

Alton Estate Regeneration
Hybrid Application

Circular Economy
Statement

Hodkinson Consultancy
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ALTON GREEN

ROEHAMPTON SW15



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We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

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Executive Summary

The purpose of this Circular Economy Statement is to demonstrate that the proposed development at the Alton Estate by Redrow Homes Limited in the London Borough of Wandsworth has considered the circular economy principles to minimise embodied carbon and operate within a circular economy, maximising the value extracted from materials and prioritising the reuse and recycling of materials. The statement takes into consideration the following, with reference to the draft new London Plan Policy S17:

- > How demand for materials will be minimised.
- > How secondary materials can be used.
- > How new materials are being specified to enable their reuse.
- > How construction waste will be minimised and how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.
- > How the proposal's design and construction will enable building materials, components and products to be disassembled and re-used at the end of their useful life.
- > Opportunities for managing as much waste as possible on site.
- > Adequate and easily accessible storage space to support recycling and re-use; and,
- > How much waste the proposal is expected to generate, and how and where the waste will be handled.

Key Commitments

- > Broad objectives for Circular Economy aspirations have been set. Moving forward, workshops will be held to develop and investigate Circular Economy objectives with specific metrics (design team, contractor, suppliers, and facility managers).
- > Site analysis, in the form of detailed pre-demolition / pre-refurbishment audits, will be undertaken.
- > Circular Economy opportunities will be monitored throughout the design and construction process.
- > On completion, success against objectives will be reviewed and an analysis will be undertaken on lessons learnt (whole design team, contractor and relevant supply chains).

Definitions

The following definitions will assist in reading this Circular Economy Statement:

Circular Economy – “A circular economy is one that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles” - Ellen MacArthur Foundation.

Current London Plan (2016) – The overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London.

Draft New London Plan (2020) – The current 2016 Plan is still the adopted Development Plan, but the Draft London Plan is a material consideration in planning decisions. The Plan gains more weight as it moves through the adoption process.

Embodied carbon – The carbon that is released in the manufacturing, production, and transportation of our building materials.

National Planning Policy Framework (NPPF) – The NPPF sets out government’s planning policies for England and how these are expected to be applied. The revised NPPF was published in February 2019.

Operational Carbon – The carbon load created using energy to heat and power a building.

RIBA Stages – The Royal Institute of British Architects (RIBA) stages organise the process of briefing, designing, constructing, maintaining, operation and using building projects into a number of key stages.

Sustainable Design and Construction Supplementary Planning Document (SPG) (2014) - The SPG supports the policies in the current London Plan, including guidance on energy, air quality, flooding and pollution control.

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1. INTRODUCTION

- 1.1** This Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Redrow Homes Limited.
- 1.2** The purpose of this statement is to demonstrate that the proposed development at The Alton Estate, Roehampton, has considered circular economy principles to:
- > minimise embodied carbon.
 - > operate with a circular economy.
 - > maximising the value extracted from materials; and,
 - > prioritising the reuse and recycling of materials.
- 1.3** The aim of circular economy is to create buildings that are high quality, flexible and pay attention to the building lifespan, through appropriate construction methods and the use of attractive, robust materials which weather and mature well.
- 1.4** Improve resource efficiency to keep products and materials at their highest value for as long as possible and promote waste avoidance and minimisation.

2. POLICY AND REGULATIONS

- 2.1** This chapter highlights the policies and regulations which are relevant to the proposed development at the Alton Estate, Roehampton.

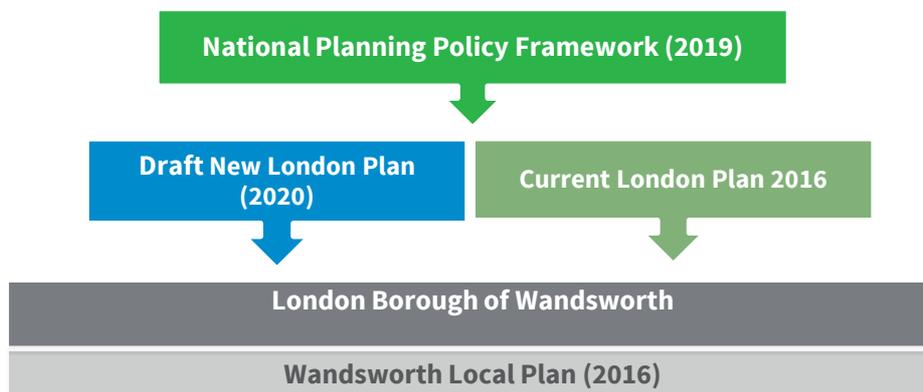


Figure 1: Relevant Planning Policy Documents

Legislation: Climate Change Act 2008

- 2.2 The UK government amended the **Climate Change Act 2008** in June 2019 to target net zero carbon emissions by 2050. The target requires the UK to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels.
- 2.3 Any emissions must be balanced by schemes to offset an equivalent amount of greenhouse gases from the atmosphere.

National Policy: NPPF

- 2.4 The revised **National Planning Policy Framework (NPPF)** was published on the 19th February 2019 and sets out the Government's planning policies for England. The NPPF provides a framework for achieving sustainable development, which has been summarised as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Resolution 42/187 of the United National General Assembly). At the heart of the framework is a presumption in favour of sustainable development.

Regional Policy: The London Plan

- 2.5 It is anticipated that the **Draft New London Plan** will be adopted at the end of January 2020, although the policies are already carrying weight with the Greater London Authority (GLA). This includes Policy SI7:

Policy SI7 Reducing Waste and supporting the Circular Economy.

- > *Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:*
 - 1) *Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible.*
 - 2) *Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products.*
 - 3) *Ensure that there is zero biodegradable or recyclable waste to landfill by 2026.*
 - 4) *Meet or exceed the municipal waste recycling target of 65 per cent by 2030.*
 - 5) *Meet or exceed the targets for each of the following waste and material streams:*
 - > *Construction and demolition – 95 per cent reuse/recycling/recovery*

> *Excavation – 95 per cent beneficial use*

6) *Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.*

> *Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:*

7) *How all materials arising from demolition and remediation works will be re-used and/or recycled.*

8) *How the proposal’s design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life.*

9) *Opportunities for managing as much waste as possible on site.*

10) *Adequate and easily accessible storage space and collection systems to support recycling and re-use.*

11) *How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.*

12) *How performance will be monitored and reported.*

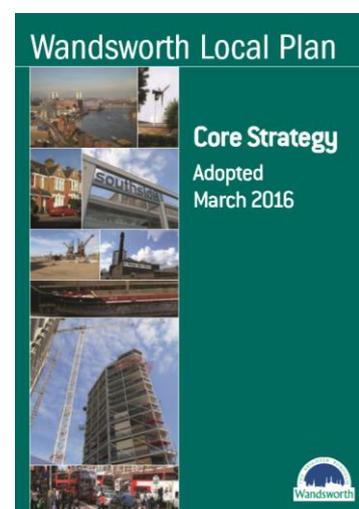
2.6 Further guidance on Circular Economy Statements by Greater London Authority (GLA) is yet to be confirmed. See section 2.8 for guidance documents referred to in producing this statement.

Local Policy

2.7 The Wandsworth Local Plan (adopted March 2016) consists of a series of documents. The most important being the Core Strategy, which sets out Wandsworth spatial vision and a strategy for how this vision will be achieved. The Development Management Policies Document (DMPD) and Site-Specific Allocations Document (SSAD) support the strategic objectives set out in the Core Strategy. The following policy is considered relevant to this Statement:

Policy DMS3 - Sustainable design and low-carbon energy

expects all developments to employ good standards of sustainable design and construction. This will include, but not necessarily be limited to the following:… sustainable construction methods, such as the use of sustainable sourced and recycled materials; the use of demolished material from the development site where practicable, in order to minimise the transportation of waste and reduce carbon emissions.



Guidance Documents

2.8 Guidance documents referred to in writing this statement are as follows:

- > 'Designing for a Circularity - Primer' by GLA, October 2019.
- > 'Circular Economy Guidance for Construction Clients' by UK Green Building Council (UKGBC), April 2019.
- > 'Circular Economy in Cities: Project Guide' by Ellen Macarthur Foundation, March 2019.
- > 'BS 8001:2017 – Framework for Implementing the Principles of the Circular Economy' by British Standards Institution, May 2017.

BREEAM

2.9 The proposed development will include structures to be designed and built to achieve a BREEAM 'Excellent' rating under the New Construction 2014 scheme. Implementing a circular economy approach can support achieving credits under Mat01 Life Cycle Impacts, Mat05 Designing for Durability and Resilience, Wst05 Adaption to Climate Change and Wst06 Functional Adaptability, where targeted.

3. DEVELOPMENT OVERVIEW

Site Location

3.1 The proposed development site is located in Roehampton within the London Borough of Wandsworth. Figure 2 illustrates the site masterplan.



Figure 2: Site Location – Site Masterplan , 2019

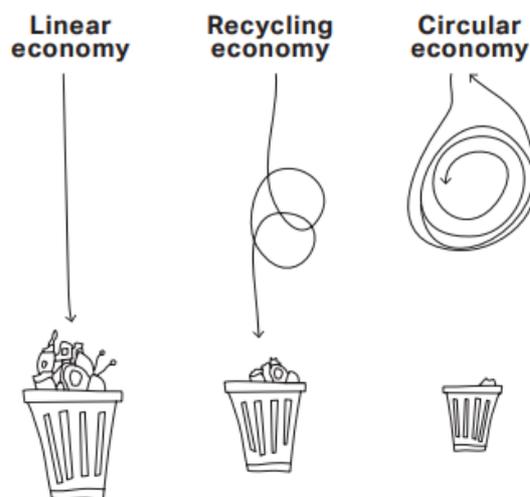
- 3.2** The planning application is being submitted as a Hybrid Application, comprising a Detailed Application for Blocks A, K, M, N, O, Q and Portwood Place, with an outline application for the rest of the site.

Proposed Development

- 3.3** The description of development for the planning application is (floor areas TBC following receipt of the finalised schedule):
- a. *Phased demolition of all existing buildings and structures (except Alton Activity Centre community building);*
 - b. *Mixed-use phased development ranging from 1-9 storeys above ground level comprising up to 1,108 residential units and up to 9,377 sqm (GIA) of non-residential uses comprising new and replacement community facilities (including library and healthcare facilities, youth facilities, community hall, children’s nursery & children’s centre) (Class D1); flexible commercial floorspace (comprising retail (Class A1), financial and professional services (Class A2), café / restaurants (Class A3), hot-food takeaways (Class A5), business (Class B1), and community uses (Class D1)); landscaping; removal and replacement of trees; public realm improvements; access improvements; relocation of bus turnaround area and provision of bus driver toilet facility; improvements to children’s play facilities; provision of energy centre and associated rooftop plant enclosure; car & cycle parking; and other highway works incidental to the development. All matters reserved except for Blocks A, K, M, N, O, Q, Portwood Place Nursery and Community Centre and highway/landscape/public realm improvements.*

4. CIRCULAR ECONOMY PRINCIPLES

- 4.1 Current and future trends point toward the need for a fundamental shift in the way resources are consumed. A shift to a circular economy will provide considerable economic opportunities as a result.
- 4.2 In contrast to a linear economy (take, make, dispose), a circular economy keeps products and materials circulating through the system at their highest value for as long as possible, through re-use, recycling, refurbishment and remanufacturing. As 60% of total UK waste is generated from construction, demolition and excavation (Defra and Government Statistical Service, 2019) this transition from linear to circular is essential.



FROM TAKE • MAKE • USE • DISCARD TO RE-MAKE • USE-AGAIN

Figure 3 - Linear, Recycling and Circular Economies (GLA, 2019)

- 4.3 The successful implementation of circular economy principles will help to reduce the volume of waste that London produces and has to manage. A key way of achieving this will be through incorporating circular economy principles into the design of developments, these principals are as follows:
- > **Building in layers** - ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.
 - > **Designing out waste** - ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build and re-use of secondary products and materials.
 - > **Designing for longevity** - creating a built asset with well-defined long-term needs, while being durable, resilient or able to cope with societal and environmental change. It would require little

modification / no replacement of parts, due to its 'loose fit', generous proportions and readiness for alternative technologies.

- > **Designing for adaptability or flexibility** – to meet the needs of the present but with consideration of how those needs might change in the future, and to enable change in the form of periodic remodelling and reconfiguration, including alterations or replacement of non-structural parts.
- > **Design for assembly, disassembly and recoverability** – future proofing the asset by designing products and services to be assembled, deconstructed and reused or recycled on a part-by-part basis.
- > **Selecting materials** - any new material specified in the development should aim to be low impact materials with little or no adverse effect on either the environment or on human health throughout its lifecycle. Recognise and encourage the use of recycled content and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

5. IMPLEMENTING CIRCULAR ECONOMY

- 5.1 Building circularity into projects is complex. There are many different approaches a project can identify and adopt solutions, with input from all design team members, including project managers and cost consultants.
- 5.2 Figure 4 defines a hierarchy for building approaches which maximises use of existing materials, with the ideal being to retain existing buildings.

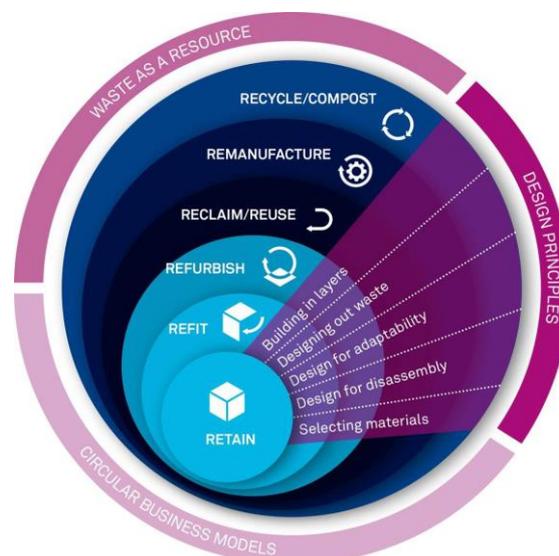


Figure 4: Circular Economy Principles (Source: RICS)

- 5.3** As noted previously, the Mayor’s updated draft London Plan will require all new referable developments to submit a Circular Economy Statement. This policy focuses on waste reduction, increases in material re-use and recycling and aim to be net zero-waste.
- 5.4** For circular principles to be successful, it requires a whole building approach. Figure 5 suggests methods to incorporate circular economy principles into a development process using the RIBA stages as an indicator of when the action should be undertaken.
- 5.5** These principles need to be proactively considered throughout specification, design, procurement, construction and operation. This includes collaborating with supply chains to explore and develop solutions which implement these principles and realise the benefits.

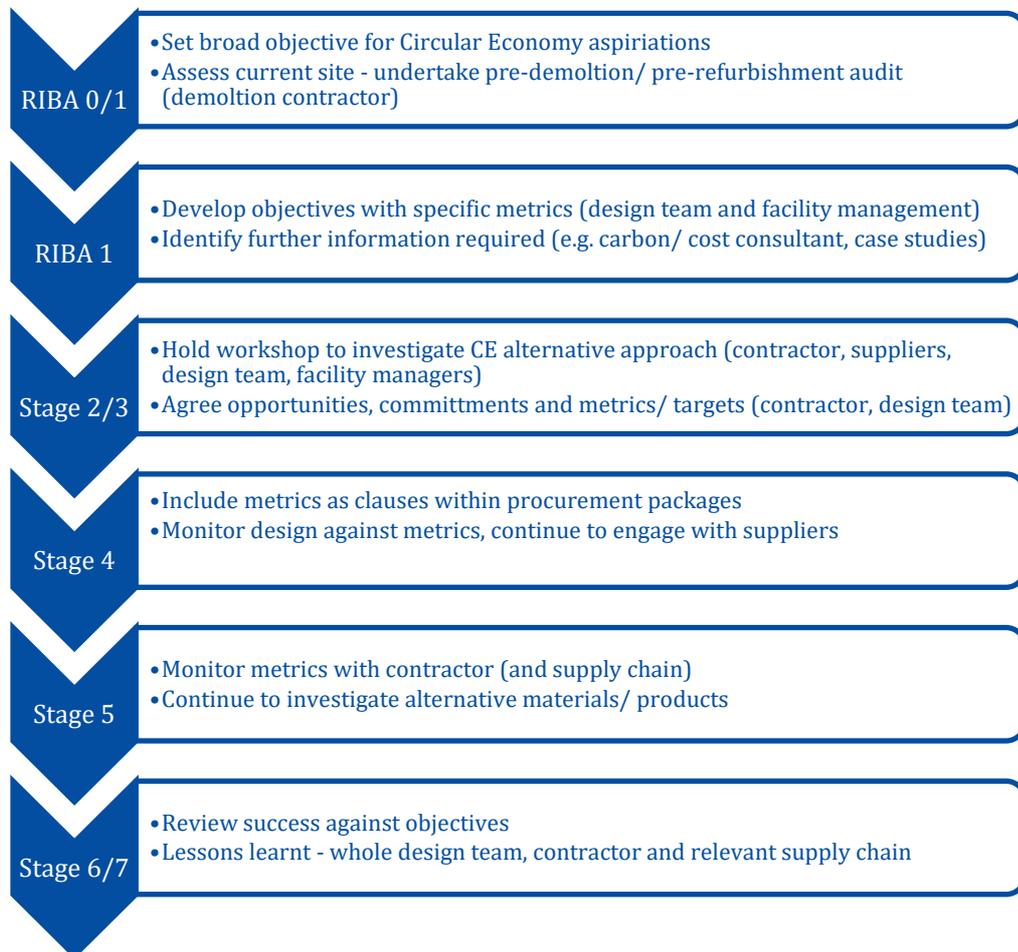


Figure 5: Methods to incorporate circular economy principles into a development process using the RIBA Stages (Source: UKGBC)

6. REDROW COMPANY TARGETS

- 6.1** Redrow have developed and monitor key objectives and company targets across their construction activities to continually drive improvements in social, environmental and economic performance.
- 6.2** Although not directly related to Circular Economy the company targets set by Redrow encompass the general principals surrounding Circular Economy, these are as follows:
- > 95% of construction and/or demolition waste to be diverted from landfill is a ‘*Managing Resources Efficiently*’ Redrow objective. In 2019 this target was met with 97.7% of waste being diverted from landfill.
 - > Evaluate and adopt modern methods of construction is a ‘*Managing Resources Efficiently*’ Redrow objective. In 2019 this was reported as being ‘ongoing’ and refers to smaller areas of efficiency achieved on site in order to reduce defects and waste.
 - > Redrow have a standard specification for all projects, this includes the use of innovative concrete roofing tiles which reduce the carbon emissions (during manufacture) by 40% when compared to concrete plain tiles. It also includes the use of aircrete concrete blocks, 80% of the raw materials used in the manufacture of the blocks are recycled products in some form, with the primary ingredient being Pulverised Fuel Ash (PFA) which is a by-product of coal fired power stations that would otherwise be sent to landfill.
- 6.3** Redrow work with the Community Wood Recycling scheme to increase the reuse of waste wood on site, in line with circular economy principles. This scheme ensures that any waste wood is used in the most environmentally beneficial way. A detailed breakdown of waste and timber reused or recycled on site can be seen in Figure 6 below:

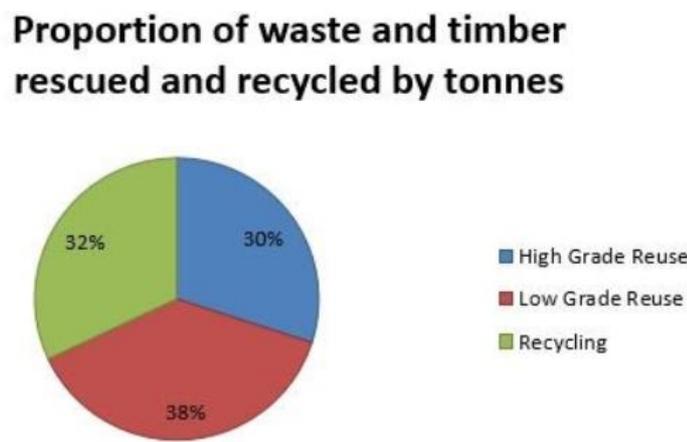


Figure 6: Proportion of waste and timber rescued and recycled in tonnes (Source: www.redrowplc.co.uk/news/latest-news/redrow-encourages-the-reuse-of-wood-in-line-with-circular-economy-principles/)

- 6.4 High grade reuse material has been used by communities for DIY or building projects or made into a range of products such as bird boxes or dining tables. Low grade reuse wood has been processed into firewood and kindling, helping to displace fossil fuels and reduce carbon emissions. Remaining waste wood was recycled into woodchip used as carbon-neutral fuel in power stations.
- 6.5 They are also members of the Homes Builders Federation Forum and are undertaking detailed analysis of waste produced during the construction of a new home, sharing findings with others to help reduce waste.

Colindale Gardens – Case Study

- 6.6 At Colindale Gardens 16 unused buildings were demolished to make way for new homes to be built. All the materials from the demolition process were separated with c.5,000 tonnes of metal recycled, and 61,000 cubic metres of concrete crushed and reused on site as aggregate.
- 6.7 The re-use of materials on site is in line with the circular economy hierarchy highlighted in Figure 4 above.

7. DESIGN PRINCIPLES

- 7.1 This section will review circular economy design principles and detail measures the proposed development *could* implement throughout the design, construction and operational phases in addition to those company objectives that are already in place.

Designing Out Waste

Minimised Material Use

- 7.2 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (i.e. lean design), and / or less waste is produced in the construction process, without compromising the design concept. For waste reduction, minimisation of excavation, simplification and standardisation of materials and components of choice, and dimensional coordination have been considered.
- 7.3 The development will aim to ‘design out’ waste through the consideration of material specification, such as maximising use of existing materials, and construction techniques in order to prevent and minimise waste generation.
- 7.4 When selecting and designing components the following will be applied where feasible:
- > Design out the need for the component or material.

- > Use reclaimed material over new and remanufactured components over new, where possible.
- > Use products with labels such as Cradle to Cradle (C2C) and Natureplus.
- > Select products that can be remanufactured or reused at end of first life.
- > Use materials with recycled content.
- > Select products that are designed for disassembly.
- > Select materials that can be recycled or composted at end of life; and,
- > Consider leasing short lived components.

7.5 When applying the above, complete transparency and visibility throughout the supply chain will be encouraged. Early engagement with the contractor and partnering within the supply chain will be required.

Waste Hierarchy

7.6 The design team will consider the Waste Hierarchy (Figure 7), to optimise reuse, recycling and recovery opportunities for the purpose of minimising waste as far as possible. The principal contractor, once appointed, will be responsible for implementing the principles within the Waste Management Strategy and the Site Waste Management Plan (SWMP) during the construction phase of the proposed development.

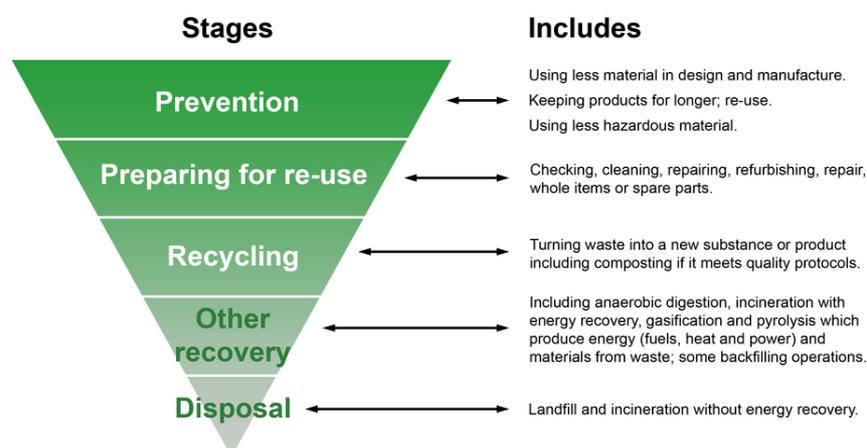


Figure 7: The Waste Hierarchy, Defra 2011

Estimated Waste from Construction

7.7 At this stage, no detailed bill of quantities for building material has been drawn up for the proposed development. Assumptions on the likely quantity of waste to arise have been made based on the

building use schedule, and using typical construction waste composition data (DEFRA, 2009). Therefore, estimations at present, do not account for measures that should be incorporated to reduce waste produced during construction, for example through design and procurement.

- 7.8** The developments Waste Management Strategy estimates waste arising from the construction of buildings at the proposed development, calculated using BRE SmartWaste benchmarks, to be a total of approximately 17,262 tonnes (10,941 tonnes from detailed element and 6,321 from outline). Whilst the outline element estimates up to an additional 6,321 tonnes, this will be spread over the anticipated construction period expected to be from 2020 to 2029.

Reuse and Recovery

Site Analysis and Potential for Reuse

- 7.9** A site analysis including a pre-demolition and pre-refurbishment audits will be carried out to determine opportunities for reusing existing materials and / or components. The existing materials on site will be reviewed to determine if they meet the required functionality of the new building design. Where no such opportunities exist, good practice measures will be taken in the demolition to ensure maximum recovery of materials through recycling. All elements from the deconstruction phase that cannot be reused on site will be sent to organisations for onward use where feasible.
- 7.10** Investigations will be carried out to establish where possible the extent of reuse, including reuse of materials and components from other projects (whether of major assemblies – e.g. structural steel frame – components, materials, etc.), and its practicality as early as possible. Throughout this process, carbon impacts will also be considered to ensure they are not compromised in material selection.

Site Waste Management

- 7.11** A Waste Management Strategy has been prepared by Stantec (formerly Peter Brett Associates LLP) as part of the Hybrid Planning Application to deliver the mixed-use development at Alton Estate. The strategy confirms the hierarchy of waste management will be adopted in accordance with national policy requirements. The waste management methods include preparation for reuse and material recovery. The strategy will aim to support innovative design features to the proposed development to use materials in their current state and form (for example reuse of soils), this can occur either on or off site. The scale of the site lends itself to store materials and manage construction so that vehicle movements off-site can be minimised. For example, if appropriate, areas for temporary stockpiling of materials will be assigned.
- 7.12** A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. This will increase efficiency and minimise wastage

due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of 'just in time' deliveries will be encouraged.

- 7.13** Options also include using waste materials found on site and recycling / recovering them into an alternative form that can be used for any construction purposes (for example crushing concrete for road construction material). By recycling onsite, carbon emissions associated with the proposed development are also reduced, rather than materials being taken away from the application site.
- 7.14** During the construction phase, materials recovered from any on-site works may be suitable for reuse on-site, reducing costs of transportation and procurement of virgin materials. This combined with considerate design practice, such as balancing any cut and fill of materials, will help to minimise construction waste in line with the waste hierarchy which seeks to eliminate, reduce, reuse and recycle.
- 7.15** Reusable packing solutions with key product manufacturers will be explored at the earliest opportunity. Solutions may include flat pallets, bulk bags, steel stillages and returnable cable drums.

Operational Waste

- 7.16** Waste reduction during the operational phase will also be considered. High profile signage will be provided, where feasible, in communal waste storage facilities to encourage correct use of the recycling service. New residents will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates. The information should also include details on waste prevention schemes within the London Borough of Wandsworth area.
- 7.17** Community initiatives can provide a good foundation for influencing a more circular economic behaviour. The local authority already has had community initiatives in place, an example of which was the 'Golden Ticket recycling prize draw'. The development should look at possibilities for supporting and implementing community initiative on site. Such initiatives lean towards a focus on household waste reductions.

Whole Life Carbon and Material Resource Efficiency

- 7.18** Engagement with the design team has been undertaken to address the end of life strategy for the material. Initial building material formation has been made available to understand future life.
- 7.19** A Whole Life Cycle Carbon Emissions (WLCCE) report has been produced by Hodkinson Consultancy, with the aim to improve the overall environmental impact. The initial findings and early recommendations have been included in the standalone report in support of the planning

application. Once a full detailed building model is available, a full WLCCE assessment will be undertaken. The assessment will support BREEAM certification credits (MAT01) to be achieved and will consider, for RIBA stage 2-4, design for superstructure, substructure and core services.

- 7.20** LCA is a tool to measure how effective different design strategies are at improving wider environmental (or cost) performance. It is then used to prioritise which strategies will provide the best value. If a building can be adapted for a new purpose it is less likely to be demolished in the future.

Designing for Longevity

- 7.21** The proposed development seeks to design with durability and longevity in mind to ensure the built asset allows for challenging climatic conditions. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.

BREEAM

- 7.22** In line with BREEAM requirements for Mat05 (Designing for Durability and Resilience), vulnerable elements of the proposed development will be protected from damage. Protection measures will be incorporated to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. With guidance from the requirements for Wst05 (Adaptation for Climate Change), where feasible, the proposed development will seek to incorporate measures to mitigate the impact of extreme weather conditions arising from climate change over the lifespan of the assets.
- 7.23** Liaison with the Local Planning Authority (LPA) to determine population trends and future projections will be considered to ensure the development can meet them. Design considerations will be given to a robust frame to enable changes in building use.

Maintenance

- 7.24** Appropriate and simple maintenance strategies will be planned at design stage, including using condition-based monitoring for equipment.

Design for offsite construction

- 7.25** Offsite construction and manufacturing will also be considered, where feasible. The benefits of offsite factory production in the construction industry are well documented and include the potential to considerably reduce waste especially when factory manufactured elements and components are used extensively. Its application also has the potential to significantly change the

operations onsite, reducing the amount of trades and site activities and changing the construction process into one of a rapid assembly of parts that can provide many environmental, commercial and social benefits, including:

- > Reduced construction related transport movements.
- > Improved workmanship quality and reducing on site errors and re-work, which themselves cause considerable on-site waste, delay and disruption; and,
- > Reduced construction timescales and improved programmes.

Standardisation or Modularisation

- 7.26** The proposed development will consider designing and construction methods by applying, where feasible, standardised elements or modular designs for materials and products that enable a reduction in construction waste and easier reuse in next life.
- 7.27** Elements should use standardised design formats to enable future reuse, e.g. no bespoke cutting of materials as this can make replacements difficult to obtain.
- 7.28** Work towards <5% 'special' components across standardised and/or modular designs.

Designing for Assembly, Disassembly and Recoverability

- 7.29** Opportunities to develop a materials inventory will be created for the proposed development will be explored, which would include a detailed breakdown of all the building elements that sets out the constituents of each product and material, the structural loadings, and the ability for each material to be reused and/or recycled.
- 7.30** The lifespan of internal fixtures is often over-estimated which leads to significant waste. Where feasible, components that are likely to have a shorter lifespan will either be made of biological materials which can be returned to the biosphere (for example breather board) or designed to be returned to the manufacture.
- 7.31** Materials with a planned short life span will be prioritised to be selected with manufacturers with take back schemes or that are procured through a service agreement. Companies such as WarpIT help distribute, reuse and recycle surplus redundant resources such as furniture, equipment, fixtures and fittings. Other services from companies include, Building as Material Bank (BAMB), a reusable materials bank aiming to increase the value of building materials, reduce waste and the use of fewer virgin resources.

- 7.32** Unnecessary toxic treatments and finishes will be avoided where possible. In addition, finishes that can contaminate the substrate in a way that they are no longer reusable will be avoided unless they serve a specific purpose.
- 7.33** Consideration to designing the building systems and components in layers to enable the ability to remove, adjust or replace of some elements is feasible, particularly for areas where different components have different life spans and maintenance needs.
- 7.34** All assets will seek to be designed to allow for easy assembly and reconfiguration where feasible, for alternative future uses, for example, the design of interior systems for disassembly. Materials will have the option to be taken apart through mechanical and reversible fixings to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be avoided where feasible, to enable end of life deconstruction and salvage of building elements. Fixings will be easily accessible, where possible, for disassembly.
- 7.35** No fixtures or fittings will be glued down wherever feasible to ease future disassembly and recovery.

Designing for Adaptability or Flexibility

- 7.36** The proposed development will seek to avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works. These changes could be required as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy. Where feasible, compliance with the BREEAM Wst06 'functional adaptability' credit could be targeted for relevant assessments.
- 7.37** Designing for adaptability and flexibility has been considered in the design to ensure the built asset can cope with a diversity of scenarios, e.g. flexible planning, location of cores and generous floor to ceiling heights. The proposed development has been designed to promote openness and ease of access.
- 7.38** Other examples include ensuring that insulation is not bonded to the prefabricated ground slabs or the roof membrane, allowing for maintenance or upgrades in future.
- 7.39** The development will seek to ensuring that the mechanical and electrical design is zoned to allow for future changes in layout.
- 7.40** Considerations have also been given to designing for future adaptability and flexibility, for example, building heights to account for future mezzanine installations.

8. CONCLUSION

8.1 The purpose of this Circular Economy statement is to demonstrate that the proposed development at the Alton Estate by Redrow Homes Limited in the London Borough of Wandsworth has considered the circular economy principles to minimise embodied carbon and operate with a circular economy, maximising the value extracted from materials and prioritising the reuse and recycling of materials. The statement takes into consideration the following, with reference to the draft new London Plan Policy SI7:

- > How demand for materials will be minimised.
- > How secondary materials can be used.
- > How new materials are being specified to enable their reuse.
- > How construction waste will be minimised and how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.
- > How the proposal's design and construction will enable building materials, components and products to be disassembled and re-used at the end of their useful life.
- > Opportunities for managing as much waste as possible on site.
- > Adequate and easily accessible storage space to support recycling and re-use.
- > How much waste the proposal is expected to generate, and how and where the waste will be handled.

Key Commitments

- > Broad objectives for Circular Economy aspirations have been set. Moving forward, workshops will be held to develop and investigate Circular Economy objectives with specific metrics (design team, contractor, suppliers, and facility managers).
- > Site analysis, in the form of detailed pre-demolition / pre-refurbishment audits, will be undertaken.
- > Circular Economy opportunities will be monitored throughout the design and construction process.
- > On completion, success against objectives will be reviewed and an analysis will be undertaken on lessons learnt (whole design team, contractor and relevant supply chains).

