

# Collaboration in demolition projects

## FIVE GUIDES TO THE DEMOLITION PROCESS

This guide is one of five linked Værdibyg guides focusing on the productive demolition process:

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Find them all at [vaerdibyg.dk](http://vaerdibyg.dk)



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The publication has been monitored by the following professional group:

**The Danish Association of Construction Clients**

Peter Toftso (Halsnæs Municipality)

Peter Aufeldt (Kuben Management A/S)

**Danish architects practices**

Signe Lynge Nielsen (Rubow Arkitekter)

**DI Byggeri**

Anders Strange Sørensen (Enemærke & Petersen A/S)

Andreas de Gier (Enemærke & Petersen A/S)

Benny Aldershvile (Hvidberg A/S)

Dennis Eiberg Becker (G. Tscherning A/S)

Kasper Sørensen (Søndergaard A/S)

Tommas Salomonsen (Tsolusion)

**The Danish Association of Consulting Engineers – FRI**

Helene Gaarn (Dominia)

**Other**

Emil Bille (Dansk MiljøAnalyse)

Filip Lau (JORD•MILJØ A/S)

**Observer**

Mads P. Gede (DI Byggeri)

**Værdibyg**

Nina Koch-Ørvad

Stephan P. Sander

**Consultant and writer**

Niels Trap (WSP / TRE Rådgivende Ingeniører og Biologer)

**Images**

Jonathan Grevsen

Ricky John Molloy

Kevin Grieve at [Unsplash.com](https://www.unsplash.com)

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# A consolidated partnership on good demolition practice

Cooperation and coordinated efforts constitute a solid foundation for any construction project. Productive partnerships in general ensure an efficient project – whereas poor collaboration engenders conflict, inappropriate solutions and expensive subsequent remedial work.

Productive partnerships are especially challenging on demolition projects because demolition is often characterised by a high level of uncertainty. The uncertainty may involve the structure of the building that is to be demolished, the materials in the building, the environmental issues and environmentally hazardous substances that may be present in the building components etc.

This means that new circumstances that the involved parties have to take into account often arise and that the parties have to agree on which may prove challenging when everyone is under pressure in terms of time and budget.

Many demolition projects are often characterised by the fact that many different people and companies are involved within a short period of time – and not everyone has solid experience in demolition. This means a vague division of roles and doubts about the interfaces between the different disciplines which may lead to misunderstanding and conflict.

There is therefore a need to strengthen productive partnerships between the stakeholders involved in a demolition project. The purpose of this guide is to outline the key elements in a productive partnership that manage the uncertainties and risks inherent in any demolition project and that take into account the many different stakeholders involved.

This guide applies to complete demolitions, partial demolitions as part of renovation projects and demolitions where reuse and recycling of materials are required.

The guide is aimed at the main parties in a demolition: developers, main and subcontractors as well as engineering and architectural consultants, including specialists (e.g. environmental consultants and working environment coordinators).

Værdibyg, 2021



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# The special thing about demolition projects

**The prerequisites for productive partnerships are particularly challenged on demolition projects as such a high level of uncertainty is involved in these projects. It is therefore difficult to produce an accurate project description, clear planning of the process and an unambiguous distribution of roles.**

## **Preliminary studies cannot cover everything**

It may be difficult to know in advance what the parts of a building that need to be demolished contain. This is partly due to the fact that clear and unambiguous plans of existing conditions rarely exist or because later modifications have been made. A project may be fortunate enough to have plans of the structures of the buildings, but these may not specify how the individual parts have been assembled. Finally, health hazards may arise over time, e.g. rot, dry rot or historical dust<sup>1</sup> which will not be included in even the most accurate plans.

Effective preliminary studies – including environmental mapping<sup>2</sup> – may help to identify some of the risks presented by a demolition project. This requires that the results of preliminary studies are put into play and that the necessary knowledge is forwarded to the applicable stakeholders, e.g. as an integral part of the project description and tender documentation.

However, an environmental survey can never be exhaustive, but will include selected, critical parts of the construction project. The excluded elements therefore constitute a potential risk which has to be managed on an on-going basis. For working environment reasons, it is important that new circumstances and changes to the project are communicated clearly and quickly to all contractors.

## **Focus in this guide: partial demolition as part of main contract**

This guide is based on a demolition project that is performed as part of a main renovation contract (i.e. a partial demolition – see also Definitions overleaf). It is in this type of project that most of the stakeholders are typically involved which means that productive partnerships are particularly crucial – and challenging.

The recommendations and advice contained in this guide are therefore wide-ranging and also apply to complete demolition projects as part of both turnkey and specialist contracts. The guide focuses mainly on the collaboration between the parties that are directly involved in a demolition project and only briefly touches upon other stakeholders such as users and residents.

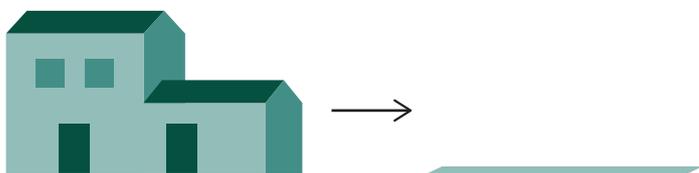
<sup>1</sup> Find out more in DI Nedrivningssektionen's [Dust Guide](#)

<sup>2</sup> Find out more about environmental mapping in the [Environmental Mapping and Demolition Værdibyg Guide](#) and in VCØB's checklist for [The efficient mapping report](#)

## DEFINITIONS – DEMOLITION

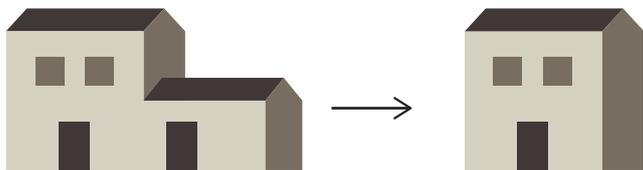
This guide uses the term ‘demolition’ as a general term for the activity and phase in which (parts of) a building is demolished. In practice, several other terms are used to describe the same thing, e.g. breakdown, disassembly and removal.

A demolition project may vary in both scope and organisation:



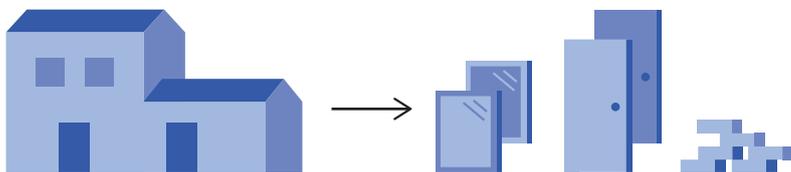
### Complete demolition

The entire building is demolished. Complete demolition is usually performed as a turnkey contract or main contract.



### Partial demolition

Parts of the building are demolished, and the building is subsequently renovated or transformed. Partial demolition is usually performed as a specialist or main contract.



### Selective demolition

The demolition of government buildings requires selective demolition<sup>3</sup> where materials are continuously sorted at source during the demolition to enable reuse and recycling of materials.

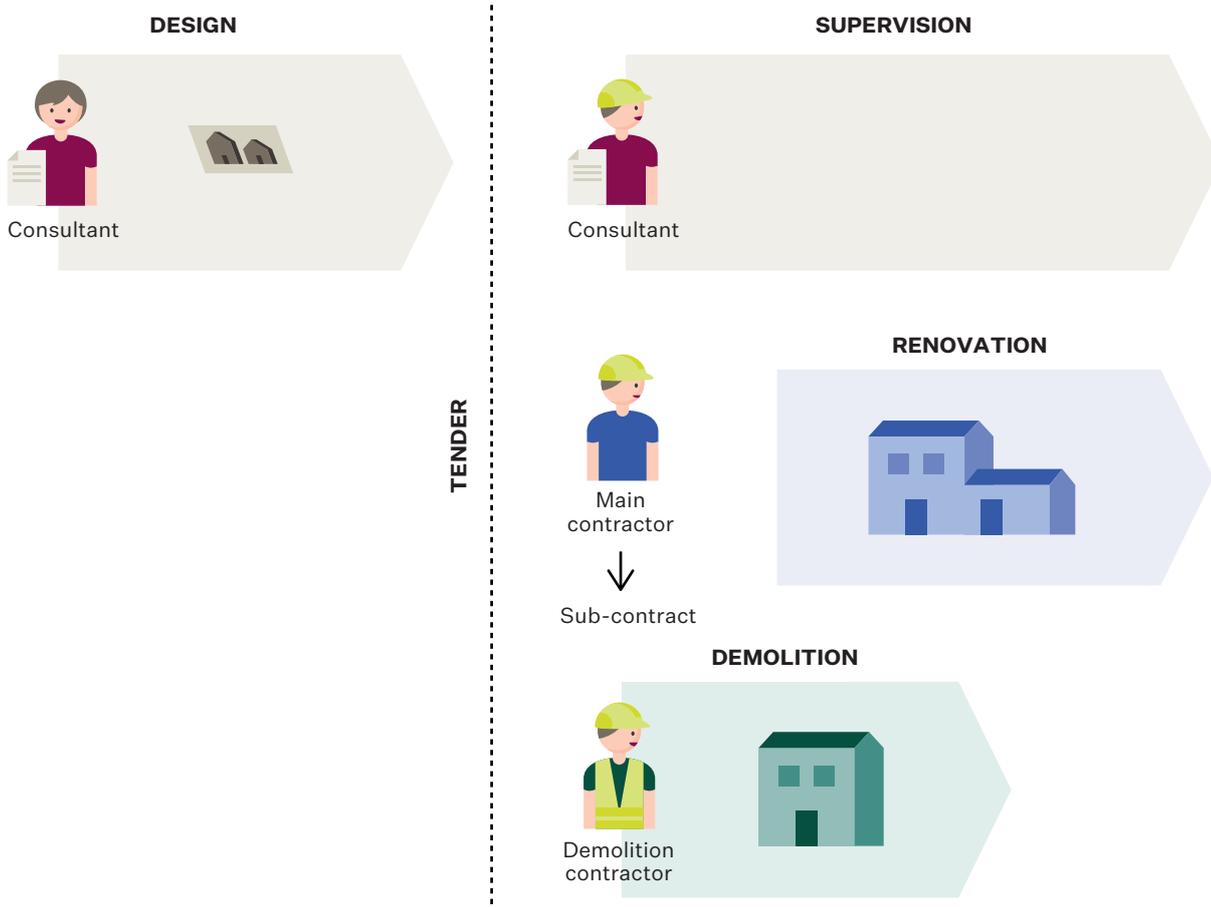
# Critical interfaces on a demolition project

On a demolition project that is performed as a main contract, the developer will typically hire a consultant to prepare the project documentation on which the project tender will be based. The project – and the project documentation – typically includes both the demolition work and the subsequent renovation. The main contractor to be awarded the tender will often hire a demolition contractor to perform the part of the project that involves the demolition work. This means that the demolition project becomes a subcontract under the main contract. During the project, the consultant inspects and monitors the works.

This organisation of the project – and of the demolition work – entails a number of interfaces that are important to coordinate in order to ensure a productive partnership throughout the demolition process.

## The interaction between main contractor and demolition contractor

Close cooperation is required between the main contractor and demolition contractor to ensure coordination between the various tasks on the project and for the demolition to take place as planned as well as safely. This requires that effective early screening of the project takes place and that the demolition project is properly described in the tender documentation. If the description of the demolition project is imprecise or inadequate, the main contractor and demolition contractor will risk pricing their bid too low in order to increase their chances of being awarded the project.



This often results in conflict and additional expenditure and liability.

If it turns out that the project is more extensive than assumed in the tender, this may result in claims for extra payment for additional works. As demolition is one of the first tasks, such requirements put the main contractor's relationship with the developer to the test early on. To save the relationship with the developer, the main contractor may try to put the demolition contractor under pressure to complete the job at the tendered price. There will often be more focus on the budget than on effective solutions, and the productive partnership will hang in the balance.

Effective preparation and a thorough description of the demolition works may help to minimise these challenges and conflicts. It is worth setting aside extra time and money for a preliminary study as a basis for the description of the demolition works. This provides both more nuanced and precise tenders that match the actual task, and the developer avoids expensive and cumbersome delays in the execution phase.

As the demolition contractor specialises in the area and is often very familiar with both work descriptions and rules governing the working environment, the main contractor may feel under a great deal of pressure as he may not be in a position to argue with the demolition contractor. In order to be on a more equal footing with the demolition contractor and the consultant, it is important that the main contractor possesses solid insight into the environmental and working environment aspects of the demolition works and seeks advice from relevant specialists, if applicable.

### **The developer and the consultant can ensure a good start**

Efficient preparation by the developer and consultants is the key to running a smooth project which the main contractor and demolition contractor can tender for. The developer is rarely unwilling to pay the right price, but is not keen on ending up with major additional expenses – even before the project has properly started. If the developer is aware that the tender documentation for the demolition contract is inadequate, the developer should set aside additional risk funds for the contract.

It is usually the consultant who prepares the project documentation and the descriptions of what is to be demolished. In order to create a sound basis for a solid start to the demolition project and to ensure a productive partnership, it is important that the consultant focuses on the preparation of the project documentation – even if the consultant's core expertise and experience relate more to the subsequent renovation than to the demolition, something that is often the case. It is particularly important that the consultant focuses on making clear descriptions and plans for the demolition work – including measures to address special risks, e.g. the presence of environmentally hazardous substances.



# Clarification of roles and responsibilities

Demolition companies have for many years been slightly separated from the rest of the construction industry where demolition has been regarded as something that just has to get out of the way so that the 'real' construction can begin. This trend is reversing – both because demolition companies now undergo specialist training that focuses on the working environment and especially because demolition plays a key role in circular construction.

Nevertheless, the demolition industry has so far minded its own business where organisation and roles in some areas have differed markedly from 'ordinary' construction. Where no agreement on the different roles and responsibilities on a project exists, this may give rise to major misunderstandings and disputes.

## Particular roles on demolition projects

To maintain a productive partnership, it is important that all parties involved are aware that the following terms are used for key roles on demolition projects:

- **Project manager/contract manager**  
At the start of a demolition, the demolition contractor usually appoints a project manager or contract manager (the two terms are used interchangeably in different companies). The job of the project manager/contract manager is to negotiate the contract with the main contractor and to plan and coordinate the demolition. During the demolition itself, it is the project manager/contract manager who makes the decisions that have a significant impact on the project schedule and budget.
- **Foreman**  
The demolition contractor usually has one (sometimes two) foreman on site to commence and coordinate the day-to-day work and the specific jobs that need to be done on site. The foreman makes continuous decisions on the performance of the works, but involves the project manager/contract manager on particular issues – e.g. if major amounts of PCB are suddenly discovered – that require decisions with serious (financial) consequences for the project.

## Always employ a permanent site manager

The main contractor's site manager also plays a key role in the demolition project when it comes to coordinating and managing the demolition process itself. The site manager has to ensure that all subcontractors – including the demolition contractor – know what they are meant to be doing and that work is coordinated and performed as described. When problems arise, the site manager is usually the person who is required to present a solution.

The site manager therefore has an important task to continuously ensure a solid framework for cooperation on site. The site manager must be able to communicate clearly and precisely and with many different people – both to avoid problems and disputes and to ensure that any conflicts that do arise are quickly resolved within the framework provided. We recommend employing a permanent site manager on the demolition. The developer may, in his tender documentation, make it a requirement that the main contractor employs a permanent site manager. Often, the additional cost of the site manager's salary is modest compared to the derived costs that may result from a lack of timely planning and management.

## LET THE DEMOLITION BE VISIBLE

Demolition work may have major working environment consequences for other contractors on site. It is important that the main contractor and the demolition contractor agree on whether environmentally hazardous substances will be involved in the demolition so that work processes in other areas can be coordinated with the demolition and the necessary precautions taken. A good piece of advice is to use clear visual features on site, e.g. that waste bags with asbestos are yellow, and yellow ribbons are used to mark and cordon off areas with asbestos contamination – and not using yellow markings in any other context.

### **All contractors must be informed and instructed**

Demolition contractors often find that there is a great deal of competition for unskilled workers – sometimes employees only work one week on site before moving on to the next project. Many different languages may be represented in a demolition team, and some employees may not speak Danish at all. It is important that the demolition contractor focuses on his internal organisation, communication and knowledge sharing to ensure systematic coordination of employees throughout the demolition project as staff turnover may be high.

Cf. Regulation on the Performance of Work<sup>4</sup> a contractor must ensure that other contractors have been informed of the particular risks involved in the performance of specific work. The persons performing the work must also be appropriately trained and instructed in the work they are undertaking. This applies demolition contractors who should be particularly aware of ensuring that all employees are adequately informed and instructed irrespective of how long they have been working on the project and irrespective of the language they speak. This provides the best possible framework for discussion and collaboration with other technical staff working on the project, e.g. on a demolition.

**It is important to maintain effective communication between the demolition contractor and other subcontractors about the scope of the demolition. The demolition contractor may have important knowledge to impart to those who need to renovate the building afterwards.**

## When demolition is not undertaken by a demolition contractor

On many projects (especially renovations), demolition is performed not by a demolition specialist, but by the subcontractors who have been hired to undertake the renovation. This means that the demolition work is included as a point under the various subject descriptions in the project documentation so that the mason has the task of removing masonry and concrete, the plumber has to remove pipes and shafts etc.

If possible, we recommend that the developer and his consultants separate the demolition work as an independent subcontract in the project documentation. This gives the demolition contractor the opportunity to apply his skills and expertise so that the demolition is performed as required and with due consideration for the working environment, management of environmentally hazardous substances etc. This also makes it easier for the main contractor's site manager to coordinate the work of the various subcontractors, and the risk of misunderstandings and disputes is minimised.

In some cases, especially on smaller renovations, the demolition will in practice often be tendered as part of other subcontracts. It is important that cooperation on and discussion about the demolition is given additional attention in a number of areas to ensure that the demolition goes smoothly – to the satisfaction of all parties.

## Produce clear descriptions

Firstly, the developer and his consultants must describe the demolition project very precisely and in detail as part of the contracts in the tender documentation so that there can be no doubt who is to work on which tasks.

Secondly, these descriptions must be very clear on applicable guidelines<sup>5</sup> on the working environment and the handling of environmentally hazardous substances. These are areas that are particularly important on a demolition and that experienced demolition contractors are fully aware of. An ordinary bricklayer

may not be altogether familiar with all the rules and procedures involved in the handling of e.g. masonry with PCB-infected paint etc. For the sake of everyone's health and safety, this point needs special attention from the developer, consultants and contractors, and it may be a good topic to review at project review meetings, where the working environment coordinator can also become involved. It may be that the role of inspection staff is to be consolidated to allow time and focus on discussion between inspection staff and contractors on site to ensure that the demolition is performed correctly and safely.

The developer, consultants and the main contractor must also be aware that working with asbestos requires statutory training<sup>6</sup>. If preliminary studies show that asbestos is found in the building components that are to be demolished, the developer and his consultant must consider requiring that the demolition work be performed by a demolition contractor. If the demolition project is nonetheless tendered as part of other subcontracts, the main contractor must ensure that the contractors are able to document that their employees have completed the required training.

## Circular demolition requires particularly close dialogue

In the case of circular demolition, where materials are removed for reuse and recycling, and there is no professional demolition contractor on site, particularly close dialogue and coordination between consultant and contractor may be necessary. Both in terms of how materials have to be demolished or removed if they are to be recyclable and how they are subsequently handled. We again recommend that such complex demolition be performed by an experienced demolition contractor and that the demolition be offered as an independent specialist contract.

<sup>5</sup> Find the Danish Working Environment Authority's guide to safety during demolition of buildings and structures at [at.dk](http://at.dk) and the Danish Environmental Protection Agency's guide on methods for the removal of environmentally hazardous substances at [mst.dk](http://mst.dk)

# Targeted management of uncertainty

**Demolition is more unpredictable than new-builds! This is something that the parties involved have to manage in the best way possible. But this requires a very close and coordinated partnership so that uncertainty and risk can be identified and prevented (to the extent that this is possible) and new circumstances and problems can be addressed quickly and effectively.**

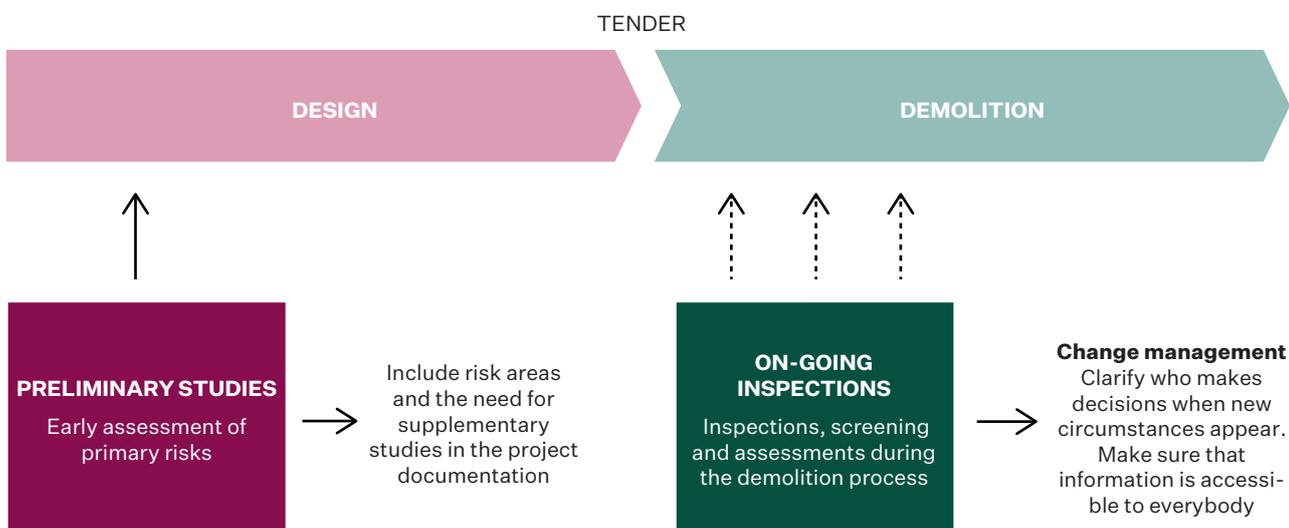
## Preliminary studies as part of start-up

Effective preliminary studies are particularly important on demolition projects. This is because often no comprehensive description of existing circumstances is available, including the substances and materials that have been used in the existing building<sup>7</sup>. A preliminary study of the building, or those parts of the building that are to be demolished, should clarify whether the demolition includes areas or components that involve particularly hazardous work<sup>8</sup>. This means that a screening must be performed of where risks lie as well as clarification of what needs to be examined more closely – both immediately and continuously throughout the demolition process.

We recommend that the developer and consultant early on based on the age and type of building assess

the greatest or most probable risks and conduct simple preliminary studies of these before the demolition contract is put out to tender. This can often be managed with a few inspections. If asbestos or other environmentally hazardous substances are found, this may not just affect one area of the tender, but may have wide-ranging consequences for other works, safety measures and the overall project schedule.

It will typically be the consultant or a specialist consultant who conducts the preliminary studies. We recommend that the consultant, on the basis of the preliminary studies, clearly sets out the risk areas and the need for supplementary studies in the project documentation. This may be information about lack of preliminary studies or descriptions of how uncertainties are to be addressed in practice and the principles according to which the price may need to be adjusted.



<sup>7</sup> See the [Environmental Mapping and Demolition Værdibyg Guide](#)  
<sup>8</sup> Cf. Regulation on the developer's obligations includes 'particularly hazardous work', including work that poses an especially severe risk of falling, and work that exposes employees to chemical or biological substances and materials. Find out more at [at.dk/regler](http://at.dk/regler)

## Certain studies can wait

Not all preliminary studies need to be performed before the demolition contract is put out to tender as long as the tender documentation clearly states how the demolition is to be handled<sup>9</sup>. A typical example may be where bathroom tiles need to be removed. It is often not possible to perform tests to clarify whether the tiles were installed using adhesive containing asbestos while the building is still in use. In this case, it is quite simple to incorporate descriptions and adjusted prices that take into account the two options for the works, i.e. tile adhesive with and without asbestos, including any requirements for additional testing.

## Continuous inspection and change management

The developer and the consultant should be aware that there will certainly be a need for on-going inspections, screening and assessments during the demolition process both in the schedule and in the budget. We also recommend that the consultant prepares a clear procedure for handling unforeseen circumstances. It must be unequivocal who has to be contacted when something new and unexpected happens on site. We recommend that this contact, irrespective of whether he or she works for the developer or the consultant, has a decision-making mandate, i.e. that the person in question is able quickly to make a decision on how the new circumstances are to be handled and can clearly communicate the decision to the applicable parties.

It is important that everyone involved has access to key documents on change management, communication information etc. When demolition forms part of a renovation project, the developer will typically provide a digital tool or project web that is well suited for gathering and structuring information. On complete demolition projects, where the demolition contractor is handling the work alone, digital systems are rarely used. The minutes of the site meetings, which are usually distributed by e-mail, are often the place in which agreements and changes are collated.

## Pilot projects

Pilot projects have proven to be a really good idea as part of major demolition projects e.g. renovation of large non-profit residential property builds. Pilot projects mean small testing projects where particular project elements are tested 1:1 before commencement of works. The consultant and contractor test solutions together and jointly find the most suitable method.

A pilot project may involve a test renovation of a single apartment in a building in which all work processes are tested in full scale. A pilot project may also involve testing particularly critical aspects, e.g. the replacement of façades. Testing how it is possible to loosen and hoist down each element may be sufficient. Finally, a pilot project may include a test PSB clean-up in one apartment to verify that the required indoor climate level can be achieved on the basis of the planned measures.

Pilot projects can be organised in different ways. One option may be to perform a pilot project already in the design phase. Another option is that the project material states that a pilot project must be performed for a given step before the project goes into full production.

On tendered public sector projects, it is important to be aware that if the contractor who has completed the pilot project wishes to bid for the subsequent full contract, all experience gained from the pilot project has to be disclosed as part of the tender documentation for the subsequent works.

# Checklists

## PRELIMINARY STUDIES AND PLANNING

Relevant to the client and consultants

- Set aside time and money to have an effective preliminary study produced as a basis for the description of the demolition work in the tender documentation. This provides both more nuanced and precise tenders that match the actual task, and expensive and cumbersome delays in the execution phase are avoided.
- Undertake an early assessment of the biggest or most likely risks in the current project, and examine these areas as part of the preliminary studies. Include the risk areas and the need for supplementary studies in the project documentation.
- Set aside time and resources for on-going inspections and screenings during the demolition process – it is virtually impossible to investigate everything in advance.
- Set aside resources for additional inspection if new circumstances arise.
- Develop a clear procedure for dealing with unforeseen circumstances, which is available to all parties involved throughout the demolition process.
- Consider whether there may be a need to undertake pilot projects or partial deliveries on the current project in order to clarify uncertainties and minimise risk.

## PROJECT DESCRIPTION AND TENDER DOCUMENTATION

Relevant to the client and consultants

- Produce clear descriptions and plans for the performance of the demolition work, including measures to address particularly hazardous work, e.g. on the discovery of environmentally hazardous substances
- If possible, offer the demolition work as an independent subcontract in the project documentation. Especially in the case of selective demolition or circular demolition for the purpose of reusing and recycling materials, it is a good idea to let a professional demolition specialist perform the demolition.
- If the demolition project is tendered as part of other subcontracts, be sure to describe the demolition as precisely and in as much detail as possible – especially in terms of working environment and handling of environmentally hazardous substances – in the tender documentation. Remember that remedial works involving asbestos require statutory training. Set aside resources for stricter inspection.
- Set aside a risk fund – especially if the demolition is only briefly described in the tender documentation.
- Make it a requirement that the main contractor employ a permanent site manager.

## TENDERING AND START-UP

Relevant to the main contractor and demolition contractor

- The main contractor should familiarise himself with environmental and working environment requirements on demolition projects so that the main contractor is able better to discuss issues with the consultant and demolition contractor as part of tendering and performance of the works.
- Make sure that all employees are adequately informed and instructed and that the applicable employees have received statutory training, e.g. to work with asbestos.
- Make sure that it is the people who actually have to perform the project who participate in the start-up meeting and not those who have prepared the tender documentation.
- Organise construction meetings approximately every other week and take minutes that summarise the agreements and decisions made.
- Organise weekly foreman meetings – as part of inspection, if applicable – between consultant and foreman where ongoing and upcoming work is discussed.
- Inspection should focus on work with substances that are harmful to the environment and human health. The consultant should involve the demolition foreman and the main contractor's site manager.

## EXECUTION

Relevant to the client, main contractor and demolition contractor

- Remember that project manager/contract manager and foreman on demolition projects denote different roles to those used on standard construction projects. Both are employed by the demolition contractor, but where the project manager/contract manager plans the demolition and makes the overall decisions, the foreman is responsible for the day-to-day coordination of the works.
- Focus on working environment and environmentally hazardous substances at the project review meetings – especially if the demolition work is performed by someone other than a specialist demolition contractor.
- Focus on good and clear communication throughout the demolition project – and remember to maintain a friendly atmosphere.
- Create and update a written agreement log so that all parties are able to access the applicable agreements and decisions at all times.
- Make sure that the foreign-language workforce is also adequately informed about and instructed in the project, e.g. by hiring an interpreter or by conducting 1:1 demonstrations of how the work should be performed.

# Coordination and meetings

**Writing an excellent project description and selecting a good contractor is not enough, something many consultants and developers have found to their cost over the years. Throughout the project, it is necessary to maintain close dialogue between all parties, and different types of meeting play an important role.**

## Start-up meeting and project review

An effective and well-planned start-up meeting gets the project off to a good start. It is important that all the key people on the project, including the developer or the developer's consultant, the main contractor's site manager and the demolition project or contract manager, attend the start-up meeting. This means that the people who actually have to perform the project must participate in the start-up meeting and not those who have prepared the tender documentation. The working environment coordinator (B) should also attend the start-up meeting.

All too often the demolition contractor on larger projects has not been chosen from the start and is therefore not represented at the start-up meeting. In cases where the demolition forms a major part of the project, this can be problematic. This is particularly critical if the work includes unconventional secondary work, e.g. removal of materials for reuse and recycling. It may be beneficial for the consultant to require that the main contractor chooses a demolition contractor before the start-up meeting. Alternatively, several start-up meetings can be organised.

On major demolition projects, it may be advantageous to organise several project review meetings<sup>10</sup>, e.g. if a foreman changes or when major project milestones are reached. The project documentation should be reviewed so that everyone – even staff who are new to the demolition project – are clear about and understand the project documentation and its buildability.

## Site meetings

Site meetings are important in the demolition process because it is typically at site meetings that on-going challenges on the project are clarified and significant

decisions about progress are made. Site meetings are usually held every two weeks, and summaries are almost always made. The minutes are a key element in ensuring that all parties are informed of agreements entered into during the project.<sup>11</sup> Usually, the main contractor's site manager, foremen from the subcontractors – including the demolition contractor – and the developer's consultant and specialist inspection staff participate. In special cases, the developer also participates.

## Foreman meetings

A meeting type that is often emphasised is 'foreman meetings' where the consultant and the foreman meet on site to discuss on-going and future works to ensure that they have a common understanding of current tasks and that any uncertainty is clarified. Foreman meetings are usually held once a week as part of site inspection visits.

## SUBSTANCES HARMFUL TO THE ENVIRONMENT AND HUMAN HEALTH

Especially when it comes to substances that are harmful to the environment and human health, lack of monitoring and checks is a very typical cause of conflict on site. If, for example, there is any doubt as to whether asbestos removal has been performed in full, and whether the site has been adequately cleaned, serious conflicts may arise as staff feel that their safety is not being taken seriously. Inspection staff must pay special attention to their checks on the work in partnership with the working environment coordinator (B). Clear monitoring of e.g. asbestos removal also sends a strong signal that mutual respect and unity exist on site.

Find out more at [renover-sikkert.dk](http://renover-sikkert.dk)

<sup>10</sup> Find out more about project reviews in the Project Review Værdibyg Guide and in Section 18 of AB18.

<sup>11</sup> Find out more about site meetings in Sections 31 and 32 of AB18 as well as minutes templates from site meetings at [bygherreforeningen.dk](http://bygherreforeningen.dk)

## Inspection and follow-up

Inspection<sup>12</sup> and continuous follow-up must be designed to ensure that demolition work is performed as prescribed and that new circumstances and potential disagreements between the parties involved are caught and resolved early on.

Although most people will quickly agree that inspection and follow-up are important, there are unfortunately many examples of this being sidelined in practice. In most cases, budgets are tight, and the items that carry no unambiguous requirements and deliveries often end up being downgraded. We recommend that inspection be prioritised – both by the developer and the consultant.

As a rule, inspection is performed by the consultant, but the consultant should not perform inspection on his own. We recommend that the demolition contractor's foreman also participates – as well as the main contractor's site manager. The consultant also often plays a role as 'mediator' between the two parties and may

contribute to clarifying misunderstandings and tension during the inspection process.

No set rules for how inspection visits should be documented exist, but it is a good idea to prepare an inspection note if the inspection gives rise to comments on the work that has been completed or if particular instructions are given during the inspection. Similarly, if tests are performed during the inspection, preparing an inspection note may be appropriate.

The important thing is to clarify and resolve challenges immediately and on the spot. A concise and precise note may be useful to document what was agreed. Problems or challenges that cannot be resolved immediately as part of the inspection must be communicated to the site management or taken up as an item at the next site meeting.

### THE TURNOVER OF PEOPLE ON A PROJECT IS A BARRIER TO EFFECTIVE INSPECTION AND CHECKS

A typical challenge when it comes to inspection and checks on demolition projects is that it is rarely the same people who have prepared the project material who are put in charge of the task of inspection and checks. Deciding on the following may be appropriate:

- Is it best to put an experienced employee in charge of inspection, or to set aside more hours so that a less experienced person can be present on site more often?
- Is it relevant to divide inspection responsibilities according to current technical areas, so that emphasis is placed on e.g. professional supervision of environmental clean-up and demolition?
- How can it best be ensured that the transfer from the project designer to the project supervisor takes place?
- Is it relevant to draw up a detailed inspection plan and, if so, which points are key?
- Should supervision be performed as billed work or as a fixed-price service?

<sup>12</sup> See the Inspection Værdibyg Guide

## Partial deliveries

One means of managing the quality, time and budget on a long-term demolition project may be to agree on partial deliveries. Delivering the project in parts provides the opportunity to identify whether full agreement exists on whether future work should be performed in the same way.

A thorough review before partial delivery of e.g. an initial stage will often identify issues on the project that can be optimised going forward. A partial delivery may also take the form of a review of whether environmental clean-up and demolition have been performed as described and whether the site has been cleaned up properly prior to subsequent works commencing.

## Going that extra mile to ensure productive collaboration

This may sound piddly, but to support a sense of community on site it may be an idea to celebrate good results – just as is usually done at traditional topping-out ceremonies. Examples of this could be:

- Celebrating x number of days on site without accidents
- Celebrating successful partial deliveries
- Rewarding especially effective solutions or proposals, e.g. for optimising safety

The important thing is not necessarily the specific occasion, but just that everyone takes a break and celebrates a job well done.

## A FRIENDLY ATMOSPHERE IS IMPORTANT

It may be the little things, such as serving coffee and pastry at construction meetings, that are crucial to a productive partnership. It is not about the pastry, but about signalling from the very beginning that creating a good atmosphere and a pleasant partnership is a priority. With that in mind, it is often much easier to maintain and expand any kind of collaboration.



# Effective and clear communication

Daily communication and discussion – both at the developer's and consultant's offices and on site – is vital to productive partnerships and a successful demolition project.

## A friendly atmosphere

A friendly and appreciative atmosphere can do wonders for collaboration and the working environment in general at the demolition site. A simple 'hi' can be enough to make everyone – even those who do not speak Danish, for example – feel seen and appreciated. All parties are responsible for reminding themselves that many things start by leading by example and thinking about how you yourself want to be spoken to.

## Agreement log

The written word can be a good way to ensure broad and clear communication. Often, many people are involved in a demolition, and it may be a good idea to have a written agreement log which all applicable parties have access to, e.g. on a common digital platform or project web. Usually, it will be the inspecting consultant who updates the agreement log.

Focusing on the decisions and agreements that lead to changes or are otherwise important to several parties on the project is crucial. Documenting informal chat and coordination between different parties in a log is not necessary.

Note also that the developer must continuously record changes in a change log<sup>13</sup>, which must be updated regularly and form a regular part of site meetings.

## Also remember the site surroundings

Many demolition projects take place in built-up and inhabited areas. This means that residents and the site surroundings are important to include in the planning of the demolition. We recommend producing a stakeholder analysis and on the basis of this assessing and clearly describing how the demolition work is to be performed taking into account residents and surroundings in terms of dust, noise, odour, traffic etc. The way that enquiries – positive as well as negative – are to be managed and by whom must also be clearly detailed.

## Take foreign language-speaking labour into consideration

It is currently a reality that the native language of the majority of employees on demolition works is not Danish – and many do not speak Danish at all. This means that conventional Danish language work descriptions cannot be used and alternatives have to be found:

- Many companies currently choose to hire an interpreter who continuously works on interpreting for and instructing foreign language employees on major projects. This works well, as long as relatively few different nationalities are involved.
- Team leaders who speak the language that is prevalent on site and who also understand Danish or English are a popular solution.
- Another option is 1:1 instruction based on the performance of the work being shown in practice as a demonstration. This can be combined with working in mixed teams where some of the employees are Danish speakers.
- Film and video instruction is also a tool that is increasingly used on larger projects.
- Several of the initiatives set out above, e.g. pilot projects, foreman meetings etc. can also be initiatives that strengthen cooperation across languages.

The crucial thing here is not which communication option is chosen – but that the fact that a variety of languages are spoken on site is taken into account. Both to ensure that work is performed correctly and safely and to signal that everyone's presence on site is justified and everyone performs important tasks on the project.

### WRITTEN INSTRUCTIONS MUST BE COMPREHENSIBLE TO ALL

When writing instructions, the employer must, according to the Danish Working Environment Authority, ensure that instruction is comprehensible to the employees, even if they speak a foreign language.

# Cooperation on circular demolition

The more complicated the demolition project is, the more important effective cooperation is. Effective cooperation usually achieves the best solutions and addresses challenges that were not known in advance. When the demolition is circular demolition with a view to reusing and recycling materials, which is not a common demolition practice, all the limitations that are found in the collaborative process will soon be on display. Materials and building components typically disappear or are destroyed during work if the demolition contractor's staff who are managing the work have not been given clear and precise instructions.

Conversely, there is much to win in a circular demolition process by involving the demolition contractor's knowledge and experience. This may be applicable in the following areas:

- **Resource mapping**

What materials and components can be separated and reused? How are materials usually attached or installed? And is it possible to remove them?

- **The demolition process**

How should the process be organised – where to start? Which machine can best be used for gentle demolition and is there room in the building for that? Is it necessary to provide supports during the demolition, and how can supports be set up?

- **Sales options**

What does the market for second-hand materials currently look like? What materials sell well? Are materials 'in storage' somewhere which can be used on a current project?

- **Storage options**

What is important to know in terms of cover, heating etc. when storing second-hand materials? What storage options is the demolition contractor able to offer?

- **Environmental clean-up**

What is the best order in which to perform environmental clean-up of the building? During what periods is it necessary for the demolition contractor to work alone in enclosed spaces?

- **Waste management**

What fractions should waste be sorted into?

Read more about cooperation and knowledge sharing on circular demolition projects in the [Circular Demolition and Dilemmas and Decisions in the Circular Demolition Process Værdibyg Guides](#).



Værdibyg is a partnership between the construction industry's leading organisations. Værdibyg is developing a new common practice for the construction process across stakeholders in the construction industry.

This guide provides useful advice and recommendations for how to consolidate cooperation between the stakeholders involved in a demolition project.