

Addendum on

SUSTAINABILITY SERVICES

2022



Foreningen af
Rådgivende Ingeniører
FRI



DANSKE
ARKITEKT
VIRKSOMHEDER

BYGHERRE
FORENINGEN

The addendum to the description of services has been prepared by:

FRI (the Danish Association of Consulting Engineers), the Danish Association of Architectural Firms and the Danish Association of Construction Clients with support from **Realdania**

The following companies have participated in the preparation:

The Danish Association of Construction Clients:

Attorney to the Danish Government represented by Bo Schmidt Pedersen;
City of Copenhagen represented by Eskil Emil Kwedéris; The Danish Association of Construction Clients represented by Hanne Ullum

Danish Association of Architectural Firms:

3XN/GXN represented by Casper Østergaard Christensen; Matter by Brix represented by Lene Brix; AART represented by Nanna Flintholm; the Danish Association of Architectural Firms represented by Peter Andreas Sattrup and Preben Dahl

The Danish Association of Consulting Engineers (FRI):

Dominia represented by Jesper Ring; COWI represented by Gitte Gylling Hammershøj Olesen; Søren Jensen represented by Marlene Hagen Eriksen; FRI (the Danish Association of Consulting Engineers) represented by Ulla Sassarsson and Majbritt Juul

The Danish Construction Federation:

NCC represented by Anna-Mette Monnelly; Adserballe & Knudsen represented by Jakob Kock; The Danish Construction Federation represented by Torkild Schrøder-Hansen

Others:

DK-GBC represented by Lau Raffnsøe, Værdibyg represented by Nina Koch-Ørvad

Design: BGRAPHIC

PREFACE

This addendum to the description of services provides the basis for agreements regarding sustainability services, i.e. services that are intended to elevate the level of sustainability in building and landscape projects and that are new compared with the other description of services.

This addendum supplements 'Description of Services for Building and Landscape 2018' (YBL18) prepared by FRI (the Danish Association of Consulting Engineers) and the Danish Association of Architectural Firms, and 'Description of Services for Client Consultancy 2019' (YBB19) prepared by FRI (the Danish Association of Consulting Engineers), the Danish Association of Architectural Firms and the Danish Association of Construction Clients. This addendum cannot stand alone.

The addendum relates to building and landscape projects, but may, subject to relevant changes, be used for civil works projects together with 'Description of Services for Civil Works 2019' (YBA19) prepared by FRI (the Danish Association of Consulting Engineers).

All terms, conditions, assumptions and definitions of concepts applicable to the other descriptions of services also apply to this addendum, with the following exceptions:

- The definition of sustainability management in the description of services is replaced by the definition of sustainability management and sustainability consultancy provided in this addendum.
- This addendum replaces the sections of the descriptions of services regarding sustainability under 'Other services', i.e. sections 7.29, 7.30 and 7.31 of YBB19 and 9.31, 9.32 and 9.33 of YBL18.
- Sections 9.8 and 9.13 (Individual services regarding Energy and Indoor Climate) of this addendum replace sections 9.26, 9.27, 9.28, 9.29 and 9.30 on Energy and Indoor Climate of YBL18.

The purpose of this addendum is to make it simpler and more transparent for clients and designers to enter into agreements on sustainability services.

The addendum supports the client in defining visions, objectives and requirements regarding sustainability in a building project and the designers in clarifying the scope and content of the required services that translate the client's ambitions into concrete solutions.

The aim of the addendum is thus to promote sustainability in building projects, contribute to a clear understanding of the sustainability concept and support building industry operators in managing sustainability in practice by offering a standardised and structured set of sustainability services.

The addendum covers services related to sustainability consultancy, sustainability management and design and is therefore relevant for clients, sustainability consultants, sustainability managers and designers.

The structure of the addendum mirrors the descriptions of services, as this addendum is expected to be incorporated into the descriptions within a few years.

The addendum contains appendices in the form of model forms for defining consultant services that can be used to select and specify services for a specific project and for allocating responsibilities between the parties involved.

CONTENTS

DEFINITIONS	8
INTRODUCTION	10
1. SUSTAINABILITY CONSULTANCY (INITIAL CONSULTANCY)	13
1.1. Sustainability in the property strategy (Property strategy)	13
1.1.1. Contents	13
1.1.2. Commissioning and operation	13
1.1.3. Authorities	14
1.1.4. Programming	14
1.1.5. Cost management	14
1.1.6. Quality assurance	14
1.1.7. Project documentation	14
1.1.8. Client	14
1.2. Sustainability vision (Appraisal)	14
1.2.1. Contents	14
1.2.2. Commissioning and operation	15
1.2.3. Authorities	15
1.2.4. Programming	15
1.2.5. Cost management	15
1.2.6. Quality assurance	15
1.2.7. Project documentation	15
1.2.8. Client	15
1.3. Technical financing analysis	16
1.3.1. Contents	16
1.3.2. Commissioning and operation	16
1.3.3. Authorities	16
1.3.4. Programming	16
1.3.5. Cost management	16
1.3.6. Quality assurance	16
1.3.7. Project documentation	16
1.3.8. Client	16
1.4. Sustainability specification (Design specification)	16
1.4.1. Contents	17
1.4.2. Commissioning and operation	17
1.4.3. Authorities	17
1.4.4. Programming	17
1.4.5. Cost management	18
1.4.6. Quality assurance	18
1.4.7. Project documentation	18
1.4.8. Client	18
2. SUSTAINABILITY MANAGEMENT	19
2.1. Contents	19
2.2. Commissioning and operation	19
2.3. Authorities	19
2.4. Programming	20
2.5. Cost management	20
2.6. Quality assurance	20
2.7. Project documentation	20
2.8. Client	20
3. PROPOSALS	21
3.1. Outline proposal	21
3.1.1. Contents	21
3.1.2. Commissioning and operation	21
3.1.3. Authorities	21
3.1.4. Programming	21

3.1.5.	Cost management	21
3.1.6.	Quality assurance	21
3.1.7.	Project documentation	21
3.1.8.	Client	21
3.2.	Project proposal	22
3.2.1.	Contents	22
3.2.2.	Commissioning and operation	22
3.2.3.	Authorities	22
3.2.4.	Programming	22
3.2.5.	Cost management	22
3.2.6.	Quality assurance	22
3.2.7.	Project documentation	22
3.2.8.	Client	22
4.	REGULATORY PROJECT	23
4.1.	Contents	23
4.2.	Commissioning and operation	23
4.3.	Authorities	23
4.4.	Programming	23
4.5.	Cost management	23
4.6.	Quality assurance	23
4.7.	Project documentation	23
4.8.	Client	23
5.	TENDER DESIGN	24
5.1.	Contents	24
5.2.	Commissioning and operation	24
5.3.	Authorities	24
5.4.	Programming	24
5.5.	Cost management	24
5.6.	Quality assurance	24
5.7.	Project documentation	24
5.8.	Client	24
6.	CONSTRUCTION PROJECT	25
6.1.	Contents	25
6.2.	Commissioning and operation	25
6.3.	Authorities	25
6.4.	Programming	25
6.5.	Cost management	25
6.6.	Quality assurance	25
6.7.	Project documentation	25
6.8.	Client	25
7.	CONSTRUCTION	26
7.1.	Contents	26
7.2.	Commissioning and operation	26
7.3.	Authorities	26
7.4.	Programming	26
7.5.	Cost management	26
7.6.	Quality assurance	26
7.7.	Project documentation	26
7.8.	Client	26
8.	DELIVERY	27
8.1.	Contents	27
8.2.	Commissioning and operation	27
8.3.	Authorities	27
8.4.	Programming	27
8.5.	Cost management	27
8.6.	Quality assurance	27
8.7.	Project documentation	27
8.8.	Client	27
9.	INDIVIDUAL SERVICES	28

A:	DOCUMENTATION	29
A.1.	Sustainability certification	29
A.1.1.	Contents	29
A.1.2.	Programming	29
A.2.	Building and material passports	30
A.3.	Screening for undesirable substances	31
A.4.	Variant comparisons	31
B:	LIFE CYCLE	33
B.1.	LCC	33
B.1.1.	Contents	33
B.2.	LCA	34
C:	CIRCULAR CONSTRUCTION	36
C.1.	Resource mapping	36
C.2.	Area assessment	37
C.3.	Reuse and recycling	38
C.4.	Design for disassembly	39
D:	CLIMATE AND ENVIRONMENT	41
D.1.	Energy	41
D.2.	Water concept	42
D.3.	The fossil-free or emission-free construction site	43
D.4.	Climate change robustness	44
D.5.	Biodiversity	45
D.6.	Carbon storage	45
E:	SOCIAL VALUE CREATION	47
E.1.	Indoor climate	47
E.2.	Social preliminary analysis	48
E.3.	Social commissioning	49
E.4.	Evaluation of social impact	50
E.5.	Social efforts during construction	50

DEFINITIONS

In this addendum, **sustainability** is used as a broad concept that focuses on securing opportunities for future generations by balancing economic, environmental and social considerations. Accordingly, in this context, sustainability refers to measures suitable to promote this balance, such as circular construction, certifications, emission reductions, life cycle considerations, etc.

Sustainability management refers to services related to planning, coordination, etc. that support designers and contractors in achieving the sustainability objectives and requirements of the project. Sustainability management can be delivered either as a standalone role or as part of a design or construction manager's services.

The **sustainability plan** is an action plan for working with sustainability during both design and construction. The sustainability plan is prepared as part of sustainability management and includes a description of the main sustainability initiatives, a coordinated time schedule, allocation of roles and responsibilities, organisation, etc.

The **sustainability specification** presents the client's sustainability vision, specifies requirements for sustainability in the project and outlines the required services (including the required documentation and sustainability management) needed to comply with the requirements. The sustainability specification is either part of the design specification or an appendix to the design specification.

Sustainability consultancy refers to the assistance provided to the client to clarify the client's sustainability vision, objectives and requirements for the project.

The **sustainability vision** is prepared in the appraisal phase and collects the client's wishes for what the project is to achieve in terms of sustainability. This includes clarifying according to which parameters or criteria sustainability is measured in the specific project.

Sustainability screening is an assessment of the sustainability level of the building at a given stage based on the chosen sustainability standard or definition.

Certification is an impartial scheme for documenting the sustainability level of a building, which enables comparison across buildings. The scheme usually includes a third-party approval, which is considered a separate service that is clarified and settled separately.

Circular construction is a model for sustainability in the building project with a focus on reducing resource consumption through reuse and recycling of building materials, design for disassembly, transformation, etc.

The **variant comparison plan** includes a plan of the type and scope of expected variant comparisons to be performed in each phase as well as the selected parameters to be used in the different types of variant analyses. The plan is updated at the start of each phase so that any adjustments can be reflected in time schedules and activity plans.

Project period describes all the phases to which the addendum relates. This implies sustainability consultancy (initial consultancy), proposal and design phases, construction and delivery.

Project teams are the operators who are engaged in the project at the given time and who are involved in the sustainability services in question, either as providers of a service or as recipients of the outcomes of the service.

Robustness generally refers to the resistance and viability of a system in the event of crises. In this context, robustness refers to the resistance of buildings to known climate changes. In some contexts, the term 'resilience' is also used.

Progress reports include a summary and conclusion of the sustainability level achieved and any deviations from set sustainability objectives at a given time, including deferred services. The progress reports are prepared at each phase change and approved by the client so that they can be used as a basis for any adjustments in the subsequent phase.

Technical financing analysis is also referred to as a feasibility study or business case and comprises an analysis of the financial feasibility or profitability of the project. The service for preparing a technical financing analysis is described in YBB19. This addendum addresses the addition of sustainable value creation as an element in the technical financing analysis.

Variant comparison involves a comparative analysis of different potential design solutions for the project based on selected, measurable criteria in areas such as environmental, social and economic quality. The aim is to find the solution that best complies with the sustainability criteria of the project.

INTRODUCTION

The purpose of this addendum is to support the building industry in developing in a more sustainable approach by equipping clients, designers and contractors to request and deliver sustainability services in practice. This addendum therefore includes descriptions of a more indicative nature in some places, as it has been assessed that examples will help ensure that as many operators as possible will find the descriptions of services relevant and applicable in practice.

The addendum consists of two parts:

- A description of the **general services** that relate to:
 - *Sustainability consultancy*, which includes assisting the client in providing and specifying intentions, ambitions, requirements and objectives regarding sustainability in the project. Services under sustainability consultancy refer to YBB19.
 - *Sustainability management*, which includes planning and coordinating the project team's services and deliverables across disciplines and operators so that the project is developed and realised according to the set sustainability objectives. Services under sustainability management refer to YBL18.
- A range of **individual services** that describe specific services beyond the current requirements in the Danish Building Regulations regarding various sustainability parameters, such as services related to certification, LCA, circular construction, etc. The individual services are selected and opted for by the client as part of the strategy process and the appraisal and are defined in final in the sustainability specification. The individual services must be realised and customised to the current project in the specific agreement. The individual services refer to both YBB19 and YBL18.

The selection and specification of individual services, i.e. scope, deliverables and responsibility for the services, is part of sustainability consultancy, while the coordination of individual services is part of sustainability management. Sustainability consultancy and management are described in generic terms here, but are specified in connection with the selection of individual services.

Forms for defining consultant services

This addendum is supplemented by forms for defining consultant services, in which services related to sustainability consultancy, sustainability management and individual services are specified. The forms can be used to specify the required services in relation to the needs of the individual project and determine responsibility for the execution of and contribution to the services.

Correlation with YBB19 and YBL18

The sustainability services, i.e. the general services and the individual services, must be delivered integrated with other services, which are described in more detail in YBB19 and YBL18.

The structure of the addendum corresponds to the structure of the descriptions of services. The headings of the sections of the addendum refer to the corresponding sections in YBB19 and YBL18, respectively, sometimes in brackets.

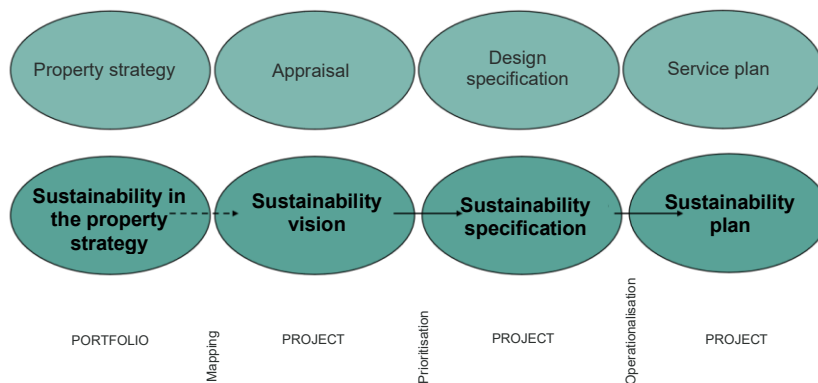
As the addendum cannot stand alone, each section should be considered as a supplementary section to the corresponding section in YBB19 and YBL18, respectively. As for sections without content, only the text of the corresponding section in YBB19 and YBL18 applies. These sections are highlighted in grey.

The individual services contain only the sections: Contents, Programming, Project documentation and Client.

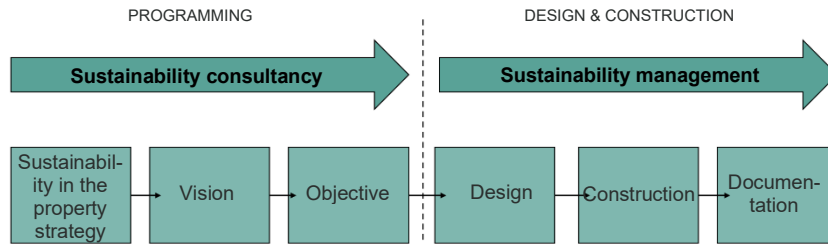
Although it is not stated in the text of this addendum, the consultant's general quality assurance and review obligation also applies to all services, including the individual services described in chapter 9.

Process, interaction and organisation

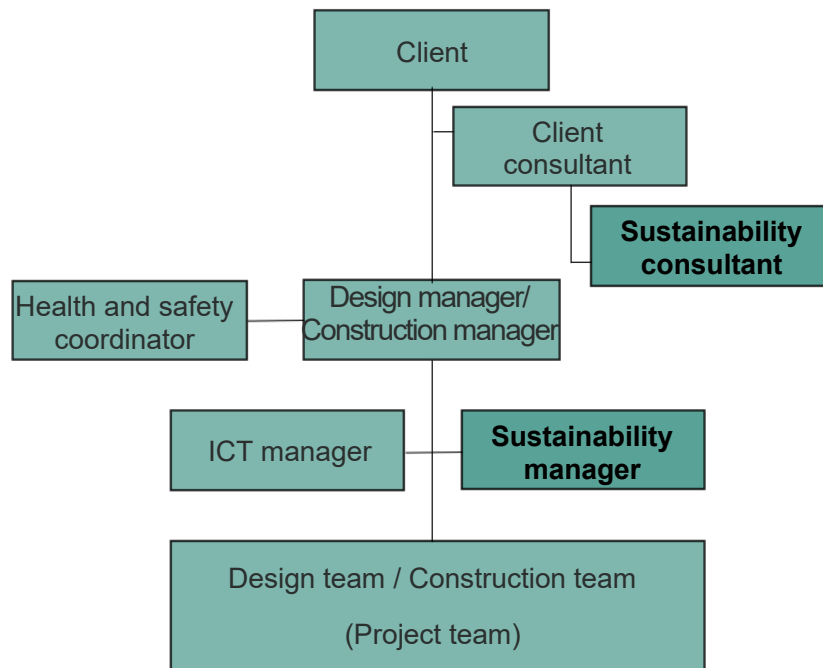
The addendum proposes a process that mirrors the approach in YBB19 and YBL18. Firstly, sustainability is included as a quality parameter in the client's property strategy (where relevant), and then a sustainability vision for the specific project is mapped out and incorporated into the client's appraisal. A sustainability vision is then prioritised and specified so that the sustainability specification can set concrete objectives for the sustainability of the project. These objectives are operationalised in the sustainability plan, which describes how objectives are achieved and implemented in the project.



In this way, the sustainability consultancy services focus on establishing the client's vision and objectives for sustainability in the project, and the sustainability consultant coordinates the services with the other services in connection with programming. The sustainability management services support the implementation of the sustainability vision and objectives in the project design, construction and documentation, and the sustainability manager coordinates the services with the rest of the design and construction.



The description of services is based on the organisation outlined below, where the sustainability consultant is placed under the client consultant and ensures that sustainability input is integrated with the client consultant's services, e.g. in the appraisal and design specification. The sustainability manager reports to the project manager and ensures that sustainability inputs and services, including those provided by project team members (designers or contractors), are integrated with the project manager's services, e.g. in coordinating the project team and updating time schedules and budgets.



The organisation chart is *an example* and illustrates the basis and wording of the addendum. Other organisations and forms of contract may shift the services and roles.

1. SUSTAINABILITY CONSULTANCY (INITIAL CONSULTANCY)

Sustainability consultancy includes:

- 1.1 Sustainability in the property strategy (Property strategy)
- 1.2 Sustainability vision (Appraisal)
- 1.3 Technical financing analysis
- 1.4 Sustainability specification (Design specification)

These services must be coordinated and integrated with the services described in YBB19.

1.1. Sustainability in the property strategy (Property strategy)

When preparing a property strategy, the client's strategic considerations and ambitions regarding the sustainability of the property portfolio must be mapped and incorporated into the property strategy.

A property strategy may include all the client's properties or individual, clearly defined properties.

1.1.1. Contents

The sustainability consultant assists the client in preparing a proposal for the structure, scope and level of ambition of sustainability in the property strategy. The proposal can be developed based on the client's business strategy.

The sustainability consultant prepares a proposal for the scope of any necessary registrations and preliminary studies to identify the condition of the property portfolio, sustainability potentials and related risks. The sustainability consultant ensures that the required studies are initiated, analysed and reported, and that the results are included in the preparation of the property strategy.

The sustainability consultant assists the client in incorporating sustainability into the property strategy. This includes a description of the sustainability value that the client wants to create with the property portfolio as well as the related criteria. The property strategy must also describe any measures, e.g. a selection of relevant individual services, the client wants to implement to achieve and document the desired value, as well as the link to other relevant framework conditions (e.g. the EU taxonomy for environmental sustainability).

1.1.2. Commissioning and operation

The client involves relevant people and information regarding the operation of the property portfolio as input for the preparation of the property strategy. Input may relate to waste sorting, maintenance, indoor climate control, water consumption, energy consumption, cleaning without chemicals, etc.

1.1.3. Authorities

The sustainability consultant ensures that the property strategy comprises the specific regulatory conditions and requirements that are relevant for the implementation of the desired sustainability services and measures. This includes requirements for environmental and climate impacts, required documentation (e.g. LCA), required permits and any exemptions.

1.1.4. Programming

The sustainability strategy must include an overall time schedule for the activities that are relevant to the implementation of the strategy activities in the property portfolio or in the individual projects. The service is provided in connection with the preparation of the property strategy as part of the initial consultancy.

1.1.5. Cost management

The sustainability consultant analyses the cost implications of the measures described in the property strategy, possibly from a life cycle costs (LCC) perspective.

1.1.6. Quality assurance

The sustainability consultant reviews the property strategy with a focus on sustainability and ensures that relevant rectification is made to the strategy.

1.1.7. Project documentation

The sustainability consultant incorporates assumptions, analyses and conclusions regarding sustainability into the property portfolio into the property strategy.

1.1.8. Client

The client approves the proposal for the property strategy and the proposal for necessary preliminary studies.

The client obtains relevant property information, informs about relevant framework conditions and actively participates in necessary meetings.

The client organisation approves the property strategy before initiating the appraisal.

1.2. Sustainability vision (Appraisal)

The sustainability vision must describe the client's thoughts, wishes and expectations of what the project should achieve in terms of sustainability, and define the criteria according to which sustainability is measured in the specific project.

The sustainability vision is based on the property strategy's wishes and services in relation to sustainability.

The sustainability vision is prepared in connection with the appraisal and integrated with the appraisal.

1.2.1. Contents

The sustainability consultant assists the client in preparing the sustainability vision based on analyses of the sustainability potential of the project and on the selected sustainability criteria.

The sustainability consultant assists the client in formulating the project sustainability vision and clarifying the need for and selecting the required sustainability services, including sustainability management and individual services needed to fulfil the vision. The sustainability consultant incorporates the sustainability vision into the appraisal.

1.2.2. Commissioning and operation

The client involves existing and future users and operating staff in the preparation of the sustainability vision. The sustainability consultant coordinates and facilitates the involvement, which may include waste sorting, maintenance, indoor climate control, water consumption, energy consumption, cleaning without chemicals, etc.

1.2.3. Authorities

The sustainability consultant ensures that the sustainability vision incorporates the relevant regulatory conditions and requirements, including necessary permits and exemptions.

1.2.4. Programming

The sustainability consultant incorporates the required sustainability services into the overall project time schedule.

1.2.5. Cost management

The sustainability consultant ensures that the cost implications of the sustainability vision are incorporated into the project budget via the design manager.

1.2.6. Quality assurance

The sustainability consultant reviews the sustainability vision and its foundation.

1.2.7. Project documentation

The sustainability vision is formulated in a clear and easily understandable language as part of the appraisal programme.

1.2.8. Client

The client makes its property strategy, if any, available to the sustainability consultant. If there is no property strategy or if it does not specifically address sustainability, the client will state its overall wishes and visions for the sustainability of the project at the start of the phase.

The client actively contributes to the creation of the sustainability vision, including by specifying expectations, wishes and ideas for the sustainability of the project as well as the financial and functional framework conditions of the project.

The client approves the sustainability vision.

1.3. Technical financing analysis

Subject to agreement with the client, the sustainability consultant may contribute to the technical financing analysis (Business case) so that the client's sustainability vision for the project is included in the analysis.

1.3.1. Contents

Based on a dialogue with the client, the sustainability consultant prepares a proposal on the purpose, scope and content of the sustainability contribution to the technical financing analysis.

Based on the client's appraisal and the selected sustainability criteria, and subject to agreement with the client, the sustainability consultant collects relevant information that can contribute to the technical financing analysis.

Subject to agreement with the client, the sustainability consultant may assist in identifying possible funding for special sustainability measures via e.g. funds and foundations.

1.3.2. Commissioning and operation

1.3.3. Authorities

1.3.4. Programming

1.3.5. Cost management

1.3.6. Quality assurance

The sustainability consultant reviews the technical financing analysis and its basis with a focus on sustainability.

1.3.7. Project documentation

The sustainability consultant contributes to the technical financing analysis report with input on the sustainable value creation of the project.

1.3.8. Client

The client approves the sustainability consultant's contribution to the technical financing analysis.

1.4. Sustainability specification (Design specification)

The sustainability specification is the part of the design specification that translates the client's sustainability vision for the project into concrete, operational sustainability objectives and requirements. The specification prioritises objectives and requirements and sets requirements for an implementation process/plan.

The sustainability specification is prepared based on the approved appraisal and the selected sustainability criteria. The sustainability specification forms

the basis for agreements on future sustainability management and individual services.

1.4.1. Contents

The purpose of the sustainability specification is to collect and structure the client's sustainability requirements for the project and support the planning and coordination of services during the construction process.

The sustainability specification is prepared by the sustainability consultant in dialogue with the client and with the involvement of other relevant stakeholders of the project team.

The sustainability specification includes the final sustainability requirements, including requirements for sustainability management and the required individual services, as well as a specification of scope and responsibility.

The sustainability specification must include:

- An account of the basic assumptions of the project in relation to sustainability based on agreed screenings, preliminary studies, analyses, etc.
- A description of the client's sustainability vision for the project.
- Qualitative and quantitative requirements for the sustainability of the specific project, including requirements for the scope of individual services in the project and criteria for compliance with the requirements.
- The client's requirements for sustainability documentation in the project, including any requirements for sustainability certification of the building project. In this case, it must be specified how requirement specifications in certification schemes should be handled and what level of ambition is to be achieved.
- Requirements for the scope of sustainability management, including the scope and content of meeting activities.
- Requirements for time schedule, process and collaboration in the subsequent project phases.
- The client's requirements for follow-up, quality assurance and reporting in relation to provided services and project solutions.

1.4.2. Commissioning and operation

The sustainability specification must account for the derived impact on operations of the set sustainability requirements. This may include waste sorting, maintenance, indoor climate control, water consumption, energy consumption, cleaning without chemicals, etc.

1.4.3. Authorities

The sustainability specification must account for the required permits and exemptions in order to achieve the set sustainability requirements.

1.4.4. Programming

The requirements of the sustainability specification for a time schedule are coordinated with the overall project time schedule.

1.4.5. Cost management

The sustainability specification budget must be coordinated with the overall budget for the project.

1.4.6. Quality assurance

The sustainability consultant reviews the sustainability specification and its link to the design specification and ensures that relevant rectification is made to the specification.

1.4.7. Project documentation

The sustainability specification is designed as an actual specification that in a clear and accessible format describes the client's requirements and wishes for the sustainability measures and results of the building project as well as process and organisational requirements to support the achievement of the client's sustainability vision for the project.

The sustainability specification may be incorporated into the overall design specification or exist as a standalone document.

The requirements of the sustainability specification must be coordinated with the ICT specification of the design specification.

1.4.8. Client

The client submits the approved appraisal to the sustainability consultant as basis for the preparation of the sustainability specification.

The client approves the sustainability specification as part of the design specification and approves any deviations from the agreed basis in the process.

2. SUSTAINABILITY MANAGEMENT

Sustainability management includes planning, coordination, management and follow-up during the building project phases up to and including delivery that support designers and contractors in achieving the sustainability objectives and requirements of the project.

Sustainability management can be delivered as a standalone role or as part of a design or construction manager's services.

These services and those in the subsequent chapters must be coordinated and integrated with the services described in YBL18.

2.1. Contents

The client defines the scope of the service in the sustainability specification (design specification).

The sustainability manager prepares a sustainability plan in which the required sustainability services, including individual services, are described and coordinated in terms of content, scope, organisation, programming and responsibility.

A log function may be added to the sustainability plan where decisions and justifications can continuously be entered and shared with the project team.

The sustainability manager coordinates the sustainability plan with the selected individual services.

The sustainability manager coordinates the implementation of the sustainability plan.

Together with the design manager, the sustainability manager ensures that the sustainability plan is coordinated with the ICT specification.

The sustainability manager informs the client of any deviations from the sustainability plan.

The sustainability manager updates the sustainability plan.

2.2. Commissioning and operation

The sustainability manager involves the operating staff of the project in the design and implementation of solutions, and the project documentation includes sections on project operations in each phase.

2.3. Authorities

In collaboration with the project manager, the sustainability manager ensures that the required input is provided for regulatory processing, including any exemptions.

2.4. Programming

Project time schedules must be continuously updated with sustainability services and deliverables, the client's expectations for regulatory processing and time frames for any certification processes.

The sustainability manager contributes to the updating of time schedules during the proposal and design phases as well as the construction phases. Time schedules are coordinated with the client (client consultant), design manager and construction manager.

2.5. Cost management

The overall budgets and accounts of the project are regularly updated in relation to implemented and planned sustainability services and deliverables.

The sustainability manager coordinates that input is provided from project teams and contractors, respectively, in the proposal and design phases as well as the construction phases.

The sustainability manager may adopt a life cycle cost (LCC) perspective to identify impacts on costs.

2.6. Quality assurance

The sustainability manager coordinates with the design manager to ensure that the quality plan for quality assurance includes the planned sustainability services, including required checks and testing prior to delivery, and ensures that relevant rectification is carried out.

The sustainability manager ensures that internal reviews of all deliverables are carried out for their own work.

2.7. Project documentation

Other project documentation is updated with sustainability deliverables.

Sustainability services and deliverables must continuously be presented in progress reports prepared at each phase change. Progress reports show the currently achieved sustainability level, any deviations from set sustainability objectives, deferred services and references to relevant documentation.

The sustainability manager is responsible for preparing progress reports in the proposal, design and construction phases and for providing input to other project documentation.

2.8. Client

The client continuously provides the basis for completing the project, including project documentation from previous phases and information about any existing buildings.

The client actively participates in required meetings and ensures access for the project team, users, operating staff and any other stakeholders.

If the client involves other consultants, the client must specify the interfaces between the operators when signing the agreement.

The client approves transactions, project documentation and progress reports in each phase.

3. PROPOSALS

Sustainability management in connection with proposals includes:

3.1 Outline proposal

3.2 Project proposal

3.1. Outline proposal

In terms of sustainability, the outline proposal is a motivated proposal for the completion of the project on the basis of an approved sustainability specification.

3.1.1. Contents

The sustainability manager ensures and coordinates that the project team provides the services specified in the sustainability plan.

3.1.2. Commissioning and operation

3.1.3. Authorities

3.1.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

3.1.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

3.1.6. Quality assurance

3.1.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of any deviations from the sustainability plan and requirements of the sustainability specification.

3.1.8. Client

The client approves the updated (phase-updated) sustainability plan.

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the sustainability plan and sustainability specification.

3.2. Project proposal

The project proposal is a reworking of the approved outline proposal to such an extent that all crucial decisions in the project regarding sustainability have been made and are included in the proposal.

3.2.1. Contents

The sustainability manager coordinates that the project team provides the services specified in the sustainability plan.

3.2.2. Commissioning and operation

3.2.3. Authorities

3.2.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

3.2.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

3.2.6. Quality assurance

3.2.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

The sustainability manager updates the sustainability plan.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of any deviations from the sustainability plan and requirements of the sustainability specification.

3.2.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the sustainability plan and sustainability specification.

4. REGULATORY PROJECT

4.1. Contents

The sustainability manager ensures that the project team provides the services specified in the sustainability plan.

4.2. Commissioning and operation

4.3. Authorities

The sustainability manager coordinates with the project manager to ensure that applications for any permits and exemptions as well as the required basis for these are prepared.

4.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

4.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

4.6. Quality assurance

4.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

The sustainability manager updates the sustainability plan.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of any deviations from the sustainability plan and requirements of the sustainability specification.

4.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the sustainability plan and sustainability specification.

5. TENDER DESIGN

5.1. Contents

The sustainability manager coordinates that the project team provides the services specified in the sustainability plan.

5.2. Commissioning and operation

Subject to agreement with the client, the sustainability manager involves the operating staff and others in connection with the determination of requirements for materials and assessment of tenders received in order to optimise project operations and operating costs.

5.3. Authorities

5.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

5.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

5.6. Quality assurance

5.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

Sustainability requirements must be integrated into the tender documents, including work specifications and tender control plans.

The sustainability manager updates the sustainability plan.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of any deviations from the sustainability plan and requirements of the sustainability specification.

5.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the sustainability plan and sustainability specification.

6. CONSTRUCTION PROJECT

6.1. Contents

The sustainability manager ensures that the project team provides the services specified in the sustainability plan.

6.2. Commissioning and operation

Subject to agreement with the client and in collaboration with the construction manager, the sustainability manager may involve operating staff, e.g. to contribute to requirements for testing technical systems and installations.

6.3. Authorities

6.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

6.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

6.6. Quality assurance

The sustainability manager coordinates that any project documentation from the contractor regarding sustainability is reviewed to ensure that the project complies with the requirements and intentions of the tender documents.

The sustainability manager ensures that relevant updates are made to the project documentation.

6.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

The sustainability manager updates the sustainability plan.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of any deviations from the sustainability plan and requirements of the sustainability specification as well as from requirements in the tender documents, including in work specifications and tender control plans.

6.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the sustainability plan and sustainability specification.

7.CONSTRUCTION

7.1. Contents

The sustainability manager coordinates that the project team provides the services specified in the sustainability plan.

The sustainability manager ensures follow up on deliverables according to the project tender control plans.

7.2. Commissioning and operation

7.3. Authorities

7.4. Programming

The sustainability manager coordinates the sustainability plan with the project time schedule.

7.5. Cost management

The sustainability manager collects input about sustainability, which is coordinated with the project budget, possibly via the project manager.

7.6. Quality assurance

The sustainability manager ensures that deliverables from designers and contractors are reviewed for compliance with sustainability requirements in the project documentation.

The sustainability manager coordinates that supervision of the work performed is carried out and that any project documentation from the contractor regarding sustainability is reviewed to ensure that the project complies with requirements and intentions of the tender documents.

The sustainability manager ensures that relevant rectification is made to both the project documentation and any defects found during construction.

7.7. Project documentation

The sustainability manager ensures that input about sustainability is coordinated with other project documentation.

The sustainability manager updates the sustainability plan.

At the end of the phase, the sustainability manager prepares a progress report and informs the client of significant deviations from the sustainability plan and from sustainability requirements in the tender documents, including in work specifications and tender control plans.

7.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves any deviations from the agreed basis.

8. DELIVERY

8.1. Contents

The sustainability manager coordinates that the project team provides the services specified in the sustainability plan.

Together with the consultant and operating staff, the sustainability manager follows up on deliverables according to the project tender control plans.

8.2. Commissioning and operation

Subject to agreement with the client and in collaboration with the construction manager, the sustainability manager may involve the operating staff in the delivery to receive the collected operating and maintenance manuals.

8.3. Authorities

8.4. Programming

8.5. Cost management

8.6. Quality assurance

The sustainability manager ensures that deliverables from designers and contractors are reviewed for compliance with sustainability requirements in the project documentation.

The sustainability manager coordinates that an inspection for defects of the work performed is carried out and that any project documentation from the contractor regarding sustainability is reviewed to ensure that the project complies with the requirements and intentions of the tender documents.

The sustainability manager ensures that relevant rectification is made to both project documentation and sustainability defects identified during the delivery meeting.

8.7. Project documentation

The sustainability manager ensures that sustainability input is coordinated with other project documentation, including that as-built sustainability documentation is prepared.

At the end of the phase, the sustainability manager prepares a defects list for completed sustainability work and informs the client accordingly.

8.8. Client

The client participates in decision-making processes according to the sustainability plan.

The client approves deviations from the agreed basis.

9. INDIVIDUAL SERVICES

The individual services describe the specific sustainability services, listed below under five themes:

A: Documentation

B: Life cycle

C: Circular construction

D: Climate and environment

E: Social value creation

The individual services are selected by the client during the initial sustainability consultancy (sustainability in the property strategy or sustainability vision) and are defined at the latest as part of the sustainability specification (design specification).

In general, the following applies to individual services:

- The sustainability consultant coordinates the individual services together with other initial sustainability consultancy.
- The sustainability manager coordinates the individual services with each other and with the other services.
- The sustainability manager continuously updates the sustainability plan based on input and results from the individual services.

The individual services cannot stand alone and must be realised and adapted to the project in question within the specific agreement.

Unless otherwise agreed, the client is responsible for ensuring that the individual service is described in detail and unambiguously and that it is reviewed before commencement. If the parties have not made a specific agreement as to the scope of the individual service, the service provider will determine the scope of the individual service.

The following descriptions are supplemented by forms for defining consultant services in which the individual services are specified. The forms for defining consultant services are adapted to the specific project to indicate the current scope, the respective responsibilities and, if necessary, a project-specific specification of the service.

The client's general services, including meeting attendance, involvement of operating staff and users, approval of project documentation, etc. are generally not specified further in the forms for defining consultant services, but are described in the following sections.

A: DOCUMENTATION

A.1. Sustainability certification

The sustainability level of a project can be documented with a certification system, which is an impartial scheme that often involves third-party approval or audit.

A.1.1. Contents

The sustainability manager ensures that a person is appointed as responsible for carrying out the certification, such as an auditor or assessor, who is responsible for collecting the required documentation and engaging in a dialogue with the certification body.

The client is assisted in selecting a certification scheme that is relevant for the property portfolio or individual project and in setting the level of ambition. Requirements for sustainability certification are incorporated into the property strategy or defined in the sustainability vision.

A screening of the sustainability vision is carried out in connection with the preparation of the appraisal. The project sustainability vision is coordinated with the selected certification scheme.

The client is assisted in prioritising and defining the level of ambition and requirements for the sustainability certification. Requirements, including documentation requirements, are incorporated into the sustainability specification.

Project stakeholders are involved and coordinated throughout the proposal, design and construction phases.

Documentation is collected and coordinated according to the requirements of the chosen certification scheme throughout the proposal, design and construction phases.

The required documentation is carried out according to the selected certification scheme, including any specific calculations.

The certification level of the project is assessed at the current project stage, and the client and sustainability manager are informed of any challenges or deviations and any derived alternative solutions.

A dialogue is conducted with the external third-party inspection body (certification body) according to the selected certification scheme.

A.1.2. Programming

The individual service is performed throughout the project period.

A.1.3. Project documentation

Documentation is prepared and collected in accordance with the selected certification system and subject to agreement with the client.

A.1.4 Client

The client provides the required information and approves solutions presented in the process.

The client participates in required meetings.

The client provides input to the documentation for future operations.

The client approves the documentation on an ongoing basis and in final upon delivery of the building project.

A.2. Building and material passports

The materials and products used are documented via building and material passports.

Building passports relate to the entire building and can either be a collection of material passports or an overview of materials across products and components.

Material passports document the individual product, including by listing the contents, installation solution and potential for reuse and recycling.

A.2.1. Contents

The client is assisted in formulating the ambition and purpose of the building and material passports, including in clarifying the need and requirements for building and material passports.

The client is assisted in formulating requirements for documentation of materials in the form of building and material passports as well as models for documentation at material, component and building level. A building parts catalogue is prepared, describing the nature and location of building materials and components. This is incorporated into the sustainability vision.

The client is assisted in defining requirements for documentation of materials in the project regarding material passports and building passports, including a specification of which materials and building parts are covered by the requirements.

This is incorporated into the sustainability specification.

Based on the requirements of the sustainability specification, a dialogue is conducted with suppliers or manufacturers and material passports are collected. A building passport platform is prepared for uploading and compiling collected material passports.

Requirements for documentation of materials and components are incorporated into the tender documents, including work specifications and tender control plans.

Based on the requirements in the tender documents, a dialogue is conducted with suppliers or manufacturers and material passports are collected. Collected material passports are uploaded to or compiled on the building passport platform.

In connection with delivery, the final material passports are collected and delivered and are uploaded to or compiled on the building passport platform.

A.2.2. Programming

The documentation work should be carried out on an ongoing basis, but must be completed on or before delivery of the building project.

A.2.3. Project documentation

The final building and material passports must be available upon delivery of the building project and be in a digital format as agreed with the client. Unless otherwise agreed, the documentation is collected in both CSV and PDF

format. This is supplemented by an overview indicating the ID and location of each material/product.

A.2.4. Client

The client approves requirements for the scope, detailing and format of building and material passports as part of the sustainability vision and sustainability specification.

The client approves the final building and material passports in connection with the delivery.

A.3. Screening for undesirable substances

The individual service includes screening for undesirable substances in project products, materials, components, etc. to reduce the risk of microplastic formation and to minimise the use of halogens such as chlorine (PVC) and bromides as well as PFAS (perfluoroalkyl substances).

A.3.1. Contents

As part of the property strategy, the client is assisted in determining the requirements for and scope of screening for undesirable substances, including to which buildings in the property portfolio the service should extend.

In connection with the preparation of the sustainability vision, the client is assisted in formulating the scope and level of ambition for screening for undesirable substances. In addition, the client is assisted in defining the reference list of undesirable substances, critical limits, etc.

The client is assisted in formulating requirements for screening for undesirable substances and requirements for related documentation, which are incorporated into the sustainability specification.

The screening is carried out in the proposal and design phases as required by the sustainability specification.

Based on the screening, the client is assisted in defining requirements for products in relation to undesirable substances and their documentation.

Requirements for products in relation to undesirable substances and requirements for documentation of materials and components are incorporated into the tender documents, including work specifications and tender control plans.

A.3.2. Programming

The screening takes place during the proposal and design phases. Control and documentation are collected during the construction phase.

A.3.3. Project documentation

All documentation must be available upon delivery of the building project and be in a digital format as agreed with the client.

A.3.4. Client

The client approves the requirements for the scope of screening and limit values.

The client approves the complete documentation in connection with the delivery.

A.4. Variant comparisons

A variant comparison involves a comparative analysis of different potential design solutions for the project, based on selected, measurable criteria in areas such as environmental, social and economic quality. The aim is to find the solution that best complies with the sustainability criteria of the project.

A.4.1. Contents

The client is assisted in determining the needs and wishes for variant comparisons, including number, type and scope. A variant comparison plan is prepared to define the number and types of variant comparisons, which criteria, such as financial, social and environmental impacts, the comparisons are assessed against, and at which point in the process they should be carried out. The plan must cover the entire project and the client approves this plan.

Initial variant comparisons are carried out according to the variant comparison plan, focusing on different scenarios for the project design, function, etc. Based on the results, the client is assisted in making decisions on wishes and requirements for the overall design, function, etc. of the project. This is incorporated into the sustainability vision.

As input for the technical financing analysis, the sustainability consultant collects relevant information, such as scenario studies in relation to financial, social and environmental impacts.

Further variant comparisons are carried out according to the variant comparison plan with a focus on volume studies, which may include environmental impacts and resource consumption related to e.g. building design, construction principles, facade solution and choice of energy supply. Based on the results, the client is assisted in determining relevant requirements to be incorporated into the sustainability specification.

Variant comparisons are carried out according to the variant comparison plan, which is updated together with the other project documentation.

A.4.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

A.4.3. Project documentation

Documentation is incorporated into the rest of the project documentation.

A.4.4. Client

The client participates in required meetings.

The client makes ongoing decisions based on the results of the variant comparisons.

The client approves the variant comparison plan and results/status on an ongoing basis.

B: LIFE CYCLE

B.1. LCC

Life cycle cost (LCC) calculations cover the total cost of the project over a set period of time, including construction, operation, maintenance, dismantling, disposal and reuse/recycling of the building and its materials.

B.1.1. Contents

In connection with the preparation of the property strategy or sustainability vision, the client is assisted in formulating wishes for the LCC for the property portfolio or project, including how the LCC should be used in the decision-making process and determination of the method used for LCC calculations.

In connection with the preparation of the property strategy, or at the latest as part of the sustainability vision, a series of LCC calculations are carried out, which can contribute to the decision-making basis in choosing between renovation and new construction.

As a minimum, the LCC calculation must include a statement of all relevant building-related costs and revenues, including residual value, in order to make a reasonable comparison of different scenarios and variants. The calculations must be supplemented with an explanation of which costs and revenues are considered relevant.

The sustainability vision of the project is coordinated with results from the LCC calculations.

The technical financing analysis is coordinated with information and results from the LCC calculations.

The sustainability specification sets out requirements and criteria for LCC calculations throughout the subsequent phases, including the scope and content of the calculations at different project stages (e.g. whether to calculate LCC at building or component level) and requirements for documentation.

An overview of the necessary documentation and a plan for obtaining it is prepared, indicating which operator is responsible for producing or obtaining each part of the documentation. The plan is coordinated with the sustainability plan and approved by the client.

LCC calculations with content and scope according to the requirements and criteria set out in the sustainability specification are carried out throughout the proposal, design and construction phases of the project.

Requirements for input regarding materials and components are incorporated into the tender documents, including work specifications and tender control plans.

Final LCC calculations are carried out at delivery and commissioning.

B.1.2. Programming

The work is carried out throughout the project.

B.1.3. Project documentation

Documentation requirements are defined in the sustainability specification. Results from LCC calculations are summarised in clear reports presented to the client at each phase change.

B.1.4. Client

The client must attend necessary meetings and provide the agreed documentation in the process.

The client approves the choice of method, documentation collection plan, requirements and ongoing reporting from the LCC calculations.

B.2. LCA

A life cycle assessment (LCA) is carried out to calculate the total climate and environmental impact of the project for a defined section of included building parts over a defined reference study period. An LCA addresses climate and environmental impact during selected phases, such as sourcing of raw materials, manufacturing of materials and products, from the construction process (including construction and transport), use of the building (including energy consumption and replacement of materials and products), dismantling, disposal and, where applicable, reuse and recycling of materials and products.

Projects subject to climate requirements with threshold values can benefit from using LCA in connection with variant comparisons during the design process to ensure that the completed building complies with the climate requirements.

B.2.1. Contents

The client is assisted in formulating the ambition and purpose of LCA in the project, including how results are to be used in decision-making processes.

The client is assisted in specifying the method to be used for the LCA calculations as well as the scope and level of the calculations, depending on the project stage, including whether calculations are to be performed at building or component level, which phases (A-D) of the life cycle are included and which climate and environmental impact categories are calculated.

LCA calculations are carried out according to the specified method, scope and level as part of the sustainability vision (appraisal). If necessary, and subject to agreement with the client, additional LCA calculations can be carried out as part of the scenario studies.

The client is assisted in formulating requirements for LCA calculations and associated limit values based on the sustainability criteria specified in the sustainability vision. Compliance with applicable regulatory requirements is ensured. The requirements are incorporated into the sustainability specification.

A plan for LCA calculations leading up to delivery is prepared, including a plan for collecting the necessary data and documentation as a basis for the calculations as well as the allocation of responsibilities and related time schedule.

The plan for LCA calculations is coordinated with the variant comparison plan and with the overall project time schedule. The client approves the plan for LCA calculations.

The LCA calculations are carried out according to the plan for LCA calculations. During construction and delivery, calculations are performed on the overall project based on bills of quantities from the designer and contractor.

Results from the LCA calculations are made available to the client and the rest of the project team and thus form an essential basis for relevant decisions regarding choice of material, design solutions, etc.

B.2.2. Programming

The work is carried out throughout the project.

B.2.3. Project documentation

Climate and environmental impacts are calculated according to applicable standards.

Results from LCA calculations are compiled in clear reports at each agreed phase change and presented to relevant parties, including authorities and the client.

B.2.4. Client

The client must attend required meetings and provide the agreed documentation in the process.

The client approves the choice of method, requirements for LCA calculations and limit values, the plan for LCA calculations and ongoing reporting from the LCA calculations, including the final LCA calculation in connection with delivery.

C: CIRCULAR CONSTRUCTION

C.1. Resource mapping

A resource mapping is a systematic mapping of the available resources in a building that provides an overview of the amount of resources as well as the potential for reuse, dismantling and sales opportunities through selective demolition. A resource mapping can be used as an important basis for assessing whether renovating or demolishing a building has the most potential.

C.1.1. Contents

As part of the property strategy, the client is assisted in determining the requirements and scope of the resource mapping, including which buildings in the property portfolio the service should cover.

As part of the property strategy, an early screening of the resources of the property portfolio is carried out based on the available drawings and physical records. Screening and analysis include functional analysis, architectural analysis, determining the quality and quantity of materials, assessing the residual service life of materials, assessing the suitability for disassembly and dismounting, and identifying environmental conditions and risks.

The results of the screening and analysis are presented to the client as input for decisions on whether existing buildings should be preserved, renovated or fully or partially demolished. The decision and key results from the resource mapping are incorporated into the property strategy.

As part of the sustainability vision, a thorough resource mapping of the project is carried out in order to make a decision regarding the reuse and recycling of individual resources in future building projects. Mapping and analysis include: bill of quantity, quality, residual service life, suitability for disassembly and dismounting, detailed environmental mapping, identification of environmental risks and possible dismantling options. The results of the resource mapping are presented to the client, who makes the final decision on the use of the materials.

The results of the resource mapping, including any requirements for additional registrations and analyses as well as special dismantling methods, are incorporated into the sustainability specification.

The results of the resource mapping are coordinated with the other services and individual services – particularly individual services related to reuse and recycling, design for disassembly, LCA, LCC as well as building and material passports.

The sustainability plan is updated with the results of the resource mapping, including the time schedule, and regarding regulatory dialogue on waste management, permits, exemptions, planning act and local development plan.

Any requirements for additional mapping are incorporated into the tender documents, including work specifications and tender control plans.

C.1.2. Programming

The work is carried out in connection with the initial sustainability consultancy, possibly with additional mapping in subsequent phases.

C.1.3. Project documentation

Results from initial screening and analysis as well as resource mapping are compiled in clear and graphically supported reports, and derived decisions are incorporated into the property strategy, sustainability vision and sustainability specification.

C.1.4. Client

The client ensures access to buildings, provides existing drawings and reports and contributes with relevant operational data.

The client approves the reporting from the resource mapping and decides on the use of existing buildings and materials in the future building project.

C.2. Area assessment

An area assessment reviews the potential of the existing landscape or open space in order to establish a systematic knowledge base of which elements can be preserved, reused, recycled or redistributed. The analysis forms the basis for decisions on site layout in relation to existing components and structures as well as the natural resources of the project area.

C.2.1. Contents

Initially, the client is assisted in determining the requirements and scope of the area assessment, including whether the individual service should cover the entire project area or a sub-area.

An early screening of the potential of the landscape is carried out based on the available drawings and physical records. Screening and analysis includes functional analysis, landscape architectural analysis, determination of the quality and quantity of materials, including paving and planting, assessment of the residual service life of materials, assessment of suitability for disassembly and dismantling, and identification of environmental conditions.

Based on the results of the screening and analysis, the client is assisted in deciding whether existing elements in the landscape should be preserved, renovated or fully or partially cleared. The decision and key results from the screening are incorporated into the property strategy.

In connection with the development of the sustainability vision and based on the results of the screening, a mapping of the potential for preservation or reuse of the existing landscape or open space as well as the potential of its natural resources is carried out based on available drawings and physical records. Mapping and analysis include: bill of quantity, quality, residual service life, suitability for disassembly and dismantling as well as detailed environmental mapping.

Based on the results of the mapping, the client is assisted in determining the requirements for the use of existing components, structures and natural resources as well as any requirements for additional mapping. This is incorporated into the sustainability specification.

Additional mapping is carried out according to the requirements of the sustainability specification.

Any requirements for additional mapping are incorporated into the tender documents, including work specifications and tender control plans.

Additional mapping is carried out in accordance with requirements in the tender documents, including work specifications and tender control plans.

C.2.2. Programming

The work is carried out in connection with the initial sustainability consultancy. Any additional mapping is carried out in the proposal, design and construction phases.

C.2.3. Project documentation

Results and analysis from the area assessment are compiled in clear and graphically supported reports, and derived decisions are incorporated into the sustainability vision, sustainability specification and tender documents.

C.2.4. Client

The client ensures access to the project area, makes existing drawings and reports available and contributes data on existing parts of civil works and operating conditions.

The client approves the area assessment report and makes a decision on the use of existing components and structures in the future civil works.

C.3. Reuse and recycling

The purpose of the individual service is to ensure maximum utilisation of existing resources with the lowest possible carbon footprint. The individual service includes both the initial assessment of reuse and recycling potentials as well as the incorporation of reused or recycled materials into the project leading up to delivery.

C.3.1. Contents

As part of the sustainability vision, and possibly as a separate individual service related to resource mapping, an analysis is made of potential reused and recycled materials, including reliability of supply and associated risk analysis, as well as an appraisal for incorporating materials into the project.

Requirements for reused and recycled materials in the project are incorporated into the sustainability specification, including requirements for volumes, quantity, quality and documentation, regulatory requirements and exemptions, as well as requirements for the demolition process, storage and material processing. The time schedule of the sustainability specification must take into account supply risks and, if necessary, provide scenarios and options in the event that key materials cannot be used as planned.

Materials for reuse and recycling are incorporated into the other project documentation, including consideration of tolerances, location, function and risks. It also describes the integration of reused/recycled materials and new materials.

Documentation requirements (e.g. building or material passports) are incorporated into the project documentation.

The individual service may include development and production of prototypes to further identify the potentials. This is subject to agreement with the client.

The sustainability plan is continuously updated with relevant information and decisions regarding reused and recycled materials.

The individual service is coordinated with the other services and individual services – particularly individual services related to design for disassembly, LCA, LCC and building and material passports.

The necessary permits and exemptions for the incorporation of reused and recycled materials are obtained.

Requirements for handling reused and recycled materials and products during construction are incorporated into the tender documents, including work specifications and tender control plans.

C.3.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

C.3.3. Project documentation

Documentation is incorporated into the rest of the project documentation. Selected solutions and materials can be documented in building and material passports subject to agreement with the client.

C.3.4. Client

The client makes available the results of resource mapping of existing buildings, if available, or initiates resource mapping in order to provide sufficient information about the nature and quantities of existing buildings and materials.

The client participates in required meetings.

The client makes a decision on presented solutions and materials in the process.

The client approves project documentation and results/status on an ongoing basis.

C.4. Design for disassembly

The individual service supports the circular principles by ensuring the ability to disassemble materials or components after use so that they can be used in new contexts, to optimise the operation and maintenance of the building and to support flexibility and adaptation to future needs.

C.4.1. Contents

The client is assisted in analysing the flexibility, adaptability, conversion and expansion possibilities of the property portfolio and mapping the need. This is incorporated into the property strategy.

The client is assisted in identifying needs in relation to the future flexibility, adaptability, conversion and expansion possibilities of the project, including wishes for circular business models and the potentials of building systems, modularity and simple assembly methods. These are incorporated as part of the project sustainability vision.

Requirements for design for disassembly and circular business models and their documentation, any requirements for building and material passports and requirements for the demolition process are incorporated into the sustainability specification.

Requirements for design for disassembly and circular business models are integrated as a parameter in the other project development. A dismantling plan is prepared as part of the project development.

Documentation requirements (e.g. building and material passports) are incorporated into the project documentation.

The service may include development and production of prototypes to further identify the potentials. This is subject to agreement with the client.

The required exemptions for any deviations from regulatory requirements are obtained.

The individual service is coordinated with the other services and individual services – particularly individual services related to LCA, LCC and building and material passports.

C.4.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

C.4.3. Project documentation

Documentation is incorporated into the rest of the project documentation. Selected solutions and materials can be documented in building and material passports subject to agreement with the client.

C.4.4. Client

The client participates in required meetings.

The client makes a decision on presented solutions and materials in the process.

The client approves project documentation and results/status on an ongoing basis.

D: CLIMATE AND ENVIRONMENT

D.1. Energy

The individual service includes energy optimisation measures that go beyond the requirements stipulated in the Danish Building Regulations. The focus is on both passive measures, where the energy consumption of the project is adjusted to match its energy production, and active measures, where the energy production of the project is optimised.

D.1.1. Contents

In connection with the preparation of the property strategy, the client is assisted in determining a strategy for reducing the energy needs of the current property portfolio, including wishes for active and/or passive measures and specification of the necessary calculations and simulations to be able to document the required measures.

The calculations and simulations specified in the property strategy are carried out. Based on the results, variants of proposals for passive and active measures are prepared. The scope and content of variant comparisons are agreed with the client prior to commencement. The proposals are incorporated into the sustainability vision.

A decision-making proposal is prepared on the cost-effectiveness of incorporating various energy principles. This is incorporated into the technical financing analysis.

Final requirements for energy consumption and demand, including requirements for passive and active measures and their documentation, are incorporated into the sustainability specification.

Calculations and simulations are carried out as specified in the sustainability specification.

Solutions for using active and passive measures are integrated into remaining project development.

Energy requirements are incorporated into the tender documents, including work specifications and tender control plans.

The final documentation for the implemented energy measures is carried out based on as-built material.

D.1.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

D.1.3. Project documentation

Documentation is incorporated into the rest of the project documentation.

D.1.4. Client

The client participates in required meetings.

The client makes a decision on presented solutions and measures in the process.

The client approves project documentation and results/calculations/simulations on an ongoing basis.

D.2. Water concept

The individual service focuses on the water consumption and discharge of the project and addresses measures to reduce the consumption of drinking water and wastewater. In addition, focus is on rainwater management – both as a result of increasing cloudbursts and as measures to reduce the water consumption of the project.

D.2.1. Contents

Initially, the quantity of precipitation, local conditions for seepage and discharge to local recipients and risks of future water increases are analysed. The client is assisted in setting objectives for the water consumption of the project and management of precipitation and wastewater.

As part of the sustainability vision, outline proposals for local rainwater management and measures to reduce water consumption are prepared based on calculations and simulations.

Requirements for the project water concept, including requirements for rainwater management and requirements for measures to reduce the water consumption of the project, are incorporated into the sustainability specification.

The necessary permits for the realisation of the project water concept are obtained in collaboration with the design manager.

A detailed solution is prepared for the project water concept based on calculations of water consumption and prevention of wastewater discharge. The scope and content of calculations are agreed with the client. Calculations and project documentation are updated at each phase change.

Requirements for rainwater management and reduction of water consumption are incorporated into the tender documents, including work specifications and tender control plans.

As-built project documentation is prepared based on requirements in the tender documents, including work specifications and tender control plans.

D.2.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

D.2.3. Project documentation

Calculations for water consumption and prevention of wastewater discharge are prepared made at each phase change, and solutions and project documentation are updated.

Documentation is incorporated into the rest of the project documentation.

D.2.4. Client

The client participates in required meetings.

The client makes a decision on presented solutions and measures in the process.

The client approves the project documentation and calculations on an ongoing basis.

D.3. The fossil-free or emission-free construction site

The fossil-free and emission-free construction site means that no fossil fuels are used and that no greenhouse gases, particles, NOx or other exhaust gases are emitted from machinery and equipment on the construction site.

The goal is to reduce the climate footprint within the construction site and to reduce noise and air pollution.

D.3.1. Contents

Initially, the client is assisted in determining the needs and wishes for the fossil-free or emission-free construction site.

In connection with the sustainability vision, the potential for a fossil-free and emission-free construction site is analysed in terms of market, method and system definition. In addition, an analysis of potential measures regarding logistics, climate considerations, occupational health and safety as well as civil engineering and construction solutions will be carried out based on the financial scope and time frames for the project. Measures may relate to the use of fuel, energy-efficient site huts, monitoring as well as follow-up and optimisation of electricity consumption.

The client is assisted in formulating requirements for measures to establish a fossil-free and emission-free construction site, which are incorporated into the sustainability specification. This includes requirements for monitoring, data collection and documentation of the individual measures on the construction site.

Measures and solutions for establishing a fossil-free and emission-free construction site are incorporated into the project.

Requirements for measures and solutions for a fossil-free and emission-free construction site are incorporated into the tender documents, including work specifications and tender control plans.

Monitoring, data collection and documentation are undertaken in accordance with requirements in the tender documents, including work specifications and tender control plans.

At the end of the project, a statement of the reduction of climate impacts as a result of the fossil-free or emission-free measures is prepared.

D.3.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

D.3.3. Project documentation

Documentation of the monitoring of the implemented measures is prepared.

Documentation is incorporated into the rest of the project documentation.

D.3.4. Client

The client actively contributes with wishes and final choices for the fossil-free or emission-free construction site.

The client participates in required meetings.

The client makes a decision on presented solutions and measures in the process.

The client approves the project documentation and other documentation on an ongoing basis.

D.4. Climate change robustness

The purpose of the individual service is to ensure the robustness and resistance of the project to known climate change.

D.4.1. Contents

The client is assisted in defining a strategy for ensuring the robustness of the property portfolio and/or project to climate change.

Analyses are carried out to determine the need for climate adaptation or climate proofing measures, such as landscape-based rainwater management, protection against rising sea water or groundwater, reduction of urban heat island effects, absorption of airborne particle pollution, counteracting turbulence/wind protection or reducing the cooling needs of buildings through strategic use of vegetation. Analyses are based on accessible drawings, maps and physical records.

The analyses are conducted as variant comparisons. The content and scope of these are agreed with the client.

The client is assisted in determining requirements for climate change robustness measures, their documentation and any requirements for additional mapping and analyses. This is incorporated into the sustainability specification.

Solutions and measures for climate change robustness are integrated into the other project development.

Requirements for climate change robustness solutions and measures are incorporated into the tender documents, including work specifications and tender control plans.

The final documentation of the implemented measures is carried out on the basis of as-built material.

D.4.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

D.4.3. Project documentation

Documentation is incorporated into the rest of the project documentation.

D.4.4. Client

The client participates in required meetings.

The client makes a decision on presented solutions and measures in the process.

The client approves project documentation and results/calculations and simulations on an ongoing basis.

D.5. Biodiversity

The purpose of the individual service is to ensure optimum knowledge of the existing biological state in connection with the project and ensure a knowledge base for the best possible development of biodiversity.

D.5.1. Contents

A screening of existing planting and wildlife in the neighbourhood of the property portfolio, including invasive and native species, is carried out. Based on this, the client is assisted in setting objectives for biodiversity in the property portfolio and in preparing a biodiversity strategy that is incorporated into the property strategy.

In connection with the sustainability vision and based on the screening, additional mapping and analysis of existing planting and wildlife in the project neighbourhood will be carried out. Based on this and the biodiversity strategy, solutions and measures to protect biodiversity will be outlined.

The client is assisted in defining requirements for measures and solutions to protect biodiversity and related documentation, which are incorporated into the sustainability specification.

Solutions and measures to protect biodiversity are integrated into other project development.

Requirements for solutions and measures to protect biodiversity are incorporated into the tender documents, including work specifications and tender control plans.

Continuous monitoring of biodiversity is carried out to ensure that the original objectives are maintained. Proposals for changes that can support and enhance biodiversity may be prepared.

The final documentation of the implemented measures is carried out on the basis of as-built material.

D.5.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

D.5.3. Project documentation

Documentation is incorporated into the rest of the project documentation.

D.5.4. Client

The client attends necessary meetings and ensures free access to inspect the project area.

The client makes decisions on presented solutions and measures in the process.

The client approves project documentation and results/calculations/simulations on an ongoing basis.

D.6. Carbon storage

The purpose of the service is to uncover the potential for carbon (CO₂) storage or sequestration in vegetated areas, wetlands and structures/building parts.

D.6.1. Contents

A screening of the potential for CO₂ storage/sequestration in vegetated areas, wetlands and structures/building parts related to the property portfolio is carried out. Based on this, the client is assisted in setting objectives for carbon storage in the property portfolio and in preparing a carbon storage strategy that is incorporated into the property strategy.

In connection with the sustainability vision and based on the screening, additional mapping and analysis of the potential for CO₂ storage/sequestration in vegetated areas, wetlands and structures/building parts related to the project will be carried out. Based on this and the carbon storage strategy, solutions and measures are drafted for carbon storage.

The client is assisted in defining requirements for measures and solutions for carbon storage and related documentation, which are incorporated into the sustainability specification.

In connection with the outline proposal, carbon storage measures and solutions are detailed in accordance with the carbon storage strategy and requirements in the sustainability specification, and carbon storage calculations are initiated.

Carbon storage solutions and measures are integrated into other project development and calculations are updated.

Requirements for solutions and measures for carbon storage are incorporated into the tender documents, including work specifications and tender control plans.

In connection with delivery, the calculation and documentation of carbon storage is verified in accordance with the requirements in the tender documents.

D.6.2. Programming

Carbon storage potentials may be documented from the outline proposal phase and should be updated before the start of each new phase based on updated project documentation.

D.6.3. Project documentation

Analyses and calculations are documented in reports and supported by relevant layout and/or detailed drawings and bills of quantities.

D.6.4 Client

The client decides on the overall objective for the total carbon footprint of the project.

The client approves project documentation and results on an ongoing basis and makes decisions on adjustments to the CO₂ objectives of the project.

E: SOCIAL VALUE CREATION

E.1. Indoor climate

The individual service addresses measures that optimise the indoor climate of the project beyond current legislative requirements by focusing on the well-being and health of the users. An optimised indoor climate is essential to ensure long-term and optimum use of the building.

E.1.1. Contents

A mapping of existing conditions regarding thermal (heat/cold), atmospheric (air and ventilation), optical/visual (light) and acoustic (sound) indoor climate is carried out.

The client is assisted in defining an indoor climate strategy, which may include user behaviour, user evaluation, room surfaces, etc. as well as passive and/or active measures to ensure optimisation of these areas.

Based on the indoor climate strategy, indoor climate simulations and calculations are carried out and variants of solutions for optimising indoor climate are prepared. The scope and content of calculations, simulations and variant analyses are agreed with the client.

The client is assisted in formulating requirements for measures to optimise the indoor climate, documentation thereof and requirements for further calculations and simulations of thermal indoor climate, daylight autonomy and shadow studies in particular. These requirements are incorporated into the sustainability specification.

Simulations and calculations are carried out according to the requirements of the sustainability specification.

Measures and solutions for optimising indoor climate are incorporated into the project.

Requirements for measures and solutions for optimising indoor climate are incorporated into the tender documents, including work specifications and tender control plans.

Monitoring and documentation are undertaken in accordance with requirements in the tender documents, including work specifications and tender control plans.

At the end of the project, documentation of measures and solutions for optimising the indoor climate will be prepared.

E.1.2. Programming

The work is carried out in parallel and integrated with the other services throughout the project period.

E.1.3. Project documentation

Documentation of the monitoring of the implemented measures is prepared.

Documentation is incorporated into the rest of the project documentation.

E.1.4. Client

The client participates in required meetings.

The client makes a decision on presented solutions and measures in the process.

The client approves the project documentation and other documentation on an ongoing basis.

E.2. Social preliminary analysis

The purpose of a social preliminary analysis is to establish a knowledge base about the users' or target group's practices and perceived needs, which can be used to qualify the development of the project, especially in the early design phases, and thus determine the desired social value creation of the project.

E.2.1. Contents

The client is assisted in defining wishes for social value creation in and around the project, including which social challenges or potentials the future project must meet as well as the conditions that must be measured and followed up.

Based on the client's wishes for the social value creation of the project, a plan for social preliminary analysis is prepared, including content, scope, target group, method and questions to be considered. The methods may be semi-structured interviews, participant observations, surveys, registrations or more co-creative methods such as workshops.

The social preliminary analysis is carried out as described in the social preliminary analysis plan.

Requirements are prepared for the application of results from the social preliminary analysis in subsequent project development. These requirements are incorporated into the sustainability specification.

Results from the social preliminary analysis are used as the design basis for the project development in accordance with the requirements of the sustainability specification.

It must be agreed how the project is to be validated against requirements for social value creation, e.g. through user involvement, operations, etc.

Requirements for social value creation are incorporated into the tender documents, including work specifications and tender control plans.

E.2.2. Programming

The work is carried out in the earliest phases of the project, in parallel and integrated with the other services.

E.2.3. Project documentation

Results from the social preliminary analysis in the form of insights into user practices and needs in relation to the physical framework are summarised in a report.

The report is incorporated into the other project documentation.

E.2.4. Client

The client participates in necessary meetings.

The client ensures that any users are accessible and contribute relevant knowledge.

The client approves the plan for social preliminary analysis.
The client approves the reporting from the preliminary analysis.

E.3. Social commissioning

The purpose of social commissioning is to support the desired connections between the physical framework of the project and the intended social value creation by planning and facilitating a commissioning process with the future users.

E.3.1. Contents

The client is assisted in determining wishes for social value creation in and around the project, including wishes for the commissioning process.

A proposal for the commissioning process is prepared and presented to the client.

The client is assisted in defining requirements for social commissioning in the sustainability specification.

Based on the assumptions, a risk analysis is carried out to identify where special efforts are needed to realise the project potential for having a social impact. Based on the risk analysis, an overall plan for commissioning activities with the future users is drawn up and the individual activities are planned, implemented and evaluated.

Social commissioning requirements are incorporated into the tender documents, including work specifications and tender control plans.

Commissioning activities are carried out according to the commissioning activities plan.

Commissioning activities can be carried out both before and after commissioning and may consist of meetings, workshops, information material, etc. Pre-commissioning activities focus on 'practising for the future' in the existing physical framework, while post-commissioning activities take place in the new physical framework.

Finally, the commissioning activities are summarised and it is assessed whether and how the new physical framework and/or the use of the physical framework can be optimised and/or improved.

E.3.2. Programming

The work is carried out throughout the project period, but primarily in the last part of the construction phase and before/during/after delivery. Work is carried out in parallel and integrated with the other services.

E.3.3. Project documentation

A plan for the social commissioning process is drawn up and incorporated into the rest of the project documentation.

E.3.4. Client

The client participates in required meetings.

The client ensures user involvement during programming, project development, construction and delivery.

The client approves the plan for social commissioning process/utilisation activities.

E.4. Evaluation of social impact

The purpose of the individual service is to analyse how the project creates value for users after commissioning. A quantitative or qualitative evaluation identifies how the project interacts with its users and the social impacts created.

E.4.1. Contents

The client is assisted in determining wishes for social value creation in and around the project, including how the social impacts should be evaluated.

The client is assisted in formulating requirements for measures regarding evaluation of social impacts, which are incorporated into the sustainability specification.

A plan is drawn up for the evaluation of social impacts, including the selection of criteria, relevant methods and the questions to be answered. The methods may be semi-structured interviews, participant observations, workshops, surveys or registrations.

Requirements for social impacts are incorporated into the tender documents, including work specifications and tender control plans.

Evaluation of social impact is carried out according to the social impact evaluation plan.

Proposals for remediation of any identified issues and an action plan may subsequently be prepared. The scope and content of the analysis and preparation of an action plan must be agreed with the client.

E.4.2. Programming

The work is carried out throughout the project period, but primarily in the last part of the project phase and after the building has been commissioned. Work is carried out in parallel and integrated with the other services.

E.4.3. Project documentation

A plan for the evaluation of social impacts is drawn up and incorporated into the rest of the project documentation.

E.4.4. Client

The client participates in required meetings.

The client involves the users during the construction.

The client approves the social impact evaluation plan.

E.5. Social efforts during construction

The objective is to utilise the potential of the project for employment and job openings for people on the edge of the labour market. The individual service concerns the initiation and implementation of binding social efforts with a focus on employment, education, integration and/or retention in the labour market.

E.5.1. Contents

The client is assisted in defining wishes for the social efforts during construction with a focus on employment, education, integration and/or retention in the labour market.

Requirements for the realisation of measures related to the social efforts during construction are incorporated into the sustainability specification.

A description of the specific wishes for the social efforts is prepared during construction. Including the type of employment programme (full-time or part-time job) and/or training programme (apprenticeship, internship, etc.) and their scope and content.

Requirements for the social efforts during construction are incorporated into the tender documents, including work specifications and tender control plans.

A plan is drawn up for the organisation of the social efforts, including which resources will support social efforts and the organisation of the efforts between the client, contractor, municipality and other stakeholders.

The social efforts during construction are carried out in accordance with the requirements in the tender documents, including work specifications and tender control plans as well as the plan for organising the social effort.

E.5.2. Programming

The individual service concerns the determination and planning of the social efforts during construction and is therefore primarily carried out during the tender project and construction project.

E.5.3. Project documentation

A description of the specific wishes for the social efforts during construction, requirements for the social efforts during construction and a plan for the organisation of the social work are prepared.

E.5.4. Client

The client approves the project documentation.

The client actively participates in meetings and clarification regarding social efforts.

Prepared by:

FRI (the Danish Association of Consulting Engineers)
Vesterbrogade 1E, 3rd floor
DK-1620 Copenhagen V
T: +45 3525 3737
E: fri@frinet.dk
www.frinet.dk

The Danish Association of Architectural Firms
Vesterbrogade 1E, 2nd floor
DK-1620 Copenhagen V
T: +45 32 83 05 00
E: info@danskeark.dk
www.danskeark.dk

The Danish Association of Construction Clients
BLOX, Bryghuspladsen 8
DK-1473 Copenhagen K
T: +45 70 20 00 71
E: info@bygherreforeningen.dk
www.bygherreforeningen.dk