Procuring Resource Efficient Construction Projects

RESOURCE EFFICIENT SCOTLAND

Growth that doesn't cost the earth

Model procurement wording for public and private sector clients and contractors on construction projects

Contents

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Disclaimer

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1. Introduction

1.1 Aim of this guidance

The procurement process is an essential enabler to reducing waste and using resources efficiently in construction projects.

This guide aims to help **Public** and **Private Clients** and **Contractors**:

Figure 1: Hidden costs of waste: 8yd skip can equate to £1700.

- Enhance high quality re-use, recycling and avoidance of waste to landfill including through 'Designing out Waste' and implementing Site Waste Management (SWMP);
- Reduce the costs of materials and waste, highlighted in Figure 1, through a whole life costing approach;
- Enhance the application of circular economy outcomes. This includes extracting maximum value by keeping buildings, infrastructure, resources and materials in use for as long as possible. This may be applied in the procurement of construction projects through a focus on design for durability, deconstruction, disassembly and flexibility together with refurbishment, repair, re-using, recovering or remanufacturing materials or equipment, where relevant.
- Clearly define relevant procurement requirements and how you expect your supply chain to respond.

This guide includes model clauses and evaluation supporting guidance that focus on Construction, Renovation and Demolition and is supported by other guidance which is referenced where relevant in this guide.

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1.2 Format and how to use this guide

Project stages:

- The model procurement clauses and evaluation guidance are set by project stage, based on the 2013 RIBA Plan of Work[1].
- This organises the process of briefing, designing, constructing, maintaining, operating and using building projects into a key stages. It is used as guidance for the preparation of detailed professional services contracts and building contracts.
- This means that, irrespective of the procurement route adopted for a project (e.g. Traditional, Design and Build (D&B), Non-Profit Distributing (NPD), Framework and Term contracts (e.g. NEC3) for maintenance or long term asset management) actions and model wording should be selected according to project stages.
- Requirements can also be applied to procurement processes targeted at maintaining rather than building new facilities, civil engineering and infrastructure where there is little or no design involved.

Using the Guide:

- The guide is separated into:
    - **Client Actions and Procurement Clauses**; and
    - **Contractor Actions and Procurement Clauses**.

  Where there is an overlap, this is highlighted in the text;
- You can navigate using the 'Navigation Map' below which provides links to the the Actions and Procurement Clauses /evaluation guidance by clicking on the hyperlinked boxes marked '**Click here**' on the Map. At the bottom of each page is the 'Jump to Navigation Map' button to enable you to get back to this page;
- Within the Contractor Section Actions D-N provide detail on specialist contractors;
- When using the suggested Actions and Clauses which include text in [**XX**] it is recommended you refer to Section 4 to help determine relevant targets and KPIs.

2. Navigation Map

Project stage	Client Actions	Procurement Clauses	Contractor Actions	Procurement Clauses
Planning Procurement **RIBA 0**	**ACTION 1:** Strategic planning, options, outcomes, targets, business case. **Click here**	Strategic brief – Market engagement **Click here**	**ACTION A:** Strategy and Objectives. Targets. **Click here**	Project brief **Click here**
Preparation and brief **RIBA 1**	**ACTION 2:** Clarifying intended outcomes and commitments. **Click here**	Advertising Contract Notice **Click here**	**ACTION B:** Contract Performance Requirements. **Click here**	Advertising/ Contract Notice **Click here**
Design **RIBA 2-4**	**ACTIONS 3-5:** Design team tender **Click here**	Supplier Selection **Click here** Specification/ ITT **Click here** Contract Mgmt **Click here**	**ACTION C:** Sub-contractor requirements (inc. SWMP development) **Click here**	Statement of contractor requirements **Click here**
Pre-construction & construction **RIBA 5**	**ACTIONS 6-8:** Contractor tender **Click here**	Supplier Selection **Click here** Specification/ ITT **Click here** Contract Mgmt **Click here**	**ACTIONS D-N:** Sub-contractor tendering Post Tender interview/ start up meeting **Click here**	Supplier Selection **Click here** Specification/ ITT **Click here** Contract Mgmt **Click here**
Handover, Post-completion & Use **RIBA 6-7**	**ACTION 9:** Outcomes monitoring & reporting **Click here**	Contract management, project review **Click here**	**ACTION O:** Outcomes monitoring & reporting **Click here**	Contract management/ project review **Click here**

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3. Context

3.1 Intended audience

This document is for both construction clients and contractors[a]:

- **Clients:** it advises how to write procurement requirements and evaluate bids for your design team and contractors for the construction and maintenance of building and civil engineering/infrastructure projects. It is suitable for **Public** and **Private** sector clients and stakeholders, including budget holders, commissioners, end users, construction teams, finance, procurement, facilities and waste managers, sustainability leads, contracts managers and others; and
- **Contractors:** it sets out how to apply requirements and evaluate bids when appointing your supply chain and is suitable for tender managers, supply chain managers, sustainability managers, project managers, design teams, contracts managers and others.

3.2 Policy and legal context

This guide reflects relevant Scottish construction policy and legislation, including:

- Scotland's Zero Waste Plan[2] incorporating Scotland's target to recycle and recover 70% of construction and demolition waste by 2020, supporting the European Waste Framework Directive and the Waste Hierarchy**;**
- 'Making Things Last - A Circular Economy Strategy for Scotland'[3];
- Scottish Building Standards, especially Domestic and Non-Domestic Sustainability Standards[4];
- Public Procurement Regulations - Public Contracts (Scotland) Regulations 2015[5], Procurement Reform (Scotland) Act 2014[6] and Procurement (Scotland) Regulations 2016[7];
- The Scottish Government's Construction Procurement Manual (subject to amendment)[8] and Procurement Journey[9] and ongoing development of measures arising from the Review of Scottish Public Sector Procurement in Construction[10].

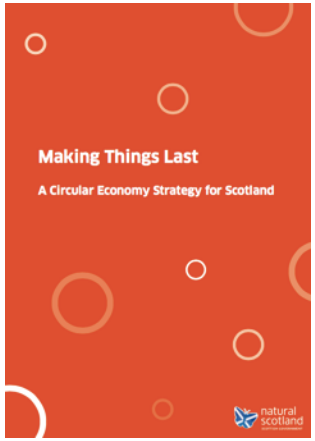

Figure 2: Making Things Last: Circular Economy Strategy for Scotland

3.3 Outcome based construction

To achieve waste reduction and recovery, good practice must be adopted as early as possible, and mandated through the procurement in a relevant and proportionate manner.

Planned actions, metrics and targeted outcomes should be communicated between the client and contractor and passed down through the supply chain (including design and consultancy teams, sub-contractors, waste management contractors and material suppliers) and across all project phases – from option identification and preliminary/outline design through to project completion and whole-life management.

Intended outcomes that focus on resource efficient construction include improving waste forecasting and reporting, use of materials with higher

[a] 'Contractor' refers to the main contractor, principal contractor or other named contractor that is responsible for co-ordinating the delivery of the client's requirements.

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recycled content, re-use of materials, user and design led projects with consistent monitoring, evaluation and reporting of project outcomes.

The role of specialists and managers in ensuring supply chains reduce waste and increase recycled and re-used content at project stages is highlighted in Figure 3.

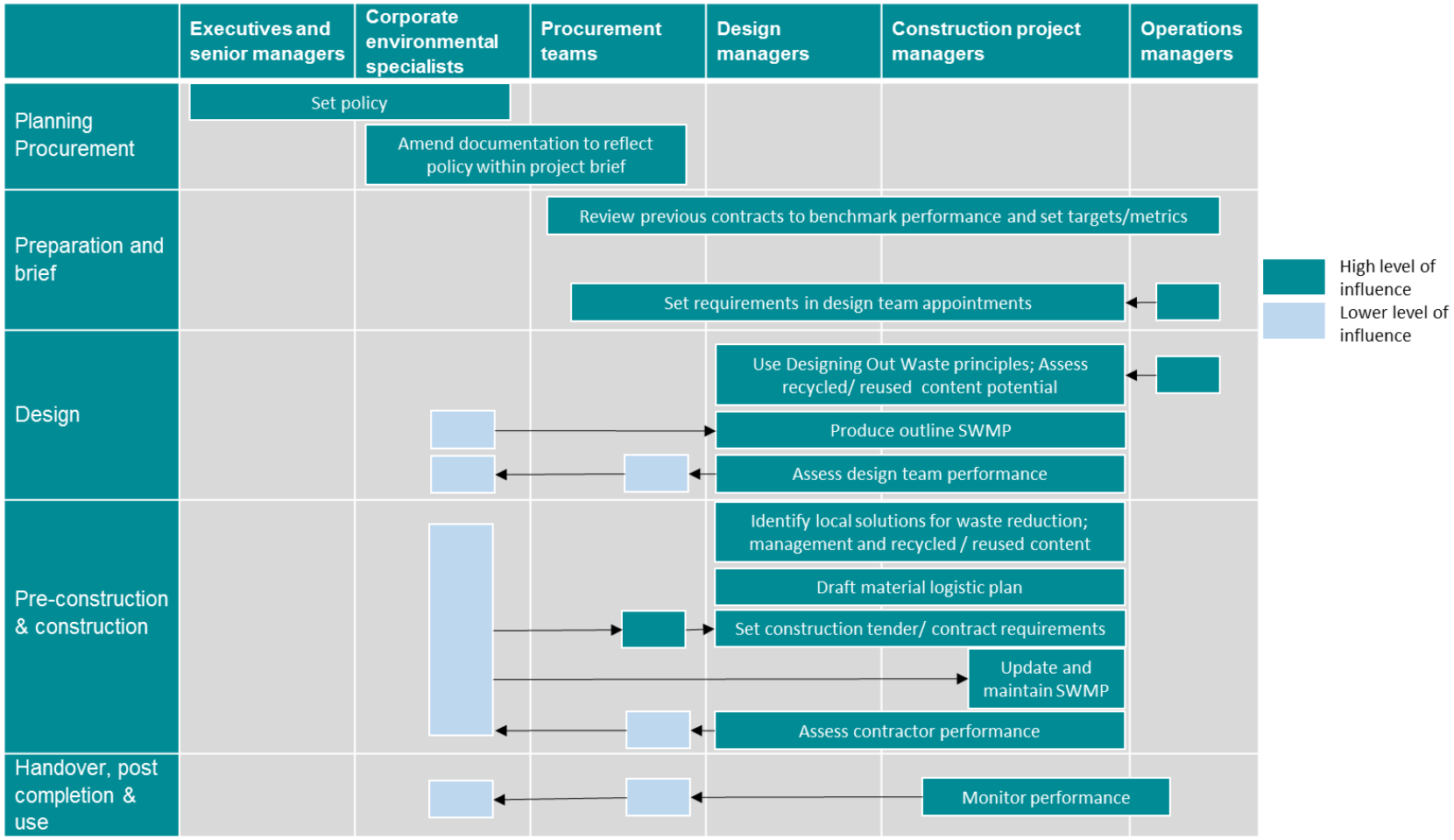

Figure 3: Role of specialists and managers in ensuring supply chains reduce waste and increase recycled and re-used content at project

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4. Key definitions, targets and KPIs

The following are key definitions and considerations for Key Performance Indicators (KPIs) and targets.

4.1 Demolition, construction and excavation wastes

When setting waste KPIs and targets it is important to be clear on the waste type it relates to, as each has different material composition, management routes, and standard, good and best practice options.

- **Demolition waste** – arising from demolition or strip out activities as part of a refurbishment;
- **Excavation waste** – typically soil and stones resulting from excavation activities – i.e. preparation & levelling, excavation of foundations, basements, tunnels and service trenches;
- **Construction waste** – other waste produced at a construction site, that isn't demolition or excavation waste.

It is useful to address demolition waste separately, as the quantity will be site specific, potentially represent a large waste stream and differs from construction waste in being difficult to reduce. High levels of demolition waste recycling and re-use can be achieved, especially if used on site, albeit in lower value applications. If combined with construction waste for a KPI or target, demolition waste could account for most the combined stream, and therefore act as a disincentive to reducing or recycling construction waste due to its small contribution.

It can also be beneficial to exclude excavation wastes from any construction or demolition waste KPIs or targets. It can represent a large site specific waste stream that can skew waste diversion from landfill and recycled content data, where significant soil re-use occurs on site.

4.2 Non-hazardous construction and demolition waste

The scope of waste KPIs and targets are **typically limited to non-hazardous waste**.

- **Hazardous** – waste that may be harmful to human health or the environment (e.g. solvents, oils, asbestos, fluorescent lights, batteries);
- **Non-Hazardous (Non-Inert)** – waste that is reactive but does not have hazardous properties (e.g. wood, paper, cardboard);
- **Non-Hazardous (Inert)** – waste that is non-reactive and does not have hazardous properties (e.g. uncontaminated glass, bricks, concrete).

Hazardous waste generation will be specific to an individual site, potentially have limited treatment or disposal routes, and its inclusion could unfairly hinder the achievement of waste diversion from landfill targets.

4.3 Reduction/ diversion from landfill vs recycling

Whilst the Scottish Government's aim of securing 70% recycling of construction and demolition waste by 2020 acts as an overarching driver for this guidance, the aim of this guide is to drive good practice beyond recycling. The terminology therefore used is **Reduction/ diversion from landfill,** whch incudes:

- Re-using waste material on site (in-situ or for new applications);
- Re-using waste material on other sites;
- Salvaging or reclaiming waste material for re-use;
- Returning waste material to the supplier via a ‘take-back’ scheme;
- Recovery of waste material from site by an approved waste management contractor and recycled or sent for energy recovery.

4.4 Recycled and re-used content

Increasing the recycled and re-used content relies on the use of products containing higher levels of recycled material or re-use of existing buildings products or materials. This promotes greater sustainability by:

- Reducing consumption of virgin material;
- Reducing the quantity of construction and demolition waste being sent to landfill;
- Reducing a wide range of environmental impacts associated with extracting, transporting, and manufacturing / processing raw materials;
- Stimulating demand for recycled materials amongst product manufacturers and thereby encouraging higher levels of recycling.

Recycled content is defined in ISO 14021[11] as:
The proportion, by mass, of recycled material in a product. Only pre-consumer and post-consumer materials shall be considered as recycled content.

A product that is actively re-used (e.g. is removed and replaced or is moved to another location rather than simply left in-situ) is credited as 100% re-used content by value. The material value of re-used materials is either the purchase price, or if materials are not purchased (e.g. are re-used onsite) is taken as the value of an equivalent new product if procured on the open market.
Non-waste by-products such as blast furnace slag and flue gas desulphurisation gypsum, as well as other materials that have been recovered from the waste stream, can be classed as recycled content.

Calculating recycled and re-used content

Recycled and re-used content by value is a function of the material value of a component, the quantity used and the percentage of the component by mass (taking into account yield of input) that is derived from recycled content.

The method of calculation is:

$$\frac{M_1Y_1+M_2Y_2+M_3Y_3}{P} \times 100 = \text{recycled content \%}$$

Where: M = mass of recycled input; Y = yield of input (taking into account waste losses, moisture content, etc) and P = mass of final product.
Thus, if a material costs £100 per m^2 and has 20% recycled content by mass, the recycled content by value of 10 m^2 would be: **£100 (per m^2) x 10 (m^2) x 20% = £200[12].**

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By summing the recycled content by value of all the components in a building and dividing this by the total material value of all the components in the building, it is possible to estimate the total percentage of recycled content by value for the building.

Further details on potential benchmarks for construction projects are contained within: 'Archetype resource benchmarks for construction projects: Evidence base report (WRAP)'[13].

4.5 Target setting

Throughout this document KPIs are included to measure performance against waste and recycled and re-used content objectives, including:

- Percentage diversion of non-hazardous construction waste (excluding excavation and demolition) from landfill;
- Percentage diversion of non-hazardous demolition/ strip out (excluding excavation) waste tonnage from landfill;
- Percentage of total material value derived from recycled or re-used content in new construction;
- Non-hazardous construction waste (excluding demolition and excavation) generation[b].

For each KPI there are a range of targets that can be set to meet Standard, Good or Best practice aspirations based on published benchmarks or targets from sources including:

- WRAP Resource efficiency benchmarks based on actual project data collected from industry;
- BREEAM Waste credit requirements;
- EU Green Public Procurement Criteria for Office Building Design, Construction and Management for Core and Comprehensive criteria levels[14]. Note: these criteria are just for office buildings.

Within the model wording, each KPI has a **[XX]**, which indicates where a preferred target can be inserted. The following section provides guidance on various target levels that may be set depending on the project aspirations as well as considerations and potential project constraints that may influence, and help guide the selection of different targets.

[b] Note: Recycling rates provided by waste management contractors are often based on monthly data, so not specific to your waste. It is good practice as part of your waste management duty of care audit to review how recycling data is collated, so that the approach and robustness of data, is clear.

Percentage of non-hazardous construction waste generated by the project and diverted from landfill

Level	Target bracket	Considerations and constraints when setting targets	Notes
Standard	• ≤70% by volume; or • ≤80% by tonnage.	• Waste is not a priority environmental issue for the project. • Project doesn't have a BREEAM rating aspiration; or has a BREEAM Pass or Good target (or equivalent). • Site is in a rural location, which may limit available construction waste management infrastructure and the logistics of takeback schemes from manufacturers. • Minor works project – e.g. <£100,000, where economies of scale may limit waste management options. • Space constraints on site will limit onsite segregation.	This level wouldn't contribute to any BREEAM UK (New Construction non-domestic buildings 2014) waste credits.

Good	• ≥70% by volume; or
	• ≥80% by tonnage.
		• Waste is a key environmental issue for the project.
		• Targeting BREEAM Very Good or Excellent (or equivalent).
		• Space likely to allow for segregation of streams, if required.
		• Site is in a suburban/ urban location that has good logistics connectivity therefore likely to:
		  ○ have good construction waste management infrastructure
		  ○ facilitate manufacturer take back on packaging/ offcuts.
			70% by volume and 80% by tonnage contributes to one credit in BREEAM UK (New Construction non-domestic buildings 2014).

Best	• ≥85% by volume; or
	• ≥90% by tonnage.
		• The project has an objective to be an exemplar in terms of sustainability and waste diversion from landfill.
		• Targeting BREEAM Excellent or Outstanding (or equivalent)
		• Site is in an urban/ city location that has good logistics connectivity therefore likely to:
		  ○ have good construction waste management infrastructure, including construction MRFs and recycled aggregate producers
		  ○ facilitate manufacturer take back on packaging/ offcuts.
			85% by volume and 90% by tonnage meets exemplary level criteria in BREEAM UK (New Construction non-domestic buildings 2014).

Percentage of non-hazardous demolition waste generated by the project and diverted from landfill

Level	Target bracket	Considerations and constraints when setting targets	Notes
Standard	• Between 55% - 80% by tonnage.	• Waste is not a priority environmental issue for the project. • Project doesn't have a BREEAM rating aspiration; or has a BREEAM Pass or Good target (or equivalent). • Site is in a rural location, which may limit demolition waste management infrastructure availability. • Very limited demolition required, which may make significant recycling/ re-use unviable.	• EU GPP Criteria for Office Building Design, Construction and Management sets core criteria for a minimum of 55% by weight of the non-hazardous waste generated during demolition and strip-out works, excluding excavations and backfilling, that shall be

Level	Target bracket	Considerations and constraints when setting targets	Notes
		• No demand for recycled aggregates or material re-use in new build. • Space constraints on site will limit potential for deconstruction or onsite segregation. • Tight project timeframes limit the opportunities for phased deconstruction, assessment and retention of building elements.	prepared for re-use, recycling and other material recovery. • EU GPP Criteria for Office Building Design, Construction and Management sets comprehensive criteria for a minimum of 80% by weight of the non-hazardous waste generated during demolition and strip-out works, excluding excavations and backfilling, that shall be prepared for re-use, recycling and other material recovery. • Less than 80% by volume and 90% by tonnage level wouldn't achieve associated BREEAM UK (New Construction non-domestic buildings 2014) credits.
Good	• ≥80% by volume; or • ≥90% by tonnage.	• Waste is a key environmental issue for the project. • Targeting BREEAM Very Good or Excellent (or equivalent). • Site is in a suburban/ urban location therefore likely to have good demolition waste management infrastructure available. • Demolition will create good quantities of material, making high recycling/ re-use potentially viable. • Some potential demand for recycled aggregates/re-use in new build • Space likely to allow for some deconstruction or on site segregation of streams. • Project timeframes will allow for a process of deconstruction, assessment and retention of building elements.	• 80% by volume and 90% by tonnage contributes to one credit in BREEAM UK (New Construction non-domestic buildings 2014).
Best	• ≥85% by volume; or • ≥95% by tonnage.	• Targeting BREEAM Excellent or Outstanding (or equivalent). • The project has an objective to be an exemplar in terms of sustainability and waste diversion from landfill. • Site is in an urban/ city location likely to have significant local demolition waste management infrastructure available. • Demolition will create significant quantities of material, making very high recycling/ re-use potentially viable. • There will be a demand on site for recycled/ re-used material in the new build. • Space likely to allow for deconstruction and segregation of streams	• 85% by volume and 95% by tonnage meets exemplary level criteria in BREEAM UK (New Construction non-domestic buildings 2014).

Level	Target bracket	Considerations and constraints when setting targets	Notes
		• Project timeframes will allow for a process of deconstruction, assessment and retention of building elements.	

Percentage of total material value derived from recycled and re-used content in new construction

Level	Target bracket	Considerations and constraints when setting targets	Notes
Standard	• No recycled or re-used content target set; or • Less than 10% of the total value of materials used derives from recycled and re-used content in the products and materials selected.	• Recycled or re-used content is not a priority issue. • Minor works project – e.g. <£100,000, which may limit economic viability of opportunities • Project brief will limit the applications available for re-used materials in new build. • New works unlikely to require materials that typically contain good levels of recycled content e.g. aggregates, concrete, masonry, steel/aluminium, drywalling, insulation, glazing • No infrastructure/ hard landscaping applications that may require recycled aggregates. • No planned demolition that would allow re-using or recycling materials already on site in the new works. • Limited opportunities to bring reclaimed or recycled materials from off site without imposing high transport impacts.	• There is ample evidence to demonstrate that requiring a minimum of 10% recycled content by value for the project overall (i.e. not per product) is widely achievable. Therefore, not setting a target or targeting less than 10%, should only be considered where the circumstances of the project may preclude inclusion of recycled content.
Good	• 10-15% of total material value derives from recycled and re-used content in new construction; and • Identification of top ten Quick Wins or equivalent, selecting the top opportunities to exceed this percentage without increasing the cost of materials.	• Recycled and re-used content is a key issue for the project • Project brief doesn't preclude the applications of re-used materials in new build. • New works will require materials that typically contain good levels of recycled content e.g. aggregates, concrete, masonry, steel/ aluminium products, drywalling, insulation, glazing. • Project brief includes infrastructure/ hard landscaping applications that may require recycled aggregates. • Some demolition required that would allow re-using or recycling materials already on site in the new works • Location shouldn't limit opportunities to bring reclaimed or recycled materials from off site without imposing high transport impacts.	• While the 10% benchmark could be considered modest, its aim is to instil the process of measuring and considering recycled content within the project. When coupled with a requirement to identify the top ten Quick Wins, this instruction has the effect of necessitating action by the project team even if the baseline level of recycled content for the selected design is shown to be >10%. • In this way, improved performance can be achieved whilst retaining flexibility to take account of the economic, technical and environmental circumstances of the specific project. By adopting the available opportunities to increase recycled content using cost competitive, readily available products (i.e. 'good practice'), levels exceeding 15–20% are common.

Level	Target bracket	Considerations and constraints when setting targets	Notes
			• EU GPP Criteria for Office Building Design, Construction and Management sets core criteria for incorporation of 15% recycled content in concrete and masonry structural solutions.
Best	• 20%+ of the total value of materials used should derive from recycled and re-used content in the products and materials selected; and • Identification of top ten Quick Wins or equivalent, selecting the top opportunities to exceed this percentage without increasing the cost of materials.	• The project has an objective to be an exemplar in terms of sustainability and recycled and re-used content. • Project brief offers good opportunities to re-use existing materials in new build. • New works will require materials that typically contain good levels of recycled content e.g. aggregates, concrete, masonry, steel/aluminium products, drywalling, insulation, glazing. • Project brief includes infrastructure/ hard landscaping applications that may require recycled aggregates. • Demolition required that would allow re-using or recycling materials already on site in the new works. • Location shouldn't limit opportunities to bring reclaimed or recycled materials from off site without high transport impacts • Paying a premium for some recycled content materials would be considered. Note: It is not intended that setting a requirement for recycled content should dictate choice of design specifications for a project.	• Careful consideration would be needed before adopting a higher target requirement (e.g. achieve a min of 30% recycled content) because, if strictly enforced, this could have the impact of influencing key design decisions (such as choice of framing solution or cladding material) based on the inherent recycled content of different options. • Using alternative specifications rather than higher recycled content products within an existing specification would not provide the same stimulus to the markets for recycled materials; it would not stimulate demand for products with higher levels of recycled content than their peers. • EU GPP Criteria for Office Building Design, Construction and Management sets comprehensive criteria for incorporation of 30% recycled and re-used content in concrete and masonry structural solutions.

Non-hazardous construction waste (excluding demolition and excavation) generation targets

Note:

- Separate waste generation target brackets are provided for infrastructure and building projects, as infrastructure projects generate significantly different waste streams and quantities from building projects;
- At project brief stage, the client may only wish to set a requirement for a waste generation target to be proposed by the contractors during tendering, rather than setting a target at the outset. A client led low waste target can dictate the choice of design specifications used on a project, which may not be the intent.

Level	Target bracket	Considerations and constraints when setting targets	Notes
Standard	**Buildings** • ≤13.3m^3 or ≤11.1 tonnes per 100m^2 Gross Internal Floor Area (GIFA). **Infrastructure** • ≤20m^3/ £100k or ≤16 tonnes/ £100k.	• Waste is not a priority environmental issue for the project. • Project doesn't have a BREEAM rating aspiration; or has a BREEAM Pass or Good target (or equivalent). • Site is in a rural location, which may limit the logistics of takeback schemes from manufacturers. • Project brief will require traditional construction methods. • It is a complex design or requires a particularly high finish, and therefore potential for waste and rework. • Space constraints on site may create material handling and logistics challenges that could lead to increased product damage.	• Achieving the Buildings target would be awarded 1 credit under BREEAM UK (New Construction non-domestic buildings 2014). • WRAP benchmark data for Buildings[15] provides further standard, good and best practice waste generation averages by property type (offices, retail, residential etc). • The Infrastructure target is based on WRAP's benchmark data for 'Standard' performance on new build and refurbishment infrastructure projects. • EU GPP Criteria for Office Building Design, Construction and Management sets core criteria of waste arisings during construction and renovation, and excluding demolition waste, shall be ≤11 tonnes per 100m^2 GIFA.

Good	**Buildings**
	• ≤7.5m^3 or ≤6.5 tonnes per 100m^2 GIFA
	Infrastructure
	• ≤7.6m^3/ £100k or ≤5.4 tonnes/ £100k
		• Waste is a priority environmental issue.
		• Targeting BREEAM Very Good or Excellent (or equivalent)
		• Project brief/ design allows for a mix of traditional and modern methods of construction (i.e. prefabrication).
		• Site is in a suburban/ urban location that has good logistics connectivity, therefore likely to facilitate manufacturer take back schemes on packaging/ product offcuts.
		• Space on site unlikely to inhibit standard logistics practices
		• Good opportunities to design out waste. For example, the design allows:
		  ○ Repeatable detailing to reduce the number of variables and allows for simpler, more efficient construction.
		  ○ High level of standardisation of material types.
		  ○ Coordination to standard material dimensions.
			• Achieving the Building target would be awarded 2 credit under BREEAM UK (New Construction non-domestic buildings 2014). Note: WRAP benchmark data[15] provides further standard, good and best practice waste generation averages by property type (offices, retail, residential etc).
			• The Infrastructure target is based on WRAP's benchmark data for 'Good' performance on new build and refurbishment infrastructure projects.
			• EU GPP Criteria for Office Building Design, Construction and Management sets comprehensive criteria of Waste arisings during construction and renovation, and excluding demolition waste, shall be ≤7 tonnes per 100m^2 GIFA.

Best	**Buildings** • ≤3.4m^3 or≤3.2 tonnes per 100m^2 GIFA **Infrastructure** • ≤2.6m^3/ £100k or ≤2.3 tonnes/ £100k	• The project has an objective to be an exemplar in terms of sustainability and waste avoidance. • Targeting BREEAM Excellent or Outstanding (or equivalent) • Site is in an urban/ city location that has good logistics connectivity therefore likely to facilitate manufacturer take back schemes on packaging/ product offcuts.	• Achieving the building target would be awarded 3 credit under BREEAM UK (New Construction non-domestic buildings 2014). Note: WRAP benchmark data[15] provides further standard, good and best practice waste generation averages by property type (offices, retail, residential etc).

Level	Target bracket	Considerations and constraints when setting targets	Notes

		• Project brief allows for predominantly modern methods of construction to be used (i.e. prefabrication).
		• Excellent opportunities to design out waste. For example:
		  ○ Repeatable detailing to reduce the number of variables and allows for simpler, more efficient construction.
		  ○ High level of standardisation of materials.
		  ○ Coordination to standard material dimensions.
			• The infrastructure target is based on WRAP's benchmark data[15] for 'Best' performance on new build and refurbishment infrastructure projects.

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5. Model Wording for Clients

The model wording should be inserted into the corresponding procurement documents and tailored where appropriate. The wording can be applied to different procurement routes and forms of contract. Clients and their project teams should tailor the use of the clauses, according to the specific contract, and must ensure that procurement requirements are relevant and proportionate to the contract.

The wording is suitable for Public and Private Sector Clients. However, given current regulations that apply to public procurement additional specific information is provided for Public Sector Clients, where relevant.

ACTION	Client Action – Strategy & Objectives	Procurement Clause – Strategic Brief/ Market engagement
ACTION 1 **PLANNING PROCUREMENT**	It is important to be clear about intended objectives and outcomes which reflect organisational policy commitments and inform the project business case. The objective is to signal your intent to your own organisation and to members of your supply chain, and to provide a clear simple basis for measuring (and hence managing) your overall performance. For example: "We are committed to reducing waste and the Scottish Government's target of 70% recycling of construction and demolition waste by 2020. We are also committed to supporting the transition to a more circular economy by, where relevant, retaining existing buildings or infrastructure through refurbishment and repair, designing new buildings or infrastructure, refurbishment, or maintenance works for deconstruction and flexibility, procurement of products that are durable and facilitate disassembly, repair and refurbishment and remanufacture of building components or equipment and construction material reclamation and redeployment at end of the	As part of initial market engagement, the Client should clarify organisational commitments which it expects the market to be able to contribute to, through project delivery. For example: "The Contractor will be expected to support the contracting authority's commitment to deliver whole life value for money, including by waste minimisation and recycling in accordance with the Scottish Government's target of 70% recycling of construction and demolition waste by 2020 and applying circular economy outcomes through relevant re-use and recovery of materials and equipment. This in particular involves reducing the lifetime embodied carbon impact of the building by: • Reducing the quantity of materials being sent to landfill during the construction process by designing out construction waste and effective site waste management - recycling and recovering waste material as appropriate; • Utilising more recycled materials and mainstream products containing high levels of recycled material ('recycled content'); • (where applicable) Designing for deconstruction, enabling the building to be efficiently dismantled at end of life. Allowing salvaged materials at the end of first life to be re-used, re-manufactured or recycled recovering some of their inherent value; • (where applicable) Designing for flexibility, enabling significant changes to be made to the building during the course of its life. This can help to delay or avoid the building's obsolescence; • (where applicable) Including building products and materials where manufacturers operate cradle to cradle or closed loop remanufacturing

ACTION	Client Action – Strategy & Objectives	Procurement Clause – Strategic Brief/ Market engagement
	building's or infrastructure's life i.e. re-used in its existing or modified size and shape. We are committed to whole life value for money and encouragement of innovative waste reduction, recycling and circular economy solutions. We will: • set targets for reducing waste to landfill, recycled and re-used content, overall waste generation; • set corresponding requirements in project procurement; • measure performance at a project level, and • report annually on overall corporate performance." • schemes, where products at the end of their life can be returned and remanufactured into new product; • (where applicable) Including reclaimed or redeployed materials, with comparable performance and availability and which are cost-neutral and represent 'Quick Wins'. The Contractor will be required to agree to targets to reduce waste to landfill, recycled and re-used content and overall waste generation, including through innovative solutions. Contractors will be required to report performance against these targets on a regular basis: 1. Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]** 2. Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** 3. Minimum **[xx]** % of total material value derived from recycled and re-used content in new construction 4. Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**" (See 'Target Setting' for suggestions regarding relevant targets).
Additional information	**Early consideration** At this stage, it is important to agree with all relevant stakeholders the link from organisational commitments to the delivery of the construction project. It is also essential that Clients consider as early as possible: • Intended outcomes; • Available budget and the scope of relevant Whole Life Costs; • The involvement of all relevant stakeholders. It may be that KPIs can not be finalised until after the design stage or based on input from bidders as part of tender submission. Circular economy outcomes may relate to the re-use of materials, which in many construction projects is routinely considered. It may also extend to other issues (such as those highlighted 'where applicable' above). There may also be opportunities for repairability and refurbishment of buildings products, plant, tools and equipment through repair and maintenance services.	

ACTION	Client Action – Strategy & Objectives	Procurement Clause – Strategic Brief/ Market engagement
	Demolition The involvement of demolition contractors if relevant has a potential impact on design outcomes and helping to achieve targets for waste and recycled content by describing their approach to identifying opportunities for re-use, recycling or recovery of waste through a pre-demolition/strip-out audit. **While this may vary according to the nature of the contract reference is included in the Client section and detail in the Contractors section.** **Energy Performance Contracts** The basis of an EPC is an agreement between the buying organisations (the Authority) and the Energy Services Company (the Service Provider, also commonly referred to as an ESCO) that sees a Service Provider design and install equipment to deliver energy savings and/or energy generation. The delivery of such a contract will inevitably result in waste generation, with opportunities for waste minimisation, reduction, recycling, re-use and refurbishment given the electrical and electronic equipment involved, such as lighting and monitoring and control equipment, gas discharge lamps and LED light sources and relevant Waste Electrical and Electronic Equipment Regulations. This guide does not go into detail on the management of EPCs but Clients and Contractors should consider the application of relevant clauses subject to the scope of the contract in question. This may for example relate to recycling, re-use, refurbishment and where practical remanufacturing of relevant equipment. Guidance on model procurement contract for EPC is provided in Contract Guidance Note & Model Contract: Energy Performance Contract (EPC) DECC[16]. **Additional guidance** A range of additional guidance is referenced. This includes: • Business Case - Managing and Reducing Embodied Carbon in Building Projects[17]. Business Case - Managing and Reducing Embodied Carbon in Infrastructure Projects[18]. Business Case for resource efficient construction products – clients[19]. Business Case for resource efficient Construction Products – Contractors[20]. The Business Case for optimising materials in building design[21]. Business Case for resource efficient construction products - Designers & Consultants[22]. Business Case for Specifying and Sourcing Resource Efficient Products[23] (all from WRAP). These are short high level documents that may be useful when setting outcomes for the organisation/project and engaging stakeholders. • Client Procurement Guide: Asking for Carbon-Efficient Buildings – Good Practice for New Build Projects and Guidance for Building Projects[24] and Estates Management, Procurement Requirements for Carbon Efficiency[25] (both WRAP). These focus on embodied carbon within building design. Users should consider the extent to which this is relevant to the contract in question but it links potentially to material use/re-use and recycled content and Designing out Waste. • CIBSE TM56 - Resource Efficiency of Building Services[26], has lots of good practice design opportunities, but also a	

ACTION	Client Action – Strategy & Objectives	Procurement Clause – Strategic Brief/ Market engagement
	series of procurement questions/ specification requirements that may be relevant. • Embedding of circular economy outcomes in procurement of infrastructure projects is increasingly being addressed. This includes a White Paper from the Major Infrastructure – Resource Optimisation Group (MI-ROG).[27]	
Public Sector Clients	The Procurement Reform (Scotland) Act 2014 applies to regulated procurements including framework agreements above financial thresholds of £50,000 for public goods and service contracts and £2,000,000 for Works contracts. The Sustainable Procurement Duty requires obligated public bodies to consider improving economic, social and environmental wellbeing and reducing inequality in their area, involving Small and Medium sized enterprises and Third sector bodies including supported businesses while promoting innovation. There may for example be opportunities for innovative waste reduction, recycling or re-use solutions, which may provide Community Benefits through the involvement of SMEs and Third sector organisations and related training and skills. The link from National Outcomes to organisational strategic objectives, those that are relevant to the procurement of construction projects to relevant procurement requirements which are then monitored and reported informs a project's intended outcomes and helps relevant reporting requirements, such as the Climate Change Reporting Duties. This includes a focus on waste reduction, re-use and recovery.	

ACTION	Client Action - Outcomes	Procurement Clause – Advertising/Contract Notice
ACTION 2 **PREPARATION & BRIEF**	Development of project objectives and intended outcomes takes place at this stage, so that you are able to clearly articulate these to the market in Advertising, Prior Information Notices and Contract Notices, as relevant. Consideration of waste reduction, re-use and recovery targets and KPIs will help inform the appropriate focus within design of the project/site and facilities. This includes agreeing the scope of Whole Life Costs beyond initial purchase price. Encouraging the use of the Designing Out Waste	"The Contracting Authority has included obligations within the specification and contract conditions relating to environmental matters including the (delete if not applicable): • use of the Demolition Protocol, Refurbishment Survey (or equivalent), with considered deconstruction in a way that maximising reclamation and re-usability of material which are relevant to the service to be delivered; • (where applicable) design for deconstruction and flexibility of the building which is relevant to the service to be delivered; • (where applicable) use of recycled aggregates, materials or building products which are relevant to the service to be delivered; • the use of closed loop remanufacturing schemes where products can be refurbished or remanufactured at end of first life, which are relevant to the service to be delivered; • forecast waste quantities and re-used and recycled content and set and agree targets for waste reduction from an early design stage (for instance

	and Net Waste tools by design and construction teams will help identify and clarify relevant costs as well as opportunities for achieving the intended outcomes.	by using the Net Waste Tool)." "Design and construction project teams will be required to implement SWMP throughout the design and construction period and include project-specific targets for waste recovery and re-used and recycled content and for waste reduction and measure and report progress against the KPIs as below: • Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]** • Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** • Minimum **[xx]** % of total material value derived from recycled and re-used content in new construction, without increasing the cost of materials • Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**" (See 'Target Setting' for suggestions regarding relevant targets). Before starting on site, the project team shall submit a copy of the SWMP, identifying the actions to be taken to reduce waste, increase the level of recovery and increase re-used and recycled content, and quantifying the resulting changes. On completion of the Works, the project team shall submit a copy of the completed SWMP, reporting the forecast and actual performance for waste quantities, disposal routes, and re-used and recycled content used in construction. Design and construction project teams will be required to demonstrate how the design will support a practical transition to a more circular economy, including: maximising retention/re-use of existing assets, creating assets that are demountable/ deconstructable/ recoverable, maximising re-use, minimising the use of non-renewable primary materials, ensuring longevity, maximising the value of materials once the original purpose is accomplished". **For a programme of minor works (projects less than £300k)** For a small project a SWMP may not be appropriate (although it is good practice to embed). "We require each individual project to: • establish a baseline for waste production and agree a target for waste reduction;

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		• measure and report construction, demolition (including strip out) and excavation waste amounts separately, and identify the destinations (landfill, materials recovery facility etc) to which these amounts are sent and their recovery rates; • identify the five most significant construction materials/products (by quantity, cost and wastage) and the most significant waste streams (in terms of disposal cost); • propose and implement the most cost-effective methods of reducing, re-using and recovering more of these waste materials; • identify, for at least one of these five product/material categories, options with higher recycled content available on the market at a competitive cost and use these products in construction; and • provide a record of waste data and waste reduction/ re-use/ recovery/ recycled content actions from each individual project using an agreed template." Targets applied may relate to (tailor according the project): • Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]** • Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** • Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products; • Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**" (See 'Target Setting' for suggestions regarding relevant targets).
Additional information	• Designing out Waste Tool for Buildings (DoWT-B)[28]. Designing out Waste Tool for Civil Engineering projects[29] (DoWT-CE). These identify opportunities to design out waste in buildings projects; record design solutions pursued to reduce material consumption or wastage; calculate the impact of these solutions, including savings in project costs, diversion of waste from landfill and embodied carbon; compare the performance of different projects/ alternative designs; and provide an indicative waste forecast for your SWMP. • The 'Net Waste' Tool[30] has been managed by WRAP but will be available from Zero Waste Scotland in 2017. By forecasting construction waste arising it is designed to: ○ apply value engineering at the design stage to reduce the costs of wastage (value of wasted and unused materials, cost of waste recovery and disposal); ○ optimise on-site segregation of wastes for minimum cost within a known space constraint; ○ target the top cost-competitive opportunities to adopt more re-used materials and higher recycled content in	

	building products; and ○ evaluate performance against corporate targets, such as a reduction in construction waste to landfill (in line with Scottish Government policy objectives) and progress towards waste neutrality or zero Net Waste. • Contractors may use the BRE SmartWaste[31] tool or similar systems to monitor and report progress. Clients should clearly set out their requirements for monitoring and reporting waste management, reduction, re-use etc and determine whether the methodology used by contractors meets these.
Public Sector Clients	The Contract Notice should contain the minimum and specific requirements for your procurement exercise. You should include appropriate statements in the Contract Notice that are aligned to the relevant exclusion and selection questions that are being used in the European Single Procurement Document (ESPD (Scotland))[32] for the particular procurement exercise. Standardised statements relating to the ESPD (Scotland) questions have been developed to support you in adopting a standard approach to defining minimum requirements in your Contract Notice and are available in the ESPD (Scotland) station. It is important that the Contract Notice provides the scope of the requirement, either by volume or by value and, in the case of Contract Notices for Framework Agreements that it clearly identifies the bodies which will be entitled to use it. If the proposed contract is to be a reserved contract the Contract Notice must state this.

ACTION	Client Action – Design Team Tender	Procurement Clause – Supplier Selection
ACTION 3 **DESIGN**	Clients should use the model wording in this Section when procuring a design team. The term 'design team' is used broadly and includes all consultants (and contractors where they are involved in the preparation stage) required for the construction process. The objective is to include waste and materials use as a systematic consideration from an early design stage; rather than leaving waste for the contractor to consider later, when much of the opportunity to reduce and re-use	The following is suitable for a design team tender: **Preamble** "Our environmental policy sets our commitment to minimising any adverse impacts that construction has on the environment, through the design process, materials selection, construction techniques, and operational methods. All organisations appointed to work on our behalf are required to work in accordance with the commitments set out in [insert reference to the relevant document on this topic]. This includes our objective to recycle at least 70% of construction and demolition waste by 2020." The appointed design consultant shall work to the following general design principles: • support the transition to a more circular economy; • forecast likely waste streams;

	waste materials and secure cost savings will have been missed. In addition, by getting the design team to quantify potential savings upfront, the client is much better placed to secure more competitively priced tenders from contractors. Depending on the procurement route adopted (and the nature of the contract), external design teams may be involved only as far as construction, or until completion, or not involved at all (due to in-house resource). Contractor involvement can also occur from Preliminary Design or earlier within Early Contractor Involvement (ECI) procurement. Demolition, ground investigation and site clearance contractors may be appointed early in the project lifecycle, and can have a substantial impact on material recovery rates. Although the model wording provided is aimed at project design teams, it can be easily adapted to apply to demolition, ground investigation and site contractors involved in the preparation stage. The wording needs to be applied to those charged with design responsibility for your project. Irrespective of procurement route adopted, the model wording can be inserted in design team Pre-Qualification Questionnaires (PQQs), Invitation to Tender (ITT)	• reduce materials wasted in construction; • reduce the proportion of waste that is sent to landfill; • reduce materials used in construction; • increase the use of recovered materials, materials with above-average levels of recycled and re-used content [including reclaimed and redeployed materials]; • (where applicable) increase the use of building products and materials where manufacturers operate cradle to cradle or closed loop remanufacturing schemes; • (where applicable) design for deconstruction, enabling the building to be efficiently dismantled at end of life; • (where applicable) design for flexibility, enabling significant changes to be made to the building during the course of its life. Evidence shows that taking action to reduce waste and increase re-use and recycling rates will reduce whole life project costs, and the appointed design consultant shall seek such savings on behalf of the client". **Pre-Qualification Questions** • "What experience, if any, does your company have in forecasting waste arisings and identifying and implementing options to reduce construction waste and associated costs? • What experience, if any, does your company have in preparing or contributing to a SWMP at the design stage, which results in quantified reductions in waste to landfill? • What experience, if any, does your company have in evaluating re-used [including reclaimed/ redeployed material] and recycled content, and specifying construction materials containing a higher recycled content as well as re-used materials?" Where applicable: Detail your understanding and experience in achieving design solutions that: • Facilitate [deconstruction and flexibility] in buildings, and evaluate the potential embodied carbon impact'. • Incorporate ['cradle to cradle' type products or closed loop remanufacturing

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	documents, and consultant appointment contracts. This wording will also apply to maintenance/framework contracts where the principal contractor has some design responsibility.	schemes] in buildings and evaluating the potential embodied carbon impact'. **Evaluation** An ideal PQQ response would provide the following details: • project experience illustrating how the bidder has previously identified waste streams, forecasted waste arisings and investigated waste reduction and recovery options at an early design stage, in conjunction with key stakeholders including end users and following post project evaluations; • project experience illustrating how the bidder contributed towards a SWMP that reduced waste to landfill; • examples showing how the bidder affected the selection of cost effective construction materials containing higher levels of recycled content; • examples of how the bidder has designed projects to re-use in-situ, excavation and demolition materials in the past; • examples of how Whole Life Costs have been considered in Design options including those relating to waste (which may include use of techniques and tools, such as the Resource Efficient Scotland Whole Life Cost tool[33]); • examples showing how the bidder has previously collaborated with construction Clients, partners and their supply chain to deliver these outcomes; • evidence of how the bidder has previously identified design opportunities for deconstruction, building flexibility, use of cradle to cradle, remanufacturable, or reclaimed/ redeployed products; and • evidence of having developed a Design for Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material Plan (or similar) to inform clients of the options available to them to maximise the life-cycle financial and carbon savings.
Additional information	Bidders may operate to management systems, such as ISO14001 (Environmental Management). You should determine in advance whether these are relevant and proportionate minimum requirements for the contract in question. ISO14001 may demonstrate that the bidder has an audited system that includes waste management within construction project design, training, capability and delivery. However, you should ensure that the scope of their registration covers the profile of the contract and evidence of relevant past experience may also be required.	

Public Sector Clients	Public bodies must be prepared to accept an equivalent to voluntary standards (such as ISO14001). The selection statements you use in the Contract Notice must be aligned to a specific question in the European Single Procurement Document (ESPD (Scotland)). Where you wish to apply minimum standards to limit the number of potential suppliers to be invited to tender, minimum standards or objective criteria must be specified or referred in the Contract Notice (or Prior Information Notice if used as a 'call for competition' by a sub-central organisation) and set out in the Procurement Documentation to allow the rejection of potential suppliers. The ESPD (Scotland) should be used for all selection stage questions. The introduction of the ESPD is intended by the European Commission to remove some of the barriers to participation in public procurement, especially for small to medium-sized enterprises (SMEs).

Design Team Tender		Procurement Clause – Specification/ ITT
ACTION 4 **DESIGN**	The Selection stage has looked backwards at past experience and systems that may be in place. At the ITT stage you need to determine how bidders propose to embed the intended outcomes of waste reduction, re-use, recovery and re-used and recovered material content in the design proposals while delivering whole life value for money. The Planning Procurement and Preparation and Brief stages have clearly set out the intended outcomes of the project following consultation with relevant key stakeholders. Good design that reflects the intended outcomes and needs of users will deliver whole life	The following is suitable for a design team tender – some of these may become contractual requirements: **Preamble** "Our environmental policy sets our commitment to minimising any adverse impacts that construction has on the environment, through the design process, materials selection, construction techniques, and operational methods. All organisations appointed to work on our behalf are required to work in accordance with the commitments set out in [insert reference to the relevant document on this topic]. This includes our objective to recycle at least 70% of construction and demolition waste by 2020 [Insert other targets as relevant]. The appointed design consultant shall work to the following general design principles: • support the transition to a more circular economy; • forecast likely waste streams; • reduce materials wasted in construction; • reduce the proportion of waste that is sent to landfill; • reduce materials used in construction; • increase the use of recovered materials, materials with above-average levels of recycled and re-used content [including reclaimed and redeployed materials]; • (where applicable) increase the use of building products and materials where manufacturers operate cradle to cradle or closed loop remanufacturing schemes;

	value for money if it includes a focus on waste and ways of minimising its generation and circular economy. Bidders' responses should reflect the practical delivery of the project and intended outcomes and not merely rely on the Design organisation's policy commitments. **It should be noted that demolition and strip out may be subject to a separate contract. You may therefore wish to refer to the detail provided in the Model Wording for Contractors that relates to such services.**	• (where applicable) design for deconstruction, enabling the building to be efficiently dismantled at end of life; • (where applicable) design for flexibility, enabling significant changes to be made to the building during the course of its life. Evidence shows that taking action to reduce waste and increase re-use and recycling rates will reduce whole life project costs, and the appointed design consultant shall seek such savings on behalf of the client".
	Design & Build /NPD	Alongside the above the following may be used for Design & Build/ Non-Profit Distributing contracts: "[Design & Build/NPD] project teams shall be required to: • implement SWMPs throughout the design and construction period (that comply with regulatory requirements) and include in such Plans project-specific targets for waste recovery and re-used and recycled content (below) and for waste reduction, starting from an early design stage; • measure and report progress against the following targets and KPIs: ○ Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]** ○ Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** ○ Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products; ○ Maximum **[xx]** non-hazardous construction waste generated by the project

		tonnes **[per 100m^2 GIFA] [per £100k value]**" Before starting on site, the project team shall submit a copy of the SWMP, identifying the actions to be taken to reduce waste, increase the level of recovery and increase re-used and recycled content, and quantifying the resulting changes. On completion of the Works, the project team shall submit a copy of the completed SWMP, reporting the forecast and actual performance for waste quantities, disposal routes, and re-used and recycled content used in construction."
	Where there is continued design team/consultant involvement e.g. consultant contract	"In support of these objectives, the Consultant shall apply the processes for designing out waste identified in their tender and specifically: • identify methods to reduce waste and waste to landfill, and increase re-used and recycled content, starting at the commencement of service, and during the course of the service report to the Employer [state frequency, e.g. monthly or at the end of each design and construction phase] the financial and practical implications of implementing the recommended actions – for instance by using the Net Waste Tool to forecast waste quantities and increases in re-used/recycled content and quantify potential reductions in waste and costs; • work with the project team to ensure that design actions to reduce construction waste and increase re-used/recycled content are implemented; • agree with the Employer which level of waste reduction and re-use to pursue; and • develop the SWMP from an early design stage, including waste forecasts and data on reduction targets and actions". Where applicable: • work with the project team to ensure design for deconstruction and flexibility, and that cradle to cradle/ closed loop, remanufacturable products are implemented; • present the impact of implementing the Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] on the design, project cost and programme. Quantifying the financial and embodied carbon impacts made through these individual design changes, and report actions and outcomes as part of the Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Plan; • ensure any [Deconstruction, Flexibility, Cradle to Cradle] elements are recorded in the BIM or building handbook, detailing their location, means of disassembly, re-use/

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		recycling notes and any special considerations required.
	Where the Contractor does not have design involvement	(this clause will ensure the contractor is fully informed of the required project actions on waste): • "ensure that the Contractor is fully informed at tender/negotiation stage (or before) of the Employer's requirements for good practice waste reduction, re-use and recovery within the economic, physical and design constraints imposed by the project; • as a minimum, the Consultant shall provide the Contractor with a brief description of the Employer's objective, relevant targets and KPIs and a statement outlining the Contractor's responsibilities for: ○ selecting and agreeing the most significant opportunities to reduce total waste and waste to landfill, and increase re-used and recycled content; and ○ measuring and reporting actual performance against the agreed targets in the format specified by the Employer, namely: the requirement to implement SWMP which delivers the targeted outcomes and their initial SWMP and a list of those decisions taken during design which directly influence waste such that they may be incorporated into the Contractor's SWMP; • report the Contractor's performance on the above requirements in the [monthly – state frequency] project report."
		ITT Questions "Designers are required to demonstrate how they will, in the delivery of this project: • identify which designing out construction waste principles they will employ on this project and an estimation of material potentially diverted from landfill; • forecast wastes, identify, prioritise and select options to design out construction waste, set targets for waste reduction, and increase re-used [including reclaimed and redeployed material] and recycled content on this project, where technically viable, including through innovative solutions in conjunction with key stakeholders; • maximise the use of demolition, in situ and excavation materials [delete as appropriate]; • embed information into a SWMP and communicate design decisions; and • propose to contribute most effectively to meeting our cost saving and Waste to Landfill objectives; • [how they will monitor and report against waste targets during project delivery] –

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		depending on design team/consultant involvement. Where applicable, how they will: • identify the most significant and cost-effective deconstruction and building flexibility opportunities associated with the project; • identify the most significant and cost-effective 'cradle to cradle'or closed loop remanufacturing opportunities associated with the project; • present the impact of implementing the Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] on the potential design, project cost and programme. Quantifying the financial and embodied carbon impacts made through these individual design changes, and report actions and outcomes as part of the Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Plan; • ensure any [Deconstruction, Flexibility, Cradle to Cradle] elements are recorded in the BIM or building handbook, detailing their location, means of disassembly, re-use/ recycling notes and any special considerations required.' Responses should be SMART (Specific, Measurable, Achievable, Realistic & Time-based) and capable of being monitored through contract management." **Evaluation** An ideal ITT response would provide the following details (tailor according to the contract): • principles of designing out waste are: off-site construction/ prefabrication; designing for deconstruction; designing for flexibility of use; utilizing cradle to cradle products, local producers and suppliers; and using recycled content. The respondent should make clear how these will be employed in the project; • a method statement that details: reduction in construction waste, increase in the use of re-used and recycled content through design, that integrates Designing out Waste into the project from an early stage and reflects an application of circular economy outcomes, including innovative solutions; • design that reflects coordination with all key stakeholders in the design of specific proposals including end users; • a robust system and process to setting and meeting project targets for waste reduction and re-used and recycled content; • selection of the most whole life cost-effective options - not based on price alone, but

		including commissioning, maintenance and disposal costs of the infrastructure required across the life cycle and including materials where options with higher re-used/recycled content are available on the market at a competitive cost; • where strip out, demolition and excavation will take place, the bidder should specify how they will use such materials on this project; pre-demolition audits and ground/site investigations can help with this and the bidder should refer to using this information; • where ground work is involved, the bidder should show how they will maximise the value of in-situ materials avoiding the need for excavation if possible; ground/ site investigations can help with this and the bidder should refer to using this information; • explanation of how they will help develop the SWMP – forecasting waste (the method used to forecast), and capturing design actions that will reduce construction wastes; • [explanation of how they will monitor and report implementation of agreed waste reduction/re-use/recycling measures including periodic reporting of quantities, progress against agreed targets and project measures] - depending on design team/consultant involvement; • explanation of how their approach will help to cut your costs and contribute towards your longer-term Waste to Landfill objective, including solutions to project-specific barriers and constraints; and • responses which are SMART (Specific, Measurable, Achievable, Realistic & Time-based).
Additional information	As RIBA Plan of Works 2013 sets out, Design may incorporate stages from Concept through to Developed and Technical Design. This section of the guide focuses on one Design stage and outcomes that the project may seek to achieve – it can be tailored according to the Design processes followed. As indicated in **ACTION 1** project specific targets and KPIs may be determined at the Planning Procurement or Preparation and Brief stage. However, input from the Design team is an important step in determining practical and ambitious targets and they may be finalised based on input and suggestions at this stage. This may include consideration through Design Competitions or Presentations as part of the bidding process. They must be practical, achievable, match your ambition while delivering whole life value. **Additional guidance** Delivering effective Waste Minimisation. Technical guidance for construction clients, design teams and contractors (WRAP)[34]. This provides a potentially useful reference for design and contractor tenders.	

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Note: Public Sector Clients	As the Construction Procurement Manual indicates *'Good design is not merely a question of style or taste but arises from the careful synthesis of many interrelated factors including architectural vision, functionality and efficiency, structural integrity and build quality, accessibility, security, sustainability, whole life costing and flexibility in use'.* This includes waste and circular economy outcomes in design and use of the building or site.

Design Team Tender		Procurement Clause – Contract Management
ACTION 5 **DESIGN**	As indicated in the Selection and Specification/ ITT clauses there will be several requirements that will need monitoring and reporting through contract management. These should relate to the tender requirements that will demonstrate performance against contractual requirements. It should be remembered that there may be selection requirements that will need monitoring to ensure that the supplier continues to have the capability and capacity to deliver project requirements. Relevant contract management requirements will depend on the nature and length of design service contract.	Selection criteria that relate to waste reduction/re-use and circular economy outcomes and which may require monitoring include:
	Design team (not involved in construction and project delivery)	• Engagement with key stakeholders as part of design options; • Development of robust methods to reduce waste, re-use waste and materials that consider whole life costs; • Forecast waste quantities and targets for reduction/re-use/recovery. If the contract period is sufficiently longer, selection criteria such as following may be suitable: • ISO14001 – continuing registration with scope that covers profile of the contract, where relevant; • Training records of design team on waste reduction/re-use/recycling/circular economy.

	Design team (Design & Build, NPD)	As well as the above monitoring may include:
		• Application of designing out waste and waste management measures within construction/project delivery;
		• SWMP development and management – use of Net Waste tool and waste costs;
		• Performance against agreed targets;
		  ○ Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]**
		  ○ Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]**
		  ○ Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products;
		  ○ Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**"
		This is also an opportunity to encourage further improvement:
		• Continual improvement opportunities for waste reduction/re-use/recovery/circular economy including innovative solutions.

Public Sector Clients	Grounds for exclusion form part of the selection process and will have been assessed through the ESPD. Continued assurance that the supplier remains capable of delivering the project is important; this may include reporting/ monitoring of breaches in waste management regulations for example. Public sector clients must be prepared to accept an equivalent to identified standards (e.g. ISO14001).	
Private Sector Clients	It is good practice for all Clients to monitor the capability of suppliers to continue delivering services and the private sector may refer to the public sector exclusion model as guidance.	

ACTION	Client Action – Contractor Team Tender	Procurement Clause – Supplier Selection
ACTION 6	Construction clients should use this wording when procuring a contractor.	**Preamble** "Our environmental policy sets our commitment to minimising any adverse impacts that construction has on the environment, through the design process, materials selection,

PRE-CONSTRUCTION & CONSTRUCTION	Depending on the procurement route, the contractor may have already been appointed and involved in the pre-construction activities. In such situations, the waste reduction and recovery targets will have been set at an earlier stage using **'ACTION 2'** model wording. The wording opposite may be applied to those involved with construction works on your project. Irrespective of the procurement route adopted, the following model wording can be inserted in Pre-Qualification Questionnaires (PQQs), Invitation to Tender (ITT) documents and works contracts. The wording can also be applied to maintenance contracts which involve no design work, or a combination of design and construction works.	construction techniques, and operational methods. All organisations appointed to work on our behalf are required to work in accordance with the commitments set out in [insert reference to the relevant document on this topic]. This includes our objective to recycle at least 70% of construction and demolition waste by 2020. The appointed contractor shall work to the following general design principles: • support the transition to a more circular economy; • forecast likely waste streams; • reduce materials wasted in construction; • reduce the proportion of waste that is sent to landfill; • reduce materials used in construction; • increase the use of recovered materials, materials with above-average levels of recycled and re-used content [including reclaimed and redeployed materials]; • (where applicable) increase the use of building products and materials where manufacturers operate cradle to cradle or closed loop remanufacturing schemes Evidence shows that taking action to reduce waste and increase re-use and recycling rates will reduce whole life project costs, and the appointed contractor shall seek such savings on behalf of the client". **Pre-Qualification Questions** These questions probe the general capability of a contractor to manage waste using a SWMP and help to achieve the client's objectives. • "What commitment and experience, if any, does your company have in providing input to a SWMP (including at the design stage); for example by identifying waste streams, forecasting waste generation, and prioritising waste reduction and recovery opportunities? • What experience, if any, does your company have in completing a SWMP which results in quantified reductions in waste to landfill and a reduction in whole life costs? • What experience, if any, does your company have in evaluating re-used and recycled content, and specifying cost effective construction materials containing higher recycled content as well as re-used materials? • Detail your experience in delivering a [sustainable demolition service; or

		sustainable refurbishment services] that includes the use of the [Demolition Protocol or refurbishment survey], or equivalent procedures, to identify and extract reclaimable building materials for re-use including through innovative solutions; • What experience does your company have in managing your supply chain to ensure that waste reduction/re-use/recovery and circular economy outcomes have been implemented through their work." Where applicable: Detail your understanding and experience in incorporating [cradle to cradle/ remanufacturable products or reclaimed/ redeployed material] in buildings and evaluating the potential embodied carbon impact'. **Evaluation** An ideal PQQ response would provide the following details: • policy commitment to waste reduction/re-use/recovery and circular economy; • project experience illustrating how the bidder has previously identified waste streams, forecasted waste arisings and investigated waste reduction and recovery options at an early stage, in conjunction with design and key stakeholders including end users and following post project evaluations; • project experience illustrating how the bidder contributed towards a SWMP that reduced waste to landfill; • examples showing how the bidder affected the selection of cost effective construction materials containing higher levels of recycled content; • examples of how the bidder has delivered projects to re-use in-situ, excavation and demolition materials in the past, including innovative solutions; • examples of how Whole Life Costs have been considered in material selection options including those relating to waste (which may include use of 'cradle to cradle' type products or closed loop remanufacturing schemes or techniques and tools, such as the Resource Efficient Scotland Whole Life Cost tool); • evidence of having used the Demolition Protocol in the delivery of a contract similar in nature to the service required; • evidence of the reclamation, storage and management of building materials for re-use in the construction phase of the same development; • evidence of the management of reclaimed or redeployed materials within its supply chain including sub-contractors and links to reclamation yards, third sector or sector

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		or supported businesses involved, where material couldn't be re-used in the construction phase of the same development; • examples showing how the bidder has previously collaborated with construction Clients, partners and their supply chain to deliver these outcomes.
Additional information	Bidders may operate to management systems, such as ISO14001 (Environmental Management). You should determine in advance whether these are relevant and proportionate minimum requirements for the contract in question. ISO14001 may demonstrate that the bidder has an audited system that includes waste management within construction project design, training, capability and delivery. However, you should ensure that the scope of their registration covers the profile of the contract and evidence of relevant past experience may also be required.	
Public Sector Clients	Public bodies must be prepared to accept an equivalent to voluntary standards (such as ISO14001). The selection statements you use in the Contract Notice must be aligned to a specific question in the European Single Procurement Document (ESPD (Scotland)). Where you wish to apply minimum standards to limit the number of potential suppliers to be invited to tender, minimum standards or objective criteria must be specified or referred in the Contract Notice (or Prior Information Notice if used as a 'call for competition' by a sub-central organisation) and set out in the Procurement Documentation to allow the rejection of potential suppliers. The ESPD (Scotland) should be used for all selection stage questions. The introduction of the ESPD is intended by the European Commission to remove some of the barriers to participation in public procurement, especially for small to medium-sized enterprises (SMEs).	

Contractor Team Tender		**Procurement Clause – Specification/ ITT**
ACTION 7 **PRE-CONSTRUCTION & CONSTRUCTION**	These clauses ask contractors to explain how they will systematically consider waste and maximise cost savings using the SWMP process. At the ITT stage you need to determine how bidders propose to embed the intended outcomes of waste reduction, re-use, recovery and re-used and recovered	**Preamble** "Our environmental policy sets our commitment to minimising any adverse impacts that construction has on the environment, through the design process, materials selection, construction techniques, and operational methods. All organisations appointed to work on our behalf are required to work in accordance with the commitments set out in [insert reference to the relevant document on this topic]. This includes our objective to recycle at least 70% of construction and demolition waste by 2020 [Insert other targets as relevant]. The Contractor shall support the delivery of the following project objectives: • implement SWMPs throughout the construction period (that comply with relevant regulatory requirements) and include project-specific targets for waste recovery and

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	material content in the construction stage that reflects design proposals while delivering whole life value for money. The Planning Procurement and Preparation and Brief stages have clearly set out the intended outcomes of the project following consultation with relevant key stakeholders. Good design and construction that reflects the intended outcomes and needs of users will deliver whole life value for money if it includes a focus on waste and ways of minimising its generation and circular economy. Bidders' responses should reflect the practical delivery of the project and intended outcomes and not merely rely on the Contractor's policy commitments.	re-used and recycled content (below) and for waste reduction; • measure and report progress against the corporate KPIs as follows: ○ Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]** ○ Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** - [if requested by the Employer] report performance for construction, demolition (including strip out) and excavation waste streams separately; ○ Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products - select the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance; ○ Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m² GIFA] [per £100k value]** [if quantified by the design team/consultant]" The Contractor shall provide the following information to the Client: • before starting on site, provide a copy of the SWMP to the Client, clearly identifying the following information: the estimated total **[volume] [tonnage]** of waste and the estimated recovery rate before mitigating actions, with a list of actions to reduce waste and increase the level of recovery (distinguishing construction, demolition/strip-out and excavation wastes as appropriate) and increase re-used and recycled content; plus a revised estimate of the total **[volume] [tonnage]** of waste and the estimated recovery rate after mitigating actions, and forecast performance indicators for: % **[volume] [tonnage]** of waste sent to landfill; and **[volume] [tonnage]** of waste produced per **[100m² GIFA] [£100k value].** Where applicable: • present a Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Implementation Plan; • ensure any [Deconstruction, Flexibility, Cradle to Cradle] elements are recorded in the BIM or building handbook, detailing their location, means of disassembly, re-use/ recycling notes and any special considerations required.

		The Contractor [may/shall] use [Net Waste Tool – or equivalent] to forecast waste quantities, quantify potential reductions in waste and costs, identify actions to reduce and recover waste, and quantify and select materials with re-used and recycled content." **ITT Questions** The Contractor is required to demonstrate how they will, in the delivery of this project: • estimate likely waste arisings on this project, and the method used for this forecasting; • implement actions to meet the project targets and contribute towards the Client's Waste to Landfill target; • how you will contribute to the design stage elements of the SWMP before work starts on site; • how you will approach taking ownership of the SWMP and working with your supply chain to implement waste reduction, re-use and recovery actions; • how you will measure, monitor and report whole life costs that relate to construction, not based on initial price alone, but including commissioning, maintenance and disposal costs of the infrastructure required across the life cycle; • how you will measure, improve and report performance during and post project; and • issues which you consider to be the main barriers to meeting the Waste to Landfill objective, and your proposed solutions. • (Where applicable) how you will approach taking ownership of the Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Implementation Plan and working with your supply chain to implement actions. Responses should be SMART (Specific, Measurable, Achievable, Realistic & Time-based)." **Evaluation** An ideal ITT response would provide the following details (tailor according to the contract): • a method statement that details: reduction in major sources of construction waste, increase in the use of re-used and recycled content through construction that reflects Designing out Waste into the project from an early stage, the use of Net Waste (or equivalent) to help forecast waste arisings, and reflects an application of circular economy outcomes, including innovative solutions; • an explanation of how their approach will contribute towards reducing waste costs and your longer-term Waste to Landfill objective, including solutions to project-

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		specific barriers and constraints; • where a SWMP is already set up, analysis of the forecasts, targets and actions contained therein and suggested improvements to wastage rates, recovery rates and levels of re-used/recycled content and an explanation of how they will monitor and report implementation of agreed waste reduction/re-use/recycling measures including periodic reporting of quantities, progress against agreed targets and project measures; • arrangements for regular waste data monitoring and reporting from waste management and specialist sub-contractors using the correct metrics (as specified in the ITT) to enable reporting against the project targets; • a robust methodology for identifying and monitoring whole life costs and selection of the most whole life cost-effective options including materials where options with higher re-used/recycled content are available on the market at a competitive cost; • robust procedures for post project evaluation in conjunction with the Client and end user to determine performance against waste and whole life cost targets/budgets; • where strip out, demolition and excavation will take place, the bidder should specify how they will use such materials on this project; pre-demolition audits and ground/site investigations can help with this and the bidder should refer to using this information; • where ground work is involved, the bidder should show how they will maximise the value of in-situ materials avoiding the need for excavation if possible; ground/ site investigations can help with this and the bidder should refer to using this information*; • evidence of contribution to circular economy outcomes beyond materials waste, such as through equipment and product re-use, refurbishment and remanufacturing; • (where applicable) where a Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Implementation Plan is already set up, analysis of the forecasts and actions contained therein and suggested improvements and an explanation of how they will monitor and report implementation progress and outcomes; and • responses which are SMART (Specific, Measurable, Achievable, Realistic & Time-based) and capable of being monitored through contract management.
Additional information	***Construction Material Reclamation** - Reclaimed materials include materials that have been used before and are re-used as construction materials without reprocessing. The Construction Material Exchange from Resource Efficient Scotland[35] provides a portal aiming to challenge the 7.4 million tonnes of construction and demolition waste produced in Scotland	

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	annually. There is already a significant market for certain reclaimed products of architectural and historic significance such as of doors, door and window furniture, frames, flooring, ducting, roof tiles, bricks etc. Such products can be utilised with relatively little modification or further work. **Additional guidance** Resource Efficient Scotland has a range of Trade specific guidance available that includes some focus on waste management and minimisation. Contractors may be signposted to these or they may offer them as some examples of how they ensure staff and sub-contractors and trained. You should ensure that they are relevant and proportionate for the contract in question[36]. The project approach to the preparation and use of the SWMP should be clearly defined and good practice is to use a model template structure, whether this is an in-house version or publically available template. For example, Resource Efficient Scotland have prepared a model SWMP Template[37].
Public Sector Clients	Materials exchange portals may be commercial offerings – as such the public sector must be prepared to accept evidence of a system or process which demonstrates that it meets the relevant requirements above and not rely on a particular portal.

Contractor Team Tender		**Procurement Clause – Contract Management**
ACTION 8 **PRE-CONSTRUCTION & CONSTRUCTION**	As indicated in the Selection and Specification/ITT clauses there will be several requirements that will need monitoring and reporting through contract management. These should relate to the tender requirements that will demonstrate performance against contractual requirements. It should be remembered that there may be selection requirements that will need monitoring to ensure that the supplier	Selection criteria that relate to waste reduction/re-use and circular economy outcomes and which may require monitoring include: • ISO14001 (or equivalent, if relevant) – continuing registration with scope that covers profile of the contract; • Training records of construction team on waste reduction/re-use/recycling/circular economy application. As well as the above, monitoring may include: • evidence of how agreed Designing out Waste measure have been applied to construction works through the provision of necessary data and documentation (e.g. for products or equipment installed, results of tests conducted etc.) to the client or occupier, demonstrating the solutions implemented; • on completion of the Works [or at another interval determined by the Employer, e.g. annually], provide to the Client a copy of the completed SWMP, reporting the forecast and actual performance for waste quantities, disposal routes, and re-used and recycled content used in construction;

	continues to have the capability and capacity to deliver project requirements.
	
	Relevant contract management requirements will depend on the nature and length of the construction works.
		• if requested by the Client, report forecast and actual waste performance for construction, demolition (including strip out) and excavation waste streams separately;
		• (where applicable) evidence of implementation of Design for [Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material] Plan;
		• (where applicable) ensuring any Design for [Deconstruction, Flexibility or Cradle to Cradle] elements are recorded in the BIM or building handbook, detailing their location, means of disassembly, re-use/recycling notes and any special considerations required;
		• in so far as is possible provide detail of relevant whole life costs including waste and associated costs;
		• provide evidence of meeting the following requirements:
		  ○ Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]**
		  ○ Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** - [if requested by the Employer] report performance for construction, demolition (including strip out) and excavation waste streams separately;
		  ○ Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products - select the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance;
		  ○ Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**"
		
		This is also an opportunity to encourage further improvement:
		• Continual improvement opportunities for waste reduction/re-use/recovery/circular economy including innovative solutions.

ACTION	Contractor Team Tender	Outcomes Monitoring & Reporting - Project Review
ACTION 9 **HANDOVER, POST-**	The client should collate KPI data from contractors (and waste management contractors if appropriate) in order to evaluate performance and report against	While model wording does not apply at this final project stage Post Project Evaluation (PPE) is an important opportunity to determine the successes and failures of the Contractor's (and Designer's) approach to waste reduction/re-use/recovery and

<table>
<tr><td>COMPLETION & USE</td><td>any waste to landfill commitment. These parties should have been mandated in previous project stages to collect waste reduction and recovery data.

Lessons learned and outcomes achieved should be monitored, collated and reported. This may be part of internal and external reporting requirements.</td><td colspan="2">application of circular economy outcomes in conjunction with the Client, Designer, occupiers/end users. This includes:
How has the project performed against agreed targets regarding waste?
How has the project performed against anticipated whole life costs?
Were the targets achievable/not ambitious enough?
Is the project delivering user needs while delivering waste and circular economy objectives?
What lessons for waste reduction/re-use/recovery and circular economy in similar projects are there?</td></tr>
<tr><td>Additional information</td><td colspan="3">As indicated in previous stages the use of tools such as Net Waste and SmartWaste may provide relevant evidence of achievement against targets and overall progress.

Other evidence that assists the management of projects in the future includes feedback from occupiers/end users.</td></tr>
<tr><td>Public Sector Clients</td><td>The public sector is bound by reporting requirements such as those set out in the Procurement Reform (Scotland) Act 2014 on procurement strategies and annual reporting against this strategy as well as against the National Performance Framework.

Outcomes achieved should be aligned with organisational strategic commitments and therefore reported against these and relevant National Outcomes. This may include reporting requirements under Climate Change Reporting Duties (which include how procurement contributes to Climate Change mitigation). In this way evidence is available of the impact that procurement has had in influencing intended outcomes, in accordance with the linkages shown opposite[38].</td><td colspan="2"> 
</td></tr>
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6. Model Wording for Contractors

This section covers the selection and appointment of:

- General Sub-contractors
- Material Suppliers
- Waste Management Companies
- Demolition/ Strip out Contractors

When appointing sub-contractors, it is important to bind them to helping deliver your project resource efficiency brief as set out in the by the client. The appointment process should therefore tie the sub-contractors to the project commitment and KPIs, a Statement of Contractor Requirements, the SWMP and reporting mechanisms. The following section provides key model wording which you may want to incorporate this into your own documentation without adaptation, or adapt to your own documentation style.

ACTION	Contractor Action – Strategy & Objectives	Procurement Clause – Project Brief
ACTION A **PLANNING PROCUREMENT /PREPARATION AND BRIEF**	It is important to be clear about intended objectives and outcomes which reflect organisational policy commitments and project requirements. The objective is to signal your intent to your own organisation and to members of your supply chain, and to provide a clear simple basis for measuring (and hence managing) your overall performance. Moving towards a more circular economy, where products and materials are kept in high value use for as long as possible is a key objective for the Scottish Government. In Scotland, the construction sector is the biggest user of materials and responsible	**Resource Efficiency Commitment and KPIs** "We are committed to minimising the environmental impact of our activities. As part of this commitment, **[Name of organisation]** will play our part in helping Scotland recycle 70% of construction and demolition waste by 2020, and applying circular economy outcomes through relevant re-use and recovery of materials and equipment. We will work to adopt and implement standards for good practice, while delivering whole life value for money, in reducing waste, recycling more, and increasing the use of recycled and recovered materials. To help deliver on this commitment we expect our supply chain partners to support us in this area, and to meet the minimum requirements set out below. All organisations appointed to work on our behalf are required to work in accordance with these requirements, and we will review and assess their performance against them. We will report progress annually using the following KPIs: • tonnes of waste per £100k construction value*; • tonnes of waste to landfill per £100k construction value*; and • % of waste diverted from landfill. * Construction value is the price in the accepted tender or, if there is no tender, the cost of labour, plant and materials, overheads and profit."

	for over half of its carbon emissions when the operation of buildings is included. These impacts can be addressed by ensuring building designs consider waste reduction in both new build and refurbishment, while also enabling greater life extension, through improved durability, re-use repair and remanufacture, along with recycling at end of life.
	
	The project brief should reflect client requirements, set the agenda for the project, establish the circular economy, waste and materials management objectives, include targets that are stretching but realistic and should form part of a broader environmental/ sustainability strategy for the project, which demonstrates how the design and construction will deliver the client's environmental/ sustainability objectives.
		Project requirements and targets
		
		"In support of our corporate commitment and targets, we shall work to the following standards, for which we require sub-contractor support:
		
		Targets
		• Minimum **[xx]** % of non-hazardous construction waste generated by the project and diverted from landfill, by **[volume] [tonnage]**;
		• Minimum **[xx]** % of non-hazardous demolition waste generated by the project and diverted from landfill, by **[volume] [tonnage]** - **[if requested by the Employer]**;
		• Minimum **[xx]** % of material value derived from recycled and re-used content in new construction for the priority products - select the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance;
		• Maximum **[xx]** non-hazardous construction waste generated by the project tonnes **[per 100m^2 GIFA] [per £100k value]**"
		
		(See 'Target Setting' for suggestions regarding relevant targets).
		
		Tools and Plans
		• Use Zero Waste Scotland Designing out Waste Tool and Net Waste Tool (or equivalents) to help set targets, measure and report progress on:
		  ○ waste generation and landfill diversion
		  ○ recycled and re-used content
		• (Where applicable) Carry out a pre-demolition/strip-out audit in order to determine what can be re-used, recycled or recovered;
		• (Where applicable) Implement the Design for **[Deconstruction, Flexibility, Remanufacture, Reclaimed/ Redeployed Material]** Plan;
		• Implement SWMPs throughout the design and construction period. This includes:
		  ○ Before starting on site, the project team shall submit a copy of the SWMP to the client, identifying the project specific targets, actions to be taken to reduce waste, increase the level of recovery and increase recycled **[and re-used]** content, and quantifying the resulting changes.
		  ○ On completion of the Works, the project team shall submit a copy of the completed SWMP to the client, reporting the forecast and actual performance for waste quantities, disposal routes, and recycled **[and re-used]** content used in construction."

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Additional information	Note: 1) As part of the client brief there maybe wider sustainability aspects that need to be considered and the model wording can be adapted to reflect this. 2) The Business Case for Resource Efficiency: Contractors (WRAP)[39] provides more background information on improved competitiveness and profitability through efficient use of resources in construction. 3) The client may take one of two approaches to target setting for waste generation during the tendering process: • Setting a target e.g. (XX tonnes/£100K); or • Request that the contractor establishes a target for waste generation as part of the tender submission, allowing some flexibility in design and construction approaches, based on the type of construction to be undertaken. Whichever approach taken, these targets will need to also be included in the Statement of Contractor Requirements 4) The 'Designing out Waste for Buildings', 'Designing out Waste for Civil Engineering' and 'Net Waste' Tools has been managed by WRAP but will be available from Zero Waste Scotland in 2017. They can help you to generate waste forecasts and prioritise waste reduction and recovery actions to input to your SWMP, as well as identify recycled content quick wins. 5) Reclaimed materials include materials that have been used before and are re-used as construction materials without reprocessing. The Construction Material Exchange from Resource Efficient Scotland provides a portal aiming to challenge the 7.4 million tonnes of construction waste produced in Scotland annually. There is already a significant market for certain reclaimed products of architectural and historic significance such as of doors, door and window furniture, frames, flooring, ducting, roof tiles, bricks etc. Such products can be utilised with relatively little modification or further work.

ACTION	Contractor Action – Contract Performance Requirements	Procurement Clause – Advertising/ Contract Notice
ACTION B **PLANNING PROCUREMENT /PREPARATION AND BRIEF**	If suppliers are put on notice in the OJEU advertisement they will be alerted to look at the contract performance requirements and take an early view on whether they can satisfy the requirements.	If sustainability is a core requirement and forms a key element of the subject matter of the contract, highlight this through the wording of the contract title, for example: • Sustainable **[Design/ Construction/ Building Maintenance]** Services. Below is an example of wording that can be used for this purpose:

		"The Contracting Organisation has included obligations within the specification and contract conditions relating to social and environmental matters including the: • supporting of the transition to a more circular economy; • forecast likely waste streams; • reduce materials wasted in construction; • reduce the proportion of waste that is sent to landfill; • reduce materials used in construction; • increase the use of recovered materials, materials with above-average levels of recycled and re-used content **[including reclaimed and redeployed materials];** • (where applicable) increase the use of building products and materials where manufacturers operate cradle to cradle or closed loop remanufacturing schemes.
Additional information	As part of the client brief there may be wider sustainability aspects that need to be considered and the model wording can be adapted to reflect this.	

ACTION	**Contractor Action – Sub-contractor requirements**	**Procurement Clause - Statement of Contractor Requirements**
ACTION C **DESIGN/ PRE-CONSTRUCTION & CONSTRUCTION**	**General sub-contractor, waste management companies, demolition contractors and material supplier requirements** This is a single set of requirements which details minimum requirements placed on sub-contractors (including general sub-contractors, waste management and demolition contractors, and material suppliers). These require sub-contractors to support the development and maintenance of the SWMP. The Statement of Contractor	**Development of the SWMP** "All sub-contractors are required to: • provide an accurate forecast of the types and **[volume] [tonnage]** quantities of materials to be used and waste that will be produced by your contract (inclusive of packaging waste), explaining the method used to generate these forecasts; • identify the typical wastage rate applied to each major material, explaining the need for this level of wastage allowance and how it might be reduced; • identify innovative actions that you will take to reduce this level of waste, showing any additional costs or savings achieved by these measures; • advise on the level of recycled content in major materials to be supplied by the sub-contractor, and supply materials with a higher than average level of recycled content where technically and commercially viable; **[Where applicable, based on the scale and nature of your project and scope of sub-contract, add]:**

	Requirements should be consistent across all supply chain members. Further specific requirements are listed in the rows below for: • sub-contractors with design responsibility, • waste management sub-contractors. The wording should be suited to the scale and the nature of the contract. For minor works of less than £300,000 a 'lite' version of the Statement of Contractor Requirements is available. See minor works wording below.	• provide information on the method of materials delivery, unloading and storage whilst on site, including transport to the workface, identifying ways in which material handling and packaging waste will be reduced; • determine and provide information on the method of waste handling from workface to removal from site; • participate in site briefings for operatives on materials handling and waste disposal; • identify how packaging waste arisings on site will be reduced; • identify the most significant and cost-effective cradle to cradle product or closed loop remanufacturing opportunities associated with your sub-contract." **Support [contractor name] during the works** All sub-contractors are required to: • make sure that materials and waste are stored in a safe and tidy manner; and working in full compliance with the methods detailed within the SWMP – in particular complying with the site waste segregation strategy and all actions to reduce and re-use waste and increase levels of recovery; • inform the **[contractor name]** (in advance) of deviations from the SWMP with justifying reasons; • identify additional ways to reduce and re-use waste and/or increase recovery and informing **[contractor name];** • participate in periodic reviews of performance against KPIs during contract delivery. **Support [contractor name] on completion of the Works** All sub-contractors are required to: • contribute to a project review to identify what could be improved and what worked well; • make sure all necessary data are provided to **[contractor name]**; and • provide written evidence of the recycled content level of specified materials in the form of invoice/delivery notes along with datasheets for the materials. • (where applicable) provide written evidence materials in the form of

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		invoice/delivery notes and data sheets associated with any cradle to cradle or closed loop remanufacturable products” Note: where the sub-contractor has responsibility for removal of construction waste, they must comply with the specific requirements for waste management companies (see below).
	Additional requirements for sub-contractors with design responsibility	“Sub-contractor with design responsibility, are required to: • demonstrate how the design will support a practical transition to a more circular economy that, where technically and commercially viable, minimise waste, maximise re-use of existing assets, create assets that are demountable/ deconstructable/ recoverable, and that facilitate longevity of life; • quantify the level of waste anticipated from the design, and use this to inform the wastage allowances applied to the materials order; and • specify materials with increased levels of recycled content where there is no impact on cost or performance”
	Waste management company requirements or where a sub-contractor is managing their own waste arrangements	“Waste management companies are required to: • provide a copy of their Waste Carrier’s Registration to [contractor name] before starting work; • comply with all relevant legislation including the Duty of Care Regulations; • divert **[XX%]** of non-hazardous construction waste (excluding excavation and demolition) tonnage from landfill*; • divert **[XX%]** of non-hazardous demolition/ strip out (excluding excavation) waste tonnage from landfill*; • aim to maximise the re-use of demolition and excavation waste arisings; • identify ways to increase the recovery rate of materials by finding end-destinations with high recovery rates; • advise on waste management actions most appropriate to each project; • provide details of the end-destination of all movements of waste, including the following information: name and address of destination, type of facility, and recovery rate for that material; • report on the different types of waste managed, and the split of each different type of waste according to the waste management method (re-use, recycling, recovery, landfill and other) and, in the case of re-use, recycling and recovery,

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		whether this has taken place on or off site; • monitor and report monthly (within 2 weeks of the end of the reporting period), the quantities in **[volume] [tonnage]** and percentage recovery rates for construction, demolition and excavation waste streams separately; • submit quarterly or annual relevant data in the form of an SEPA Return from the waste transfer station to the Principal Contractor; and • use a systematic process to record and check waste, recovery and recycling data which is available for inspection on request. * where these waste recovery rates are not achievable (e.g. because of contamination or where only certain types of materials are being managed) **[contractor name]** should be informed immediately together with an explanation of the measures proposed to maximise recovery as far as is possible."
	Minor works (less than £300,000) Where a programme of minor works is being procured, the tender and contract documents for the sub contractor chain should be modified to reflect a proportionate reduction of requirements. See adjacent model wording.	"Across our programme of minor works, we seek to: • Set a target for, measure and report progress against the corporate KPIs for the quantity of waste produced **[volume] [tonnage]** per **[100m2 GIFA] [£100k value]** and the quantity of waste sent to landfill (measured in **[tonnes] [volume]**); • Divert **[XX%]** of non-hazardous construction waste (excluding excavation and demolition) tonnage from landfill; • Divert **[XX%]** of non-hazardous demolition/ strip out (excluding excavation) waste tonnage from landfill; • Ensure that at least **[XX%]** of total material value derives from recycled **[and re-used]** content in new construction, selecting the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance. We require each individual project to: • measure and report construction, demolition (including strip out) and excavation waste amounts separately, and identify the destinations (landfill, materials recovery facility, etc.) to which these amounts are sent and their recovery rates; • identify the five most significant construction materials/products (by quantity, cost and wastage) and the most significant waste streams (in terms of disposal cost); • propose and implement the most cost-effective methods of reducing, re-using and recovering more of these waste materials;

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		• identify, for at least one of these five product/material categories, options with higher recycled content available on the market at a competitive cost and use these products in construction; and • provide a record of waste data and waste reduction/re-use/recovery/recycled content actions from each individual project using an agreed template.”
Additional information	Note: 1) On some projects, requirements and targets set by the project client or developer may also apply. 2) Model approach to Site Waste Management Planning is as follows: The Statement of Contractor Requirements must be supported by a robust approach to site waste management planning. This should aim to incorporate the following elements of good practice: • project-specific targets for the quantity of waste arisings and waste going to landfill; • record of design decisions that will avoid, reduce and re-use waste, based on discussions with the design team – ideally this will be completed by the design team at an early project stage; • quantified forecast of waste arisings based on the nature of the project and the materials and construction methods employed; • clear set of waste prevention and reduction actions covering the procurement, supply and fitting of materials – each action should have specific action owners and contributors (e.g. nominated sub-contractors); • strategy for managing each of the predicted waste streams, including location and plan for storage of wastes, and identification of waste recovery actions for the most significant wastes; and • facility for recording actual waste arisings and comparing these with forecast quantities, project targets and KPIs. The project approach to the preparation and use of the SWMP should be clearly defined and good practice is to use a model template structure, whether this is an in-house version or publically available template. For example, Resource Efficient Scotland have prepared a model SWMP Template[40]. If the contractor does not issue a Statement of Contractor Requirements and standard approach to Site Waste Management Planning, then their specific requirements should be added to the wording of the Invitation to Tender (Action I - M below). 3) Some other useful good practice SWMP guides, and tools to facilitate their development, include: • Achieving effective Waste Minimisation. Guidance for construction clients, design teams and contractors (WRAP)[41]. • Demolition Protocol 2008 (ICE)[42], designed to assess the potential for maximum material recovery through demolition via a bill of quantities of tonnages arising and options for recovery. • Designing out Construction Waste[43] (Zero Waste Scotland). In 2017 Zero Waste Scotland will launch an updated version of the WRAP designing out construction waste good practice guide. • Material Logistics Plan Good Practice Guidance[44] (WRAP), which provides guidance for Clients, Design Teams,

	Construction Contractors and Sub-contractors on developing and implementing an effective Material Logistics Plan. • Construction Material Exchange[45] (Resource Efficient Scotland), which allows companies/projects to list materials they no longer need or are unwilling to send to landfill, and offer these materials to other businesses that may have a re-use requirement for them • The 'Designing Out Waste and Net Waste' Tools have been managed by WRAP but will be available from Zero Waste Scotland in 2017. It can help you to generate waste forecasts and prioritise waste reduction and recovery actions to input to your SWMP, as well as identify recycled content quick wins. • Whole Life Cost[46] Tool (Resource Efficient Scotland) is designed for evaluating the whole life cost of a new build or refurbishment project helping to analyse the total cost of ownership over the life of an asset. 4) The wording of the Statement of Contractor Requirements can also provide the basis for a Charter or similar partnering agreement between the client and their supply chain (such as a framework of principal contractors). Such a Charter can be introduced after contracts have already been signed, subject to voluntary approval.

ACTION	Contractor Action - Supply Chain Tendering	Procurement Clause – Supplier Selection
ACTION D **PRE-CONSTRUCTION & CONSTRUCTION**	All sub-contractors should confirm that they are willing to work in accordance with the contractor's standard requirements and be subject to performance reviews through contract management. The objective is to include circular economy thinking, waste and materials use as a systematic consideration throughout the supply chain; rather than leaving waste for the waste management contractor to consider later, when much of the opportunity to maximise resource efficiency, reduce and re-use waste materials and secure cost savings will have been missed.	**Agreement to work in accordance with the Statement of Contractor Requirements** **"[Contractor name]** has developed targets and minimum requirements for materials resource efficiency. These are defined in our **[Statement of Contractor Requirements].** Please confirm that you have read and are prepared to work in accordance with our **[Statement of Contractor Requirements].** If you are unable to accept these requirements, please provide information to explain this position."

ACTION	Contractor Action – General Sub-contractor Tender	Procurement Clause – Supplier Selection
ACTION E **PRE-CONSTRUCTION & CONSTRUCTION**	Principal Contractors should use the model wording in this section when procuring general sub-contractors. These questions can be used to assess the ability of a trade/ specialist sub-contractor, and those with some design responsibilities to deliver good practice and forecast waste, reduce waste, re-use materials, comply with legislation, contribute to a SWMP, and select materials with higher recycled content.	**Pre-Qualification Questions** "Please tell us how you will work to support us achieve our targets for waste and recycled content by: • providing high quality information on the likely quantity, timing and composition of wastes associated with your activities; • reducing the generation of construction, demolition or excavation (CD&E) waste; • managing your activities so as to ensure that as much of the waste is recovered (i.e. diverted from landfill) as practicable; • re-using suitable materials (including CD&E waste materials, in-situ materials, and materials reclaimed or recovered off site) rather than using new material; • making use of construction products with higher levels of recycled content; • (where applicable) used Whole Life Costs when considering material selection options (for example relating to cradle to cradle or closed loop remanufacturable products); • (where applicable) identifying innovative opportunities to reduce waste through design (for example by applying WRAP's Designing out Waste principles), and the use of material logistics planning; • (where applicable) managing your wastes so as to achieve or exceed our waste recovery requirements; and • (where applicable) providing high quality information on waste arisings and its fate in line with our approach to measurement and reporting (as defined in our **[Statement of Contractor Requirements]).**" **Evaluation** An ideal response from general sub-contractors would provide the following details: • evidence of being able to forecast waste on projects (e.g. using previous experience of wastage rates), including the quantity, timings and composition of wastes; • examples showing the approach to reducing specific waste arisings (e.g. for major components, with a corresponding reduction in wastage allowances); • actions taken to increase waste recovery on previous projects such as segregation of waste streams – responses will vary depending on whether the sub-contractor

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		was responsible for their own waste management and disposal or participated in a waste service arranged by the principal contractor; • examples of the management of reclaimed or redeployed materials on previous projects, such as offcuts, recycled aggregates and reclaimed products. Also any links to reclamation yards or third sector, where material couldn't be re-used in the construction phase of the same development; • examples showing how the bidder has previously selected products (e.g. bricks and blocks) containing higher levels of recycled content; • examples of how Whole Life Costs have been considered in material selection options including those relating to waste (which may include use of cradle to cradle/ closed loop remanufacturable products or techniques and tools, such as the Resource Efficient Scotland Whole Life Cost tool); • previous innovative application of the principles and processes involved in designing out waste (see Zero Waste Scotland Designing out Waste guidance) – relevant where the sub-contractor has design responsibility or input; • previous experience of material logistics planning to reduce material handling damage; • evidence of achieving a specified % recovery of waste materials (i.e. diversion from landfill) – relevant in those cases where the sub-contractor is responsible for waste management; and • previous experience of waste data monitoring and reporting using appropriate metrics – relevant in those cases where the sub-contractor is responsible for waste management.

ACTION	Contractor Action – Waste Management Company Tender	Procurement Clause – Supplier Selection
ACTION F **PRE-CONSTRUCTION & CONSTRUCTION**	Principal Contractors should use the model wording in this section when procuring waste management company sub-contractors.	**Pre-Qualification Questions** "Please tell us how you will work to support us achieve our targets for waste by describing your approach to: • Supporting the development of our SWMP in line with the core requirements set within the Statement of Contractor Requirements; • Working with us and our sub-contractors to effectively manage waste on site, including advising on segregation options where this will reduce costs or

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	These questions can be used to assess the ability of a waste management company to deliver good practice and comply with legislation, increase diversion from landfill, advise on most effective methods of waste collection and recovery, providing solutions to meet recovery targets, and report robust data.	increase levels of waste recovery, and (where applicable) how to cope with space constraints on site; • Providing high quality information on waste arisings and its fate in line with our approach to measurement and reporting (as defined in our **[Statement of Contractor Requirements**]); • Providing evidence that wastes are being managed in line with legal requirements and that stated recovery rates are being achieved in practice; • Providing collection services that vary according to the programme and project type. Where appropriate, use examples to illustrate your previous experience in implementing these approaches and the specific outcomes achieved." **Evaluation** An ideal response from a waste management company would provide the following details: From smaller waste management companies: • project experience illustrating how the bidder contributed towards quantified reductions in waste to landfill; From larger waste management companies, in addition to the above: • project experience illustrating how the waste management company has previously identified waste streams, contributed towards segregation strategies, investigated recovery options and contributed to a SWMP; • standardised process for calculating quantities of different waste streams and defined arrangements for collection of those waste streams; • project experience of delivering waste recovery solutions at minimal cost and with cost savings; • details of their own Materials Recovery Facility (MRF) or third party recovery arrangements; • standardised process for waste data monitoring and reporting, which is auditable and verifiable – to include the use of correct metrics (as requested by the Principal Contractor), and data reporting which is scheduled to be provided at the right time (e.g. monthly, weekly etc); • ideally tenderers will refer to agreed industry methods for waste measurement

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		and reporting, available from WRAP; • capability for recovering, managing and processing strip-out, demolition and excavation arisings and securing reliable markets/uses for the resulting materials; • where waste management contractors process aggregate materials, this should be done in accordance with the WRAP Quality Protocol; • range of collection methods, frequencies and arrangements on offer – flexible services to suit the project. Responses should be SMART (Specific, Measurable, Achievable, Realistic & Time-based).

ACTION	Contractor Action – Demolition Company Tender	Procurement Clause – Supplier Selection
ACTION G **PRE-CONSTRUCTION & CONSTRUCTION**	Principal Contractors should use the model wording in this section when procuring demolition sub-contractors. These questions can be used to assess the ability of a demolition company to deliver good practice and comply with legislation, increase diversion from landfill, advise on most effective methods of demolition/ strip out and recovery, providing solutions to meet recovery targets, and report robust data.	**Pre-Qualification Questions** "Please tell us how you will work to support us achieve our targets for waste by describing your approach to: • Supporting the development of our SWMP in line with the core requirements set within the Statement of Contractor Requirements; • How you will work to support us achieve our targets for waste and recycled content by describing your approach to identifying opportunities for re-use, recycling or recovery of waste through a pre-demolition/strip-out audit. • Your experience in delivering a **[sustainable demolition service; or sustainable strip out services]** that includes the use of the **[Demolition Protocol or strip out survey]**, or equivalent procedures, to identify and extract reclaimable building materials for re-use including through innovative solutions; • Providing high quality information on waste arisings and its fate in line with our approach to measurement and reporting (as defined in our **[Statement of Contractor Requirements])**; • Providing evidence that wastes are being managed in line with legal requirements and that stated recovery rates are being achieved in practice; Where appropriate, use examples to illustrate your previous experience in implementing these approaches and the specific outcomes achieved."

		Evaluation An ideal response from a Demolition Contractor would provide the following details: • project experience illustrating how the bidder has used the demolition protocol (or equivalent) to undertake pre-demolition/strip-out audits to maximize the re-use and recycling of demolition materials both on site, as well as off site; • project experience of delivering waste recovery solutions at minimal cost and with cost savings; • standardised process for waste data monitoring and reporting, which is auditable and verifiable – to include the use of correct metrics (as requested by the principal contractor), and data reporting which is scheduled to be provided at the right time (e.g. monthly, weekly etc); • ideally tenderers will refer to agreed industry methods for waste measurement and reporting, available from WRAP; • where the demolition contractor processes aggregate materials, this should be done in accordance with the WRAP Quality Protocol.

ACTION	Contractor Action – Material Supplier Tender	Procurement Clause – Supplier Selection
ACTION H **PRE-CONSTRUCTION & CONSTRUCTION**	Principal Contractors should use the model wording in this section when procuring material suppliers. These questions can be used to assess the ability of a material supplier to deliver good practice and reduce wastage e.g. through delivery and installation methods, take back schemes; approach to packaging; and offer higher recycled content.	**Pre-Qualification Questions** “Please tell us how you will work to support us achieve our targets for waste and recycled content by describing your approach to: • working with us and our sub-contractors to minimise wastage of the products and packaging you supply (for example through innovative products and installation methods; logistics; taking back surplus materials/ packaging; or by providing pre-assembled/pre-cut products); • increasing the recovery of any packaging that is generated; • increasing the level of recycled and re-used content in the products you supply (without increasing project costs); • **[where applicable]** Whole Life Costs when considering material selection options (for example relating to assessment of cradle to cradle or closed loop remanufacturable products)

		Where appropriate, use examples to illustrate your previous experience in implementing these approaches and the specific outcomes achieved." **Evaluation** An ideal response from Material Suppliers would provide the following details: • example training material, guidance notes or good practice guide for delivery staff to reduce waste in loading, transit and offloading; • waste reduction metrics showing how careful handling and transit or innovative installation methods/ products that reduce wastage rates; • awareness of industry good practice guides and materials logistics plans; • examples of project/s where material take- back schemes have been successfully introduced; • knowledge of manufacturers and distributors of materials and products who can offer take-back schemes; or products that offer potential for deconstruction, flexibility, remanufacture at end of first life; • examples of products or suppliers which provide efficient use of packaging (minimal or re-usable packaging); • examples of products or suppliers where the packaging is recovered through packaging take-back schemes; and • awareness of the difference between re-usable, recyclable, re-used and higher recycled content materials and products; • examples of how Whole Life Costs have been considered in material selection options including those relating to waste (which may include use of techniques and tools, such as the Resource Efficient Scotland Whole Life Cost tool); • list of key materials and products supplied that can be later re-used or recycled; • understanding of manufacturers and distributors who can offer reclaimed products and products with higher recycled content; • knowledge of tools and guides to source materials and products with re-used and recycled content; • knowledge of calculating recycled content in materials and for projects. Responses should be SMART (Specific, Measurable, Achievable, Realistic & Time-based).

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Additional information	1) Guidelines for measuring and reporting construction, demolition and excavation waste (WRAP)[47] provides guidance on how to measure and report waste arisings and waste to landfill from construction, demolition and excavation activities on projects in the United Kingdom. 2) Bidders may operate to management systems, such as ISO14001 (Environmental Management). You should determine in advance whether these are relevant and proportionate minimum requirements for the contract in question. ISO14001 may demonstrate that the bidder has an audited system that includes waste management within construction project design, training, capability and delivery. However, you should ensure that the scope of their registration covers the profile of the contract and evidence of relevant past experience may also be required.

ACTION	**Contractor Action – Sub-Contractor Tender**	**Procurement Clause – Specification/ITT**
ACTION I **PRE-CONSTRUCTION & CONSTRUCTION**	The Selection stage has looked backwards at past experience and systems that may be in place. At the ITT stage you need to determine how bidders propose to embed the intended outcomes of waste reduction, re-use, recovery and re-used and recycled material content in their individual work packages, while delivering whole life value for money. The adjacent wording can be used to ensure that tenders provide specific information that will demonstrate how the sub-contractor will help the contractor meet corporate and project targets.	**Preamble** **"[Contractor name]** has developed targets and minimum requirements for materials resource efficiency. These are defined in our **[Statement of Contractor Requirements].** You will work in accordance with these requirements and also any applicable project-specific requirements detailed in the project SWMP." **[If SWMP is available]** A draft SWMP has been prepared that forecasts the wastes predicted for this project and the actions that will be implemented to reduce waste, increase waste recovery and increase use of recycled and re-used materials.

ACTION	Contractor Action – General Sub-contractor Tender	Procurement Clause – Specification/ITT
ACTION J **PRE-CONSTRUCTION & CONSTRUCTION**	The Statement of Contractor Requirements [and draft SWMP if available] have clearly set out the intended outcomes of the project. This is where you can communicate project-specific targets and requirements, and request specific actions, behaviours, information and data from trade/ specialist sub-contractors on resource efficiency, forecasting waste, how they will reduce and re-use waste, how they will use higher recycled content. And from those that have design responsibilities, how they will identify, prioritise and implement design decisions to reduce construction waste.	**ITT Questions** "Please describe the steps you will take to meet our project requirements and help us achieve our waste targets on this project. You are specifically asked to identify and provide information on: • the quantity, timing and composition of wastes that you envisage being generated by activities covered by this contract, and the method used for forecasting waste arisings; • the steps that you will take to reduce the quantity of waste generated (including wastage rates targeted for major materials) and to increase the proportion of these wastes that are recovered; • the specific opportunities you will pursue to increase the use of re-used or recycled materials and products with higher recycled content; • specific opportunities to use cradle to cradle or closed loop remanufacturable products; and • (where appropriate) the recovery rates you will achieve for wastes for which you are responsible. **[If a draft SWMP has been provided]** Provide comments on the draft SWMP and recommendations for its development as it relates to the activities covered by this contract. You will be expected to work in accordance with the project SWMP if appointed." **Evaluation** An ideal response would provide the following: • specific proposals showing a workable solution to meeting the project's waste reduction, recovery, re-use and recycled content targets – in which the opportunities to improve performance have been identified and prioritised to maximise impact, and that demonstrate some innovative thinking; and • explicit reference to achieving/improving on the relevant wastage rates as identified in the SWMP (if stated).

ACTION	Contractor Action – Waste Management Company Tender	Procurement Clause – Specification/ITT
ACTION K **PRE-CONSTRUCTION & CONSTRUCTION**	The Statement of Contractor Requirements [and draft SWMP if available] have clearly set out the intended outcomes of the project. This is where you can communicate project-specific targets and requirements, and request specific actions, behaviours, information and data from waste management companies - input to forecast of waste, proposal for most effective waste management method, recovery rates that will be achieved, specifics of waste reporting and data assurance process.	**ITT Questions** "Please describe the steps you will take to meet our project requirements and help us achieve our waste targets on this project. You are specifically asked to identify and provide information on: • (where applicable – i.e. where these haven't been estimated in the SWMP) the key wastes that you estimate are likely to arise on this project, and the method used for forecasting waste arisings; • the steps you will take to effectively manage the key wastes; • the level of waste recovery that you will achieve for each of these key wastes; • the overall level of waste recovery that you will target for construction wastes and for demolition and excavation wastes; • specific wastes where segregation may be beneficial, in terms of cost or waste recovery rate, for some or all of the contract period; • opportunities to provide materials for re-use on site; and • any support/resources you require to enable you to more effectively manage wastes and the benefits associated with our provision of these resources." **[If a draft SWMP has been provided]** Provide comments on the draft SWMP and recommendations for its development as it relates to the activities covered by this contract. You will be expected to work in accordance with the project SWMP if appointed. **Evaluation** An ideal response would provide the following: • specific proposals showing a workable solution to meeting the project's waste reduction, recovery, re-use and recycled content targets – in which the opportunities to improve performance have been identified and prioritised to maximise impact; and • explicit reference to achieving/improving on the relevant wastage rates as identified in the SWMP (if stated).

ACTION	Contractor Action – Demolition Company Tender	Procurement Clause – Specification/ITT
ACTION L **PRE-CONSTRUCTION & CONSTRUCTION**	The Statement of Contractor Requirements [and draft SWMP if available] have clearly set out the intended outcomes of the project. This is where you can communicate project-specific targets and requirements, and request specific actions, behaviours, information and data from demolition contractors on planned approaches to demolition/ strip out and recovery, identification and management of materials for re-use/ recycling on site, specifics of waste reporting and data assurance process.	**ITT Question** You are specifically asked to identify and provide information on: • the steps you will take to effectively undertake a pre-demolition/ strip out audit to identify potential resources available, the method used for forecasting material tyeps and quantities, and opportunities to provide materials for re-use/ recycling on site and off site; • the steps you will take to allow the separation and sorting of building materials; • the level of recovery/recycling that will be targeted for key material streams **[If a draft SWMP has been provided]** Provide comments on the draft SWMP and recommendations for its development as it relates to the activities covered by this contract. You will be expected to work in accordance with the project SWMP if appointed. **Evaluation** An ideal response would provide the following: • specific proposals showing a workable method statement for undertaking a pre-demolition/ strip out audit. Clearly setting out how potential resources will be identified and assessed for re-use, recycling and recovery; • the steps you will take to allow the separation and sorting of building materials; • explicit reference to achieving/improving on the relevant the level of recovery/recycling that will be targeted for key material streams.

ACTION	Contractor Action – Material Supplier Tender	Procurement Clause – Specification/ITT
ACTION M	This is where you can communicate project-specific targets and requirements, and	**ITT Questions**

PRE-CONSTRUCTION & CONSTRUCTION	request specific actions, behaviours, information and data from material suppliers on how they will reduce and re-use/recycle (via take back) waste and reduce/ re-use/recycle packaging, and components offered with recycled content.	Please describe the steps you will take to meet our project requirements and help us achieve our waste and recycled content targets on this project. You are specifically asked to provide information on: • the steps you will take to reduce wastage in relation to the materials covered by this contract – identify those materials and actions you consider to be most significant in terms of their contribution to reducing overall levels of wastage and waste to landfill; • the steps you will take to reduce the quantity and wastage of packaging – identify the sources of packaging waste and the actions you consider to be most significant in terms of their contribution to reducing overall levels of wastage and waste to landfill; • the ways in which delivery of the materials covered by this contract may give rise to waste (e.g. during unloading, storage, etc) and how you will work to reduce this wastage; • which of the materials covered by this contract you would be prepared to take back if unused/surplus to requirements and the conditions under which you would be prepared to do this; and • which of the materials covered by this contract you will be able to provide with above standard levels of recycled content. Specific components where higher levels of recycled content are sought are **[insert list where known].** **[If a draft SWMP has been provided]** Provide comments on the draft SWMP and recommendations for its development as it relates to the activities covered by this tender. You will be expected to work in accordance with the project SWMP if appointed." **Evaluation** An ideal response would provide the following: • specific proposals for waste reduction of materials and packaging (prioritised in terms of maximum impact); • proposed manufacturers and distributors of materials and products who offer take- back schemes; and • specific proposals for re-used and recycled content materials and products.
Additional information	Note: If the principal contractor has used WRAP's Designing out Waste Tools, Net Waste Tool or equivalent to forecast waste and select reduced wastage allowances for priority components/ materials, then specialist contractors need to be bidding to deliver these wastage rates – otherwise the principal contractor may not secure the waste and cost savings identified.	

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ACTION	Contractor Action – Post Tender Interview/ start up meeting minutes	Procurement Clause – Contract Management
ACTION N **PRE-CONSTRUCTION & CONSTRUCTION**	Following the receipt of information from the sub-contractor, it is common for a post-tender interview to be held to clarify and agree specific actions and standards to be targeted during the project. This allows: • Trade/specialist sub-contractors – agree forecast of waste, waste reduction actions to be recorded in the SWMP, any specific targets, site rules for waste reduction, re-use and recovery etc; • Material suppliers – agree materials and level of recycled content, and actions to reduce materials and packaging wastage; • Those with design responsibilities – agree where to focus for waste reduction and re-use, and actions to be recorded in SWMP and communicated to contractor; and • Waste and demolition contractors to agree waste management method, recovery rates to be achieved and data reporting.	**"[Sub-contractor name]** will work in accordance with **[contractor name's]** Statement of Contractor Requirements which includes a reporting schedule to determine performance against requirements, together with details of accountability /responsibility for specific roles and will comply with any additional requirements specified in the project SWMP. (Where applicable) Specific actions that will be undertaken by **[sub-contractor name]** are to: • **[list agreed actions or, if available, refer to relevant actions in the project SWMP]** • **[Where applicable]** Specific targets relating to [sub-contractor name] are to **[select as appropriate]:** ○ reduce project waste arisings associated with **[insert material or activity name]** to **[XX] [% wastage rate or total tonnes**]; ○ achieve the following waste recovery rates **[insert list of agreed recovery rates for specific materials];** ○ achieve an overall recovery rate of **[state target]** for construction wastes and **[state target]** for demolition, strip-out and excavation wastes; ○ achieve minimum levels of recycled [or re-used] content for the following materials used in the project* **[list materials and minimum recycled content levels]**, and; ○ (where applicable) include cradle to cradle/ closed loop remanufacturable products for the following materials used in the project* **[list materials and end of life treatment routes].** * provided this is achievable without increasing project costs."
Additional information	Note: 1) Only those sub-contractors with the potential to significantly influence the project's performance should be required to implement specific additional actions or targets as part of this process. In many cases, it will not be appropriate or practicable	

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	to set specific wastage targets for a general sub-contractor or materials supplier. However, if their contract is likely to be the only/major source of a significant waste for the project in question, it may prove beneficial to specify a target and monitor performance accordingly. In addition, wastage allowances should be agreed for the purchase of components which are expected to be significant sources of waste. What is essential is to agree which of the proposed targets and actions will be implemented by the sub-contractor and recorded in the SWMP. 2) **Minor works (less than £300,000).** Where a programme of minor works is being procured, the contract documents for the sub contractor chain should be modified to reflect a proportionate reduction of requirements, in line with the abbreviated Statement of Contractor Requirements.

ACTION	Contractor Action – Outcomes Monitoring & Reporting	Contract Management/ Project Review
ACTION O **HANDOVER, POST-COMPLETION & USE**	At this stage, the priority is to collate and analyse data and learning from the project and to record these data in a format that can be used to help improve the approaches for future projects. This can be a valuable mechanism for learning and continuous improvement (for client, design team, contractor and sub-contractors).	Where a panel or framework of preferred suppliers is maintained, it is beneficial to assess the performance of suppliers on an ongoing basis and to share information on best practices between suppliers. The best approach to managing performance will depend on the systems already in place for supply chain management and post-project reviews. The following aspects should be considered: • Did the sub-contractor meet your requirements as they applied to their work, and what were the critical success factors? • To what extent does the sub-contractor deliver services that go beyond the requirements and proactively reduce waste, increase recovery, use of re-used/ recycled materials or include cradle to cradle/closed loop remanufacturable products? • Are there any specific examples of good practice that could be applied to other projects or shared with other sub-contractors? Waste data should be gathered from each sub-contractor involved in waste management. The data collated should enable easy and consistent completion of the contractor's waste measurement and reporting system. To ensure support from sub-contractors in undertaking these reviews, the model Statement of Contractor Requirements includes a requirement that the sub-contractor provides data and contributes to project review processes on request.

Additional information	Note: The process of review may benefit from insight/ feedback from end users and other stakeholders involved in the operation of the built asset. Other evidence that assists the management of projects in the future includes essential feedback from occupiers/end users.

7. Glossary

This details terminology used in the guide and different procurement routes together with a brief explanation outlining their purpose. It is intended to demystify the wide range of terminology used. Different documents occur at different stages of a project lifecycle according to which procurement route is used (Traditional, Design and Build, NPD etc.). These documents can be drawings, specifications, legal agreements or any other type of project information.

There are potentially variations on procurement routes chosen for construction projects. Some caveats to note are listed here:

- **Procurement management** (management contracts and construction management) types of procurement will use similar documents to those 'Traditional' documents listed below. For Management Contracts, agreements will be between the client and the management contractor. The management contractor will then cascade Waste to Landfill requirements down to the works contractors they appoint to the project. For Construction Management, where the client takes control, individual agreements containing Waste to Landfill requirements will be made between the client and lead designer, construction manager and specialist/trade contractors.
- **Design and Build** (D&B) can either be a single stage or two stage appointment process. A two stage D&B process uses the same documents, only repeating the short-listing and contractor appointment stage a second time around to appoint a final D&B contractor. The benefit of a two stage D&B is that a preferred contractor can be appointed at the first stage before the design is completed, so works can commence on site earlier than would otherwise have been the case.
- **Non–Profit Distributing** (NPD) programme which supercedes Private Finance Initiatives is being taken forward by Scottish Futures Trust (SFT) with a wide range of financiers using a simplified standard contract.
- **NEC3** is a family of contracts which offers a complete end-to-end project management solution for the entire project life-cycle; from planning, defining legal relationships and procurement of works, all the way through to project completion, management and beyond. It has been used within a number of major infrastructure programmes with an emphasis on collaborative working to achieve shared objectives (outcomes).

Table 1: Glossary of terms used

Term	Explanation
Consultant Contract	The consultant appointment will usually include terms and conditions of appointment, finalised consultant scope and a fee agreement. Model wording can be placed in this document.
Contractor's Proposals (CP)	This is the contractor's response to the ITT and ER. The CP will usually include drawings, specifications, contract sum analysis and any qualifications.

Contractor Consultant Contract	The contract between the contractor and design consultants. The design consultants may be the original designers (with contracts simply novated from client to contractor) or different designers employed by the contractor. Irrespective of who is employed, the contract will usually include consultant terms, consultant scope and a fee breakdown. Note: This process will take place after the contractor has been appointed, which under D&B can be as early as Preliminary Design or as late as Construction Preparation.
Corporate Social Responsibility (CSR)	Based on the idea that a company's responsibility goes beyond the strict legal and regulatory responsibilities. The **CSR** policy document may be adopted by companies and sets how to improve their business impact on society and the environment. Businesses may use alternative terminology such as Sustainability Policy/Strategy. Model wording can be placed in this document.
Cradle to Cradle/ Closed Loop Remanufacturing Products	These types of products are developed with closed-loop life cycle systems in mind, where: • Cradle to Cradle refers to a production process where products are developed for closed-loop systems in which materials are either biodegradable or can be fully recycled. • Remanufacturing refers to the capacity to renew a product at end of first life to the original manufacturing standard through re-use, repair and new components.
Employers Requirement (Design & Build)	Under D&B, the Employers Requirement will be included. This document will usually be included in the Contractor D&B ITT. The Employers Requirement usually consists of a performance specification and drawings. Model wording can be placed in this document.
European Single Procurement Document (ESPD)	The ESPD (Scotland) will replace the requirement for suppliers to provide up-front evidence or certificates by allowing them to self-declare that they meet the relevant selection and exclusion criteria. Bidders will be asked to provide proof of this at a later stage. All Scottish public bodies must issue and accept the ESPD for all procurements worth more than the EU thresholds. This will replace the standard pre-qualification questionnaire (sPQQ) and any local PQQs used by public bodies.
Invitation to Tender (ITT)	The ITT process follows the PQQ process, or sometimes both PQQ and ITT can be issued at the same time. The ITT can include a number of documents (such as outline consultant terms & conditions and outline consultant scope) and requests the tendering company to submit their bid. Model wording can be placed in this document.

Invitation to Tender (Design & Build)	The ITT process follows the PQQ/ESPD process, or sometimes both PQQ and ITT can be issued at the same time. The ITT can include a number of documents (such as general contract conditions) and requests the tendering D&B company to submit their bid. Model wording can be placed in this document.
Invitation to Submit Outline Proposals (ISOP), or Invitation to Submit Outline Solutions (ISOS); Invitation to Participate in Dialogue (ITPD).	The ISOS or ISOP document may be issued to selected bidders, and should include an early version of the Output Specification. This stage may be termed the Invitation to Participate in Dialogue (ITPD). Its purpose is to help the client evaluate bidders, leading to the selection of a short-list. The public sector may be involved in procurement procedures which include: • Competitive Procedure with Negotiation; • Competitive Dialogue; • Innovation Partnerships; • Negotiated Procedure Without Prior Publication Subject to suitability and relevance.
Invitation to Submit Detailed Solutions Invitation To Submit Final Bids	The client issues an early version of the Output Specification when the project and PQQ is advertised in the Official Journal of the European Community (OJEU) notice. Subsequently, refined versions of the Output Specification also accompany: • the Invitation To Participate in Dialogue (ITPD) issued to long-listed (pre-qualified) bidders, which may also be termed the Invitation to Submit Outline Solutions (ISOS); • the Invitation to Continue Dialogue issued to short- listed bidders, which may also be termed the Invitation to Submit Detailed Solutions (ISDS); and the Invitation To Submit Final Bids (ITSFB) or Call for Final Tenders (CFT).
Main Contract	The main contract is made up from a number of documents including: • General conditions (such as JCT, NEC etc); • Drawings; • Specifications including: Preliminaries; and Pricing document.

Main D&B Contract	The main D&B contract is made up from a number of documents including: • General conditions (such as JCT, NEC, where model wording can be placed); • Employers Requirements (where model wording can be placed); • Contractor's Proposals; and Contract sum analysis.
NEC3	A suite of end to end project management contracts for Works, including purchases such as the construction, refurbishment and decommissioning of buildings, structures, process plants and infrastructure – including everything from houses, schools, hospitals and leisure facilities to infrastructure for water, energy, transport, industry and waste.
Non-Profit Distributing (NPD)	The Non-Profit Distributing (NPD) programme was developed as an alternative to, and has since superseded, the traditional Private Finance Initiative (PFI) model in Scotland and is being used to fund projects in three main sectors – Further Education, Health and Transport.
Outline Business Case (OBC)	This early-stage in-house client document is developed following the establishment of the business need for the project. The OBC is then typically sent for Client approval. If approved, the project is advertised in the Official Journal of the European Union (OJEU) – where relevant.
Pre-Qualification Questionnaire (PQQ)	The PQQs are normally the first stage of a short-listing process. They are sent to consultants, or contractors depending on the procurement route chosen. See 'ESPD' for public sector. The PQQ may be issued when the project is advertised in a notice placed in the Official Journal of the European Community (OJEU), accompanied by a Descriptive Document and an early version of the Output Specification (which should include requirements for waste reduction). Bidders listed (pre-qualified) after submitting PQQ responses receive an Invitation to Participate in Dialogue (ITPD) or Invitation to Submit Outline Solutions (ISOS) or Invitation to Submit Outline Proposals (ISOP).
Project Brief	Document outlining the background and requirements of the project. Model wording can be placed in this document.

Site Waste Management Plan (SWMP)	SWMPs were a legal requirement in England for all construction projects that were started after 6 April 2008 with an estimated construction cost of over £300,000. If you were in Northern Ireland, Scotland or Wales, you were not legally required to have a SWMP. However, it was considered that SWMPs were good practice, helping manage construction materials more effectively, reducing the amount of waste produced and saving money. The SWMP Regulations were repealed in December 2013 to reduce red tape, which meant that construction businesses in England were no longer legally obliged to produce SWMPs for building projects. They are however still considered good practice throughout the UK and this guide refers to them throughout.
Sub-Contracts	Used where subcontractors are appointed to complete discrete work packages. These documents will include subcontract conditions, drawings, specifications (including Preliminaries where model wording can be placed) and a pricing document.

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