water is new digital platform which will allow the exchange of materials from construction projects across the borough, including Meridian Water, helping to reuse materials and reduce waste. The first circular economy project to be delivered at Meridian Water is the Troubadour Meridian Water Studios, a film studio complex built using recovered materials.

Supply chain innovation
There is an opportunity at OOW to build an innovative supply chain to achieve exemplary standards of sustainable construction, contributing towards a new circular economy in the wider OPDC area. The largest Passivhaus development in the UK comprises 125 new homes. Delivering homes to a Passivhaus standard at OOW would require significant increases in current industry capacity and capability; such an initiative could support a whole new local economy around designing, fabricating, and constructing Passivhaus homes, comprising flying factories, employing local labour, and adopting prefabrication and modern methods of construction to create a 'centre of excellence' for low-carbon and Passivhaus construction.

OBC approach to sustainability

Baseline scheme
The capacity study used to inform the OBC financial model assumes a baseline scenario in terms of sustainability, targeting a general alignment and compliance with current regulations, policies, and standards, to allow a fair comparison to be made with alternative delivery models. It follows requirements set out in national, London and local planning policies, including the London Plan[2], the OPDC Local Plan[3], the Environment Act 2021[4], the Thames River Basin Management Plan[5] and *BRE BR209 2022* – Site Layout Planning for Daylight and Sunlight[6].

Key environmental performance metrics have been tested spatially, using an integrated modelling approach to explore the impact of different massing options on daylight,

[2] Mayor of London, 2021. *The London Plan.* Accessed: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf (May 2023).
[3] Old Oak and Park Royal Development Corporation (OPDC), 2022. *OPDC Local Plan.* Accessed: https://www.london.gov.uk/modernigovopdc/documents/s60158/07.6%20Appendix%206%20Local%20Plan.pdf (May 2023).
[4] UK Public General Acts, 2021. *Environment Act 2021.* Accessed: https://www.legislation.gov.uk/ukpga/2021/30/section/1/enacted (May 2023).
[5] Department for Environment, Food and Rural Affairs, 2016. *Thames river basin district river basin management plan.* Accessed: https://www.gov.uk/government/publications/thames-river-basin-district-river-basin-management-plan (May 2023).
[6] BRE Group, 2022. *Site layout planning for natural light.* Accessed: https://bregroup.com/services/testing-certification-verification/indoor-environment-testing/natural-light/#:~:text=The%20BRE%20Report%2C%20Site%20layout,the%20impacts%20of%20new%20developments. (May 2023).

sunlight, thermal comfort, and operational energy performance, with reference to targets set out in *OPDC Local Plan Policy D5*[7] and *BRE BR209 2022* guidance[8]. A high-level assessment of energy demand was conducted based on London Plan requirements to deliver a minimum on-site reduction of carbon of at least 35% beyond Part L of the Building Regulations[9]. High level analysis and testing of flood resilience, water supply and demand, and sustainable urban drainage was also undertaken.

Project build rates and on-plot infrastructure costs for the OBC scheme are based on comparables compliant with current policy and legislative requirements, for example in relation to carbon and energy use, within a similarly dense urban context (see Mott Macdonald's *Sustainability Memorandum* appended to this note for more information).

Enhanced sustainability opportunities

The appended table *Strategic Sustainability Initiatives – Summary* identifies potential opportunities for strategic initiatives and strategies which are made possible, and/or more cost-effective, when delivered at scale with a coordinated approach. These initiatives are aligned with the project's Strategic Objectives, particularly 01 *Drive Economic Growth,* 03 *Create a Place to be Proud of,* and 05 *Create a Better Environment,* [reference OOW Strategic Objectives – Strategic Case], as well as the Mayor's aim for London to become a net-zero carbon city by 2030.[10]

Following a review of comparables for other 'best in class' schemes, an indicative cost uplift of around 5-10% from baseline construction costs has been suggested to deliver an 'exemplar' sustainable scheme (see Mott Macdonald's *Sustainability Memorandum*). The comparables studied are developments within London that have implemented various sustainable practices within their design, that go over and above what would be allowed for within baseline schemes. It should be noted that this uplift would not allow for the delivery of all stretch initiatives identified in the appended schedule. The comparable schemes referred to typically deliver one or two 'stretch' initiatives.

Benefits of a sustainable approach

Traditional methods of undertaking cost appraisals can struggle to capture the long term social and environmental value of sustainable development. A 'triple bottom line' approach to whole-life cost considers the true value of development decisions, including comfortable homes with lower operating costs, attractiveness to tenants and buyers, and a lower risk of stranded assets. The most cost-effective way to 'lock in' long term sustainability and achieve net zero in operation, is by adopting a 'fabric first' approach, whereby investment in a high-performance building fabric is prioritised over 'bolt on' solutions. Development at the scale of OOW provides a real opportunity to create a

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[7] Old Oak and Park Royal Development Corporation (OPDC), 2022. *OPDC Local Plan.* Accessed: https://www.london.gov.uk/modernmgovopdc/documents/s60158/07.6%20Appendix%206%20Local%20Plan.pdf (May 2023).

[8] Littlefair P, King S, Howlett G, Ticleanu C, and Longfied A, 2022. *Site layout planning for daylight and sunlight: a guide to good practice.* Accessed: https://www.brebookshop.com/details.jsp?id=328056 (May 2023).

[9] Department for Levelling Up, Housing and Communities, 2014 (updated 2023). *Conservation of Fuel and Power. Approved Document L.* Accessed: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l (May 2023).

[10] Mayor of London, 2022. *Net zero carbon by 2023.* Accessed: https://www.london.gov.uk/programmes-and-strategies/environment-and-climate-change/climate-change/zero-carbon-london/pathways-net-zero-carbon-2030#:~:text=The%20Mayor%20of%20London%2C%20Sadiq,of%20the%20net%20zero%20pathway. (May 2023).

‘centre for construction excellence’ in the area, focussed on creating the skills and capacity for a pipeline of sustainable construction projects.

Homes England economists are currently undertaking analysis to understand and quantify the environmental impacts of various sustainability scenarios, from a baseline through to an exemplary scheme. These scenarios are based on capacity study design work, and accompanying technical analysis, rather than a fully designed scheme.

Conclusion

A scheme that is compliant with current policy and regulations will not deliver the carbon savings required across the industry by 2030, and there is an ongoing risk across the construction industry that interventions and planned adaptation within our built environment will be insufficient to avoid harmful consequences of climate change. It is anticipated that future policy will continue to ‘tighten’ around themes relating to environmental sustainability, so that what is currently regarded as an ambitious, or ‘stretch’, target, may become a minimum policy requirement – even within the timeframes that OOW is being delivered.

OPDC have set an aspiration for the OOW project to be a benchmark for low-carbon, sustainable development [reference OOW Strategic Objectives – Strategic Case]. Old Oak West is one of the largest Opportunity Areas in London. A development of this nature is unique in its ability to harness its scale to achieve the highest sustainability standards and use its connections to surrounding education, science/technology hubs to drive innovation in climate change mitigation and adaption. Pursuing an ambitious approach to sustainable development will reduce risks, enhance social value and benefit both the local and global environment.

Strategic sustainability initiatives				
Intervention / strategy	**How it helps build the case for comprehensive development**	**Other benefits**	**Deliverable under BAU**	**MDP or Public Sector Delivery**
Environmental Initiatives				
Heat network	Ambient network sourcing waste heat from data centres to provide low carbon heating for development.		NO - requires strategic approach	OPDC
Envac waste system	Pneumatic or automated waste collection systems can improve recycling rates, and reduce vehicle movements across the site. They require underground tunnels and are typically not financially attractive on a small scale. They provide great amenity benefit in freeing up ground floor areas from the clutter and smell of wheelie bins.	Integration with circular economy opportunities.	MAYBE - but not typically financially attractive at small scale	MDP
Site-wide energy strategy	Ability to plan for long term electrification of grid and transportation by building in EV charging infrastructure, PVs and battery storage and connecting to a site-wide energy system that can balance and optimise supply and demand over a 24hr period.	Builds energy resilience, helps to tackle fuel poverty	NO - Requires strategic approach	OPDC at Strategic Level MDP at local level
Passivhaus homes	Opportunity to cross-subsidise passivhaus uplift for test homes with project of this scale. Economies of scale for site-wide approach to material procurement, efficiencies gained through upskilling/continuous improvement on-site.	Potential long term value creation, lower carbon offsetting contributions.	YES - Economies of scale	MDP
Onsite soil remediation	Opportunities for site wide approach to ground remediation. Economies of scale may make certain approaches viable and reduce costly offsite disposal of contaminated grounds.	Integration with earthworks and circular economy strategies.	MAYBE - economies of scale would mean site-wide strategy more cost effective	Pub. Sector or MDP
Circular economy	A 'Circular Economy' is defined by the GLA as one where: 'materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste'. The London Plan emphasises the importance of embedding circular economy principles in the design of new buildings. Embedding circularity requires a 'systems' approach to material flows which can only be achieved if the opportunity area and development site are considered as a whole, rather than a series of fragmented plots. Examples of circular economy approaches enabled by comprehensive development include: - the ability to procure sufficiently large quantities of materials to build innovative supply chains (e.g. low carbon cement for London 2012 Olympics), - establish a 'flying factory' to manufacture prefabricated components and modules. This leads to carbon and quality benefits, reduces construction wastes and can provide local skilled jobs to support the social value case. - ability to include circular economy functions in the spatial plan (e.g. shared amenities, library of things, centralised waste processing hubs, food growing space).	Integration with low carbon strategy.	NO - Embedding circularity requires a 'systems' approach to material flows which can only be achieved if the oportuity area and development site are considered as a whole, rather than a series of fragmented plots.	OPDC Strategy, to be developed by MDP
Embodied Carbon strategy	Linked to circular economy strategy - e.g. reuse of materials, local supply chain, local prefab factory. Site wide approach to embodied carbon reduction more impactful - e.g. looking at cut & fill, structure of foundations, use of podiums, decking	Significant carbon reduction, aligned with strategic objectives.	MAYBE - site-wide approach more impactful, economies of scale (linked to circular economy)	OPDC Strategy, to be developed by MDP
Site-wide sustainable drainage (SUDS) and green infrastructure strategies	Integrated surface water management strategy maximising above ground storage and integrated with landscape and green infrastructure across wider site, generating multiple benefits. Maximise discharge to canal and minimises local flooding on Counters Creek sewer catchment. Strategic approach to green infrastructure can deliver more impactful biodiversity/ecological benefits E.g. Ecological corridors, microclimates, microhabitats.	Multiple benefits of integration of SUDS with climate resilienec, biodiversity strategy and landscape design.	MAYBE - site wide approach enables better intergration landscape and green infrastructure strategy across masterplan. E.g. water discharge into canal, SUDS maximised in 2ha park.	MPD
Cut and fill	Optimisation of cut and fill across the whole site could generate significant cost and carbon savings and reduce the need for lorry movements and associated impacts on traffic, noise and pollution.	Potential for integration with surface water drainage strategy and maximising discharge to canal, integration with site remediation strategy, and integration with circular opportunities to reuse low-value demolition materials as fill	MAYBE - More efficient at scale.	MDP
Pedestrian and cycling routes	Strategic cycling and pedestrian infrastructure needs to be planned at the masterplan / city scale if it is to be effective.		NO	OPDC
Sustainable water supply strategy	Site wide approach to sustainable water integrated with drainage and smart harvesting allows to maximise potential of different building typologies		NO	MDP
Social Initiatives				
Ground floor use strategy - affordable spaces for enteprise and community	Ensuring that a certain proportion of ground floor space is avaialble on discounted terms to support enterprise and community integration. A site wide approach offers the best opportunity for curation of this nature - ensuring the leasing strategy responds to evolving demand and community context.	Economic benefits - creating jobs and value and supporting enterprise. Social benefits - job and enterprise opportunties for local residents, opportunities to bring people together and provide support.	MAYBE - but best considered on site-wide scale	MDP
Proactive skills and employment initiatives	A site wide approach offers greater critical mass to build targetted skills and employment interventions - this could be on-site provision, partnership work with new tenants, or outreach activities into local communities (or a mix of all).	Wider social benefits - helping to create new pathways for local residents and link residents into better quality employment opportunties	NO	MDP / OPDC
Meanwhile programming	A proactive meanwhile strategy has the potential to help build the identition of the area (generating footfall and excitement), while also delivering direct economic and social benefits. Comprehensive development offers potential for critical mass and coherancy which would not be achieved on a more piecemeal basis - offering opportunities for a curated approach which links activities across different sites and over different times periods around a specific set of ambitions / objectives	Breadth of potential economic and social benefits depending on the programming - spaces for enterprise, opportunties to bring communities together etc. Also potential short and longer term commercial benefits in terms of activation and identity building.	NO	MDP / OPDC

Social value charters - living wage, social and green leasing	Building socially and environmentally focused clauses into commercial leases can help to secure a range of benefits which would otherwie be missed. A site wide approaches offers greater critical mass and greater opportunity to units developers and landlords around a common set of objectives.	Social benefits - e.g. local people into employment; engagement with local schools. Environmental benefits- e.g. businesses committing to minimise their environmental footprint.	NO	MDP / OPDC
Inward investment strategy	Activities to target investment into commercial space which could help to secure investment from more socially and environmetnally focused businesses. A site wide approach offers the opportunity for a more coherant approach to promoting the area, and attracting occupiers who reflect overall aspirations for the place.	A more proactive approach to inward investment offers more opportunity to curate the ultimate tenant mix; ultimately this will help to build a stronger and more resilient business ecosytem (with linked benefits in terms of commercial, social and economic outcomes).	NO	MDP / OPDC
Community capacity building initiatives	A site wide approach offers greater critical mass to build tailored community initiatives - be it activities to bring people together (programming of support or events), or to build long term ownership (e.g. community development trust models).	Wider social benefits - helping to create new opportunities for residents to participate, and building a greater sense of ownership in the future place	NO	MDP / OPDC
Community engagement and evidence	Commitment to proactive engagement and collection of good evidence should be a common thread running through delivery and operation. A site wide approach offers greater critical mass and coherancy.	Wider social benefits - helping to create new opportunities for residents to participate, and building integration between existing and new communities	NO	MDP / OPDC
Lighting strategy, early activation ahead of development	Providing safe and accessible access routes through the site is essential to creating an attractive and inclusive neighbourhood. Strategic access routes, particularly those associated with any meanwhile uses, may not align with separate plot boundaries so best considered as a whole.		NO - site wide intervention best considered as a whole	MDP

MOTT MACDONALD

Project:	OPDC Strategic Development Advisory Services		
Prepared by:	Giacomo Fraterrigo	**Date:**	19-06-2023
Approved by:	Barry Winterton	**Checked by:**	Barry Winterton
Subject:	Sustainability Stretch Target – Capital Cost Advice- Rev 1		

1 Introduction

This Memorandum summaries the current environmental sustainability assumptions included within the "baseline" costs (issued 05.04.2023) and provides commentary on what schemes in London are considered Exemplar in terms of going above and beyond "compliance", and what a likely 'cost uplift' would be, to be considered "Best in Class".

2 Baseline Costs

Mott MacDonald's initial 'baseline' costs are based on what would typically be found within industry standard schemes, and include (but are not limited to) the items below:

- Compliance with part L of building regulations.
- Compliance with London Plan requirements.
    - 35% reduction in on-site carbon dioxide emissions against Part L 2013 of the Building Regulations.
    - Prioritised efficiency of the building fabric, minimising the overall energy demand of the building.
    - Whole Life-Cycle Carbon Assessments.
    - Monitor, verify and report energy performance for at least five years post-construction.
    - At least Air Quality Neutral.
    - Overheating mitigation.
- Appropriate smart technology to enable monitoring of energy use.
- Some photovoltaic provision in line with Part L of Building Regulations.
- Mandatory circular economy statements.
- 20% of all construction materials (by volume) are regenerative or secondary material.
- 100% of timber from sustainably certified sources.
- Target of 0.4 Urban Greening Factor for residential developments and 0.3 Urban Greening Factor for commercial developments.
- Biodiversity net gain of 10%.
- comply with any relevant requirements of local authority surface water management plans.
- London living wage paid.

3 Exemplar Developments

For comparison, Mott MacDonald have also reviewed 'best in case' scenarios. These are developments within London that have implemented various sustainable practices within their design, that we believe go 'over and above' what would be allowed for within baseline schemes.

Elephant & Castle, Southwark -This development set a target in 2013 to be a net zero carbon community in operation by 2026. The scheme includes an energy hub to supply low carbon heat, Passivhaus accredited homes, and is centred around 2-acre park.

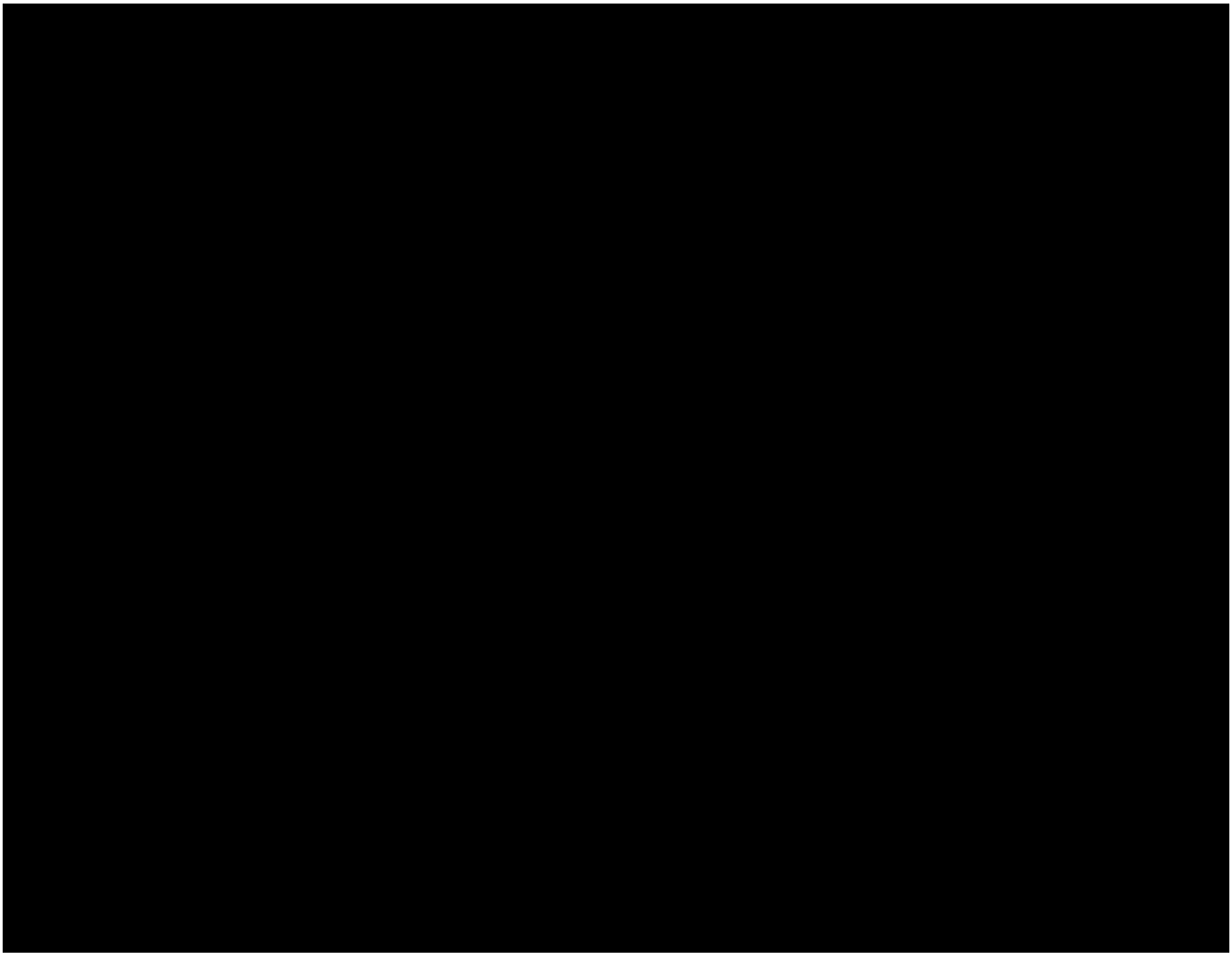
Nine Elms, Wandsworth - Aims to create a sustainable mixed-use neighbourhood. Achieved through provision of low-carbon district with green infrastructure and additional cycle routes/access to public transport, as well as district heating.

Chelsea Barracks, City of Westminster – Committed to sustainability and seen to lead way in green building practices. Awarded LEED Platinum certification and ~40% of total development area allocated to public green spaces.

Wembley Park, Brent – Adopted an envac system to help reduce impact of waste across development throughout operation.

Mott MacDonald have also found a scheme in Nottingham, referred to a NCH2050 which was highlighted at COP-26 and appears to be stretching targets further, however at this point in time, schemes of this nature

tend to be small scale pilot schemes, and in particular may focus on ‘retrofitting’ solutions, and therefore may not be useful as a direct comparison.



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[1] BRE, “Design for Deconstruction – helping construction unlock the benefits of the Circular Economy,” [Online]. Available: https://bregroup.com/buzz/design-for-deconstruction-helping-construction-unlock-the-benefits-of-the-circular-economy/.