

Circular Economy Project Development Document (PDD)

The purpose of this document is to define the scope, approach and financial needs to establish a local construction materials reuse hub within Greater Brighton. It includes the project scope, project management, costs and benefits and risks.

Project: **Local construction materials reuse hub**

Date: **October 2022**

Version: **1**

(**) Mandatory to fill in (*) Can be filled in later

Names of council employees* <i>Project Sponsor:</i> <i>Project Manager Project:</i> <i>Team:</i>		
PID Item	Check When Complete	Pre-filled example
Section 1: What is the project about and who will it benefit?		
Checklist – before you start, check that you have considered the following points:		<input checked="" type="checkbox"/> Environment <input checked="" type="checkbox"/> Economy <input checked="" type="checkbox"/> Job creation <input checked="" type="checkbox"/> Green skills <input checked="" type="checkbox"/> Social
Project title**		Local construction materials reuse hub
Background**		This project would support local construction and renovation companies, to solve their challenge in collecting, storing, and re-using locally sourced building materials, either from buildings which are deconstructed/removed or from other waste sources.

<p>Purpose/Overall aim**</p> <p><i>Please outline what difference your service or activity will make to your target audience and how it supports a circular economy</i></p>		<p>The overall purpose is to promote the circular economy in construction and reduce construction materials carbon emissions in line with net zero targets. These emissions are related to the transport of construction material, as well as the emissions related to the production of newly made construction material. This is important as the built environment is responsible for 25% of the UK’s carbon emissions¹. The local construction material reuse hub will encourage the reuse of construction materials, preventing materials from being recycled into lower-value products and diverting remaining construction waste from landfill and incineration. Reusing local construction materials will reduce imports of construction materials, reducing the embodied emissions related to using and transporting virgin construction material from abroad². It could also reduce costs related to transport, create local jobs and enhance the local construction economy.</p> <p>The project is targeted at construction and renovation companies which are active in and around Brighton & Hove City, solving the issue of space that limit the reuse of construction material, and supporting growth in local markets for such materials.</p>
<p>Geographical area that the project will cover**</p>		<p>The aim is for the local construction reuse hub to be located in and serve the Greater Brighton region. The region covers a diverse area of one million residents reaching from Crawley and Gatwick Airport in the north to Lewes and Seaford in the east and Bognor and Littlehampton in the west, as shown on the map below. The reason for choosing the Greater Brighton region is to solve the issue of lack of space to store construction materials. Limiting the geographical area to the smaller Brighton and Hove geography would limit the available sites to be used for the reuse hub.</p>

¹ <https://publications.parliament.uk/pa/cm5803/cmselect/cmenvaud/103/report.html>

² In its Net Zero Whole Life Carbon Roadmap report, the UKGBC estimated that residuals emissions from the build environment were equivalent to 6.9MtCO2E for domestic emissions and 9.1MtCO2e including consumption emissions that include imported materials <https://www.ukgbc.org/wp-content/uploads/2021/11/UKGBC-Whole-Life-Carbon-Roadmap-A-Pathway-to-Net-Zero.pdf>

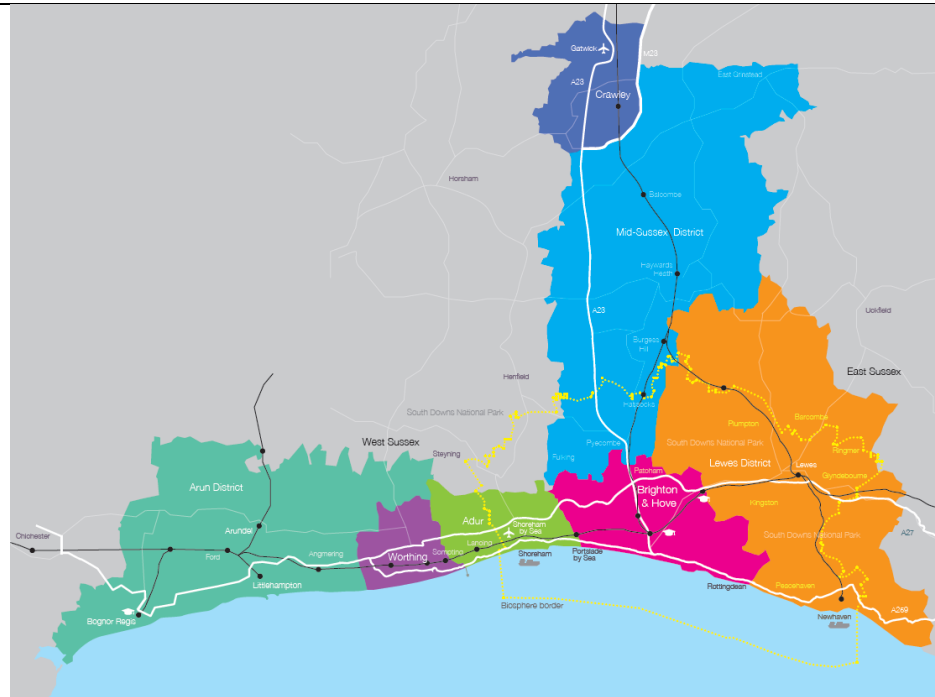


Image source: <https://greaterbrighton.com/about-us/>

Who will benefit from the project? **

This project will benefit construction and renovation companies active in the geography of the Greater Brighton region by improving the sourcing of local materials and reduce the cost of waste disposal related to those materials. It will also slightly reduce the need for longer distance transport of some primary materials. It will also benefit job-seekers by generating jobs active in operating the construction materials reuse hub and enhancing the local economy. Roles that will be needed for the reclamation and testing of materials will also create training opportunities at local colleges or at universities, which will benefit the learner and give them transferrable green skills.

<p>How will this project benefit the local authority or region?*</p>		<p>This project would benefit the Greater Brighton region and Brighton & Hove by:</p> <ul style="list-style-type: none"> - Assist in embedding circular economy principles in the construction sector³ - Reducing the cost of construction and of waste disposal related to those materials - Boosting the local economy by reducing construction material import needs from outside, thereby ensuring that a greater portion of the construction materials value chain benefits Greater Brighton - Creating green local jobs in the logistics and preparing for re-use of construction materials
<p>Who are the stakeholders, what are their profiles, and what do they bring to this project? **</p>		<p>The main stakeholders in this project are local construction and renovation companies, reclamation suppliers, site waste management companies and local colleges and universities. They are all crucial in creating supply and demand for reused construction materials.</p>

³ <http://constructingexcellence.org.uk/wp-content/uploads/sites/8/2020/05/BHCC-CE-summary-Constructing-Excellence-12.03.2020.pdf>

Section 2: What is the project scope and what are the objectives?

<p>Project Scope**</p>	<p>The scope of the project is divided into three phases.</p> <p>The aim of the first phase is to establish the local interest from construction, renovation and reclamation companies in the concept of a local construction material reuse hub. The hub would function as a yard and hub where collected building materials are stored and prepared for reuse in construction, operating as a marketplace for local, circular construction. The steps to prepare the materials for reuse include ensuring there is enough information available on the building component, such as the material type, the quantity available, and the condition of the component⁴. This can be done through pre-demolition audits and on-site inspections. The material then has to be sorted and separated and tested to ensure it can be reused⁵. This implies that only construction companies that perform pre-demolition audits can give material to the hub.</p> <p>The second phase would consist of developing the operational and technical requirements and business case, as well as finding existing suitable industrial sites within the Greater Brighton region for the setup of the reuse hub. To this end a consultancy responsible for establishing the operational and technical requirements and business case for the reuse hub would need to be involved. A suitable location can be an existing industrial estate where economic activity in waste management is possible⁶ or alternative sites within planning constraints.⁷</p> <p>Several relevant partners need to be involved in this phase, including construction and demolition and reclamation companies, to help inform the operational and technical requirements and business case. This can be done under the umbrella of a new or existing private-public body partnership between Brighton and Hove City Council and relevant partners. This will make it easier to bring in the knowledge and ensure that the right parties are involved who can run and use the construction materials reuse hub. The partnership can also jointly explore potential sites and work together to raise finance for the reuse hub. Also in this phase, council policies (e.g. procurement and planning policies) would need to be updated to drive demand for second-hand materials by the council and private developers.</p>
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⁴ https://www.ucl.ac.uk/circular-economy-lab/affiliated_projects/opportunity_waste

⁵ https://www.designingbuildings.co.uk/wiki/Reuse_of_building_products_and_materials_%E2%80%93_barriers_and_opportunities#Challenges_to_increasing_reuse

⁶ See more detail on schedule of industrial estates identified through planning policy as suitable for waste uses in Brighton & Hove and East Sussex: <https://eastsussex.objective.co.uk/file/4409373>

⁷ See for more detail on industrial estates space availability in BHCC: <https://www.brighton-hove.gov.uk/sites/default/files/2021-05/OD78%20Industrial%20Estates%20Audit%20Dec%202017.pdf>


		<p>The third phase consists of the council supporting the companies to setup the re-us hub as an initial user of materials via council construction project. Potentially the council also can support the investment into the reuse hub via the private-public partnership to contractually secure the site. Either by providing one of its own sites at a subsidised rate, and/or by acting as a co-investor and financial guarantor. To this end the reuse hub would need to be operated as a charity to enable support.</p>					
<p>Objectives and how they will be measured**</p>		<p>Goal</p>	<p>Baseline <i>If baseline is available</i></p>	<p>Target</p>	<p>Number</p>	<p>How will it be measured?</p>	<p>How often will this goal be measured (on-going basis/once)</p>
	<p>Increase in reuse in the Brighton area</p>	<p>Not available</p>	<p>Percentage of construction & demolition material reused at end of the pilot of the hub</p>	<p>3%</p>	<p>Amount of materials (in tonnes) reused (sold from the hub) vs total construction material tonnage used in the Brighton area (in tonnes)</p>	<p>Annually</p>	
	<p>Tonnage of construction & demolition waste reused in the hub</p>	<p>Not available</p>	<p>Tonnes of materials reused</p>	<p>5,000</p>	<p>Amount of materials (in tonnes) reused (sales from the hub) vs tonnage of materials reused in second year to create a baseline</p>	<p>Annually, after first year baseline measure</p>	
	<p>Job creation</p>	<p>Not applicable</p>	<p>Number of new local jobs created</p>	<p>3 One hub manager, two operators</p>	<p>Survey with construction companies using the hub to see if they have created additional jobs & roles within their organisations to make better use of the Hub</p>	<p>Once</p>	
	<p>Local economic benefits</p>	<p>Not applicable</p>	<p>Percentage of import reductions</p>	<p>3%</p>	<p>Survey with construction</p>	<p>On-going measurements</p>	

				and associated cost savings		companies using the hub	
	Carbon emissions reduction	Available for a sample of construction projects		Percentage of embodied carbon emissions reduction from construction and renovation projects	5%	Sample estimate with at least 3 construction or renovation project using locally reuse materials (with counter example with only new materials)	Once
	Engagement	Not available		Number of companies	6	Number of companies engaging with the project	On-going measurements
	Green skills			Number of students and/or trainees learning how to test materials and/or that attend and complete a course or training	15	Measured via engagement/feedback from institution(s) that offers modules or courses on green construction to ensure engagement with green skillset	Once
Deliverables *		<ol style="list-style-type: none"> 1. Review of existing circular construction activity in the city-region + updating relevant council policies 2. Partnership launch 3. Construction materials reuse hub technical requirements report 4. Construction materials reuse hub site options and selection report 5. Construction materials reuse hub financing & business model report 6. Construction materials reuse hub marketing and communication strategy 7. Construction materials reuse hub launch report to present the operation, goals, and aims of the hub 					

<p>Constraints** <i>These could be:</i> - Constraints due to the nature of project For example, difficulty in changing behaviour of citizens or companies - Constraints due to finances</p>		
	Constraint Title	Description
	Company interest and traction	Willingness of all main stakeholders to invest time to develop a construction materials reuse hub, identifying certain type of developers that engage with circular economy and sustainability
	Site availability	Challenge in finding a large site or premises for accommodating the reuse hub at an affordable cost and in a location that is accessible and attractive to users
Business operations viability	Significant enough number of organisations and site developers that willing to buy reused materials as part of their building procurement for the business operations to work i.e for the hub to have enough demand	
Processing of waste into new material	Reviewing the cost, materials testing efforts need, and legal challenges and other barriers to processing waste into new material	

Section 3: How, When and Where Will the Project be Delivered?						
Project activities** <i>Please break-down the expected activities with their duration</i> <i>Also please include if the activity will be delivered internally or by an external organisation</i>	No	Activity	Description	Internal or external	Start	End
	1.	Ensure procurement and planning policies will facilitate the reuse hub ⁸	Review of planning policies to make sure they can facilitate the reuse hub from a waste disposal and reuse requirements point of view	Internal	M1	M3
	2.	Establish local interest in setting up a partnership or utilize an existing partnership	Contact and engage with organisations that have an interest in becoming more circular in the construction sector	Internal and external	M1	M3
	3.	Develop technical and operational requirements	Develop the technical and operational requirements for the construction materials reuse hub together with the partnership	External	M3	M8
	4.	Find suitable site(s) to use as a hub	Finding suitable sites which are large enough as available options	Internal	M3	M5
	5.	Develop the business case and financial viability of the project	Determine how much funding is needed to run the project	External	M5	M8
	6.	Secure the site to use as a hub	Secure the site with the help of the council to have a reduced cost	Internal	M7	M9
	7.	Procurement and set-up	Contracting the site and carrying out any required renovations and installations	Internal and external	M8	M12
	8.	Training and recruitment	Hire two site operators that have completed a training in material testing, hire a hub manager	External	M10	M12

⁸ For example The City of Houston Building Materials Reuse Warehouse “operates under the City of Houston Code of Ordinances, Chapter 39: Solid Waste and Litter Control: “. . . material that has been recovered or diverted from the non-hazardous waste stream for purposes of reuse. . .” It also operates under the U.S. Environmental Protection Agency Waste Management Hierarchy:“ Source reduction, . . . means reducing waste at the source, and is the most environmentally preferred strategy. It [includes] reusing or donating items . . .”

		8.	Pilot operation of the hub	Collecting construction material to be reused, ensuring that supply and demand are matched	External	M12	M18																								
		9.	Project results and impact reporting based on the pilot	Evaluating results of the project	Internal and external	M19	M20																								
Project milestones* <i>Please provide for any milestones and if these are go/no-go points for next activities in the project</i>		No	Milestone	Main areas/resources required	Activity start dependent on milestone (see table above)	Milestone month																									
		1.	Secure the partnership	Partnership for setting up the reuse hub	Activity 2	M3																									
		2.	Secure funding	Funding	Activity 6	M9																									
		3.	Setup the hub to start the operation	Site/hub	Activity 7	M12																									
Schedule ** <i>Gantt Chart- Please add a GANTT chart with the activities and timeframe for completion</i>		 <table border="1"> <caption>ACTIVITIES</caption> <thead> <tr> <th>Activity</th> <th>Start Month</th> <th>End Month</th> </tr> </thead> <tbody> <tr> <td>Establish local interest from construction and renovation companies</td> <td>1</td> <td>4</td> </tr> <tr> <td>Develop technical and operational requirements</td> <td>2</td> <td>8</td> </tr> <tr> <td>Develop the business case and financial viability of the project</td> <td>5</td> <td>8</td> </tr> <tr> <td>Find a suitable site to use as a warehouse</td> <td>6</td> <td>7</td> </tr> <tr> <td>Procurement and set-up</td> <td>9</td> <td>12</td> </tr> <tr> <td>Pilot operation of the warehouse</td> <td>13</td> <td>16</td> </tr> <tr> <td>Project results and impact reporting based on pilot</td> <td>18</td> <td>20</td> </tr> </tbody> </table>						Activity	Start Month	End Month	Establish local interest from construction and renovation companies	1	4	Develop technical and operational requirements	2	8	Develop the business case and financial viability of the project	5	8	Find a suitable site to use as a warehouse	6	7	Procurement and set-up	9	12	Pilot operation of the warehouse	13	16	Project results and impact reporting based on pilot	18	20
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<p>Project control: monitoring mechanisms** <i>What KPIs will be used to monitor the project?</i></p>		
	Local economic KPIs	How is it measured
	Ratio between pounds (£) invested by council and revenue generated (£) from reuse hub in the local economy	Expense accounting from the council Revenue account from the reuse hub
	Reduced cost of import of materials (£) compared with added value from revenues generated locally from the reuse hub (£)	Revenue account from the reuse hub Estimated market price of construction material reused
	Circular Economy KPIs	How is it measured
	Tonnage of material incoming	Weighing of incoming materials at reuse hub
	Tonnage of material sold for reuse	Weighing of outgoing materials at reuse hub that are sold
	Number of companies that provide material to the hub	Number of companies registered as a supplier from the reuse hub accounting system
Number of companies that take material from the hub	Number of companies that have made a purchase from the reuse hub accounting system	

Section 4: Why should this project go ahead?

<p>Business Case**</p> <p><i>Specify the spending objectives for the project. These should focus on the target outcomes for the intervention:</i></p> <ul style="list-style-type: none"> - Project Benefits - Cost and Timescales - Cost/Benefit Analysis - Funding route 	<p>Project financial setup</p> <p>Please select one of the following financial setups of the project:</p> <table border="1"> <tr> <td data-bbox="655 321 940 428"> <input type="checkbox"/> Structurally subsidised </td> <td data-bbox="940 321 2016 428"> The project is not financially self-sustainable and both the investment and the operations will be structurally subsidised by the council. </td> </tr> <tr> <td data-bbox="655 428 940 532"> <input type="checkbox"/> Investment subsidised </td> <td data-bbox="940 428 2016 532"> Investment for initial set up is subsidized as a one-off cost yet the operations provide sufficient income for the project to be sustained for the project duration or on an on-going basis. </td> </tr> <tr> <td data-bbox="655 532 940 641"> <input checked="" type="checkbox"/> Cost neutral </td> <td data-bbox="940 532 2016 641"> The project should generate sufficient income to pay back any council internal investments and the operational costs. </td> </tr> <tr> <td data-bbox="655 641 940 748"> <input type="checkbox"/> Profit generating </td> <td data-bbox="940 641 2016 748"> The project should generate surplus revenues that can provide income to the council and provide for a return on investment. </td> </tr> </table>	<input type="checkbox"/> Structurally subsidised	The project is not financially self-sustainable and both the investment and the operations will be structurally subsidised by the council.	<input type="checkbox"/> Investment subsidised	Investment for initial set up is subsidized as a one-off cost yet the operations provide sufficient income for the project to be sustained for the project duration or on an on-going basis.	<input checked="" type="checkbox"/> Cost neutral	The project should generate sufficient income to pay back any council internal investments and the operational costs.	<input type="checkbox"/> Profit generating	The project should generate surplus revenues that can provide income to the council and provide for a return on investment.
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<input type="checkbox"/> Profit generating	The project should generate surplus revenues that can provide income to the council and provide for a return on investment.								
<p>Project Benefits</p> <p>The financial benefits are the generation of income from a revenue sharing agreement (a revenue sharing agreement would only deliver returns if the project starts to generate profits) with the hub operator charity and a small rental income of the site, based on the provisioning of the hub asset at a low-cost rent by the council. The revenue share agreement will allow for recouperation to the council of the asset costs of the hub. The economic benefits include the generation of local economic value, the expected creation of 3 local jobs and the potential to link the activity to traineeship programmes in material re-use for job-starters in the construction sector.</p> <p>Phasing, cost and timescales</p> <p>The project costs can be split into three categories:</p> <ul style="list-style-type: none"> • First, across the 20-month project, the spending on internal labour from council employees to manage the project (project manager, sustainability officer, procurement officer, estates officer, finance and legal officer who will advise on tenders and public-private partnership). • Second, during a 6-month period in the first year, the cost of an external consultant to evaluate the technical and operational requirements for the hub. 									

- Third, in the second year, the cost of acquiring the site with the hub with renovations and/or constructing a new hub to maintain it under full ownership of the council, as an investment.
- Fourth, in the second year, the cost of developing a marketing and comms strategy.

After these spendings the intention is for the hub to be financially self-sustainable managed by a charity under the public-private partnership and there are no further costs to the council.

Funding route

The project will require two types of funding. First, and once a proposal has been put forward the exact outcome of the project, funding of around £300,000 for the labour of council staff and external consultant. Second, obtaining a loan for which the appropriate model would need to be developed. If undertaken by the council the loan could potentially come from the public works loan board at a low interest rate for the investment in the hub, assuming the charity that would run the hub would be fully council owned.

*The revenue share income is a long-term consideration and not an assumed benefit as it will likely take a longer time for revenue to be generated from the project

Cost/Benefit Analysis Table – Example figures

Costs	Estimate
Internal labour from council employees	£160,000
External consultant	£50,000
Acquisition cost of the site with hub	£2,500,000
Hub maintenance and partnership (10 years)	£100,000
Total cost	£2,810,000
Benefits (10-year period after project)	
Rental income	£80,000
Business rates	£100,000
Revenue share income*	£3,000,000
Total benefit	£3,180,000
Net value (Benefits minus costs)	£300,000
Return on investment	1x ROI

Risk Analysis** <i>Risk Identification and mitigation</i>	Risk (consequence)	Likelihood (1-3)	Severity (1-3)	Impact* (1-10)	Mitigation
	Not finding a suitable and affordable space	2	3	6 - High	Scoping out many different options of spaces, adapt to the lack of space (moving out a bit further from BHCC, looking for a smaller space)
	Lack of financial viability to maintain project	1	3	3 -Medium	Developing a long-term business plan ensuring there is enough funding to cover running costs for a running 5-year pilot and having a funding and logistics manager as part of the team to find funding from different sources
	Unable to match supply and demand	2	2	4 – Medium	Mechanism to match supply and demand through stockholding facilities, such as reclamation yards, and material exchanges/reuse platforms.
	Not securing the initial investment needs	2	3	6 – High	Finding the right call for funding and applying to it in advance
	Lack of engagement from construction and renovation companies	1	3	3 - Medium	Creating an engagement programme to encourage companies to commit to the reuse of material
	Not finding a private partnership that can take on the management of the project	1	3	3 - Medium	Creating the right proposal for partnership with a team of experts in the field
	Not finding a suitable team to operate the hub	1	3	3 – Medium	Defining a need of skillset and advertising to the right audience
	*Multiplication of likelihood * severity				

<p>Dependencies*</p> <p><i>Specify any dependencies upon which the success of the project is dependent</i></p> <p><i>Determine the businesses, partnerships, NGOs, governments that would be required to make this project work</i></p>		<p>The success of the project will depend upon the availability of, and inputs from other, external agencies such as:</p> <ul style="list-style-type: none"> - Construction and renovation company - for example AY Developers⁹ or GB Constructions¹⁰ - Industrial estate or alternatives site property owners (if not owned by the council) - Project developers and public institutions willing to include reuse in their procurement and projects
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⁹ <https://aydevelopers.co.uk/>

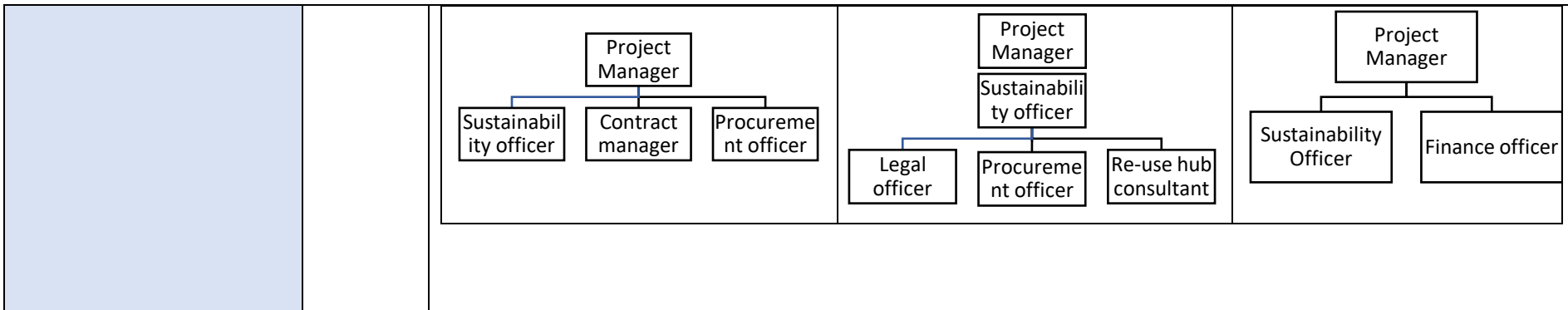
¹⁰ brighton-construction.co.uk

Section 5: How will the project be financed?

<p>Costs ** How much is the investment and operational cost and how will it be funded?</p>							
	No	Activity	Start	End	Investment cost	Operational costs	Funding route
	1.	Ensure planning policies will facilitate the reuse hub	M1	M3			Internal investment
	2.	Establish local interest to set up a partnership or utilize an existing partnership	M1	M3			Internal investment
	3.	Develop technical and operational requirements	M3	M8			Grant funded
	4.	Find suitable site(s) to use as a hub	M3	M5			Grant funded
	5.	Develop the business case and financial viability of the project	M5	M8			Grant funded
	6.	Secure the site to use as a hub	M7	M9			Public works loan board investment loan
	7.	Procurement and set-up	M8	M12			Public works loan board investment loan
	8.	Pilot operation of the hub	M12	M18			Public works loan board investment loan
9.	Project results and impact reporting based on the pilot	M19	M20			Internal investment	

<p>Services/activity cost details* What do you anticipate will be the income and expenditure of this project?</p>	<p>The business model will be developed during the project (see Activity 3). The core idea is that the council becomes the owner of the hub via a charity that it owns and rents it to the charity operator at a cost that makes it feasible to run the reuse hub during a pilot phase. The council can setup a revenue sharing agreement with the operator of the reuse hub to enable cost neutral operations. This combination reduces the risk for the reuse hub charity operator.</p>
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Section 6: Who Will Work on the Project?				
Roles and responsibilities**	Role	Internal/ External	Responsibilities	Notes (if any)
	Sustainability officer/Contract Manager	Internal	Facilitate finding a site; write a tender for the public-private partnership; write a tender to hire the reuse hub consultant	
	Reuse hub consultant	External	Develop the technical and operational requirements for the construction materials reuse hub together with the partnership	
	Project Manager	External	Ensure all the steps are met and that funding is being used appropriately,	
	Procurement officer	Internal	Facilitate contractually securing the site	
	Estates officer	Internal	Ensure management of property that will be used for the hub	Only applicable if the property is owned by the council
	Finance officer	Internal	Actively look and apply for funding	
Project organisation chart(s) *		First stage: writing a tender to hire a re-use hub consultant	Second stage: defining the legal and technical requirements for the reuse hub	Third stage: securing the site for the reuse hub and the associated investment financing



Section 7: Procurement Strategy

<p>Determine procurement strategy** <i>Explain how the project's key outputs and activities will be procured in compliance with relevant procurement rules and regulations</i></p>		<table border="1"> <tr> <th>Procurement needs</th> <th>Procurement routes and compliance requirements</th> </tr> <tr> <td>Develop the technical and operational requirements for the construction materials reuse hub together with the partnership</td> <td>Standard consultant procurement route using an open tender with the council's procurement platform</td> </tr> <tr> <td>Contracting the site and carrying out any required renovations and installations</td> <td>Council infrastructure investment as owner of the site</td> </tr> </table>		Procurement needs	Procurement routes and compliance requirements	Develop the technical and operational requirements for the construction materials reuse hub together with the partnership	Standard consultant procurement route using an open tender with the council's procurement platform	Contracting the site and carrying out any required renovations and installations	Council infrastructure investment as owner of the site		
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<p>Quality Control*</p>		<table border="1"> <tr> <th>Quality control measure</th> <th>How</th> </tr> <tr> <td>Well-defined requirements for technical consultant to work on hub requirements</td> <td>Workshops with partnership companies at the beginning of the project will ensure that the reuse hub requirements tender brief will fit the needs for renovation and construction companies</td> </tr> <tr> <td>Ensure open communication (Check- ins)</td> <td>Quality assurance and surveillance, where the project manager and sustainability officer in charge (internal) would be required to have monthly meetings with Reuse hub officer (external) to maintain a certain standard and work out any issues that may occur</td> </tr> <tr> <td>Target completion inspections</td> <td>Discussions with member of the B&HCC and partners on carrying out inspections as a target end approaches to ensure work is completed as per specifications</td> </tr> </table>		Quality control measure	How	Well-defined requirements for technical consultant to work on hub requirements	Workshops with partnership companies at the beginning of the project will ensure that the reuse hub requirements tender brief will fit the needs for renovation and construction companies	Ensure open communication (Check- ins)	Quality assurance and surveillance, where the project manager and sustainability officer in charge (internal) would be required to have monthly meetings with Reuse hub officer (external) to maintain a certain standard and work out any issues that may occur	Target completion inspections	Discussions with member of the B&HCC and partners on carrying out inspections as a target end approaches to ensure work is completed as per specifications
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Target completion inspections	Discussions with member of the B&HCC and partners on carrying out inspections as a target end approaches to ensure work is completed as per specifications										

Section 8: Case studies/Examples

<p>Case study 1: The City of Houston Building Materials Reuse Warehouse**</p>	<p>The Reuse Warehouse is operated by the City of Houston Department of Solid Waste Management on surplus municipal property. The Reuse Warehouse is partially funded by a public Solid Waste Implementation grant from the H-GAC (Houston-Galveston Area Council), in partnership with the Living Paradigm. The Living Paradigm is a Houston-based non-profit organization dedicated to helping low-income families build and own their own homes.</p> <p>The warehouse accepts donated building materials from builders, contractors, remodelers and the general public and makes the materials freely available for use by any non-profit organization. Donations are limited to items that are suitable for reuse. Examples include odd lots of leftover inventories such as rolls of flooring material,</p>
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	<p>lumber scraps from construction, or items such as cabinetry or plumbing fixtures from a home remodelling effort.</p> <p>Desired outcome and how it is being measured: The first involves tracking landfill diversion, quantitative, and qualitative analysis of materials. The second type of outcomes are results from reuse building activities. This is done based on written and photographic information from stakeholders to evaluate efficiency. Regarding monetary values of materials received, they are rated in terms of percentage diverted/reused, as well as actual/potential replicability. All material donations and collections to and from the Reuse Warehouse are weighed and described in writing by the respective donors, shoppers, and staff. Each month, all transactions are tabulated in 13 categories. A monthly tonnage report is generated for data tracking and sharing. Between 2009-2018, citizens, organizations, and companies have diverted over 4,000 tons of reusable bricks, lumber, concrete, plumbing fixtures, tile, stone, cabinets, and other useful materials from area landfills. Shoppers have collected 4,000 tons, or 90% of the material for reuse. They divert and give away an average 500-600 tons of material per year.</p> <p>Sources: http://www.guangzhouaward.org/uploads/20191127/b9031e33b1ddc3cdd27d7c324ce85d44.pdf https://www.houstonarchitecture.com/haif/topic/20845-city-opens-a-building-materials-reuse-warehouse/</p>
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Appendix: Risk assessment reasoning

Risk Matrix:

	SEVERITY		
LIKELIHOOD	1	2	3
1	Low 1	Low 2	Medium 3
2	Low 2	Medium 4	High 6
3	Medium 3	High 6	High 9

Risk Score & Reasons:

Risk (consequence)	Likelihood (1-3)	Severity (1-3)	Impact* (1-9)	Reasons
Not finding a suitable and affordable space	2	3	6 - High	<ul style="list-style-type: none"> - Depends on site availability in the region and affordability of the site, there is a shortages of spaces within Brighton & Hove
Lack of financial viability to maintain project	1	3	3 - Medium	<ul style="list-style-type: none"> - Low demand could lead to low sales of construction material - The project might have little revenue and high operational cost
Unable to match supply and demand	2	2	4 - Medium	<ul style="list-style-type: none"> - Demolition companies could find the reuse hub useful to “get rid” of demolition material, and construction companies may lack of trust in such service to procure their construction material. This would result in high supply and low demand. However, the likelihood this

				is low as more companies are including circular economy principles in their strategies
Not securing the initial investment needs	2	3	6 - High	<ul style="list-style-type: none"> - Depends on the strength of the funding proposal - The project would not be able to start without funding
Lack of engagement from construction and renovation companies	1	3	3 - Medium	<ul style="list-style-type: none"> - More construction companies are imbedding circular economy in their procurement and disposal strategies
Not finding a private partnership that can take on the management of the project	1	3	3 - Medium	<ul style="list-style-type: none"> - Depends on strength of partnership proposal
Not finding a suitable team to operate the hub	1	3	3 - Medium	<ul style="list-style-type: none"> - Low likelihood as only a small team is needed to initiate the project