Self-Build Secrets

How to Make Money by Building Property Yourself

By Sean Bates

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Foreword

If you're like me, then you have probably always considered those who build their own homes to be a curious breed of people – either madcap DIY enthusiasts, or people with insider knowledge of the building trade.

Whatever else they were, they certainly weren't like me!

The idea of building my own house was about as realistic as waking up one morning and discovering I could speak Chinese!

This is why it gives me such great pleasure to introduce this wonderful book by Sean Bates.

For the first time, the lid is truly lifted on the whole process of self-building. In simple, easy to follow steps, Sean's expert advice adds up to two exciting truths about building your own home.

One, anyone can do it, provided they are properly focused and correctly motivated - even me! And, two, it could be one of the best investments you ever make. Not to mention, a whole lot of fun!

Using insider secrets, Sean reveals how you can turn a profit even before you've laid that first brick – by choosing the right site, the right design and getting them for a bargain price.

For anyone who is tempted to try self-building, this book has it all – read it and you'll not only be able to talk the talk, but also really know what you're talking about – whether it's soil pipes and damp-proof roof lining or dealing with your local planning department.

What's more, the e-book format is ideally suited to the subject matter.

As a vital part of your toolbox, this guide, with its hyperlinks and Internet–friendly design, can be easily navigated whenever you need it. If you think your truck has turned up with the wrong grade of concrete, a quick jump into your e-book will tell you all you need to know.

Of course, there's no doubt that building your home is a major undertaking and certainly not for the faint-hearted. But, as Sean says, if you do it right, it could well be the best thing you ever do.

The other way that we can help you is with our Property Secrets UK newsletters and private website and expert forums at www.PropertySecrets.net.

We've created these to give you the latest and most up to date information on the UK property market and other important issues. You receive 3 months' complimentary access to the PRO newsletter and private website with your purchase of this e-book.

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Or, if you need help finding your passwords please visit www.propertysecrets.net/myaccount.htm.

When you log on, you'll be able to find the past newsletter issues and an expert forum dedicated to Property Renovations. Please feel free to drop by and ask our experts a question about your e-book or anything else to do with Self-build.

Building property yourself offers huge opportunities, but knowing how to build for profit (and within a budget) is becoming more and more important if you truly want to make it a success.

Go for it! And, of course, the very best of luck!

Neil

P.S. If you enjoyed this e-book, you might also enjoy;

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1. INTRODUCTION

In this chapter you will learn:

- What is self-building? (See section **1.1**)
- Motivations other than profit (see section **1.2**)
- Being mentally prepared (see section **1.4**)
- The road ahead – a schematic view of this book (see section **1.5**)
- The 15 most common self-build questions (see section **1.6**)

Hello and welcome to Self-Build Secrets! People have been building their own homes for years – either because they thrive on the challenge of it, or they want to make sure that the house they get is the house of their dreams.

Now, investors are recognising the huge potential of self-building for profit, and here's why …

- Property is still the most reliable kind of investment you can make
- You can potentially make a 25% profit on the total cost of your self-build project as soon as your house is finished.
- Self-building is remarkably tax-efficient
- Finance is readily available
- Help is just around the corner!

The aims of this book are simple:

1. To teach you how to design and build a profitable dream home in the location of your choice, on a tight budget and in record time!

2. To do this in a clear, concise and easy-to-follow way.

In short, we will explain exactly how to manage your self-build project, from start to finish. We will take you through each step – from finding land and finance, to drawing plans, getting planning permission, then building - and of course selling - your dream home.

We also provide several bonus software items. The project planning and cash flow model, for example, will give you one of the most powerful planning tools available, and we give it to you free with this book!

There are countless books available on the subject of self-building, and many more that go into great detail on just one of the elements involved in self-building – planning strategy and plumbing, to name just a couple.

This, however, is not another one of those books.

We know that if you were to wait until you understood the intricacies of every single element of self-building before you started planning your project, opportunity would have long since knocked and gone away.

What this book aims to do, then, is give you all the tools you need before you begin your project – without any irrelevant detail.

It allows you to make informed decisions about what you're planning, before you start – at the time when you're in the best possible position to determine the ultimate success of your project.

Think of this book like the trusted road map you keep in your glovebox. It doesn't tell you where to get the best pizzas, but you can count on it to get you where you want to go in the fastest possible time – without making any wrong turns.

This book aims to satisfy the goals of every self-builder - to deliver a house that is everything you wanted in a home, within budget, on time and without stress – and, of course, turn a hefty profit at the same time.

Here are a few glimpses of what's ahead:

- The complete guide to finding a building plot. This section provides previously unpublished and little-known methods of finding building land
- Design made simple – a toolkit that will allow you to design a home as well as any expert
- A planning guide that takes the lid off the entire planning process
- Forget "ask for three references". Our People-Finding Guide will show you unbeatable ways of finding the best tradespeople
- A guide to managing people that is so simple and yet so powerful you will be amazed at the impact it has
- An introduction to construction that will instantly have you sounding like an expert
- A guide to building the house you want – quickly, economically, and well enough to last for centuries
- A wealth of advice on how to maximise your profit from a self-build scheme.

Our books – those published by Visium Group Ltd – are available in paperback or e-book versions as well.

If this is your first e-book, you will come to see, however, that they have a huge advantage over normal printed media. For one thing, they are completely

interactive. You can jump from page to page and chapter to chapter by following hotlinks.

You can also jump into links on the Internet while you are reading, and we will take you to invaluable sources of information that have in many cases taken us months to find.

Your package is also packed with bonus material. The spreadsheets, for example, are full of planning tools that are worth the cost of the book in themselves!

So, read on and enjoy!

1.1 What is self-building?

Self-building is you, an individual, using personal finance to buy land and build a home which you then live in. Until recently, that has always been the case, at any rate.

But now, there is substantial growth in pseudo-commercial self-build schemes, which allow you to generate funding by acting as a householder, but use your business skills – and of course this book – to generate the biggest possible profits.

Self-build usually involves the following steps:

- Finding good-value land. This is one of your first – and one of your biggest – challenges. Finding available land within defined residential areas is difficult, but finding suitable land outside them is equally tough, as building is often heavily restricted
- Getting permission from local authorities to go ahead with the building project you have planned
- Obtaining competitively priced and affordable finance
- Sourcing good builders – a potential minefield for the uninitiated
- Building!

Since you are primarily an investor, rather than a true self-builder, there are two other critical steps in the process:

- Maximising value from your house design
- Developing and managing your project accounts

Throughout the self-build process you will be constantly seeking answers to questions – everything from 'What planning permission do I need", to "What's a raft foundation?"

But before we answer those questions – and all the others – a question for you: Why do you want to self-build?

1.2 Motivations other than profit

Why do you want to take on a project like this, and what do you want to get out of it?

For some, it's the chance to build their dream home, or a home that's built in record time. For others, there's the appeal of building a house that's environmentally sound, or gives them the satisfaction of having managed a huge DIY project from go to whoa.

Whatever motivates you – apart from the prospect of making a profit on your investment – it is vital that you are clear about what you want out of the project before you start, as it will help you focus on what's important as you go along.

It may be, for instance, that building a home faster than anyone you know gives you great satisfaction. But it may be that rushing the job means making compromises that end up sacrificing some of your profits.

Build a dream home

Imagine building a home that you can look at every day as a testament to your creativity and dedication. Our design tools (section **3**) will help you challenge your thinking in this area. You may not do all the design work, but if you are equipped to challenge convention, you will certainly get a lot more out of your designer.

Build a home in record time

It's possible to build a four-bedroom house in six weeks. You can be living in this home (and building as you go) within four. We'll tackle this subject in the project management section (section **4**)

Build the least costly home ever

Half the cost of your self-build project is in materials. Half of this is in your choice of materials, and half is in your sourcing and negotiating skills (section **5.3**)

The other half of your cost is in labour, and half of the labour depends on your design.

So, pick the right materials, get them from the right supplier, negotiate like mad, design a buildable house, manage your own trades and save a fortune.

Build a home that will last a thousand years

It's quite possible, in theory at the very least. We can't guarantee one thousand years but we can point you in the right direction (section **9.3**).

Build a home that is environmentally sound

If you've ever done any building, you will recognise the toxicity of the products we use in construction. This book is not about building eco–homes, but it will give you something to think about in this regard (section **2.3.1**)

Build a home and make a huge profit

If nothing else, it will allow you to fund another self-build project. We will consider what the mega-house builders do to maximise profit (section **5.5.8).** The key, of course, is to be clear about the difference between cost and value (section **5.5**)

Key Tip

Understand the tax advantages of self-build. Building a home as your primary residence provides exemption from capital gains and other forms of taxation

Build a home - DIY the whole project

There can be no greater pleasure, if you happen to have a few years on your hands, to DIY the whole thing (section **4.2**). Some say life is too short. Well, sorry folks, no pain no gain. The harder it is, the bigger it will make the experience and the bigger it will make you!

Remember, if you are doing a lot of DIY, you also have to organise delivery of materials, finance, and any tradespeople you employ. It is easy to lose sight of these things while you are busy with bricks and mortar.

Key Tip

Manage your project first, tinker second.

Build a home – the hands-off approach

That's fine too! In fact, there is a far worse approach - getting so involved in the project that you fail to manage your paid help.

1.3 The importance of focus

It's OK in life - once in a while at least – to get into the car and just drive. This is not one of those occasions, however. This is the time that your behaviour must be dictated by your goals. The stakes are high, and if you take a wrong turn, you can lose, big time, so stay focused.

So, please, go sit under a tree and work it all out. Then use this book to help you find the place you most want to be.

Ask yourself this: "What will be my measure of success?" Or, put another way, "What will ultimately show me I have done a good job?" Write it all down, and review it as you go along. You may be surprised to find that your motives change

as you proceed.

If your primary goal is to make money, you keep this clearly in mind all the way along. Building your dream, or making a super-eco-friendly home will end up costing you money.

Building a house is hard work, and at times, everything seems to stack up against you. Materials are late. Tradespeople don't show up, but rain and snow do show up, at the worst possible times.

1.4 Dealing with the ups and downs – being mentally prepared

There is one thing that you must understand about self-build from the beginning. You are entering into a very challenging adventure.

There will be many ups and downs. We will take away the most serious of the downs for you if you follow this book, but the road ahead will still be tough.

Most successful self-builders have one feature that stands out above all else: they are extremely tenacious.

Tenacious people succeed because they are driven by their goals and stay focused on those goals. Success doesn't come instantly it requires focus and determination…even when you're digging trenches in the driving rain!

Take pride in your ability to get back on your feet after a knock. Imagine yourself going through some of the following challenges and finding a solution against all the odds. Visualise the pride you would feel having found a way past the obstacle:

- You look at 50 different sites, they are all too expensive, unsuitable, or snapped up before you get a look in
- You employ an architect who constantly wants to do his own thing. You have to take control of the situation
- You run out of money and you still haven't got a roof on. You have to find more cash and nobody wants to provide it
- It rains constantly, you cannot get your foundations in as the trenches keep collapsing

This technique of visualising outcomes is called NLP or Neuro-Linguistic Programming – it's the kind of thing that many very successful people do all the time, without even realising they're doing it.

Key Tip

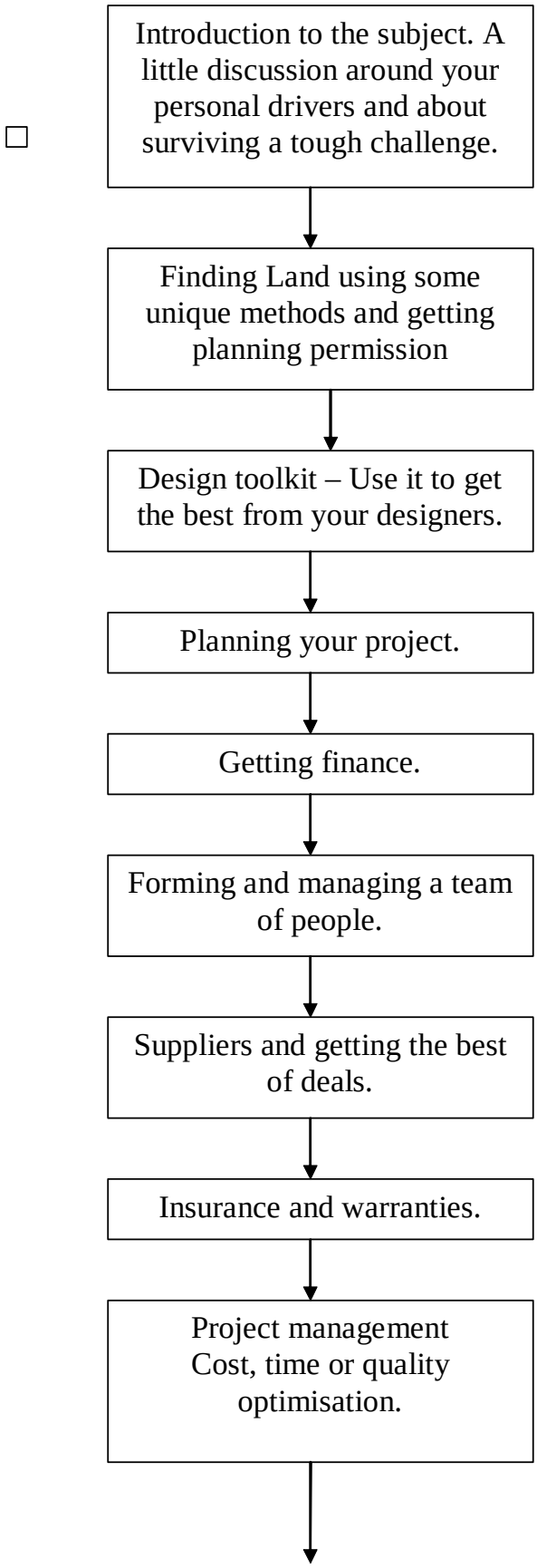
Stay positive and remain focused on your goals, even when everything seems to be going wrong. Your hard work and tenacity will have paid off when you finish, and make a big profit

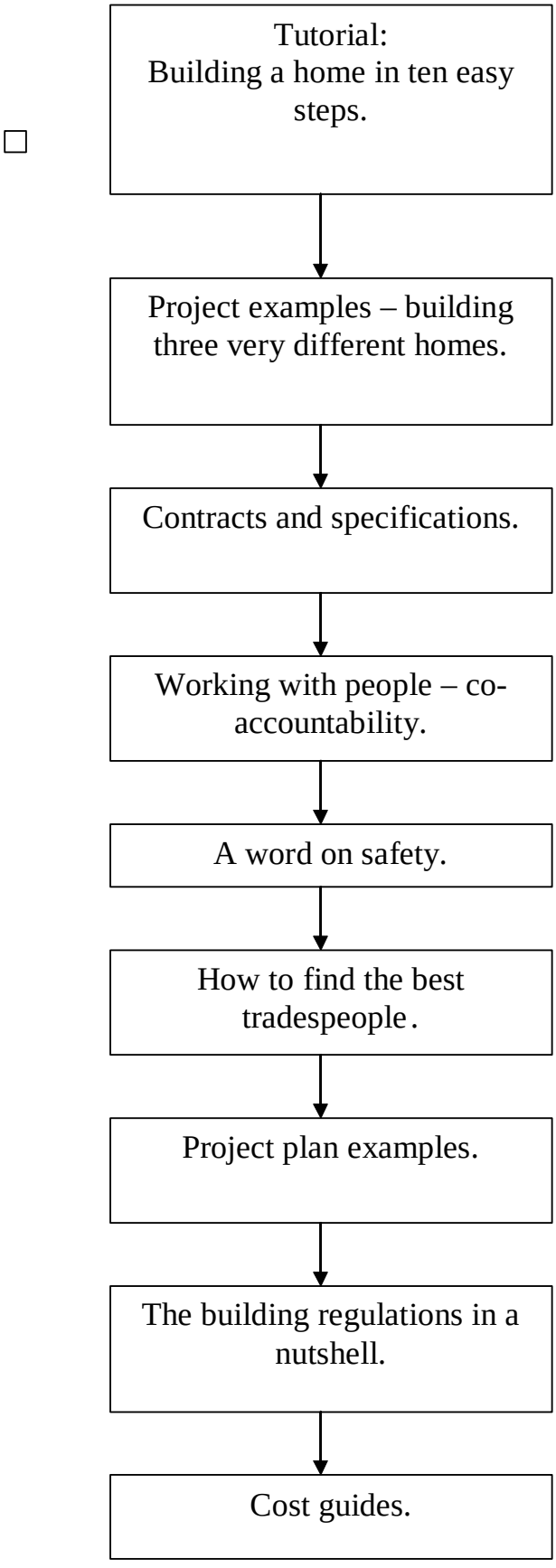
1.5 The road ahead – A schematic view of this book

There are three simple steps to a successful self-build. The pages ahead will provide all the detail you need to be successful in taking each of these three steps, which are:

- Clarifying your financial goals
- Setting up a project
- Making sure the project delivers

Here's the book, in a nutshell….


Introduction to the subject. A little discussion around your personal drivers and about surviving a tough challenge.
Finding Land using some unique methods and getting planning permission
Design toolkit – Use it to get the best from your designers.
Planning your project.
Getting finance.
Forming and managing a team of people.
Suppliers and getting the best of deals.
Insurance and warranties.
Project management
Cost, time or quality optimisation.


Tutorial:
Building a home in ten easy steps.
Project examples – building three very different homes.
Contracts and specifications.
Working with people – co-accountability.
A word on safety.
How to find the best tradespeople.
Project plan examples.
The building regulations in a nutshell.
Cost guides.

1.6 The 15 most common self-build questions - a quick answer

So, before we get into too much detail, here are quick answers to the 15 most common questions self-builders ask.

The full answers, of course, lie in the detail of the remainder of the book.

1.6.1 How much can I make?

It depends on how on-the-ball you are. Let's consider normal case and best case for a four-bedroom house in a Home Counties area.

Opportunity area	Normal Case	Best Case
Cost of land	220,000	30,000
Cost of building	160,000	140,000
Professional fees, sales	25,000	5,000
Cost of loan	20,000	10,000
Sales value	480,000	520,000
Profit	55,000	335,000
Profit % of investment	**13%**	**180%**

Clearly you can make a ton of money, if you get everything right along the way.

Your priorities need to be in the following order:

- Get cheap (but good) land. Aim to pay less than 25% of the sale value you estimate the finished project will have
- Push up sales value by employing good design methods
- Minimise professional fees by doing your own project management
- Minimise your building costs by managing labour and material well
- Turn the project around quickly on the back of good, cheap finance

You can also push up the sales value, of course, by putting a higher-value property onto your plot of land. In order to do this you need to have a plot of land that will sustain a higher value or higher density of construction.

Key Tip

Concentrate hard on finding land that costs less than 25% of the final scheme value. Do this and you will be sure to make great profits

1.6.2 How do I find land?

It depends on the demand and the supply of land in your chosen area. In the most difficult areas, it will be your biggest challenge of the entire project. In outlying areas it's easy to get average plots but still hard to get good ones.

Generally, as with all business activity, competition increases in areas of greatest profit potential.

You can make more profit in London than in Scotland but it is harder to come by good land. We will look at some tried and tested – and some not-so-obvious – ways of finding the right land for your self-build (section **2.1**)

1.6.3 How much does self-build cost?

As a starting point, think in terms of £500-£1,000 per square metre of finished building + land fees + professional fees of £5-20k. Don't forget costs like stamp duty. Our comprehensive cost calculator will help you (appendix **9.5**)

1.6.4 How do I finance my project?

Money is not a problem as long as…

a) You can prove that you can repay your loan (serviceability)

AND

b) The loan is less than your assets are worth (risk cover).

That's all you have to remember.

"a" is usually based in multiples of income e.g. 4 X main income = the maximum amount a mortgage provider will lend you.

"b" is the value of anything that can be sold if your investment goes south. That includes the land and any unfinished work, plus money in the bank, or loans secured against another property.

We will guide you through an approach that will make this part of your project painless (section **4.7**)

1.6.5 Can I stay in my current home while I build?

Yes, as long as you can afford to. Consider living on site, though, as it has benefits that will become apparent later (section **6.2.4**)

1.6.6 How do I find the best house designer?

Make them prove their skill. Ask them to submit concept designs for free (section **5.1.1**)

1.6.7 How do I find good tradespeople?

Know what good work is and seek out those who can produce it. There are other ways of finding good tradespeople too – asking friends and trade organisations – but these methods are all fallible, whereas the first one is not. Plenty of help on this one to follow (section **11**)

1.6.8 What does building control mean?

The government wants to make sure you build a house that is safe, dry and energy efficient. This is their way of imposing control (section **2.3.16**)

1.6.9 How does planning permission work?

Planning permission is strictly to do with how your property looks and relates to its community. There are several key principles stated by central government that local authorities interpret into a strategy.

Your application is in the form of drawings that are considered in the context of this strategy. A common element, for example, would be “Re-development within green belt must occupy footprint of original building and must not be bigger by more than 30%.”

We’ll take you through some policy stuff, which will help you enormously when looking for your land in the first place (section **2.2**)

1.6.10 Will my project need planning permission?

We will give you the highlights. The detail is out there on the Web and we will link you to it. It's actually in pretty plain English, considering it's a government publication! (Section **2.2.1**)

1.6.11 Will I get planning permission for the design I want?

If you design it right, yes, you should. Read the book, follow the advice and you will certainly improve your chances. You never need to go in blind, however.

Your research and discussions will be enough for you to know in advance that you have a very good chance of success (section **2.2.2**)

1.6.12 What's approval document L?

It's part of the building regulations. "L" is about energy efficiency. We will make the whole set available to you through the Web, and explain the key points to you (section **13.3.11**)

1.6.13 What's a raft foundation?

A raft foundation looks like a raft and is suitable for certain soil types as it spreads the weight of the house over a large area. This is a gross simplification, of course, so do read on (section **7.1**)

1.6.14 Is timber frame better than bricks and blocks?

It's infinitely better, in most respects. It is not quite as durable, though, and not quite as good at absorbing sound. The stuff about brick walls storing heat is all rubbish, by the way.

Sure, bricks store heat, but so do electric storage heaters. Storage heaters aren't desirable so why are walls that store heat? (Section **6.1.1**)

1.6.15 What's the fastest method of construction?

Timber frame. This is particularly true if you plan ahead and if you live in a wet country like the UK. We'll explain why later (section **6.1.2**)

Congratulations! You've finished chapter 1

You will now know:

- What is self-building? (See section **1.1**)
- Motivations other than profit (see section **1.2**)
- Being mentally prepared (see section **1.4**)
- The road ahead – a schematic view of this book (see section **1.5**)
- The 15 most common self-build questions (see section **1.6**)

2. SETTING UP A SELF-BUILD PROJECT

In this chapter you will learn:

How to clarify your goals (see section **2.1**)
Finding land and getting planning permission (see section **2.1.3**)
How to work the planning system (see section **2.2.1**)
Problem sites and how to spot them (see section **2.3**)

There are nine key steps to building a home. Here's a summary:

1. Finding the right piece of land and getting planning approval
2. Deciding on the project approach
3. Producing a high level project plan
4. Designing the home of your dreams
5. Getting finance
6. Producing the construction detail and sequence
7. Lining up the right people
8. Lining up suppliers and getting the best prices
9. Getting insurance and warranties in place

The order may change and the activities may overlap quite a bit. You will see this in the project management section (section **4**). So … let's go for it!

2.1 Clarifying your goals

We are not going to spend too long on this subject. Don't let this fool you into thinking it is less important, however. You need to be clear that, as a serious investor, you are truly interested in profit above all else.

2.1.1 Money or Merit?

We've already talked a little about the importance of goal clarity. Now is a good time to complete this exercise. We've prepared the simple questions below to help you.

List five good reasons why you want to self-build. Weigh up each of them according to how important each of them is to you.

Then look at who else will measure the outcome of the project, and consider whether each of them would regard all your reasons for self-building with the same level of importance as you.

Questions to ask yourself and the other people whose opinion on the project matters to you include the following:

- What three features of the finished design will really please you if achieved correctly?
- Is resale value important to you?
- How long do you intend to stay in the home?
- Is it important what others think of the finished work?
- Are you designing for yourself or for others?
- Does it matter if the project takes longer than planned?

You should be able to position yourself on a line that extends from “artistic merit” to “commercial success”. On the one extreme, you want to self-build purely to satisfy your own need for creating, for achieving.

On the other, you are self-building because it is a tax-efficient way to make a place to live.

The scale can also be defined therefore as ranging from ‘internal focus’ to ‘external focus’.

2.1.2 Motives and compromises

Next, consider this: if you want to do things in a certain way towards a certain result, what challenges do you face? Here are some examples.

You want to please others, perhaps family members, friends and perhaps even people who drive by. Now, list your goals in one column of the table, followed by how you are likely to have to compromise on this goal.

Give a score according to whether you believe the eventual result will be a compromise or will fit with your ultimate goal.

Goal	Counter balance	Goal Strength
I want to build a house myself brick by brick	The family do not support this. It would be very impractical	25%
I want seven bedrooms with en-suite bathrooms	The cost is £50,000 above our realistic budget	70%
I want to create a magnificent legacy by using only the finest materials and methods	We need a certain size of home and the added cost compromises this	60%
I want to allow 1 year to do the job carefully	We need as a family to be finished in 6 months	30%
I want a workshop	We may have to lose a bedroom to get it	75%
Location is more important than size	We need a certain size of home and the added cost compromises this	50%
I want at least four bedrooms		100%
A lounge with a great view is a must	The design cost will add £10,000	90%
I want to make sure we profit from the scheme	Some of the features we want may not appeal to future buyers	100%
I want to use clay tiles	The added cost is £8,000	100%
I want hardwood windows	The added cost is £8,000	80%

Now a suggestion…..

Any score of less than 75% in favour of your goal will result in a compromise. Do you accept this position? Look again and re-score. See if you can work through alternatives that diminish the counter balance.

The point is this: if your goal is strong enough, it will overcome any obstacle. If it's not, it won't!

Mull over this exercise for a few days. Once you are happy, cross out any objectives that don't rank above 75% commitment and move ahead with those that do.

2.1.3 Finding the right piece of land and getting planning approval

It may take you two weeks to find a good plot. On the other hand it may take you ten years! Plots vary in demand as you move away from London and, to a lesser extent, other large cities.

The hardest places, probably in the world, to build a plot are the Polar Regions - rural Surrey and East Sussex!

If on the other hand you live in Carmarthenshire, no problem, there at loads of plots with the best ones fetching £50K and the worst ones worth no more than farm land.

So, here are a few points to get us started:

- Almost all land is owned
- Most prospective building land is owned by large companies
- Most land cannot be built on due to planning policies
- The best building land has usually been developed already

That's why good building plots are hard to find. Don't lose hope though; there are many solutions to this!

What kind of land maximises profit?

It's really quite simple. You have to consider land as a percentage of final sales value. Any other view will lose you money! Generally, look for the following:

- A location that is desirable to yourself and potential buyers
- A location where sales prices can be improved by a really good design and building scheme
- A plot that will support a large dwelling

Remember, sales value is determined by….

- Location
- The look and the quality of your project
- The size of the building

The price of a plot will be determined by…

- The seller's view on the ultimate sales value of a development
- How close to realising this sales value the plot is

The seller, in a case where planning is already approved, will generally take a view of your costs, and will price the land to allow you a builder's profit of 20%.

The only ways to make more money are …

- You find land where the potential is not yet realised, i.e. there is no planning in place
- You conceive of a scheme, by good design, that exceeds the potential the seller sees and that other interested parties see
- You have legal or other holds on land that others do not have (like first right to purchase)

You can reduce this thinking even further…

Key Tip

You can maximise your profit by ensuring that the cost of your land is 25% or less of the finished project's sales value. Do this by seeing potential that others have not seen, or realising potential others cannot access

Approaches to finding land

There are two basic ways of getting building land:

- The direct, buy a plot with permission approach
- The indirect, find an opportunity approach

Direct plot buying

Your sources for direct buying are as follows:

- Newspapers
- Estate agents
- Auction houses

- Private sales through your personal network

You can supplement these with databases that trawl information from several sources such as those above and present them to you as a list. Try these sources.

www.buildstore.co.uk/findingland/EXTERNAL/potton-fst.html

www.selfbuildcentre.com

Building land, particularly for single plots, is usually in high demand. You have a possible advantage over developers in as much as you don't need to make as much profit as they do. You can therefore win a bidding contest just by offering a little over the odds.

Premium plots in locations like the Home Counties e.g. Berks and Surrey can be marketed at up to £1 million for ½ acre and can be bid 30% above that level. Conversely, plots in less desirable areas can be as little as £10,000 and can stay on the market for years.

Generally, you don't need to move all that quickly as plots will be marketed for a couple of weeks to gauge demand before an offer is accepted. There will typically be several offers out there that you have to compete against.

If you find that a plot is snatched away from you unexpectedly, there may be one of several reasons:

- The agent feels another buyer is more credible (in terms of demonstrating intent to buy quickly)
- The seller has some kind of preference for a particular buyer. Builders often do deals with sellers that include tax-efficient barter type arrangements. The seller may, for example, benefit from a free extension to another property
- The estate agent has pushed the property to a friend of theirs or a family member

Here are our tips for securing a plot in a buying contest:

1. Make sure you have cash, in principle, ready to go.

2. Get a letter from your bank confirming you are able to finance the deposit from cash.

3. Be dogmatic when asked, “How quickly can you complete”. Sell your scheme. Other buyers will do the same.

4. Be prepared to pay a little more.

5. Be wary of estate agents who suggest they have other offers but are vague. **Try to talk by email as this makes for a more honest conversation than on the phone.**

6. Stay close to the agent. Keep selling yourself to them.

Indirect plot buying

Indirect options usually require a great deal of energy and sometimes risk. They usually provide a better outcome, however, if you do well in terms of cost or quality or both.

The way to find a hidden building plot is to understand a little of planning process and strategy and then work the system. Armed with this knowledge, you will see things others cannot see.

Finding the hidden gems

There are three ways you will come across hidden gems:

1. Someone will tell you of an opportunity. That’s why you should tell everyone you know that you are looking for building land.

2. You will drive around until you see a gap between houses or an oversized garden.

3. You will consult local maps or aerial photos and see something that looks interesting, like a larger than average garden.

www2.getmapping.com/home.asp

Key Tip

Don't confine your search to greenfield sites. Look for properties you can demolish. Sometimes properties that look too good to demolish can offer interesting and profitable opportunities

www.mapmarketing.com/MapMarketing/OS/SuperplanPlots.asp

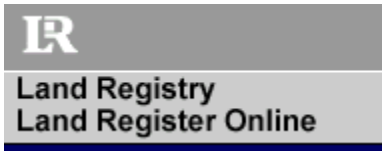
Key Tip

Tell your friends, family and everyone you meet that you are on the lookout for a good building plot. Tips on land coming up for sale can come from the least likely people simply because they mentioned you to someone who was in the know.

If you know the area you would prefer to live in, securing small scale maps that show plots and buildings can be very useful in terms of locating infill opportunities. Once you find a piece of land that has the right potential, do the following:

Find out the owner's details through the land registry. You can do this online for £4.

www.landregisteronline.gov.uk



Then:

- Write to them and politely set out your proposal
- If they don't respond, go knock on the door
- Try and meet face-to-face if you can

Try not to be too pushy. Explain that it's a win-win opportunity.

You have one thing working in your favour in terms of securing the deal. You are prepared to pay the application fees and for architect's drawings. You are prepared to risk £1,000.

You know, of course, that the proposal will probably succeed. The seller may not be as well-informed as you and therefore may not be willing to take this £1,000 risk personally.

If this is the case, get a contract together that secures the plot for you at a pre-agreed price subject to planning approval. It's as easy as that!

In all cases, familiarity with local development plans is a must as you are generally confined to plots within defined boundaries (unless you want to play a long game, as boundaries get adjusted every decade or so).

As a general summary, plots are costed according to how much risk they carry. Greenbelt land costs around £4,000 per acre, land with planning approval can be £100,000 or more per acre.

Many speculators and developers own large banks of greenbelt land. Their hope is that it will one day become building land.

Redevelopment land usually has a good chance of getting approval for a reasonable scheme. Its pricing will be indicative of this. Most people are pretty savvy to the opportunities that can be present in brownfield sites.

Sometimes, however, the opportunity can only be seen by you. That's the hidden gem!

Key Tip

A hidden gem is only visible to you. You suddenly see something that has been overlooked. Play it carefully and you can get a great bargain.

And that's it in a nutshell. Do your homework, start looking and you will eventually find something of great interest!

2.2 Planning systems and how they operate

At the highest level, the government establishes policies for housing. These policies have a number of goals. They are to:

1. Satisfy economic targets
2. Satisfy environmental targets
3. Satisfy social targets

In other words, they try to please everybody and therefore stay in favour. Generally, the policies aim for the following:

- Provide space for new housing and generally to support growth
- Re-use land where possible
- Increase housing density as much as possible
- Protect the countryside
- Protect heritage sites, such as villages and historic buildings

Follow these links to read more.

www.odpm.gov.uk/stellent/groups/odpm_planning/documents/sectionhomepage/odpm_planning_page.hcsp

OFFICE OF THE
DEPUTY PRIME MINISTER

www.hbf.co.uk/specialisms/planning_national/index.html

The House Builders Federation

The second level is usually a county establishing what it calls its structure plan. Try this as a guide.

www.slough.gov.uk/LocalEnvironment/berkstructure1.asp

At a local level, (this link defines all of the local planning authorities in the UK) policies are set that are meant to follow the guidelines of the state and of the county.

Find these documents for your local (unitary) authority. The link lists them all.

www.oultwood.com/localgov/england.htm

In practice, the process gets a little skewed as local leadership is less concerned with economic factors but is more in tune with social and environmental factors.

Local policies will tend to make statements that follow the government line but, in practice, they tend to resist development. That's why the appeals process exists (section **2.2.2**) and that's why the government sets housing targets that localities have to comply with.

Follow this link for examples of local planning statements. The documents are usually listed under "local plan" and "planning policies"

ww2.westberks.gov.uk/localplan/

www.westberks.gov.uk/WestBerkshire/services.nsf/Public/AllServices/FE08C96C6BD43ECC80256D5500339389?OpenDocument

In more recent times, planning authorities have been required to create and review a "local plan" that defines housing policy and actually gets to the level of showing locality maps with a line around them defining where building will be allowed.

These local plans will exist for most large settlements with smaller ones being omitted and considered as green belt or in the countryside.

The local plan usually lasts a number of years and sets out schemes for large developments, shops and new roads as well as plans to move local boundaries around settlements.

You should at this point go the your planning office (at the council offices) and ask to see the local plan and maps. It will all then be apparent.

The planning process involves submitting drawings and forms defining the application. A planning group (part of the local authority) may be able to make a decision on the scheme themselves or may refer the decision to a local council sub-committee.

Generally, there is a process (involving some type of publication), which tries to gather local opinion on any development.

In general, you can expect the following:

- The local plan will be adhered to
- New development will be OK within the defined boundaries
- New development will not be OK outside these boundaries i.e. in green belt unless it is a special cause such as a barn conversion that will preserve an interesting building
- Renovation and rebuilding will be allowed in both of the above but severe limits on sizing will apply to green belt

There are a few other things that your planning department will consider as well as overall strategy:

It will examine your plans in terms of what is called ‘public amenity.’

This means it will make sure that your proposal is not excessively harmful in terms of its impact on other people. Excessive overshadowing or windows looking into a neighbour’s house are two examples of a design being detrimental to public amenity.

It will also want to see that the scale of the development is in proportion to the overall street scene.

The planning department will consider traffic impact and ensure that problems are avoided with driveway access.

It will consider the views of local councillors and the general public, especially your neighbours.

Most planning applications are handled by the planning department of the council (full-time staff people). They work hand-in-hand with parish and district councils. Some planning applications, particularly if they are controversial, will be decided by the district council at a committee meeting.

Now, many speculators understand these systems, and you will not find it easy to identify opportunities that have not already been examined.

There are ways, however!

2.2.1 Working the planning system

Consider the following tips to smooth the planning process:

- Understand the local policies and apply these to your proposal
- Get to meet local councillors to discuss the proposal
- Meet with planners, if you can, to discuss some concepts. There is usually one planner on duty each day to meet with the public on a first-come, first-served basis
- Make sure you are positioned as a reasonable person with some ethics. Many developers are despised because they exude greed
- Get the views of people close to the proposal site, particularly immediate neighbours. Get them to sign a letter of support if they are supportive. Neighbours will often do this once you explain that they will indirectly benefit through new boundary walls, fences and greenery
- Try and work with, and not in conflict with planners

2.2.2 The mechanics of planning approvals

The planning process looks something like this:

- Your designer produces drawings that show the location and views of the scheme. He/she submits several copies of these to the councils planning department
- The planning department sends drawings out to the parish council and notifies neighbours that a scheme is being proposed so that they have an opportunity to comment, and object
- A planning notice (sticker) may have to be posted at the site so that people are made aware that something is being proposed
- After a public hearing period, opinions are gathered
- The parish council sits to consider the case during its normal monthly meeting and reports back to the planning department
- The planning department makes a recommendation within 8 weeks of the application date. This recommendation is in the form of a provisional decision
- A ward member can, within a week of this recommendation, call the application to a full planning committee meeting for review. If he does not, the decision is said to be made by delegated authority (the council has delegated its authority to its staff members and they will make the call)
- Should the result not please you, you can appeal to the state for a hearing. It will first be decided if you have grounds to be heard and, if so, the application will be considered and a revised decision made.

www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_606151.hcsp

2.3 Problem sites and how to spot them

There are many problem sites to worry about. Most problems can be resolved at a cost. The biggest risk is that of not knowing that a problem exists.

2.3.1 Environmental issues

Contaminated ground is fast becoming the curse of many a developer. The environment agency has comprehensive maps showing sites of concern. Your searches will certainly reveal these.

On the other hand should the contamination surface post-purchase, you may face a major cost headache.

Generally, brownfield sites such as old garages are an obvious concern. Consider, though that an old car, left to rot on a rural site can contaminate ground with oils and battery chemicals.

If concern is raised by anyone involved with the project, you will have to prove the scale of the issue and its resolution - an expensive business, so check your plot carefully.

www.ruralhome.org/pubs/environment/concerns/contents.htm

2.3.2 Ransom strips

You may not actually own a small strip of land that is important to you. If you miss this during your investigation you could be held to ransom. Your solicitor should stop this type of issue. The council own the verge that you cross to get to the road. They can block your progress for more legitimate reasons.

www.greenfielddevelopment.net

2.3.3 High water

If your property contains soft ground it is usually apparent. There are some instances where this is not the case.

You may have chosen a location subject to localised flooding or you may have a plot that simply accumulates rain water in abundance. You can seek the help of a geologist if you are concerned. Talk to your surveyor about this.

www.environment-agency.gov.uk/subjects/flood/

2.3.4 Clay

Clay soils are a particular hazard as they shrink or expand based on their water content. Clay is particularly influenced by the proximity of trees. If you have an oak tree within 20m, with clay soil, your foundations may have to be as much as 2m deep.

2.3.5 Trees

Trees often have blanket preservation orders on them. You may buy a plot with outline consent and find you cannot properly develop this site due to tree positions.

2.3.6 Hills

Gradients massively complicate your foundation and general site access. You can expect to add thousands of pounds to your foundation costs for any gradient more than a gentle slope. For very hilly sites, the cost can amount to tens of thousands.

2.3.7 Cliff tops

Cliff tops tend to fall into the sea! Make sure yours is not at risk. Even if the risk is not perceived for 100+ years it may still contribute to a loss in resale value to you.

2.3.8 By-pass

Your plot may have a bypass built next to it in ten years time. Make sure your solicitor's searches cover transport strategy.

2.3.9 Archaeological interest

You may be unlucky and find Roman ruins as you start to dig. If you are concerned at the outset about this possibility, contact an archaeologist and get a view.

2.3.10 Pylons

Make sure your friendly electrical company doesn't have plans to build pylons within sight of your plot. Again, searches should cover this.

2.3.11 Phone masts

Phone masts require planning permission. You can search your local authority for such applications before you buy.

2.3.12 Traffic noise

You may view a plot on a Sunday morning and subsequently find that the mid-week traffic is terrible. The simple solution is to thoroughly research the plot you are buying.

2.3.13 Crime

If you are concerned about the possible level of crime in your area, call the local crime prevention officer and discuss.

www.upmystreet.com

2.3.14 School places

You may buy a plot in a catchment that has no school places. Make sure you check ahead of time. These links carry local information like school performance, and much more.

www.upmystreet.com

2.3.15 Covenants and title

Covenants are written into the deeds of a property. They are usually legally binding although there are ways to have them removed.

Speak to your solicitor about the deeds and ensure that you are buying a property with proper title and that allows you to do what you want to do.

2.3.16 Building regulations and planning approval

Planning and building control are often confused. They are simple to distinguish:

- Planning approval (often called development control) is concerned with appearance and impact on the environment, street, town or whatever.

  In this case, a designer produces drawings of the proposal and the local authority and local councillors decide if it is acceptable.

- Building control is concerned with standards of construction. In this case (and usually after planning permission has been gained) drawings, technical specifications and calculations for the structure are sent to the local authority building control group who make sure the plans comply with all 13 approval documents.

  These simply state how a good home should be built in terms of structure, ventilation and other matters.

  The inspector commonly sends the plans back with a statement of non-compliance. The drawings are then updated and re-submitted.

  Once an approval is generated, the work starts and the inspector checks the site to make sure the work is up to scratch.

  Generally, these people are your allies as they have the power to stop a builder doing poor work. The best way to proceed is to make sure the inspector knows you are sensitive to quality and that you want his or her help to make sure the builder does a good job.

Key Tip

Contracts for new build must always state that “work must comply with the building regulations to the satisfaction of the building control officer”.

Congratulations! You’ve finished chapter 2

You will now know:

- How to clarify your goals (see section **2.1**)
- Finding land and getting planning permission (see section **2.1.3**)
- How to work the planning system (see section **2.2.1**)
- Problem sites and how to spot them (see section **2.3**)

3. DESIGN AND RAW MATERIALS

In this chapter you will learn:

- How to make sure your design fits your lifestyle (see section **3.1**)
- How to design for potential buyers (see section **3.3**)
- How to use design to transform your home (see section **3.6**)
- How to put natural light to work (see section **3.6.5**)

Our design toolkit takes the lid off what seems like a complex process. It provides simple, common-sense, yet highly powerful tools that you can use to design a highly effective home.

You can use these tools to design your home entirely on your own or, more likely, in partnership with a designer, engineer or architect.

When you design a home, you need to consider at least the following factors:

1. How it operates
2. How pleasant it feels to use
3. How it looks
4. How much it costs
5. How much it will be worth

3.1 Designing for function

This is a pretty obvious concept. Draw a list of activities that you want to use your home for.

Here are a few examples …

- Showering
- Sleeping
- Ironing
- Watching TV
- Reading
- BBQ-ing
- Listening to music.
- Entertaining guests (overnight?)

- Having family come to visit
- Cooking

Be specific for all members of the household. If you intend to sell to a target group, design for all members. If you intend to sell to a family for example, consider the husband, wife and children.

Other uses for your house may therefore expand to:

- Surfing the Web
- Playing table football
- Studying for exams
- Listening to music
- Practising piano

Now map these on a sheet of paper and show the following:

- Traffic density (by line thickness)
- Degree of separation required (by location of bubbles)
- Heavily used areas (heavy circles)
- Movement of materials
- Materials sitting in a location

Next take this a step further. Try connecting these activities as a series of bubbles into a structure.

Your goal of course is to design so that activities can happen without conflict or congestion and in harmony. Try drawing it out, this may help evolve some ideas for you.

3.2 Designing for pleasure

Consider now, beyond what you actually do in your home and think about how pleasant it is to perform these same tasks. Make statements like the following:

E.g., Take a Shower (dad) – in private, plenty of power, very hot not over bath, nice warm room, good to have changing room attached (that's just as warm), a view from it but not into it! How many showers?

Read my book (mum) – want to be close to dad, he likes to watch TV so reading area/bookshelves close to TV room, must have good reading light but must not intrude on dad watching TV.

At this stage, you are starting to develop a powerful specification.

Make sure you capture and categorise your thinking for each activity the property must perform and how it must achieve this.

Next go back to the bubble map and add to it or reconfigure it.

Other considerations are:

- The scheme should have fairly mainstream appeal if there is any chance that you will sell in the short term or if you intend to re-finance
- The scheme must benefit from some features that make a contemporary home function well

The design must have longevity – it will otherwise look worse with time. That's why you must apply time-proven design concepts and use appropriate materials.

Read on to learn more.

3.3 Designing with buyers in mind

This is more of a statement than a method. If your total interest or partial interest is commercial success then you need to design for others rather than exclusively for yourself.

You may consider yourself a good designer with exceptional taste. The rest of the world may consider you to be completely out of touch.

The problem is you just don't know what you don't know. What is even worse is that your friends may not have the heart to tell you that your design is naff. The only way you can verify your thinking is to ask as many people as you can:

- Is my design the best one possible to appeal to a potential buyer?
- Is my design timeless enough that should I hang on to the property for ten years, it will look better - not worse?

Key Tip

Find ways of testing your design thinking with others, professional or otherwise.

3.4 Designing for form – classical design

There are certain features of house design that are undeniably attractive over a long period of time. It's important to be able to recognise those attractive features that are here to stay and those that will come and go.

You may decide to move after ten years so it's important that you design in a durable style to gain maximum value.

Here are some examples of things that have been or may be short lived and their approximate time at the top:

- Low-pitched roofs – 5 years
- Long horizontal windows – 5 years
- Cube homes – 5 years
- Plastic carports – 5 years

Usually, the most long-lasting designs are those that have a sustainable performance advantage. All products, good are bad, are driven into mass appeal by public exposure. In a growth cycle, hysteria for newness tends to rule.

Once this fad hysteria has waned however the reality of the product becomes more significant.

Boy bands usually come and go because their music is often awful. They might look cool for a while but their existence is not about looks, it's about music. Mozart will live forever because his music is actually pretty good!

Here's a list of classic design features that will have enduring appeal. Put them together with high performance materials and you will have produced a timeless design:

- Windows that have greater height than width and commonly have proportions of around 1.6:1 (designers will recognise this ratio)
- Steep roofs (more than 45 degrees)
- Multiple gables
- Decorative lead work
- High ceilings

- Bay windows
- Simple symmetry

www.periodhomesgreatbritain.com/html/property.php

Generally, if you look at the dominant periods of housing design you will see several significant styles that are timeless. Consider these for example.

Tudor/Elizabethan – Steep roofs, gables, timber frames, oak and clay in abundance.

www.historic-uk.com/DestinationsUK/Stratford.htm

Georgian – Classic symmetry, lead work, parapet walls, high ceilings.

Victorian (the most common type of house out there) – Classic solidity, simplicity, brick and slate.

It is conceivable that some very poor, really daft-looking houses were built during these periods and have gone out of existence.

It does seem, though, that house design in the UK has completely lost its way. Most individual designs are based on some kind of respect for the past.

Some of these work quite well. There are certain barns out there for example that have considerable appeal. They are of course early Saxon derivatives.

Most modern housing design seems to have little to say about itself other than its efficiency and cost-effectiveness.

Certainly, there is some original architecture out there, but most of it seems based around either producing something outlandish (like straw houses, houses that look like fish, or more Bauhaus cubes).

Perhaps the only distinctive memory of late-twentieth century housing will be an increased focus on lifestyle and designing homes that fit with how people like to live. This is certainly a significant driver in the USA.

www.globalhouseplans.com/countryfarm_house_plans.htm

www.eplans.com

On the other hand, perhaps the increased use of glass will stand the test of time (and it is used to great effect in commercial buildings).

Perhaps structural materials providing huge open spaces will stand out. Or it may be our distinctive (or is it renewed) need for natural, untreated, earthy materials.

www.telegraph.co.uk/property/main.jhtml?xml=/property/2003/08/30/pglas30.xml

In the UK, sadly, we are in a period of sustained decline as far as home design goes. It's a great shame as we were once the best architects on the planet.

The talent is there, it's something else that's lacking. So, go ahead, apply our simple rules and challenge your designer to do something a bit special.

3.5 Use of high-performance materials

Materials similarly suffer from the same faddishness as designs.

Consider the lifespan of the following materials:

- Artex on walls – 10 years
- Artex on ceilings – 10 years
- Ash felt roofing – 15 years
- MDF – 10 years?
- Large concrete roof tiles – 10 years
- Secondary glazing – 10 years
- Wooden decking?
- Underfloor heating?

Wooden decking dries quickly and is cleaner than stone or concrete. It does rot faster, though, so it may not be a popular option in years to come.

Underfloor heating performs well and has no obvious downsides (although it does make your feet warm!) Will it thrive for decades or more?

Key Tip

Generally, the most impressive housing will contain materials of high performance and durability

Consider these tried and true building materials:

- Clay brick
- Clay roof tiles
- Slate, sandstone, granite
- Hardwood
- Iron
- Lime mortar

These materials have pedigree. The key thing about materials with pedigree is that they have proven performance over a significant time period. They usually, for some unknown reason, also look better and better as they age.

So remember, the best materials:

1. Perform well
2. Improve with age

Perhaps the twentieth century will contribute a few materials that will stand it in high esteem:

- Insulants and roofing felts that are incredibly durable and effective
- Glass that is remarkably clear and yet blocks harmful radiation
- Improved spatial quality

Did you ever walk through the front door of a house, into a dismal closed-in hallway that felt like a phone box without windows? The impact is quite difficult to get over. Space is not necessarily a real quality.

It is mostly a felt quality. A big house can be made to feel very small. A small house can feel big.

3.6 Simple tips to transform a design

3.6.1 Long views

Look at a plan view of your property. Consider what you see and how far you see from some key strategic points:

- As you enter the front door
- As you enter the back door
- Generally, from any point where you may be parked, e.g. sitting on your sofa.

3.6.2 Designs for contemporary living

House design in the UK has in the past stubbornly held on to a notion of a collection of boxes (rooms) with one function only and no particular relationship between them.

This is beginning to change. Large housebuilders for example now favour connecting some spaces with double doors. Their view is very conservative however and does not show a good regard for one key point that you would do well to remember:

Key Tip

A home needs to harness Yin and Yang. In other words it must have spaces that contrast with one another for each to be fully appreciated.

Consider the following examples:

- Private and public spaces
- Rooms that are light and airy, rooms that are warm and cosy
- Old and new in a rich harmony (think old fireplaces and shiny new fridges)

Remember also, **the two golden rules of house design:**

1. **The kitchen is the heart of your house.** Design it to be a social centre and put it in the centre of the house.

2. **The rooms within a home are used for activities.** If they were towns, they would have to be connected by a good road network in order for people to be comfortable using them.

A home must have a good road network. If must be possible to flow from one area to another without any traffic jams.

3.6.3 Providing private and public spaces

A house will have a better feel if it has places to interact, socialise, do things together and it has spaces where escape is possible from this.

All people, to some degree, appreciate these two contrasting features and appreciate having the freedom to decide which they want at a particular time.

If the kids have a nightclub running in the basement, then mum and dad can come and dance when they want and they can retire to a quiet, tranquil space when they want.

Think of this concept as having both Piccadilly Circus and Isle of Arran in the same house!

Key Tip

Review the list of uses for your property that you made earlier. Consider which are private and which are public. Build this thinking into your design.

Bathing for example is a very private activity. That's why an en-suite bathroom is a great (private) feature.

There was a time when many (even small) houses had a room called a parlour. It was used for formal events like entertaining important guests, and for weddings and funerals.

Many houses still have a parlour. It's a room that now seldom gets used except to accumulate junk. The really unusual thing about this room is that it is commonly found in homes whose owners complain of insufficient space.

This odd paradox occurs because the needed space is a public one and the room is isolated in the minds of the occupiers. This is usually because of the physical layout of the property. A more modern example of a space that's dysfunctional is a formal dining room.

If it's too formal it will hardly ever be used. A good dining room used to be Ritzy. Nowadays, a good dining room is more in keeping with a coffee house. The level of formality has shifted.

What's the alternative?

House design is much more evolved in the USA. The concepts introduced earlier are widely adopted. Houses tend to have several mostly public spaces, like kitchen, dining and living that flow into each other.

Separation is more subtle than a brick wall and comes commonly in the form of floor or ceiling level changes, potted plants, floor covering changes and many more alternatives.

Separation of the dining area, for example, is just enough that dining has the right degree of formality placed on it. The benefits of these designs are numerous:

1. They create a feeling of space
2. They make the most of natural light
3. They provide a great sense of community
4. Rooms can be used for multiple purposes (therefore making the most of the floor space and giving a greater sense of space)

They also have private spaces that are separated in terms of location and noise communication, such as studies, en-suite bathrooms, home offices and quiet rooms.

3.6.4 Kitchen - the heart of a home

It's very simple. It should be well understood. Kitchens often get put into a dark, almost non-existent corner of the house. In more formal times, the kitchen would have been staffed (for those fortunate enough) by servants.

The room and its inhabitants were not to be seen. Fortunately, we now live in less formal times. Informality is a growing trend that property developers must harness.

Most entertaining for example, unless it is of the rarer formal nature, will migrate to and thrive in a well-designed kitchen. Kitchens must therefore be designed with this in mind. At their best, they have the following social features:

- A counter top that people can lean on
- A place to sit and chat over a coffee

- Good natural light
- A phone
- A small writing area for making notes
- Places to store things other than kitchen apparatus

3.6.5 Let there be light

Natural light is an undisputed asset. Its most crucial feature is that it is constantly changing and impacting on its environment. Its power is at its best if it is applied without excess. Nobody would choose to live in a glass house. A mixture of natural light levels works well.

Imagine the following situations:

- Sitting in a cosy warm kitchen, early in the day, sipping coffee as the sunlight reaches its way up the walls.

- Relaxing in an open porch area appreciating the cool evening sun, enjoying a glass of wine and generally unwinding.

Key Tip

Contrast is crucial when it comes to making the most of natural light. A cosy, intimate space does not demand much natural light. In fact, it would be spoiled by it.

Study your sun angles and design your property to interact with the sun. Don't forget, though, that windows have about 10 times less insulating value than an insulated wall. Too much glass will make a house cold.

North-facing glass will receive no sun, whereas south-facing glass will gain heat when the sun is around and lose heat when the clouds are out.

3.6.6 Sun angles

Architects understand that at a particular time of day, at a particular time of year, in a particular part of planet Earth, the sun will follow an arc from a point somewhere around the East to somewhere around the West. Half-way between, it will rise to an angle above the horizon.

Midsummer in the UK, the sun rises around the north-east, sets in the North West and reaches around 55 degrees above the horizon. In the middle of winter, the arc is much shorter and reaches around 25 degrees above the horizon.

You must understand what this means for a house and the natural light within it if you are to harness the natural light available successfully.

3.6.7 Linking the inside to the outside – transitional spaces

The concept of long views can be integrated with the concept of bringing the outside in. Use strategically placed windows (or doors) to frame good outside aspects. Imagine entering a spacious entry area that opens out into a generous living space.

Beyond this imagine there is a cedar deck with an elevated view of beautiful countryside.

In your dreams this might be an elevated view over miles of rolling fields and mountains. In reality, there is a great deal you can do in a limited environment. Design the outside of your home as a picture from several key internal and external viewpoints.

Here's an additional theory with no particular scientific basis other than observation. People are instinctively attracted to being close to the outside world while at home without actually being impacted by it. Take the following examples:

- It feels good to be in a cool place on a very hot day
- It feels good to sit in the rain without getting wet
- It feels good to watch the wind without being affected by it
- It feels good to watch people without people watching you

Fundamentally, a home is a sanctuary. If a feeling of security can be maintained while allowing an interaction with the world, it will have great appeal.

3.7 Using planning software

If you intend to do some designing yourself, you will benefit from a software package that allows you to visualise your designs in 2D and 3D. You can get these packages from as little as £15 or you can pay thousands.

Here's a quick summary of what to expect from planning software:

- You will find it easy to create simple boxes with roofs and you will be greatly impressed by the start you have made
- You will then find the package cannot do at least twenty things you really want to do and you will get incredibly frustrated
- You will then (assuming you don't just give up) spend about two years learning how to do the twenty things you thought you couldn't do. You will at this point feel impressed that you have finally got the software to work and disappointed that life has passed you by
- Alternatively, you will find another package that promises not to have the limitations of the previous one and go through the whole process again

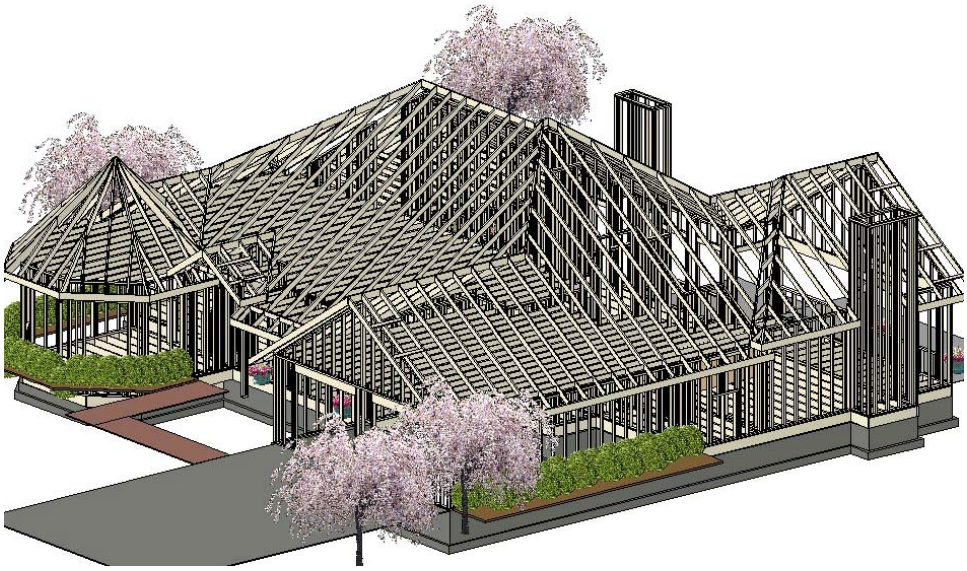
Key Tip

The key is not to get too clever with design software. Use a low-cost package to generate floor plans and elevations (side views). Leave the posh stuff to somebody else.

There are many good CAD packages available. The low-level packages (where you just draw lines and arcs in 2D), will allow you to draw anything given enough time.

The high level packages do the work for you, produce great 3D views but are gruesome to learn.

The following were created using Chief Architect. This package retails (mostly sold in the USA) for about $900. It takes 5 minutes to learn the basics and 5 years to learn the advanced stuff. Again, stick to the basics. It will be easier and cost a lot less!



Try www.chiefarch.com for a demo version with limited save and print ability.

Or

www.housebuilderxl.co.uk

3.7.1 Your Design Toolkit Checklist

Tool	Remember to consider
Functional design	List activities for all inhabitants including guests.
Lifestyle design	Rich statements that expand on the functions. Turn concepts into physical layouts.
Design for form	Timeless design elements considered. Short duration fads recognised and avoided.
Use of materials	Sticking to the classics? Using high-performance glass in abundance?
Spatial quality	Long views. Views that open out. Diagonal views. Views from strategic vantage points (e.g. entry point).
Linking to the outside	Identify the best scenes, views, etc. Windows that frame schemes. Transitional spaces. Porches. Decks. Patios. Gazebos. Glass roofs. Conservatories.
Sun angles	Bring the sun into your home. Map out the seasons.
Design for contemporary living	Kitchen as the heart of the home. Public and private spaces. Multiple bathrooms are a must. Guest quarters are desirable. Lots of storage space.

3.8 Ten key factors to create the perfect design

1. Make sure it's functional by listing who will use the house for what, and don't forget about guests

2. Turn those statements into a lifestyle design, which will enable everyone to do what they want to do without interfering with the way others enjoy the house

3. Consider timeless design elements, and try to steer clear of trends that will probably be short-lived

4. Think about the best materials to use. Will you stick with the classics, or use high-performance glass in abundance?

5. Think about the spatial quality of the design, with long views, doors and windows that open onto pleasant views, and views from strategic vantage points, such as the entrance

6. Link the inside and the outside with the best scenes and views from strategic positions, such as a porch, patio, deck or conservatory

7. Bring the sun into your home, and map out how the changing seasons will affect light in the design

8. Design for contemporary living, with the kitchen as the heart of the home

9. Allow for both public and private spaces, with multiple bathrooms

10. Incorporate guest quarters if possible, and as much storage space as you can

Turning designs into working drawings.

The whole point of our toolkit is this…

Key Tip

Use the design toolkit to specify your home. The drawing will simply mirror the words.

Congratulations! You've finished chapter 3

You will now know:

- How to make sure your design fits your lifestyle (see section **3.1**)
- How to design for potential buyers (see section **3.3**)
- How to use design to transform your home (see section **3.6**)
- How to put natural light to work (see section **3.6.5**)

4. PAPERWORK AND PROJECT PLANNING

In this chapter you will learn:

How to produce a high-level project plan (see section **4.1**)
How best to manage your project (see section **4.2**)
How to write contracts and a specification (see section **4.6**)
How to get finance for your project (see section **4.7**)

4.1 Producing a high-level project plan

There are two purposes for creating this plan:

1. It will clarify things for you

2. It will convince others – including your financiers – that you know what you are doing

Your project plan should cover the following key points:

- State the objectives of the scheme, including your profit targets, the timeframe for building and selling, your costs, and your target sale price
- State the project approach – in other words, how you are making sure your project goes ahead smoothly. This will address whether you are having the project managed for you entirely, or taking a different approach, the options for which we will discuss now.

4.2 Managing your project – all, nothing, or something in between?

At one extreme you can build a home by paying a professional such as an architect or surveyor to manage the whole package for you.

This could include completing design, specifications, plans, planning approval, and project management. Your role could conceivably be reduced to signing on the dotted line and agreeing or not agreeing to what is being asked of you.

At the other extreme, you could do the whole thing yourself, brick by brick.

Most people opt for something in between.

Look realistically at the savings you can make from DIY vs. using a pro, and calculate what they amount to:

- If you owe £60,000 at 10%, the cost of your capital is £6,000 per year. This is about £500 per month.
- If it takes you a full extra month to plaster a kitchen yourself at a saving of £800, then your real saving is £300
- In the same time you could have made twice this much delivering pizza!

Key Tip

In practice, there is never a totally hassle-free approach to project management. At some point, someone out there will be inclined to let you down, whether it's an architect or a plumber. They don't do it on purpose, by the way! It's called a conflict of objectives. Read the section People Power – how to manage people to resolve this (section 10.4)

4.2.1 Managing a self-build

There are three typical approaches to managing a self-build:

1. Hands off, where a third party manages the whole project

2. You manage the project, and hire a building firm to design and build, or you hire separate designers, builders and sub-contract tradespeople

3. You DIY. Everything.

Really, the difference is in the degree of integration. If you integrate the scheme by bring together a number of parties to do the work, you become heavily involved and save money in the process.

That's because you are taking away the integration function from someone else like an architect or a general builder.

Remember as well that fragmenting a job tends to move the burden of risk to you, the integrator. It is much simpler to transfer accountability for the total job to one firm than it is to many smaller ones.

Generally, the more confident and knowledgeable you are, the more you can integrate others (and do a good job). If on the other hand you are not in the above camp then consider integrating through some other means, such as employing a project manager.

4.2.2 Which method is for you?

Overall, there are three main things to consider when making your decision on approach.

1. The cost involved in the time taken to complete the project
2. The cost of employing extra support
3. The cost of lost opportunities to you if you are unable to pursue any other projects

So our DIY approach could pan out like this…

Build cost + support costs = 180k
Cost of capital = 20k

Whereas our managed approach could be…

Build cost + support costs = 210K
Cost of capital =10k (quicker delivery)
Revenue from other ventures =15k

The third category is the income you make elsewhere because you where not fully tied to this one project.

Generally, if you can make more doing something else and you are confident your project will succeed at arm's length, then go for it!

Key Tip

Self-manage if you are confident and want to maximise profit.

Let others manage if you want to reduce risk.

4.3 What about the money? Your finance plan

Before you start, you must also produce a finance plan, which needs to show three things:

- Summary of financial targets
- Costs (broken down by activity)
- Cash flow

A commercial scheme should of course show a profit and loss statement for the project. This is simply a statement of sales price minus costs.

Sales	Costs
Sale of property	Land cost
	Stamp duty
	Professional fees
	Selling fees
	Cost of borrowed money
	Building costs

Your costs include not just the people you hire and their materials, but the cost of the land, stamp duty, selling fees, and the cost of borrowing money.

Cash flow is simply a statement of when money is spent and when it goes into the scheme. This is important, as you will often get money in after you have paid out.

Consider a few key points on cash flow:

- If you run out you cannot operate
- Creating trading accounts means you pay later
- Paying by credit card means you pay later

Key Tip

With careful financial planning, you can receive money before you have really paid for things!

The separate spreadsheet, **Materials and Costs Calculator,** contains a cash flow model to help you keep track of spending (see section **9.2** and **9.2.2**)

4.4 Produce a risk assessment report

This shows you have considered all angles. It also shows you can cope if things go wrong. There are two types we recommend:

1. Financial sensitivity

2. Risk-resolution matrix

4.4.1 Financial sensitivity

This shows the financial impact of unforeseen changes in particular elements of the project. In commercial projects for example, the output is profit, the biggest input factor is the resale price.

A small change in this will have a bigger impact than a small change in cost to the overall profit of the scheme.

Your sensitivities may be different. If you are not interested in resale value then your output may be total project cost and your most influential input may be the time it takes to build the project, or perhaps ground conditions.

Look at the separate spreadsheet **Project Return Calculator** and it will all make sense! (see section **9.2** and **9.2.1**)

4.4.2 Risk-resolution matrix

This shows a scored matrix of risks as you see them and a statement of how you will resolve them. This is important to you as it ensures you have clarity in your planning. It will also convince others of the same.

4.5 What comes when?

Armed with your knowledge of construction (from this book), you will be able to write down all the main tasks you need to complete. You will recognise several things:

- These tasks have dependencies on other tasks in your list. Your wiring cannot be done until the walls are built, for instance!
- Some tasks can be done together (assuming you have the resources). Landscaping can be done in parallel with any other activity, for example.
- One chain of tasks sets the overall time for the project as other chains take less time. This chain is called the critical path.

4.5.1 Produce a PERTT and GANTT chart

Consider buying software that automates project planning. Microsoft Project, for example. The process of linking tasks into a network is called CPM or Critical Path Method.

The process involves entering tasks with their start and end dates, entering supply lead times as tasks and connecting things based on dependencies.

www.microsoft.com/office/project/prodinfo/demo.mspx

A Gantt chart is simply a grid that shows when things will happen in time.

Here's a sample!

www.me.umn.edu/courses/me4054/assignments/gantt.html

This type of chart should actually be made for you by the software package. The correct way of building a project plan is via a Pert chart. This type of chart is a network of linked activities. It allows you to input data on activity and dates and it shows you how they interact.

You can move things around until you are happy. Once you have done this, you can ask for a printout in Gantt, which is more readable.

Here's a great example…

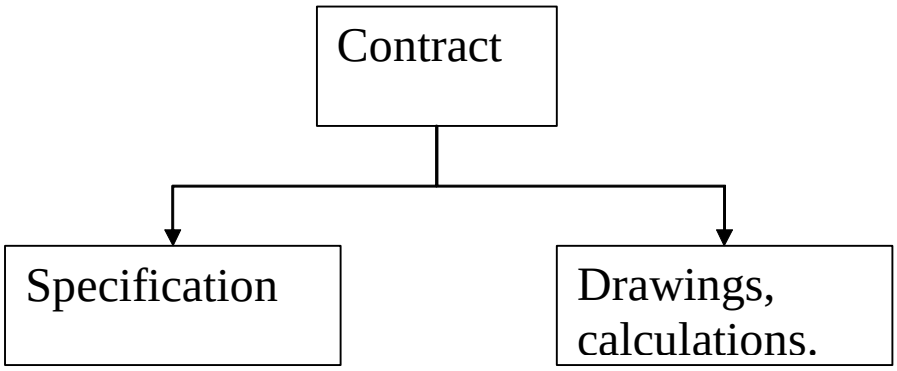
www.criticaltools.com/timepert.htm

4.6 Develop specification and contracts

Your specification details the extent of the work. Its purpose is to describe the agreement you will have with yourself and between yourself and your builder regarding the building.

It will usually be separated into sections like ‘roof’, ‘foundations’, etc. There will be several documents that make up your ‘contract pack’. They will include the contract itself, the specification, the drawings, designs and calculations.

The relationship between these documents is simple.



The roles of each are as follows:

4.6.1 The contract

This describes the overall commercial terms, including price and payment terms. It states the scope of the project, who is involved, and what each party will do to support the other (e.g. provide access to the site on weekends). It must also:

- Set out what happens in the event of a dispute
- Show that a timeline has been agreed
- State that work is done in compliance with specification and drawings/calculations
- State other standards that apply if not noted in the specification (e.g. the building regulations)

4.6.2 The specification

This details what work will be done and to what standard. Drawings and calculations are really just specifications in a different form.

The detail of what you write in your specification should be based on two things:

1. A description of the features that you are asking for. An example is roof finished in rosemary clay tiles, dark brown.

A description of what to you will constitute a good result. This can be a reference to a standard. It can also be a specific that you set.

As an example – 'All wiring to be to IEE regulations' is a reference to a standard. Read the section on finding and keeping the best tradespeople to help you write a good spec! (section **11**).

4.7 Getting finance - the basics of LTV (loan to value) and loan servicing

There was a time when self-build finance was hard to get. Nowadays, it's pretty easy as long as you satisfy two criteria:

1. You must provide some security

The home you are building covers much of this (although half-finished work has a pretty depressed value). Generally the loan is structured so that the lender provides around 95% of finished value.

In practice, this means you pay for 5% of the land cost and as the work progresses towards completion and the value of the property exceeds its cost, you get loan payments that give this back.

In fact, because the loan is structured to value not cost, you can actually ask for more money as you progress to completion.

Many companies now offer stage payments on flexible terms and in advance of your needing them. Traditional problems with cash flow have therefore been minimised.

2. You must be able to service the loan

This means you must have enough income to cover the interest. The usual maximum borrowings are around 3 or 4 times gross income.

It becomes complex if you are self-employed, as you are of course viewed as a greater risk. There are mortgage products that will allow you to self-certify your income.

This means making a simple statement of how much you make, getting a simple letter from an employer if you have one or getting your accountant to write an estimate of how much you are likely to continue making.

These products generally have a lower LTV, of around 75%. Since this reduces the risk on the part of the borrower they can take a more flexible stance on income than they normally would.

All of the above assumes you have a good credit history. If you don't, then start building one! The lender will check you out with credit agencies (and you can check your rating yourself if you want).

The dream customer from a lender perspective looks like this:

- Already owns a property with a good degree of equity
- Has demonstrated a history of paying bills on time. (Note that one of the most influential determinants is how promptly you pay council tax)
- Has a good income from a steady job with a long employment history
- Has no Cocks (County Court judgements) for debt arrears

Key Tip

Practically anyone can get a loan for more money than they could ever repay. The key to it is the terms of the loan. Expect to pay more interest if you have some credit issues.

There is perhaps one other test you may have to pass before getting a loan, or at least it will help you get a good deal:

You must demonstrate a plan.

Banks do not like supporting DIY-ers, for example. Better to show hard quotes from reputable firms, timelines and design drawings. If you build a lemon that nobody wants, the bank has to resort to messy recovery action. This is undesirable from their point of view.

Key Tip

If you provide a project plan, make sure it shows a professional approach, not a DIY approach

There are, of course, alternatives to approaching a lender for a traditional mortgage.

4.7.1 Re-financing

With competition in the lending community comes a lot of special-offer mortgage products. If you can be bothered to shop around and move lenders, you can save a lot of money.

Once you have completed your self-build, you will move away from short-term financing and resort to a conventional mortgage. At this point you need to be free to shop around.

Make sure you are not tied to a particular product when you take out your initial loan as this will cost you in the long run.

4.7.2 Bridging

You may want to live in your existing home while you self-build your next home. Some lenders will support the cost of doing this as a project expense that goes onto your loan. It's just a matter of shopping around.

The scheme is usually called a mortgage holiday. Make sure that this doesn't impact on your credit rating though.

Ultimately, you don't have to do very much to raise finance. You can easily turn the whole thing over to a broker who will recover a fee from the lender. But make sure they get you the best possible deal.

Here are some great links for finding self-build finance:

www.buildstore.co.uk/finance/fst-centre-home.html

www.addeva.co.uk/addeva/compare.aspx/self+build+mortgage/Self%20build%20mortgage/

Congratulations! You've finished chapter 4

You will now know:

- How to produce a high-level project plan (see section **4.1**)
- How best to manage your project (see section **4.2**)
- How to write contracts and a specification (see section **4.6**)
- How to get finance for your project (see section **4.7**)

5. THE RIGHT PEOPLE FOR THE JOB

In this chapter you will learn:

How to find a good tradesperson (see section **5.1**)
Where to get the cheapest supplies (see section **5.3.1**)
What insurance you'll need (see section **5.4.1**)
What factors can drive up your costs (see section **5.5.3**)

The thing that will make or break your project will be the quality of people you find, so it's worth spending some time getting this right at every stage of the process.

5.1 Finding a good tradesperson

There are three levels of tradesperson available to you.

The **first** is a person who specializes in a particular trade such as bricklaying.

The **second** is more general (often called a general builder) and will take on projects requiring multiple skills. Much work will be sub-contracted and these builders will typically then project manage the work of others.

These builders have often grown from being tradespersons themselves (commonly bricklayers or carpenters).

The **third** is a house builder who can be trusted to deliver a complete package from a set of plans and a specification. This person is again often a tradesperson but may also be a professional person associated with building, such as a surveyor or engineer.

Key Tip

Word of mouth is important in finding a good tradesperson. One way to do this is to use one trusted tradesperson to nominate one or more in other fields.

This way, you can quickly form a network of trusted people all recommended by people who are good tradesmen themselves!

5.1.1 Finding a good designer

The prospect of finding a good designer, particularly for commercial projects is a challenge. As a rule, architects prefer to be expressive in their design rather than to think commercially.

Few designers have an intimate enough knowledge of building or of sales value that they fully appreciate how to design a home that maximises future profit.

If that is your goal, you must be armed with the knowledge contained later in this book. It will be up to you to steer your designer in the direction you want to go.

Three key ways to find the right designer:

1. Consider architects, designers, surveyors, drafters or pretty much anyone who can use CAD and has previously designed houses. It's not about title, it's about talent.

2. Map out your needs according to this book and discuss these with each prospective designer.

3. Make sure they listen to you AND offer input to the scheme themselves.

It will become pretty clear very quickly as to who to work with.

5.1.2 Finding a good surveyor

Follow these simple tips:

1. Look for someone who has done some building themselves and has a lot of practical hands on experience.

2. Ask to attend the survey and provide a list of questions that you will want answers to.

3. Look for someone who is receptive to your concerns.

5.1.3 Finding a good estate agent

They come in all shapes and sizes. Your interest is in finding an agent who will work with you towards designing a good scheme. They will do this because they see a long-term relationship forming.

Here's what you need to bear in mind:

1. Find someone who wants to help you because you may be offering them future business.

2. Look for a demonstrated understanding of the market in your area.

3. Quiz them about buyer preferences and the likely buyer types for your property.

4. Look for suggestions on things that will push the value of your property higher.

5. Finally, ask them how they would pitch your property to prospective buyers.

5.2 Do I need a project manager?

If you feel at all anxious about managing your project, then by all means try recruiting a project manager. Expect to pay from £2,000-£20,000, depending on the hours this person will spend on the job and the exact role.

Key Tip

If you hire a project manager, try to recruit locally if you can. Managing a job from a distance is an extra challenge for the best of experts

Project managers will typically be either:

- Architects
- Surveyors
- Building degree graduates
- Engineering graduates
- Former construction site supervisors

Choosing one profession over another will not improve your chances of getting the right manager for you and your project.

5.2.1 Choosing a project manager

Generally, good project people are:

1. Technically competent
2. Good with people
3. Very disciplined
4. Able to see the wood for the trees

Three top tips on finding a good manager:

1. If a person dresses well, seems well-organised and drives a clean vehicle they will probably fit the bill in terms of being disciplined.

2. Ask about some of the technical topics in this book. Read a small piece of the building regulations and test their knowledge by referring to it.

3. Make your own judgement about how they are with people. See if you can visit them on site. Their contractors should respect them.

Key Tip

A project manager has to step in and out of the action. The highly disciplined, techie type will have no problem being immersed in the detail in the same way as the dealmaker is always looking at a wider picture.

You are looking for evidence of attention to detail AND an imagination that can see beyond the day.

Recruit based on the above criteria and your instincts, then write a co-accountable contract.

5.3 Lining up suppliers and negotiating the best prices

The Cost appendix includes materials guides as the most you should pay for items (section **9.6**)

As a general rule, follow these tips:

Don't assume that because you are offered 40% off list price that you are getting a good deal.

That's the first mistake most people make when buying in the construction sector. The amount of discount means nothing. What matters is the actual price.

Use discount suppliers as a benchmark. Screwfix.com has a huge catalogue of mostly good-quality goods at low prices. Use these as your benchmark, then shop around see if you can do better.

www.screwfix.com/app/sfd/cat/home.jsp

Use B&Q / Homebase type-retailers as benchmarks as well.

www.diy.com

Companies offering full package assistance to self-builders are great but still check prices carefully so you know how much you are paying for the extra help.

www.buildstore.co.uk

Key Tip

Look out for loss leaders. Most traders these days are very competitive in a few areas and take your money away in others

5.3.1 Where to get the cheapest supplies

Product	Likely supplier
Bricks and blocks	Builders merchants or direct from the brick maker
Timber	Builders merchants
Roofing materials	Specialist dealers
Insulation	Specialist distributors
Kitchens	Retails outfits like MFI
Electrical / Lighting	Screwfix
Heating	Screwfix or specialist distributors
Plasterboards	Builders merchants
Lintels	Builders merchants
UPVC windows	Builders merchants, Screwfix or direct from manufacturers
Bathrooms	B&Q / Screwfix

5.4 Getting insurance, legal protection and warranties in place

5.4.1 Insurance

It seems that just about everyone sells insurance these days. It is possible to insure yourself in pretty much any way against any eventuality. The insurance industry would like you to.

Of course, if you didn't get any insurance and put the money in the bank, you could probably afford to cover the cost of most eventualities and still have some left over! Hmmm….

It seems to me that insurance becomes worthwhile when a certain low-risk event has a likelihood, if it happens, of wiping you out.

The kind of thing that can do this is for a postman to fall into a hole on your building site and break his neck. This is the kind of thing you need insurance for.

www.protection-insurance.com/self-build-insurance.htm

Key Tip

Beware, taking building site insurance is not risk-free. If you are negligent in the extreme, not only will the insurance company walk away from you, the health and safety executive will want a word as well.

As a self-builder, who is having a home built for their own occupation, the law regards you as a layperson who is the client of a builder.

The builder in this instance is expected to be the authority on safety matters and you are generally not liable in most instances, as you are a self-confessed buffoon.

What then happens when it surfaces that you are on your fifth project and you are taking a pivotal role in the running of the site?

In taxation terms you are still a self-builder as long as you do the principal residence thing.

What about in terms of the way the health and safety executive view you?

The answer is not clear.

Here is one view on it. In matters where it can be demonstrated that you have shown wilful neglect, you will probably go to jail. In instances of pure negligence you will not.

You are allowed to be negligent as a layperson. You are not allowed to deliberately flaunt rules, as this implies that you knew what you where doing and you chose to take an easier route.

As an example, if you were to manage a site of sub-contractors and not provide scaffolding out of ignorance, you would simply be negligent.

The subcontractors would technically be a collection of contractors who should manage their own affairs and provide their own scaffolding. If on the other hand you stated that there was to be no scaffolding on your site because it would cause hindrance to the job, you would be wilfully neglectful.

The bottom line is that in matters of law, if you are a householder, you must still act with the highest integrity and apply the knowledge that you have.

If you are a developer, on the other hand, you must not only act with integrity, you must also be fully aware because negligence is not an acceptable defence in this case.

Most insurance packages cover the complex area of liability and also throw in insurance for theft and vandalism.

5.4.2 Warranties

Warranties are not the same as building site insurance. They are insurance-backed, but their purpose applies to the finished building rather than the building site and work in progress.

The way building warranties work is that the insurer uses surveyors to ensure work is being done to a high standard. Once the job is done they offer a certificate that guarantees the work for ten years or so. This will cost you between £500-£1,000.

There are several companies in the business. The most well known is the National House-Building Council (NHBC).

The NHBC is actually a professional body that uses an insurance-backed product to provide warranties. It has a mixed reputation due to a lot of negative TV exposure.

On the whole, however, it does a very good job of presenting and trying to enforce and encourage best practice. Its mixed reputation is usually connected with large builders since they are the primary source of funding for the NHBC.

The other providers are much more akin to insurance companies. They have little building competency internally and tend to hire in surveyors to do their legwork.

Key Tip

View your relationship with inspectors as a positive one that is beneficial to you. Work with them to promote good practice and benefit from a much higher-quality scheme than you might normally get for the same price.

5.5 Good project management

5.5.1 The project triangle

The first thing project managers are taught is the project triangle – the critical tension between cost, time and quality.

The best way to view this is to examine your goals and clarify where you want to be on the model. If, for example, your goal is minimum cost then this will exert tension on the time and quality elements.

If you want to do things fast, you may pay more for premium time working. If you want quality you are likely to pay more and take longer.

In other words, when you do project management, you have one friend and two enemies. It's easy to build a home of the utmost quality if you spend a fortune and take a long time. This is not what most people want to do, however.

So, here's a simple rhetorical question for you: "What do you want?"

ANSWER: "I WANT IT ALL!"

You should not plan for the cost of a high-quality building to be low, but you should set out to achieve this!

The key to highly successful project management is to understand what your bias is and to fight with the other two components that are working against you.

The most likely goal for you is a balance of the three factors with a bias for one particular element. Self-builders often have a strong quality goal and commonly go over budget.

Large house builders have a strong cost and time focus and usually make big profits. They can't build really bad homes and expect to achieve this, though.

What they actually do is to find holes in the tension model, i.e. ways of increasing quality perception without adding cost or time. We'll call these the **opportunity areas.**

Before examining these, let's consider each of the elements in isolation and summarise how choices influence their outcome.

5.5.2 Stretching the triangle

You can have a house that costs £300 per square metre to build and you can build a house that will last 3,000 years. It's your choice. We've set up some specifications for several types of home, each complete with cost estimates later in the book (See **section 9.2.1**)

Note as well that low cost is not necessarily high profit. Your ultimate goal is maximum value, in minimum time and minimum cost.

Read on and see how the three are always in tension. Then think hard about how you break the links between them. That's what the professionals do best.

Factors determining cost

Some of the detail here may be a little mysterious to you. If so, just move on to the house building tutorial (section **7**) and come back to this.

5.5.3 Factors increasing cost include:

- Complex foundations, bad ground, or a sloping site
- Complex or inefficient design shape
- Large room sizes (walls bigger than 4m wide)
- Lots of rooms

- Handmade clay room
- Expensive bricks
- Hardwood windows
- Hardwood flooring and trim
- Lots of glass

- Lots of brick walls in the garden
- Poor site access
- Premium single-contract builder
- Oak frame
- Premium oil heating system

- High-performance insulation
- Lots of bathrooms
- High-spec handmade kitchen with granite
- Taking too long over the project

- No DIY element
- Premium materials suppliers

5.5.4 Factors decreasing cost include:

- A simple flat site with good ground
- A simple square design
- Room sizes up to 4m-wide walls
- Open-plan design
- Concrete tile roof

- Engineering bricks
- UPVC windows
- Softwood flooring and trim
- Minimal glass area
- Good site access

- Multiple sub-contractors
- Simple natural gas heating system
- Fibreglass insulation
- One low-cost bathroom
- Low-cost kitchen with plastic worktops

- Quick project turnaround time
- Plenty of DIY
- Getting supplies direct from the factory

So cost is primarily driven by the following:

- Design complexity
- Specification and fittings
- Labour options
- Time to complete

Here it is in a nutshell:

Cost Area	% of total
Ground clearance and drainage	12%
Foundations	11%
Shell	21%
Windows / doors	11%
Carpentry inc. roof frame	8%
Roof cover	12%
Plumbing and heating	7%
Lining and plastering	6%
Electrics	3%
Landscape and driveway	8%

5.5.5 Taking time management to extremes – an example

Here's an extreme scenario that will show you how it's done. In practice, of course, it will never happen like this, as the costs will be prohibitive. The idea is that you harness some of the thinking here and apply it to your project.

Day number	Activity
1	Clear site. Use high-end tracked vehicle, mechanical grabber and on site trucks to move material off site.
2-4	Fit proprietary raft foundation.
5-15	Fit timber frame and windows.
15	Fit scaffold.
16-36	Bricklayers in.
16-22	Roofers in.
16-22	First fix wiring and plumbing in.
22-36	Dry lining crew followed by plastering crew.
36-50	Plumbing and electrical second fix. Kitchen and bathroom installers in parallel. Finish carpentry in parallel.
50-52	Painting and carpeting.

Perhaps the only other consideration is rain! It is possible to rent enclosures that will cover a complete house. That's if you are really in this kind of hurry.

Key Tip

There are very few activities that cannot be done all at the same time (concurrent is the technical word!)

Consider in this case that we are intending to do…

Bricklaying
Electrics
Plumbing and heating
Kitchen
Bathroom
Carpentry
Landscaping

All at the same time. A bit of an organisational challenge but definitely do-able.

Working seven days a week, the above house is buildable within 8 weeks.

5.5.6 How to do the job for half the price

Here's a side-by-side example for two homes of equal floor area of 200 square metres. House 1 has a simple square design, simple roof of large concrete tiles and economical fittings.

House 2 uses premium materials and has an intricate design. House 2 is built on a complex site (trees, clay and a severe slope). House 1, of course, is built on a simple accessible site.

House 1	£	House 2	£
Simple strip foundation, good machine access. Shallow slab	5,000	Complex piles, steel & concrete beam	14,000
Shell in block and render	10,000	Shell in handmade bricks with chimney	20,000
Windows: PVC	4,000	Windows: Oak	8,000
Roof: concrete tile on simple roof	5,000	Roof: handmade clay plain with dormers & valleys	14,000
Kitchen: MFI	4,000	Kitchen: designer	25,000

House 1	£	House 2	£
One bathroom, gas fired central heating	8,000	Underfloor heating, multiple bathrooms	18,000
General finishing, carpet and paint	2,500	Floor in stone & hardwood carpentry	6,000
Simple landscape, stone drive	2,000	Lots of landscape, clay brick drive	15,000
Internals: large internal rooms, open plan	4,000	Small intricate rooms	10,000
Simple drainage	1,500	No mains drainage, complex pipe runs	12,000
TOTAL	**46,000**		**141,000**

Naturally, you don't need to be told how to spend a lot of money!

5.5.7 A dozen key tips on how to save, big time

1. Use a simple square design with small, sparse and evenly sized windows of UPVC
2. Generally minimise glass area.
3. Use a low-pitch roof with Marley modern concrete tiles.
4. Use timber frame and minimise overspending on timber sections.
5. One bathroom from B&Q.
6. One small kitchen from MFI.
7. Simple flat site with full access, no trees, flat ground, good ground.
8. Ensure services in the street are less than 10m away.
9. Buy carpets for £5 per square metre.
10. Use sparse carpentry.
11. Have open-plan design.
12. Keep ceilings nice and low.

Of course, if you do all this, your home will look like a community centre. You get what you pay for!

5.5.8 Breaking the cost-value relationship – how developers make money

So the question then becomes: 'How do I build a home that has a higher spec and still do it on a tight budget?'. The answer is to learn from developers.

Most developers install the cheapest hardware they can and yet work with it in a way that looks appealing. Some apply a different formula that seeks to get a higher return for a higher spec.

www.octdev.co.uk/octframeset.html

The key is always to gain more value for each additional £ spent.

Do your own research. Here are a few ideas:

A cheap kitchen can look 90% of a high-end kitchen. Use halogen lights to give impact. Go easy on cupboards and frills. Go for posh handles.

The same for bathrooms. It's all in the taps and lighting (halogen, of course).

www.lightsaver.co.uk

Find a good-looking cheap brick. Make a sample panel with various cement colours from white to brown and see if you can improve the look. Handmade bricks look great but can cost you £6k-7k more per house than some quite good alternatives.

www.yorkhandmade.co.uk/Bricks.htm

www.hansonbrick.com/content/products/products_fset.htm

UPVC windows can look good and you can introduce some low-cost lead effects.

Use high-end cushion floor for kitchens rather than church stone.

Use smaller skirting and architrave.

Install a fire that doesn't need a chimney.

Think about a quality plastic worktop rather than granite.

These are all difficult compromises to make. They are perhaps essential if you are on a tight budget, but certainly prudent if you want to maximise profit. Tough all the same.

Developers usually compromise high-end materials and expensive approaches for maximum useable floor space, plus a little of the clean-fresh-warm effect. That's what a site home usually offers.

Consider again the cost examples in the previous sections. You now know how to double your build costs. The question the developer faces is 'how do I halve my build costs and retain the same value?'

Which of the following would you erase if you had to make hard commercial decisions?

Complex piles, steel and concrete beams.
Shell in handmade bricks with chimney.
Windows in oak.
Roof - handmade clay with dormers and valleys.
Designer kitchen.
Underfloor heating and multiple bathrooms.
Floor in stone and hardwood carpentry.
Lots of landscaping, clay brick drive.
Small intricate rooms.
No mains drainage, complex pipe runs.

Some you have no option with. The answer is usually as follows:

- Lower the roof slope.
- Use a less expensive concrete roof tile.
- Use lower spec flooring and wall tiles.

- Use a low cost bathroom and kitchen (make it look good with lights).
- Have smaller windows (and hence less insulation).

You may decide differently. It's market driven so spend time understanding your potential buyers' tastes.

Congratulations! You've finished chapter 5

You will now know:

- How to find a good tradesperson (see section **5.1**)
- Where to get the cheapest supplies (see section **5.3.1**)
- What insurance you'll need (see section **5.4.1**)
- What factors can drive up your costs (see section **5.5.3**)

6. RUNNING A SELF-BUILD PROJECT

In this chapter you will learn:

How to choose between timber and brick-block (see section **6.1.4**)
How to set up a good building site (see section **6.2**)
About the cost of demolishing existing buildings (see section **6.4**)

To run a successful project, you need just three things:

1. A set of goals that you are committed to achieving
2. Knowledge of project management skills
3. Knowledge of the field you are managing

We've already taken care of 1. Let's move on to the other two. The tutorial covers the essentials of housebuilding. It takes you through the whole process step by step and gives you great tips on how to avoid the biggest pitfalls.

6.1 Tutorial – Ten steps to effective housebuilding

The construction steps you will go though as a self-builder will be as follows:

- Setting up a good site
- Clearing ground and excavating foundations
- Building a floor platform
- Building a shell
- Fitting a roof
- Fitting windows
- Wiring
- Plumbing
- Wall ceiling and floor finishing
- Landscaping

Let's clarify this a little:

Setting up a good site means you will…

1. Be safe.
2. Be secure.
3. Save labour.
4. Never move anything more than once.
5. Use machinery rather than picks and shovels.

Clearing ground is necessary before any building can start. You have the option of creating a landscape and installing your underground stuff at the same time.

Building a floor platform means providing a good base to work off.

Building a shell means building the overall structure of the building including walls, floors, ceilings and roof structure out of wood or a combination of wood and concrete and clay products.

Fitting a roof stops water from flowing into the building. This can be done as soon as the structure is in place and before, after or during the time the windows and doors are being fitted.

Fitting windows and doors, together with capping the structure with a roof, makes a watertight building. This is a significant milestone. From this point on, you are no longer at the mercy of the weather as you can now work inside and outside at the same time.

Timber frame methods mean you can even start working inside before laying a brick or a roof tile. That's a big advantage in this climate of ours!

6.1.1 Generic approaches – Frame v brick and block

Perhaps the biggest decision you will make during your project will be the generic construction method. There are generally two:

1. Timber frame.
2. Brick and block.

The choice you make has implications way beyond just the choice of material. First an explanation of each, then we will discuss the relative merits and advise a choice based on your circumstances.

6.1.2 Timber frame

Timber frame construction, contrary to what many may think, has a long and prestigious history. Timber frame construction was brought to the UK from Scandinavia along with their long ships and warriors.

There are many good quality Tudor, Elizabethan, Jacobean and other period timber frame homes still around (i.e. 1508-1625), and quite a few medieval ones too (pre-1508).

The earlier examples had a widely spaced oak structure with panels in-filled with mud, hair and stick (wattle and daub).

This method is usually called post and beam nowadays and this type of house can still be bought off the shelf from companies like Potton, in oak or in softwoods.

www.potton.co.uk/default1.htm

There are also companies specialising in providing the materials and erection of high quality “A” frames (the underlying structure of this type of building).

Post and beam barn being built

Most timber homes (that’s about 10% of all built and a good many more in self-build), nowadays are constructed by what is known as a platform method.

The method consists of many smaller posts (vertical) spaced at typically 400mm intervals. The wood is usually softwood of some kind and is nailed together. The outside is clad with boards to give strength and a brick or other shell is added for cosmetic purposes.

The timber shell has a timber floor platform that sits on top of the posts and a timber roof that sits, of course, on top of the highest wall.

Insulation sits between the posts or over the top of them. Wall finish is typically plasterboard fixed to the frame. Internal walls have the same timber structure.

The timbers used for the walls are all typically 100mm x 50mm. Floor joists will of course be bigger at typically 220x50mm and roof rafters at 50x150mm.

6.1.3 Brick and block

Brick and block construction has two skins. One (inner) of concrete or lightweight block and an outer one of either block with render or a face brick.

The wall is usually around 260mm thick, that is the width of a concrete block (100mm) a brick (100mm) and a cavity between. Openings are supported by steel lintels.

www.igltd.co.uk/product_guide.php

This type of construction dates from around 1920 with earlier examples of solid construction being of solid brick (without cavity) or solid stone. There are again many stone buildings from medieval times still in existence.

6.1.4 Which method is for me?

It's fair to say that solid construction is more durable than timber frame. There are many more stone buildings from the twelfth century still around than there are timber buildings.

Of course, even stone buildings had timber roofs (unless they where Norman castles with stone roofs!) The table below compares the two methods.

It's pretty easy to summarise.

Timber frame has a significant advantage in terms of project management. It's very easy to erect a factory-built frame and fit a water-tight cover to the whole building within about a week.

From that point on, internal and external works can run concurrently. A solid shell can take 5-10 weeks and bad weather can make it take much longer than that.

Feature	Brick & Block	Timber frame
Cost	Equal	Equal
Difficulty to implement		Slightly more complex.
Time	Very linear. Build the shell, do the roof, then start the inside work	Faster & more forgiving of poor weather, trades being late, etc.
Thermal	Tends to store heat in walls. Slower to warm up, slower to cool. High levels of insulation possible.	Very high levels of insulation possible. Tends to warm up quickly.

Feature	Brick & Block	Timber frame
Structural options	Anything is possible but can get very expensive due to weight being carried.	Anything is possible as light frame.
Noise	Considered traditionally better.	Usually considered poor as very few builders use noise insulation. It is possible to exceed solid performance.
Durability	Most durable	Can be made durable. Can also be made not at all durable !
Dampness	Moderate to low levels of water in building structure. Some natural passage of water vapour through walls, i.e. building breathes to some extent. This means that the ambient internal humidity is balanced with the external humidity.	Low levels of water passage through walls. The inside atmosphere tends to be independent of the outside atmosphere. More thought required on removal of water from showers, for example.

It is fair to say on balance that timber frame is great if you want a smoother-running project, want best levels of insulation and expect to build a home that will last for 100-300 years.

If you do it right, there will be no practical difference in durability for your average home and you will have the advantage of a thermally better and dryer building.

Timber structures do tend to move around more so some cracking around the seams of plasterboards can occur particularly early in the building's life as moisture levels balance out.

As there is less passage of moisture through walls, timber houses tend to be naturally drier inside unless you produce a lot of moisture and don't allow it to escape.

Timber lends itself better to more complex design such as vaulted ceilings and oversize open-plan arrangements. These options are equally possible with solid construction but the cost can increase rapidly as steel structure becomes necessary to hold the whole thing together.

Timber houses depend on membrane systems to prevent moisture entering the wall fabric from either side. If this system fails (which is usually because of something as simple as a badly installed sheet of polythene), then the timber can become damaged by moisture or fungal attack.

Timber homes depend on plasterboard internal walls and are likely to need refurbishment more often than solid ones.

Many solid-walled houses now have plasterboard wall linings rather than solid ones. Durability is therefore more than a function of the wall construction.

Ultimately, most self-builders choose timber primarily because of its ease of use and perhaps its insulating potential. Most people choose solid construction because of its solid feel and durability.

The solid feel is usually a function of noise transmission and flexibility, i.e. bending of timbers, both of which can be addressed.

6.2 Setting up a good site

There are some sites that are inherently difficult. Examine the table for a comparison of good and bad sites.

Key Tip

Having a site that functions well will reduce your project costs by thousands of pounds over a site that functions badly. By understanding this, you can save a great amount of project money.

Good site	Bad site	Cost impact for 200m² home
Flat ground	Steep hillside	£10,000
Firm sandy ground	Wet clay or bog	£10,000
Clear machine access to all sides	Site only accessible by foot	£20,000
Site large enough to store all materials	No storage/on busy road	£10,000
Accessible & close to suppliers	Down a snow-covered mud track in middle of wilderness	£5,000
Rainwater drains well	Rainwater accumulates	£5,000
Secure from vandals & thieves	In a bad area	£5,000 (lost time)

Setting up a site involves creating a working platform for the building and building work. There are several things you will need to accommodate:

1. Access to the site
2. Storage areas
3. Space in which to manoeuvre and work
4. Office/accommodation

6.2.1 Access to the site

This is a pretty simple concept. You need to establish the following:

- You have to get vehicles and people into and out of the site.
- You have to have room perhaps to turn vehicles around.
- You need access to all sides of the proposed building.
- You have to overcome the effect of rain on your entrance, i.e. sinking vehicles.

The importance of access is very high. If you build a house in such a way that a tracked excavator cannot get to the rear, you will spend 100 times as long levelling ground by hand.

Key Tip

A mechanical excavator works 100 times faster than a human. Make sure there is good access for the duration of the project!

Consider the effect that rain will have on your site. Plan for water to be carried away using land drains (porous pipes), for example.

Rain will have the most effect on the site access as lorries will tend to churn it up. Make a hard base by building an access road with a 100mm depth of hardcore (sharp stone, of 50mm diameter in this case).

6.2.2 Effective storage

At some point or another, every component of your building will be stored on site for a period of time. Consider the following key points:

Security is always an issue. Rent a lock-up container for valuable supplies.

Get the materials as close as possible to the point of use, but do not get so close that you limit working space. Remember that you will be erecting a scaffold and this will occupy the 1500mm or so around the building.

Moving materials around by hand to make space is time wasted. Plan carefully so that materials are moved only once. This is harder than it sounds!

Some materials are damaged by rain. Some are not. Most materials need at least to be stored off the ground on wooden blocks and pallets.

These materials can be stored outside:

- Bricks, but cover them to prevent water penetration. If you don't, they will release salts when they dry (white streaking on building)
- Roof tiles, again cover if concrete or synthetic slate.
- Wood, if treated.
- Aggregate of any kind, i.e. sand, stone.

These materials will be ruined by rain or even dampness:

- Plasterboard
- Plaster mix
- Cement powder
- Man-made boards like plywood, MDF, OSB

The key here is to keep your materials well off the ground (on pallets for example) and securely covered with plastic. Better still, put them in a store building.

Key Tip

Wet materials are unpleasant to work with and much heavier. Buy tarpaulins to cover most of your materials.

Finally, avoid stacking materials on top of each other unless you are absolutely confident about the sequence in which they will be used.

6.2.3 Space in which to manoeuvre and work

This is a simple point. You want materials close to their point of use but not too close so as they will get in the way. Keep a 3-metre walkway around your building.

Avoid creating a wall of materials around your building that prevents other materials getting in. Make sure vehicles can turn properly. Mechanical excavators come in many shapes and sizes. Consider these points and discuss with your team:

They generally need a lot more room to work in than it may seem.

Back hoe-type machines like Cat need to be serviced by a vehicle that takes their load away (a dumper truck perhaps).

Front excavators like JCBs can drive around with a cargo.

Wheeled vehicles will make a mess of soft ground whereas tracked ones will compress it quite nicely.

Smaller excavators usually have limited reach and sometimes limited hydraulic power.

Vehicles above around 3 tonnes need specialist transport (rather than a trailer and Land Rover). This can limit flexibility.

Key Tip

You do not need all your materials all at once. You want to order parts to arrive just before they are used. Of course, suppliers will often let you down so don't cut it too finely.

The section on lead times **(**see sections **9.4** and **9.4.1)** guides you on how much safety time to allow when ordering different materials.

6.2.4 Office/accommodation

Here are some uses for a site office. It doesn't need to be anything fancy. Just a good, secure shed.

- Sheltering from rain.
- Storing valuables.
- Inspecting plans.
- Using the phone.
- Having meetings with contractors.
- Accessing the internet (for ordering materials, for example)
- Having a cup of tea and regaining composure.

Living on site

You can choose to live on site and get the following advantages:

1. Close to the action so easy to manage the work.

2. Helps with security.

3. Less travelling.

4. Close to family.

The normal approach is to live in a caravan on site.

6.3 Brownfield sites

Aside from the issue of contamination, brownfield sites have a host of other challenges:

Dangerous materials – asbestos being the leading one. It was used to lag boilers, to provide fire insulation and as an ingredient of a cement board like material (think of those corrugated off-white shed roofs – that's asbestos board).

To remove a little will cost you a few hundred quid. To remove a houseful will cost thousands to tens of thousands. Don't avoid it at all costs, but get prices before you commit.

6.4 Demolition costs

Demolition costs have increased greatly with the recent increase in landfill costs. Budget around £30 per cubic metre as a starting point. This includes cart-away. Don't even think about using skips as these cost around £30 per square metre for the volume alone.

Consider that some materials may be salvageable. Plain tiles, particularly clay, are worth 20p each (and you may easily have 10,000 of them at 60 to a square metre.

Bricks are often salvageable as long as the mortar is weak enough to break away. These can again be worth 20p to £1 each depending on quality.

Bathroom suites are the other significant salvage item – a high quality suite from 30 years ago may be worth £1,000. These opportunities may offset some but not all of the demolition costs.

6.5 Contaminated ground

Aside from the obvious contaminations there is the residue of the foundation and services from the previous building to think about.

The demolition must remove all of this unless a structural engineer says otherwise (and he probably will not). It needs to be included in the demolition contract if you want to avoid being stung.

Congratulations! You've finished chapter 6

You will now know:

- How to choose between timber and brick-block (see section **6.1.4**)
- How to set up a good building site (see section **6.2**)
- About the cost of demolishing existing buildings (see section **6.4**)

7. BUILDING – EVERYTHING FROM THE GROUND UP

In this chapter you will learn:

How a good foundation is laid (see section **7.1**)
How to choose the best roofing materials (see section **7.6.1**)
How electricity works in your home (see section **7.8**)
What options you have for heating (see section **7.9.1**)
All about walls, ceilings and floors (see section **7.10**)

7.1 The foundation slab and groundwork

A foundation simply connects your home to firm ground so that it doesn't sink.

There are several main kinds of foundation:

1. Strip or trenchfill – a 600mm wide perimeter of concrete around the base of the property a metre or so underground.

2. Raft – A slab of concrete sitting on the ground and knitted together with embedded steel.

3. Piles – Posts cut very deep and filled with steel and concrete. The gap between the piles is bridged with a steel frame.

Let's say a house weighs in at around 50 tonnes (that's 50,000 kg and not a bad guess). Let's say the foundation strip has an area of 50 square metres. That's 1 tonne per square metre.

The more foundation area you have, the less weight it carries per square metre. This is very important on soft ground, not so on rocky ground.

Ground tends to change in unpredictable ways as you dig down. The top level (topsoil) is generally soft, compressible and organic. If you dig a hole to fifty feet in different regions of the country you will get different results.

In London, for example you may get 500mm of topsoil and then 50m of clay. In Wiltshire you may get a layer of topsoil followed by 1m of clay followed by 1m of chalk followed by flint.

As a rule you try to build on firm ground. You can do this by digging a trench down until you get some.

If you know through investigation that the firm ground is 10m down then you will decide to drive piles into the ground, as a trench would be impractical. If you know the ground is soft and boggy for 500m you will chose to fit a raft and float on the surface.

In most cases however you will simply build a concrete strip foundation. Ultimately, the person who is best trained to decide on approach is a structural engineer.

You commonly will not need to resort to this high level of help. Generally, the man from the council (building control) will know the area and will tell you or your designer what to do.

It's important to note that the foundation is commonly well below ground, say 1m, even if the ground is firm close to the surface. There are two reasons for this:

1. The ground tends to be firmer down there.

2. Clay and frost don't mix. Clay takes in water, expands, contracts and does all kinds of tricks. The deeper you are, the safer you are from clay movement. Since trees have an effect on clay soil movement, the presence of trees requires much deeper foundations.

7.1.1 Setting a strip foundation

This involves Levelling the area to accommodate the building, digging trenches for foundations, digging service trenches and filling with concrete.

7.1.2 Levelling the area to accommodate the building

Your builder will mark out the approximate position of the building with marker poles. He will also place poles at the extremities of the excavated area to include room for patios, paths, flat lawns, etc.

His excavator machine will use its front appliance (i.e. a blade like the front of a caterpillar or bucket like on a JCB), to push earth into a pile so that you have a good and firm playing field. Topsoil is commonly 300mm deep.

This tends to become firmer and more compact ground below this level (because it's had weight from above applied to it for a long time).

Generally, firm ground is easy to recognise (as it's firm!) and the person with the digger has done it enough times to recognise it. Your surveyor will help with this.

7.1.3 Setting out the foundations

At this stage you have created the terrain profile you want and removed topsoil from the area of the building. The next step is to mark out the actual foundation positions and set depth gauges.

Foundations need to be level within about 20mm and need to be aligned within about the same margin i.e. plus/minus 10mm. The reason for being level is that the building is constructed on the foundation and you certainly want this to be level.

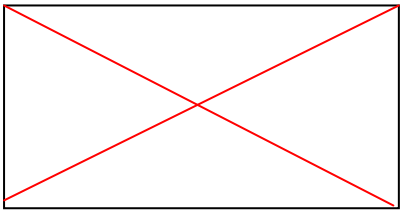
It is possible to adjust the level as the foundation is built using thinner or thicker cement beds but this makes for more work so best get it right at concrete level.

The grey line (cement powder) gives the excavator a line to work to.

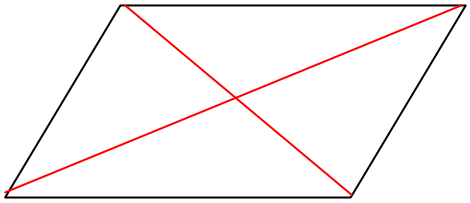
The corner boards, called profiles, are used to hold string lines that mark wall positions. These positions are worked out using a tape and simple geometry:

A rectangle has equal diagonals.

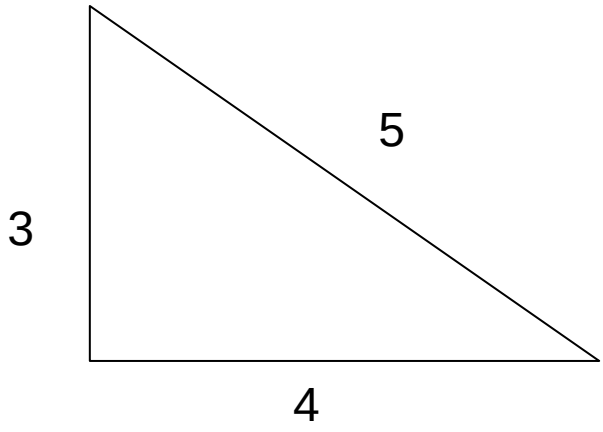
A right-angled triangle can be formed by sides in the ratio 3:4:5 with 5 being the long sloping side (or hypotenuse).



Diagonals (RED) equal.



Diagonals (RED) not equal.



Check your builder's diagonals are within about 15mm overall for the building.

7.1.4 Pouring the concrete

Once your trenches are in place (and the building control inspector has verified they are OK), your builder will pour concrete into them. Concrete is usually specified by your designer.

Its strength varies from C10 to C50, with yours likely to be in the range C15 to C30 depending on the application.

You will also be asked to specify 'slump'. This refers to how wet the concrete is. It generally should arrive in a fairly stiff, hard-to-move state.

Key Tip

Most builders request water to be added on site, which makes the concrete flow around the trenches. This compromises its strength quite dramatically, however, and you are right to object to this practice.

Finished foundations – the top surface is smoothed to provide a good base for building.

7.1.5 Building foundation walls

About 24 hours after the concrete strip is fitted, the bricklayers can build up the foundation walls. They do this with a strong cement mix of around 4:1 sand to cement.

The foundation can be of solid construction with the cavity starting around ground level. Brickies commonly use large foundation blocks to do this as they are easier to lay. These blocks are made from a lightweight aggregate that provides insulation to the floor platform.

A foundation wall in place. Note the profiles. Lines secured to these indicated the initial position of the trench and later the walls.

7.2 Service trenches and providers

There are several services you may have to install to your building:

Gas
Water
Sewerage
Oil
Electricity

You need to work with your designer and builder to ensure that services are installed into appropriate trenches early in the project and preferably while the foundations are being laid. The reason for this is that things can become a terrible mess if this is done as mud is extracted, particularly if it rains.

7.2.1 Water

Cold water is provided via an underground connection to the mains water which is usually located in the street ahead of the property. The pre-purchase searches that your solicitor does will indicate where the connection point is.

A simple scheme involving a connection and run of ten metres will be a trivial matter.

You will be responsible for fitting an underground pipe at a depth of around 700mm. The utility company will make the connection to your pipe. Problems are only likely if there are access difficulties to your site.

This can occur if for some reason the water main connection has to pass through the land under separate ownership. You should check carefully that you have a 'clean' scheme with your legal team.

Other than this, it's usually a matter of booking the utility company early and digging a suitable trench yourself.

7.2.2 Gas

Gas enters a property from underground. Much the same issues apply with gas as with water installation. The gas company will be more proactive about giving you a supply, however, as they will profit from it. It may be that there is not a gas main in the street in which case you can have bottles installed by a CORGI-registered plumber.

This is OK for cooking, as a £20 cylinder will last six months. It is a poor option for heating, however, as it becomes very expensive. Better in this case to use oil for heating, gas for cooking.

7.2.3 Drainage

If you live in town then you are likely to have mains sewerage in the street (or sometimes along the line of adjacent gardens). Your design plans should clearly show your connection to a sewer. The utility (water) company again needs to make the final connection.

One issue that is unique to sewer installations is that they need gravity to function. If you are too low to flow into the sewer you may end up spending a few thousand on a private pumping station.

Make sure you verify your position early in the project.

There are two components to a drainage system. The part that is owned by the utility company (to which they will want to make the connection), and the part that services your property specifically, which is owned by you.

The latter is covered in the plumbing section. The only comment worth making here is that you should consider installing this pipe work (underground) early in the project so that the messy process of trenching is completed. Again, discuss with your designer.

Use narrow trenches for pipes to limit disruption.

7.2.4 Oil

Oil is supplied to a property by a tanker that fills a tank on your site. This tank is under your ownership and nothing to do with any utility company. It is a well-accepted method of heating a property.

7.2.5 Electricity

Electricity is a similar installation process to water and gas. It can be routed overhead in which case a supply can be quickly installed. Better however to run it in a trench that you can dig and offer to the utility company to run a cable into.

7.3 The floor

7.3.1 Building a suspended floor platform

What's a suspended floor? There are two generic types of floor platform - those that are suspended about the ground i.e. supported on the foundation walls, and those that sit on the ground inside the foundation wall.

It is possible to get a very similar result in both instances.

Suspended floors come in two forms – wooden floors or concrete beam floors.

Wooden floors are simply joists spanning between foundation walls that support floorboards of some kind. Wood can typically span around 4.5m before it gets too bendy.

At this point, you can resort to additional supporting walls (foundation walls) at midspan or you can use alternatives like wood beams or steel beams.

Key Tip

Discuss upgrading your floor joists with your designer. This will make your floor feel much more rigid and will cost very little extra to do.

The second type of suspended floor uses concrete beams rather than wooden ones. The gaps between are filled with concrete blocks rather than timber decking. Needless to say this option makes for a more rigid feel.

Take note of several features of a suspended floor platform.

There is a ventilation gap and wall vents that allow air to flow. This is to limit the risk of gas build-up and of dry rot (fungal attack).

There is a membrane that connects into the damp-proof layer in the walls. This is less critical with a suspended floor but still is important in terms of limiting moisture and therefore the risk of dry rot and wet rot.

Make sure, whatever scheme you have, that there is a good membrane in place, free of any holes and suitably overlapped at joints.

This should join with the damp-proof membrane in the wall to form a continuous barrier to water (think of a swimming pool in reverse keeping the water OUT).

7.3.2 Building a solid (ground-bearing) floor platform

There are several advantages and disadvantages to this approach:

- It is more likely to have damp problems, but only if there is damage to the membrane.
- It feels more solid.
- Is easiest if a concrete truck can drive up to the edge of trenches. Timber is quickest if the site is hard to access with a concrete truck or crane.
- The cost is roughly the same for each option, though concrete beams are expensive.
- It may not be possible on a site with a severe slope, or if the slab is any more than 800mm from the ground due to the risk of subsidence.
- Both options are very good insulators.

It comes down to a couple of things – site access and site conditions.

If you have a slope sufficient to require any point of the building to have a sub-floor depth in excess of 800mm then suspend the floor.

Also, if you cannot easily get concrete to the site (consider a pump as well), then go suspended.

Otherwise, a solid floor gives a robust and practical result and can be insulated to a high level if you wish.

7.4 Building a shell

The superstructure of the building is built from either a concrete and brick mixture or a timber frame option.

Apart from the obvious, shells or superstructures have several features that are important:

- They contain insulation.
- They prevent moisture from passing through the wall into the building.
- They support floors.

Generally, the shell needs to be strong to resist the weight of the roof and wind loads. It also needs to be fairly rigid so that the windows do not become deformed and that the internal wall covering does not end up cracked.

7.4.1 Alternative frames

There are alternatives around these, which you can discuss with your designer. Generally, you will always have a cavity to keep out damp and insulation for thermal efficiency.

The wall layers around this can be practically anything durable enough and strong enough to hold the substantial weight of the floors and roof.

The cavity exists because water tends to pass through a solid wall layer. It actually runs down the cavity in very small amounts. It can either simply accumulate and evaporate at the bottom or be guided back through the brickwork using what is called a cavity tray.

The cavity is often used to house insulation.

This is fine, but avoid completely filling the cavity with insulation as this removes some of its ability to prevent damp. The cavity also closes around windows and doors.

The correct way of doing this is with a cavity closer with insulation built in. This stops cold spots on the inside that get condensation (called cold-bridging).

You will see that the cavity is bridged by metal ties. These are designed to hold the two halves together. They should be spaced at regular intervals.

Key Tip

It is very important that cement (i.e. brickie mess) doesn't accumulate in the cavity. The brickie knows this but sometimes needs to be reminded.

The **lintels** are steel units that bridge openings and support the weight from above. Other forms of bridging include steel beams (RSJs) which are much heavier, and even timber, which is weaker but still OK for many jobs.

The **DPC** is the damp-proof course that stops moisture rising up the wall. It must be 150mm above outside ground and below finished floor level.

It must also have an open cavity of 200mm below it. The cavity below this level is filled with weak concrete to give it strength against the soil bearing on it.

The **wall-plate** is a wooden plate that links brick walls to timber joists and rafters. It is rather difficult to join these two materials in a highly robust way.

One approach is to use steel straps. Look out for these on the wall plate and when connecting gable walls to the roof structure.

You will see short timber sections between longer timber lengths in several places in the structure. They are called **noggins** in walls and strutting in between floor joists.

Their critical job is to prevent buckling. They should fit without gaps to do their job. Spacing is every 2.5m in floors and every 1.5m in walls.

Some features to look for in a good shell:

- A good clear cavity
- Lintels that have a decent bearing area on either side (at least 150mm)
- Consistent spacing of wall ties
- Insulating cavity closures around windows and doors
- Effective strutting and noggins

7.5 Insulation of walls floors and roofs

Ready for some science?

The most common measure of insulation performance is the U-value. This is a value that describes how much heat a feature like a wall will lose or transmit to the outside world.

It applies to blocks of 1 square metre to be convenient. Think of a 1 square metre block of wall. Its U value is 0.2.

Think firstly about the inside of the building being the same temperature as the outside. Does any heat pass through the wall? Of course not.

Think about the outside being warmer. Does heat transfer from outside to inside? Yes, of course.

If the inside is much, much hotter than the outside, does this create more pressure for heat to leak through walls? Of course.

The point is that a U value has to be related to temperature differential as well.

The measure of heat being passed through the wall is in Watts. Just like a 50w light bulb makes 50w or so of heat, so a building makes heat and passes it through its skin.

Of course the wall materials are designed to resist this. But some heat passes anyway. The more temperature difference, the more pressure there is for this to happen.

Coming back to our U value of 0.2. **What this means is that for each 1 square metre block of wall area (or ceiling or floor area) 0.2 watts of energy are passing for every degree that the outside is cooler than the inside.**

If the outside is 10 degrees (centigrade not Fahrenheit) cooler, then each square metre of wall will be transmitting 2 watts on a constant basis.

If the building has a surface area of 500 square metres then 1,000 watts will be passing constantly. This also means, by the way, that 2-3 500w halogen lights will maintain the building temperature.

All true IN THEORY!

Multi-reflective insulation giving U of 0.2

In practice, there is enough natural ventilation in a house for this to be nonsense. If it were not, there would be no air to breathe! Heating systems generally have around 15,000-20,000 watts of output.

So much for theory, but it does explain how insulation performance is measured.

If you happen across a thermal performance in a value "R" then simply divide this into 1 to get a U. So if R=5 means U=0.2.

If you get a Lambda (looks like "λ") then simply divide the thickness of the insulation being provided into this to give U. So a product of Lambda 0.01 with a thickness of 100mm will have a U of 0.1

To give some idea on performance:

100mm of fibreglass (or Rockwool) has a U of 0.45
A very good insulator material will now give a U of 0.2
A typical double-glazed window has a U of 2.0

The materials you will commonly see come under brand names. You will most frequently come across:

- Many brands of fibreglass-type rolls or bats
- Rigid board like Celotex
- Some natural products like newspaper and sheep wool.

Self-builders are also being targeted by multi-reflective products like Actis, which are the thinnest, highest-performing and probably most expensive product options around.

Key Tip

In terms of ease of installation, the multi-reflective products are quickest, followed by the fibreglass and then the rigid boards (which have to be cut so size unless you have carefully set out a building to accommodate the sizes available).

7.5.1 Thermal mass

The more thermal mass a product has, the more heat it stores. A house with 300mm thick stone walls has a lot more thermal mass than a modern timber frame home.

Thermal mass has nothing to do with insulation. This confuses most people, experts included, in an instant. Let's see if we can clarify it.

A little house in Spain is made from 500mm of concrete and has very small windows.

It doesn't get very warm inside even during the hottest days because the walls soak up all the heat that is passing into them. They then slowly release this heat back into the night and gradually cool to night time temperatures.

The result is a building that tends to change temperature very slowly and typically maintains a temperature that is half-way between the coldest and warmest points of a day.

The walls do not stop the heat transfer from outside to inside, they simply slow it down to such an extent that it never gets there.

In a situation where the night is as hot as the day, the system will not function. In a situation where the inside is kept constantly cooler (by means of a chiller) than the outside, the cooled air will soon reach the extremities of the walls and pass through.

At this point the wall will provide much-reduced separation.

Now if this house in Spain were constructed of timber with no insulation, its temperature internally would simply follow the outside and it would quickly reach the daily extremes.

If this same timber house has a very high degree of insulation, it would tend to perform more like the stone house.

Now introduce a heating and cooling system in all three scenarios.

In scenario 1, the system will slowly respond to changes in setting.

In scenario 2, the system will struggle to do anything.

In scenario 3, the system will quickly reach its settings.

The moral of the story is this. If you want a controlled environment all year round, avoid solid walls and have lots of insulation. If you want a more natural environment indoors that tends to want to follow the average 24-hour outside temperature, build thick stone walls.

Your goal in terms of insulating you home is to provide a blanket that totally encompasses the property. The areas that are venerable are as follows:

- Areas where floor insulation ends and job should be taken up by wall insulation
- Same for wall to roof transition
- Doors and windows
- Wall closures around the above

1 and 2 are covered by good design. Ask your designer about how the insulation is made absolutely continuous at these points. It's a little tricky in practice.

The building regulations take insulation or energy conservation very seriously. There have been increases in expected performance many times recently. The current expectations are:

Element	U Value
Floor	0.25
Wall	0.35
Roof	0.25
Windows	2.00

This is a gross generalisation, by the way, as there are several other factors that can be brought into play. As a general rule however, accept that you will need to achieve around about these figures.

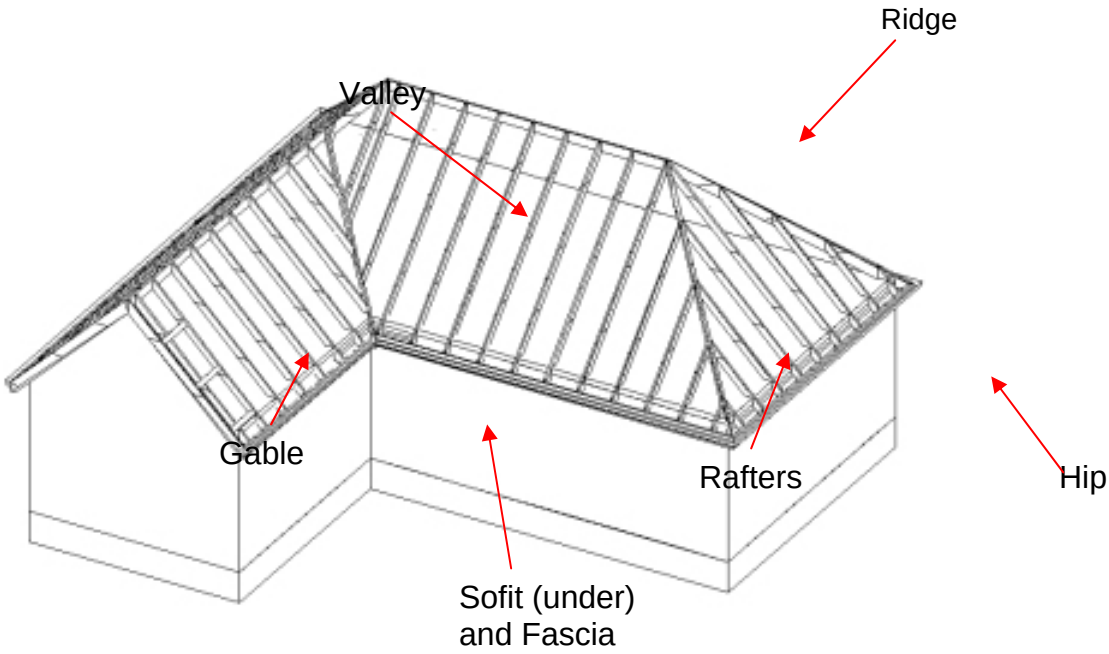
This means for example that a roof needs about 200mm of fibreglass insulation and a wall about 150mm. You can of course use different materials even in combination if you want to. It's a complex field and you need to discuss your options thoroughly with your designer.

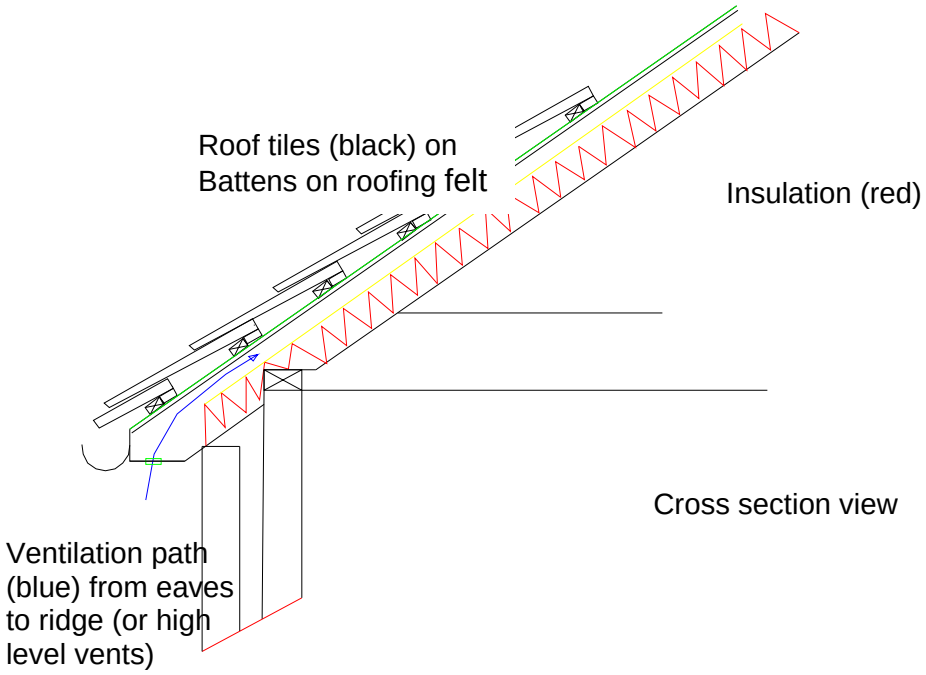
7.6 Fitting a roof

The roof covering composition has several roles:

- To provide a rainproof cover and guide water away sensibly
- To stop wind penetration
- To insulate the building
- To stop condensation forming

The components of a roof structure are shown in the diagrams that follow:





Generally the layers of the roof (progressing from the outside) are:

1. Roof tile.
2. Underfelt.
3. Ventilation path from eave to ridge.
4. Insulation.

The insulation may be over, between or indeed under the main supports (rafters or trusses).

The ventilation path may be over the top of the underfelt if a breather felt is used (it should be these days).

The links have plenty of data about roof installation.

www.celotex.co.uk

www.marley.co.uk

www.lafarge-roofing.co.uk/cgi-bin/roofwebred/uk_redland/index_uk.jsp

The building regulations also cover roof covering in the 'ventilation' section and this is worth reading.

7.6.1 Roof tiles and accessories

Roof tiles are made of clay, cement, slate or wood (shingles).

Tile sizes vary from the small plain tile at 150x200mm to large flat affairs of 300x500mm. Generally the best tiles are made of natural materials – clay being the most common, followed by slate and then by the much rarer wood shingle.

If you want a good-looking roof (and the roof is probably the most significant aesthetic feature of a house), then think only in terms of clay plain tiles or natural slate.

It's hard to choose between these two, although good-quality hand-made clay tiles are most impressive.

At the other end of the scale, synthetic slates actually perform reasonably well and look reasonably good. Concrete tiles bring up the bottom of the pile although

concrete plain tiles (smaller sized ones) actually look pretty good and hold their looks reasonably well.

There are many accessories that support the tile cover. Ridges cap the roof, valley tiles create a channel down a valley for rain to pass. You will find on the websites many references to clipping of tiles (i.e. a metal clip joining tiles to battens), or nailing of tiles.

Generally, tiles just sit on the roof under gravity (slates do not, they are all nailed). To reduce the risk of wind damage, the manufacturers advise physical attachment at specified intervals.

Again, follow the links to see some pretty impressive web-based brochures.

7.6.2 Underfelt

Underfelt used to be made of a tar-impregnated cloth. This product is still produced but is being replaced by the more advanced breathable felts such as Tyvek.

The advantage of the latter types is that they allow the roof to breathe. This is becoming more important as insulation increases in performance.

That's because the first layer of roof material outside of the insulation (typically the felt), used to stay reasonably warm due to heat passing through the roof. Nowadays, the level of insulation tends to give a surface that is cold and more susceptible to condensation.

Condensation forming inside the felt can cause significant damage. The solution that is most common in existing buildings is to provide a ventilation path underneath the felt. This to some degree compromises the performance of the insulation.

The newer and more radical solution is to seal the gap between the felt and insulation, use a breathing felt to pass moisture and ventilate the outside of the felt.

The breather felts are now designed with a diaper-like texture on the inside that is capable of holding condensation without dripping until the vent path takes it away. It's not that difficult to understand. But, if you do understand it, it puts you at least one step ahead of a lot of builders!

Underfelt usually has timber battens (commonly 50mmx20mm), nailed onto the surface to hold the roof tiles. There are now also battens that run up the length of the roof that are typically 50mmx50mm that provide the required ventilation path. They are called counter battens.

The role of underfelt is primarily to stop wind penetration through gaps in the tiles. There is also a small but present risk of melting snow being driven through the gaps between tiles in strong winds.

Generally, however, a tile roof is waterproof in its own right. A felt roof is not, due largely to the abundance of nail holes that it contains after having battens applied through it.

With the increased use of insulation, the use of high-performance felts and a vent path become more important in terms of stopping condensation.

Condensation can devastate the structure of a roof so it's crucial to get it right.

7.6.3 Vent path

The vent path itself is determined by the building regulations. The requirement is for a through-flow of air of substantial volume.

In a room-in-roof set-up, for example, the low-level opening must be a continuous 25mm, the path up the roof must be 50mm and the ridge vent must be a continuous (or equivalent), 5mm.

Equivalent means the vent can be evenly spaced units that give a result equivalent to a continuous amount. So, for vents placed every 1m, 5mm x 1,000mm, i.e. 5,000mm^2 of ventilation must be provided each metre.

You will notice that a roof has overhangs at the gable and at the eave. These are designed to provide some shade from the high sun (not so much in the UK), and to keep water away from the side walls of the building.

Water is capable of being carried horizontally and somewhat vertically upwards (something to do with bonding energy if you're a physicist) off the sides of objects, particularly in the wind.

These protrusions are designed to prevent this and to also limit dripping water from being blown back onto a building and causing mould.

The boards at the eave are called a fascia (vertical) and a soffit (horizontal). They are prone to water attack and commonly now are made from UPVC for this reason.

Their purpose is simply to close off the bottom of the roof in a neat manner. The soffit usually holds guttering, which is designed to take away rainwater.

This is important as the large volume of rainwater off a roof can cause significant damage to walls, make a mess on windows and sills and can even deteriorate foundations, particularly in clay soils due to drying and wetting cycles.

7.7 Fitting doors and windows

Doors and windows have a rather obvious purpose. They are commonly made from a range of materials, most commonly:

- Softwood
- Hardwood
- UPVC
- Aluminium

Softwood windows are often a maintenance hazard as they can warp. Hardwood windows can vary in quality enormously, so don't be fooled by the name. **The most durable timbers are teak, iroko and oak** (in that order).

Of the three, windows are commonly available in oak so that's your option! UPVC windows vary greatly as well The better ones generally use a heavier section and are less bendy.

Roof windows such as those made by Velux are usually made of softwood and are usually of very high quality (proof that there is more to it than the name).

Key Tip

Glass can be used to great effect in a home. Current U values for glass, however, are around 2.0. That's ten times worse than a well-insulated wall. Now south facing windows can gain a lot of heat too.

7.8 Wiring

Wiring a new house is done in three stages:

Firstly, an electric supply is provided to the home. This can happen at any time during the build. The supply is best set into a trench to avoid overhead wires. Contact your local supply company to discuss.

The wait times can be an issue sometimes, so call them very early in the process.

Secondly, wires are run around the home from point to point. This is usually done after the structure is built and watertight, and before the walls are plastered.

The process involves putting wires into walls and into boxes that will hold the sockets, light switches, etc. These are then plastered over to contain them. In the event of dry-lined walls, the cables run within the wall cavities and are installed before the plasterboards are put in place.

The wires are simply arranged to be threaded through a hole in the plasterboard as it is being installed. This hole then gets a recessed box installed that eventually gets a socket or switch cover over. The process of running wires but not actually connecting them is called First Fix Wiring.

Thirdly, the wires are all connected to the sockets, switches and fuse box so they function as intended. This usually happens late in the installation, certainly after plastering and as late as right at the end of the job.

This is called Second Fix Wiring, Last Fix Wiring, or Final Fix (you get the point I'm sure).

The wiring typically takes 1 week for first fix, and 1 week for 2nd fix. It can certainly be done faster.

Key Tip

Electrical installers tend to work alone, however, and this is the time-limiting factor. It is possible to muck in yourself if your electrician is OK with this. It's pretty easy work as long as you have an expert guide on hand.

7.8.1 Getting well wired

Some tips for a great result from your wiring:

- Run some spare wires to strategic points that can be used later. You can do this by simply providing blank covers over the outlets. You must put the cables in channels or in dry-lined walls for this to work. The wire that you leave can then be used to pull the correct wire through.
- You can, for example, leave a length of string that later could be used to pull in a phone wire or broadband wire. This will future-proof your home electrically.
- Provide sockets at each end of breaks in walls (doorways), and at each end of a wall.
- Think about using exotic covers for your sockets like brushed stainless steel, chrome or even handmade ones. You could do this just in the living areas if cost is an issue.

7.8.2 Electrics theory for those less technical

A special note!

Warning – Be very careful when working with electricity. You can create many dangerous outcomes inadvertently. A sound technical knowledge is required to correctly modify or install domestic electrics. In this area, above all others, consider employing a pro.

It is worth having a little technical know-how, even if it just means you will know how to talk to the experts. Here's a whirlwind course in basic electrics. The explanations get progressively more complicated, so jump out whenever you've had enough!

Volts, Amps and Ohms

Volts – Drives the electricity through the wire (or through you!) Imagine a hosepipe connected to a mains tap. Volts = the pressure of the mains water.

Domestic installations use 240 volts (240V). Some houses have up to 415V for powering heavy equipment but this is rare. You may see it in a farmhouse, for example. You would certainly see it in a factory.

Amps – A measure of current. Simply how much water flows through the hosepipe. Typically in the range 5 to 40 amps (5A-40A), for the individual circuits in houses.

Ohms – A measure of resistance to flow. If you turn the tap mostly off or kink the hose, you get resistance. You've always got some resistance even with an un-kinked hose.

Relationship between the above: **Volts = Amps x Ohms**

Or…doing a little mathematical juggling: **Amps = Volts divided by Ohms**

Watts – Wattage is a measure of power. Multiply Volts by Amps and you get Watts.

Or again being mathematical, **Amps = Watts divided by Volts**

So, for example, a 100watt light bulb will take 100/240 amps.

Circuits and circuit-protection devices such as RCDs

Circuit – Electrical installations go in a circuit. It is like having a hose connected to a tap at one end and a drain at the other.

If you turn a tap fully on, that's pretty much it. You get maximum flow.

To minimise resistance you can turn the tap on fully and disconnect the hose (the hose has some resistance to flow) and get a little more flow because the pipe resistance has gone (this is one experiment you can safely perform)!

If you remove the resistance to electricity flow, you get a massive build up of current. You can momentarily get thousands of amps flowing. The magnitude of the rise is huge. Your hosepipe would be shooting water to the next town. That is why electricity is dangerous.

Circuit protection devices – These are crucial. Electrical wires come in a range of sizes. The bigger the cable, the more electricity (current in amps), it can carry. The cable itself does not significantly limit the amount of current it carries.

The voltage will be fixed coming into the house, usually at 240V. The current is therefore limited by the device connected to it (for the resistance of that device see again the equation above).

If fuses or circuit-breakers did not protect the circuits, it would be possible to overload a circuit by connecting a low enough resistance. The current flow would then exceed the capacity of the cable.

If a circuit is overloaded by a little and there is not adequate protection, the cable will get hot. If this trend continues, it will melt and probably start a fire.

Circuit-protective devices come in the following forms:

- Fuse – literally a wire that melts when excess current passes through it
- Circuit Breaker – a device that overheats and trips itself (opens an internal switch)
- RCD (Residual Circuit Device) – not strictly a circuit protector – they are people protectors and are essential.

Remember that the circuit protector must be rated at a significantly lower value than the capacity of the cable.

For example:

A lighting circuit using 1.5mm2 wire has a maximum current capability of about 12 amps.

The protective device for this circuit is rated always at 6 amps.

There is therefore a considerable (and prudent), margin of safety.

Short circuits – This is the extreme end of overloading a circuit.

For example, instead of flowing the electricity through a device that has reasonable resistance (e.g. a 100w light bulb has 575 ohms resistance), you connect through a device that has low resistance (a spanner for example may have a resistance of 0.1 ohms).

In this example, you would get a massive surge of current. The protective devices are designed to trip as quickly as possible to limit this rise. Work it out for yourself using the equation Amps=Volts divided by Ohms.

A person, by the way, does not have very high resistance, so 0.020 amps is enough to kill an adult. That's why electricity is dangerous. That's also why a house has a fuse box.

Types of current

DC – Direct current – A tap on one end of the circuit, a drain on the other. On a battery, the "+" is the tap (called the positive), the "–" (called negative) is the drain.

Path of least resistance – Electricity will divide itself into multiple paths in proportion to resistance of those paths. If it sees two paths – one of 100-ohm resistance and one of 10-ohm resistance, most, but not all of the flow will take the path of least resistance.

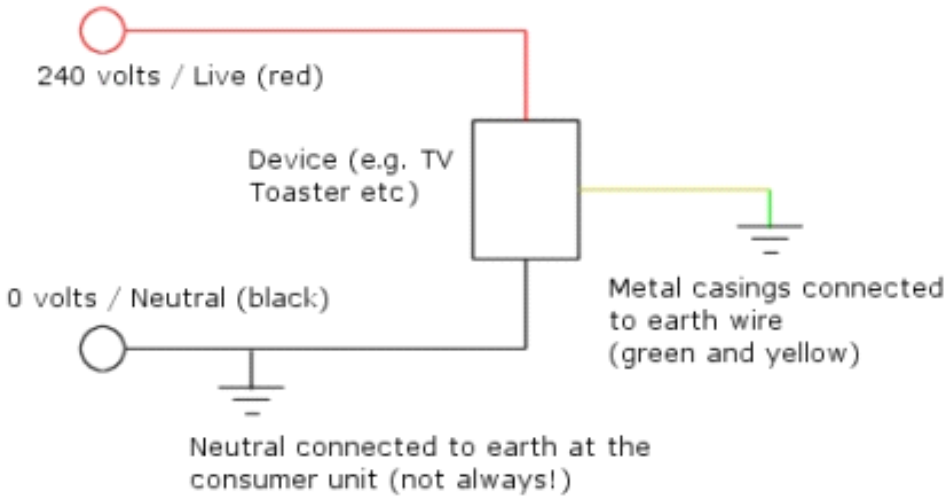
AC – Alternating current - All domestic supplies are AC. It's a little difficult to grasp but essentially the flow goes (as above), from the tap to the drain but then they swap ends and the water flows the other way.

It does this 50 times a second (50 cycles or Hertz….that's Hz). Many devices don't mind the alternating nature e.g. a kettle, light bulb. They just take the energy out of the flowing electricity (like taking fish out of a moving river).

Other devices convert the AC to DC internally, like your TV does.

Live and Neutral – These are the two ends of an electrical supply. The live is the tap, the neutral the drain. The live is usually red, the neutral black. Note this changes to brown and blue at device level.

The neutral wire is connected to earth (practically zero volts) somewhere within the electrical system (usually in your home next to the electrical meter). The live wire is usually at 240V. The diagram below explains.



Earth protection

Earthing literally means the Earth. Electricity will flow easily through the earth.

Connecting a live wire to the earth (e.g. through a person - not a good idea!) will give a complete circuit. That's why cables are protected with insulators.

The earth wire – normally green/yellow stripe or a bare copper wire - does not normally carry electricity. It is literally connected to earth, either outside your home or more normally somewhere further down the line. It is best explained using an example:

An electric toaster uses a conventional 13 amp supply taking its energy from the current flowing between the live and neutral terminals.

A live wire comes loose within the device and touches the metal casing. The casing is now live but does not necessarily have a current flowing. If it is touched, the current will flow from the casing, through the person, to earth (or into the ground, to you and me).

A safer bet is to connect the metal casing permanently to earth. The electricity flows down this wire to earth in the event of a fault and trips out the protective devices. The most likely device to trip will be the RCD since its purpose is to measure this type of leakage to Earth.

The RCD (Residual Circuit Device)

The RCD is nowadays incorporated into the consumer unit (the proper name for a fuse box).

It detects leakage to earth as would occur through a human body (see the toaster example above). Look for a 30mA (milli-Amp current rating) on the device.

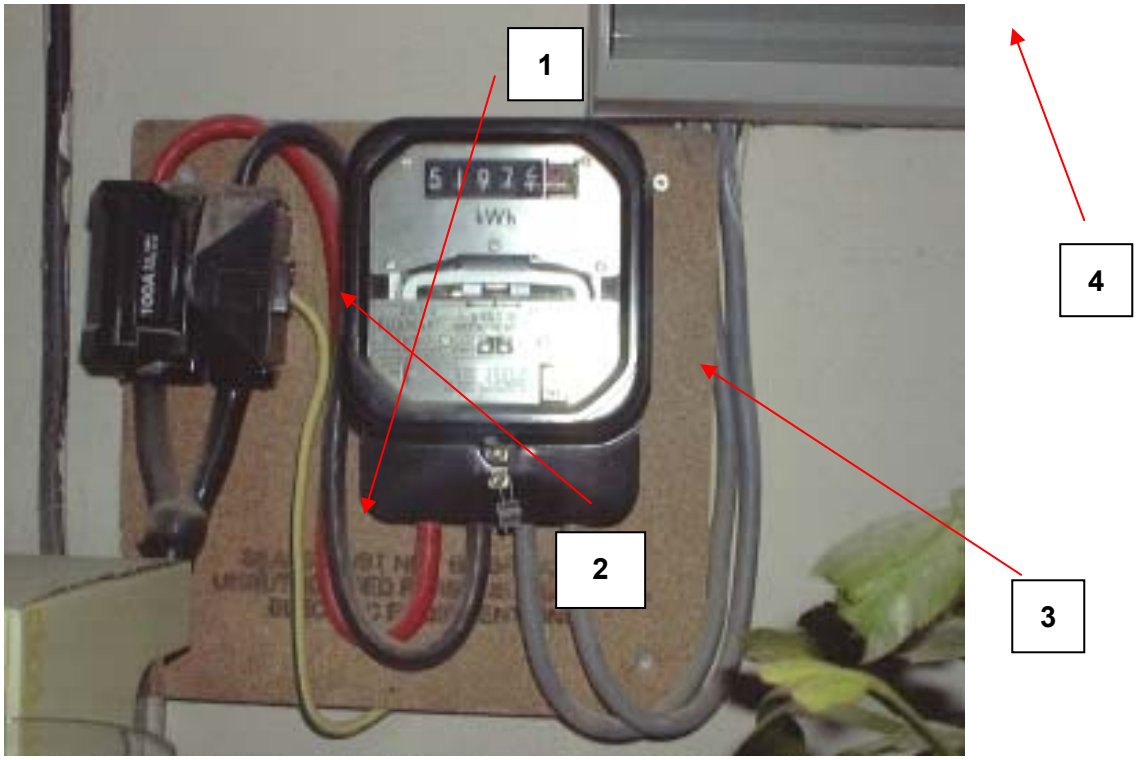
State-of-the-art electrical supplies have a split box (see picture below). This allows sockets to be RCD-protected but devices such a freezers not to be. This is because RCDs are so sensitive that they can suffer from nuisance trips.

A domestic installation has a mains supply from the supply company that usually comes into a house (or to an outside white box), in a black steel reinforced (armoured) cable.

The cable is capable of delivering more than 100amps under normal operation. It arrives underground or overhead.

The incoming cable goes through a main fuse (usually a black box about 100mm x 50mm). This is not yours so don't touch. 100 amps would be a common rating from this fuse.

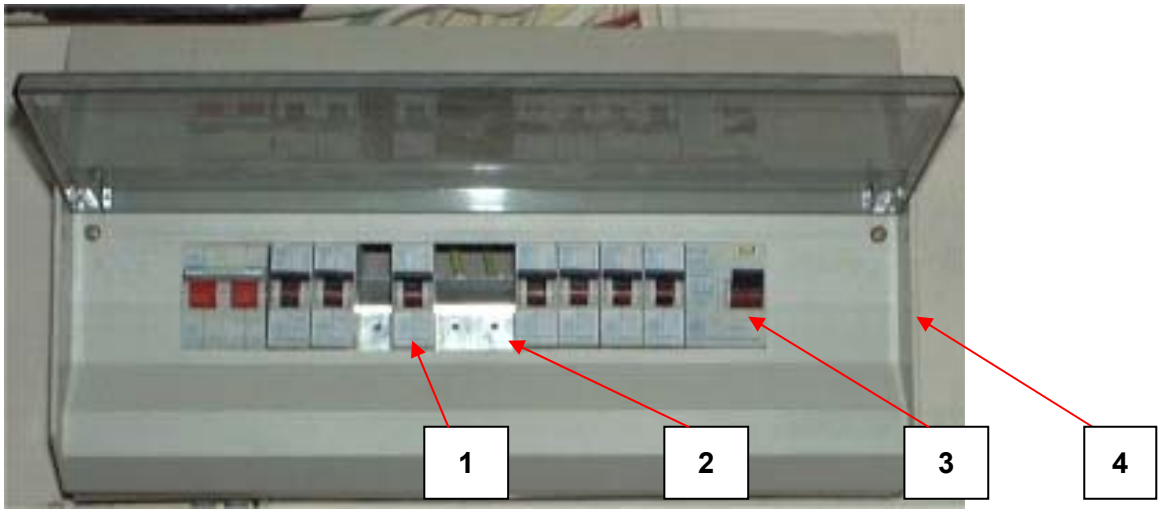
The supply then goes through a meter that of course measures the amount of electricity being used. This is the one part of the system everyone knows about!



1. Main cable into property
2. Electrical company fuse (the main cable goes into this). See the 100 Amp rating.
3. Meter. Look for the live and neutral wires going into it. The earth wire is going directly to the Consumer unit (4.)
4. Consumer unit
5. Main cable into property
6. Electrical company fuse (the main cable goes into this). See the 100 Amp rating.
7. Meter. Look for the live and neutral wires going into it. The earth wire is going directly to the Consumer unit (4.)
8. Consumer unit

The electricity supply will make its way to a consumer unit.

This consumer unit is usually the first point in the system that is owned by the property. At this point, the supply is divided into separate circuits, each of which feed separate devices.



‘Consumer box’ – commonly called ‘Fuse box’

1. Mains isolator switch.
2. Non-RCD protected circuit breakers (lights, freezers, etc).
3. RCD protected circuit breakers.
4. RCD (can be switched off too).

The breakers to the right are fed through the main isolator and the RCD (Residual Circuit Device). In this split box there are five. They are RCD-protected. This means they will trip very quickly in the event of an earth fault (like you touching a live wire).

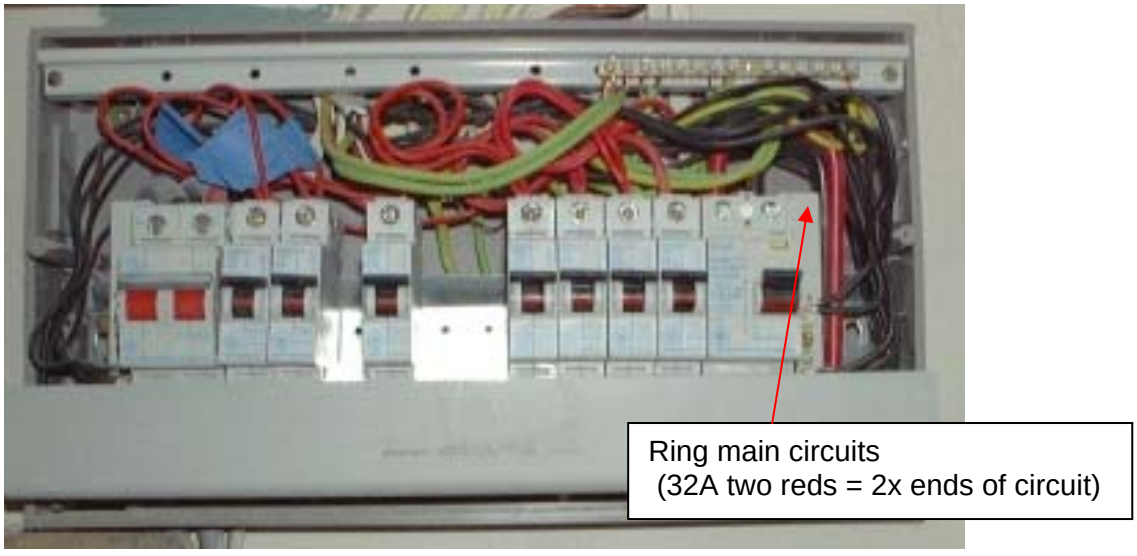
The five or so to the left are not RCD protected. They are used for devices that tend to leak to earth anyway (cookers, freezers, etc) and hence become a source of nuisance tripping.

Commonly, sockets are protected by the RCD (Residual Circuit Device), other devices are not. It is best to protect as many circuits as possible.

7.8.3 Electric sockets

Ring Main system for electrical sockets

You should have at least one circuit breaker rated at 30A with two live (red) wires connected into it. You may have more than one. Two to three separate 30A circuits are common. This circuit is a ring main. This is the modern Convention for feeding sockets.



Radial system for electrical sockets

This system has two live wires going to each socket (apart from spurs).

If you have multiple 20A circuits instead of 30A circuits with only one live wire connected to each circuit breaker, you have a radial system. This may still be OK but does raise suspicion that the system may need replacing.

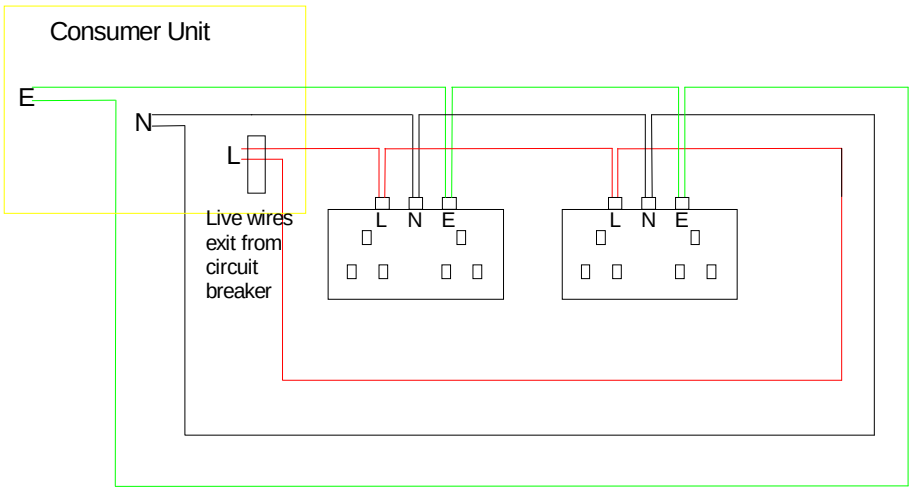


Diagram shows Ring Main circuit

Labelling circuits in the consumer unit

Check the consumer unit for labels. A good electrician will label all the circuits so that subsequent visitors will know what's what.

Look again at the circuit breakers. You should have a good collection that is something like the following:

- 5A lighting
- 5A lighting
- 15A freezer
- 30A cooker
- 30A ring main (sockets)
- 30A ring main (sockets)
- 45A electric shower

Multiple circuits should be evident for sockets and lighting unless you have a very small property.

7.8.4 Opportunities for adding value with electrics

- A modern consumer box, modern PVC wiring, good earthing and conventional outlets are essential.
- An RCD-protected system is a must.
- Dimmer switches are a good bet for dining and living rooms.
- Consider using fancy covers for light switches, dimmers, and sockets.
- Add more sockets if they are obviously lacking. Adding a "spur" like this is not too challenging.
- Adding an alarm may be a good option in some areas. It must be discreet enough that it doesn't worry potential customers into thinking there is a crime problem.
- Spotlights are a good feature for kitchens and bathrooms.
- Extractor fans to bathrooms are a good practical feature. They are a requirement in all new building work (building regulations).

Fancy switches (this one is brushed stainless steel) come in at around £3 - £6 each.

7.9 Plumbing

The way to view plumbing is as four discrete units:

1. Heating system

2. Cold and hot water system

3. Rainwater system

4. Waste water system.

7.9.1 Heating system

There are two generic types of **wet heating system** – a sealed pressurised system or an open-vented system.

There are also **dry systems**: a hot air system or electric heating.

Hot air systems don't have a good name in the UK for 2 reasons:

1. They occupy a lot of space
2. They are perceived to be dirty as they can circulate dust around a home.

They, in fact, have **several advantages**, if you are still interested:

They can actually be used to clean the house as the re-circulated air can be filtered constantly to a high standard. A friend claims his house never needs dusting as all dust is taken away by a high-performance filtration system.

These filters can also remove contaminants like pollen, so they have some pretty significant benefits.

They also tend to be more responsive in providing heat, more or less instantly.

And they can work in party with a cooler unit to deliver full climate control.

Electric heating similarly has a pretty bad name. The main objections are the lack of control and heat leakage at the wrong time.

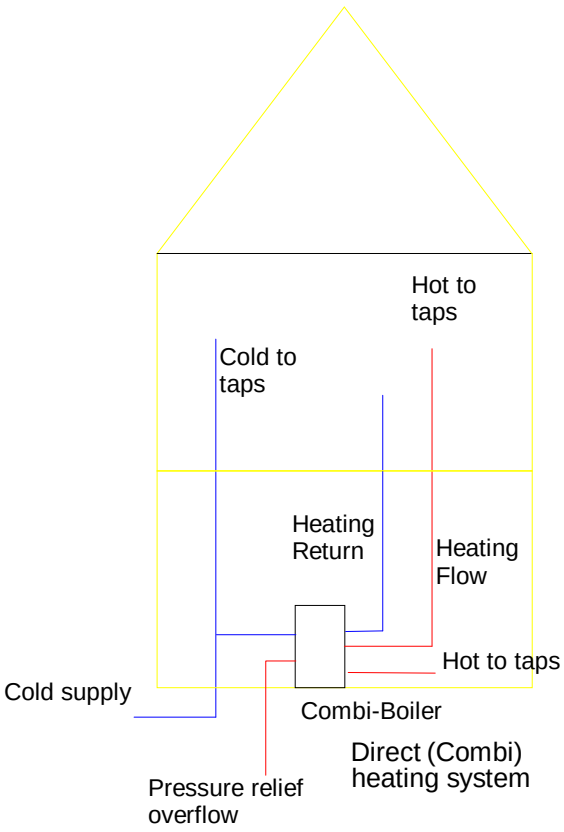
The one advantage is cost and convenience of installation. There is no plumbing to do. For this reason they are popular in very low-cost installations. Probably not a good option for self-builders.

The two wet systems are worth considering further:

7.9.2 Sealed pressurised systems

These systems contain either a combi-boiler that produces instantaneous hot water or a more conventional boiler operating under pressure with a sealed storage tank. The combi system is quite radically different in that it has no cold or hot storage tanks.

Water is either heated or not as required. The sealed system has a hot water tank so abundant hot water is available on demand. It usually does not have a cold water tank in the loft.



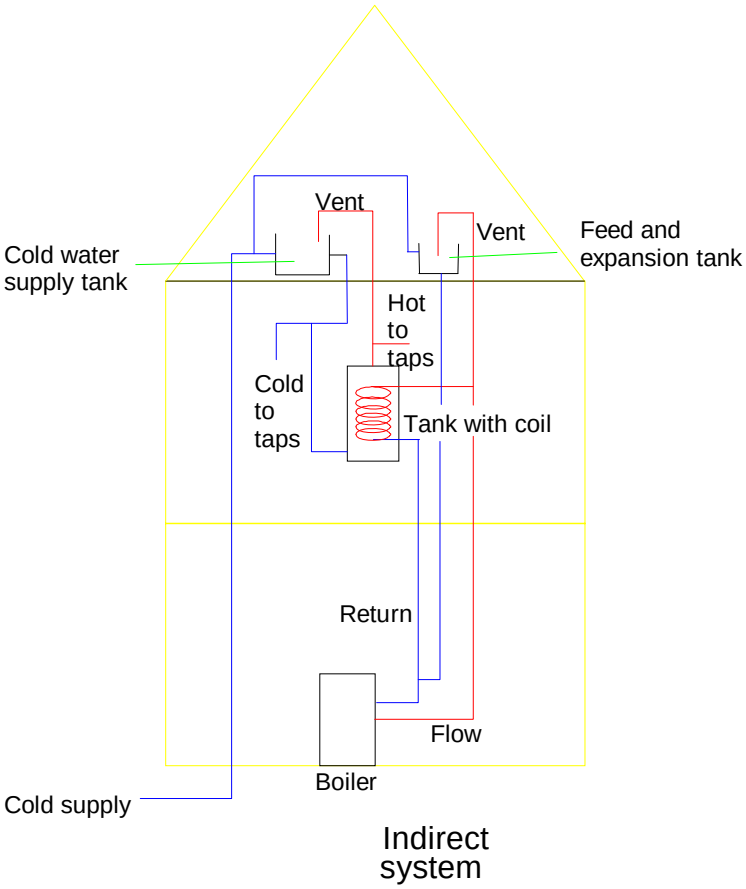
7.9.3 Open Vented systems

These are the more conventional types of heating system. There is a boiler, a hot water tank and two cold water tanks. The cold water tanks simply top up the hot water tank and heating system.

This type of system is isolated from the mains pressure by the top-up tanks. These are filled under mains pressure (a float valve controls their level in the same way as a toilet).

They discharge under their own steam, however, and it is the height of these tanks that actually determines the hot water pressure in the building.

These open vented systems are also called indirect systems as the heating circuit's water is isolated from that of the hot water system by the heat-exchanger coil in the hot water tank.



Indirect system

The systems compared:

Open-vented
Pros: Hot water storage is simple and well understood.
Can feed a pressure (pump) shower.
Cons: Lots of tanks, pipes and unnecessary complexity.

Sealed system
Pros: Simpler, and still has a hot water storage tank.
Cons: Pressurised system – not for DIY-ers.

Combi sealed system
Pros: Simple with instant hot water, usually in ample supply.
Cons: Can't really supply simultaneous hot taps or pressure showers.

Which you choose really depends on your needs. If you want pressure showers, three at a time then go for an open system. If you want three showers at a time without the pressure go for a sealed system.

If you want hot water on demand, no more than enough for 1 good shower at a time, go for combi.

Key Tip

Choose a heating system that suites your needs. They each have benefits…and disadvantages.

7.9.4 Underfloor heating

The self-builder's favourite! Underfloor heating is simply moving the radiator from the wall to under the feet.

The heating system stays the same. It is discrete in terms of its invisibility, but it can warp wooden floors so awareness is required. It also makes your feet hot. Most people love it.

7.9.5 Water softeners

If you live in a hard water area, the effects of the water go much further than poor soap suds:

- Shower cubicles get rock formations on the glass.

- So does every other appliance.
- Clothes don't wash correctly.
- Coffee doesn't come out quite right.
- The boiler gets furred up quickly and starts banging.

A water softener costs about £300.

Key Tip

The cheaper alternatives don't seem to do anything. A water softener uses salt in abundance. It replaces calcium, magnesium and other -ums with sodium. You get the sea water taste without the lime scale.

7.9.6 Cold and hot water system

Cold water is provided to taps and showers either directly from the mains or from a cold water storage tank if you have one (usually in your loft). This depends on the heating scheme that you have as per the previous section.

A sealed system will not usually have a cold water tank and cold water will be supplied from the mains.

In open vented systems the cold can come from the mains (certainly for drinking). Baths and showers can be supplied from the (header) tanks. The water board prefers this as it smoothes demand.

7.9.7 Rainwater system

The rainwater system consists of:

- Guttering at roof level
- Down pipes (guess what they do!)
- Soakaways

Rainwater doesn't usually go through the sewer system. It is usually preferred that this clean type of water is dissipated in a man-made bed of rocks somewhere on the property.

This is simply a big pit with a 100mm pipe leading to it. The pit is covered with polythene membrane to stop mud from filling it. It then has topsoil set over it so it appears not to be there.

www.hunterplastics.co.uk/underground.html

7.9.8 Waste water system

Waste water exits the house via traps to vent pipes, to drains, to a sewer system.

The **traps** are those odd-shaped plastic objects under sinks and baths. Their job is to retain a water level so that smells don't permeate back from the sewers.

If you do experience smells, it's commonly because the traps are either missing (unlikely) or that they are being sucked dry by high speed water gushing down the pipes downstream from the traps.

The **vent pipe** is the 100mm or so vertical pipe that other drain pipes lead into. Its purpose is to allow the water to fall freely in order that traps are not sucked dry by siphoning, and to allow smells to pass.

Soil vent pipes (SVPs) are commonly fitted inside houses these days as they look ugly outside. The top is fitted with an air admittance valve that allows air into the pipe (to again prevent siphoning).

Smells/gases need to be let out at some point as well and there are various schemes for this, such as roof tiles that have in-built vents.

The vent pipe passes into the ground and into a sewer system. These on-site sewers are usually made up of 100mm plastic pipes linked with manholes or inspection chambers.

These latter elements are provided to allow blockages to be cleared. Generally, drains work better than they used to and so building inspectors are less touchy about access.

The system passes finally to a method of discharging the foul water. There are several solutions:

- To the local authority sewer.
- To a septic tank.
- To a cesspit.
- To a private treatment plant.

If there is a public sewer line close by then well done, you have saved several thousand quid!

If not (and many, many people are in this 'not' category), then you have the other options to think about.

Of these, a **septic tank** is a good option but must be approved by your local authority. Septic tanks are devices that separate solids from liquids by a simple floatation/sinking regime.

Liquids get tapped off at mid-level and get spread into the ground. Solids go through a mixture of decomposition and then pumping out that happens once a year or so.

These simple devices work incredibly well. Modern washing machine powders tend to kill most of the decomposition action and the main mechanism at work is separation. The de-sludging process is left to a specialist firm who charge less than £100 every year to do the duty.

Cesspits are just large tanks and are a last resort if you cannot discharge into the ground for some reason (perhaps there is a stream nearby that could be contaminated).

Because the liquids are contained as well as solids, the emptying process needs to happen about once per month and the cost can therefore be much higher.

Other options involve a **private treatment works** that usually are packaged up in a neat way and discharge only water. These are more hefty in terms of investment but are also good practical alternatives to a cesspit.

These treatment works can be made out of plants and reed beds. Specialist advice should be sought.

In terms of cost, estimate £5k for a septic tank, £7.5k for a cesspit and £10k for a mini-treatment works.

7.10 Walls, ceilings and floors – the finishing touches

7.10.1 Walls

Walls may be solid construction or may be dry-lined. In the case of dry-lining, the wall is finished either by having the joints taped and filled with a plaster type compound or by having a finish coat of plaster applied.

The latter is superior in terms of crack resistance as the joint tape typically has a more robust bedding.

Solid walls have an undercoat plaster applied and a finish plaster over. The under-plaster is used to create a uniform surface. The finish plaster is for smoothness.

Dry-lining has the following advantages:

It is lightweight and doesn't need a structure under it to provide support. This gives a lot of flexibility in design.

It is predominantly a dry system and doesn't therefore introduce a lot of water into the property. Undercoat plaster brings hundreds of gallons of water that makes the whole building very damp for many weeks.

www.fermacell.co.uk/pdfs/handyguide.pdf

Plastering on a solid wall has the following advantages:

- The wall is solid to the touch
- The wall is impact-resistant
- It absorbs sound

Note, it is possible to make dry-lined walls soundproof by using sound-insulating products.

The time to complete either option is about the same. It takes a week to dry-line an average house and a week to undercoat plaster. The two are the same in the sense that plasterboards are actually pre-fabricated plaster panels.

7.10.2 Ceilings

Ceilings are usually fitted with plasterboards in the same way as walls, and have the joints taped or the whole thing applied with a coat of finish plaster called skim.

Ceilings are often decorated with features like coving and other mouldings that enhance the appearance. These mouldings are now made in paper-covered expanded plastics and also in traditional plaster.

The individual costs of items are not that great but costs can accumulate to many hundreds of pounds per room very quickly.

7.10.3 Floor finishing

There are at least three generic forms available:

1. Wood
2. Carpet
3. Stone and clay.

For each of these, of course, there is also a lower cost synthetic imitation.

The options for wood are softwood, hardwood or laminate. In addition, many geometric options exist, such as planks and parquet.

In general, **softwoods** tend to be softer (although the softest wood, balsa, is actually a hardwood). The options range from spruce to scots pine to fir.

Spruce is very soft and not very attractive. Some of the others have more to offer and can be a good alternative to hardwood at around **£8 per square metre.**

Hardwoods are offered either as solid wood or as thin layers laminated onto a plastic or MDF carrier. The latter is actually a pretty good option due to its stability.

Typical wood ranges from light colours such as beech through oaks (medium) to cherries (darker). Hardwoods tend to be more stable and you should expect a durable floor as a result.

There are some risks associated with high moisture areas and with underfloor heating. Generally hardwoods are less trouble in terms of impact damage, and changes in moisture content are the only concerning factor. Expect to pay upwards of **£20 per square metre.**

Key Tip

Make sure your wood floor installer is concerned with moisture content. He should have a device to monitor this.

www.flooringsupplies.co.uk

Congratulations! You've finished chapter 7

You will now know:

- How a good foundation is laid (see section **7.1**)
- How to choose the best roofing materials (see section **7.6.1**)
- How electricity works in your home (see section **7.8**)
- What options you have for heating (see section **7.9.1**)
- All about walls, ceilings and floors (see section **7.10**)

8. THE GREAT OUTDOORS

In this chapter you will learn:

- All about driveways (see section 8.1)
- How to select the right loose stone for outdoors (see section 8.1.2)
- Why tarmac driveways aren't always the work of cowboys (see section 8.1.3)

Landscape design is far beyond the scope of this text, but here are a few thoughts that may help you on you way.

- Gardens take time to mature. You may want to think about landscaping early in your project to reap the benefits as you move in
- Decking is practical as it dries easily
- Spaces containing some degree of cover (like pergolas) are called transitional spaces as they are half-way points between inside and outside. They can have a great effect on the tone of a property
- Trees, even small ones, make a property look more mature
- Grass and gravel cover mud very, very well. They also stop mud from being carried into a new home

vvv.com/~csl/lands.html

8.1 Driveways

There are several driveway options to consider:

- Block pavers
- Loose stone
- Tarmac

8.1.1 Block pavers

The king of good-looking driveways (and of cost as well). The primary issues of concern here are:

Soundness. Block pavers should lie on a substantial base of stone and sand and should not undulate.

Cut quality. Blocks should be laid regularly and be cut into corners, etc, in a sensible rather than labour-saving way.

Blocks can be made of concrete or clay. Clay is of course the superior material and, if properly laid, will give decades of good looks.

www.pavingexpert.com

8.1.2 Loose stone

A lot of poor information is available on the best stone types for driveways. There is a general consensus, however, on the two primary goals (apart from looking good):

1. The stone must settle rather than roll onto the road.
2. The stone must not get picked up by car tyres or shoes.

The second rule is satisfied by having stone containing nothing less than 10mm.

The first is a matter of binding correctly. Comments about using mixed stone size are reasonable but miss the key aspect.

The most important feature is a stone that is sharp in character (usually called a chipping) rather than pebble-like. Ten tons of 10mm chippings will work just fine. By all means mix in some bigger stones if you want.

8.1.3 Tarmac

Tarmac driveways often make it onto TV 'cowboy' shows. That's because practically everyone who lays roads and can drive a lorry seems to be driven towards knocking on doors and selling leftovers.

This will not happen to you, of course, because you will be working to a defined specification that is referenced by binding contracts. Your payment terms will ensure that you can check the quality before you pay.

Tarmac should generally be around four inches thick for driveways. It should also be laid onto an appropriate base – meaning that any topsoil should be moved away and replaced with stone or stone and sand (ballast).

Congratulations! You've finished chapter 8

You will now know:

- All about driveways (see section **8.1**)
- How to select the right loose stone for outdoors (see section **8.1.2**)
- Why tarmac driveways aren't always the work of cowboys (see section **8.1.3**)

9. PLANNING IT WITH SPREADSHEETS AND MORE…

In this chapter you will learn:

How to use the Self-build Cost and Project Planning Software (see section **9.2**)
How to use the Project Return Calculator (see section **9.2.1**)
All about cost-to-build tables (see section **9.5**)
The cost of materials (see section **9.6**)

9.1.1 Opening the spreadsheets on an Apple Mac

According to Apple's website www.apple.com/appleworks/
the latest version of Appleworks software should be able to read Microsoft Excel spreadsheets.

If you have Appleworks 6.04 then there is a small file to download to upgrade it to accept Excel files at:

www.apple.com/appleworks/update/,

instructions are on the webpage.

If you have an earlier version of Appleworks (6.0 or 6.03) then please go to: www.info.apple.com/usen/appleworks to upgrade to Appleworks 6.04, then use the above link (www.apple.com/appleworks/update/) to upgrade to Appleworks 6.1 first.

It seems a little complex - but all the info is on Apple's support page for Appleworks. At the time of writing, the upgrades are free.

9.2 Using the Self-build Cost and Project Planning Software

Opening your Spreadsheet software

There are different spreadsheets depending on your computer software.

Essentially,

If your PC runs **Excel 95 or later** then
Click here to open the **Project Return Calculator**
Click here to open the **Materials and Costs Calculator**

If your PC runs **Microsoft Works** then
Click here to open the **Project Return Calculator**
Click here to open the **Materials and Costs Calculator**

If you have any problems with opening or using the spreadsheets or other parts of your Property Secrets e-book, there is a comprehensive help section online at the following address:

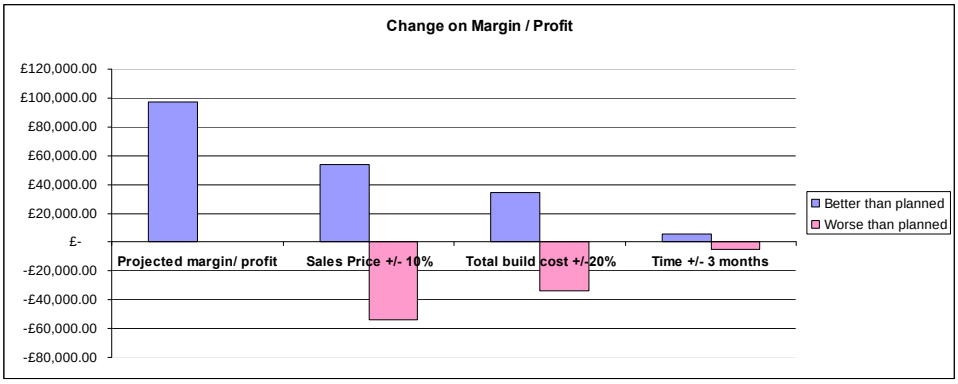
www.propertysecrets.net/faq

9.2.1 Using the Project Return Calculator

By entering:

- the measurements and sizes of your project, and
- the individual costs of each item (including labour)

you can calculate the return on your project and also the sensitivity of your project to the three factors



This graph shows your projected margin/ profit and the impact (increase or decrease) on that margin in the following cases

- Property sale price is + / -10%
- Total build cost is +/ - 20%
- Time (to complete works) is + / - 3 months

By using this analysis, you can see the both the greatest threat to (and also opportunity to increase) your margin.

Start by entering the sizes of your project here:

A6 to D21

Then add all the individual costs:

A70 to G116

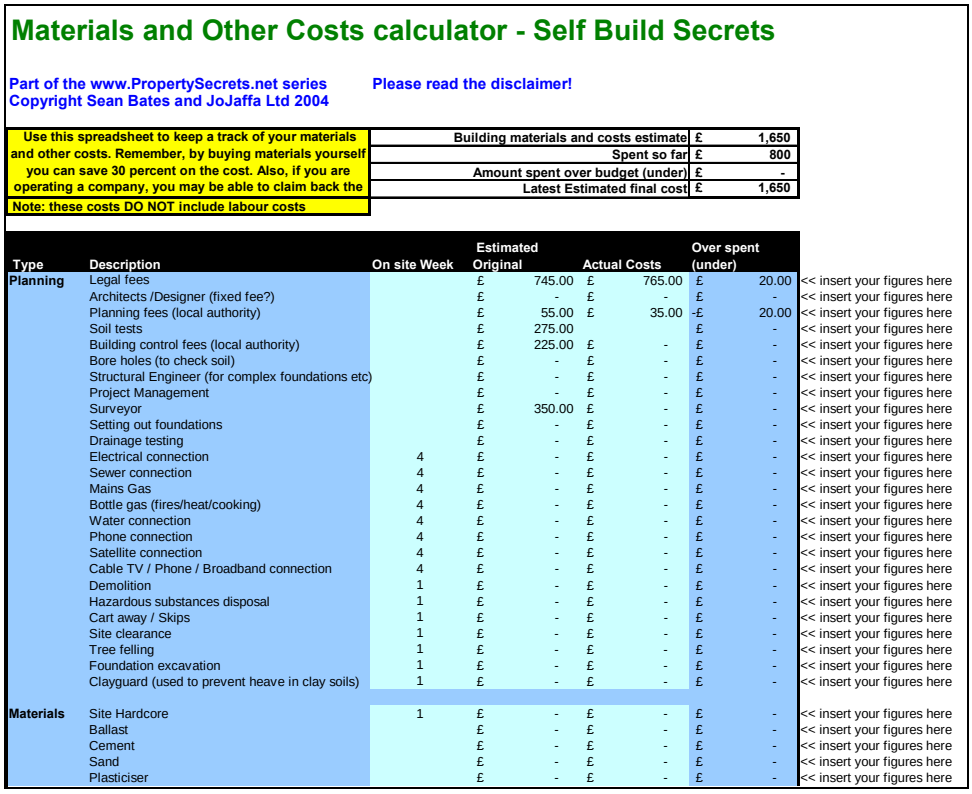
Lastly add the expected selling price

A24 to D25

and now you can calculate your margin and cost per square meter

A36 to C37

9.2.2 Using the Materials and other costs spreadsheet



Materials and Other Costs calculator - Self Build Secrets

Part of the www.PropertySecrets.net series
Copyright Sean Bates and JoJaffa Ltd 2004

Please read the disclaimer!

Use this spreadsheet to keep a track of your materials and other costs. Remember, by buying materials yourself you can save 30 percent on the cost. Also, if you are operating a company, you may be able to claim back the

Note: these costs DO NOT include labour costs

Building materials and costs estimate	£ 1,650
Spent so far	£ 800
Amount spent over budget (under)	£ -
Latest Estimated final cost	£ 1,650

Type	Description	On site Week	Estimated Original	Actual Costs	Over spent (under)	
Planning	Legal fees		£ 745.00	£ 765.00	£ 20.00	<< insert your figures here
	Architects /Designer (fixed fee?)		£ -	£ -	£ -	<< insert your figures here
	Planning fees (local authority)		£ 55.00	£ 35.00	-£ 20.00	<< insert your figures here
	Soil tests		£ 275.00		£ -	<< insert your figures here
	Building control fees (local authority)		£ 225.00	£ -	£ -	<< insert your figures here
	Bore holes (to check soil)		£ -	£ -	£ -	<< insert your figures here
	Structural Engineer (for complex foundations etc)		£ -	£ -	£ -	<< insert your figures here
	Project Management		£ -	£ -	£ -	<< insert your figures here
	Surveyor		£ 350.00	£ -	£ -	<< insert your figures here
	Setting out foundations		£ -	£ -	£ -	<< insert your figures here
	Drainage testing		£ -	£ -	£ -	<< insert your figures here
	Electrical connection	4	£ -	£ -	£ -	<< insert your figures here
	Sewer connection	4	£ -	£ -	£ -	<< insert your figures here
	Mains Gas	4	£ -	£ -	£ -	<< insert your figures here
	Bottle gas (fires/heat/cooking)	4	£ -	£ -	£ -	<< insert your figures here
	Water connection	4	£ -	£ -	£ -	<< insert your figures here
	Phone connection	4	£ -	£ -	£ -	<< insert your figures here
	Satellite connection	4	£ -	£ -	£ -	<< insert your figures here
	Cable TV / Phone / Broadband connection	4	£ -	£ -	£ -	<< insert your figures here
	Demolition	1	£ -	£ -	£ -	<< insert your figures here
	Hazardous substances disposal	1	£ -	£ -	£ -	<< insert your figures here
	Cart away / Skips	1	£ -	£ -	£ -	<< insert your figures here
	Site clearance	1	£ -	£ -	£ -	<< insert your figures here
	Tree felling	1	£ -	£ -	£ -	<< insert your figures here
	Foundation excavation	1	£ -	£ -	£ -	<< insert your figures here
	Clayguard (used to prevent heave in clay soils)	1	£ -	£ -	£ -	<< insert your figures here
Materials	Site Hardcore	1	£ -	£ -	£ -	<< insert your figures here
	Ballast		£ -	£ -	£ -	<< insert your figures here
	Cement		£ -	£ -	£ -	<< insert your figures here
	Sand		£ -	£ -	£ -	<< insert your figures here
	Plasticiser		£ -	£ -	£ -	<< insert your figures here

Use this spreadsheet to

- estimate your building and other costs at the outset of the project
- keep a track of whether you costs are still on budget

For a full list of cost items please see **section 9.7**

9.3 Sample High Level Project Plan

Here is an example of a high level project plan:

“Build a 400 square metre Georgian reproduction, centrally located on a flat site north of Virginia Water, Berkshire. The building is to have six oversize bedrooms, four bathrooms and several living rooms. Key features will be:

- Handmade clay bricks
- Ceilings at 3 metres’ height with significant plaster details
- Lead and slate roof

- White painted oak reproduction windows
- Clay brick driveway
- 50 square metre conservatory to the south

The project will cost £600,000, to be built to a high standard of fitting including hand-produced cherry wood joinery with an estimated completion time of 13 months.

Sales value will be £850,000

9.3.1 Sample Project Approach

Here is an example of how you plan might describe you approach:

- To build using a conventional brick and mortar house with thermalite inner skin and internal walls.
- To use only the most durable and consistent of materials.
- To self-manage the project using specialist sub-contractors.
- To employ architects to design the form of the building and consult on material sources and detailed finish.
- To employ a part-time building surveyor to review specifications and make weekly quality inspections.
- To be a full-time (self) on-site project manager. Facilities will be installed on site to allow phone, office, and broadband.

9.4 Lead time assessment for materials

Here's a guide as to how long a delivery you should plan. Most of this stuff is available through the DIY chains.

Don't waste your valuable time being a hauler, however. Only go to shops if you really want to see something in a showroom.

Item	Standard Kit	Special kit
Kitchen	1 week max	10 weeks
Bathroom	1 week max	10 weeks
Bricks	1 week	10 weeks
Sand / cement / plaster	3 days	7 days
Windows	7 days	5 weeks
Decorative wood	7 days	2 weeks
Roof tiles	3 days	5 weeks
General lumber	3 days	7 days

Item	Standard Kit	Special kit
Pipes and drains	3 days	2 weeks
Fencing	3 days	2 weeks
Floor tiles	3 days	3 weeks
Floor boards	3 days	2 weeks

Materials	Weeks
Bricks	3
Concrete	1
Aggregates	1
Timber and frame	2
Staircase	6
Drainage	3
Windows/Doors	6
Heating systems	3
Electrical hardware	1
Kitchens	5
Bathrooms	3
Insulation	2
Roofing materials	3

9.4.1 Lead time assessment for Tradespeople

Trades	Weeks
Brickies	8
Plumber	8
Plasterer	5
Electrician	6
Ground works	3
Driveway installers	9
Utility companies	10
Roofers	6

9.5 Cost-to-build tables

Per square metre, finished home costs and value.

Location	Cost to build per m^2	Value per m^2	Cost to value ratio
South East	850	2500	2.94
London	1100	3200	2.91
West Midlands	750	2200	2.93
Other mainstream	700	1800	2.57
Other outlaying	600	1200	2

This is a rough guide only. If generally illustrates several important points:

Key Tip

The most expensive geographical areas generally have the highest costs as well. The margin between costs and value can generate more profit, however.

Many tradespeople get caught up in infrastructure projects. Terminal 5 Heathrow is a great example affecting the south east.

This drives up the cost of tradespeople as they become harder to get, but also drives up value. Birmingham is an example of a city that has seen massive infrastructure investment and house price inflation.

You generally need to work out your own ratios as costs can vary enormously over short distances.

Cost estimates here are for middle-of-the-road developments. The numbers can increase dramatically or reduce less dramatically based on those factors outlined in the cost section.

9.6 The cost of materials, a rough guide

The materials are listed in approximate order of how much they contribute to the overall project cost.

9.6.1 Insulation

For U = 0.2: £7 per square metre for glass fibre.
As much as £12 per square metre for multi-reflective film.
Other options in between.

9.6.2 Roof tiles

Large tiles, 30p upwards.
Plain tiles, 22p for concrete to 60p for handmade clay.
Slates, 50p for imitation, up to £2 for best Welsh.

9.6.3 Timber

£1.75 per cubic metre for sawn.
£1.95 for sawn treated.
10% add-on for planed.
10% add-on for machining for skirting, etc.

9.6.4 Bricks

20p each for low-cost bricks.
50-60p each for hand-made clay bricks.

9.6.5 Windows

UPVC, £250 for a 1800x1000 triple casement.
UPVC, £500 for French doors.
Softwood – 20% less.
Hardwood – double the cost of UPVC.

9.6.6 Heating systems

£2,000 for an oil system with 8 radiators.
15% less for natural gas.

9.6.7 Scaffolding

£20 per linear metre.
Much more in metro areas, much less out in the sticks.

9.6.8 Plaster boards

£4 each.

9.6.9 Kitchen units

£20 upward per unit.

9.6.10 Wall tiles

5p each for plain white.
Up to £10 each for handmade and painted.

9.6.11 Concrete ready mix

£85 per cubic metre.

9.6.12 Shower cubicles

£250 upwards.

9.6.13 Sand and aggregates

£20 per tonne from a quarry.
£35 per tonne from a builder's merchant.
About £200 per tonne in small bags.

Key Tip

Forget about fighting for cheaper cement and saving £50. Go for the big hitters: bricks, tiles, timber and windows.

The cost of the kitchen and bathrooms are highly dependent on what you choose, so are entirely up to you.

Material prices generally have been flat for a long time with a few exceptions here and there. The trend is for labour costs to exceed materials costs. We will soon reach a point where 60%+ of a home's cost are in labour.

9.7 Buyer's checklist

Self Build Secrets includes a comprehensive list of components you need to purchase for your build project. It will help you enormously if you plan to purchase your own materials.

Click here to open the **Purchase Cost Checklist**

Key Tip

If you do all of the project buying yourself, then you can save 30% over builder costs and claim VAT back

Congratulations! You've finished chapter 9

You will now know:

- How to use the Self-build Cost and Project Planning Software (see section **9.2**)
- How to use the Project Return Calculator (see section **9.2.1**)
- All about cost-to-build tables (see section **9.5**)
- The cost of materials (see section **9.6**)

10. PUTTING IT ALL TOGETHER

In this chapter you will learn:

How to build a home to last a thousand years (see section 10.1)

How to set payment terms for your project (see section 10.3.1)

How to get the best from people you hire (see section 10.4)

All about site safety (see section 10.5)

10.1 Building a brick and block home to last a thousand years

Now that you understand construction terminology, here's a list of features you should consider if you want to build a home of the utmost quality.

- Deep foundations, certainly a minimum of 1m deep and probably 2m deep to account for future tree planting.
- Drainage around foundations in the form of land drains to take away accumulating water.
- A stone backfill to foundation trenches to again assist with drainage.
- Concrete footings in a high-strength mix (c35) and oversize i.e. perhaps 600mm x 450mm or even trench fill.
- Steel re-enforcement in the footings to resist localised subsidence (consult engineer).
- Double membrane below a 6-inch concrete ground-bearing slab.
- Ventilation gap of 200mm + with considerable vents to all sides.
- Steel-reinforced concrete floor beams.

- Double DPC.
- Concrete walls, oversize (partial fill) cavity to allow insulation and an air gap on the wet side.
- Install cavity trays and weep vents to properly dispose of cavity moisture.
- All joinery of English oak.
- Roof rafters double size 400mm spacing maximum and CCA treated. Use of purlins to assist with shape retention. Use of 12mm bolted connection to limit spreading of walls.
- Roofing felt of Tyvek or similar.
- Roofing battens double size, CCA treated.
- Through-roof ventilation.
- Roof tiles in clay tile or plain tile, nailed with stainless steel nails.
- Plastering – direct to solid walls, perhaps even lime-based to improve breathability.
- Brickwork – lime mortar to assist with flexibility.
- Driveway – clay block pavers on 200mm of C40 concrete with suitably placed expansion gaps.

10.2 Doing the same in timber!

Use the same method as the previous example. This time however, think about the following:

The timber frame method is vulnerable in several ways:

- The sub-floor.
- The wall structure.
- The partitioning.

Substantial protection to the sub-floor:

- High ventilation and substantial air gap.
- Double membrane.
- Choose a durable wood – OAK.

Highly durable wall structure:

- Timber frame material – OAK in substantial section.
- High-quality and robust vapour barrier to inside of walls.
- Use a lime mortar to allow movement.

Durable partitioning:

- Use 15mm gypsum boards with plaster skim finish.
- Use close studding like 300mm spacing to give rigidity.
- Use all screw fixing of studwork and wallboards.
- Use high-quality timber (like Douglas fir) for studding.

Key Tip

A home of this type is likely to look a little tired after a while as the inevitable cracks appear around the partitioning. With the help of a little routine maintenance, however, this type of construction can have a very long life.

10.3 Getting it right, in writing

Why have written agreements at all?

People often say to me: 'I don't ever have written contracts. I don't need them. I have good relations with my builder and we work things out.'

My answer to this of course is that those relationships will quickly change if there is a major misunderstanding, through no fault or negative intentions.

Key Tip

Write everything down. Contracts exist as a safety net should relationships break down. They are, in fact, an aid to good relationships as any misunderstandings can be quickly resolved with reference to the written word.

Here are some tips for setting up agreements:

- Try not to be too legalistic. A simple and unambiguous statement will suffice
- Try to cover important detail and at the same time ensure you cover all of the ground in some way or another.
- Stick to the important stuff

There are standard forms of contract available. Follow these links to the Federation of Master Builders and to JIT for more information.

www.fmb.org.uk

Generally, the contract lays out the terms of the agreement. It covers things like time to completion, access to the property, insurance and the broadest level of stuff like what's being provided.

It usually needs to reference several other documents like drawings, specifications and calculations.

Appendix 2 has a full set of sample contracts and specifications by way of example (section **12**). Note the way the specification makes a broad statement of coverage followed by specific requirements.

This is so that items not covered by specific statements are included in the scope of work.

If, for example, there is no specific statement about the wood used for window sills, then windows sills will still be required within the scope as they are included in the general statement of coverage.

As the job progresses, keep separate records to indicate changes and other agreements. Email is a good form of reference as it can be clearly demonstrated that it has been received.

10.3.1 Payment terms

Payment terms should reflect around 80% of the cost of work done to a particular time.

That's because unfinished work costs a bundle to put right. It is reasonable to reimburse a supplier in stages but always stay behind the costs so that there is an incentive to get the work finished.

The table illustrates an example:

Stage	Cost of work to date	What you should pay
	33%	20%
	33%	25%
	34%	40%
pletion)		15%

Key Tip

You should structure payments so that you get closer to actual value generated as the job comes to a close. You should also agree to withhold 15% for 1 month

A decent supplier will accept that terms such as these are reasonable, as they will not see negative cashflow impacts (they don't pay for materials as they are used, as they have trading accounts).

Anyone who asks for payment in advance should be turned away.

10.4 People power – getting the best from the people you hire (even the difficult ones!)

There are two secrets to managing people:

1. Making them co-accountable for the outcome
2. Treating them and the task as separate entities

It sounds complicated. It's not. It's very basic and it's fundamental.

Don't forget that your goal is to get the most productivity out of your people. You should set a basic expectation that everyone in your employ will work very hard. In return they can expect from you:

- To be treated with decency.
- To be kept informed and never messed about.
- To be paid appropriately and promptly.

Key Tip

A good relationship with your workers makes more money for you!

10.4.1 Co-accountability

Sometimes people let you down. The trick is to recognise the process by which this happens and manage it **before** it happens.

These are the reasons people let you down:

- They cannot do what you or they thought they could do.
- A genuine event arose unexpectedly – a sudden illness, for example.
- They have conflicting objectives to yours.

The third category is the one you will most often see coming from a long way off. You may hear 'genuine event' but this is commonly just a cover for conflicting objectives.

The key thing is in the terms of contract you have with the person.

Let's take an example.

Architect John is engaged to manage a self-build. The job pays a reasonable fixed fee but has several nuisance factors:

The job is far from home and takes John away from his family. John has another job closer to home that is more important to him for many reasons. And being on job A is affecting the outcome of job B.

John has a conflict that makes this job a chore rather than a challenge. John is not driven by a desire to succeed. He knows that his success is being compromised overall by this scheme in terms of the other things in his life.

Here are some things that can change this:

If successful, John will…

- Get much more money.
- Get a lot of praise from you.
- Get a lot of positive PR from you.

If unsuccessful, John will…

- Get no money.
- Get sued for consequential damages.
- Get trashed by you in the town square.

So, part 1 of co-accountability is making it important for John to do well. This will fail on its own, however. The essential ingredient that is missing of course is the "co" of "co-accountability". You are the "co". You must do everything you can to help John achieve his goals.

Key Tip
Drive co-accountability through raising the stakes and supporting your people in any way you can.

10.4.2 Treating people right

There is a simple rule for dealing successfully with people. It has to do with separating them from the task that they are doing.

Part one is to always treat people with the utmost dignity they deserve as human beings. Obey this rule regardless of how sub-human they may appear!

Part two is to treat the task at hand in a totally uncompromising way.

If you apply rule one in isolation, you will be treated as weak and you will be let down with alarming frequency.

If you apply rule two in isolation you will get the same result.

You must therefore use both parts to be effective. Here are some examples of our two-part technique in use:

- 'I understand that you've got other pressures, it can't be easy for you. You must understand however that I have pressures too. The work has to be completed on time and we need to work out a way together of achieving this.'

- ‘I’m sorry that things aren’t working out. I wish it could be different. I am certainly not casting any blame. We need to find a way of working this out, however. I must meet my schedules and you must understand that I can’t allow anything to stop this being the case.’

- ‘I realise and understand that you have to make a profit and wish you all the best with your business. I too have to work to very difficult targets, however. I must meet these targets and we need to find a way of achieving this.’

  ‘I agree with you that quality of work is important and I’m pleased to be working with someone who has the same view as me. This work has to be complete by next Monday, however, and we need to find a way of doing this and keeping your high quality levels.’

So remember, treat people well. Genuinely well. Be decent and honest. Show concern for their problems.

Set a high standard for yourself and expect the same from them. If they let you down, focus on the event and make it clear you are separating the event from them as individuals.

Key Tip

Treat people well AND focus on their task uncompromisingly.

That’s all there is to it!

10.5 Site safety

Building work is, statistically, extremely hazardous. The industry has now been forced to get its act together, although smaller players typically have not responded quite as well as bigger players.

Accidents are predominantly linked to falls from height or by impact of some kind.

A surprising cause of many fatalities is collapsing trenches.

Generally, foundation trenches are now much deeper than they once where. A trench deeper than 1m starts to get very dangerous. A 2m trench is a death waiting to happen.

Particular care should be exercised if children have access to the site.

The Construction Industry Training Board (CITB) works very hard to promote site safety. It produces an excellent guide book called GE700. The HSE also has several publications along the same lines, on health and safety in construction.

The latter is a much-condensed version at 120 pages, compared to GE700's several hundred. A few pounds and a couple of hours invested here may save a life. It may be the life of a child. Yours even. Do it!

www.citb.org.uk/health_safety/

10.6 On to bigger and better things?

Thank you for taking the time to read this book. We sincerely hope it has been useful to you and that your latest self-build project is a better one for the experience.

Now that you have mastered the skills it may be time for you to move on to a more extensive scheme. Perhaps the constraints that you faced or imposed upon yourself on this occasion can be lifted and you can move to a new level of excellence.

Self-building is recognised by most of those who have been through the experience as one of the most fulfilling things a person can do in their lives. So go on, go for it!

If you have any comments to make about the book then please contact the author at Sean@PropertySecrets.net

Congratulations! You've finished chapter 10

You will now know:

- How to build a home to last a thousand years (see section **10.1**)
- How to set payment terms for your project (see section **10.3.1**)
- How to get the best from people you hire (see section **10.4**)
- All about site safety (see section **10.5**)

11. APPENDIX 1 – YOUR COMPLETE GUIDE TO FINDING AND KEEPING THE BEST TRADESPEOPLE

We hear a lot about bad builders.

Do we have cause for concern as self-builders? Are we going to get ripped off wherever we take our business?

The answer of course is no.

Most builders are generally pretty good in most regards. Builders and tradespeople are, like all of us, largely a result of their experiences in life.

The way you set up and manage your relationships with your tradespeople will largely determine their quality of work.

So, how do you get it right? Read on…

11.1 How to get the best out of your tradespeople

Generally, most builders experience a client problem or two once in a while.

Quite often, the clients are completely in the wrong. I've seen many examples of this. So, remember, many adversarial outcomes are a result of the client's behaviour.

Consider, for example, that most clients will be carrying some or all of the following assumptions with them in their interactions:

- Many builders are cowboys.
- Many builders try to rip you off with extras.
- Builders are noisy, loutish, have bums that hang out of their trousers, and wolf-whistle at passers by.
- Builders spend most of their time drinking cups of tea.

It's quite probable that in a number of cases their anxiety comes through negatively and starts to develop an atmosphere of mistrust very early on.

In fact, you can expect that most tradespeople will be something like the following:

- Want to do a good job.
- Are overworked so don't really need to make a good impression (except out of pride).
- Want to make maximum profit so will know how to slip a few sly pounds in.
- Are slightly suspicious that the client wants to rip them off.

You are broadly interested in three features of your potential contractor's make-up:

1. Their ability to perform good work.
2. Their ability to manage their work.
3. Their ability to work with you, their client, in a reasonable way.

If you think about it, the first is about **quality**, the second and third ultimately about **cost** and **time**.

In general, a good craftsperson that lacks the latter two skills may result in the following:

- Very frustrating process.
- They may well overcharge.
- They may be grossly late in their delivery.

An inability to perform good work has two outcomes:

- You end up with a job that devalues your home (the worst outcome).
- You pay up and get somebody else to do the work right.
- You refuse to pay and get somebody else to do the work right.

Now we've talked separately about writing good contracts and specifications. This provides you with two things:

1. Legal cover if you should choose to go in that direction.
2. Negotiating power should there be a misunderstanding between reasonable parties.

Unfortunately, of course, your average deficient tradesperson is typically not all that reasonable.

If you get the spec out and tell them they've put the doors in the wrong place they might just get angry and leave site. Ultimately you will win as you have the paperwork on your side.

You may have to go through a lot of pain for that victory, however, including the possibility of threats against you.

It is therefore far better to get it right the first time by employing good people.

Common advice in terms of finding the right people is as follows:

Look for members of trade clubs, seek personal referrals, and ask for references.

In practice….

Trade clubs don't actually guarantee much. There are good and bad tradespeople in even the most reputable clubs although they are less likely to be prominent within good organisations.

In some instances it is the company and not the individual who is a member of the club. It does have some value that suppliers are members of organisations, but don't rely on it too much.

Personal referrals on the other hand are very useful in terms of the person's reliability and integrity. If a trusted person tells you a builder was good to deal with, then your are half way there.

Of course, they may have been good to deal with because things happened to be going well. How would they be if you challenged their quality? Would they be mature or would they blow up?

Most people have little knowledge of construction quality. Unless the referral is being made by someone who does understand construction, this area needs to be covered in other ways.

Asking for **references** is a waste of time. Everyone has a friend or two who will provide a reference.

Ultimately, the best way to find good craft is to know what to look for and to find it! We will show you how to do this with specific tips on what to look for. You will be equipped once you've read this to assess the quality of a person's work.

There are also some other ways, other than through personal recommendation, to assess organisational ability and ability to work with others.

- Talk to them. Ask challenging questions about their planning. For example, ask them how they schedule jobs and how they adjust to keep customers on schedule. Get to know them and use your intuition.
- Talk to their customers. Visit them on site if you can and ask their customers about these two areas.

Some other pointers:

- Look for tradespeople who return your phone calls. This is pretty rare actually!
- Look for people who show reliability in other ways, like showing up for meetings on time.

So, there you go. It's as simple as that.

- Develop skills that allow you to recognise good work.
- Look for personal referrals of good character.
- Visit other sites.
- Look for indicators of reliability like returned phone calls.

This is our comprehensive and sometimes controversial guide to craftsmen. We will take you through each of the building trades, describing in detail, with the help of photographs, exactly what to look for in a tradesperson.

All you then have to do is visit a few sites and you will know exactly what you are likely to get.

We will cover the trades in the following order:

- Bricklayers
- Plasterers
- Roofers
- Ground workers
- Plumbers

- Electricians
- Carpenters (framers)
- Carpenters (finish)
- Dry liners
- Scaffolders

- Painters
- Kitchen installers
- Bathroom fitters
- Lead workers
- Floor tilers

11.1.1 Bricklayer (or brickie)

Most of bricklaying involves stacking bricks in an ordered fashion and a neat way. Generally, the following things are desirable:

The walls, as they grow, should be vertical. A 2m wall should be vertical within a few mm. Use a longish spirit level to check work. If the work is out of level by 1mm on a 1m long spirit level then you can assume it is 2mm out of level on a 2m wall.

You can always move your spirit level to different places to get an overall view.

The joints between courses should be regular. The mortar beds should be the same thickness throughout (around 10mm) and the bricks should stack so that the joints form straight lines again on a spirit level.

The wall should follow a tight line down its length and be visually level and true. In fact, all brickies build corners first and then fill the gaps using a tight line as a guide.

The corners (quoins) should be level with one another. Generally, walls should be built so that they are true within a 5-6 mm over their whole length or height.

The mortar beds should be pointed. That means that they should be shaped in one of several patterns to deflect water away from the joint. The pointing should be neat.

There should be little mortar left on the face of the brick once the work is done.

Bricklaying is dirty work. Scaffold, window sills and driveways usually get a good degree of mess left on them which will be hard to remove.

Reasonable precautions should be made by the brickie to ensure this mess is minimised and removed regularly during and at the end of the work.

Neatness is a key word for good bricklayers. Look for neatness in every aspect of their presentation and work.

11.1.2 Plasterers

Plasterers are a close relative of brickies in as much as their work is a wet trade.

Good plastering looks like this:

- The surface is smooth, almost glass-like.
- Joints are provided with a reinforcing tape or mesh to avoid splitting.
- Outside corners have a (usually metal) reinforcing band fitted.
- Inside and outside corners are razor sharp.
- The plaster surface should be flat within about 2mm over a square metre.
- Undulations should be gradual.
- There should be very few blemishes (like holes) on the surface.

You can reasonably expect that the plasterer will locate defects and fill them.

The general rule is that finished work must look glass-like, flat, sharp and defect-free.

Neatness, as with the bricklayer, is a big factor.

11.1.3 Roofers

Roofers are generally a tough bunch of people. The work is physically the most demanding of the trades. There is considerable craft (more than most people expect), involved as well.

Generally, a good roof looks like this:

- The battens and therefore the attached tiles are straight (except in a roof using reclaimed tiles, where they will naturally undulate).
- The tile courses (rows) are evenly spaced (although there may be some deliberate closing to get the tiles to fit the roof).
- There should be no odd-size cutting.

- The pattern, like brickwork, should be uniform and form straight lines.
- Sometimes tiles need to be nailed, sometimes clips need to be used.
- Valleys should be neat and uniform.
- Ridge work and eave work should be neatly cemented.
- Ridge lines should be straight.

Generally, good roofers are remarkably quick and do very neat work. The fitting of roofs is very closely defined by the tile companies (the two main ones are Marley and Redland).

The tile companies' specifications are excellent in many ways. Add the above thoughts to their specs and you will clearly define the work.

11.1.4 Ground workers

Ground workers provide foundations and service runs. Look for the following:

- Neat trenches that have vertical or close to vertical sides. It is particularly important that trench bottoms are clear of loose material before foundations are laid.

They should be scraped clean with a sharp trenching shovel so look for this.

- The materials used to backfill trenches, particularly those used for sewerage trenches, should be uniform. Generally, some type of gravel is ideal.
- Watch out for installers who backfill with the same materials that came out of the ground.
- Finished foundations should be level within about 20mm end to end. The surface should be smooth to allow bricks to be properly laid on top.
- It is particularly important that foundation slabs are 'tanked' properly. Even suspended slabs should have this feature.

To check for tanking look for a neat plastic membrane (usually blue), that should run under the whole slab, neatly overlapped at joins and overlapped into the damp-proof membrane in the wall to provide a continuous barrier to damp.

Groundwork is covered by the building regulations and you should be familiar with the approval documents A, C and H, which cover structure, damp prevention and drainage.

11.1.5 Plumbers

Plumbers who install gas must be **CORGI**-registered. Plumbers who install oil should be **OFTEC**-registered.

Generally, neatness is a crucial indicator of quality. Look for the following:

- Pipes that run in sensible locations (so as not to obstruct or be unsightly).
- Pipes that look neat as they run in straight lines.
- Under-sink pipework that is compact.
- Isolation valves in abundance, particularly around water tanks and taps/toilets/washers.

A good plumber should be able to discuss the merits of different heating schemes. Ask about sealed Vs open vented systems for example, and discuss combi systems.

Plumbing is covered by the building regulations approval document H (drainage). It is particularly important that your plumber knows how to install effective traps, for example.

11.1.6 Electricians

An electrician's work revolves more around good theory. The tasks are pretty low-skill but working to a correct scheme is more complex. **A badly designed circuit can have devastating consequences.**

Look for the following in good work:

- Sockets and switches are level and sit tight to the wall.
- Wires that are visible are neatly laid and covered, if appropriate.
- Wires and circuits are labelled. Typically a consumer (fuse box), unit should have a description of each circuit.
- A test certificate should be provided showing that the work has been tested and is safe.

- Generally, again, neatness is a key word.

Technical competency is a significant factor. Electrical installation is governed by the IEE (Institute of Electrical Engineers).

IEE regulations are a legal obligation as they are referenced by an Act of Parliament. Electricians are commonly, although not always, part of the NICEIC body lll (National Inspection Council for Electrical Installation Contracting).

Qualifications are a must however. You should ask for certificates.

11.1.7 Carpenters (Framers)

Good woodworkers can generally do work ranging from the overall frame of a building or a roof, to the more challenging art of cabinet making and finishing.

Many will run out of steam well before cabinet work is required and a framer doesn't necessarily need to be a cabinet maker (and vice versa), to be competent. We have therefore considered these as separate trades.

The framer generally has a competency with length and angle. The best indicator of good framing ability is an ability to cut complex (or compound), angles that fit tightly. It's as simple as that.

Perhaps the other factor worth noting is that wood, particularly the less refined versions used in framing, tend to shrink and twist. The tradesperson should understand the concepts of…

Wood moisture content (12% or lower is considered OK for framing).
How the wood will shrink, and its impact on the project.

Your specification should revolve around producing tight joints that don't pull apart.

11.1.8 Carpenters (finish)

There are two aspects of a finish carpenter's work that can be clearly assessed:

1. Ability to produce tight, clean joints.
2. Ability to produce a high finish.

It's a very simple matter to look at joints produced and assess the quality of the work. Look closely around skirting boards, around door trims and along gaps between other components. The joints should form a razor-sharp line.

Look around at the way doors have been mounted. The cut-outs produced for locks and hinges should follow the profile of the lock or hinge very closely. There

should be little evidence of the wood being crushed, and the cut line in the wood should be razor-sharp.

Producing a high finish is a skill that fewer carpenters have. The general steps are as follows:

- Producing good work to begin with.
- Sanding down in successive grades of sandpaper. Generally three to four grades should be used - 80g, 150g and 220g may be a good succession.

For a particularly fine finish (for hardwood cabinets, for example), the sanding should progress through to around 360g or 400g (the higher the number, the finer the sandpaper).

- Following sanding, the first layer of finish will be applied. There are several to choose from. The section below describes types of finishes and the results obtained.

Use your little knowledge to start a discussion with your finish carpenter about the merits of each. It will help you establish expertise.

11.1.9 The range of wood finishes – what to use when

Sanding sealer - Usually based on a dewaxed shellac compound. Makes a smoother undercoat finish with a medium gloss but not for final finishing, i.e. a preparatory finish.

Oil finishes like linseed and tung oil - Give a flat and moderately resilient finish. Built up in 4-5 layers. Does not produce a hardened cover like varnish but rather like a penetrating moisturiser. Commonly used under wax for a more traditional look.

Wax - Commonly applied on top of oil. Gives a more traditional finish that looks great but marks easily.

French polish (shellac) - Bug carcasses leached in alcohol to produce the king of finishes. If freshly prepared it is non-waxy. Application is an expert field. Used for fine furniture, it gives a fine patina but does not protect against water.

Varnish, polyurethane, lacquer - Hardening finishes that are durable as they leave a layer of glass-like cover over the work.

Generally, several of the above can be combined and the more combining you do the better the effect. The rules are as follows:

- Do not put anything on top of wax although wax can go on top of anything.
- Do not mix oil and water finishes. Quick-drying varnish is water based. Use it only on top of water-based products like quick-drying stain
- Oil products like tung oil and Danish oil can have wax or any hardening finish applied over, although again avoid covering oil finish with water finish
- French polish should be treated as containing wax and therefore do not mix with any other products.

The best looking finishes for fine furniture are either French polish or an oil and wax team. The best finishes for hard-wearing areas are the hardening finishes like polyurethane. Pre-treated floors are treated with lacquer, which is usually even harder.

11.1.10 Dry liners

Dry liners are a new breed of installers who fit plasterboard to internal walls to provide separation. The same rules for finish apply as with plasterers. Examine the work under a halogen light to spot defects that will annoy you in the finished work if left unchecked.

Look for the following indications of good work:

- Joints are properly taped (although the dry liner may leave this to a plasterer).
- Fixing should be every 150mm on ceilings and 200mm on walls.
- Screw fixing is preferable to nail fixing as it is less likely to come apart.
- Gaps between boards are not an issue as they aid crack prevention.

You should be able to push with moderate force against boards and ensure that they are fixed rather than floating.

11.1.11 Scaffolders

Scaffolders are usually a tough crowd who are best left alone to do their work. Scaffolds are a very important safety feature and must be erected properly. The HSE provides guidelines on what represents a good scaffold and you should obtain one of its guidance books.

The highlights are as follows:

- The structure must be braced to avoid the risk of collapse.
- All boards must be properly supported at the ends and several other points.
- There must be a handrail to prevent fall.
- There must be a kickboard to prevent objects falling.

11.1.12 Painters

Painters usually repair minor plaster defects as they go and produce a final finish that is pleasant to the eye. Look for the following indications of quality:

- Look closely around areas where wall meets wood to ensure the paint is neatly separated.
- Look around light switches and sockets to ensure they have not been painted.
- Look for indications in general that care is being taken to avoid getting paint anywhere other than the intended place.

11.1.13 Kitchen installers

Kitchen installation is best performed by specialist installers who are contracted through the supplier. Look for the following indications of quality:

- Doors should be level with each other and handles should be in line.
- The units should be sturdily attached.
- The worktop should be level under a spirit level.
- The worktop joint should be neatly mitred, i.e. cut to join rather than have some kind of plate-joining affair. The joint should be practically invisible.

11.1.14 Bathroom fitters

This may be your plumber or may be contracted by your bathroom supplier. A well-installed bathroom should fit correctly and look right. Try the following:

- Look for neat pipework, possibly below the floor.
- Look for sealant joints around baths and showers that are neat.
- Ensure tap bases do not rotate.
- Look for earth bonding between components.

- Ensure water supplies have isolation valves.
- Ensure drainage is compliant with the building regulations approval document H.

11.1.15 Lead workers

A bit of a specialist field. You are likely to have some lead flashing in your home.

Generally look for the following.

- Lead should be neatly stepped and not be too obtrusive.
- Lead should be in short overlapped lengths (as it expands like crazy in heat). 1.5m is a good guide maximum.
- Lead should be treated with a corrosion inhibitor that stops unsightly lead oxide from forming.

11.1.16 Floor and wall tilers

Good tilers will apply the following:

- Where tiles need to be cut, they will have been carefully planned in advance so that there are no unsightly ‘slither’ cuts.
- Tiles will sit flat to one another.
- Spacing will be even.
- Look closely at how the tiles bridge complex shaped objects. A good tiler will cut neatly around. A bad tiler will fill the bulk of the cut-out with grout.
- Large areas need to be carefully planned to ensure tile cuts are sensible. Floor tiling in particular is usually set out with a series of lines before being progressed.

11.1.17 Wood floor installers

The biggest factor in the quality of a wooden floor installation is wood moisture content. If a floor is installed too wet it will shrink and leave unsightly gaps.

The installer should be able to demonstrate a moisture content of well below 10%.

Key Tip

If your floor installer lacks a moisture meter you should be sceptical of the quality of his work.

12. APPENDIX 2 - EXAMPLE CONTRACTS AND SPECIFICATIONS

12.1 Building Specification

New Renovation, Profit City, UK
Major Renovation, including addition of three bedrooms in roof space.

12.2 General builder's notes

The builder will work within a written safety plan that will define and monitor compliance with measures that will protect those exposed inadvertently or otherwise to the dangers inherent in the building activity.

This safety plan will, in particular, define and execute measures that provide physical separation from building site hazards to those not involved in the construction.

Work to be progressed from outside of the property. Existing property from ceiling level down to be maintained in a fully functional (unimpeded) state.

Access to loft to be through roof structure. Access to be secured by appropriate security when not in use to minimise risk of illegal entry to property.

Alterations to inside of existing property i.e. wall opening and staircase to proceed only after full completion of loft conversion work.

This work to be conducted within a total of 7 weeks and to be conducted with suitable protection to existing building and contents including full dust control measures (sealed plastic partitioning) and mechanical extraction.

Site to be kept clean and tidy at all times.

Site to be fully restored to pre-work condition including making good of any landscape damage and removal of all debris.

Work to be conducted once started as quickly as practicable and continuously once started without periods of delay or resource shortage.

12.3 Scope of work

To construct and refurbish “Renovation, Profit City, UK” including all required materials and labour for demolition, site removal, site security, clean-up, wall, roof and floor structure and covering, structural members like lintels and beams, partitions and plaster finish, below-ground and above-ground drainage, including rainwater removal, (new) heating system to whole property, electrical system.

Hot and cold water, bathroom installation including suite and plumbing, partition walls, doors, door trims, window sills, door hardware, skirting boards, windows and skylights, redirection of structures and services that prevent delivery of extension.

Making good to appropriate and reasonable standards, and generally to build an extension that is satisfactory and complete in all respects with the exception of paint and/or other decoration, floor finish aside from chipboard decking and window dressing.

All work to be in compliance with this specification, building control-approved drawings and structural engineering drawings as supplied.

All specifications and drawings to be signed approved by the contractor before commencing work.

12.3.1 Compliance with approval document L – conservation of fuel and power

All designs, as appropriate for domestic extension, are based upon the elemental method with an SAP rating of over 60.
U-values as follows (in W/m2K units):

- Roof - 0.3 for sloped roof section (table 1 material alteration)
- Walls – 0.35
- Floor above garage – 0.25
- Windows, doors and roof lights – 2.0

Roof extension to be fully insulated (in a way that is continuous with the existing cavity wall / loft insulation as per the attached plans ref 2002/036/001 and 002.

Use UPVC 20mm double-glazed units

Cavity closure to be thermabate or similar to avoid cold bridging

All insulation to be multi-reflective Actis Tri-Iso Super 9 giving U value equivalent to 200mm mineral wool i.e. 0.2wm2/k. All joints to be lapped and taped with aluminium tape. Attachment with stainless steel staples.

12.3.2 Ventilation

Trickle ventilation to bedroom and hallway 8,000mm2.

Trickle ventilation to bathroom, 4000mm2.

Rapid ventilation to all rooms 1/20th floor area.

15 litres per second minimum mechanical extract to bathroom.

Roof ventilation as per plan.

12.3.3 Building structure

Roof rafters to be 50x150mm SC4 at 400mm centres as per table A15.

Rafters to connect to wall / base plate using galvanised steel framing anchors with minimum 4 off 4.8mm 50mm screw fixings to each.

Maximum birds mouth less than 1/3 depth of rafter.

Collars to be 50x150mm SC4 at 400mm centres.

Collar to rafter attachment by m12 bolt with 50mmx3mm square plate washer each side.

Floor joists to be 63x220mm at 400mm centres as per table A2.

Floor joists to follow alignment of current joists and straddle current joints. Joists to be shimmed off wall plate by 20mm to maintain integrity of current plaster and lathe ceilings.

Floor platform to be substantially braced using metal herringbone strutting at 2m intervals.

Rafters to sit on 100x50mm wall plate

Rafters to be tied back to floor joists (in instances where floor and rafter direction are contrary) using 1500mm x 35mm x 5mm steel restraints screwed 4.8mmx50mm) to at least three rafters and to each rafter.

In other instances, rafters to be bolted to floor joists using m12 bolts and 50mm square washers.

Floor to be covered with 19mm P5 flooring grade chipboard. Covering to span whole extent of platform i.e. to meet gables and intersection of rafters with floor joists.

Screwing pattern to be m6x75mm passivated screws at 400mm x 300mm centres i.e. to each joist and at three points across width of board.

Gable (non-supporting) walls to be 100x50mm sc4 carcassing internal with brick external to match existing and to prior approval by client.

Internal gable wall to have studs at 400mm centres with horizontal noggins at 1m vertical intervals. Walls to be clad with 12mm OSB board screwed with m4x50mm screws at 300mm intervals to each stud.

Outside of OSB to be wrapped with Tyvek or similar breather membrane. Wall to be internally clad with Actis Tri-Iso super 9 insulation.

Plasterboards to be fitted on 25x50 counter battens. Insulation to be continuous with other wall, floor and ceiling insulation.

External (brick) skin to be tied using flexible galvanised cavity wall ties (Catnic BT-2) or similar to BS1243 at 450mm vertical, 600mm horizontal centres.

Wall ties to be at 300mm maximum vertical centres within 225mm of reveals.

Garage front wall (225mm solid wall) to be replaced on existing foundation with 250mm cavity wall.

Garage window to be removed and bricked up to match existing. Client to approve bricks before use.

Wall over study window to be rebuilt incorporating lintel as detailed in plan.

Strapping using 5mmx30mmx1500mm straps.

Wall plate fixed to existing walls, galvanised steel straps at 2m interval wrapped over wall plate.

Rafters to be tied to gables at 2m intervals.

Rafters to be tied to supporting walls at 2m intervals.

Internal stud walls to loft conversion to be 100mmx50mm carcassing at 450 centres sitting on 100x75mm sole plate with 12mm plasterboard to both sides, skimmed.

All screw construction. Boards to be screwed at 200mm centres to each stud. Stud walls to have noggins at 1m vertical intervals.

Stud walls to existing loft to be 100x50mm carcassing with 12mm skimmed plasterboard to inner side over Actis Tri-iso super 9 insulation. Access door to be insulated.

Ceiling boards to be screwed at 150mm intervals and be suitably secured at edges using appropriate noggins. Ceiling to be skim finished.

The existing foundation walls between the kitchen and hallway (marked load bearing) to have foundations exposed for building control inspection of adequacy.

12.3.4 Roof covering

Plain roof tiles to match existing and of same material.

Breathable felt Tyvek Pro or similar.

Battens to be 35x21mm nailed with 2.8mmx60mm galvanized or stainless steel nails.

Tile pitch to supplier's guidelines.

Tile nailing to supplier's guidelines.

Valley to be GRP based, gutter formed by machine cut roof tiles 75mm nominal gap with a range of 5mm. Verges to be OPC mortar pointed.

12.3.5 Windows and skylight

Windows to be 2002 approval document L-compliant.

Skylight to use manufacturer gutter / flashing kit.

Bathroom, drainage foul and rainwater

Bathroom suite hardware to be free issue. Use water resistant backing board to shower enclosure. Catalyst-hardened grout to all areas.

Shower to be gravity fed and incorporate client-issued electric pump.

Installation to comply with the latest edition of BS5572.

W.C.s to have 75mm traps with a minimum 50mm seal depth.

Drainage to wash hand basins to be 40mm diameter with 40mm diameter P traps a minimum 75mm seal depth.

Drainage to showers to be 40mm diameter with 40mm diameter P traps a minimum 75mm seal depth.

Branch connections to SVP designed to avoid cross flow.

All new gutters at eaves level to be 125mm diam. Half-round PVC with 75mm down pipes, colour to match existing, discharging into R.W.D.P.s running into new soakaway.

12.3.6 Carpentry and finish

Loft access hatch to be located within new hallway dimensions 800mm x 1200mm. Hatch to be fully insulated.

Jointing to be free from any obvious gaps i.e. 0.5mm is considered excessive. All wood will be allowed to acclimatise for this reason for a minimum of 3 days in a heated room.

All finish carpentry will be secured by screw fasteners and plugged in identical wood. All carpentry to be redwood based and free from dead knots.

12.3.7 Heating system

High-efficiency (condensing) oil-fired boiler 90,000 BTU hr.
90%+ efficiency Sedbuk.

Installer to confirm suitability of system for purpose i.e. to provide suitable heating and hot water to property as designed.

Oil-based system installation to OFTEC standards.

Room-sealed appliance.

Balanced flue located within table 4.2 approval document J. Outlet to be permanently guarded with terminal guard.

Flue gas maximum temperature confirmed less than 250C

Pressure jet burner.

Max surface temperature of 60C under full operation.

Fitted onto 100mm minimum concrete hearth with in-built spillage containment.

Manufacturer supplied flue arrangement installed to manufacturer's recommendations.

CE marked.

Permanent ventilation if required will be provided to manufacturer's guidelines.

Appliance will be placed to allow proper maintenance.

Tank installation and supply pipework to BS5410 part 1.

Integrally bunded tank.

1800mm horizontally from building extremities and 760mm from any boundary.

Installed on 100mm concrete base or on paving slabs at least 42mm thick and in either case extending beyond outer skin of tank by 300mm in all directions.

Supply system to have 2 isolation valves at the tank, and an oil indicator gauge between.

A proprietary fire valve to be fitted with valve external to the premises and probe internal to the premises and within close proximity to the boiler combustion chamber.

An in-line filer to be provided

System to be gravity-fed.

Approval document J Appendix 1 checklist and boiler commissioning notes to be provided to client after installation. Commissioning will be by a competent commissioning engineer.

Pipework to be rigid copper appropriately sized to provide. Re-use existing installation wherever appropriate.

Heating system to be indirect open-vented system.

Convector radiators sized for appropriate output and rate of temperature rise. Calculations to be provided.

All radiators to be fitted with thermostatic valves.

A single digital programmable thermostat to be provided in a client-approved location.

Hot pipework outside the insulation envelope will have insulation fitted Lambda 0.035 thickness 40mm min.

Hot water tank to be insulated with at least 35mm PU foam minimum density 30kg/m3.

Cold water tanks and pipework to be insulated to U=0.5

12.3.8 Electrics

RCD to be fitted to all circuits.

Earth Bonding / supplemental bonding to be provided to the bathroom and kitchen areas as appropriate to the IEE regulations.

All wiring in compliance with IEE regulations and installer to be member of a credible installer organisation.

12.3.9 Staircase

Max rise of 42 degrees.

Closed treads.

First 3 treads as winders.

Handrail at between 900 and 1000 above ground, 1 side only.

Create and appropriately trim opening as per plan.

Staircase dimensions as in plan.

Open banister, handrail and turned spindles in pine. Spindles will not allow 100mm sphere to pass at any point.

Banister to terminate into 100x100 turned newel in pine.

Construction to be appropriate to carpeted stairway and the use of plywood and/or MDF will be allowed in their construction.

12.3.10 Compliance with Approval Document B – Fire Safety

Bottom of bedroom and hallway window opening area to be maximum of 1100mm above floor level.

Minimum opening of 450mm x 450mm.

Mains-linked smoke alarms to be fitted to each floor as shown on building control drawings.

Garage ceiling covering 12mm plasterboard, taped and skimmed to provide 1/2hr fire barrier.

13. APPENDIX 3 - SAMPLE CONTRACTUAL AGREEMENT

Customer's name:

Customer's address:

Phone number:

Address of the premises where the work will be done, if different from the above:

Phone number:

Contractor's name:

Contractor's address:

Phone number:

This Contract is in two parts - Part 1 deals with the arrangements for the work and part 2 gives the conditions

13.1 Part 1 - The arrangements for the work

13.1.1 (A) The work to be done

1. Short Description of the work to be done:

Roof space conversion and associated ground-floor modifications.

2. A full description of the work to be done is given in the documents checked below. They have been drawn up and agreed between the customer and the contractor and are called the work details.

Contractor's quotation
Date of quotation: 30th April 2003
Drawings: Identifying nos2002/036/001b, 2002/036/002
Date of specification: 2002-036-010 revision 2

Other documents (specify)

Drawings and details provided by Engies and Co (structural engineers)

Both the customer and the contractor should initial the documents and retain a copy.

13.1.2 (B) Planning permission, building regulations and party walls

1. The contractor will apply for any planning permission, building regulations approval and party wall consents or awards that may be needed unless the customer indicates otherwise by marking the list below.

The customer will apply for the following:

- Planning permission
- Building regulations approval
- Party wall consents or awards

2. The contractor will not start work at the premises before any planning permission and party wall consents or awards that are needed have been received.

However, the contractor can start work before building regulations approval is received but must let the local authority know at least 48 hours before he starts.

13.1.3 (C) Using facilities on the premises

The customer has checked below the facilities, which he will allow the contractor to use, free of charge:

- Electricity
- Washroom/toilet
- Telephone/fax
- Water

13.1.4 (D) Price

The price for the work shown in the work details is £XXX (including any VAT)

The contractor will itemise the price and show the items on which VAT is charged, and at what rate.

The price also includes the contractor's costs of dealing with any unexpected problems, which he could have discovered by carrying out a careful inspection before the price was agreed.

If the customer changes the work details the price will be increased or reduced depending on the changes made (Condition 4)

The price for the work shown in the work details, together with all increases or decreases made to it, will be the total price.

13.1.5 (E) Payment

1. The customer will pay 90% of the total price by the time the contractor finishes the work (Conditions 6(a) and (b)).

The customer will pay the agreed instalments below as each of the following stages of the work is finished.

Stage	Payment
Completion of watertight structure with window in place and glazed	30%
Completion of roof covering (tiling and ridging) and bricklaying of gables	30%
Completion of all works	30%

2. The customer will not have to pay the remaining 10% of the total price any earlier than 1 month after the work is finished (Condition 6(c))

13.1.6 (F) The working period

(The working period is the agreed length of time for doing the work. The customer should choose one of the options below).

- The contractor will start the work no later than (date here)
- The work will be finished within [11] weeks from a start date to be agreed between the customer and the contractor.

The work is finished when the contractor has properly done everything shown in the work details and any changes made to them.

The working period will be extended in certain circumstances (Condition 5(a)).

13.1.7 (G) Product Guarantees

The contractor will give the customer the benefit of any guarantees issued by the manufacturers of products installed in the work.

13.1.8 (H) Insurance

Before the work starts:

1.The customer will tell his household insurers, (if any), that he is about to have work done at the premises.

2. The contractor will have an all risks policy to cover himself and the customer for the full costs of damage to the work and to unfixed materials on the premises before being used in the work.

3. The contractor will have an up-to-date public liability policy for death or injury to people and damage to property.

Amount insured for any one claim arising from one event [£5,000,000].

13.1.9 (I) Working hours

The customer will allow the contractor to carry out the work between 8am and 8pm from Monday to Saturday, unless they agree otherwise.

13.1.10 (J) Occupation and security of the premises

1. The customer has indicated below to show whether the premises will be lived in while the work is being done (circle one).

- The premises will be lived in
- The premises will not be lived in

2. If the premises are unoccupied at any time while the work is being done the contractor will take practical and common sense precautions to deter intruders from entering.

13.1.11 (K) Disputes

1. The customer or the contractor can start court proceedings to settle any disputes.

2. The customer or the contractor can also have disputes decided within 21 days by an adjudicator appointed under an arbitration scheme run by the Royal Institution of Chartered Surveyors (RICS) or the Royal Institute of British Architects (RIBA).

This is as well as the right to go to court.

3. If the customer or contractor chooses adjudication to decide disputes, they both accept that the cost, rules and procedures involved will become part of this contract.

Customer's signature

Date

Contractor's signature

Date

13.2 Part 2 - The conditions

13.2.1 A. Contractor's responsibilities

The contractor will do the following:

- Carry out the work carefully, competently and as set out in the work details.
- Use materials that are of satisfactory quality and suitable for their intended purpose. The materials will be new unless the customer agrees otherwise in writing.
- Start and finish the work within the working period or any extension made to it.
- Be at the premises regularly to carry out the work during the agreed working hours.
- Not sub-contract any of the work without the customer's permission
- Store away his tools and equipment and ladders at the end of each working day.
- Regularly dispose of any rubbish from the work.

- Be responsible for any damage that he may cause to the premises and its contents or to neighbouring properties.
- Leave the working areas in a clean and tidy condition after finishing the work.
- Keep to all his legal duties and responsibilities.

13.2.2 B. Customer's responsibilities

The customer will do the following:

- Give the contractor access to the premises during the agreed working hours throughout the working period.
- Keep the working areas sufficiently clear of obstructions to allow the contractor to carry out the work.
- Allow the contractor to carry out the work in an order that he considers necessary to finish the work on time.

13.2.3 C. Health and Safety

The contractor will take all practical steps to:

- Prevent or minimise health and safety risks to the customer and other people living in or visiting the premises.
- Minimise environmental disturbance, nuisance or pollution from the work.
- Make sure that any temporary protection for the work is safe and weatherproof.

The customer will:

- Take notice of all warnings the contractor gives about any health and safety or environmental risks that he is taking measures to prevent or minimise.
- Not knowingly allow people living in or visiting the premises, particularly children, to be exposed to any dangers from the work.

13.2.4 D. Changing the work details

Only the customer can change the work details. Changes will be dealt with as follows:

If the changes increase the amount of work shown in the work details and the contractor agrees the changes he will quote a price for the extra work and the time involved. The customer will then decide whether to go ahead with the changes.

If the changes reduce the amount of work shown in the work details the contractor will make an appropriate reduction in the price.

If the changes alter the cost of any items in the work details without increasing or reducing the amount of work involved, an appropriate adjustment of the price will be made to reflect those changes.

13.2.5 E. Extending the working period

(a) The customer will extend the working period by a fair and reasonable amount if the contractor:

Has to spend extra time on the work because of changes made to the work details
OR
Cannot finish the work on time for reasons beyond his control, including any delay caused by the customer.

(b) The contractor can claim any reasonable costs arising from the working period being extended because of any delay caused by the customer.

13.2.6 F. Payment

When each stage of work is finished, the contractor will invoice the customer for the amount due after taking account of any price increase or decrease for changes made to the work details.

The invoice will be itemised and show the rate of VAT charged on each item.

The customer will pay 90% of the amount of the invoice no later than 7 days after receiving the invoice from the contractor.

The customer will pay the remaining 10% of the total price no later than 7 days after the contractor has put right all faults which the customer has promptly reported as having appeared at any time between the date the work was started and 1 month after it was finished.

13.2.7 G. Contractor's continuing responsibility for faults in the work

For six years after carrying out the work the contractor will remain responsible for any faults in the work (other than fair wear and tear), which are caused by him.

13.2.8 H. Bringing the contract to an end

If the contractor:

- Is not at the premises regularly to carry out the work OR
- Is not meeting his health and safety and environmental responsibilities OR
- Is so incompetent or careless that the work is of an unacceptable standard, and the matter is not corrected within 14 days of receiving a written notice from the customer …

…the customer can end this contract by giving the contractor a written notice to take immediate effect

If the customer ends this contract he will only have to pay any money due to the contractor when the work has been finished by another contractor.

If the customer:

- Does not pay an amount due, without having good reason OR
- Prevents or obstructs the contractor from carrying out the work; and does not correct the matter within 14 days of receiving a written warning from the contractor …

The contractor can end this contract by giving the customer a written notice to take immediate effect.

If the contractor ends this contract the customer will pay him, within 7 days of the contract ending, for work properly carried out, for any materials ordered specially for the work and for any other of the contractor's materials on the premises which he allows the customer to keep.

Insolvency

If the customer or the contractor becomes insolvent (unable to pay their debts), this contract will come to an end unless the insolvency practitioner involved makes a suitable arrangement to allow the contract to continue.

If this contract comes to an end because the contractor becomes insolvent, the customer will not have to pay any amount then due to the contractor until the work has been finished by another contractor.

13.2.9 I. Other rights and remedies

The customer and the contractor can claim from each other the costs and expenses which result from any failure to keep to this contract. This contract does not rule out or limit any other legal remedies which may be available to the customer or the contractor.

Law of the contract: The laws of England and Wales apply to this contract.

Customer's signature

Date

Contractor's signature

Date

13.3 A summary of the building regulations.

www.odpm.gov.uk/stellent/groups/odpm_control/documents/contentservertemplate/odpm_index.hcst?n=240&l=2

Simply to give you at least a vague idea of what they all mean:

13.3.1 Approval document A – Structure, makes the following main points:

- Timbers must be appropriately sized for a particular job or span (tables included).
- Walls much be of certain thickness and proportions that they are stable.
- Walls, roofs and floors must be tied together with steel braches to lock the structure together.
- Foundations must be designed in a certain way to support the building correctly.

13.3.2 Approval document B – Fire safety, makes the following main points:

- Mains-linked smoke detectors are essential.
- A secondary means of escape must exist. Rooms should have windows with certain heights and openable areas. The exact requirements get more stringent as height increases.
- Buildings like flats need special separation to resist fire.
- Staircases need to protect people from fire.
- Garages must be isolated by means of a fire door, a sunken floor and floors / walls with high fire resistance.

13.3.3 Approval document C – Site preparation and moisture, makes the following main points:

- Floors must be protected from moisture by special measures, including underfloor ventilation and membranes.
- Walls must be protected from moisture by a damp-proof course and a cavity, or water-resistant cladding.

13.3.4 Approval document D – Toxic substances, makes the following main points:

Should a wall contain insulation containing UREA FORMALDEHYDE (UF) then special measures like a protective membrane must limit penetration of fumes from the product into the home. The fumes are in fact formaldehyde, which is a recognised carcinogen.

13.3.5 Approval document E – Resistance to the passage of sound, applies only to linked buildings or flats.

Its purpose is to ensure that one dwelling doesn't receive sound pollution from an adjacent one. It actually makes good reading if you intend to provide sound insulation within your new home.

13.3.6 Approval document F – Ventilation, makes the following main points:

- All rooms must have a flow of air (for breathing!). This should be in the form of background ventilation normally found on windows and windows or doors that open to provide rapid ventilation. The standard gives the appropriate areas of ventilation required.
- The roof of a building must have a free passage of air of a minimum area in order to prevent condensation damage.

13.3.7 Approval document G – Hygiene, makes the following main points:

- All dwellings shall have a toilet and a bath or WC.
- These must be designed to be hygienic.
- A WC must be accompanied by a sink with hot and cold water.
- Sealed hot water vessels will have a safety device for high temperature and over-pressure. They will be fitted by a competent person.

13.3.8 Approval document H – Drainage, makes the following main points:

- Foul water systems must be carefully designed and installed to ensure that they work without leaking, blocking and without releasing smells into the house. There are various good design points in this document and it makes good reading.
- A foul water system must be accessible for service (i.e. manholes, etc).
- A septic tank or cesspool shall have certain design conditions applied.
- Rainwater systems (i.e. guttering, down pipes, gullies and soakaways shall have design criteria applied that ensure they work correctly.

13.3.9 Approval document J – Heat-producing appliances, makes the following main point:

Heating systems will be correctly installed to ensure they work safely without burning the house down!

13.3.10 Approval document K – Falling, collision and impact, makes the following main points:

- A staircase must have design conditions applied which ensure it is safe, of a reasonable steepness with an appropriate handrail.
- Any areas where a fall could occur must be protected by a guard rail (a landing is a good example). This guard rail must comply with certain design conditions as well.

13.3.11 Approval document L – Conservation of fuel and power, makes the following main points:

- A home must be designed with an appropriate level of insulation and draft protection.
- Elements like pipework must be appropriately insulated.
- Energy-efficient features like efficient bulbs and heating systems must be fitted.
- Glass area must be minimised or balanced by increased insulation.

13.3.12 Approval document M – Disabled access, makes the following main points:

- The approach to a dwelling must make reasonable measures to accommodate those who use a wheelchair. A ramp is an obvious feature as is ground that a wheelchair can pass over.

  If steps are the only reasonable way into a home due to terrain, they must be shaped to accommodate a wheelchair being pulled up them.

- An entrance hall must make provision for a wheelchair to manoeuvre.
- Any stairs must have an appropriate handrail (no more than required by document K).
- A WC must be located on the entrance level.
- Sockets and switches must be at a reachable height.

13.3.13 Approval document N – Glazing, makes the following main points:

- Glazing in vulnerable positions should be safety glass.
- Windows, when opened, must not present a falling hazard.
- Windows must be accessible for cleaning although for windows less than 6m above the ground, the requirement is only that there is a flat surface for a ladder to stand on.

And that's it in a nutshell!

The actual standards, which are freely accessible on the web, are very detailed. You certainly will not get to know them thoroughly.

Imagine, though, knowing a little about drainage the day before your drains are installed. You can certainly put yourself in a position of power.

The vast majority of builders have never seen the building regulations. They know bits and pieces from experience. If you spend twenty minutes reading one or two standards you will be well equipped to manage your subbies very well.

As a footnote, there exists another set of standards, more comprehensive still, that is produced by the NHBC.

If you employ a NHBC builder, pay £50 to get the standards. They define all sorts of good practice in plain English.

Your builder is obliged to comply with them. If you pick up on an issue during the first day of work, imagine how careful your builder will be from that point on!

Key Tip

Show attention to standards early in the project. This will keep your builder on his toes.

Congratulations! You've finished Self Build Secrets

If you've enjoyed it you might also want to read other titles from the www.PropertySecrets.net e-book and software tools series.