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Introduction



This stage is where all the time invested in planning will become reality as drawings of your house are translated into a building. The aim is to carry out an agreed, high quality construction process that is timely, healthy, safe, and delivers on the design and wider project objectives.

Design Toolkit

Key checks for before, during and after the build process

Build_Process_Checklist.pdf

How building to the Design Brief contributes to project objectives

The Design Brief embodies what you set out to achieve, so ensuring the construction process is consistent with what is drawn is essential for the project to be completed successfully. When it comes to actually building your house, some of the solutions you have chosen may seem more complex than other options; however maintaining consistency between what is drawn and what is built is the only way to ensure your overall vision is achieved. The quality of construction can impact your sustainability outcomes, especially those around **comfort and health**. A house that is well built is likely to be weathertight, warmer and more comfortable.

The construction process and building practices should also reflect your project's overarching aims, and this should be included in the Design Brief and in your building contract. If, for example, reducing negative impacts on the environment was set as a goal, then waste management during construction should be considered essential and would have been included in the tender documentation.

Key Activities



A site ready to be handed over to the builder and for construction work to begin

With the project now moving into construction, activities are split between you, the design team, the build team, and contract administrator.

Clients

Clear the site and hand it over to the builder

Before construction can begin, the **site** should be cleared and any objects obstructing access or work should be removed. Once this is done the **site** will be handed over to the builder and they will be responsible for it until the project is completed. It is important to note that while the **site** is under the builder's responsibility you will need their permission to enter.

Keep track of progress

Define a level of interaction between you and the builders that you are both comfortable with. Regular **site** visits are important but you should also allow builders to have autonomy and space during the process. You should also request a list of key items that will be checked and signed off as they are built.

The key steps of a construction process are broadly outlined below. Depending on what is agreed with the builder, they may relate to sign-off milestones:

- **Foundations:** These are typically below ground level, e.g. the footings and structural walls that will support the loads of the house. They can be deep or shallow depending on the quality of the soil.
- **Framing:** The assembly of structural pieces (usually timber elements) that will support and shape the house.
- **Roof, windows and doors:** Setting out the roof cladding which will provide shelter for the elements underneath. Doors and windows will also be installed before wall linings go up.
- **Cladding:** This includes exterior cladding and insulation. The first is the outer skin of the building, which will prevent the infiltration of weather elements. Insulation will provide warmth and internal comfort.
- **Electrical and plumbing:** Before interior lining is installed, pipes and wiring for water and energy systems have to be embedded into the walls.
- **Paintings, lining and flooring:** These are all the elements that will define the way the house looks on the inside. All the details and internal finishes will be installed and completed.
- **Landscaping:** These are exterior features that will enhance the project. Paving and decks are laid out, and live elements are planted.

While you are not expected to be present for the council inspections, builders should make you aware of any issues that arise and involve you in the solution-finding process.

Checking and signing off items as the build progresses requires an agreed understanding of the acceptable level of quality. Council inspections are not necessarily an indication of this, as they only check for basic durability, weathertightness, and health and safety. If you are not knowledgeable or confident enough to inspect and sign off build quality as the project progresses then it is advisable to have a contract administrator undertake or assist with this role.

Additional tests can be implemented to ensure the quality of construction. The blower door test, for example, determines how airtight your house is by simulating the effect of wind using a fan fitted on a door. See 'Comfort and Health' section in the 'sustainability' hub for more information.

If your architect has been engaged as your contract administrator they will be particularly suited to this role as they will have the clearest interpretation of the design and have experience in assessing build quality and consistency throughout the construction process.

As part of this activity it is recommended a clear filing system for information about the project is established and that a photo or video diary is kept for future reference. If you are pursuing a certification such as Homestar, these images will demonstrate compliance with the tool's requirements and will therefore be essential for the process. It is important for you to feel you are well informed and have an understanding of what is happening at each stage of the process. It is a good idea to use an online resource such as a blog or facebook. Being able to verify the date you took the photo is very important if there is a dispute. You should visit the **site** at least once a week and at any key sign off points.

Communicate with neighbours

The people who will live in the house are likely to do so for a long time so establishing a good relationship with neighbours and keeping them informed of progress is important. A building site can be upsetting for many reasons, including increased noise and obstruction. Keeping neighbours informed about the progress and expected completion times can put them at ease.

Avoid changes

From the developed and detailed design stage onwards, making changes to the design becomes increasingly complicated. At this stage any modifications are likely to affect the building consent and have great effects on the construction schedule and budget. If any become necessary, they must be priced by the builder and approved in writing by both parties before being carried out.

Plan in advance

If you are providing any materials or doing work on site, planning ahead is essential to avoid holding up the builder's work. You should consider your level of skill and make an honest estimate of the time it will take. Failing to deliver on time could have cost and schedule implications.

Additionally, you should set dates within the schedule for the completion of key construction stages that need to be signed off and paid for. Because sums to be paid are usually large, it is essential to be aware of these obligations and talk to the bank so money is ready at the right time. Late payments can delay construction work and discourage the building team. Remember also that valuations may be needed for the bank to release funds.

Finally, plan for the future by purchasing spare fixings and extra finishes for when damage occurs. Trends in fixings and finishes change rapidly; while it is easy to shop for them during construction, finding a perfect match in the future may not be as simple.

Builder

Assume responsibility for quality

Even though it is likely a contract administrator will be hired to manage construction, it is the builder's responsibility to ensure a good quality product. For this to happen it is important to establish an organised and thorough process that follows the designer's drawings, the health and safety plan, the resource consent decision (if any), the building consent decision, and other legal requirements.

If you have conducted a thorough process during the Engage Build Team stage, this should result in the selection of a team that has the knowledge, experience and support to deliver a satisfactory and high quality end result.

Inform you about delays

It is normal to expect a few delays in the course of the construction process, especially due to external factors such as the weather. While some of them will not affect the overall schedule and completion date, there are others that will. Builders need to be up front and honest about these changes and discuss with you how estimated timings will be affected.

Arrange consent inspections

When building consent is granted, the council will determine the work that needs inspection and approval. Although it varies from project to project, it usually includes foundations, framing and insulation, plumbing, drainage, cladding and flashings. It is the builder's responsibility to request inspections (<http://www.aucklandcouncil.govt.nz/EN/RATESBUILDINGPROPERTY/CONSENTS/BUILDINGCONSENTS/Pages/processingandinspections.aspx#inspections>) once the listed work is ready. They should also be present during the visit to answer any questions and provide officials with copies of the approved consent documentation.

Contract administrator

The scope of work for the contract administrator, regardless of who is undertaking the role (e.g. designer, builder, project manager) needs to be clearly written down in the contract to avoid misunderstandings and gaps in the process. Key activities are as follows:

Review existing information

Before construction starts the contract administrator should review the construction drawings and ensure the information is complete and accessible to builders. Drawings should be easy to handle, readable and have sufficient measurements and specifications.

Check that construction follows drawings

Once the contract administrator reviews the existing information it is important to check that builders are following the design and that everything is being built according to the drawings. This will ensure the designer's vision is properly translated and that the building corresponds to the one approved by the council. It will also increase the chance of achieving a better end result.

This is also applicable to drawings and information submitted by sub-consultants. Building in accordance with their plans will ensure that building systems perform better.

Approve sign-offs

The contract administrator will have a key role in deciding when payments are made to builders. It is their job to check that work has been completed to an acceptable standard and to provide you with advice when sign-offs need to be made. They should carry out **site** visits with you and document such visits accordingly. They should review any documentation submitted by the builder and authorise payments.

Keep communication channels open

Good communication channels between the contract administrator, you and the builder are key to reducing the chance of disputes and misunderstandings. Building trust and discussing issues openly are therefore key to a successful project.

Properly outlined contracts from previous stages will be helpful in establishing everybody's roles and responsibilities. This will help to avoid conflicts and be helpful when notifying and addressing defects. Uncertainty in these situations will break communication channels and become a major obstacle for the project. If disputes do arise, the contract administrator should act as a mediator and help both parties reach a solution.

Set up risk assessment methods

Identifying risks and working out how they can be reduced or avoided will enable a quick and effective response if issues arise. Contract administrators should lead a process that uses common sense and creative thinking to visualise potential problems and work out ways to reduce the chance of them happening.

Deliverables

Health and Safety Plan

Implementing a Health and Safety Plan during construction is essential to ensure a safe work environment. Unless you have chosen a labour-only procurement route, it is usually the builder's responsibility to complete the plan, update it during the process and maintain a safe **site**. However, all parties are obligated under New Zealand health and safety law to be familiar with the contents of the Health and Safety Plan, and know how to act in the case of an emergency. The Health and Safety Plan should address:

- ◆ the person responsible for health and safety on site
- ◆ identification and control of potential hazards
- ◆ posting of notices and warnings of potential hazards
- ◆ guidance on ensuring a safe working environment at all times
- ◆ instructions on safe methods and practices
- ◆ provision for safety meetings
- ◆ recording and investigation of accidents.

Who should you be talking to?

Council

After the building consent has been issued, the council will determine key moments in the construction process when approval is required before works can continue. These building inspections do not check the quality of the work beyond compliance with the Building Code, but are a check for basic durability, weathertightness, and health and safety. They do not ensure a level of quality or finish that you may expect for your home, and should not be a replacement for other quality checks and standards in the contract. It is important to include the council inspections in the programme of works, and ensure they are successfully completed before moving on.

If resource consents have been submitted, check for additional inspections that may be required and plan for them in the project schedule.

Insurance

Prior to the start of construction, the main contractor should obtain a Contract Works Policy to cover the full replacement value of the project. This will protect the project from hazards like fire and malicious damage. The insurance will also be needed for the bank to release any funds.

What to look out for?



A client and builder examine the designs on site

Not being involved enough

During this stage, your risks directly related to your level of involvement as required by your contract and procurement method. Not devoting enough time may lead to results that are either unsatisfactory or unexpected. Commitment is especially important for people choosing a labour-only procurement route since they are responsible for supplying materials and managing the entire process. However, even if the contract and procurement method mean that all the decisions around the building process are being made by someone else (such as a Group Build contract) you are still a key decision maker. An involved client will encourage builders to perform better and is likely to reduce failures in communication channels. Building processes can move quickly, and if you are not available to answer questions, decisions may be made for you.

Making changes

Changes at this stage constitute another risk for the project as they will cause delays and increase cost. Not only are they likely to fall out of the builder's scope of work, but they may require the Building Consent to be updated. Early design stages are the most appropriate for making modifications and only those that are unavoidable should take place during this construction stage.

Forgetting council inspections

Another risk during the building stage is failing to incorporate council inspections into the construction programme. Missed council sign-offs may require work to be demolished or modified.

Not requiring builders on site until completion

Finally, failing to include clauses in the builder's contract that require their presence on **site** until completion of the project may result in them leaving subcontractors to finish off the job while they plan for their next one. This could lead to inconsistencies in build quality. Therefore, it is important to ensure builders remain on **site** until the house is handed over to you. This can be achieved by keeping part of the payment back until the building is completed to your satisfaction, or requiring penalty payments if the building goes on past the agreed date.

It is very important to stipulate exactly what you expect by final completion. A common mistake is to rely on 'practical completion' as signed off by Council. Council will say a building is 'practically complete' when it is able to be lived in, but there may still be a lot of work left to do on the building.