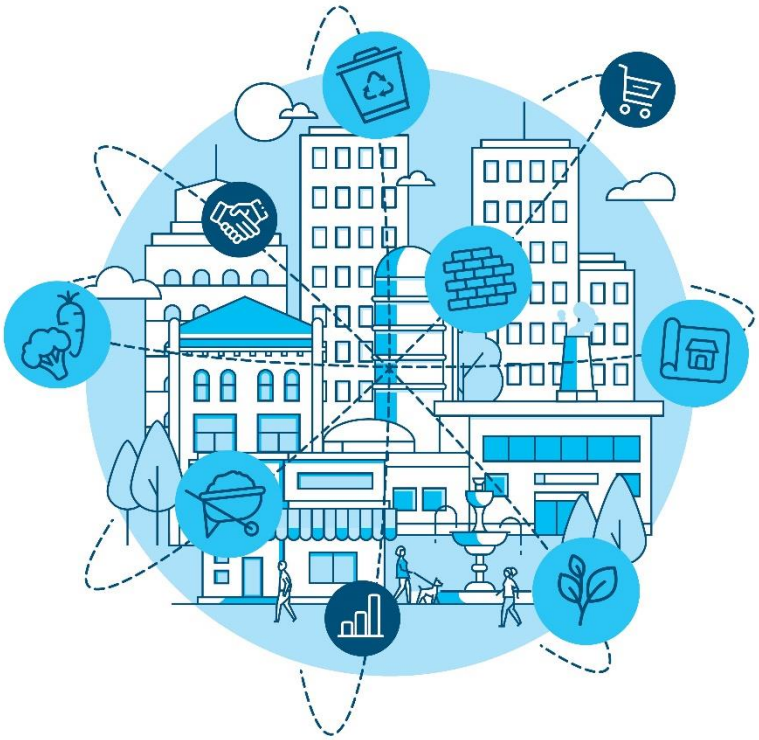
WP2 Circular Procurement

D2.4 Construction/demolition Procurement Guidelines

with case study examples

Rijkswaterstaat

June 2023



Version	3.0
WP	2
Deliverable	2.4
Date	20 June 2023
Dissemination level	Public
Deliverable lead	Rijkswaterstaat (coordinator) – Cities are responsible for developing their own demonstration project guidance.
Authors	Mervyn Jones (Rijkswaterstaat); Annex 1 City demonstration teams
Reviewers	Emile Bruls, Jeroen van Alphen (Rijkswaterstaat), Simon Clement (ICLEI)
Abstract	This updated version of the original guidance presents a consolidated overview of the construction and demolition waste (CDW) procurement guidelines produced by each of the cities for their WP2 demonstration projects and includes additional case study examples at the request of the H2020 desk. The individual City-based plans are attached in their original languages. The overview guidance brings together key procurement-related aspects for use in replication and scale-up within the cities, wider replication regions and elsewhere.
Keywords	WP2; Circular Procurement; construction; demolition; waste guidelines
License	

Contents

1. Background

The structure of the guidance presented below provides an outline for CityLoops partners to follow in the delivery of their demonstration projects in the field of construction & demolition waste (CDW). The guidance summarises procurement approaches taken within each CityLoops partner's[1] specific project. These range from large-scale, long term complex redevelopment projects (as in Bodø, Norway) through to smaller scale demolition and newbuild works for a single building (e.g. Høje-Taastrup, Denmark). These specific approaches are supplemented by existing guidance on circular construction and resource efficiency[2]. This approach creates a consolidated view of good practice from the CDW demonstration projects that may be used by others seeking to improve the circularity of their CDW through procurement.

As the guidance forms an overview of the approaches taken by individual partner cities in the CityLoops project, there some elements of the guidance may not be relevant to all projects. The guidance adopts the approach discussed with partner cities namely, to provide an overview document that enables specific Cities to adapt this guidance to their circumstances. This follows the approach used in serval of the CityLoops cities and especially in Mikkeli, where responsibility for developing detail is devolved down to municipality and project level. This keeps the guidance to a manageable length but also means it only provides a broad overview as a basis for further action.

The individual, and project specific, CDW guides from each of the CityLoops cities engaged with this topic are attached in Annex 1 - Note these are reproduced in the original language of each document.

The guidance may also be used when replicating demonstration projects elsewhere within the partner cities and also more widely where circular demolition and construction are identified in public sector projects.

Definition of circular construction

This guidance uses the definition of circular construction from the Circular Construction Economy Transition Agenda:

'*Circular construction means to develop, use, and reuse buildings, areas, and infrastructure without unnecessarily depleting natural resources, polluting the living environment, and damaging ecosystems. Building in a way that is economically sound and contributes to the well-being of people and animals alike. Here and there, now and later.*'

This definition means that, aside from the materials component, other natural resources such as energy and water must also be taken into account in circular construction projects.

[1] The CityLoops CDW partners included Bodø (Norway), Mikkeli (Finland) Høje-Taastrup and Roskilde (Denmark), Apeldoorn (Netherlands), and Seville (Spain).
[2] For example: Handreikingen circulair inkopen GWW en U&B in 8 stappen (Dutch Language); Sustainable Building Guide (French language).

2. Establishing a Procurement Policy Framework for the development project

Optimising circularity in any given procurement exercise whether construction or otherwise requires a robust sustainable and circular procurement approach to enable it to work. Ideally the Circular procurement Framework should underpin all procurement across the organisation to ensure replication and scale. Depending on the size and complexity of the development / CDW project an overarching procurement framework[3] should be created in order bring together key parties, commitments and actions to delivering circular and sustainable outcomes from the project. An important aspect of any circular procurement framework is to link the project goals to municipal goals, and impacts, including climate, energy and circular economy. These local goals should clearly relate in turn to national commitments (e.g. circular economy) and wider UN Sustainable Development Goals, where relevant[4].

The CDW procurement framework should seek to:

- be overarching across all sustainability considerations;
- act as a guidance tool for all aspects of the development and decision-making for planning authorities, developers, landowners, project managers and contractors; and,
- set out and honour all ambitions and objectives in the new development relating to sustainability, climate (low carbon) and circular consideration

The framework should be able to be an operational tool, i.e. capable of being adjusted along the way in line with concrete planning and increased knowledge about the environmental effects of various solutions. Therefore it requires oversight and governance.

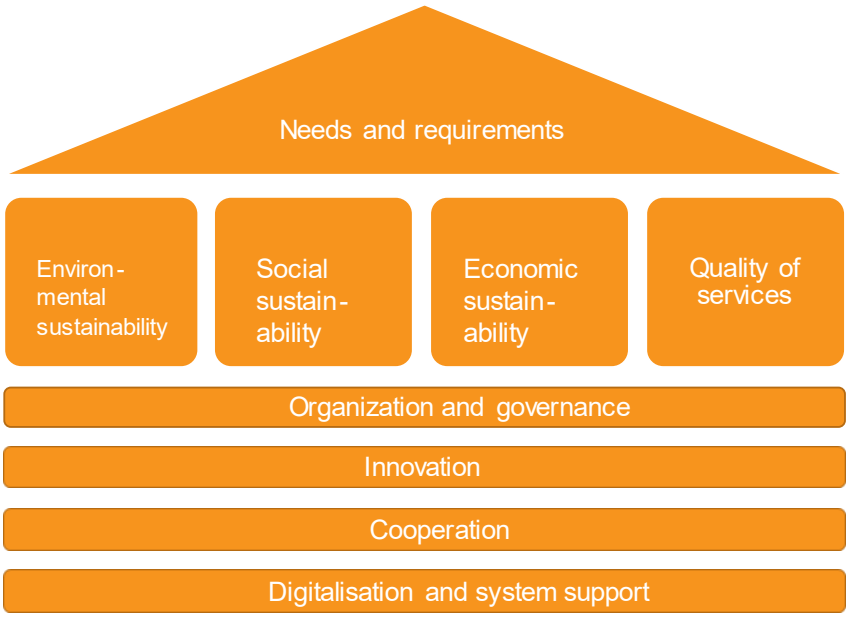
The procurement framework should set out, as a minimum:

- Overall objectives within priority areas for example: energy, material use / waste, circularity, mass balance/ material flows, biodiversity and climate adaptation.
- Key performance indicators (KPIs) that are proportionate to the development, e.g. size and scope (See Box 1).
- Specific measures relating to goals and objectives set within the Framework.
- Roles and responsibilities of the key parties – for example, the municipality, developer(s), contractors, relevant third parties (such as NGOs, civic groups etc). Who is responsible and accountable for delivery of specific objectives, measures and KPIs.
- Existing regulatory and legislative context for the development – recognising that in terms of sustainable and circular goals this represents a minimum threshold for fulfilling the broader ambitions of the Framework.
- Barriers to implementation and mitigation plan.
- Methodology for monitoring and reporting key performance indicators.
- Risk register for implementation and delivery.

[3] Bodø refers to this as an environmental programme (OMP)
[4] Roskilde Real Estate Strategy

Snapshot Example – Bodø regeneration project

The City of Bodø, in Northern Norway used the CityLoops project the evaluate the overall impact of the airport and city regeneration project to initiate a circular procurement strategy for the whole city. The new procurement strategy was supported politically and unlike earlier procurement pilots, where no such strategy existed, it ensures that going beyond the CityLoops demonstration project, circularity is a required element whatever the supply chain or category.



Bodø circular procurement strategy

3. Examples of common overarching goals and measures

The following sections provides examples of goals identified within the CityLoops CDW demonstration projects.

3.1. Example goals

- The project will act as a driver and exemplar for sustainability, with life cycle thinking, circularity, reuse and resource efficiency as a basis.
- The development will be low carbon and low-emission society. Zero-emission solutions will be established starting from the first stage (e.g. demolition) and across all subsequent stages of construction in neighbourhoods, buildings and mobility.

- Environmental requirements will have a strong focus on reducing CO_2 emissions at all stages of construction (see Box 1).
- The project will encourage and test innovation in implementing new solutions in low carbon, circular, and future-oriented energy systems, etc.
- All planning and development shall safeguard the principles of circular economy and follow the circular and resource efficient principles of the EU waste hierarchy. This will form the basis for how resources, materials and energy are managed and used in all development and development projects.
- The Municipality buildings and projects should be exemplars inspiring sustainable construction projects within the region and local Community. This must be achieved through visibility, cooperation and initiative.

Circular materials goals -

- The project will be developed based on circular economic principles, for example including but not limited to:
    - consume as few materials as possible;
    - use materials for as long as possible;
    - reuse materials as much as possible in development and development projects; and,
    - create value chains based on sharing, reuse, repair of materials.
- Waste volumes to be reduced in demolition, construction and operation.
- Pavement, asphalt and other inert materials (e.g. aggregates) in the project will be reused locally.
- All materials should be capable of being reused and/or recycled.
- New (virgin) material should be avoided, as far as possible[5].
- Transport of materials should be reduced to the minimum using local storage, disposal and reuse where possible.
- Nutrients and bioresources from bio-waste shall be reused to the greatest extent possible.

3.2. Examples measures

The following list provides some examples of procurement measures used within the various CityLoops CDW demonstrator projects. They range from high level measures through to specific measures addressing energy and emissions from construction site vehicles. The circularity of materials was also addressed explicitly, with reference to the materials hierarchy focussing on

[5] Virgin raw materials are materials or masses taken out from finite natural resources, i.e. non-reused and non-recycled materials. See for example: https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy/resource-efficiency_en

reusing existing assets, elements and components where possible to reduce embodied carbon; and, to close material loops through recycling where reuse and repair are not possible.

- Climate budgets and climate accounts shall be used as management tools to minimise greenhouse gas emissions from all development projects in a life cycle perspective.
- Procurement shall be used as a strategic instrument to achieve the goals defined in all areas of the Framework. In connection with tenders, all municipal projects must draw up a sustainability plan that at least takes into account the project-specific requirements for CO_2 emissions and the possibility of circular construction. The sustainability plan shall define whether they are procurement requirements to be complied with or whether requirements serve as award criteria to be competed on. This means that sustainability must be considered in the individual tenders from the outset. Appropriate tools and resources shall be used to follow up environmental criteria in tenders to suppliers.
- In order to realise high climate, energy and environmental ambitions, all relevant stakeholders must be involved in the early planning phase. Stakeholder mapping tools should identify the relevant parties, roles and responsibilities.
- Plant operation and materials handling shall be carried out with emission-free construction machinery and vehicles.

Circular materials measures -

- This will be a project that enables reuse, exchange and sharing economy and repair within the operation and use phase.
- Where relevant, the development shall encourage future business enterprises to use circular value chains and business models as a basis.
- In all development and development projects, reuse of materials and source sorting throughout the life cycle of the project will be required. Existing infrastructure and buildings shall to the greatest extent possible be reused or recycled if it cannot be documented that other circular solutions provide higher environmental benefits.
- New buildings and structures built in the development / project shall be planned and built so that they may be dismantled in a way that enables the reuse of components and materials.
- Renovation shall be included in early planning of any infrastructure and logistics. Space shall be adapted for waste and reuse solutions combining favourable access for both users and any waste management operators.
- Material selection in development and development projects shall be based on:
    - renewable or recycled resources;
    - materials suitable for recycling;
    - materials with long service life and robustness;
    - materials that do not originate from scarcity resources;
    - materials that ensure a good indoor environment;
    - materials that do not contain pollutants; and,

- materials with a minimal climate footprint.

- Plans for mass management in development and development projects shall be based on circular economic and environmentally friendly management (waste pyramid shall be directional, see Figure 2).
- All available knowledge and digital tools shall contribute to decisions in the planning of material flows management. Between demolition and new construction or renovation of existing properties, CO_2 will also act as a decision parameter in line with economy and functional requirements. CO_2 calculation / life cycle analysis will assess the cost benefits choosing either demolition or renovation.
- A business cases must be prepared for various recycling projects based on circular principles such as whole life costing and/ or Total Cost of Ownership (TCO).
- Established guides and best practice for handling clean and contaminated masses are used as a reference when materials management strategies are agreed.
- To help design procurement requirements for CO_2 emissions, simple CO_2 calculators should be used to ensure that the process is operational and can result in concrete requirements and objectives on smaller projects as well.
- Facilities/receiving apparatus shall be established for intermediate (e.g. temporary) storage of materials (e.g. material banks) that can be used in future or ongoing projects in the same or nearby area.
- Mass accounting/ data banking and a digital marketplace for surplus materials should be prepared. This might include market engagement in the planning to determine availability of secondary materials infrastructure and / or discussions with other public sector bodies on forward plans for construction and demolition.

Snapshot Example – Material challenges in demolition projects

Working with reused elements and components and Recycling can be associated with several practical challenges, initially around linking the construction processes that we subsequently use these products and materials, and also testing to ensure they are fit for purpose. Early collaboration is particularly important in construction projects and in the CityLoops projects this began with an Environmental and Resource mapping of a building ready for demolition, which gave all parties the opportunity to identify the places where reuse, recycling and/or recycling of materials was possible.

The CityLoops project has developed a **Pre-demolition Screening Procedure** for addressing these challenges early in the CDW procurement process. This has been used in Roskilde, Høje-Taastrup, Mikkeli and Bodo on demolition projects ranging from a single building to a decommissioned airbase.

Box 1 Example KPIs for circularity - Roskilde
The long-term aim to target a total maximum CO_2 emissions for all municipal construction of a maximum of 8.5 kg CO_2e per m^2 over 50 years. This requirement has already been made at day care agency Ringparken, but could be extended to all construction including private sector. Source: Roskilde (Real Estate Strategy)
Additional information on measuring circularity in Construction can be obtained for example from Measuring circularity: Working agreements for circular construction. Version 2.0. Platform CB'23, 2020

4. Key phases of construction and procurement

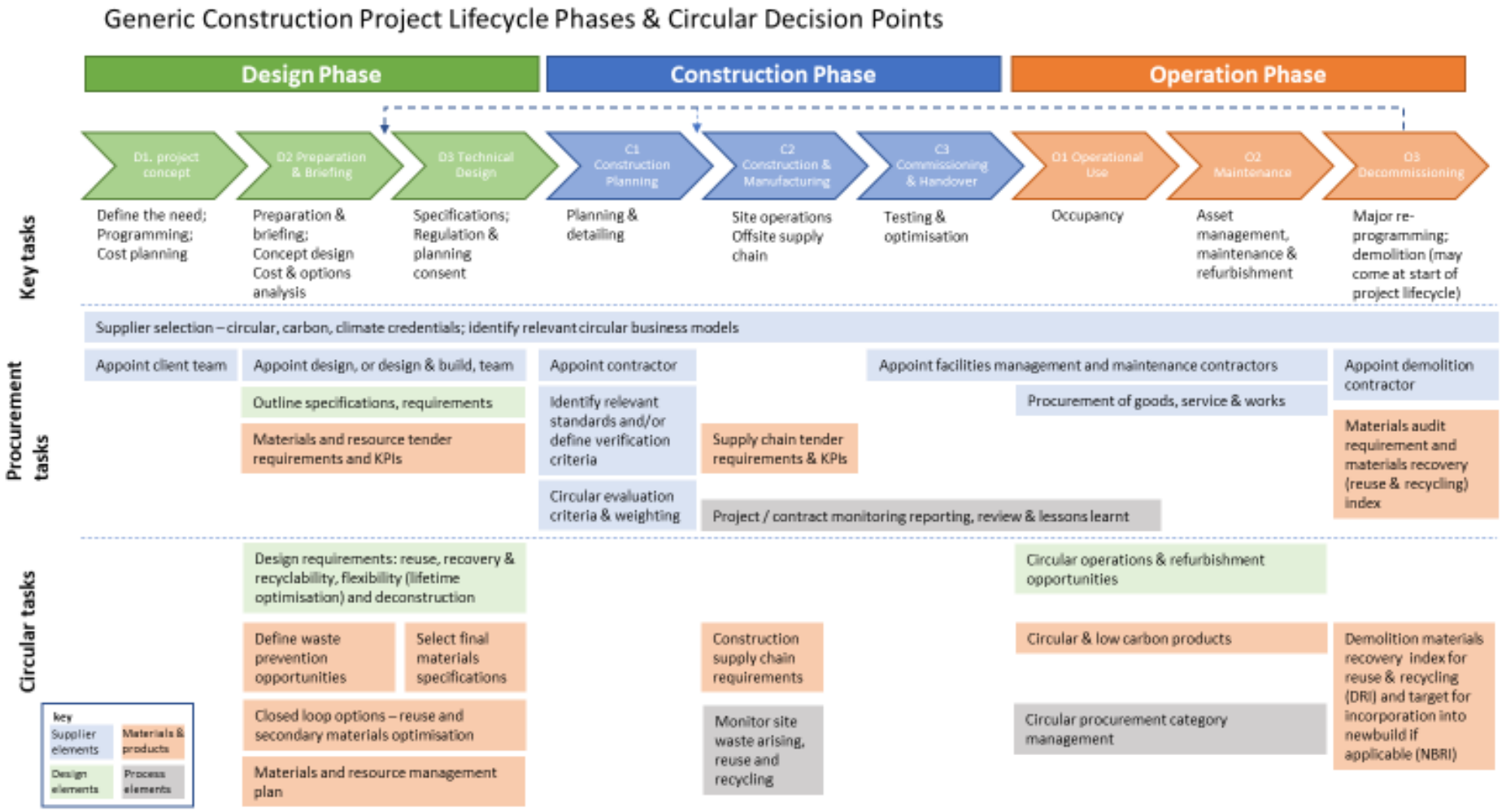
4.1. Key decisions points within the asset lifecycle

Figure 1 provides a summary of the simplified stages of a construction project and the key procurement decision points across the lifecycle, including operation and demolition. In practice some of these procurement stages may be combined depending on whether the procurement approach is, for example, Design & Build or Design, Build & Operate etc. The demolition phase may also be a distinct phase at the end of a building's or asset's functional life. The demolition phase may also be combined with a new build phase on the same site – this gives the greatest scope for improving circularity of materials by reincorporating elements, components and recycled materials whilst minimising transport impacts (carbon and emissions etc).

4.2. Maintenance of existing buildings and structures

Ensure the procurement process provides sufficient time, scope and resource to assess the potential to maintain existing structures. The conservation of all or part of the existing elements of a building /structure forms part of the principle of sustainability, conservation of resources and materials, reappropriation of space, recovery, reuse, repair and maintenance. The maintenance of the elements follows a decision-making logic based on a set of criteria assessing the potential for preservation. These criteria may include the historical value of the building, intellectual property, the condition of the building elements, the accessibility of the building, its type, costs and environmental impacts.

Figure 1 Generic lifecycle and key procurement decision points within construction projects



4.3. Deconstruction and dismantling

The objective is to use requirements in the project procurement to make the most of the components and materials of any existing building(s) or infrastructure through selective demolition (deconstruction) for better recycling and disassembly (or dismantling) for reuse.

This may be achieved by setting clear technical requirements, e.g. for demolition audits and/or for selective demolition; or, by asking functional performance-based questions to allow potential suppliers to offer the most circular outcomes in line with defined criteria. For example, minimising the carbon footprint of the project, reducing offsite waste, reduction of primary (virgin) materials etc.

4.3.1. Examples of tools

The CityLoops demonstration projects employed a number tools specified in the procurement requirements. A selection of these tools are noted below:

- Resource Management Plan and/or Site Waste Management Plan - require the development and maintenance of resource and waste management plan alongside a demolition audit. This will help identify the composition of the existing building(s) /structure(s) in terms of materials, products and elements and their uses. The quantification and analyses will help inform what appropriate circular strategies may be adopted further into the procurement process.
- Demolition Recovery Index (DRI) – this enables a quantification of the materials that may be reused or recycled within the newbuild phase of the project and maybe set as a target for the project, e.g. contributing to recycled content across the total project.
- Require the adoption of the EU Construction & Demolition Waste Management Protocol (2018). The Protocol fits within the Construction 2020 strategy, as well as the Communication on Resource Efficiency Opportunities in the Building Sector. It's also part of the European Commission's ambitious and more recently adopted Circular Economy Package. Its overall aim is to increase confidence in the Construction and Demolition waste management process and the trust in the quality of Construction and Demolition recycled materials.
- Whole life cost benefit analysis of remediation options versus demolition. Whole life costing tools e.g. Total Cost of Ownership will enable subsequent construction, operation and ultimately demolition costs to be weighed against the initial costs. Aim to include environmental impact costs within the analysis.

4.4. Construction on-site reuse

Where the demolition audit tools identify the economic viable scope for reuse of existing materials, components and elements in the newbuild phase, the procurement requirements should ensure that:

- Relevant performance tests are conducted to define performance as necessary;
- Selective and careful dismantling of the elements is undertaken;
- The storage and protection of deconstructed elements is allocated to enable preparation for reuse and to avoid any additional site waste arising, e.g. a dedicated space inside the site is established along with relevant site waste management facilities. Note that in some urban sites the storage must be done off-site; and,
- All materials and flows are documented, for example in a Materials (or Resource) Management Plan to enable the required preparation for reuse on site, cleaning, remanufacturing, custom cutting, etc. The Materials Management Plan may be linked to Materials Passports where these are specified for future refurbishment, renovation, deconstruction activities downstream in the structure's operational life (see Figure 1).

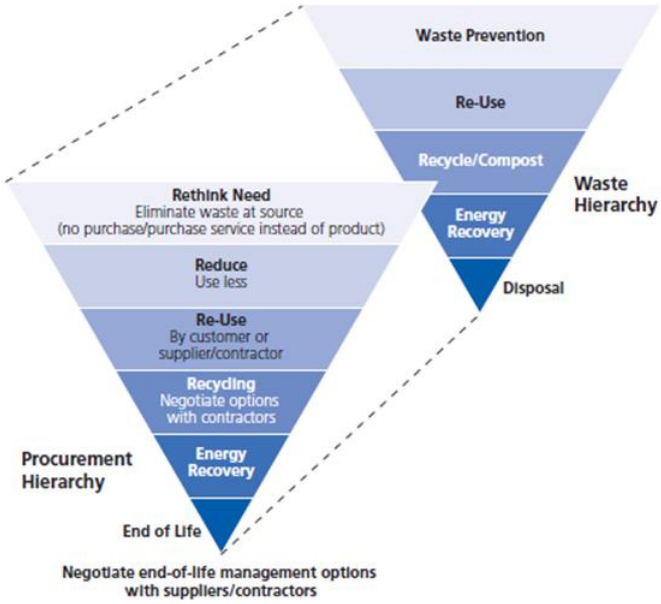
4.5. Construction site waste management

The European Waste Framework Directive establishes a waste hierarchy which applies in order of priority in waste prevention and management legislation and policy. The Directive states that prevention should be the first priority of waste management, with reuse and recycling to be preferred to the energy recovery of waste, as they represent the best ecological option.

According to the Directive, the waste hierarchy establishes an order of priority for what constitutes the best overall solution from an environmental point of view. Non-compliance with this hierarchy may be necessary for specific waste streams, e.g. on grounds of, inter alia, technical feasibility, economic viability and environmental protection but must be fully justified.

The waste hierarchy and the procurement hierarchy (Figure 2) are consistent with each other and with circular principles of closing material loops and retaining value.

Figure 2 Applying the waste hierarchy to procurement principles



In terms of demolition and construction waste, materials leaving the site can be one of two types. Either:

- they constitute a flow of resources that can be reused on another site or to be handed on to re-use professionals; or
- they constitute assets that the client wishes, or is forced to, economically, technically or environmentally dispose of.

If a materials or resource management plan has previously been specified during the demolition phase, then ensure site waste management requirements, e.g. separation and segregation of waste streams are applied in the construction phase in order to ensure materials loops can be closed.

5. Circular procurement principles in summary

The following steps are adapted for this guidance from the 8 steps to circular procurement of buildings. The 8-steps guidance includes numerous examples across construction and other procurement categories that provide practical case studies on how circularity of materials can be incorporated within all stages of the procurement process. The guidance is available in Dutch and the general 8 steps principles (available in English and other languages). A brief summary is provided below.

5.1. Step 1 – Set ambitions

By setting ambitions beforehand and clearly prioritising certain circular strategies, you provide direction and make it easier to evaluate the tenders received.

1. For each project, look at the context of the project to assess whether the ambitions are (still) relevant. Questions to ask in this assessment include the following:
    - How long will the building be used?
    - Will the building always serve the same purpose? If not, what possible purpose(s) might it have in the future?
    - What design strategies could facilitate possible future repurposing?

2. Set a clear ambition for the project that takes adequate account of the project's context.
3. Be aware of the consequences of your ambition.
4. Stick to the ambition throughout the entire procurement process. Run it by market parties (Step 4) and make sure the selection and award criteria are in line with the ambition (Step 6).

Snapshot Example – Car Park "Indfaldet", Roskilde

The CityLoops project had the opportunity to influence the preparation of the demolition tender of Pankalampi Health Centre and Tuukkala hospital, Mikkeli (Finland) which was managed by the Building Services Department of Mikkeli Municipality. As a baseline study, the CityLoops team reviewed the documents of some earlier demolition procurement projects carried out in the city of Mikkeli earlier and, for comparison, also selected procurements carried out in some other cities. The aim was to identify methods for the city to promote the principles of the circular economy in its projects. Based on the analysis, the initial situation in the city's procurement practice before the demo projects was as follows:

- the minimum requirements are the contractor's references for the implementation of similar demolition projects and proof of the fulfilment of the contractor's obligations under the statutory obligations (social security etc.);
- the lowest contract price is the only selection criterion. Quality criteria related to waste sorting and circular economy, for example, have not been used in any of the city's demolition projects; and,
- A policy was agreed with Metsäsairila Ltd, the municipal waste company, according to which all waste generated in all demolition contracts awarded by the city will was delivered to the municipal waste centre.

As a direct result of the CityLoops project, new procurement guidelines have been drawn up to promote the circular economy in demolition projects (Mikkeli Development Company Miksei 2021). The guide proposes new qualitative requirements, benchmarks or contractual incentives to promote CE. The procurement instructions are binding on the city's own organization.

For further information see here.

5.2. Step 2 – Internal engagement

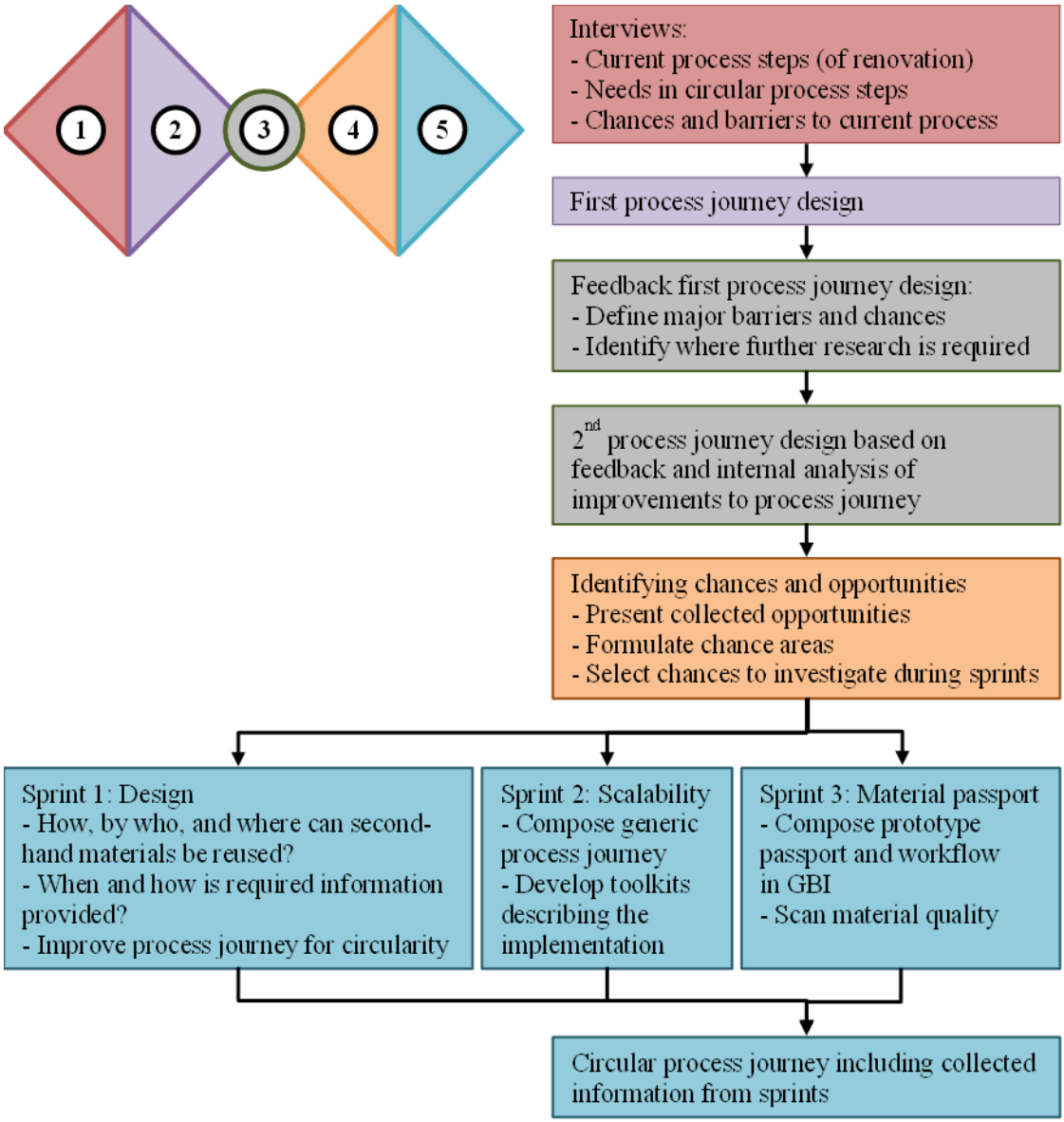
Ensure all the internal stakeholders within the project have a clear and unequivocal idea of the ambitions (Step1). It may be relevant to make a (circular and whole life) business case for the

project, while also taking into account the costs and benefits of circular construction. For example, identifying residual value from demolition and reuse options for existing materials and components.

Snapshot Example – Apeldoorn, Nethrlands

The municipality of Apeldoorn undertook a literature review and pilot to align the stakeholders in its public infrastructure projects in order to define a circular and, at the same time, executable project.

The process conducted is summarised in the diagram below:



Source: Overview of the complete service design trajectory resulting in a circular process journey by the early stakeholders involved in Griffiersveld (Entrop, Hagen and Van Leeuwen, 2022).

For further information see here.

5.3. Step 3 – Market Engagement

Before organising the market collaboration, carefully consider with whom you should collaborate with. This depends on how technical or functionality-oriented your invitation to tender is:

- For a more functionality-oriented invitation to tender, it is advisable to seek collaboration with a building contractor but also with the design team (such as an architect, installation adviser, structural engineer, building physics consultant etc). You can also ask suppliers about what is possible and not possible, e.g. in terms of the latest innovations in the market.
- For a more technical invitation to tender, the design will most likely already have been fixed so at least collaborate with the building contractor during the tendering process. You could also collaborate with suppliers prior to the tendering process to check what is possible and not possible from the market.

Market engagement may take the form of:

- pre-competition consultation (e.g. workshops, 1-to-many meetings, requests for information /Prior Information Notices etc); and /or
- technical competency requirements with the tender. For example, demonstrating competencies through examples of prior circular projects, implementing circular principles etc.

1. As a client, adopt and maintain a collaborative attitude during the procurement process.
2. Actively engage with potential suppliers to validate to what extent what you are asking for is possible and verify the feasibility of the intended procurement process - either prior to or during the tendering process.
3. Incorporate input from market consultation in your specifications and/or procedure. And give feedback on the consultation.

5.4. Step 4 - Designing the tendering procedure

The procedure you choose can be decisive in realising your circularity ambitions. As detailed in Step 4, collaboration between the client and the market is very important, and you can lay the foundation for it in the tendering procedure.

If you are under an obligation to put contracts out to tender, you must abide by the four principles for tendering. These are of a general nature and laid down by law[46]:

1 **Non-discrimination:** you cannot distinguish between tendering parties based on nationality.
2 **Equal treatment:** all market parties that take part in the tendering procedure must be given the same information. You are also under an obligation to judge all parties in the same objective way.
3 **Transparency:** it must be clear to all potential suppliers what is expected from them. You must provide clear reasons for the decisions you make as the client/commissioning authority.
4 **Proportionality:** the procedure itself and its contents, including the specifications and criteria, must be in proportion to the nature and scope of the contract.

In addition to the legal principles mentioned above, experience has shown that there are two additional principles that are important in getting (circular) tenders for a contract:

5 **Collaboration:** within the appropriate legal frameworks, stimulate collaboration between client and the potential suppliers and use the tendering procedure to bridge the gap that traditionally exists between both sides, such as by engaging in dialogue.
6 **Innovation:** make it possible to stimulate innovation and circular developments within the context of the tendering procedure. Include sufficient 'scope' in the invitation to tender for parties to be able to develop innovations, e.g. by making the invitation to tender one that is focused on functionality.

Finally, make sure you choose a tendering procedure that matches the project; points to consider include proportionality, stimulating collaboration, and allowing scope for innovation.

5.5. Step 5 - Formulating the tender

Functionality-oriented tender questions can help inform the actual requirement, without this necessarily being linked to the solution. For example asking for a work environment instead of renting an office. By taking functionality as the starting point, you create scope for tenderers to consider different solutions that can meet this need.

With a more technically oriented tender question, e.g. based on technical specifications, many of the design and sometimes even material choices have already been made. This can aid internal support for the project, because all stakeholders 'know' exactly what will be built. There is still however scope to ask the contractor to propose how specifications can be optimised and/ or exceeded with and to show how these optimisations increase circularity.

[6] EU tendering rules

1. Make an assessment of the extent to which the invitation to tender you issue to the market is of a technical or functionality-oriented nature.
2. Note that a functionality-oriented invitation to tender gives greater scope for responses to propose circular design solutions.
3. Set out any choices made on the client side, and clear communicate these choices to the bidders. This will keep transaction costs down.

Snapshot Example – Car Park "Indfaldet", Roskilde

A total contracting was offered as a tender with negotiation in accordance with the Public Procurement Act (Law nr. 1564 of 15.12.2015). The award criterion was the economically most advantageous offer with the best ratio between price and quality, where competition is based solely on quality.

The total budget included all deliveries were tendered for a total of € 4,6 million, excl. VAT.
The contractor was selected based of the following allocation model:

- Architecture 50%
- Functionality 40%
- Process 10%

Among the criteria with a focus on circular economy in operation can be mentioned:

- Construction solutions with the highest reduction of materials as possible, including load-bearing structures, coatings, and installations.
- Material with a high degree of recyclability.
- Considerations regarding cleaning and operation clearly included in the design of the house.
- Considerations regarding total energy included as a parameter in the choice of materials.

In addition, demands were made in the tender documents for recycling and circular economy e.g., reinstatement of crushed concrete and soil balance on the overall project.

For further information on the Car Park and other Roskilde CDW projects **see** here.

5.6. Step 6 - Measuring and assessing circularity

This involves designing the selection and award criteria. Based on your selection or award framework, you select the right suppliers and award the contract(s) to the bid(s) with the most circular tender.

An important difference to consider is between measuring and assessing within evaluation of bids. Measuring produces a quantitative outcome, whilst assessment is a qualitative indicator. In the case of construction projects, the 'required performance' is often difficult to quantify because the nature and complexity of the (possibly multi-phased) project that has been contracted and the associated processes e.g. demolition, construction, commissioning,

facilities management etc. There are potentially exceptions such as serial residential construction concepts.

Circular measurement methodologies in construction are emerging but currently a uniform measuring method that covers all aspects of circularity is still lacking. Examples include, but are not limited to, Platform CB'23 (see Box 1). It is therefore important to carefully consider the ambitions (Step 1) you set and how to translate these to a clear measuring method. The measuring method also depends on how you formulate what you need (Step 3). If your specifications are fairly technical, you could request optimisations of these specifications and have tenderers prove the circularity gains using a predefined measuring method.

Also consider how price included in the tender sufficiently reflects the circular ambitions. Points to consider here include:

- Ensuring that the price assessment offers sufficient scope for total cost of ownership (TCO). The guidelines described in step 2 offer a good basis in this respect.
- Setting a clear price cap for the market, and do so in time, so that you can adequately estimate whether or not the project can indeed be done at the price quoted.
- Ensuring a balanced weighing of price and quality. It is generally pointless to ask tenderers to meet high circularity ambitions and then award the contract based primarily on price.

1 Make sure that the selection and award criteria sufficiently reflect the ambitions (Step 1).
2 Circularity cannot, especially for many construction projects, be fully monetised. Therefore, aim to strike a balance between qualitative and quantitative assessment aspects.
3 Make sure that the price assessment sufficiently reflects the circular ambitions, and do not make price too big a factor in the overall assessment. For example, consider using a price cap.

5.7. Step 7 - Contract management

Select a contract manager with the right competencies who is intrinsically motivated to make a circular contract a success and shares the long-term vision. Many circular contracts revolve around ongoing collaboration. It may be relevant to include them in them internal stakeholder engagement (Step 2) or select someone from the existing project team.

Circular projects are still not mainstream and potentially require more time from both the contractor and the client before and during the contract phase. This is also the case where projects include innovation for examples in the CityLoops demonstration projects.

Ensure regular coordination meetings to review monitoring and reporting and progress and to be able to incorporate developments into the contract. Monitor the agreements closely (especially if using a framework agreement).

Monitoring and reporting should also include risk management and mitigation especially if performance and/or KPIs are not being achieved.

1 Ensure ongoing commitment from the client's side during the implementation phase.
2 Monitor the (hard) contractual arrangements but also consider the (soft) interpersonal relationships.
3 Ensure that ongoing training and circular capacity building are embedded in contract management procedures.
4 Evaluate regularly and embed lessons learnt to scale up successes and accelerate the shift towards more circular built environment and construction practices.

Snapshot Example – Contract management guidance, EMASESA, Seville, Spain

EMASESA has a strong commitment to preserving, reusing, and recycling the materials generated during water and sanitation works, as a part of its program of good practices in environmental sustainability and corporate responsibility performance. It has issued a guide for works managers setting out a strategy to reduce the environmental impact of its typical works, including some obligations related to waste generation. The guide focuses on re-using, re-manufacturing and recycling the largest possible percentage of materials. The guide is incorporated into the processes of the company, and becomes a duty for waterworks contractors. Example clauses include:

- Perform demolitions according to deconstruction criteria.
- Reuse - make the most of used materials, e.g. reuse work cuts whenever possible.
- Recycling stone materials and reusing them as subbases in urbanization works, such as draining material, etc.
- Effective improvements in waste management require a need to define a hierarchy of priorities. In order of importance, these are:
  - minimize the use of necessary subjects and resources. In other words, reducing the consumption of raw materials as well as the use of materials that may make it difficult or impossible to recyclability or subsequent reuse;
  - reuse materials - take advantage of the materials disassembled during the tasks down that can be used later;
  - reuse ceramics, tiles, etc.; and,
  - 3R strategy - reduce, reuse, recycle.

EMASESA requires all its works contractors to implement a waste management plan, according to the requirements established in the environmental annex of the tender documents. The waste management plan then forms part of contract management conditions.

For further information on EMASESA's CDW Implementation Plan **see** here.

5.8. Step 8 – Performance management

Ensuring that circular ambitions are fulfilled in contracts can be achieved by either using financial mechanisms (incentives and/ or penalties) and, including clear contractual arrangements.

A further, more technical way to ensure circularity is to require tenderers to submit a material passport. Materials passports provide insight into the materials, components, and parts that a building is made up of. It can also contain details of connections between materials. A material passport thus offers a basis to enable high-quality reuse and closed materials loops in the future.

6. Contact points

Task 2.6 Construction Procurement Support

Emile Bruls, Rijkswaterstaat

Jeroen van Alphen, Rijkswaterstaat

Mervyn Jones, Rijkswaterstaat

7. Annex 1 Original City Guidelines

The following linked PDF documents compromise the original language Construction Procurement Guidance developed under Task 2.6 of the CityLoops project for the partners involved in Work package 2 (Construction and Demolition Waste):

CityLoops Partner	Language	PDF Document
Bodø, Norway	Norwegian	Master environmental program - New district Bodø
Mikkeli, Finland	Finnish	City of Mikkeli – Internal procurement instructions
Seville, Spain	English	Procurement guidelines for demolition contracts
Roskilde & Høje-Taastrup, Denmark	Danish	Guidance for tenders for circular construction CityLoops
Apeldoorn, Netherlands	English	This guidance constitutes the Apeldoorn document

CityLoops is an EU-funded project focusing on construction and demolition waste (CDW), including soil, and organic waste (OW), where seven European cities are piloting solutions to be more circular.

Høje-Taastrup and Roskilde (Denmark), Mikkeli (Finland), Apeldoorn (the Netherlands), Bodø (Norway), Porto (Portugal) and Seville (Spain) are the seven cities implementing a series of demonstration actions on CDW and OW, and developing and testing over 30 new tools and processes.

Alongside these, a sector-wide circularity assessment and an urban circularity assessment are to be carried out in each of the cities. The former, to optimise the demonstration activities, whereas the latter to enable cities to effectively integrate circularity into planning and decision making. Another two key aspect of CityLoops are stakeholder engagement and circular procurement.

CityLoops runs from October 2019 until September 2023.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 821033.