

Upland Path Management

Standards for delivering path projects in Scotland's mountains



Upland Path Advisory Group

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Introduction

This manual covers the process of managing an upland path project from developing a proposal, to project delivery and aftercare. It complements the [Upland Pathwork Manual](#) which covers practical pathwork techniques and the context in which they should be used. Both manuals have been designed for use by all involved in upland path management throughout Scotland – path workers, site supervisors, surveyors/designers, path and wider countryside managers and funders.

The overall aim is to effectively manage the impacts of access to our uplands. By adopting this approach the exceptional wild land qualities of Scotland's mountains will continue to be safeguarded and enjoyed by all.

Whilst the manual has been developed explicitly for management in the 'uplands', many aspects of best practice management are equally applicable within a 'lowland' context.

The manual has been broken down into five sections to allow for the comprehensive coverage of path management issues:

- Section 1 covers project planning from considering whether path repair is the right solution to planning for maintenance.
- Section 2 outlines the process of path surveying from area, to condition and specification surveys.
- Section 3 works through managing path contract teams. It views contract delivery from the perspectives of clients, designers and contractors from tendering to contract completion.
- Section 4 covers the management of health and safety in pathwork including relevant legislation.
- Section 5 covers training and development.

In producing this manual the Upland Path Advisory Group (UPAG) is setting management standards for upland pathwork in Scotland. The manual also provides supporting material for managers, contractors, surveyors and site supervisors who are undertaking the UPAG approved management level vocational qualification.

A great deal of the original work involved condensing 'best practice' techniques evolved from a variety of sources including the Countryside Commission for Scotland's Upland Path Management Project and site survey, health and safety, and contract management work led by charities, particularly The Footpath Trust, and Local Authorities.

Path management techniques will continue to develop and it is intended to add to, or revise the manual accordingly.

Upland Path Advisory Group

The Upland Path Advisory Group (UPAG) is an association of path building contractors, charitable countryside management organisations, statutory organisations, landowners, hill user groups and others interested in working together to agree and improve the standard and design of path management in Scotland.

UPAG welcomes comments on this guidance or information on new techniques. Contact can be made through recreationandaccess@snh.gov.uk.

1. Project Planning

1.1 Is pathwork the answer?



Introduction

Hill paths in Scotland can be viewed in a historical context, with managed and evolved routes born from diverse origins, and spanning shifts in land use, economic activity, land management and access legislation. In many ways the hill paths that are left in the wake of this dynamic leave a legacy, whether intended or not, for all of us to enjoy.

- Paths that link settlements, coffin routes, postal routes, drove roads etc., have typically evolved over a long period of time, with both formal and informal work carried out at different times.
- Paths constructed exclusively for land management, particularly 'stalkers' paths to facilitate pony access to the corries on private estates. These were built intensively between the 1850s and early 1900s, after the land was cleared, and were maintained on a regular basis until labour became scarce during post-war years.
- Evolved hill walkers paths have become much more obvious in recent decades, with 'desire' lines from the point of access to the summit of many mountains.

An exponential increase in hill-walking through the 1970s, 80s and 90s resulted in a huge amount of hill-path erosion both on pre-constructed routes, such as stalkers paths, as well as on the newer 'evolved' routes and the majority of these routes still need managed today.

Do you need to do pathwork?

Upland path management can be an extremely effective tool to minimise erosion on sensitive upland habitats, input into the local economy and encourage a healthier lifestyle but it should always be considered as part of wider resource and visitor management.

Before thinking about how to physically manage an eroded path through intervention, always consider the alternatives. For example, if the path is in a particularly sensitive area, is it possible to reduce the pressure on it by promoting other paths in the area or through altering parking provision? Be realistic about what you can achieve - if the path is the most obvious route up a popular Munro, there may be limited opportunities, particularly on small properties. Similarly, consider the visitor experience, if a more robust path does not provide the same quality of experience walkers are less likely to use it.

Where paths have been damaged, resource protection by hardening the site – the engineering solution – tends to be the first response. At a technical level, it can often resolve the immediate problem very successfully: an extensive toolkit of established techniques and advice is readily available. But in too many cases, hardening continues to be the main, or even the only response to growing and changing visitor use. This may in part stem from a lack of knowledge, a lack of unified management, or – all too commonly – a lack of resources, but it is often also a pragmatic choice of the line of least resistance: site management is perceived as being simpler than attempting integrated management of the wider resource and much simpler than trying to manage visitors!

Bear in mind that path repair, even the most light-touch, can increase the physical capacity of the site, often at some cost to its inherent quality. A more fully built path than necessary can produce the opposite effect to that intended, reducing the quality of the recreational environment and its inspirational experience for the visitor. Path repair may encourage increased use, possibly by different users such as horse riders or mountain bikers which needs to be factored in to path design and maintenance. Upland path repair projects can facilitate, even if inadvertently, visitor provision and may open up opportunities to promote increased recreation and tourism use. By making access quicker and easier, path projects may also have major repercussions across the wider mountain area.

If you decide that pathwork is the answer, you will then need to consider the style of path and level of intervention appropriate to your site and resources.

Sensitivity to erosion

In Scotland the erosive effects of recreation are greatly exacerbated by the complex interactions between the climate, topography, geology, soil types and vegetation on our mountains, making them highly vulnerable:

- Scotland's 'oceanic' nature, with many of our weather systems generated by the North Atlantic, gives rise to high rainfall, high winds and frequent fluctuations in air temperature.
- As altitude increases above sea level, temperatures drop and wind speeds increase. The proximity to the oceans and impact of the Gulf Stream mean that Scotland generally has less snow lying over the winter; and more freeze/thaw events than other countries with similar latitude. The snow protects soil and vegetation from erosion whilst freeze/thaw exacerbates it.
- Scottish upland vegetation often depends on very thin soils, sometimes with mobile substrates and can be very fragile and susceptible to disturbance.
- The effects of climate change on Scotland's weather patterns are now recognised. There is less snow cover on the hills and more freeze/thaw events each winter. Rainfall is increasing in the winter months and torrential rain is becoming more frequent at any time of the year. The effects of climate change exacerbate the other impacts outlined above.

These phenomena are relatively peculiar to Scotland and the result is a small 'carrying capacity' of hill users before damage begins. If this capacity is exceeded the vegetation, which holds the soil together, dies after it has been trodden on too many times. The thin soils are blown or washed away, and more water concentrates into the path, which now resembles a shallow ditch. As water accumulates it washes away more material, leaving a rough and unconsolidated surface to walk on. The walker now goes along the edge of the damage and the cycle continues, with the process sometimes accelerating. The erosion scar continues to deepen and widen until intervention takes place. The product of these interactions is unsightly scarring on our wild landscapes.

Principles of upland path management

In Scotland, upland pathwork has primarily been motivated by a desire to ameliorate erosion caused by increasing numbers of walkers taking to the hills. The purpose has not, on the whole, been to make access to the hills easier, though this is often an inevitable by-product. Assessing what type of path management and promotion is appropriate in different settings is, therefore, a key issue to address.

Upland path work, in its modern form was developed through the Countryside Commission for Scotland's Upland Path Management Project during the mid-1980s, as a direct response to the path erosion caused by recreational access. Most upland path management continues to stem from the recognition of increasing damage on sites where levels of use exceed the physical capacity of the natural environment.

Pathwork is extending into more remote and wild places, requiring new techniques that will have a minimal impact on the character of the landscape. The dilemma is to provide a durable response capable of bearing the pressure of walkers and climate, whilst not compromising the experience of walking through beautiful and wild countryside. New techniques are constantly being developed in response to these factors but ultimately wider site management, e.g. car park location or even grazing regime, may be the sustainable response.

In 1995 The House of Commons Environment Select Committee endorsed the 'Guiding Principles' of upland path work that were based on The British Mountaineering Council's policy statement on upland pathwork. The path industry does not have a governing body that regulates standards of work, contract or management procedures, such as the Institution of Civil Engineers for civil engineering. However, the Upland Path Advisory Group (UPAG), formerly the Path Industry Skills Group (PISG), does provide guidance and sets standards. The following principles have been accepted by the path industry in Scotland.

- Pathwork will be carried out within a coherent management framework, including a commitment to long-term maintenance. It will integrate with other management objectives.
- An understanding of the underpinning philosophy and practice of path improvement is required of managing and funding agencies.
- Pathwork will be generated by area survey and prioritisation.
- Priority will be given to curtailing and restoring environmental damage while also enhancing the visitor experience.
- Environmental sensitivities will be given stringent regard, particularly in sites of outstanding landscape and/or natural heritage quality.
- Management of the path will be informed by suitable consultation with interested parties.
- The purpose of the path and its expected use will be defined and the path built to fit this purpose.
- Pathwork will be of the highest standard of design and implementation, preferably using locally sourced materials in harmony with the site.
- Good environmental practice will be paramount. **No material won in works will be wasted.** Techniques used will protect existing vegetation and cultural remains and the site will be left in as natural a state as is practicable.
- Those involved in the design, implementation and supervision of pathwork should be demonstrably professionally and technically competent.
- All work will be carried out in accordance with legal obligations and the requirements of current health and safety legislation.

Wider benefits of upland pathwork

There are broadly three related reasons to repair, upgrade, or create a new upland path:

- **Environmental Conservation:** Our upland environment and landscape is a precious resource, containing much of value in terms of natural and cultural heritage. This must be preserved and enhanced for future generations, so that they too can walk unhindered in a beautiful and un-spoilt landscape.
- **Economic:** It can be shown that the increase in outdoors tourism and recreation produces a significant input directly into the economy of some of Scotland's most economically fragile rural areas. Investment will be justified in the resource because:
 - Negative landscape impact ought to be safeguarded against as an eroded landscape may well lose 'value' as a direct response to the pressure of sheer numbers on the landscape.
 - Added Value may be demonstrated by marketing an upland path with a view to bringing in more visitors to the area than would have come without that investment being made

Social: At a time that public health has been identified as a major priority for the Scottish Government, walking provides an inexpensive activity that the vast majority of the population can enjoy at one level or another. Health benefits are not only physical, but also just as importantly mental. Recreation in the countryside provides a panacea to an ever-increasing pace of life in the modern world

Most path managers will carry out work for a combination of the above reasons, with emphasis placed according to the organisational remit.

Whatever the overriding rationale for becoming involved in this type of work there are two fundamental concerns that must be addressed:

- The work must be as sensitive as possible, and should not detract from the wild land qualities that it seeks to protect.
- The work should be 'sustainable', in that it must be managed in such a way that the impacts of access will be borne. It should be recognised that increased use may well result in greater damage further into the hills.

Effective management enables people to access outstanding mountain landscape and habitats, without damaging the very essence of what makes these areas important and spoiling it. Getting the balance of this relationship right is crucial in terms of securing environmental conservation and safeguarding the rural economy, as well as added social and health benefits.

1.2 Developing a Path Project



Introduction

Once it has been established that an upland path project needs to be developed, it is important to have a strategy to develop the project. Depending on the nature of the project this may include surveying or auditing the path network, consulting with key stakeholders (local communities, user groups, statutory bodies, land owners etc.), fundraising for both the development and delivery phases and bringing in staff, consultants or contractors to undertake and oversee this work.

The concept of 'best value' should be built into the project at the outset. Best value assesses several ways of delivering a project and selecting the most appropriate over the lifetime of the project. It takes into account a variety of factors, including cost, the quality of the product and delivery, and the longevity of the solution. The aim is to choose a solution that most closely meets the needs of those who will use the service or product, which is not always the cheapest. Whilst best value is integral to all parts of a path project, key things to consider at an early stage are the costs of long-term maintenance as well as initial repair and the style of path within the landscape. It may be cheaper to construct a full-build path, but if that creates a wide scar on the landscape many people will consider the project to have failed.

Practical path work is all about effective problem solving within given environmental and physical constraints, and this process is at its best as a creative action between the path manager, the client and the team.

However, non-technical problems that arise from poor planning can be crippling for the project team. If economic, political or financial issues have not been dealt with at the outset, if there are a lack of technical skills available or if there are insurmountable health and safety issues then your project may well flounder.

Raising project support

Having determined the rationale for carrying through the project, it is important to create the appropriate support for your project. This will not only be essential in securing statutory and/or landowner permission but will also add clout to funding applications and the validity of your project if you have consulted widely and gained support from key stakeholders. This is particularly important where the project is a partnership involving a number of organisations and individuals.

- Smaller independent charities may have a board of directors or trustees representing a number of different interests, and it is important that these players understand and support the project, as this will help the development of the project.
- Larger charities may work across a wide range of disciplines, and if so it is important to show senior management and members in governance that your project fits well into the aims and objectives of the organisation.
- Local Authorities and statutory bodies will have well-defined objectives, and an enormous range of prioritised activities to develop and deliver. You must be able to demonstrate that your project is of value and addresses some of these priorities.
- Landowners may be concerned about how the project is affecting their land, changing patterns of public use, what their liabilities will be and who will maintain the path once the project is completed. You must be able to demonstrate the benefit to the landowner and the long-term commitment to maintenance.
- User Groups may be the people most affected by the work carried out. They need to know that the rationale for the project has been carefully thought through and that the project is being carried out with integrity.
- Community projects require public support from representative members of the wider public, and whilst it can be difficult to get consensus across a wide range of interests, if support can be established at the outset it will ease the development and delivery of the project.

The easiest way to do this may be by way of an outline project plan, a board paper, or an options paper outlining the rationale for the project, outline costs and an indication of how the project can be delivered. It will be particularly useful if you show where finance can be sourced.

Steering the project

Once support has been established, it may be possible to set up a committee or steering group to assist in the development of the project. This will be particularly useful for bigger projects with a number of partners. For smaller projects where only one organisation is primarily involved, the steering group may comprise just the path officer, funding staff and administrator. You will need to be at least conversant in the core skills for project planning, but expert support will add a great deal to your project, adding weight to the proposal. Key skill areas that may be required include:

- **Chairing meetings:** Consensus does not always come easily. Even with a highly supportive group it is important to have a strong chair that will push for action from the other members and structure meetings in a productive manner.
- **Finance:** A vital part of any upland project is a good financial plan, as this is one of the readily identifiable measures of project feasibility. Income and expenditure should be readily identified, and accountancy input will greatly assist in the complexities of project building and delivery, including potentially complicated variables such as the treatment of VAT and project contingencies.
- **Economic:** A good understanding of economic process and market forces will add viability and credence to an upland path project, particularly if economic benefits form part of the project justification. The greater the transparency of economic justification, the more likely you are to hit your target.
- **Marketing:** These skills will be invaluable if you wish to demonstrate added value to your project via increased usage as a result of your project.
- **Cognate:** Expert assistance from a technical or political mentor with expertise in the key area of the project may be invaluable, particularly if there is a lack of built-in technical expertise in the proposed project staff.
- **Grant administration:** The project plan may hinge on attracting a grant or support from one or a number of sources. Support from funding experts will assist your proposal greatly in matching the awarding bodies' core criteria.
- **Fund raising:** Expertise in this area will be particularly valuable if you wish to raise public appeal funding as part of the delivery of the project; and/or aftercare.
- **User groups:** Representation from one or more of the key user groups that your project will affect will be vital, and can provide an invaluable perspective on design and market.
- **Community liaison:** Always a valuable skill, this will be of particular value where projects seek to harness or deliver local community aspirations through upland pathwork.
- **Land ownership:** Representation from the landowner(s) involved may well be a real asset to project development. It may be necessary to obtain legally binding access agreements spanning a period of time, and some landowners may be reluctant to sign up to these. Positive encouragement from a neighbouring landowner may well provide reassurance.

The group should help develop the plan, and present it to the relevant bodies for support. Although a steering group of such complexity may not be necessary for smaller projects it is often a condition of grant in larger projects.

Funding

There are a number of potential sponsors for path projects including:

- **Lottery funding:** If heritage, community and/or sports development is involved it may be possible to target this source of funding.
- **European development funding:** Projects that address structural and skills development, particularly in economically and/or peripherally disadvantaged areas, may well qualify for EU funding from a number of sources.
- **Scottish Natural Heritage:** is involved with most upland path initiatives through funding and/or because of natural heritage designations.
- **Local enterprise companies:** are sometimes involved in countryside projects, and access projects may target some of their key areas of interest, particularly with economic and skills development through tourism and other related projects.
- **Scottish Mountaineering Trust:** SMT has contributed numerous invaluable grants to specific Upland Path projects.
- **Local authorities:** may be attracted to projects that show strong social or economic benefits, and that allow them to fulfil statutory obligations.
- **Corporate sponsorship:** This may be applicable if it is possible to generate interest through corporate association with your project.
- **Public appeal:** It may be possible to raise funds by a public appeal. Marketing should tell you what it is possible to raise from this source. Always build in development costs as appeals can be costly and if unsuccessful may leave a deficit. Never forget that your appeal will face competition from an ever-growing number of sources.
- **Competitions for Prize Money:** Competitions run by organisations such as the European Outdoor Conservation Association give prize money towards project delivery. You may need to get your project nominated by a third party and have the staff and expertise to promote your project to your members and the general public as these are hotly contested competitions.
- **Car Parking –** fees or donations at key access points such as car parks can help bring in crucial funding for ongoing maintenance. Information on how the money will be spent may help encourage people to give as well as to help alleviate objections to introduced fees.

The project plan

Once the level of interest has been established, the steering group put in place and the funding bodies targeted, it may be necessary to develop a more detailed project or business plan. This should not be seen as a piece of hoop jumping as it provides the opportunity to fully test project ideas for robustness and viability against a disciplined set of criteria.

There are various methods of drawing up a path project plan and the techniques and format used will vary depending on the individual involved, the organisation carrying out the work and the type and scale of the project. Suggestions are given below, but for a small project you will need far less detail than for a large project. Nevertheless the key issues that must be addressed are the same for any upland path project, from conception through development to delivery and project aftercare. **As a path manager you must put aside the time to fully understand the implications of the project and anticipate the possible outcomes.**

Executive summary

The project should have clear and transparent aims and objectives at the outset. Providing a summary at the start of the document will bring the project into focus for the target audience. It may well be easier to write this having gone through the disciplined process of developing a detailed project plan. This may sound strange, but you should have a more clearly structured understanding of the issues addressed by the project having gone through the discipline of presenting the information within the project plan!

Rationale

Why do you want to build or repair an upland path?

It may be innately obvious to you that the work is needed, particularly if you come from an informed technical or user group viewpoint. However, this may not be so clear to the other individuals and organisations you wish to convince, so a clearly written piece explaining the range of benefits of your project, and how these fit into the organisation's objectives, will be very useful, particularly for potential funding bodies. If the project has heritage values then establish those clearly. If there are economic or social benefits, then be clear as to what these are, and how they will be measured. Try not to overstate the strengths of your project as this may adversely affect the credibility of your stronger points.

Project outputs

What will your project achieve?

This gives you the chance to provide a detailed breakdown of exactly what the project is about. The brief should always be precise and succinct, as items that are not understood will most likely be questioned, and may not inspire confidence.

This is a chance to explain the real benefits of your project:

- why it is unique;
- the range of benefits;
- how much work will be done;
- how it will be measured;
- what will happen after the project has finished.

Planning and the project team

How will you achieve your project targets?

This part will show the make-up of the project team, and address the issues of quality assurance, in terms of level and quantity of outputs. You will be expected to show that there are sufficient skills within the project team, and if not that there will be room for those skills to be developed over the period of the project. Will the project staff come from existing people within the organisation, or will the project require additional specialist staff to be brought in? If the latter, you should consider what skills you wish them to have and develop.

- **Project Management:** Who will take the lead role for delivering the project? And what skills will they have? Some organisations with upland path management as a large part of their remit e.g. JMT, NTS and COAT use in-house path managers. Others find it useful to bring in a manager with strong technical skills. The advantages of in-house path managers include a bottom up knowledge of the project, the ability to develop detailed surveys and an informed approach as to the appropriate standards for site management. Other organisations use managers without technical skills, bringing in specialist surveying and contract supervision as and when needed.
- **Project Design:** It may be that you have the design skills within the management team, if not it will be necessary to bring in suitably qualified and experienced individuals to provide the design and specification surveys. There are a few people with these skills in Scotland and there is a UPAG recognised SVQ in surveying which should lend quality assurance to the project. Your rationale will directly inform the design, as the path should be fit for purpose. If you wish to bring in a technical expert to provide design skills then be **absolutely clear in the brief what the design considerations are.**
- **Project Administration and Support:** It may be possible for larger organisations to tap into existing support structures to help run the project. If not it may be valuable to bring in specialist staff to assist in this area of work.
- **Project Workers:** Are there sufficient-skilled workers available to carry out the path work? There is a well-established Level 2 SVQ in pathwork, and it should be straightforward to gauge how many workers are available who have or are working towards this. Depending on the scale and terms and conditions of grant you may wish to use in-house teams, contract teams or a mixture of both.

Most path work has been carried out by contract teams in Scotland and this has helped keep an air of vibrancy and competitive ‘fitness’ in the industry.

If there are insufficient workers available, or you wish to see those skills delivered locally to maximise local benefits of the project, you may wish to train workers as part of the project development.

Evaluate the resource

What is the condition of your path resource, and within what context is the path set?

A complete survey using at least ‘Area’ and ‘Condition’ levels of survey will give you a good indication of the level of work that is required, and a system of prioritisation where a number of paths are involved. It should provide you with a comprehensive set of information, including land ownership and management, user information, cultural and natural heritage designations, design considerations and health and safety implications.

Health and safety considerations will set some of the key limitations to what can be achieved, and how much it will cost. A comprehensive audit should give a good indication of the health and safety implications and what controls need to be put in place to deliver the project. The [Managing Health and Safety Section](#) provides information on relevant legislation and practice for delivering an upland path project.

Management regime

It is well worth giving some time and thought to the way the project will be delivered at the macro-level.

- You may be tempted to use mainly intensive, high-build techniques in order to reduce the maintenance liability, particularly as it has been traditionally very difficult to attract revenue funding for maintenance, and there may be a temptation to maximise the availability of grants. **However, all work will need maintaining, regardless of how well designed and built it is and you should question whether it is worth carrying out the work at all if you do not have the capacity to maintain it.**
- Pre-emptive works can be appropriate in sensitive and high-altitude areas. These techniques will minimise the environmental and landscape impact of project work. They will not, however, prove an effective solution for large-scale damage that has already occurred.
- Maintenance will be essential to the project whatever you do, but effective maintenance built into project design at the start can provide a sliding scale between intensity of build and levels of maintenance. You may be able to work with much more sensitive and less expensive techniques if you programme more maintenance into the project aftercare at the outset.

Timescales

It is important to estimate accurately the timescale for your project. If it spans a number of years it is worth having an annual spread of costs built into the project plan. Never undertake your high-altitude project work during the winter months, particularly January to March. The risks of delay, the difficulty of the working conditions and subsequently the difficulty in maintaining the quality of the work and the morale of the team are enormous and should be avoided.

Project finance

What are the financial assumptions and forecasts that your project budget is based on?

You should consider a number of factors:

- **Funding:** The nature of funding will directly affect the project work. It is far more effective to secure both capital and revenue funding if possible. Any path work will fall apart without maintenance, regardless of design or standards of construction but it may be possible to reduce the level of build in capital path projects, significantly reducing unit costs and impacts on the environment, by increasing the revenue costs, and the level of aftercare.
- **Treatment of Value Added Tax:** What will be the VAT status of your project? If VAT is fully or partially recoverable then this will reduce your project costs significantly. If not, it will be necessary to write off 20% in VAT.
- **Inflation:** You should allow for a realistic rise in the cost of living through your project, as this will affect payroll, contract and equipment costs.
- **Contracts:** If it is intended to use contract teams to build paths, through competitive tendering, then you should be aware of the market forces at play. Contract tenders on this basis will flex with market demand. A small number of contracts and an industry at overcapacity will result in cheap prices, possibly too cheap, and the converse will produce inflated contract costs

Risk management

How sensitive is your project to variables across a range of factors?

- **Designated Sites:** Build in time to work through consents for sites with natural or cultural heritage designations and be prepared to change your working methods to mitigate impacts.
- **Legal:** Changes in legislation may directly affect your project. You should be familiar with the basic principles of relevant legislation including the access legislation, Equality Act and Health & Safety legislation.
- **Technical limitations:** You must be sure that there are effective and appropriate techniques available to fully develop the project. It is also a good time to evaluate the skilled manpower that is currently available, and that which will be available as the project develops.

- **Climate change:** changing weather patterns associated with climate change introduce a degree of uncertainty into project specification. Paths may have to cope with more intense rain and more frequent freeze/thaw cycles; drainage features may have to be more robust in construction, and more extensive in location, whilst path surfaces may need to be hardened and better able to shed water.
- **Economic:** If the project spans a long period of time you will have to consider economic stability and build in some flexibility for rises in the cost of living. This will be on a predicted rate, and yet the longer the project the less predictable this will be, as global market forces are complex. Conversely, if your plan requires a level of endowment funding it is normal to spread the risk over a number of sources. These should carry a broadly predictable outcome over the longer period, but may fluctuate markedly from year to year. If it is intended to provide revenue from this source then contingency for fluctuation should be built in.
- **Ownership:** Changes in land ownership may have a direct effect on your project. It may well be worth obtaining legally binding access agreements that transcend transfer of land deeds.

Pointers

- Overall the project plan should present a robust and rigorous argument for your project.
- Be succinct and structured and make sure the information is clearly laid out. Different individuals will be concerned with different sections, and may not want to have to read the whole document to isolate small but vital pieces of information.
- Appendices are a good way of cutting down the 'bulk' of information in your plan, but do not use them as a 'dumping ground' for all the information you don't know where to put. Appendices should also be succinct, well-structured and laid out. Only relevant information should be included, and it should be clearly shown in the body of the text when to refer to appendices.
- Do not underestimate the financial resources required, as it is much better to ask for the required amount of money at the outset. Shifting goal posts do not inspire confidence in project sponsors.
- Do not take it for granted that there will be skilled workers available at the last minute to work on your project. Path contractors are adept at weathering periods of famine and feast, but will respond much more positively to your project briefs if they are given sufficient planning time for their operations. Human resources are the key to effective delivery of upland path work, as the costs are overwhelmingly based on manpower owing to the manual nature of the work.

- Poor project timing can make an enormous difference to project costs and the chances of success. Never let a contract at high altitude during the heart of the winter, regardless of what is left in the budget and needs spent by the end of the financial year: it will cost you much more, there may be no contractor willing to risk their team on it, the health and safety implications are appalling, and it may become unworkable for the bulk of the winter period.

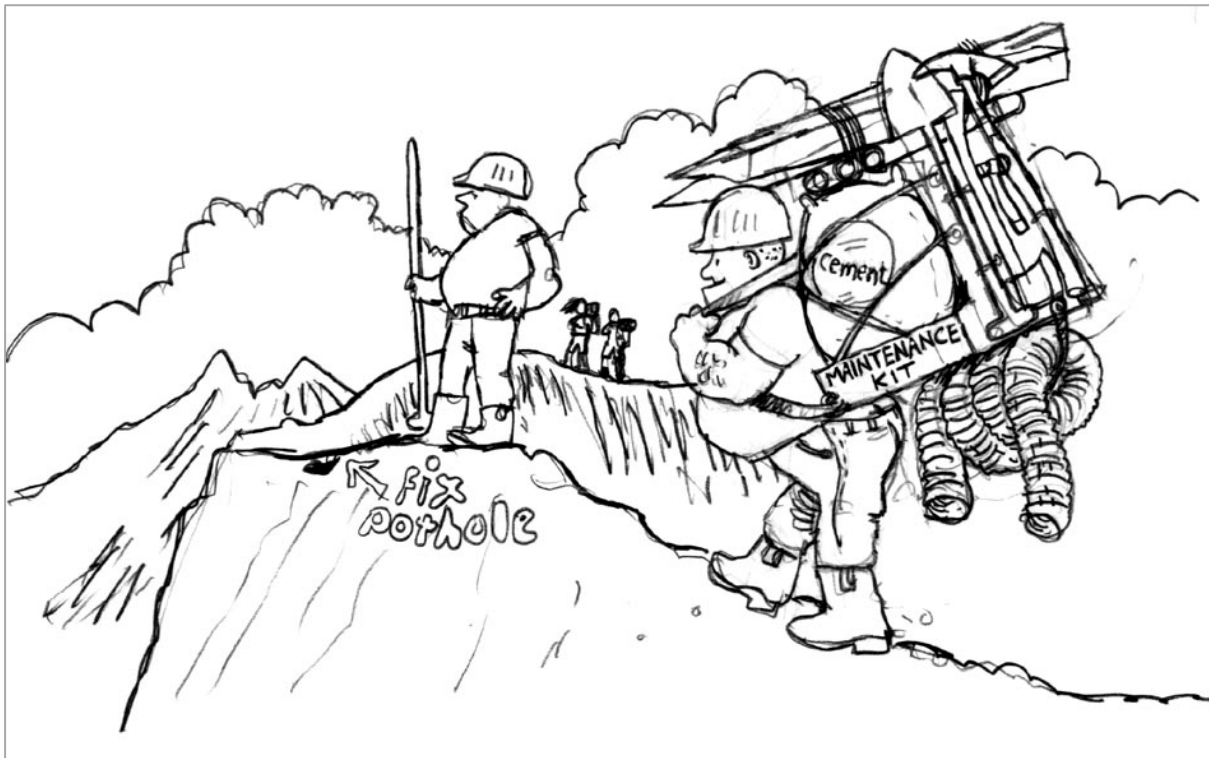
Developing Path Proposals as the project develops

As information on a path or access area is gathered through the various levels of surveys, discussions with land managers, user groups and other stakeholders and as work or future management requirements are identified and costed and information on access, designations, constraints and mitigation is gathered then the path proposal develops. This is very much an evolving process bringing together the information you have available up to that point and helping to identify the next steps.

The path proposal can take many forms and will continue to develop with the project. On the one hand it could be a fairly informal document identifying the important details and general background as a memory or reference aid or it could be a formally developed proposal with sufficient detail to take to funding agencies, to use in consultation with stakeholders, secure permission for the work or for use in the tendering process.

Path proposals are, in effect, a mini-management plan for a path or area. A number of plans can be combined to create area-based access strategies. They may also integrate local plans, designated site management plans or biodiversity action plans. It is useful to present the information in a structured way relevant to the particular audience.

1.3 Planning for maintenance



Maintenance is the ongoing upkeep of a path that allows people to continue to use the route without increasing its environmental impact. **It is not an 'add-on' to the process of access management after construction: it is an integral part of access management and decisions across the site. Do not build a path if you do not have future resources to maintain it in good condition.**

Maintenance includes:

- clearing out accumulated debris or silt from blocked drains and ditches
- re-packing loose stone work where it has settled or washed out
- re-surfacing washed out or worn away surfaces or compaction behind drains
- re-turfing or blocking path braids, or short cuts and off-path use

Maintenance work has several key features that distinguish it from path construction, improvement or upgrading. Maintenance is:

- **regular** – carried out periodically and continuously, and usually several times each year;
- **routine** – work takes place because it is predicted that the route will require attention, rather than being purely reactive or waiting for the route to fall into poor condition;

- **done to a standard** – a clear decision is made amongst site managers, owners, users and funders about the expected use of the route, the type of use intended and the quality of the route that needs to be maintained;
- **sufficient** – the level of effort each year is enough to keep the path in the desired condition long-term, and not allow it to deteriorate.

Despite ample evidence to the contrary there are those who believe that maintenance is not required or can be ‘designed out’ at the restoration phase. Good design is, however, integral to minimising the maintenance regime for a path and therefore should be considered during the early planning phase. It is not necessarily the case that heavy engineering will minimise the maintenance requirement, and may not be appropriate to the location of the path. As part of the decision making process for management of the path, the level of ongoing maintenance needs to be considered.

The maintenance requirements for a path will vary depending on the chosen restoration solution, local environmental conditions and level and type of use. All of these factors needs to be considered at the outset, and may influence the level of capital investment: a ‘low visibility / light touch’ solution is dependent on maintenance, so if there are insufficient resources for that level of maintenance it is the wrong solution for the site, or more ongoing resources must be secured before investing in this solution.

There are four key reasons why path maintenance is essential:

- **Resource protection** - pressure of use and environmental conditions mean that paths require continued maintenance. Without this, the investment of time, effort and money will be put in jeopardy. Each path requires different levels of maintenance to keep it in good condition, and benefits of rebuilding a route may be only temporary if maintenance is not adequately carried out.
- **Environmental impacts** – poorly maintained paths and long-term under-maintained paths lead to soil erosion, habitat damage, and visual scarring in the landscape. Continued maintenance minimises or prevents this environmental damage taking place.
- **Value for money** – assuming that we have a long-term interest in protecting the resource and minimising environmental impact, path maintenance work requires relatively modest resources each year. The cost of reconstructing a path once it is severely deteriorated can be as much as the maintenance bill for 20-30 years of regular maintenance. The cost of maintaining both rebuilt and existing routes in fair condition represents good value for money, in the long-term.
- **Climate change** – research suggests that frequent maintenance is the most effective way of helping upland paths to be resilient to the predicted effects of climate change.

1.4 Consents and Planning Permission



In the early stages of your path project you need to consider what consents and permissions may be required for your path project to go ahead and to ensure that enough time is built in to your project to obtain them.

This guidance includes a broad outline and context of the law and should not be taken as interpreting statute.

Land Manager permission

It is essential to have early discussions with land managers to obtain permission for the work to go ahead. This gives you a chance to demonstrate the positive outcomes to the land manager which may include resolving existing access issues impacting on land management. It can also be a useful opportunity to reinforce that managing access does not create additional liabilities for land managers. [A Brief guide to Occupiers' legal liabilities in Scotland](#) provides more information in relation to public outdoor access.

Early meetings with the land manager will also help to manage expectations and clarify how the path will be maintained.

On a core path the local authority may carry out maintenance, remove obstructions and signposting without the land managers consent, although this would be a last resort.

Planning Requirements

It can be difficult to know what the Planning requirements are for an upland path project, so a basic principle is that if you have any doubt about the need for Planning Permission, or whether the proposed path work is permitted development seek informal advice from your Planning Authority (Local or National Park Authority). Ensure that they are aware if the project may affect a Natura site as permitted development rights cannot be relied upon where a Natura site may be affected unless further consideration has been given by the Planning Authority. It is particularly important to have consents in place because funders including the Heritage Lottery Fund and Scottish Natural Heritage (SNH) commit funding on the basis that all necessary consents have been obtained before work starts.

The need for planning permission or other types of consent to construct or repair an upland path (in planning terms 'private ways') depends on its purpose and location. Planning Permission is required for 'development' including the construction of paths as defined in section 26 of the [Town and Country Planning \(Scotland\) Act 1997](#). It is also required if the path is to be re-aligned or upgraded, for remote accommodation systems and for most bridges.

Upland path projects can sometimes be [permitted development](#), e.g. if they are constructed by a Planning Authority. They can also be permitted development, subject to prior notification, if they are for agricultural or forestry use. More information about this, often referred to as the hill tracks prior notification process, can be found in the Planning section of the [Constructed tracks in the Scottish Uplands manual](#).

Many upland path projects in Scotland are for path repair and will need to be assessed by the planning authority, usually in consultation with the local access officer. Planning Authorities may consider pathwork to be construction if some of the path is widened, or short sections re-aligned but this will depend on the individual path proposal. Other path projects, particularly where the emphasis of the project is on repair and maintenance rather than upgrade, may be considered insignificant or permitted development by the Planning Authority. Be aware that it is up to the individual Planning Authority to determine whether consent is required, so seek their advice.

Depending on the sensitivity of the environment affected, and the scale of the project, an [environmental impact assessment](#) may be required. Path construction projects may be subject to Environmental Impact Assessment dependent on the location and nature of the proposed path, the length or area affected and whether it is likely to have a significant effect on the environment. Further information can be provided by your planning authority.

Natural Heritage Designations

One of the [principles of upland pathwork](#) is that 'Environmental sensitivities will be given stringent regard, particularly in sites of outstanding landscape and/or natural heritage quality.' You should consider the potential impact on the site for all path management, including where materials will be sourced and route selection, as well as the impact on habitats and species. For example, obtaining stone or surfacing

from alternative sites may have less impact on the landscape and varying the areas where turfs come from and managing the impact on donor sites could have less impact on the habitat.

There are specific consultation processes for protected areas to conserve their special qualities. You can find out if your path project is in or near a protected area on [SiteLink](#) or your local [SNH office](#) can provide advice. If it is within a protected area the project may need to be modified, for example there may be time restrictions to prevent disturbance to nesting birds, or machinery may need to be brought on to site via specific routes to avoid damage to sensitive habitats.

Natura sites (Special Protection Areas (SPA) and Special Areas of Conservation (SAC), along with potential SPA and SAC sites) are protected through European legislation under the [Conservation \(Natural Habitats &c.\) Regulations 1994 \(as amended\)](#).

If pathwork is likely to have a significant effect on a Natura site and is not necessary for the management of the site for nature conservation it must not begin without the **prior written approval of the planning authority**.

To find out if there will be a 'Likely Significant Effect' on a Natura site the path manager (the developer) should discuss the issue with SNH and the Local Authority. If SNH advises that significant effects **are** likely, the developer must seek written approval from the planning authority confirming their permitted development rights. The Local Authority will assess the impacts on Natura sites but will require adequate supporting information from the developer to do so. The planning authority can only grant approval if they are satisfied (after consulting with SNH) that the proposed pathwork will not adversely affect the integrity of the site. Where this is not the case, a full planning application will need to be submitted.

For Sites of Special Scientific Interest (SSSI) there is a different process. Each SSSI has a list of operations requiring consent (ORC) and if a land manager, or third party such as an Access Trust, wishes to carry out any of these, which may include digging a borrow pit, or path construction, they must obtain consent from [SNH](#), unless an exemption applies. If a Public Body proposes to carry out an operation likely to damage the protected natural features of an SSSI they must apply to SNH for consent whether the operation is listed as an operation requiring consent or not. This requirement on public bodies includes proposals outside an SSSI but which are likely to damage its protected natural features.

Pathwork may also affect species that are protected under domestic or international legislation. For most species this protection extends to places used for shelter, protection and/or breeding. Several species, including otter, wildcat and bats are given strict protection under the Habitats Regulations. These species are protected from deliberate or reckless disturbance and their breeding sites and resting places are protected from all types of damage or destruction whether or not deliberate or reckless. Work affecting protected species may require a licence from SNH in order for the works to be legally carried out. Further guidance and advice on protected species can be obtained from [SNH](#). Licenses are not available for wild birds affected by development proposals.

All species of wild birds (including their eggs) are protected and it is an offence to intentionally or recklessly damage, destroy or otherwise interfere with the nest of any wild bird while it is in use. It is also an offence to obstruct or prevent any wild bird from using a nest. Certain wild birds are given additional protection through the Wildlife and Countryside Act 1981 (as amended). The degree of protection given varies according to which [schedule](#) a species is listed in. Important changes were made in 2013 including that it is now illegal to intentionally or recklessly harass birds listed on Schedule 1A (white-tailed eagle, golden eagle, hen harrier and red kite) at any time. More information can be found [here](#).

The Nature Conservation (Scotland) Act 2004 states that all public bodies have a legal duty to further the conservation of biodiversity in the course of carrying out their functions, and in doing so, such organisations must have due regard to the 1992 Rio Convention on Biological Diversity and to the Scottish Biodiversity Strategy.

Controlled Activity Regulations 2011 (CAR)

The [Water Environment \(Controlled Activities\) \(Scotland\) Regulations 2011](#), often known as the CAR regs, apply to any activity which may affect Scotland's water environment, such as bridge construction, fords, culverts or bank protection. Authorisation by SEPA is required for some activities.

Cultural Heritage Designations

Pathwork can have an adverse effect on the cultural elements in the Scottish landscape. Remains of former settlements and field systems are more common in the glens, while historic communication routes often cross higher land. These can make a significant contribution to the landscape character, but they are also of value in their own right. In planning a new path, it is important to make contact with the local authority archaeologist and Historic Environment Scotland, who can advise on the relative significance of historic and archaeological features and the impact of proposals on them. Consent must always be sought in advance of any work on protected sites. Information on the location of protected sites can be found at www.PASTMAP.org.uk.

A range of measures is designed to protect important elements of the historic environment. [Scheduled Ancient Monuments](#) are considered to be of national importance and are subject to statutory protection. Any works that will lead to damage, demolition or destruction of the monument, any works of repair or removal of a monument, or making alteration or additions, and any flooding or tipping operations, can only be carried out with prior written permission from the Scottish Ministers (called Scheduled Monument Consent). This is separate from any planning consents that are required for development of the path. Individual structures such as bridges may be listed, again reflecting national importance. Where path work has the potential to affect listed structures, it will be necessary to obtain listed building consent from the local planning authority. Planning authorities may use Article 4 Directions to remove certain permitted development rights for listed structures.

2. Upland Path Surveys

2.1 Purpose and Use of Surveys



This section provides introductory information about different path survey techniques used in Scotland and some tips on managing survey projects.

Whatever the scale of the project, whether it is a specification to be used for the repair of a couple of hundred metres of path, or a large-scale area-based path condition survey, there are a number of common principles which should be considered when designing survey methods. The three standard techniques adopted by the Upland Path Advisory Group (UPAG) are described. No matter whether you use a standard method, or a customised method, you must provide the information that you require in a useful format.

Surveys are, by their nature, speculative. You will have to decide whether it is worth devoting resources to a survey for a project that may or may not come to fruition. This will depend on the resources required to undertake a survey, the resources that are available to you or your organisation, how important your organisation perceives the project to be and the likelihood of the project being successful. You should know the resources necessary for the survey and those available to your organisation before the survey, and, by canvassing the opinion of relevant organisations and individuals, you should at least get an idea of whether a project is likely to attract the support required to succeed. Despite the speculative nature of

this stage of project development, there are a variety of organisations that will provide resources for this stage. An audit can be considered taking stock of exactly what you have.

Path surveys context and use

In the context of upland path management, surveys should form an integral part of project planning. They should provide objective information about the physical resource and about the attitudes of users, which will be considered during various decision-making processes in conjunction with other factors. In particular they should be used to:

- assess current path condition;
- assess whether active path management will conserve path condition;
- identify paths in an unacceptable condition;
- prioritise work required;
- monitor path condition;
- estimate resources required to manage the path/network;
- assess the feasibility of path management;
- support funding applications;
- produce specifications and bills of quantity to manage path repair contracts.

It is important **to ensure that surveys are designed to fulfil your own particular requirements**, and you may need to draw on different types of information during various stages of a project. Indeed, it is quite common for different levels of survey to be undertaken as a project develops and as different information is required. However, it is important at the project planning stage to consider how to collect information in as efficient a way as possible and to decide what information you need to collect.

A variety of survey methodologies have been used throughout Scotland in the past, but path management has moved on to a more structured approach now. Three standardised methods have been developed depending on the level of detail required.

- Area (Green): initial path assessment.
- Condition (Amber): condition, management requirements and monitoring.
- Specification (Red): specification and bill of quantity.

It may be possible to amalgamate two or even three of these stages. The information collected usually, although not always, corresponds with various stages of a project as, and if, the project progresses. It is important to note that the overall size of a project also has a bearing on the information collected.

An [Area \(Green\) survey](#) is largely desk based and consists of analysing maps and photographic records and producing a written record. This assesses the type and use of the path, historical information, maps, designations within the path area, using information from path users and local land managers. There is a level of subjectivity involved in this process, but nevertheless this information is extremely useful at the initial stages of a project. If there is little support at this stage from key organisations and individuals, there may be little point in progressing.

If the conclusions drawn from the area survey are positive, a condition survey may follow, especially on larger-scale projects. On smaller-scale projects this stage is often omitted as a formal piece of work however the information is still gathered.

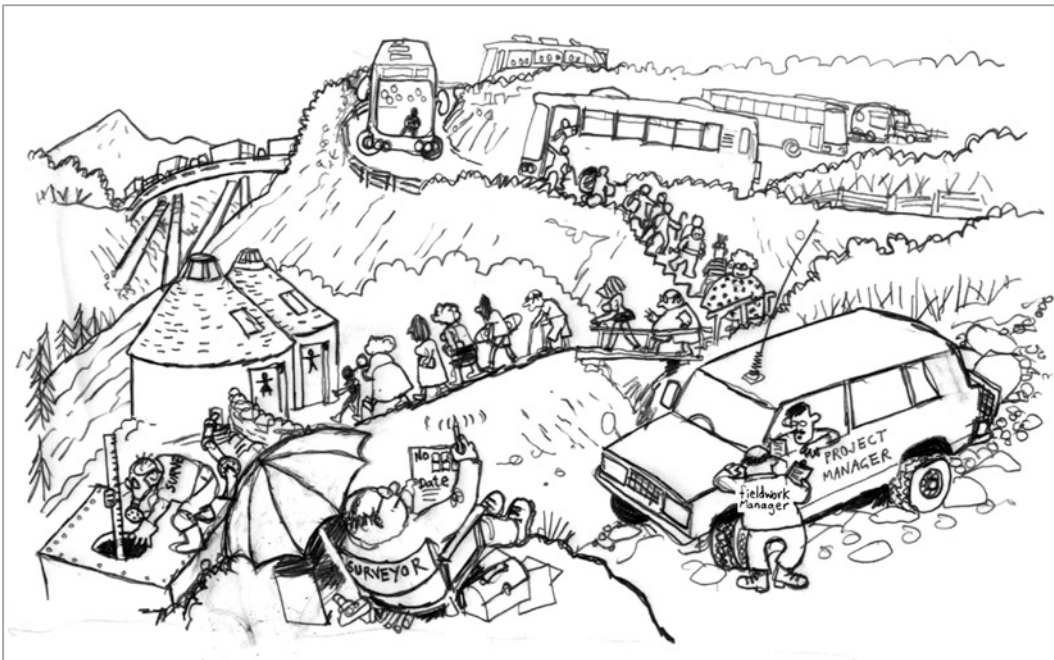
A [Condition \(Amber\) survey](#) is particularly useful when surveying a number of paths. It is about **current** and **projected** path **condition** and should also provide outline costs. It provides information about path management requirements, the costs of their implementation and the condition and physical setting of paths. It can also be used as baseline information for monitoring change over time. Information from a condition survey can be used to support funding applications and also to monitor the effectiveness of path management and influence maintenance regimes.

Condition surveys should communicate clearly and effectively an outline of the work that is required and the location of works, style of work, should describe the finished product, availability of materials, walk in times (noting any requirement for remote accommodation) and access to site information.

A [Specification \(Red\) survey](#) uses site sketches showing the required work referenced to a bill of quantities. Standards used in the bill of quantity also refer to those described in the [Upland Pathwork: Construction Standards for Scotland manual](#). Although there are other ways of specifying work, this is the method most often used in Scotland and one which competent contractors are familiar with. This is the document which is used to tender work and therefore must be as clear as possible with no ambiguities. A site visit is used to clear up any uncertainties with contractors agreeing on site with the project manager/client quantities etc., this is then tendered against.

Path repair contractors tend to have little involvement with either Area or Condition surveys. Most, if not all, of their work will be based on Specification surveys. They are used during the tendering and construction phase and for post-contract appraisal.

2.2 Planning Your Surveys



Managing a survey project

Effective path surveys do not just happen. There are a number of developmental, implementation and completion stages that need to be carried out. The following sections suggest the steps that a client should consider before commissioning survey work and the points that should be considered during a survey.

Prior to survey

Prior to the survey ensure that:

- you have resources/funds available to undertake the survey;
- suitably qualified and experienced personnel are available;
- the aims and objectives are clear;
- you prepare a brief describing the management of the survey;
- you agree a detailed work programme.

A number of organisations may provide grant aid for path project development, such as local enterprise companies, Scottish Natural Heritage and lottery distributors. The organisation commissioning the survey may be able to support the project from within existing budgets.

Ensure that any staff or contractors undertaking survey work are suitably qualified and experienced, and that they understand the processes that give rise to path damage and how to ameliorate their effect at appropriate levels of intervention. The surveyor should be familiar with UPAG [principles of upland path work](#) in Scotland and be aware that upland pathwork is part of a much wider environmental conservation agenda. They should also be made aware that different organisations have different priorities. Any recommendations, implicit or implied, should be considered in this context.

Be clear about what you are trying to achieve, what you expect to use the survey information for and how you intend to use it.

The brief should be used as a management statement and to monitor progress throughout the survey. Useful topics to cover include:

- **Background to the study:** Explain why the survey is being commissioned; for example, it may be to gain an objective overview of path condition within a given area, or it may be to provide a specification prior to undertaking path repairs.
- **Aims and objectives of the survey:** State the overall aim and specific objectives; for example, the aim of the project may be to determine the scale of the path erosion problem within a given area and to provide an indicative estimate of the cost of repair works. This information could then be used to apply for funds to undertake a strategic programme of works. Objectives may be slightly more specific, such as determining priorities for repair work needed or to provide specifications and outline costings for work required on sections of path most needing repair.
- **Existing information:** Previous surveys, photographic evidence, historical records.
- **Methods:** Describe precisely what information you require and how you wish it to be collected. This may include what equipment you expect the surveyor to use, how often and at what intervals you expect features to be recorded, etc.
- **Description of areas and routes:** Include maps and grid references and refer to any areas of particular interest.
- **Any potential sensitivities:** Ensure that staff and contractors are aware of any site sensitivities, including those associated with land ownership and management.
- **Suitable personnel:** Ensure that any staff or contractors undertaking survey work are suitably qualified and experienced and understand the processes that give rise to path damage and how to ameliorate their impacts at appropriate levels of intervention.
- **Outputs:** Clearly state the information you wish to be included in the final report and indicate how you would like the report to be set out. Also, clarify what format you wish the report to be in and how many copies you require.

- **Timescale:** State when you wish the work to be undertaken and when it should be completed. Note any critical times which may affect progress, such as the stalking season or snow cover.
- **Health and safety:** Survey work is usually undertaken alone, sometimes in remote mountain areas across difficult terrain, and this throws up a number of health and safety issues. Identify responsibilities for health and safety and ensure that a risk assessment is prepared of the activities involved in the work. Discuss risks involved and their management with those involved prior to commencement of field survey.
- **Reporting and liaison:** State at what stages and how often you require to meet the consultant or staff member. Clarify what you wish to discuss at each meeting and what you want to get out of it. Record who the point of contact should be. Good communications are essential, but remember (especially if you are employing a consultant) that meetings cost money and time.
- **Resources and duties:** Clearly describe what information and resources will be supplied by the client and what will be supplied by the consultant. In addition to survey work, duties may include contacting land managers to discuss when the survey will take place and any concerns they may have.

It is worth carrying out the above steps whether you intend doing the survey 'in house' or through competitive tender. This will ensure that staff are clear how the survey is to be undertaken and the outputs that are expected. These steps will clarify staff responsibilities and relationships.

Before the survey starts, agree a detailed schedule of work, finalise timings and make any amendments to the survey method and paths to be surveyed that may have come to light during the project development phase.

During the survey

- Monitor and review health and safety.
- Maintain regular contact with field staff.
- Review progress on fieldwork and initial results.
- Review progress and discuss the reporting format.
- Comment on the draft final report.

Regular and effective communication should be maintained between the client and the survey or consultancy staff in order to identify any problems that may arise and to make sure that the survey produces relevant information in an acceptable format.

Timescales may be affected by poor weather and regular contact is necessary for effective monitoring of health and safety issues.

Owing to the unusual nature of the work and particular hazards that are present, health and safety issues should be constantly monitored. There are a number of issues which should be of particular concern, such as lone workers, effectiveness of reporting procedures, identification of potential hazards such as burn crossings, weather conditions, length of working day, etc.

Continuing assessment of risk management should identify whether safety is being managed effectively. If risk cannot be managed effectively using current controls then new procedures must be devised.

Continue to review progress and discuss and agree the report contents and reporting format. The format should be compatible with its final use. Some funding organisations prefer reports to be produced in certain formats. Ensure that the key issues which you wish to convey are clearly identified and will reach their target audience. Circulate draft copies to the relevant individuals or organisations for comment and feedback and edit accordingly.

Completion of the survey

Once the survey is completed there are four issues that need to be addressed:

- writing the report;
- circulating the report;
- project appraisal;
- use.

After completion of fieldwork and report drafts produce a final report. For a one-off specification this may be a site assessment, site specification in sketch format and a bill of quantity. For a complex Condition survey this may be more than one volume and contain a summarised version, survey data, description of methodology, etc.

Ensure that copies are circulated to relevant individuals and organisations, especially land managers and owners whose property the results may affect.

Review the various stages of the survey process and assess the quality of the finished product. For example:

- Were there problems during the fieldwork stage that could be avoided if you undertake a similar project in the future?
- Did the final report provide exactly the information that you needed?

Surveys are not an end in themselves but form part of a larger planning process. As considerable effort and resources goes in to producing the survey, it is important that it is used and not filed away. Just because a survey has been completed does not necessarily mean that path repairs will follow. A survey should be used as objective evidence to decide to prioritise and if appropriate, action a project.

Field surveyors

A number of organisations undertake path surveys using in house staff but if there are not the in house skills, consultants are used.

Where consultants are used the nature of some duties and responsibilities will coincide, but it is likely that external surveyor's priorities will differ from those of the client. It is usual for surveyors to tender for work - more contractual information is provided in '[Project delivery and contract management](#)'.

Prior to survey

The surveyors must be clear about the aims and objectives of the project. In particular, they should clarify survey details including the:

- method;
- reporting arrangements;
- outputs;
- health and safety issues;
- timescales;
- resources and duties.

Although the surveyor's role is largely reactive during this stage of the project, there is the opportunity to influence its execution, and the input of practical experience at this stage is most useful. Comment on timescales, difficulties in collecting certain types of data and usefulness of various data sets based on previous experience are all of great help.

During the survey

Before commencement of fieldwork

- Produce a Risk Assessment and Safety Plan in order to manage health and safety during the project. Because of the lone working element of survey fieldwork, special attention should be paid to 'reporting in' procedures.
- Obtain all necessary permissions; these may include access consent from land owners/managers, but permission may also be required if a site is covered by a statutory designation, such as for nature conservation or historical preservation.
- Produce a brief with clear objectives, design considerations and the rationale behind the path survey.

During survey fieldwork

- Monitor health and safety and incorporate any modifications required into the health and safety management system.
- Review progress on fieldwork and initial results. Ensure that the data collected will be suitable for future analysis and use. Ensure that fieldwork is progressing as expected and that the survey will be completed within the timescale and resources allocated.
- Maintain regular contact with the client and promptly report any cases where data cannot be obtained in accordance with the agreed method, for example if the survey method is not suitable for prevailing ground conditions or if permission cannot be obtained to undertake a path survey.
- Develop the survey technique, if required, to take account of unforeseen circumstances.
- The field survey is the stage of the project during which the surveyor will have greatest influence on the project. The surveyor will be required to exercise judgement based on experience of path-forming processes on numerous occasions and will have to be capable of using that experience to solve problems as they arise.

During and after completion of fieldwork

It will be necessary to:

- discuss and agree the report format;
- produce a clean copy of survey documents;
- produce a final copy of the report after completing draft stages and consultation.

2.3 Area (Green) Surveys



Area path surveys gather together the existing information on a route: who owns it; who uses it; the terrain it covers; designations, and any other information that is published or known about the path, the site and its use for recreation. The survey is largely a desk-based exercise, but a site visit may be required for a visual inspection and to record the approximate levels of use, path condition, likely developments, impacts, work required and for monitoring needs.

The information contained in area surveys has been agreed by UPAG and follows a standard format. This common 'contents list' forms the structure for area surveys.

Area survey path description

Location	Include a map, with the route shown clearly on it
	Path name
	Grid references at the start and end of the path
	Brief description of the path, and reasons for its existence
Physical setting	Geology
	Geomorphology
	Habitat and vegetation
	Altitude
	Weather trends

Path use	Include details about the type of users (climbers, casual users etc.)
	Number of users (information may be available from people counters or estimates provided by the owner or estate staff, etc.)
	Patterns of use
Land use	Include information about designations (SSSI, SAC, SPA, NSA etc.)
	How the land is managed – sheep grazing, deer stalking, forestry etc.
	Contact details of owners
	Contact details of managers
	Estate boundaries
Path condition	Path management details, what type of a path is it (e.g. stakers or evolved), is it maintained etc.
	Include any survey results that may be available
	If no survey information is available include opinions gathered from estate owners/workers, path users, etc.
	Likely impact of no action
Work required	Much of this detail will only be available after more detailed surveys have been completed. During the early stages of a project this section will be based on the opinions and views of estate owners/workers and users, etc.
	Identify priority sections for work
	What techniques are to be used
	Specification survey details including information about alignment
	Quantity of work, time scale and length of pathworks
	Maintenance and monitoring requirements
Other factors (where information is available)	Estimated cost of work and funding available
	Programming and timing of work (number of years over which work should be completed and time of year that work should take place)
	Availability of materials on or off site
Health and safety considerations	May include altitude, remoteness and exposure of the site, steepness of surrounding slopes, popularity of the site, etc.
Contracts and supervision required	Recommendations about how the work should be managed, e.g. competitively tendered, who should manage and supervise the works, etc.

Sources of information

Using the information in the table above as a checklist, the first step is to look for existing information about the site. Relevant information will be available from a variety of sources. The organisation commissioning the survey may already have some information and will be able to suggest useful local sources and contacts.

Other sources include:

- The departments in charge of planning, the countryside or access in local authorities often hold relevant information. Useful information and documents include access strategies, structure plans, information about planning requirements, existing survey data, maps and photographic records. Many local authorities also fund access work and will give advice about their policy.
- Community councils may also have access to information about local historical points of interest, estimates of levels of use, alternative local routes and shortcuts. Information gleaned from community councils may be more anecdotal than that provided by local authorities, but it can be very useful.
- Scottish Natural Heritage (SNH), as a statutory body involved in designated area and recreation management, can provide detailed information about nature conservation issues and access strategies and legislation. [SNH offices](#) hold a wealth of useful reference material, which may include aerial photo of the relevant area. SNH is also involved in funding access work and can advise on this.
- Landowners, factors, land agents and estate managers may be able to provide information about many areas of path/access management on their estates, including any restrictions due to conflicting management requirements such as deer stalking or grouse shooting.
- Path users, including organised groups affiliated to The Mountaineering Council for Scotland or Ramblers Association, or individuals who use and know the path may be able to provide detailed information about path development and path drainage during heavy rainfall/thaws, seasonal variations, etc.
- Organisations such as local tourist information centres and businesses that promote access may be able to provide information about visitor numbers. etc.
- Universities and colleges may be able to supply path surveys and assessments undertaken as dissertation or thesis projects. The information may be of varying quality but can provide useful reference material.
- Maps (OS) show the routes of many paths.
- Guide books and websites provide information on path routes and condition as well as identifying which are being promoted to the public.

Do not expect to find pre-existing data on every aspect of your site: most Area surveys contain information in only half or two-thirds of the categories. If you are not able to find some basic information, then it will need to be collected. Additional Area data can be added as it becomes available, it is not necessary to have all aspects covered before starting to manage the route.

Using Area Survey data

The information that has been gathered together can be used for a number of purposes, for example:

- identifying gaps in the knowledge of path condition, etc.;
- identifying problem areas and potential solutions;
- bidding for resources to develop a programme of path management that will involve further detailed surveys and cost estimates;
- measuring long-term change on access sites in response to use and management.

Area surveys should be treated as a working document that can be updated whenever new information becomes available. They provide a wealth of useful reference information that will be essential throughout the planning, implementation and maintenance stages of managing a path.

2.4 Condition (Amber) Surveys



Condition surveys measure the condition of paths and path systems using a series of more than 30 measurements. The measurements collected cover slope, width and other real figures, along with indices of path condition and assessment of factors such as drainage and dynamism.

Condition survey data are either numerical, degrees gradient or metres of trampled vegetation, or coded, representing the type of vegetation or surface. All these data can be entered into a database, and this enables measurements from a large number of paths to be collected and compared. The system is particularly good at generating data for meaningful comparisons between individual paths and paths in geographical areas. Area-based condition surveys have been undertaken in several locations including Loch Lomond and The Trossachs, Lochaber and North Argyll, Glencoe, Upper Deeside and Wester Ross, the Cairngorms and Rum. These data have the potential to inform strategic programmes of path management and can be used to support funding applications and project monitoring. Some organisations have a full database of Condition surveys for all their upland paths, e.g. NTS who update them every 3 years.

Condition surveys provide:

- an assessment of the current path condition;
- an assessment of future management needs of the paths surveys;
- an indicative estimate of the cost of repair works;
- a baseline for monitoring long-term path condition and change.

Types of Condition survey data

The Condition survey provides four types of data:

- **Descriptive data:** a set of codes to describe path location, path type and vegetation.
- **Physical measurements:** path length, width, gradient, gully depth, number of braids.
- **Assessment of path condition:** indices describing the roughness, drainage, erosion, condition dynamism and work urgency.
- **Prescription:** codes and comments describing the type of path management required, comments about work required and comments about site conditions.

Descriptive data

Path location

This information should provide clear and unambiguous instructions about where the survey starts and ends. Subsequent to survey completion other individuals should be able to locate the path and be confident about the start and end points. Provide a grid reference at the start of the path and a note of the feature at which you start the survey and repeat for the end point. Photographic evidence is also particularly useful in locating the exact start/end points using definable on site features such as a prominent rock/stone, fence or gate, etc.

Path sections

Each path comprises sections that are more or less homogeneous in nature. The path is divided into sections in the field and a new section commences when an obvious change in path character occurs, for example a significant change in width or gradient. Path sections are numbered consecutively from the start point and path length is measured using a measuring wheel. Depending on the lengths of the path sections, an 8 figure GPS grid reference is essential at the start of each section. This will probably be impractical if the sections are consistently less than 250 m. If this is the case, decide the frequency of grid references before the field survey. It should be possible for future users of the survey information to locate the start and end points of sections, either in the field or on a map.

Identifying path sections in the field is not an easy task and requires the surveyor to use judgement and experience. The Condition survey is designed to be fairly rapid, and if required more detailed information can be collected later using the Specification survey. Do not get bogged down in too much detail; there will be variations within path sections due to the informal development of paths and variations in terrain. Using the Condition survey it is important to consider the significant parameters for path management in the area where the survey is being conducted: the presence or absence of poorly drained peat is always significant; long gradient is significant in terms of erosion processes and management; path

sections over 15° will be difficult to sustain unless they are pitched or realigned (depending on drainage and surface material), etc.

The reason for a section change should be noted on the survey sheets.

Vegetation

The average ground cover and vegetation species should be noted. Surrounding vegetation can have a large impact on path development: certain species may be extremely tolerant to trampling or may confine the path width. However, surveyors should not spend a long time running through the [Phase One](#) survey methodology; the important point is to illustrate how the surrounding vegetation may be affecting path development.

Path type

Although many upland paths have evolved as a result of recreational use, some paths have been constructed, mainly in the Victorian era, and are still in use today. The following categories can be used to describe path type.

- **Stalker-type path:** These paths are constructed as, or in the style of, stalkers' paths. Typical features are relatively low gradients, metalled surfaces, drainage by top-side ditch and stone culverts or open cross-drains.
- **Recently built path:** These are paths which have been repaired or built in the last 10 years including older stalkers' paths that have been repaired using more current styles of work.
- **Forest or estate road:** It is unusual to include roads in path surveys but they may be an integral part of a longer route.
- **ATV track:** Where all-terrain vehicles repeatedly use the same route an evolved 'track' will form. These routes are not generally built but may be used by walkers.
- **Evolved slope:** These are paths that have evolved more or less directly up or down a slope.
- **Ridge route:** These are unmanaged paths that more or less follow ridge lines.
- **Evolved line:** These are paths that have evolved but are not ridge routes and do not directly ascend slopes. They are typically found as routes through glens or paths traversing slopes.
- **Other:** These are path sections that do not fit into any of the above categories, such as historical roads now restricted to pedestrian use.

Path surface

It is more usual to find a composite of materials on a path surface, especially if the path has not been constructed. However, stalkers' paths that might originally have had a fairly uniform aggregate surface have evolved over time, especially if they have been regularly maintained; their surface may thus also comprise a mixture of materials.

Especially on evolved paths, within one section the surface can be made up of a combination of exposed peat, aggregate, block stone and exposed soil in varying quantities. Usually, it is unnecessary to record that all are present. It is necessary only to record the materials that have had the most impact on individual sections. For example, if a section is 100 metres long and has a surface of exposed peat combined with block stone, but also includes 4 x 3m sections of aggregate path, the section should be noted as having a surface of exposed peat and block stone. The isolated aggregate sections will have little or no significance for the management of the path surface in that section. However, the presence of some aggregate indicates that it may be possible to obtain surfacing material from on-site borrow pits if repairs take place. This information should be included in the comments section.

Physical measurements

Number of paths and braids

Record both the number of paths and the braids that will have to be managed. It is uncommon to manage more than one path if two paths arrive at the same destination point. However, this may occur if the paths have distinctly different properties and attributes. For example, one route may be preferable for ascent and the other better for descent; one may provide good ridge walking but be quite exposed, whereas an alternative may provide more security but less spectacular views. In such cases, where both lines are also strong desire lines, it is likely that both will have to be managed.

Braid lines, on the other hand, occur in close proximity to the main line and usually develop as walkers try to find more comfortable lines. For example, the braids might have less rough surfaces, easier gradients or dryer footing. Braids are path lines separated from the main path by a strip of vegetation or un-trampled ground; they are not simply the trampled path margins. Again, some judgement is required to record information which illustrates the nature of the path. Braids are often only 10 or 20 metres long, and it is clearly impractical to have a section change every time a braid occurred or disappeared. The record should however provide a flavour of the site – for example if braiding occurs over a large proportion of the site and the section is likely to remain braided.

Extract from a Condition Survey of Suilven by the John Muir Trust, 2012

Weather **Date** **Path Name** **Surveyor** **Start:** NC1673919632
 Sunny, dry 22/10/12 Suilven Chris Goodman **End:** NC1578418106

Section	Length	Grid Ref	Surface Type	Features	Paths/Braids	Bare Width	Tramp Width	Gully Depth	LG/ XF	Roughness	Drainage	Erosion	Condition	Dynamism	Priority	Built Features				
																XD	Pitching	SD	Revet	
1	760	NC1673919632	peat/grass	cairn at track	1/3	2.00	20	0.2	17/18	4	2	3	3	4	4	WB	Agg.	Pipe C	

Description: Generally flat peaty ground with a few short rises which are more stoney. Path is fairly braided and quite boggy in places. Erosion probably not worsening rapidly and not a hugely visible scar at present but likely to continue to widen and become more peaty as vegetation is trampled. Only solution would be to excavate and lay a path which would change the nature of the experience but if kept narrow and with a sensitive line it would be in-keeping with the environment. Imported surfacing would not be appropriate, would hope to win hard core and surfacing from borrow pits on site. No building stone for drainage features though, would probably need to airlift from boulder fields at base of Suilven. It may be possible to quarry surfacing with an excavator.

Section	Length	Grid Ref	Surface Type	Features	Paths/Braids	Bare Width	Tramp Width	Gully Depth	LG/ XF	Roughness	Drainage	Erosion	Condition	Dynamism	Priority	Built Features				
																XD	Pitching	SD	Revet	
2	184	NC1636119132	stone/scree/bedrock	steeper slope	1/3	4.50	7.00	0.4	30/15	2	3	3	3	3	3	WB	Agg.	

Description: Steeper section more eroded and visible on the approach, worst after 114m where water running down path. More dynamic due to gradient and more urgent to stabilise as earlier intervention will help minimise works required. Probably enough rock, scree and fines on site (although scarce at top of site) to build pitching, steps and drainage features. Would probably need to build path over exposed bedrock and substantially landscape the path edges.

Section	Length	Grid Ref	Surface Type	Features	Paths/Braids	Bare Width	Tramp Width	Gully Depth	LG/ XF	Roughness	Drainage	Erosion	Condition	Dynamism	Priority	Built Features				
																XD	Pitching	SD	Revet	
3	581	NC1629719018	peat/grass/stone	top of slope	1/2	2.20	4.00	0.5	15/20	3	3	3	3	3	3	WB	Agg.	

Description: Path contours up and round slope with bleached white stone exposed and new peaty braid developing on left. Exposed stone awkward to walk on and pushing walkers onto vegetation causing erosion to spread. Would probably need a full build path although would be best done by hand so as to be more natural and in keeping. Some signs of mineral deposits present and should be enough stone available although generally un-weathered.

Path width

Both the bare width and the trampled width should be recorded. These should be expressed as ranges – the minimum and maximum – of the bare width in a section and the minimum and maximum trampled widths, as well as a typical bare width and typical trampled width.

If the path is braided the total amount of bare ground across the braided section should be given; e.g. if the path comprises three lines each 1 metre wide, then the bare width would be 3 metres.

It is a little more difficult to measure trampled width accurately. The edges of trampled path margins are not usually clearly defined, but damage to vegetation and changes in species composition are good indicators of trampling.

Eroded depth

The eroded path depth is defined as the depth at which the path surface is below the surrounding ground. If the path surface is gullied measure the maximum depth in the section.

Long gradient

Long gradient is measured along the path and is the gradient of the path expressed in degrees. It is not necessarily the angle of the slope that the path is climbing or descending, for the path may meander or zigzag up steep slopes in order to reduce path long gradient. If path formation is intermittent or indistinct over steep ground, make a note in the site comments section, because a constructed path is unlikely to follow such a steep line.

If long gradient is to trigger a 'section' change it should be because it increases or decreases across a threshold that is significant in terms of erosion or path management processes.

Cross-gradient/cross-fall

Cross-fall is defined as the steepest angle, in any direction, on the slope over which the path runs, i.e. the route and angle that a stone would naturally roll away, or the fall line for the skier.

Managing paths with a low cross-gradient can be quite problematic. If low cross-fall is accompanied by a low long gradient, it is difficult for water to run away from the path and drainage may be difficult.

When a low cross-slope is accompanied by a steep long gradient, i.e. the slope is steep and open, a number of problems may occur. Erosion may be a problem on steep paths, and this often leads to roughening of the path surface. Paths in this condition often widen as walkers avoid rough surfaces and the low cross-slope provides little incentive to remain on the path line. Steeper cross-falls, on the other

hand, act as an incentive to remain on a 'benched' path line that is more comfortable to walk on.

Paths that are 'benched' into slopes often tend to hold snow and ice longer than surrounding slopes, and this can cause braiding on the path margin (as walkers avoid it) and path erosion due to the volume of water released during thaw conditions. Evidence of problems with snow 'lie' should be noted in the site comments section.

Cross-slope is significant in path management depending on other factors, especially path roughness.

Assessment of path condition

Five indices are used to assess a range of less quantifiable factors within each path section. The five factors are path roughness, drainage, erosion, dynamism and condition. A scale of 1–5 is used to score each section for each of the five indices. Work urgency is assessed using the same scoring system.

Throughout the survey a score of 1 represents the worst condition, most active or higher priority sections, and a score of 5 the least damaged, least active and lowest priority sections.

For each of the five indices used, photographs should be appended to show examples of sections scoring 1 (most damaged/highest priority), 3 (average damage/medium priority) and 5 (lowest priority/least damage).

Roughness

This is an assessment of the condition of the path surface: 1 = very rough and you may need to use hands to scramble along the path; 5 = smooth and you should be able to look at a view while walking on the path.

Research has demonstrated that path roughness has a strong influence on path width. If the path surface is rougher than the surrounding ground, walkers are likely to stray from the path line and cause trample-related damage either on the path margins or on other more comfortable lines.

Take care when recording this information, especially if the path being surveyed is extremely rough along its whole length. Bear in mind the scoring system above and do not start scoring path sections on a relative basis. For example, if section 1 is extremely rough and requires the use of hands to scramble along the path and section 2 is not quite so rough although it still requires the use of hands then both sections should score 1.

Drainage

This index measures a combination of water flow (including seepage) and standing water. Therefore, a path section scoring 1 for drainage would show evidence of

high flow, deep standing water and/or saturated surface material. A score of 5 would indicate that the path was dry with no standing puddles and that there was no flow of water along the path.

It is easier to get a better idea of drainage conditions during or immediately after heavy rainfall, although this is not always practicable and assumptions may have to be made about drainage. However, there are a number of indicators that provide clues to drainage conditions when a path is surveyed in dry conditions, some of which are fairly obvious.

Examine the surrounding ground. The presence of peat usually indicates that it is poorly drained, whereas sandy soils and bouldery ground are better drained. Shallow soil depth and bedrock close to the surface encourage very rapid runoff of water after rain. Vegetation types usually coincide with different drainage conditions to a large extent and can be used as indicators of drainage.

Observe the condition of the path; if it is gullied it is probably subject to high water flows. Look for material that has been washed from the path surface on to surrounding vegetation. Check the composition of the surface material: an absence of fine materials may indicate that they have been washed out by surface water. An accumulation of silt, on the other hand, can indicate the presence of standing water during wet conditions. A wide path and braid lines could also have resulted from poor drainage. Make a note of blocked or damaged culverts or cross drains on constructed paths, since damage to these structures will cause drainage problems.

Topography and path alignment should also be examined. The length of slope above a path will provide an indication of the volume of water that will have to cross the path. Channels and rills that are intersected by a path can cause both localised and more widespread drainage problems.

Recent uncharacteristic and erratic changes in weather patterns and higher than expected rainfall in all areas, should be considered carefully. The type, size and capabilities of drainage should be capable, to a point, of withstanding deluge and flooding events which are becoming more frequent, whilst not being over engineered. Finally, be aware of the weather characteristics of the area; Wester Ross, for example, has higher rainfall than the Cairngorms and this will affect drainage systems.

Erosion

Erosion is strongly influenced by path drainage and path gradient. However, levels of use, surface material, topography, altitude and vegetation also affect rates of erosion. This index assesses the current rate at which material appears to be dislodged on the path line: 1 = current highly active and large movement of material; and 5 = stable, no change. Erosion is an ongoing process, and a one-off visit to a site will provide an estimate of the rate at which erosion is occurring. However, that estimate should be based on the surveyor's experience and a variety of indicators.

Rates of erosion depend on combinations of factors; some steep sites may be reasonably stable if they are well drained and the path surface material is well bound, whereas poorly drained paths on steep gradients with poorly bound surfaces will experience high rates of erosion.

Combinations of steep gradient, loose surface material, high levels of use, sparse vegetation, bedrock close to the surface, high rainfall and/or rapid thawing and path alignment indicate high rates of erosion.

Evidence of high rates of erosion includes gully formation or path surface well below surrounding ground and path surface material washed onto surrounding ground or vegetation.

Dynamism

Dynamism is used to describe the rate at which a path is developing (usually deteriorating). Assessment of this process is based on judgements about rates of erosion and how quickly path width is increasing, or the path is braiding. A score of 1 = highly active future change, whereas 5 indicates that the path is not likely to change.

This is quite a difficult process to assess, particularly if the surveyor does not know the path, as a path may be highly damaged but reasonably stable and therefore not dynamic. Conversely, a path may not be in very poor condition at present but might have just passed a threshold that will lead to rapid breakdown; for example, surface vegetation might have recently been removed through trampling pressure exposing the mobile surface material underneath.

Condition

This is an assessment of overall current path condition including bare width and trample width, drainage and surface condition: 1 = gross damage over a wide area and 5 = little damage.

When recording this information relate the assessments to reference photographs and do not score path sections on a relative basis, especially if the path being surveyed is in poor condition along its whole length.

Edge

An additional path edge definition has been helpful for monitoring work in the Cairngorms and could be considered elsewhere. This is a measure of ease of travel across the path edge and the reliability of width measurements.

The edge definition index includes the following scores:

1. No visible path edge; either totally lacking in vegetation both on and off path, or vegetation highly discontinuous. Line of path very hard to tell.
2. Path edge hard to distinguish; vegetation low and discontinuous. Easy to travel on ground adjacent to path line.
3. Path edges discontinuous with bare ground apparent in adjacent area; vegetation low. May include wholly vegetated paths and margins. Marginally more effort (mental or physical) to travel off path than on path.
4. Path edges continuous, or nearly so, and well-defined. Edge may be lined with stone or (low) vegetation. Moderate additional effort required off path.
5. Path edges continuous and well-defined. Either lined with boulders or with high/dense adjacent vegetation. Considerable additional effort required off path.

Path management, information and comments

Work urgency

This is the urgency with which work is required to prevent damage or further damage occurring to the path in its present condition: 1 = extremely urgent, gross damage imminent (or already occurring) if no action is taken; and 5 = path reasonably stable, improvements are of low priority. A high score should be allocated if a path is currently in reasonable condition but likely to degenerate rapidly if no pre-emptive work is undertaken.

In terms of timescales:

- 1 = high priority: work should be undertaken within the next 1–3 years;
- 3 = medium priority: work should be undertaken in the next 3–5 years;
- 5 = low priority: work may be required in the next 5–10 years, often depending on the results of monitoring information.

Work urgency is not necessarily a priority rating. Other factors will influence priority, such as availability of funding, desirability of undertaking work in remote areas, importance of a path in terms of network connections and popularity.

Prescription

This is a rapid survey method and is not designed to provide specification details; the information gathered here describes the general type of work required. From this information, costs can be calculated at a later stage of the project. To simplify matters, prescriptions can be categorised into a list of treatments required, such as 'rebuild existing path, construct new path, stone pitching, intensive pre-emptive work,

minor pre-emptive work', etc. The list of treatments can be adapted to specific management styles and the needs of different geographical areas.

Some care should be taken with this assessment; remember that paths are dynamic. Do not under-specify if a path is particularly dynamic as further degradation is likely to occur before funding is secured and repair work starts. On the other hand, do not over-specify; repairs should reflect the context of the path in terms of setting and use.

Walk-in times

Record the length of time taken to walk to the start of each section from the nearest vehicle access point. Time spent walking to and from a work site has significant cost implications. If a site is an hour's walk from the nearest access point then 2 hours, or a quarter of an 8-hour working day, would be spent simply walking to and from the site.

Comments

Include any information not collected elsewhere on the pro forma which is important in terms of path formation or management. Also note any useful reference points.

Include notes about the availability of suitable materials, access for machinery, alternative alignments, etc. Comments about the site conditions should include any localised conditions that have not been clarified elsewhere. For example, an erosion problem caused by a burn overflowing or a path section with a peat surface and short aggregate section might not have been previously noted. Note also the type of path user as their level of experience and kit will influence their walking habits such as avoiding puddles or coping with uneven ground.

Photographs

Photos are vital for providing a visual record of path condition and setting. Include typical sections and some that are in good condition, not just the worst sections. Note the cumulative distance and direction in which they were taken.

How to collect the data

Condition surveys can only be carried out with an in-depth site visit backed up by entry of data in the office. Data are collected in the field and recorded on survey sheets set out for all the measurements required. The data are then transferred directly to a database or spreadsheet. Data can be recorded directly into a palmtop computer at the site. This can save time, but there is some concern about the reliability of palmtops in cold and wet weather. Dictaphones can also be used.

Distances are measured using a measuring wheel. This provides relatively accurate measurements over most terrain. Shorter lengths are measured using a tape. A hand-held GPS is used to generate accurate eight figure grid references. Gradients are measured with a lightweight clinometer. A digital camera, which should be

waterproof, is essential. Mapping software for GPS units or smartphones is widely available and most are highly accurate. Used in conjunction with OS maps to confirm position and reference, modern software can be extremely helpful in mapping, recording and tagging the path and reference points (way markers) and to assist in administrative mapping. A Dictaphone or similar can also be valuable when collecting data. A verbal record of condition can be used in collaboration with the written data collected whilst building your report and is also helpful to collect GPS references whilst on the move.

Survey tips

- **Be objective:** do not emphasise the most damaged parts of a section. Data should reflect the characteristics of the whole section.
- **Be consistent:** some data collection relies on the judgement of the surveyor. Apply decisions consistently throughout the survey, and if more than one surveyor is involved spend some time together in the field to standardise the approach.
- **Be adaptable:** if the data sets do not provide information that you require, modify the criteria or type of data that you collect.
- **Be aware of the function of the survey:** do not describe paths in minute detail. This is a broad-brush look at path condition and management requirements and will not provide costs with a dependable accuracy of more than $\pm 20\%$.
- **Timing:** area-based surveys can be very time-consuming. Allow enough time to undertake the field survey outside the winter months, especially if higher ground paths are included. Ideally visit at different times of year to see how ground conditions and visitor numbers change with the season
- **Employ suitably experienced staff:** Condition surveys rely to some extent on the judgement and experience of the surveyor. Pertinent and relevant data are likely to be collected if the surveyor has extensive experience of path development processes and path repair techniques.
- **Health and safety:** produce a risk assessment for the field survey stage and monitor the effectiveness, especially reporting-in procedures.
- **Access:** ensure that the survey method complies with any restrictions related to natural or cultural heritage designations and consider land management particularly deer stalking and grouse management for the timing of the survey.
- **Weather:** while surveying in extremely wet weather is not pleasant or conducive to clear note taking it is very useful to see the path in wet weather as this will identify drainage issues which may not otherwise be obvious.

Variable	Number	Measure	What to record	
Description				
Section number Path number Reason for change	3	Number/ Number/ Two-letter code	Section number Path number Codes for 'Reason for change' IA Increase angle DA Decrease angle IW Increase width DW Decrease width SB Start braids EB End braids SD Start of drainage problem ED End of drainage problem CV Change of vegetation O Other (specify)	
Grid reference/features	2	Eight-digit reference/ two words	Eight digit grid reference at start of section using GPS with notes on any obvious features at the start of sections. Also include finish reference and features for the last section in run.	
Length/distance	2	metres	Section length measured in metres and cumulative distance from start of path, both measured using wheel.	
Type of path/surface	2	Two-letter code/ two-letter code	RD Forest/estate road SP Stalker's type path RB Recent built (<10 years) EL Evolved line (one or more lines) RR Ridge route ES Evolved slope route O Other (specify)	VG Vegetated EP Exposed peat ES Exposed soil SM Fine silt/mineral AG Aggregate BS Block stone BR Bedrock O Other
Surrounding vegetation/cover	2 or 3	Two or three letter code/cover	Phase 1 (modified upland list) A1.1 Broadleaved semi-natural woodland A1.2 coniferous woodland BI Acid grassland B5 Marshy grassland C1 Bracken D1 Dwarf shrub heath D3 Lichen/ bryophyte heath D5 Heath/acid grass mosaic E1 Bog E2 Flush and spring O other (specify)	Average % groundcover for surrounding vegetation to nearest 10%

Variable	Number	Measure	What to record
Measures			
No. paths/no. braids	2	Number/ Number	Number of path lines in use which are to be managed, followed by total/maximum number of other path lines apparent which are to be blocked off.
Bare width range	2	min/max	Minimum width of bare un-vegetated ground in section, followed by maximum width of bare ground in section.
Trample width range	2	min/max	Minimum width of ground showing evidence of trampling followed by the maximum width showing trampling and a change of vegetation.
Gully depth range	2	min/max	Minimum depth of gulying below normal ground height to the deepest point in path width, followed by maximum depth of gulying anywhere on the section.
Long gradient/cross-fall	2	%	Average gradient along the path section measured from the start looking up the path line using clinometer, followed by the average cross-fall measured up drain or fall line using a clinometer.
Indices			
Roughness	1	1–5	Where 1 = hands needed to scramble up path, while 5 = ability to look at view while walking on path.
Drainage	1	1–5	Where 1 = permanently saturated with water, or very high flows of water, and 5 = very well drained ground, or very low flows of water.
Erosion	1	1–5	Where 1 = evidence of large amounts of movement of material on the path line and 5 = no movement of material from the path line. A retrospective assessment of damage.
Dynamism	1	1–5	How rapidly the path can be expected to deteriorate, where 1 = path very likely to deteriorate rapidly, and 5 = a very stable path. The future rate at which material is likely to move.
Condition	1	1–5	Where 1 = very severe damage and 5 = little evidence of damage. An overall estimate.

Variable	Number	Measure	What to record
Prescription			
Work priority	1	1–5	A combination of path condition and dynamism. Include high priority for pre-emptive work to prevent severe path damage. Where 1 = very high priority and work is recommended within the next year, and 5 = very low priority and work is unlikely to be needed for 10 years. How soon does work need to happen?
Cost per metre Extra costs	2	£ per metre/ extra per metre	Average cost per metre based on priorities 1–5 from specification surveys. Only indicate if the path has obvious extra costs (e.g. helicopter costs).
Walk-in time	1	0.25 ± hours	Approximate one-way walk-in time to nearest access point in ¼ hour intervals.
Comment	2	(a) site: 10–20 words (b) work: 10–20 words	Comment: (a) on path condition, site, available materials and features; (b) on types of work, style of construction and any adaptation of usual construction.
Photographs	1–34	Grid Ref/ direction	Approximately 4–8 photos per path in report. Take 10–20 on site. Include setting of site, general path line, good section, bad section, typical section, major work sections and other features.

2.5 Specification (Red) surveys



Specification surveys are detailed sketch maps of the path, with target notes about the route and the work required to bring it into good condition. The sketch maps are created using a standard format and a full set of [symbols](#), describing everything from large boulders to pitched liners for cross-drains. Specification surveys are the most detailed of the three levels of path survey: they are made up of intricate sketches of the path as it is now and how it will look after completion of work.

Specification surveys provide:

- a pictorial assessment of the current path condition;
- a pictorial description of work required;
- a written description of work required;
- an estimate of the time and cost to bring the path into good condition.

Specification surveys are often used on site to direct work in progress. They need to contain enough detail to identify every item of work required on the route.

Carrying out a Specification survey

The key features for carrying out a Specification survey are described below.

Path sections

Each path comprises sections, which should be easily identifiable by reference to physical features, such as burn crossings, rocky outcrops or prominent boulders. If no suitable features are present, mark the start and end of sections with discretely located wooden pegs or canes and take a GPS reading (as canes tend to disappear!).

Path sections are numbered consecutively from the start point, and path length is measured using a measuring wheel. Provide a grid reference at distinct features, such as burns or dykes. It should be possible for future users of the survey information to locate the start and end points of sections in the field. In the office, mark the route of the path and location of path sections on a 1:25,000 or 1:10,000 map. If the path sections are too small to show individually, then arrange them into sets of sections. Dividing the path into shorter subsection lengths tends to provide more detailed and prescriptive information.

Elastic scale

The scale of the pictorial representation is elastic. One survey sheet may represent 500m or 5m. The scale depends on the complexity of the path section, the condition of it and the amount of work that is required – 50m is a good length for a survey sheet if it needs a full or partial build work.

The scale may also vary on individual survey sheets. Both section length and cumulative length should be recorded for ease of reference. Path length or cumulative distance is normally measured using a measuring wheel.

Current condition

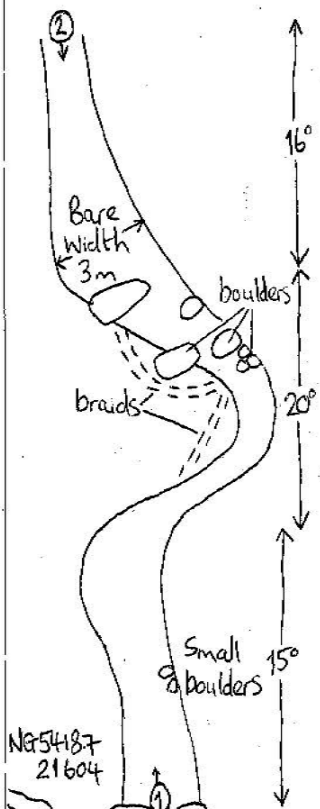
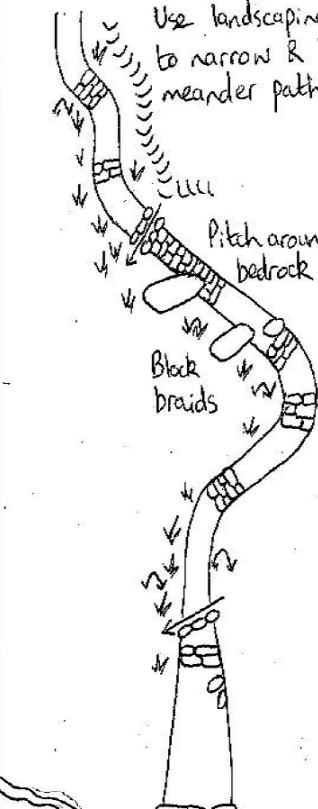
A sketch map is made with current path condition and work required in two separate columns. All the information on the survey sheet should be entered and read from the bottom of the page to the top. A standard set of symbols is used to represent various physical characteristics and prescriptive treatments. Written notes providing information about gradient, current width, visitor behaviour, etc., can be included. Include information about availability of materials on site that could be used for path repair. If possible comment on the location and suitability of aggregate for the path base and surface, pitching stone, block stone for drain construction, and so on.

Work required

A pictorial representation is provided of work required alongside the 'current condition' column. A brief written description is provided in the following column, which can be expanded upon in the bill of quantities.

It may be useful to include a separate attachment with cross-sections of path construction to clearly illustrate dimensions and path setting as well as cross-sections of drainage features (including dimensions) such as cross drains, water bars and ditches.

Extract from a specification survey

Site: Blabheinn		Date of Survey: 30/10/13		Sheet No.: 1	
	41m			13m turf ditch 2m pitching 13m deroughen path 18m landscaping 1m pitching Cross drain 5m pitching	
Bedrock	28m			2m pitching 8m spot turling & blocking 3m pitching	
	23m				
Seeper Zig-zag	16m			1m pitching 5m landscaping Water bar 2 step risers 16m deroughen path	
	12m				
Burn crossing	0m				
General Features	Cumul Length	Present Condition	Work Required	Description of Work	

Bear in mind that you are trying to find a solution through only looking at the site. Once work begins it will identify sub-surface conditions and other factors that weren't obvious during the survey so there should be an element of flexibility built into the specifications as well as additional budget allowed for further work. This could be around 10% of the repair work cost.

Bill of quantities

The bill of quantities (BOQ) should provide a detailed written description of individual items that have been specified and the number or quantity of each item. Materials that are to be used should be specified and dimensions included. Contractors will use this to tender from so it must be as descriptive and detailed as you require.

There should be 2 versions of the bill of quantities, one for the client and one for the contractor. The client copy will contain time estimates, costs, etc. and the contractor copy will have blank spaces for them to estimate their price and time for tendering. The client can then refer the tenders to the client copy when assessing the tender.

Part of a Bill of Quantities for Blabheinn (2014)

Item	Units	Quantity	Cost/ Unit	Total (£)
<p>Water Bar - Water bars should be constructed onto a hard base using suitable weathered stone, so that all exposed faces of the finished water bar are of a natural appearance and colour. Stones should have a reasonably flat treader and be of a sufficient weight and packed to withstand regular walking pressure. Joins must be close fitting and the face steep but not overhanging. The water bar should be set into the path at an angle between 40°-60° to the line of the path. The treading surfaces should be level with the path surface on the downhill side while the liner stones should be level with the path surface on the uphill side. The height of the water bar face should gradually increase from 100mm to 150mm from the upper to the lower end. The water bar stones must extend 150mm either side of the path.</p>	no.	16		
<p>Step - Construct stone riser with imported weathered stone. Step should have a maximum height of 100mm with a fairly level tread and extend at least 150mm either side of the path. Joins should be close fitting and stones should be at least 300mm deep to ensure that they are securely dug into the ground. Backfill behind steps with suitable path sub-base and surfacing material and block the path edges where necessary to stop walkers going round the step. While steps must be acceptable to walk on they should not look too formal and must be naturalised by digging in to appear like a natural stone step.</p>	no.	10		
<p>Deroughen and define path - remove bigger, awkward and obstructing stone from the path line. Break up smaller loose cobble to create a rough but walkable path surface, more appealing to walk on than the path edges or surrounding ground. Path width should be approximately 1000mm but varied in width so as not to be uniform. Removed stones should be dug into the wider path margins or carried away from the path area.</p>	m	207		

Work days

Estimate the length of time that the work will take to complete. Clearly state whether your time estimates are for the work to be undertaken by hand or with the aid of an excavator. If an excavator is to be used, clearly show how much it will cost and how long it will be on site.

Note the assumptions made about the movement of materials around the site. State whether this includes the use of power barrows, tracked dumpers or air-lifting material. Any additional cost involved in hiring or chartering this equipment should be included in cost calculations.

Clearly state whether materials will be imported to the site or if local material will be used. Importing materials will usually reduce the number of work days required to complete work. Remember to include the cost of materials and any additional transport costs in your calculations.

Equipment

Technical surveying instruments such as theodolites and distomats are not required for this type of survey: the most useful tool is a good pair of eyes and attention to detail. Surveyors should be equipped with a measuring wheel, a clinometer to measure gradient along and across the path, and a tape measure. A GPS should be used to generate accurate grid reference information. If this is not available, a map and a compass will suffice. Information is collected in the field using a survey sheet. Waterproof copies of survey sheets are very useful and a clipboard is essential. It can also be useful to carry a spade to dig trial borrow pits for surfacing material and a metal rod to push into the ground to test the depth of soft ground.







Useful pointers

- **Specify appropriately:** Path repairs should reflect the terrain which they cross. Do not over-engineer paths in a rugged mountain environment. Always maintain the informal nature of upland paths.
- **Use appropriate materials:** Identify the appropriate sources for materials available on site if possible. If this is not practicable or appropriate ensure that imported materials match those on site.
- **Realign if necessary:** Evolved path lines that climb directly uphill are associated with numerous management problems. It may be possible to realign a path to reduce the gradient and make it more attractive to walkers and less intrusive, allowing the original line to recover.
- **Be aware of budgets:** If budgets are limited, identify priority sections and ensure that specifications are prepared for those sections first. There is little point wasting resources preparing specifications that are unlikely to happen in the near future. Remember, a specification survey will have a shelf-life of only one year before it becomes obsolete due to changing ground conditions.

- **Employ suitably experienced and qualified staff:** Specification surveys rely to a large extent on the judgement and experience of the surveyor. Surveyors should have extensive experience of path development processes and path repair techniques.
- **Surveyors are not infallible:** Specifications are based on one or two visits to a site. Modifications may be required to specifications as work progresses and a contingency plan should allow for this.
- **Allow enough time:** Don't try to complete a specification survey in one day and think that is it. It is useful to see the site in different weather conditions and take time to mull over options on return visits. The more time you spend on site the better you understand it and the more informed your decisions will be.
- **Be as accurate as possible when you are surveying:** This will save time when you are writing the survey up and reduce errors or confusion.




2.6 Path Symbols

Survey features









bedrock		knoll or bank	
marker boulders		photograph	
fence		borrow pit	

Drainage Features

Problems

burn or other watercourse	
seepage or water flow	
wet path surface	

Techniques

turf lined ditch	
side ditch	
lett	
waterbar	
cross drain	
stone culvert	
piped culvert	
ford	

Path Features

Problems

rough path surface



gully



Techniques

aggregate surface



aggregate with geotextile



aggregate with anchorbars



pitching



steps



causeway



Restoration Features

Problems

braided paths



turf islands or hags



Techniques

blocking



seeding



turfing



revetment



3. Project delivery and contract management

3.1 Managing Path Contracts



Why do I need to enter into a contract?

A contract formalises an agreement between two parties, usually organisations. In the case of pathwork, the two parties are usually 'the contractor' (specialist path building company or a consultant), who agrees to build a path, and 'the client' (e.g. local authority, access charity or landowner), who agrees to pay for the service and supervise the project. Path management contracts are usually relatively straightforward agreements between one client and one contractor to construct a section of a route. However, some aspects of path contracts can become complex, such as tendering of the contract, detail of the construction required ([surveys and specifications](#)) or the long-term arrangements for maintenance. Pathwork in Scotland may involve a variety of different types of contracts, e.g. employment contracts, funding agreements, construction contracts, access agreements and equipment leases.

All contracts adhere to four essential principles:

- A contract provides agreement. Usually one party agrees to provide a service for which the other will pay. The contract contains a detailed and agreed description of what the service is and how it will be delivered. This is often contained in annexes to the contract, including site maps, surveys, maintenance schedules, Bill of Quantities or job descriptions.
- A contract sets out clear procedures. A contract lays down the conditions by which all parties agree to operate and the steps to take if anything should go awry. The contract specifies the location, timing and ownership of the work, planning details and what communication will take place during the project, e.g. site visits and completion meetings.
- A contract is made between interested parties. In pathwork the interested parties are usually the client and the contractor, but there may be others. Only those named in the contract are bound by it and have the right to amend it.
- A contract is binding. Each party to the contract is bound to deliver what is agreed and to comply with the contract conditions. There is usually provision to vary the contract if this becomes necessary as work progresses, but only if all parties agree to the changes. In the case of disagreement an arbiter will be appointed to judge the fairest course of action. If one party persistently fails to comply, the other party can take legal action.

A contract ensures that both parties are clear what work is to be carried out, and how, and who is responsible to whom. To be legal and binding, a contract must satisfy all four principles and be agreed by both parties. A contract can be verbal or written; a written contract is usually essential in the case of pathwork. Do not start work without a contract: if you are the client, you may be unable to control the work; if you are the contractor you may not get paid!

Types of path construction contract

There are currently four common types of contract used for access management work in Scotland, depending on the type and scale of work to be carried out.

Fixed price contract

The contractor submits a single, fixed price to complete all the works described in the specification, and this is agreed in advance with the client. This is the most common type of contract used for pathwork, and the price includes all materials, labour and plant. It is used for larger contracts and where the job can be described with certainty, i.e. where both the physical outputs (path, survey, etc.) and the costs (payments, materials, etc.) can be predicted and agreed in advance. It requires a comprehensive written specification but is usually less time-consuming to manage on site.

Typical use of a fixed price contract

The first 1100 m of the Craig to Diabaig coastal path is to be entirely rebuilt as part of the long-term management of the route. A full specification has been drawn up including a survey, bill of quantities and cross sectional drawings. The work will be let under a fixed price contract and four experienced path teams have been asked to provide bids. There are constraints on access for machines, over croft land, and a prohibition on Sunday working.

Negotiated contract

This type of contract is used when work is needed but some parts of the contract cannot be fully specified in advance. A sum for providing labour is agreed, or for building a trial section, after which a rate per metre/day can be set. This approach is best used for innovative work, such as developing a new technique, or on complex sites where a more “organic” line is required. It sometimes works well where an excavator will be used and a rate per meter can be set. Negotiated contracts (or small fixed price contracts) are often used to try out a newly formed team. Outputs must be agreed with the contractor and manager as work progresses. Negotiated contracts often involve less paperwork but more time on site to ensure you are getting what you want from the contract. It is common to let an “up to” amount of days in this type of contract, for instance the contract may state “up to 100 person days”. This allows the client to cut or adapt the contract before the total number of days is reached if productivity is very low or poor quality.

Design and build contract

In this case the contractor provides one or more specifications and the cost to build each, and the client selects both the price and preferred design. This approach is useful if the client is inexperienced, and was used extensively in the 1980s before design advice was widely available. However, the costs and outputs can be unpredictable, making it more difficult to determine the best value option – considering the quality of the path and its longevity, as well as the cost. In addition, there is less opportunity to be involved in the design and agree grant aid in advance. With the evolution of recognised standards in specification design and build has become redundant apart from for small sections of a larger contract, for instance a bridge, or gate, or where the client’s acting officer has no path experience (not ideal, but often the case).

Maintenance contract

Contracts for routine maintenance work usually specify the rate per kilometre of path to be maintained or the number of days per year to be spent maintaining a route, with rates for extra days if remedial repair work is needed. Rather than itemise a large number of minor tasks individually, maintenance contracts usually specify a set of maintenance standards. Maintenance jobs may be renewed annually if performance is satisfactory and are often offered on a 3 yearly rolling programme. Maintenance contracts are a form of negotiated contract, and rely on skilful and trusted contractors, who can operate and make decisions on site by themselves. It

is usual to inspect a sample of sites maintained to check that they meet the standards laid down. A similar approach can be taken for individual, low-value path projects, when often a quick response is needed and full specification is not necessary (often referred to as minor works or small works).

It is important to select the most appropriate type of contract for the project: this will depend on a number of factors, including project size, the organisation's procurement policy, staff time, staff experience and resources, project predictability and whether the project has aims and outcomes other than low cost and high quality. The reasons for using the most common types of contract are given below, along with their use in pathwork in Scotland.

Contract type	Best suited to...
Fixed price	Larger path management jobs, using known techniques, with a full specification, where high quality/low cost is the main aim.
Negotiated	Medium-sized projects, including innovation or site uncertainty, with time for on-site supervision and an emphasis on new or high-quality solutions.
Maintenance (and small works)	Small items of work, often spread across several sites, with less intensive construction over longer distances. Emphasis on minimal supervision and small but predictable costs.

Using standard contracts

There are currently two standard forms of contract in use for managing pathwork in Scotland:

- **Standard Path Contract.** This was developed by The Footpath Trust specifically for pathwork and is now widely used by charities, public agencies and some local authorities. It is suitable for use if one person will be overseeing the management of a job from start to finish, and perhaps also preparing surveys and specifications, although this may be contracted out.
- **Institution of Civil Engineers standard contract for works.** This was developed for medium-sized construction work (especially buildings) and is widely used by local authorities. It is suitable for use where several members of staff have separate roles, e.g. 'client officer' (usually the access officer) and quantity surveyor, and often with a separate designer and a budget holder.

The type of standard contract used depends on the organisation managing the project but will need to be amended to fit the job by specifying the information required (maps, surveys, schedules of work, etc.) and deleting any parts that do not apply (such as completion time penalties or materials testing).

One of the main advantages of using a standard form of contract is that everyone becomes familiar with much of it that is common to all jobs (safety plans, site rules, variations procedure, insurance required, etc). Make sure that any new staff or teams understand the contract you use and how it is applied. Then, when you adjust

the contract for each job, point out where the standard contract has been adapted, and what you expect this will mean for the job.

Standard contract formats need to be amended periodically because of changes in legislation or improvements in site management practice.

What the contract should cover

Pre-tender documents

These should cover the following:

- The invitation to tender, bill of quantities, specification survey, pre-tender terms and conditions and health and safety information. Include an anti-collusion clause to prevent any possible price-fixing among the competing teams.
- Information about how tenders will be assessed. This will usually be on a best value basis, balancing the quality of the proposed pathwork with price and other considerations, rather than accepting the lowest bid. Include an explanation of the criteria that will be taken into account and their relative weighting.

Example weighting Criteria	Weighting
Schedule of Costs - Assessment of suppliers' costs which must be clearly itemised to enable contractors to be assessed in relation to value for money.	25%
Objectives and Scope of Service – Suppliers demonstrate their ability to fully meet the requirements detailed in this document and annexes, etc.	25%
Experience / Technical Knowledge of Proposed Personnel – Based on CVs, etc., submitted to demonstrate relevant skills and experience in the provision of specialist upland path work.	40%
Timescale – Suppliers demonstrate their ability to complete the contract to timescales.	10%
Health & Safety – Suppliers demonstrate their ability to meet all Health & Safety requirements including having knowledge of the CDM Regulations.	Mandatory
Terms & Conditions – Suppliers confirm their acceptance of the enclosed Terms & Conditions.	Mandatory

- Tender format. Include details of how the tender should be presented and what to include. This often varies between organisations but must include the contractor's method statement and team details.
- Additional costs. Specify who is responsible for any changes incurring extra cost and the system for agreeing any 'variation'. It is usual for the client to pay only for additional and unforeseen work, at a 'day rate' that forms part of the bid. This should be fully detailed and included in the pre-tender (and contract award) terms and conditions to avoid ambiguity.

- Deadline for submissions and a site visit date should be included; this can be a mandatory element of tendering, but in some cases (e.g. some maintenance, small reactive and straightforward jobs) it will not be required. Enough time should be allowed for contractors to visit the site and price for all works including preparation of any health and safety documents required. Path contractors by nature are often working away all week so remember to give them enough time to respond and arrange a visit.

It is usual for the contractor to bear the cost of tender submission, and this should be made clear from the start. Also included in this section may be a set of definitions of terms used throughout the contract.

Delivery

This section of the contract addresses the following areas:

The contract should confirm that the contractor shall adhere to the specification and that alterations shall only be made with the agreement, in writing, of the

- Pathworks are usually guaranteed for one year after completion by the contractor. The contract is likely to state that during the 'defects liability period' the contractor will be responsible for repairing any defects due to poor workmanship. However, normal wear and tear should be taken care of through maintenance and paid for by the client.
- Disputes can arise, so it is sensible to explain the procedure for arbitration, by identifying a person or organisation agreeable to both parties whose decision will be binding on both parties.
- The contract should set out start and finish dates for work and invoicing. Owing to the nature of outdoor work it is reasonable to allow a 'window' in which the work can take place that should take account of potential stoppages caused by poor weather.
- Working hours should be agreed before work gets under way – at this stage it is sufficient to describe these in broad terms such as 'daylight only on any day of the week'. The contract should state that no additional payments will be made if time is lost because of poor weather.
- Restrictions on the use of plant and equipment, usually due to the terrain or sensitivity of the site, should be described. The contract should also specify that only named and qualified staff will operate specialised equipment.
- Site environment rules should be laid out, e.g. removal of all rubbish and debris from the site and repair of damage to vegetation or other features of interest.
- If remote accommodation, helicopter lifts etc. are to be used this should be outlined here, making it clear who is to provide/pay for it (client or contractor).

The contract award Terms and Conditions will be similar to the pre-tender Terms and Conditions but will include payment terms, binding timescales and any other binding agreements which the client deems necessary to deliver the contract.

Details of work to be carried out

Most of the information found in this section will be contained in the specification and bill of quantities; however it is a good idea to make some reference to key points in this section.

- Indicate the exact location of the site, usually by reference to an attached map.
- Provide a general description of the works, including the length of the section of route to be rebuilt and the types and levels of use it will get, once completed.
- Provide guidelines on the general design of the work, such as local design tradition, use of local materials from onsite, path width dimensions, and amounts of revegetation and so on.
- Detail payment and invoicing arrangements, including how interim payments are to be made and authorised. Include dates for submission of the final invoice, allowing ample time for grant claims to be submitted.
- It is usual to specify that contractor will resurvey the site following completion of all work. This provides a record of all work carried out as well as an up-to-date survey for use during long-term maintenance.
- Include arrangements for final payment, including how any remedial work will be carried out. A 'retention fee' of 5% of the total contract value is sometimes used to cover the repair of any defects arising during the one-year guarantee period. You should check your procurement policy for details.

Safety

The contract should include a section on safety specifying the following.

- All work should be carried out under the Health and Safety at Work Act (1974). Each team must submit a copy of its current health and safety policy and standard or specific site working rules.
- All contractors require public liability insurance during the whole period of the contract, including the one-year period of warranty following completion of site works. This is normally for a sum of not less than £5 million but the amount will depend on each organisation's requirements (check with your procurement department or insurers).
- A safety supervisor will be the first point of contact between client and the contractor, for all safety planning and safe working on site. Good practice requires this to be someone other than the team leader who can ensure safe practice at all times.

- The contract should state how the Construction, Design and Management Regulations 2015 apply and set out the roles that each party will fulfil, the identity of the Principal contractor, Contractor, Principal Designer, Designer, Client, any consultants and the safety planning procedure to be followed.
- The contract should set out procedures for accident reporting, including the reporting of 'near misses'. The client should be informed about any issues compromising safety on site and minor incidents as well as any major events and accidents to be reported to the Health and Safety Executive (HSE).

How detailed should a contract get?

- Business always involves some risk for both buyer and seller. Contracts help to reduce these risks and make business more manageable. However, putting together and managing contracts takes time and adds cost. Judging the level of detail to include and the number of controls to build in to the contract requires careful thought but becomes easier with experience.
- The more time spent on the details of the design and contract, the greater the likelihood of getting what you want. Look at the level of risk involved for each job. Will a 'standard' product do or do you need a special solution? What is your experience of working with these teams? Will they perform? Good pathwork is most likely to be achieved by using a clear specification and having a positive working relationship with an experienced team of contractors, all working to a set of contract conditions that everyone is familiar with. If you are overly prescriptive on a site which may have been better let as a Negotiated contract, you may end up with a lot of "extras" required, so think carefully about the type of contract issued.

3.2 Preparing a competitive tender



What is a competitive tender?

When a path needs to be built, or some other access project undertaken, the organisation commissioning the work (the 'Client') will ask several suitable teams (the 'Contractors') to assess the project, discuss it if necessary, and provide a proposal and price for carrying out the work. The documents that each contractor submits (usually a letter, some notes, a safety plan and a project plan) is called the 'tender', and 'competitive tendering' is the process of communication between the client and the contractors that leads to one team being chosen for the job.

All the common types of contract used in pathwork are suitable for competitive tender – all that differs is what is actually being priced and competed over.

Type of contract

- **Fixed-price contracts** can be placed by competitive tender and, as the name suggests, one price covers the whole of the specified job.
- **Negotiated contracts** can also be placed through a process of competitive tender, with teams being asked to offer a skilled team at a price per day or week. Alternatively, contracts may be negotiated with one team against a 'benchmark' price taken from an earlier round of tenders.

- **Maintenance and small works contracts** can be allocated by competitive tender, either by looking for fixed prices for the maintenance needs of a whole path network or by inviting bids for a daily rate. Alternatively, a flat daily rate day may be specified, with teams offering to work for this rate when available.

In summary, it is possible to select the most suitable type of contract for any particular job while still adhering to competitive procurement policies.

Good competitive tendering depends on having a level playing field for all contractors. All contractors should have the opportunity to prove their competence and all contractors asked to tender should receive the same information and have the same opportunity to bid. A good specification should mean that the needs of the Client will be met whichever team is chosen. Good competitive tendering is about ensuring that the best bid is selected and that this is done through a fair and consistent process.

What does a successful tender contain?

Path contracting companies win work by submitting successful tenders. They are assessed primarily on the information they submit for each new job, backed up by other information and their track record. Well thought out tenders often do best: four to eight pages containing all the information requested plus some original thoughts on how best to perform the key tasks is sufficient. Teams that are very able on site do not always show their abilities and expertise at the tender stage, but only by demonstrating the necessary knowledge at the planning stage will contract teams get the opportunity to prove it on site.

From the point of view of the client, the offer to carry out work (a 'tender') is most likely to produce a successfully delivered project if it can demonstrate:

- that the contractor will be able to complete the project – many tenders fail because they contain insufficient information for the client to assess competence, not because the contractor is incompetent.
- that the work can be completed within budget – very low-cost tenders are often weeded out as they show an unrealistic estimate of the job and may lead to corners being cut during the project.
- that the work will be carried out in a safe and professional manner – the safety method statement is not only a risk assessment, the client is looking for good sequencing of work and care for the public on site.
- good working methods – a full list of work (the 'bill of quantities') and description of the job (the 'specification') are usually provided by the client, but different contractors will approach this differently: describe how your team will sequence the work, divide up the site and adapt the work to fit the site.

Successful tender preparation requires good communication between the parties involved: this includes an easily read and succinct tender submission.

Preparing a tender: a six-step process

Preparing a good tender involves information-gathering and decision-making. It is better to prepare the tender systematically. A good tender for a contract worth £20,000 will take 2 or 3 days to prepare, spread over a period of 2 or 3 weeks.

	Information needed	Decisions	Source of advice
1.	Work plans; information on other jobs coming up; diary; advance warning of tender; brief description of the job.	Do you want to bid for the job	Team leaders Other potential clients Project client
2.	Site plans; bill of quantities; on-site information on materials, design, use and conditions.	Is it feasible, having seen the site?	Project client Site owner Local contractors
3.	Detailed design for each element; good idea of team skills and productivity; plant, materials and other costs.	How much will it cost you to deliver?	Project client Supplier companies Specialist advice
4.	Contract details; your own project plan; site information; team certificates; path 'portfolio'.	Can you meet all the conditions?	Safety consultant Training provider Statutory agencies
5.	Cash flow forecast; weather trends; feasibility analysis.	Is it a risky job?	Accountant Local site knowledge
6.	Client decision and feedback.	Is it a risky job?	Project client Training 'mentor'

At each stage of the process decide whether you wish to proceed – only continue if you still want the job, believe that you can win the tender and think that you can make a profit. You can drop out of the tender process at any stage, and usually a percentage of bidders do, but you must let the client know immediately: failure to respond by the closing date will not create a good impression for the next job.

Step 1: Do you want to bid for the job?

When you are asked to bid for a pathwork contract, make a brief assessment of the contract and specification and then decide whether to prepare a bid. There are usually between three and six companies competing. Making a bid is a time-consuming process. A tender for a medium-sized path contract will take 2 or 3 days to prepare: 1 day for a site visit and at least 1 day for making calculations, taking advice from the team and subcontractors and preparing the bid paperwork. So ask yourself: Are you available when the work is required? Is your team good at this type of work? Do you really want the job? Preparing a few thorough tenders for jobs you really want is more likely to win work than submitting rushed bids for every job.

It is good practice to evaluate invitations against predetermined criteria, although there will obviously need to be some flexibility. Some factors to consider include:

- Does the organisation offering the work have a track record of managing pathwork? Are you confident that it is aware of its responsibilities in managing the job and is it capable of meeting them?
- Does the organisation offering the work have the financial resources available to pay for the work?
- Are you technically capable of undertaking the work? Do you have several suitably skilled staff available or are you relying on one person? What would happen if that person is not available?
- Are you financially capable of completing the work? Check that interim payments are available and that your cash flow can cope with the timing of these, including a contingency for delays in payment.
- Are you likely to be made a better offer by another organisation during the contract period?
- Do you have all the resources available to undertake the work at the appropriate time?

Appraise the tender as early as possible after receiving the invitation as you will need plenty of time for the subsequent stages. Do not spend any further time on a job you do not wish to bid for. Keep the client informed of progress and seek extra information on any points that are unclear. Explain to the client your team's abilities and areas of special interest, as this will be useful in planning future work and helps build up a good working relationship.

Step 2: Is it feasible having seen the site?

A detailed site visit is required to properly assess almost any path job. It is good practice to attend a pre-tender site meeting for the potential contractors and the client, and many clients will only accept bids as 'competent' if you have attended. It is preferable that all contractors visit the site on the same occasion. This allows the client to explain to everyone exactly what is required and answer questions raised. It is also a good opportunity to demonstrate your knowledge and put forward ideas.

Normally the specification will be reviewed by several experts, often resulting in minor amendments being made. It is essential that any amendments to the design or bill of quantity are confirmed in writing to all those invited to tender as soon as practical after the meeting, so that everyone is bidding for the same revised job.

- Make your own assessments of the path use, safety, availability of materials, access for machinery and so on. Take measurements and photographs, and do not rely on impressions. You may want to return on your own for a second visit if you are going to bid.

- Remember that if the job requires staying away from base, you will also need to look for site accommodation and living accommodation. The site visit will give you a good indication of travel times and fuel costs too.
- If there are factors that will change the way you deliver the work, write them down and decide whether they will affect the cost. Do you know enough to predict each of these factors? If the job is not feasible or to your liking, you can pull out at this point. The site visit also gives you an opportunity to talk to the project manager face to face, to decide whether you will work well with them, and an opportunity to eye up the competition!

Step 3: How much will it cost to deliver?

Price is a key part of any tender; being able to estimate costs accurately is crucial to setting the price and deciding whether there is a margin for leeway and some profit. With best value contract selection, price is a significant factor in choosing who gets the job, but it is not the sole factor. For many pathwork jobs a good team at a reasonable price is a better option than a cheaper inexperienced team.

Cost estimation has several elements:

- **Estimate your labour unit costs.** As the greatest cost element of pathwork is usually the labour it is important that you are clear about your labour costs. You must include the cost of satisfying the conditions of any statutory requirements that apply, such as holiday and sick pay, personal protective equipment, insurance and so on. Calculate a daily rate inclusive of all costs for your team.
- **Estimate the time it will take.** For each element of the bill of quantities estimate how long an 'average' item will take. For instance, a cross-drain may usually take 2 days of labour to build, but if you have experienced staff and are on a site where block stone is available nearby the estimate for building a cross-drain could be only 12 hours. In the case of such 'discrete' tasks the total time will be readily calculated as the time taken to build one cross-drain multiplied by the number being built. Other tasks are continuous. For example, setting up a machine and borrow pit to build 50m of 'floating' aggregate path will be a high cost, but once everything is on site the next 50m will be at lower cost.
- **Multiply up unit costs.** Bring together the labour cost per hour or day and the time taken for each item of work and start working out the total labour costs. Adjust these in light of the information you have gathered on site, for example materials available and ground conditions. Add in any additional time/costs for labour, including site meetings, walk-in time to site, future remedial works and others. This part of the estimation can best be presented in a spreadsheet format, which also makes it easy to try out alternative scenarios and costs.
- **Estimate all external costs.** Add all the external costs you will incur during the job, including recurrent costs such as fuel, accommodation and plant hire and one-off costs such as materials, small tools and delivery charges. It is usually easier to estimate these costs than labour needs in advance, but more difficult to control them once work is under way.

- **Look at cash flow.** What are the terms of payment for the job? Can you invoice for stages of work? Will the bills be paid on time? Speak to your bank manager and include a cost for overdraft and other borrowing charges.

Estimating the cost of works is a complicated task, and different contractors may adopt different approaches. Consider the options of using different types of plant or other working methods, such as airlifting materials. This may have an impact on your costs and the price for providing the optimum quality–price ratio. Airlifting materials may be more expensive, but can create less disturbance to the site which may be of prime concern to the client. Talk to the client and consider offering two options and prices.

Step 4: Can you meet all the conditions?

Contracts contain detailed conditions on how work will be carried out. Some, such as safety and insurance, are fixed for all jobs. Some, such as work within designated conservation sites or access arrangements, vary from site to site. Others, such as working hours and completion dates, may be flexible and can be set by the contractor. The client will often provide a checklist of information to include or a tender questionnaire to complete. If you are uncertain, be sure to cover the following basics: dates, team personnel, track record, plant and materials, price, project plan or method statement. If in doubt ask the client, it's better to be sure than rejected because you didn't include something.

Give the planned start and completion dates for the job and your usual working days and hours. The contract usually gives a window within which work must be completed, often constrained by weather or land use, such a stag stalking seasons.

- Give a list of the personnel, e.g. company, site supervisor, team leader and team members, because clients will look not only at the name and reputation of the team but also at the team members.
- Give a résumé of the team's major contract experience and the Vocational Qualifications (VQs) and skills of individual team members as many clients require a proportion of the team to have pathwork VQs (e.g. 50% of the team to hold the level 2 Pathworker S/NVQ or relevant experience).
- Give a list of all machines and operators, materials and sources. This is particularly important for work on fragile sites including Sites of Special Scientific Interest (SSSIs), as consents will be needed for use.
- Give a fixed price (usually) for all the work listed and a daily rate for any extra work (the 'day works rate'). You may also require an itemised price for each element on the bill of quantities. State also the frequency of interim invoices and your payment terms.
- Give a brief plan of how your team will tackle the contract, lay out the site, manage the site and complete the job.
- Prepare a Pre-Tender Safety Plan.

Make sure that you provide all this information and any additional requested, it is surprising how many bids are incomplete, and these are the first to be rejected. If you are unable to meet any of the conditions in the contract, or are uncertain about how they apply, then bring this to the attention of the client and include this in your covering letter. Do not make your bid a 'conditional offer' by saying that it only applies if certain conditions are met as clients do not like this approach.

Be positive and concentrate on preparing a good method statement: this is a great opportunity to show the client that you have thought through the contract. Having a plan that is prepared and ready to deliver could put your bid ahead of a lower cost but less well-planned competitor. Many successful contractors submit a detailed method statement for every major contract, whether the client requests it or not.

Step 5: Is it a risky job?

All projects contain some level of risk. The price you bid depends on assessing the risks and opportunities the job represents to your business. Contractors can make a profit or loss depending on how accurately the risks have been assessed. Before submitting a tender, the risks and opportunities must be identified and assessed.

Risks include: financial, adverse conditions, poor weather, reputation and suppliers.

- Does the client have adequate resources to pay for the work and are you confident that they will make stage and final payments as agreed. Does your quote depend on the supply of materials, plant or labour at prices that fluctuate?
- Have you accurately assessed site conditions, such as material availability and ground conditions?
- Have you made adequate provision for poor weather that may hinder operations?
- Will the specification allow you to construct a high-quality path? If not, will your reputation be affected if you are associated with the construction of a poor-quality path?
- Are you confident that subcontractors or suppliers can provide materials or services of adequate standard when required?

On the other hand, the tender may offer opportunities, including:

- making a profit at the end of a contract that reflects the effort expended and level of risk incurred;
- continuity of work, enabling retention of a skilled and reliable workforce;
- developing new techniques and gaining experience, resulting in improved skills in the team;
- boosting your reputation and developing a positive client relationship that may lead to further work opportunities.

The price you bid will depend on many things: if you think there is a high chance of weather lay-offs, increase the price by 10–15% and seek reassurances on being given extra time to complete the job. If you need work urgently and want to impress a new client cut the price by 5–10%. Always set your bid price at a level that more than covers all costs, and never go below this. Add a margin to your total expected costs that gives you room to manage the variables and make a profit if you are successfully able to do this.

Look around at the other teams bidding and particularly the availability of skills at the time the client needs the work done – many larger client organisations prefer higher prices to delayed work. Your price should cover all work anticipated, including site restoration and return visits for any remedial work (usually 3–4% of the construction cost). Do not bid a low ‘core price’ with the expectation of adding plenty of extras when on site – clients will be looking for a realistic, single price that reflects all that the job demands and will not pay for extras which were not agreed.

Step 6: Is your bid the best?

Submit your bid in the manner requested – often in two envelopes and with an electronic copy – and well before the closing date set. Ask the client how long a decision is likely to take: this can vary from 3 days to 6 weeks depending on the complexity and size of the organisation. There may be a long delay if the information is being relayed to grant aid partners for their approval, but the client should let you know if this is the case. You may be asked for additional information, and a prompt turnaround is essential.

The winning bidder will normally be contacted by telephone and given a brief period to confirm acceptance. Unsuccessful bidders will receive a letter a few days later. It is not standard practice for clients to disclose the winning bid price because of the relatively small number of teams bidding. Whether or not you are successful, contact the client for some feedback: you have spent several days preparing the bid, and feedback will aid your success next time.

Feedback from the client to contractors should include the following: price, quality of tender, future prospects.

- How did the contractor’s price compare with the winning bid? Give a percentage above or below, even if actual prices are not disclosed.
- How did the contractor rate for team ability and skills? Are there gaps in the team’s abilities that need to be addressed?
- Did the bid cover everything that was needed? Did the contractor provide the right level of information and did the client understand how the contractor would deliver the job?
- You should let the contractor know of future jobs, and discuss the abilities and availability of the contractor’s team.

Competitive tendering: some good practice pointers for contractors and clients

- **Be transparent:** explain how the tendering process will work, how bids will be assessed and provide feedback.
- **Be consistent:** provide the same level of information to all involved and confirm verbal instructions or communications in writing.
- **Be positive:** emphasise the benefits of a thorough and rigorous tendering process – better planning, fairer assessment and less dispute.
- **Maintain perspective:** the cost of tender preparation should not be greater than the expected contract value.
- **Timing:** allow adequate time for return of tenders. Some bids may require much more preparation than others.
- **Be realistic:** do not under-price work. Path work is demanding, and you do not want to work for nothing or at a loss.
- **Be thorough:** ensure that you understand all of the contract conditions and their implications.

If you are in doubt about preparing a tender seek advice: talk to your local enterprise company; attend a short course; or approach an experienced firm and ask to shadow their work. Ask potential clients, some will gladly advise on tendering and show you examples and give advice. Tenders for work are the most complex and important pieces of paper in pathwork: how you approach and prepare your bid not only tells others about how you do business, it is also a legally binding contract if you are successful and win the job.

3.3 Selecting a tender



It's your decision

All clients want to select the best contractor to carry out their projects. The decision as to which contractor to choose will have long-lasting effects: you will be working together for several months while the route is being built; you will want the team to carry out any remedial repairs for up to a year after completion; and the path will be used and maintained for 20 years or more. Selecting the right team is all about balancing the short-term demands of your organisation (budget, contract rules, the desire to use a local contractor etc.) with the long-term management demands of the site (quality, repairs and an appropriate design).

Tender selection should be, above all, fair and transparent: the contract should be awarded to the best all-round bid received. In order to be fair, the procedure for selecting contractors should be clear, written down, checked by another member of staff and held on file for any future audits. Allocating public funds for public access is a fully accountable task.

You will have your own vision of what the job will look like when it is complete, and an estimate of cost. Do not assume that every contractor shares the same view – there will be a variety of designs and ways of delivering them. Not every contractor will build the same path from the same plans!

It is difficult to imagine what the job will look like from the information provided by each contractor. Choosing the right team involves understanding your potential contractors and how they perform. Meet with new contractors, visit their sites and

Speak to other clients. If a contractor provides all the information you have asked for but you have no idea how they will deliver this job, then they have not presented their bid well. Do not dismiss their bid, but spend time finding out how they envisage the job, and encourage them to provide this information for future jobs.

If necessary, consult with others over your recommendation, and be sure to follow your organisation's procurement procedures. But, ultimately, you are the manager and know the needs of your site and the decision is yours. Take advice but do not let others make the decision for you.

Where time and capacity allows it is good practice to visit sites that tendering contractors have previously worked to see for yourself work carried out, particularly with newer contractors or ones not known to your organisation.

Selecting a tender: a five-step process

Selecting the best tender for your job involves following a rigorous process of information comparison and decision-making. Go through each step – do not just look at the 'bottom line' and plump for the cheapest! If you have already prepared a full specification, held a site meeting and encouraged the contractors to provide full responses, the tender selection process should take only 2–3 hours. If you have skimmed on preparation and the responses are patchy, it could take a lot longer.

Stage in the process	Information needed	Decisions	Source of advice
Step 1	Sealed bids submitted.	What bids have arrived?	Administrator to check-in bids.
Step 2	Your specification and information checklist.	Do they contain everything you needed?	Second person present, advice from quality surveyor or specialists.
Step 3	Information from past work for you and other clients, plus the project plan for each team.	How do the bids compare?	Other clients, specialist safety or path officer.
Step 4	Use only the notes you have made on each bid, back up with a second opinion.	Which is your preferred contractor?	Confirm your decision with the budget holder.
Step 5	Feedback to contractors based on their performance but no specific information from other companies' bids.	Could future bids be better?	Speak to all bidders. Refer to trainers or other clients.

At each stage of the process you must decide whether you have enough information to make a good decision. If you do not have the necessary information, you must decide whether to delay the decision and seek extra information from the bidders or disregard a poorly prepared submission. This will depend on the number of bidders you have, the time available and the type of information missing. Do not make a decision based on incomplete information. It is good practice to evaluate all competent submissions fully and only make a final selection at Step 4 – do not knock them out one by one until you have only one left.

Record your observations and decisions on each bid, at each stage, on a contract selection form.

Step 1: What bids have arrived?

The assessment of tenders should be treated with care and attention and in accordance with the written procedure agreed by your organisation. It is useful to give a summary of your procedure to project funders and contractors. Procedures will vary between organisations, but certain protocols will be similar. For postal tenders it is good practice for the client organisation to issue a return address label identifying the correspondence as a tender document but not the company replying. Tenders should be kept in a safe and secure location from time of receipt to the time of opening and acceptance of the successful tender.

The contract will have stated a date and time by which tenders should be received. Date stamp all bids when they arrive in the office and again when they are opened. Keep a written contract record, noting when each bid is received and opened and by whom. If any tenders are received after the deadline or are received by phone, email or fax then this should be noted on the summary sheet. Contractors who have failed to respond should be noted as no submission. Reasons given by any contractor declining to tender should also be noted. Email submissions are common and should be sent as an attachment so it can remain unopened until the deadline.

It is good practice where possible for two people to be present when tenders are opened. And, of course, neither should have any links or interest in any of the companies involved.

Step 2: Do they contain everything you need?

It can help to use a summary sheet to collate the key information contained in each tender. Check that all the information requested in the brief has been provided in each contractor's bid. First, check that all the background information has been submitted – this can be done annually for approved contractors and kept on file. Make sure that each company has provided up-to-date details, including:

- a list of staff who will be carrying out the work, with an indication of their length of service, path experience and appropriate qualifications;
- two business referees, including at least one other client who they have worked for extensively;

- a referee contact at their bank and with their accountant;
- details of their training and ability to implement safe working practice – including risk assessment and requirements under the current Construction, Design and Management Regulations;
- a copy of their Health and Safety policy and the site rules and working arrangements they use to control risk;
- a copy of their public liability insurance certificate and current premium certificate.

Next, look at all the basic information provided in the bid that is specific to the contract – this will include:

- **Dates:** planned start and completion dates for the job. The contractor usually gives dates within the window for the project, along with their usual working days and hours.
- **Team personnel:** each company should list the site supervisor, team leader and team members for the job. Look not only for the name and reputation of the team, but also of the individual team members.
- **Track record:** a brief résumé of each team’s major contract experience, vocational qualifications (VQs) and skills of individual team members. It is good practice to require a proportion of the team to have the level 2 Pathworker VQ or a few years’ path experience.
- **Plant and materials:** a list of all machines and operators, materials and sources. This is particularly important for work on fragile sites, including those with natural heritage designations, as permissions will need to be sought and granted.
- **Price:** usually a fixed price for all the work listed and a daily rate for any extra work (the ‘day works rate’). Some contractors also like to provide an itemised price for each element on the bill of quantities. Check their proposed timetable for interim invoices and payment terms.

Confirm that all bids include the basic information you need. If not, ask for additional or missing information. The client should not discuss financial information from any bid with any of the other contractors, although it is quite acceptable to discuss technical issues and seek clarification. You must not go back to contractors and seek to ‘bid down’ for a lower price than the one put forward. If you do need additional financial information, consider whether it will make a major difference to the overall price. If it is likely to be less than 10% of total costs, make a selection based on what you know and adjust the contract later. If it is likely to be more than 10%, you will need to ask all the contractors to re-bid, giving them a revised specification and time to re-submit.

Look at the other information that bidders have provided, often in the form of a brief project plan or method statement. This often reveals most about how they have interpreted your specification, and whether they have grasped what is needed for

this particular site. A description of the techniques that they plan to use will also reveal whether they have taken into account the sensitivity of the site and whether they are using up-to-date techniques and equipment.

Summarise the information received, with brief notes on its adequacy, on a checklist. Do not accept tenders that are incomplete, and proceed to the evaluation of tenders only when you have all the information you need.

Step 3: How do the bids compare?

You are looking for quality across the whole job and it is important to appreciate that quality is not just about the physical build of the project. Although solid and durable construction to a high standard is obviously important, it should not be the sole determinant. 'Quality' at its simplest is the bid that most closely meets the needs described in your specification: the needs of users, the site and you, the client. It is up to you to decide which bid most closely meets these needs.

Quality in timing the work and dealing with the public, as well as quality in building, is the most technically difficult part of the specification. This requires consistency and ability by the contractor to coordinate and manage the different parts of the job, and not get lost in the site work.

It is often helpful to divide the evaluation of tenders into three areas: commercial security, management competence and technical ability.

Evaluation of **commercial security** considers whether each bidder has the resources to comply with the contract:

- financial resources;
- track record of project completion and returning for remedial work;
- length of company survival;
- size of contracts previously completed.

Evaluation of **management competence** considers the firm's ability to support and manage the site team and communicate with the client and public:

- What are the strengths and weaknesses of the proposed staff and supervisory structure?
- Does the contractor have previous experience of contracts of similar complexity?
- Can the contractor provide the structure and resources to plan and manage health and safety and what is their safety management record?
- Does the contractor have project management experience?
- Does the contractor have good communication skills on-site visit and on paper?

Evaluation of **technical ability** considers the skills of the proposed team to undertake the work, their training, expertise, equipment and ability to innovate:

- Does the contractor have relevant personnel with technical skills?
- Does the contractor have the plant and equipment for the job?
- Does the contractor have a track record on similar jobs?
- Does the contractor have personnel with VQs and a training policy?
- Does the contractor have proven ability to come up with good design solutions on similar sites?

All these criteria should be investigated and contractors scored or ranked. Some information will be gleaned from previous experience of the contractors involved; however, it is important that information is current. If they have not worked for you recently, speak to other competent contract managers who have had recent experience of them.

Record your observations on each contractor on a contract selection record sheet; it is helpful to incorporate this into a scoring sheet to save on duplication.

Step 4: Which is your preferred contractor?

Selecting the preferred contractor for the job should now be fairly straightforward: by comparing prices submitted with your own notes on the abilities of each company, a clear winner often stands out. If several teams are equally competent and you expect each to perform the work to a high standard, then accept the lowest priced tender if all related documents are satisfactory.

If there are several bids within $\pm 10\%$ of your own budget estimate, then look carefully at which team you consider to be best suited to the job. Choose the best-quality team within the price 'bracket'.

Quotes that are more than 15% below your estimate are often wrongly estimated and could result in either a poorly performed job or a bankrupt contractor. You may consider offering the contractors the opportunity to reconsider their bids, and disregard those that are not revised.

If the accepted tender is not the lowest priced, it is good practice to refer your decision for confirmation within your organisation along with your reasons for selecting the best contractor.

Write to all contractors to let them know whether or not they have been awarded the work. For most tenders, a letter of confirmation is all that is required as the tender papers contain all the necessary contract details. Some forms of tender may require a formal contract to be signed.

Step 5: Could future bids be better?

Having invested so much time in preparing a bid it is good practice to give contractors advice on their tender whether they were successful or not. It is always useful to receive constructive criticism, and sharing this information can help improve the quality of future tenders.

Clients should not provide detailed financial information and should not make direct reference to competing companies' tenders. Feedback should be positive and suggestions should be made of how the contractor could increase the chance of submitting a successful bid in the future.

Feedback from the client to contractors should include the following: price, quality of tender, future prospects.

- How did the contractor's price compare with the winning bid? Give a percentage above or below, even if actual prices are not disclosed.
- How did the contractor rate for team ability and skills? Are there gaps in the team's abilities that need to be addressed?
- Did the bid cover everything that was needed? Did the contractor provide the right level of information and did the client understand how the contractor would deliver the job?
- You should let the contractor know of future jobs, and discuss the abilities and availability of the contractor's team.

Selecting tenders: some good practice pointers

- **Write it down** – keep brief notes of your scoring or ranking for each bid and write down the reason for your selection.
- **Get confirmation** – once you have made your decision, check it through with a colleague or adviser, particularly if you decide that best value will come from a bid that is not the lowest priced.
- **Accept the chosen bid** – agree the contract with the winning bidder, going over all the main points and conditions with them. Get their written acceptance before work starts and do not forget to write and tell the other bidders.
- **Give feedback** – making bids involves a lot of work for the potential contractors and most of them are unsuccessful! Spend time on positive feedback and encourage them to bid next time.

All that remains is to agree a start date for the work with the successful contractor and agree a list of the tasks to be performed in advance of work commencing, such as ordering materials, informing site users of the impending work and issuing a press release about the project.

3.4 Running, monitoring and closing contracts



Work in progress!

Once the contract is awarded, everyone will be keen to get work started on site. If the project has been successfully planned, you will now reap the benefits of having all the arrangements in place and can concentrate on joint working between the contractor's team and the client to deliver the best path possible. It is essential to monitor the contract carefully so that the work proceeds according to plan and delivers what is needed. You must ensure product quality, keep within the agreed budget, keep to the timetable and meet requirements such as health and safety, public safety and environmental good practice.

You will need to make swift decisions when monitoring progress and reviewing and updating plans, which will need to be relayed to all involved. The project supervisor's main role is as a communicator, keeping all parts of the project moving together. Communication starts off site. Although you may have been planning and waiting for work to get under way for more than a year, other people will only be aware that something is going to happen when the team arrives on site. A press release, a site sign, a letter to the Community Council and a sign on local information boards will all warn people to expect some short-term disruption in their area. Arriving on site on the first day of work with machinery and discovering it coincides with the local sponsored walk is not a good start!

As project manager you are the communication point between site workers, owners, users, funders and others. Agree a timetable for people to discuss progress and get feedback, usually weekly or fortnightly site meetings and monthly or 3-monthly reports to project partners, depending on the scale of the work. If people know your contact details and are encouraged to get in touch with any queries, you will be aware of the issues before they develop into bigger problems.

Keep brief notes of all decisions, changes to plan and any communication with others. A simple report sheet and a couple of lines on each contact will suffice. Take regular photos as work progresses – before, during and after each major section is built. Photos with people in them are best. This will only use up a tiny fraction of the budget but will provide the best record.

What to expect

The majority of path contracts in Scotland are undertaken on a fixed-price basis. This method allows reasonably easy management of budgets while construction is in progress. As long as the specification and contract conditions have been carefully prepared by somebody with appropriate qualifications and experience, the cost of the completed path works should not vary greatly to that offered in the contractor's tender. Budgetary problems should have been sorted out at the tendering stage. Visit the site weekly or fortnightly, agree progress rates/targets and ensure that the team leader can contact you when you are not on site to ensure planned progress is being made, problems are raised quickly and quality standards adhered to.

Negotiated contracts can be slightly more difficult to manage, especially if they are used to implement experimental type work. Outputs are more difficult to forecast and good team morale is essential to maintain productivity as the incentive to meet agreed targets is less than with fixed-price contracts. Expect to be on site 1 or 2 days each week, especially if you are developing a new technique or trainee team. Try to keep in regular contact with the team leader.

The client should carefully monitor expenditure against the agreed budget and project 'milestones'. Staged payments should only be made for work satisfactorily completed by the contractor at predetermined points or intervals and for "days" carried out; a time sheet filled in by contractors on a daily basis is essential. It is not good practice to make advance payments to contractors for materials or other inputs.

Depending on the type of work that is involved, it is useful to maintain contingency funds. Fairly straightforward work such as repairs to stalkers' paths may require an additional 5%, whereas more technically demanding work may require an additional 10%. If additional work exceeds the contingency figure it is usually difficult to access new funds, and work being undertaken on other parts of a bigger project may need to be reduced. One way to do this is to reduce the overall contract by a percentage and if it is not required it can either be issued as additional negotiated works or retained for use elsewhere if this is applicable.

Path contracts should be subject to time limits, but there should be a fairly generous window for work to take place to allow for delays. Many clients insist that the contractor completes the work at one go, once started, and does not leave the site part-completed. This minimises disturbance and supervision time and improves safety. If this is important to you, include this condition in the contract.

Regular site visits

Be a part of the project. It is important for the manager to be seen on site and the surest way to get what you want is to enthuse the construction team and discuss with them what is needed for each section of the route. Weekly or fortnightly site visits will form the core of contact between the client and contractor while the contract is running. Each site meeting should cover these issues:

- Look at the work completed to date, check that it meets contract and quality requirements and identify any work needed to bring it up to standard. Once the work is satisfactory, it can be 'signed off' and payment approved.
- Look at the next 2 or 3 weeks' work and mark the locations of each construction feature. Identify sensitive areas of the site and agree the design of the next section to be built.
- Look at the whole job and ascertain whether the contract is running to time. If there are problems, identify their cause and, if possible, make changes to avoid more difficulties.
- Address any problems immediately, don't let things drag on. Dealing quickly with issues will lead to a better site and working relationship with the contractor.

Work often takes place on sites far away from both the client and contractor's office. An open and trusting working relationship is essential between the client and contractor. You must spend time discussing solutions, making use of the team's experience. Involve each team member and ask them to make a contribution. Summarise what has been decided with the team leader and leave it to him or her to delegate and organise the team. Acknowledge good work and praise sections that meet your expectations. If sections are not up to standard, explain why and what is required, and ask for them to be redone in time for your next visit. Among trained and experienced contractors it is rare for a problem to persist, but if this is the case meet the contracting company manager on site and explain what is needed. Write to ask for compliance within a set time. If the situation is not rectified, stop work on the remainder of the job and stop payment until the situation is resolved.

Contract disputes are uncommon in pathwork if the client, principal designer and principal contractor agree to a well planned contract. Possible problems are a team building to their 'normal' style and not to the one that you have specified or the most skilled workers being moved to a new site part-way through the contract. These can be rectified, but usually cost time for the client and additional cost for the contractor. The team's performance and willingness to discuss problems and implement decisions will influence your choice for future contracts.

As time will be limited on the site visit, use a prompt sheet to make sure that you cover all the essential points, and give the team leader a copy. Key questions to ask on a site visit include:

- Are the agreed staff members on site and are they suitably qualified and experienced?
- Are staff familiar with the site safety plan and risk assessments and are they being implemented?
- Are they suitably equipped with adequate personal protective equipment and clothing suitable for the conditions?
- Are the specification and contract drawings available and are they being adhered to in terms of quantity and quality?
- What are the ground conditions like? Is the work being undertaken with due care and regard to the surrounding environment?
- Are the team motivated and working together?
- Are the public being kept informed and able to detour safely around the work?

Dealing with variations

Example of an on- site variation order

Works Estimate	Quantity	Unit	Rate	Total
All in 100	100	m	0.14	14
All in 100	100	m	0.14	14
All in 100	100	m	0.14	14
All in 100	100	m	0.14	14
All in 100	100	m	0.14	14
All in 100	100	m	0.14	14
Total				14

Date: 16/11/00

User: [signature]

Weather: [signature]

Striped By: [signature]

The National Trust for Scotland
Postpath Survey
Distance: 101 / 7.06 / 34 / 5.47

During construction it is inevitable that some changes will need to be made to the specification. For example, sudden weather events may intervene: rapid burn rise and flash flooding after a summer thunderstorm may reveal weaknesses in the original specification. Such extremes of weather are becoming more common due to the effects of climate change. The contractor who is on site for an extended period of time may identify solutions that the client did not see when producing the specification. Unlike larger civil engineering projects, it is highly unlikely that the client will have a representative on site at all times during construction. It is essential therefore that potential problems or improvements are identified by the contractor and communicated to the client, along with suggestions for rectifying the problem as quickly as possible.

Contract conditions should identify in advance how variations to the specification should be dealt with. They usually require a verbal agreement following a discussion on site, backed up by written confirmation. It is good practice to give written confirmation of any variation, to make sure that the right work is done and to minimise the possibility of disputes later. This can be by letter, or a 'variation order' written and issued on site.

Time sheets and activity records should be kept throughout the contract period. Records about team and individual outputs can be very useful for providing accurate cost and output forecasts.

The financial implications of changes to the specification, or failure to meet targets as expected, should be discussed with the client at regular intervals. The client may be able to reschedule payments to help the contractor cope with unforeseen problems. Clients may also be constrained by cash flow from grant aid partners, and early detection of changes to timing is needed, particularly if the project is going to finish earlier than anticipated.

Monitoring safety performance

Site Inspection		Date:			
Site:	Contract:	Contractor:	Site Supervisor		
			Yes	No	N/A
Safety Management					
Named Persons on Site					
First Aid Kit available					
Safety Plan available					
Named Competent Person available					
All persons understand Safety Plan					
Communication System arranged					
Site Materials and Substances stored correctly					
Emergency response system in place					
Welfare					
Personal Hygiene materials available					
Toilets available					
Rest area available					
Refuge available					
Equipment					
In good condition					
Stored safely					
Used correctly					
Environment					
Site tidy					
Waste managed					
Plant					
Is what stated on Method Statement on site					
In generally good order					
Safety attachments working					
Maintenance sheets seen					
User trained					
Up To Date Inspections					
Excavation reports seen					
Machinery reports seen					
Lifting tackle reports seen					
Lifting appliances reports seen					
People					
Wearing suitable clothing					
Working safely					
Total numbers on site as per Safety Plan					
Do they use provided Welfare facilities					
Comments:					
Action:			Follow-up date		
Site Supervisor			Contractor		

It is important that health and safety controls identified in the [risk assessment](#) and site safety plan are implemented and that they are monitored throughout the project. Any improvements that are identified should be discussed with the client and incorporated into the plan. The contractor's identified site safety officer is responsible for ensuring that the safety plan is implemented by the team, reviewing safe working with the client and reporting this back to the team. It is often useful for the team leader to be involved in the safety discussions on site to ensure that there is no confusion over what needs to be done.

The regular site visits should include discussion and checking of safety procedures, performance and emergency readiness. The aim is not to catch out the contractor, but to identify and reinforce good practice and to spot weaknesses and eradicate them.

- If safe working practice is not being followed or is proving to be ineffective, three options are available, depending on the severity of the problem.
 - If the breach is minor, such as using the wrong lifting techniques, speak to the safety officer and check during the next visit.
 - If the risk is major but easily rectified, such as using the wrong tools for the job because of lack of equipment, then move the team and do other work until the tools are available. Back this up with a written instruction to the company.
 - If the problem is major or continuous, halt the work and prevent repetition by disabling the machinery or ceasing work and extending the cordon for public access.
- Do not allow work to restart until an alternative and safer method is found and a risk assessment prepared. Write and warn the company against repetition. It is the client's responsibility to stop work on a site that is unsafe; this may involve removing the contractor from site until the problem is rectified.

Project nearing completion

The closing phase of a project is usually a period of intense activity. When path construction is nearing completion, there are a large number of tasks to complete. It is useful for the client to produce a written 'snag' list towards the end of the construction works. This clarifies work outstanding and the quality issues that still need to be addressed. The team should not leave site until this is completed and checked by the client, including all site restoration work.

It is good practice to provide a formal completion certificate or letter indicating that works are complete, because it allows both parties to know where they stand. The contractor should issue a 'final' invoice at this stage. The final invoice should be itemised and include the total value of the contract, including any additions relating to variation orders and minus any staged payments and any retention that is held by the client until the end of the guarantee period.

In the case of fixed-price contracts, final invoices should be paid only when the client is satisfied that the work has been completed in accordance with the specification and is of adequate quality. Ensure that all documents and information required for completing the contract have been supplied. These may include 'as built' drawings and plans, records of path user numbers and site safety reports. In the case of negotiated contracts, also supply completed time and activity sheets. A contract completion letter can then be issued and final payment made less any retention fees for work under the warranty period. Remember by signing off a site as completed you are saying it is finished to the standard you/your organization are happy with. If the work is not to this standard it should not be signed off until it is made so. It is the contract manager's role to ensure the contractor is working to your specification.

One year later

The contractor is usually required to guarantee path work for 1 year from completion of site work. The guarantee is for damage caused by poor workmanship and settling-in, but not for maintenance, which should start immediately site work has finished. The client and contractor should arrange to visit the site 9 or 10 months after the main work has ended to look over the whole site and identify any remedial work required. It can be difficult to pinpoint why something has failed, and whether the work is classed as remedial repairs or routine maintenance. The amount to be put right by the contractor is usually based on negotiation, and it is often sensible to pay the contractor to carry out maintenance at the same time as remedial repairs.

On successful completion, the retained 5% or 10% is then paid to the contractor and all obligations under the contract have now been fulfilled. In general, work is usually done well first time round and the level of remedial work needed is typically around 2% or 3% of the total job, if any.

Reporting back

To close the project you have to report back to the project partners on what has taken place. This is also an opportunity to publicise what you have achieved. Different funding organisations will require different levels of reporting: good project records capturing the relevant information make this task much easier. Most funding partner organisations will require at least the following information:

- principal outputs: kilometres built, signs erected, surveys carried out;
- partnership contributions: who gave what, including time and support as well as money;
- changes to the original proposal: any major changes to plans while work was in progress;
- employment created as a result of the project: in full-time-equivalent jobs (FTEs);
- maintenance: arrangements made and who is responsible for ensuring it is carried out;
- publicity generated by the project: attach any press releases, articles or comments from users (good ones!);
- site: photos of the site before and after work, and some action shots of work in progress;
- visitor use: the number of site users, both before and after the project (using people-counters) and during the project (recorded by the team).

Many major funders provide their own report forms, and require you to follow their format. Even so, attach a copy of information in your own style, including photos and

some quotes from people involved in the work or using the site. Positive feedback and a personal touch get your organisation remembered.

Completion of a project also provides a good opportunity for wider publicity, such as in the local press and radio, specialist user-interest magazines, and possibly the funder's in-house news sheets. Use this to promote the path or path network and promote your own organisation. Also acknowledge organisations which have supported and funded the project.

Publicity coverage will depend on the scale and significance of the project, as well as the effectiveness of 'plugging' the story. The PR section of one of the funder organisations might be prepared to do this for you. Ask to see a draft of the release and make sure the right people get the credit.

How did we do?

At the end of every major project, time should be spent evaluating the project. Some funders may require an evaluation of the project as part of their grant conditions. Project evaluation should focus on how it was delivered rather than what was produced, and look for ways of improving the delivery of future projects rather than apportioning blame for things that went wrong!

On smaller projects, the client and contract staff will probably carry out the evaluation. Part of the evaluation should be based on a discussion with the site team who did all the hard work. On a large project an independent organisation is often commissioned to undertake a review and provide an external and impartial evaluation. Pathwork projects can be evaluated on the following criteria:

- quality of the finished pathwork;
- compliance with environmental requirements;
- compliance with timing and dates;
- compliance with the specification;
- compliance with contract conditions;
- compliance with information contained in the contractor's bid;
- attention to remedial work;
- team skills;
- organisation and supervision;
- level of client supervision required;
- communications and working relationship;
- health and safety.

Safety reporting is a statutory requirement under the CDM regulations. If the project involved more than one contractor a health and safety file will be passed to the client at the end of the contract. This must be available to anybody who needs the information for 10 years after project completion and must be updated when necessary. More detailed advice about the information to include in this file is given in [Maintaining site health and safety](#). Additions will include the frequency of safety audits and the types of maintenance work required.

Motivation may be waning once site work is complete, but it is essential that the project is fully closed, reporting tasks completed and the relevant organisations and individuals informed. Promoting the positive outcomes of a completed project will encourage funding organisations to offer support for similar projects in the future.

- Evaluate the success of the contract openly and honestly and learn through your success and failures.
- Ensure that you have met all the requirements set out in grant conditions from funding organisations.
- Make sure that the public is aware of increased path provision and encourage use of the route.

4. Managing health and safety

4.1 Health and safety - statutory framework



An introduction to health and safety is given here, but please note that this is intended as a guide only and is neither exhaustive, nor a definitive interpretation of the law. You are advised to seek advice from your organisation's health and safety competent person or a health and safety consultant if you are unclear about any aspect of the law, and your duties and responsibilities. Comprehensive information about health and safety is available from the [Health and Safety Executive \(HSE\)](#) website. The main piece of legislation covering health and safety at work in the United Kingdom is the:

Health & Safety at Work Act 1974

The Health & Safety at Work Act (HSWA) sets out a framework of legal duties, which are applied through regulations. These regulations provide the minimum standards which must be applied in particular industries or work situations to manage health, safety and welfare at work. The main regulations that affect upland pathwork are the Management of Health & Safety at Work Regulations 1999 and the Construction (Design and Management) Regulations 2015.

HSWA applies to all 'duty holders' (employers, employees, controllers of premises, designers, manufacturers, suppliers, self-employed) and their places of work. The term 'duty holder' describes a function, not an individual or organisation. For

example, a contractor will have both the duties of an employer (towards their employees) and a controller of the construction site (to anybody working on or visiting the site).

HSWA requires that you use reasonable care to ensure against the risk to health and safety of everyone affected by your work, including members of the public.

It is the duty of employers to:

- protect the health, safety and welfare at work of all their employees;
- provide and maintain systems of work that are safe and without risk to health;
- provide and maintain adequate welfare facilities;
- establish and maintain a healthy and safe working environment, including access;
- provide information, instruction and training to employees to make sure they carry out their work safely;
- provide effective site supervision to make sure safe systems of work are adhered to;
- provide and maintain safe hand tools, plant, machinery, equipment and appliances;
- provide protective clothing and equipment;
- engage and work with employees and others on matters of health, safety and welfare;
- arrange for, or provide, safe methods of using, handling, storing and transporting articles and substances.

If five or more people are employed, it is the duty of the employers to:

- prepare a written statement of health and safety policy;
- consult with all their employees over matters that affect their health and safety at work.

It is the duty of employees to work in a responsible manner, to:

- take reasonable care of their own and other people's health and safety who may be affected by their work;
- co-operate with their employer in all matters of health, safety and welfare;
- tell someone (employer, supervisor, or health and safety representative) if they think the work or control measures are putting theirs and anyone else's health and safety at serious risk;

- follow the information, instructions and training they have received from their employer or supervisor to do the work safely;
- use and maintain the hand tools, plant, equipment and appliances, including protective clothing and equipment, given to them to do the work safely.

The self-employed have much the same duties as employees. It is also worth noting that generally a self-employed person working in an employers' business undertaking would be effectively considered as an employee for health and safety purposes for the duration of their working time under that employer's control. For example, a self-employed path worker working for a contractor could be hired on the contractors' terms and be under their control on site.

It is the duty of designers, manufacturers and suppliers of articles used in construction, to:

- make sure, as far as they can, that articles are designed and constructed so they are safe;
- make sure adequate information is supplied for the use of the articles;
- take steps to provide revisions of information if a serious risk to health or safety becomes known.

HSWA enforces a duty on all people, both at work and members of the public, including children, not to intentionally interfere or misuse anything provided in the interest of health, safety and welfare.

Health and safety regulations

Health and safety regulations place duties on employers and employees and it is a criminal offence to break them. Examples of health and safety regulations that have an effect on upland path projects are given below.

Management of Health & Safety at Work Regulations 1999

These regulations require employers to introduce management procedures in to the working environment to ensure that health and safety issues are managed properly. Like HSWA, they apply to every work activity undertaken in the working environment.

Requirements include but are not limited to:

- Employers, and self-employed people, **must** carry out 'suitable and sufficient' assessments of the risks to their employees and anyone else who is affected by their work activities and put in place controls to manage these risks to acceptable levels (as low as reasonably practicable).
- Employers must appoint a competent person to advise and assist them in meeting their health and safety duties.

- Employers must ensure there are appropriate arrangements to deal with all foreseeable emergency situations.
- Employees must be provided with relevant information and training to ensure their health and safety at work.
- Employees must follow any health and safety procedures or instructions provided by their employer, and report any health, safety, or welfare concerns back to them.

Construction (Design & Management) Regulations 2015

The Construction (Design and Management) Regulations 2015 (commonly referred to as CDM or the CDM Regulations) are the main set of regulations for managing the health, safety and welfare of path construction projects, from the planning stage through to the end of construction. The aim is to ensure that a path construction project is planned, designed and managed to eliminate hazards and reduce remaining risks to acceptable levels for workers involved in the pathwork, and those using the path and carrying out future maintenance work, so that no one is harmed.

CDM defines roles and legal responsibilities for the five main duty holders (client, principal designer, designers, principal contractor, and contractors) and workers. In particular the CDM Regulations require that designers (including a principal designer) and contractors (including a principal contractor) must have the skills, knowledge and experience to fulfil their duties in a way that secures the health and safety of any persons who might be affected by the project. Organisations fulfilling these roles also need to have the organisational capability necessary to carry out the duties. There must be effective communication and co-operation between all duty holders involved in the project so that everyone contributes to health and safety. There is a duty on all workers to co-operate with others and report any health or safety issues to those in control. More detail about CDM is provided in the next chapters or can be found on the [HSE website](#).

The CDM Regulations apply in full to all construction work. If the path construction work is expected to last more than 30 days and have more than 20 workers working on the project at any one time, or if it will involve more than 500 person days the project must be [notified](#) to the Health and Safety Executive.

Manual Handling Operations Regulations 1992 (as amended)

The [manual handling operations](#) regulations cover all aspects of manual handling of loads in all working environments. They are particularly relevant to upland pathwork as some kind of lifting, pushing, pulling or supporting a load by hand is inevitably involved in most projects.

The employer needs to ensure that manual handling is carried out in a safe manner, with minimal risk. It is the responsibility of the employer to assess the risks from manual handling activities prior to carrying them out and identify ways to eliminate or reduce the need for manual handling, including the provision of mechanical aids.

Where manual handling is still required then other ways of reducing the risks are required, e.g. changing the work method, providing additional assistance, making loads smaller and providing training on safe moving and handling techniques.

Provision and Use of Work Equipment Regulations (PUWER) 1998

Work equipment includes all hand tools, equipment, vehicles and plant used at work. The [PUWER](#) regulations must be viewed in relation to the type of work equipment to be used. From a shovel to a tracked excavator, the requirements must be followed wherever there is a risk of injury from work equipment.

The main requirements for work equipment are:

- Work equipment must be suitable for the work it is being used for.
- Work equipment must be regularly inspected and maintained by a competent person in an 'efficient state and good repair'.
- Path workers should be given sufficient information, instruction and training to allow them to properly and safely use the work equipment.
- Any dangerous parts of work equipment should be guarded to prevent anyone coming into contact with them.
- All site vehicles must be suitable for the use they are put to, maintained in accordance with the manufacturers servicing schedules, and checked regularly by competent operators to ensure they remain safe to use.
- All site plant must be suitable for the intended use, in good working condition, and well maintained by competent operators. All plant should be inspected in accordance with the manufacturer's servicing schedules.
- Plant operators of tracked excavators must be competent and certificated to ensure safe operation of the plant.

Lifting Operations and Lifting Equipment Regulations (LOLER) 1998

[LOLER](#) applies to all work equipment for lifting and lowering loads and to lifting operations using that equipment. Lifting equipment must be suitable for use and properly examined, inspected and maintained (as appropriate). Lifting operations must be properly planned, supervised and carried out safely.

The regulations require the following to be carried out (this is not an exhaustive list):

- A competent person properly plans all lifting operations.
- All lifting equipment is thoroughly examined by a competent person at least once every 12 months or more frequently if recommended by the competent person and weekly by the operator.

- Lifting slings, chains, eyes, etc., are thoroughly examined by a competent person every 6 months and weekly by users.
- Written records must be produced and kept for all inspections.

The employer must ensure that:

- Lifting equipment operators are trained to the required standard not just to operate the machine but to inspect it weekly.
- Those supervising lifting operations are trained to the standard required to plan each lift correctly.
- Those responsible for slinging loads are trained to inspect the lifting accessories and sling the load safely.

Control of Vibration at Work Regulations 2005

The [vibration at work regulations](#) place a duty on employers to assess and manage the risks associated with the use of vibrating tools and equipment, which includes power barrows and compactor (whacker) plates. This may impact on upland path teams by limiting the amount of time equipment is used per day per individual. The main controls are to reduce the amount of vibration given off by a machine, or reduce the amount of time spent in contact with the machine unless machine mounted tools can be used instead of hand-held ones. When you are selecting tools and equipment, always choose the ones with the lowest level of vibration.

Control of Noise at Work Regulations 2005

These [regulations](#) are similar in nature to the Control of Vibration at Work Regulations 2005 and require employers to assess the risks from noisy tools and equipment, and put in place measures to ensure that exposure to noise doesn't exceed certain values. Depending on exposure levels, the employer may be required to provide hearing protection, ensure that it is worn by employees and properly maintained. Look for quieter types when selecting new equipment.

Personal Protective Equipment (PPE) Regulations 1992 (as amended)

The [PPE regulations](#) cover all types of protective clothing and safety equipment that is worn by the person requiring protection. Where a risk remains that cannot be controlled by any other control measures then suitable PPE must be supplied to path workers - the contractor has a strict legal duty to provide it. The workers have a legal responsibility to wear and care for the PPE correctly. The most common types of PPE used in pathwork are used to protect head (safety helmet), eyes (safety spectacles or goggles), ears (ear plugs or ear defenders), hands (hard wearing gloves), and feet (safety footwear). PPE also includes hi-visibility vests and warm, waterproof clothing. The regulations also state that PPE should be of a suitable standard and be maintained and stored correctly. The requirement to wear hearing protection is covered within the Noise at Work Regulations 2005.

Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended)

The [COSHH](#) regulations are designed to protect people at work from being exposed to hazardous substances. The principles behind the regulations are that:

- Employers must carry out an assessment of the risks to the health of employees and anyone else affected by the use of hazardous substances and introduce suitable control measures to protect those working with such substances.
- Employees are required to properly use the control measures provided by their employer to protect them from any harmful effects of such substances.

Examples of harmful substances which may be encountered on upland pathwork sites are some fertilisers for ground restoration work and fuel and oils for plant.

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013

[RIDDOR](#) 2013 requires that accidents which injure a person causing them to be off work for more than seven consecutive days are reported to the Health and Safety Executive (HSE). If a fatality or a specified injury occurs (as listed in the regulations), e.g. a bone fracture other than to a finger, thumb or toe; as a result of a work-related accident then a report must be made to HSE. If a person is diagnosed with certain defined diseases which are caused by working practices or occupational exposure to a hazardous substance or biological agent, e.g. Lyme Disease, that must also be reported to HSE. RIDDOR also defines when a 'dangerous occurrence' – i.e. an incident occurs but no one is injured – should be reported to HSE. For example, if the load-bearing part of any lifting equipment (but not an accessory for lifting) collapses, overturns, or fails then this must be reported to HSE. Further information is available on the HSE website which can also be used to report certain incidents.

Working Time Regulations 1998

These regulations define the maximum weekly working time, as well as the pattern of work and holidays, plus rest periods. The regulations include [maximum weekly working hours](#) of an average of 48 hours for most workers, although individuals can choose to 'opt out'. There are specific regulations for young people. Further information can be obtained from [ACAS](#).

The Health and Safety (Fees) Regulations 2012 - Fee for Intervention

The Health and Safety Executive operates a [Fee for Intervention](#) (FFI) cost recovery scheme, which came into effect in October 2012. Under The Health and Safety (Fees) Regulations 2012, those who break health and safety law are liable for recovery of HSE's related costs, including inspection, investigation and taking enforcement action.

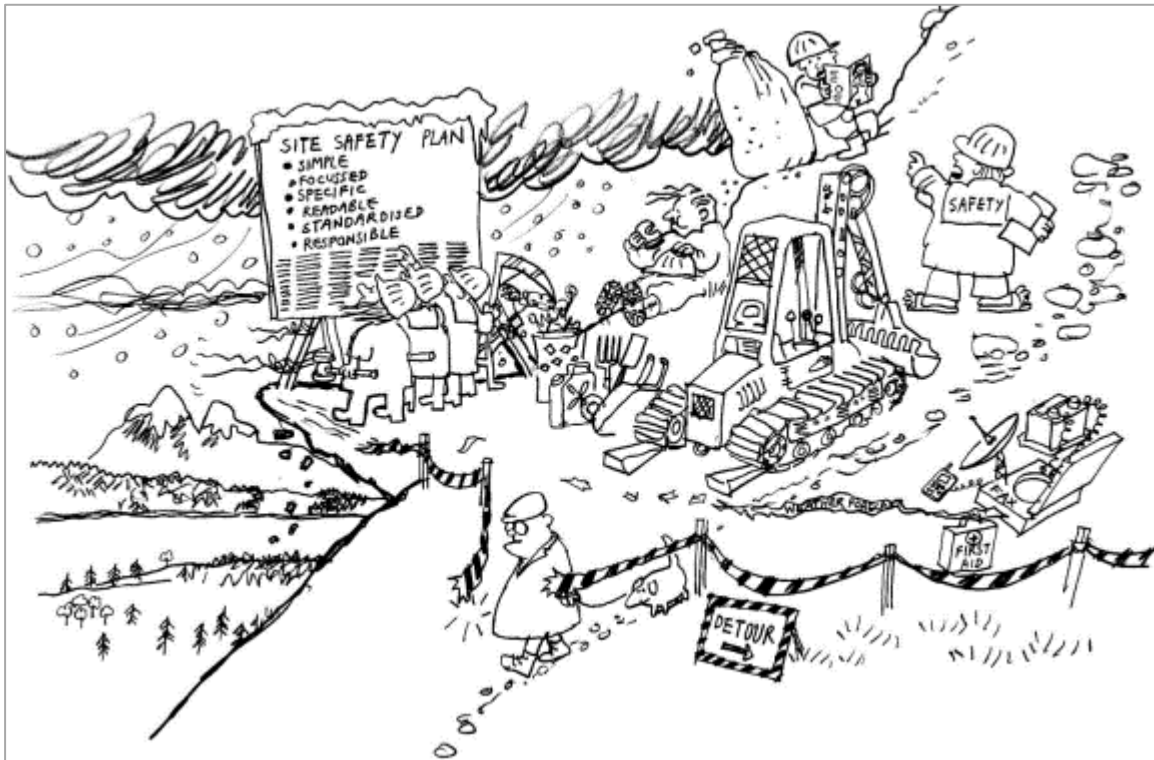
Issues

Plenty of time should be invested in planning health and safety into upland path projects before anything happens on the ground, with the focus on applying the general principles of prevention (see [Appendix 2](#)) to avoid dangerous situations rather than complex ways of dealing with them when on site. It is better to get the health and safety right from the start, rather than risk injury or ill health if something goes wrong.

Good planning, design, and management of upland path projects involving health and safety is explained in detail in the next chapters, based around the application of the Construction (Design and Management) Regulations, which are applicable to all upland path projects, regardless of size, complexity, and the level of risk involved. You will need to interpret and adapt the CDM Regulations to your own projects, your own organisation, and your own way of working. Whatever approach you adopt will need to meet the same regulations.

Most of the emphasis on health and safety communication works down the line – checking that designers and contractors have the right information at the right time and are working safely by taking the right steps. Do not forget to also go ‘up’ the line: clients, managers, project sponsors, funders, partners, directors, shareholders and trustees all have health and safety responsibilities. They must make sure that you have the information, instruction, training, supervision, support and resources you need to deliver health and safety according to the policy they have established. Build time for health and safety planning into your project; add additional health and safety resources into your project proposals and plans. Include health and safety as a routine part of your project reporting. Do not forget to seek help when you need it and if you are unsure about potential health and safety matters, stop the project immediately and seek assistance. Upland pathwork can only proceed when all members in the project team are confident that they are able to plan, design and manage the project safely without harm to anyone.

4.2 CDM in upland path projects



If you are managing an upland path project, you can either take on the responsibility to avoid or reduce the risks posed by the path work activity and design hazards, or you can oversee someone who carries out this function. This legal duty of care applies to all path work, including non-routine maintenance work, and is set out in the Construction (Design and Management) Regulations 2015 (CDM). To comply with the CDM Regulations, an effective system of project management involving good planning and design must be applied to every path project, right from the start.

Healthy and safe sites do not happen by accident, but accidents do happen on unhealthy and unsafe sites, where health and safety standards are poor.

The CDM Regulations apply to all upland path work activity – when people, hand tools, plant, and materials are involved. It applies equally to small and large projects. In practice, all path projects require assessment of risks, careful design, well-supervised site work and teamwork involving good communication, coordination and co-operation. Therefore, a good project management system should be applied to all projects, meeting the needs of CDM Regulations.

The effort and time spent on health and safety planning and preparation will be less for regular and routine maintenance tasks on an existing path and more extensive and complex on the rebuilding of an old path, or the building of a new one. It will involve formal design work, competitive tendering and specialist path contractors. Whatever the size and complexity of a project, and the nature of risks, a healthy and safe site requires thorough and constant application of a project management system that considers health and safety.

What are my health and safety objectives?

Having a healthy and safe path project involves many factors: good planning and design; a well-coordinated pre-construction phase; a safely delivered construction phase; the right materials; well-trained workers and supervisor; the right tools and machinery for the job; a first-aider; the weather; and not having visitors wandering about where the work is taking place. The objective for the client, with their team is to bring all these things together by starting to plan health and safety right from the start and lead the team via effective communication, coordination, and co-operation.

The CDM Regulations provide a framework for planning, designing and managing health, safety, and welfare on all path projects. It requires health and safety to be a vital part of all project stages and everyone involved must work together to improve health, safety and welfare standards.

Key elements to securing health, safety and welfare on path projects, are:

- Managing the risks by applying the general principles of prevention.
- Appointing the right people and organisations at the right time with the right skills, knowledge, training and experience; and if an organisation, the organisational capability.
- Making sure everyone has the information, instruction, training and supervision they need to carry out their jobs in a way that secures health and safety.
- Duty holders co-operating and communicating with each other and coordinating their work.
- Contractors (or principal contractors when there is more than one contractor involved) consulting with workers and engaging with them to promote and develop effective measures to secure health, safety and welfare.

It is neither possible nor desirable to render an upland path completely risk-free. Rather, the aim is to understand and predict the hazards found naturally in working on a steep, remote and exposed hillside and to fit into this testing environment by working at the right time, with good techniques and well-trained workers. Often, this involves working with the environment by using on-site materials, working only in the summer and not working in wet and cold conditions. Safe working must largely respond to and work around natural hazards and not try to eliminate them through over construction or heavily mechanised working.

Path management generally has a good safety record both for contractors building the paths and the public using them after they have been repaired. Most workers are motivated, considerate and attentive to health and safety.

Working on a path repairing it is very different from going for a walk in leisure time in the hills. When at work, whatever the terrain, health and safety always applies. The employer is responsible for ensuring all work is carried out as safely as possible and the employee is responsible for working safely and not putting others in danger.

Under the CDM Regulations, all path projects require a construction phase plan to be prepared by the contractor (or principal contractor), to manage the path work activity during the construction phase, overseen by the contractor (or principal contractor). There is no exception to this rule!

Compared with building work on a flat lowland site, upland pathwork is a relatively simple type of construction, but takes place in a less controlled environment. Pathwork tends to use few chemicals or power tools and has little sub-contracting, but work takes place on steep slopes, in poor weather, in remote areas. Identify the key hazards for your sites and concentrate most effort on understanding and eliminating or reducing exposure to them.

The design of a path and its drainage features should focus on avoidance and reduction of risk. Once key hazards are identified and understood, think about the factors which increase or decrease the risk of harm to those affected by the hazards. The weather is seasonally affected and changes daily, therefore it may be best for work to take place between May and September. The weather forecast can be checked every morning and the tasks that are safe for that day can be decided as a team. On wet days, borrow pits and surfacing will be safer than moving boulders on a steep slope.

Application of CDM

The CDM Regulations apply to all path projects when construction work – involving people, hand tools, plant and materials - takes place to build new or maintain existing structures, such as bridges, aggregate paths, stone pitching and drainage features. Under the CDM Regulations a structure is anything from a simple earthwork to a large bridge, or a structure designed to preserve or alter any natural feature. CDM covers path construction, but does not apply to non-construction work such as routine maintenance carried out on an existing path. The regulations do however apply to non-routine maintenance work, such as repairing or rebuilding a path. It also applies to dismantling or demolishing a bridge.

Path maintenance considered as construction work

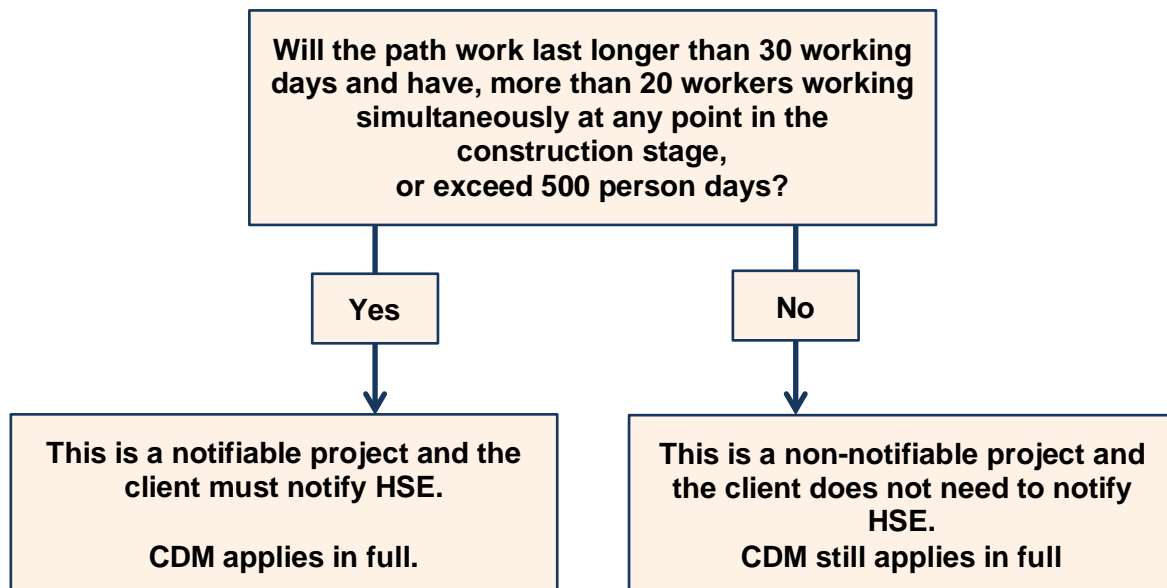
- Rebuilding a culvert and path after floodwaters from a nearby burn has caused damage.
- Repairing an aggregate surface on a slope damaged by water running down it.
- Resurfacing a worn out aggregate surface where the stone base layer underneath is exposed and washing out.
- Building an aggregate path in damage zone to provide a surface to prevent hill walkers tramping on the thin vegetation and causing more erosion.

All examples will need materials, hand tools, and machinery to carry out the work.

Project notification

Part of the CDM Regulations is about project notification, but the main focus is on project coordination.

Notification of a path project is a stand-alone requirement of the CDM Regulations and does not result in additional duties for the duty holders involved. If your project meets one of the thresholds, you must notify your project to the Health and Safety Executive as soon as possible before the path work begins.



The responsibility to notify the project is placed on you as the client. Whilst it is acceptable for someone else e.g. the designer or principal designer to notify HSE on your behalf, the duty of notifying a project is not one that you can delegate out. Therefore if someone notifies HSE on your behalf, they have to do this as if they are you. HSE has produced a step-by-step guide to completing the online F10 form for clients to notify their projects. Both [the guide and the F10 form](#) can be found on the HSE website.

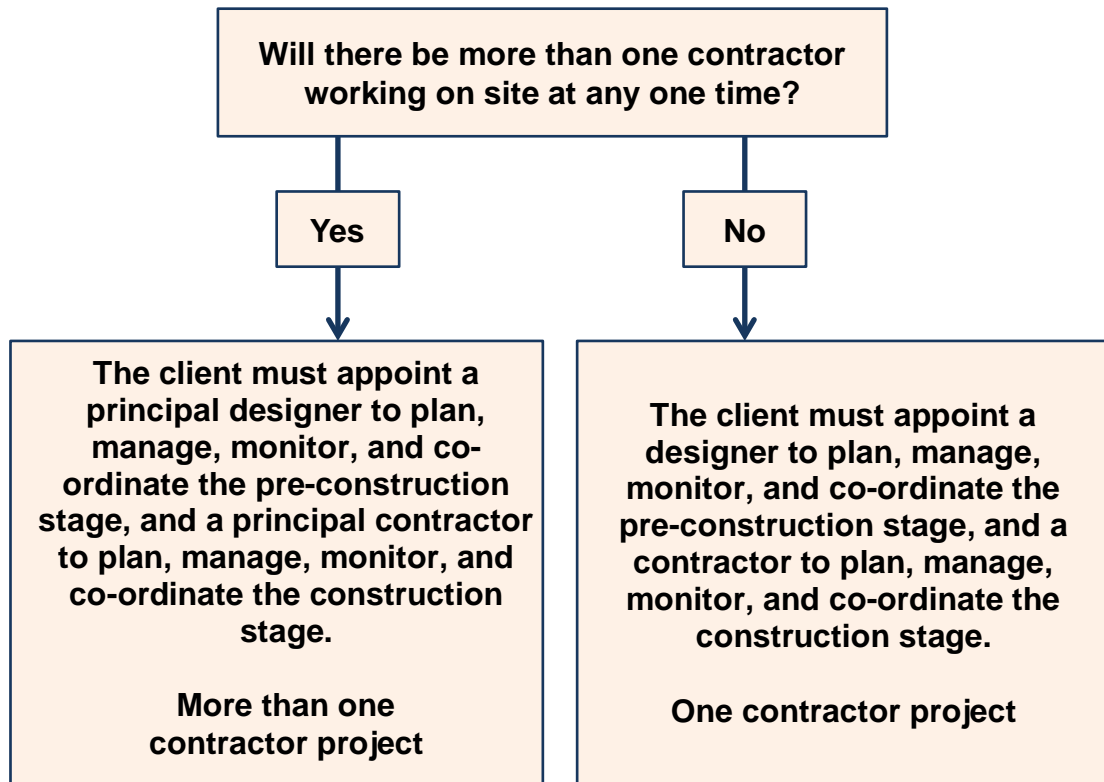
Does this path project need notified to HSE?

The outdoor access trust will be rebuilding three kilometres of eroded path using one contractor. Works are expected to last three months and involve two two-man teams using tracked excavators and power barrows. There will be four workers in total working on site at the same time on Mondays to Fridays each week, staying in remote site accommodation.

60 working days and 4 workers involved so the project does not need notifying to HSE. (60 x 4 = 240 person days)

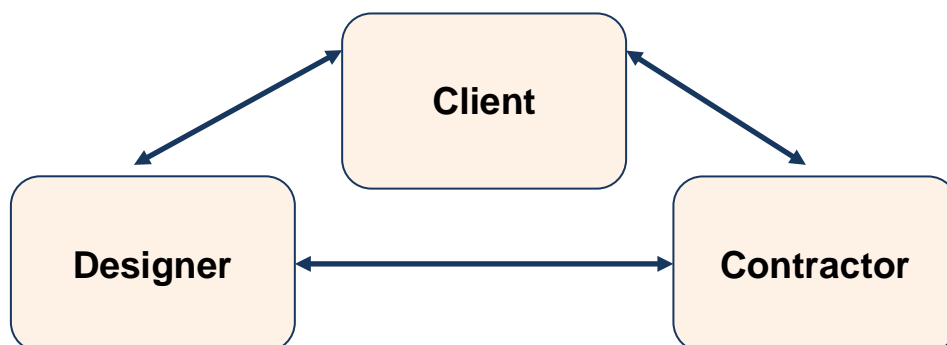
Project coordination

The main part of the CDM Regulations is about project coordination. The number of contractors working on site at any time determines how the project is coordinated and this influences which duty holders are appointed into a project team.



One contractor project

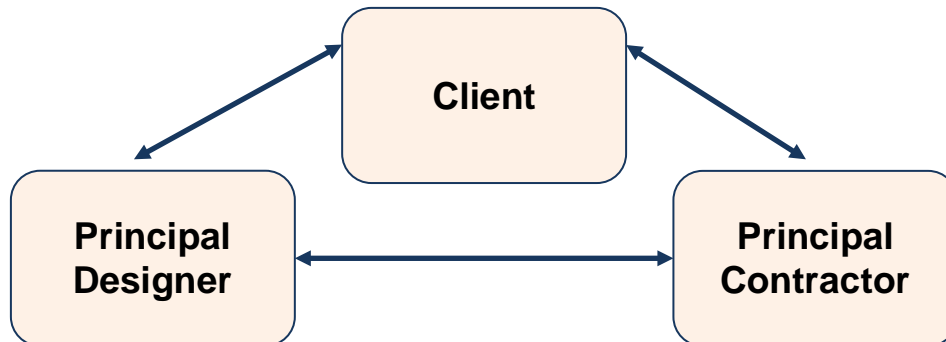
Where there is only one contractor, or if it is reasonably foreseeable that only one contractor will be working on site at any time, the client must appoint a designer and a contractor in writing.



The designer works with you during the pre-construction and construction phases and with the contractor during the construction phase. The contractor's role includes co-operating with you and the designer throughout the construction phase, but also during the pre-construction phase if they are appointed by then.

More than one contractor project

Where there is more than one contractor, or if it is reasonably foreseeable that more than one contractor will be working on site at any time, the client must appoint one designer as the principal designer and one contractor as the principal contractor in writing.



The principal designer manages the pre-construction phase and assists you with your responsibilities. Their role extends to the construction phase by working with the principal contractor. The principal contractor manages the construction phase. Their role involves co-operating with you and the principal designer throughout the construction phase, but also during the pre-construction phase if appointed by them.

You appoint the principal designer at the planning stage to plan, manage and coordinate the planning and design work. They can help you gather the information about your project that others will need to know. They will also make sure that if other designers are involved they are doing all they can to check the path design is safe for others to build. An organisation usually holds this role on larger projects and an individual on smaller projects. They will need to have:

- Technical knowledge and experience of similar path construction work.
- An understanding of how health and safety is managed through the design process.
- Skills to oversee health and safety coordination and ongoing design.

The principal contractor is generally appointed at the tender stage, but if you want them to do design work, you can appoint them at the planning or design stage. The principal contractor will need to plan, manage, and coordinate the path work. They generally hire and manage other contractors to do the work on site.

More than one contractor

A contractor would be the principal contractor if appointed by the client to employ stone workers to build stone pitching and to hire a helicopter company to lift bagged stone on site.

Regardless of the number of contractors, the client must appoint duty holders as soon as practical in writing, and in any event, before the construction phase begins. Ideally, the principal designer should be appointed at the planning stage to be involved in the design stage with other designers. If the client fails to appoint any of these duty holders, the client must fulfil the legal duties (responsibilities) themselves.

Who does what under CDM

Delivering a safe and successful path project involves a team effort to improve communication and co-operation among all involved. CDM 2015 defines five main roles and an additional role, the 'worker'. Depending on whether the project is notifiable or not and the number of contractors working on site at any time, those appointed as 'duty holders' are given various legal duties (responsibilities) to perform on a project. The duty holder roles are:

Duty holder	Key role	Who does it in pathwork?
Client – individual or organisation for whom a path project is carried out, or who carries out a project themselves	Management of their project. Makes sure the project is set up so that it can be carried out in a way that adequately controls the risks to the health and safety of everyone who may be affected from start to finish	Path owner or manager e.g. John Muir Trust
Designer – individual or organisation involved in planning and design phases	Preparing and modifying a design for any part of a path project by eliminating the risks if possible, or reducing the remaining risks to acceptable levels so no harm comes to anyone from their design	Project officer/ manager, external consultant
Principal designer - individual or organisation appointed to fulfil the Principal designer duties	Leads on the planning, managing, monitoring, and coordinating of health and safety at pre-construction phase, when more than one contractor is involved	Path manager, external consultant
Contractor – individual or organisation who does actual path work	Leads on the planning and managing path work under their control so that it is carried out in a way that controls risks to health and safety of everyone who may be affected	Site supervisor
Principal contractor – individual or organisation appointed to fulfil the Principal contractor duties	Leads on the planning, managing, monitoring, and coordinating of health and safety at construction phase, when more than one contractor is involved	Site supervisor/ manager
Worker – individual who works for the contractor	Takes an active part in helping to manage health, safety and welfare on site	Stone workers, path builders, plant operators

Devising your own project system for managing health and safety

There are many project systems for managing health and safety, each adapted to the needs of particular industries, types of construction, procurement and administrative arrangements. In path construction, there are two main approaches based on the number of contractors involved:

- Manage pre-construction directly – manage construction indirectly – project involving one contractor:

The client appoints and works with a designer to design the work. The client plans, manages, monitors and coordinates the health and safety during the pre-construction phase with their appointed designer involved. The client then appoints a contractor at the tender phase, to plan, manage, monitor and coordinate health and safety at the construction phase. The advantage of this system is direct control of health and safety during the pre-construction phase but the control of health and safety during the construction is the contractor's responsibility. The drawback is that someone needs to monitor the contractor to make sure that the right decisions are made on health and safety matters with design changes. The designer or client can undertake this monitoring, working with the contractor during the construction phase.

- Manage pre-construction directly – manage construction indirectly – project involving more than one contractor:

The client appoints and works with a principal designer (internally or externally) to oversee and lead on design work and planning, managing, monitoring and coordinating health and safety during the pre-construction phase with another appointed designer involved, if required. The client appoints a principal contractor at the tender phase to be the main contractor who can then appoint other contractors, if required, to carry out the work. The principal contractor will plan, manage, monitor and coordinate health and safety at the construction phase, whilst controlling the other contractors appointed by them. The principal designer undertakes the coordination task on behalf of the client. The principal contractor manages the construction phase, but the principal designer works with the principal contractor to ensure that the right decisions are made on health and safety matters with design changes. If the principal designer is not involved, the client will need someone to carry out the monitoring.

The CDM Regulations allow one individual or organisation to fulfil more than one duty holder role. However, the general feeling is that the principal designer should be independent in order to provide an independent view on the design; making sure that all hazards are identified, eliminated where possible, or residual risks are reduced and controlled to acceptable standards so that no one is harmed. If a project involves simple, low risk work, then it may be appropriate for the principal designer role to be fulfilled by one of the other duty holders. It is up to the client to make a judgement on what is appropriate for their project.

We'll now consider how a project team can fulfil the requirements of CDM to benefit the whole project team, especially the client. We encourage you to apply the principles to bring benefits to your team, irrespective of the requirements of CDM.

The client function

If you are the client, you have a great opportunity to influence the way the path project is delivered. In many cases, it will be obvious who is fulfilling the client role – usually the person or organisation that initiates and funds the project is the client. However, there are situations where a number of parties may have a part to play in initiating and funding a project. In this situation, it may be prudent for one party to accept the client duties in writing. In the absence of such a move, all client parties will be deemed to hold these duties.

In the initial stages of your project, you should focus on the following:

- Defining your expectations in terms of project delivery and health and safety performance.
- Selecting an individual or organisation to advise on managing project risk and CDM compliance.
- Assessing the competence of designers and contractors you appoint and taking steps to address any shortcomings, particularly in terms of health and safety, identified during the initial phase of the project.
- Making sure information needed to permit the project team to develop a safe design solution is made available, even if this means commissioning surveys (e.g. site investigations) to identify problem areas.

If you display contradictory attitudes towards managing risk, this will communicate itself to the project team and undermine efforts to deliver a safe project. For example, imposing unrealistic timescales on project delivery will neutralise any stated intent to prioritise health and safety.

If you take the right action at the beginning of your project you can save costly alterations further down the line and reduce the opportunities for accidents and health problems from ill thought out project decisions.

The coordination function

If your project is going to involve more than one contractor, you must appoint a designer as the principal designer, in writing. They are required to plan, manage, monitor and coordinate the pre-construction phase of your project, taking into account the general principles of prevention.

Under CDM 2015, the principal designer has to carry out the coordination role to manage the flow of information and promote communication and co-operation between members of the project team during the pre-construction phase.

In most projects, the primary resource constraints are time and money. Once a project is up and running, most team members will focus on meeting these two demands and, as a result, some issues may be overlooked. For example, what are the most significant risks that the team needs to focus on in the early stages of the

project? How can we communicate more effectively as a team? The principal designer is in an ideal position to pose these questions and lead on them.

General duties

There are a number of general duties that duty holders must fulfil under CDM.

Appointment of designers and contractors

Before you appoint a designer (or principal designer) or contractor (or principal contractor) to work on your path project, you must take reasonable steps to satisfy yourself, that they have the skills, knowledge and experience to carry out the work you are appointing them to undertake, in a way that secures health and safety. Reasonable steps will depend on the complexity of your project and the range and nature of the risks involved. If they are an organisation, they must have the organisational capability to carry out the work.

A proportionate approach should be taken to organisational capability; only enquiries for information addressing the anticipated risks and their capability should be made. Excessive paperwork should be avoided as it can distract attention away from the practical management of risks.

If you are appointing a designer or contractor [PAS 91:2013 Construction prequalification questionnaires](#) provides a free set of questions for construction projects which may be helpful. The standard questions may help you to assess organisational capability.

You should also check that the designer or contractor has enough experience and a good record in managing the risks in similar projects. These checks should ideally be carried out after pre-qualification checks and before you make an appointment.

It can be useful to find out whether potential designers are members of an established professional institution that includes health and safety as part of the route to membership.

You can also ask questions about their skills, knowledge, and experience to check that they are sufficiently capable of carrying out the work involved in your path project and to find out if they are keeping those capabilities up to date.

Designers and contractors seeking appointment

A designer or contractor must be able to demonstrate that they have the technical and health and safety skills, knowledge and experience to carry out the work for which they are seeking appointment. They must not accept an appointment unless they can fulfil the skills, knowledge and experience requirements of the role.

Co-operating with each other

You or anyone else carrying out a duty holder role under CDM must co-operate with anyone else involved in the path project, to ensure the health and safety of all concerned. This involves communicating with each other and understanding what others are doing and how. On a path project where the risks are low and involve more than one contractor, a simple approach is adequate. For a path project where the risks are higher, a more thorough approach to co-operation, coordination and planning will be required. In all cases, action taken should be proportionate to the risks of the path work.

Reporting dangerous conditions

Everyone involved in a path project has a duty to report instances where anyone is working in a way that puts anybody in danger. Any occurrences must be reported to the contractor (or principal contractor) in control of the path work activity. If you are in control of the work, encourage workers to stop work and report dangerous conditions when they see them.

Giving clear instructions and information to others

If you are a duty holder on a path project, you should give easy to understand health and safety instructions and information to others who need them. Agreed actions from a site supervisor to their workers are instructions that must be followed to avoid or reduce the risks that may cause harm. For workers to understand the risks involved with their work, their employer – the contractor – must give information about hazards causing those risks.

For instructions or information to be understandable, they need to be:

- in simple and clear English (and/or other languages if required);
- in a logical order and shown in illustrations, if appropriate.

Photographs and diagrams can be helpful to put across the key messages. The amount of detail you give should be proportionate to the scale and complexity of the project, the risks; and the nature and purpose of the messages.

Only instructions or information that helps to prevent harm should be shared. Unnecessary detail can prevent the clear communication of key messages. Here are some examples of different information types and who provides it:

- the client should give pre-construction information to the designer and contractor;
- the designer (or principal designer) should provide health and safety information about their design to other duty holders;
- the principal designer must give information to the principal contractor to help them prepare the construction phase plan;

- the contractor (or principal contractor) should give site rules as part of their construction phase plan;
- the principal contractor must give health and safety information to their own workers or workers of another contractor.

You or other duty holders must give information and instructions in plenty of time – before starting the work, so the people receiving it can understand and take account of it before carrying out their work. The instructions or information should, where possible, be made directly available to everyone carrying out the work. If that is not possible, everyone should be made aware of where to find it and what is available.

Information needed by the designer from the client

To manage the risks with their path design, the designer will need several key pieces of information from the client at the pre-construction phase:

- The route and ground conditions
- Existing structures on the route, such as a bridge
- Environmental, natural, and historic heritage constraints
- Details of the project team
- The methods of communicating information during the design stage, such as drawings, risk log
- Health and safety information from other designers (if involved) that may affect the path design, including any changes needing consideration
- The format required for health and safety information to go in the health and safety file.

Information needed by the client from the designer

To inform others about remaining risks in the design, the client will need the following health and safety information from the designer at the pre-construction phase:

- Significant risks in the path design, if any
- Measures taken in the path design to reduce or control remaining risks that might affect others during or after the construction phase
- Health and safety information for inclusion in the health and safety file.

The right information for the right people at the right time

Effective communication between the duty holders in a path project is the key to avoiding the pitfalls that can affect the project, whatever the size or scale of the job. Whether we are talking about pre-construction information, the construction phase plan or the health and safety file, there is a difference between 'producing documentation' and 'communicating'.

If the paperwork is not contributing to a two-way flow of information between the various members of the team, it is reasonable to question its purpose and effectiveness. On its own paperwork achieves nothing!

Your project team should devote time – not only at the start of the project but also throughout as well – to asking each other: 'How can we make sure the right people get the right information?'

Build the team then build the project = teamwork, not paperwork!

CDM project activity planning

To help manage your path projects [Appendix 1](#) shows the key CDM duties throughout a project for a one contractor project; and a project with more than one contractor. Each table shows what activities need to be carried out at each stage of the process and who does them, including who to ask for assistance if required.

Making the case

Compliance with the CDM Regulations needs effort, time, and money. Clients have responsibility to provide these resources so there is no excuse for non-compliance. The upland path industry has a reasonably good health and safety record and it is essential to maintain it. Adopting and embracing the CDM Regulations means better project management as well as health and safety. There will be less likelihood of unknown and potentially expensive problems on a site. A healthy and safe site helps to create a happy workforce that is more motivated towards doing quality work. As well as saving on the human cost of accidents, healthy and safe working means efficient working. Overall, the extra cost is more than compensated.

If you do not comply with the CDM Regulations, you are likely to be failing to influence the management of health and safety on your path project. This means that your project could be putting people at risk of harm – those doing the work as well as others affected by it – and the finished path may not achieve good standards and be fit for purpose.

Remember that if you do not appoint a designer and contractor, or principal designer and principal contractor, you will be responsible for the duties that they would hold.

Serious breaches of health and safety regulations on your path project could result in work being stopped by HSE and additional work may be needed to put things right. In the most serious circumstances, you could be prosecuted.

More CDM guidance

In the next chapters, you can find out about the CDM Regulations at the beginning, during and at end of a path project. You can also find out more through these resources:

- HSE Construction (Design and Management) Regulations 2015, <http://www.hse.gov.uk/construction/cdm/2015/index.htm>
- Construction Industry Advisory Committee (CONIAC), Construction (Design and Management) Regulations 2015 Industry Guidance, www.citb.co.uk/health-safety-and-other-topics/health-safety/construction-design-and-management-regulations/cdm-guidance-documents
- Managing health and safety in construction, Construction (Design and Management) Regulations 2015, Guidance on Regulations, L153, www.hse.gov.uk/pubns/books/l153.htm

4.3 CDM: Health and safety during the pre-construction phase



Plan and design with health and safety in mind

Most health and safety effort from the project team goes into the planning and design stages of a path project. Although it is necessary to have a set of emergency procedures in the event of an accident on site, only a small proportion of time spent on health and safety should be spent on planning for things to go wrong. The majority of time should be spent identifying significant hazards - whether on site or with the path design – and eliminating and reducing risks associated with high risk hazards, to avoid accidents happening in the first place.

Establish a team with good health and safety culture and performance

A good health and safety culture and performance must be established from the beginning of a project and continue through to the end. The performance of any project team is a function of the individual skills, experience, and attitudes of the people who make up the team, combined with the way they interact and coordinate their efforts to deliver the best results.

Establishing a good health and safety culture and performance as a team requires 'competent people' with the right skills, attitudes, knowledge and experience of delivering path projects. Under the CDM Regulations, the onus is on the client to decide whether an individual or organisation is competent to undertake a role and

the duties of a duty holder. Competence to manage health and safety on a path project can be demonstrated by:

- attending health and safety training courses and gaining qualifications;
- your experience of managing health and safety at different stages of projects;
- your ability to communicate clearly with others.

Health and safety management requires competence just as much as path construction. A badly built path can be put right, but a badly managed project can lead to irreversible damage, injury and potential prosecution. It is therefore necessary to invest in training, take advice and carry insurance for all the work you are undertaking.

Managing the design process

Effective risk elimination or reduction requires a team approach. One designer working in isolation may not always be able to determine the safest design solution for a particular set of circumstances.

The risk assessment process for path design has two essential requirements:

- The capacity to progressively review potential hazards as they become apparent during the planning and design stages of the path project.
- The ability to capture information relating to potential hazards and possible solutions as the team develops and grows, and a means for communicating the significant findings to others who need to know, e.g. another designer, contractor (or principal contractor).

The role of the principal designer is central to the process of managing the design team from the inception of the project right through to its handover to the client. The size and nature of the project team will dictate the number of steps needed to fully assess the risks and how they should be addressed prior to the construction phase starting.

A project team should progress through five stages, as follows:

- Inception review
- Design team briefing
- Initial design development
- Design risk review
- Early involvement of the contractor (or principal contractor).

Inception review

As soon as you have appointed the principal designer, an initial hazard identification meeting, with any other designers already appointed, could be used to identify significant hazards likely to be encountered if the project progresses as envisaged. This team discussion can provide a great opportunity for making sure that everyone understands the importance of addressing and, where possible, eliminating or reducing risks at an early stage.

For example, if you are envisaging a route that will involve a significant amount of stone pitching it may be worth exploring the reasons for this preference and whether other options could offer a lower risk solution at this early stage.

At this point, a risk register (log) could start to be developed.

Design team briefing

Irrespective of whether the design team has already been appointed, there is a requirement to assess the competence of those appointed by you as the client. This is best done by giving (prospective) members of the design team the information arising from the inception review, and seeking their views on the likely risks and possible alternatives to the proposed solution.

For example, issues identified might include:

- Excessive manual handling
- Lifting of bagged stone by helicopter across another route used by the public
- The public accessing the route whilst work is in progress
- Environmental considerations.

Following the discussions:

- The client and principal designer will have an appreciation of the designers' attitude and capabilities towards designing out risk.
- The designer will have a clear understanding of the path design risk issues they should be mindful of when carrying out their design work activities.

Initial design development

The designer can start to develop their path design solution taking into account technical and financial considerations as well as safety, health and environmental concerns, with the expectation that they will need to justify their proposals at the design risk review.

Design risk review

Having been briefed about the main areas of concern, the designer will be in a better position to explain the reasons for their preferred path design at the design risk review. If you have appointed a contractor or principal contractor then they should be involved in this review to provide a practical insight into the buildability of the proposed path design.

The designer should leave this meeting with clear instructions from the client (or principal designer) for what is required, confident that the design has been developed through a robust process and that the requirements for risk assessing the path design have been fully met.

Contractor (or Principal contractor) early involvement

When appointing a contractor (or principal contractor) who has not been part of the design process, consider how the information developed during the design process will be shared with the contractor's workers. It is always preferable to discuss these issues face to face rather than relying on written information or drawings. While it is inevitably more time consuming, such site briefing meetings enable a two way process of communication that will often generate benefits both to the client and to the project team that far outweigh the extra time spent.

Fulfilling your duties (responsibilities) under the CDM Regulations will make sure no one is hurt when carrying out path work on your project. Your path will also remain safe for everyone using it. Good planning will help to make sure the work is well run with fewer unexpected costs and interruptions. Planning for small-scale work should be simple, short, and proportionate to the nature of the work and the level of risks. Larger scale work will need more planning.

Client duties

All Clients, either individuals or organisations for whom a construction project is carried out, have legal duties under CDM 2015. They have a responsibility to make sure that their project is set up so that it can be carried out safely, from start to finish. Where there is doubt, or more than one client is involved, all clients can agree that one or more of them is treated as the client for the purposes of CDM.

A client brief can be prepared initially to share the client requirements and expectations with the project team; and to help comply with client duties under the CDM Regulations.

The clients' duties at pre-construction stage are to:

1) Make suitable arrangements for managing the project

If you are the client, you must make suitable arrangements for managing the project; however, you are not expected to manage the work yourself – it's done for you.

This is done through:

- Selection and appointment of the designer (or principal designer if the project is going to involve more than one contractor working on site).
- Selection and appointment of the contractor (or principal contractor where there is going to be more than one contractor working on site).
- Establishing competence of duty holders.
- Allocation of sufficient time and resources at each stage of the project.
- Arrangements for monitoring performance.

2) *Select and appoint duty holders*

As the client, you are responsible for appointing duty holders. Where the project will have more than one contractor (including sub-contractors), you must appoint a:

- Principal designer and a Principal contractor

Where the project will have only one contractor, no principal designer or principal contractor is required, and you must appoint a:

- Designer and a Contractor

3) *Establish the competence of duty holders*

It is important to make sure that those you appoint are competent. They should:

- Have the capabilities and resources to carry out the work properly and safely.
- Have the skills, knowledge, training and experience.
- Understand their roles and responsibilities when undertaking the work

To check health and safety knowledge, make enquires through:

- Evidence from previous and similar work, e.g. past client references.
- Completion of a pre-qualification questionnaire such as [PAS91](#).
- Membership of health and safety schemes such as CHAS, Safe Contractor, Safety Schemes in Procurement (SSIP).

If you fail to appoint duty holders for your project, you must carry out the roles and fulfil their duties. Early appointment of duty holders is therefore important to make sure that you do not take on additional duties under the CDM Regulations.

4) Provide pre-construction information

You must provide relevant information including information that may be reasonably obtained through enquiries. This information may include plans, ground investigations, structural information or any other surveys or results of investigations.

The information should be passed on as early as possible to the project team, as it may impact on the project. For projects with more than one contractor the principal designer will help you, as they have a duty to assist in the production of the pre-construction information.

5) Notify the project to HSE (if required)

If your project meets the notification thresholds under CDM Regulations, then you must notify the HSE about your project.

Remember that notification is needed where the project's construction phase lasts more than 30 working days and has more than 20 workers working on site at same time at any point, or exceeds 500 person days.

6) Check that the designer or principal designer is carrying out their CDM duties

As client, you must take reasonable steps to make sure that the designer (or principal designer) complies with their duties. Reasonable steps could include progress meetings and verbal communication with updates.

Designer duties

If you are a designer, you must manage path design risks, provide information on the remaining risks arising from your design and coordinate your work with others.

You must, as a designer:

- Make the client aware of their duties.
- Prepare and modify path designs with health and safety in mind.
- Avoid, reduce, and control risks with the path design.
- Co-operate and coordinate with others.

As a designer, you should:

- Understand and be aware of significant risks that workers can be exposed to and how risks can arise from your design decisions.
- Have the right skills, knowledge and experience; and be adequately resourced to address the health and safety matters likely to be involved in the path design.

- Take into account the general principles of prevention when carrying out path design work.
- Provide information about the remaining risks arising from the path design that cannot be avoided.
- Coordinate your work with others to improve the way that risks are managed and controlled.

Information needed from other duty holders

To perform the designer role, you will need information from others in the project team. For example, you will need the following from the client and principal designer:

- Client brief.
- Pre-construction information.

Site information, e.g. existing structures, ground conditions.

- Project team information.
- Design communication and coordination procedures.
- The format needed for information to be included in the health and safety file.

You may need information from other designers, if any are involved. Examples are:

- Drawings, plans, reports.
- Details of special requirements, e.g. loadings on temporary watercourse crossing.
- Sequences of construction where this may impact on the design.
- Specialist guidance as needed.
- Details of remaining risks along with controls
- Details of plant and access, e.g. excavator positioning for lifting a bridge into position, or suitable access routes where plant will not get stuck.
- Arrangements for deliveries, which will need additional protection or design.
- Details of proposed sequencing.
- Details of temporary works e.g. scaffold for accessing a bridge and a safe working platform.
- Specialists' drawings and details.

Designers need to provide information to other duty holders

To perform their role and comply with the CDM Regulations, designers need to provide information to others in the project team.

You will need to provide the client with health and safety information that might affect them during or after construction. For example, details about how to maintain parts of a bridge's design, or how to assemble parts of a bridge that is new and unusual to those tasked to put them together.

You will need to provide the principal designer with:

- Information about unusual or not obvious design risks, including key assumptions and decisions made. This information is an important part of the pre-construction information.
- Details of significant risks that are part of the design.
- Information for inclusion in the health and safety file that could be useful for the client in relation to future maintenance.

If other designers are involved you may need to provide:

- Details of design loads, where responsible for the selection of plant, equipment, materials or civil or structural design.
- Details of design parameters where they could affect others design elements of the work.
- Details of key principles used in the design e.g. loads, assumptions, stability.
- Details of drawings relevant to other designs with significant risks.
- Specifications - to the extent that they will inform other designs.
- Information obtained to aid design that could be useful to others.

You may need to provide the contractor (or principal contractor), with:

- Any relevant design assumptions such as temporary works or sequencing needed where not obvious to a competent contractor. For example, the way in which bridge handrail supports will be installed, or how temporary working platforms (scaffold) will be installed or used for accessing a bridge under construction, or demolition.
- Any survey or report obtained that could be useful to others in the management of health and safety.

Principal designer duties

The principal designer's role is to plan, manage, monitor, and coordinate health and safety at the pre-construction stage on all projects with more than one contractor. The principal designer must be a designer, preferably a lead designer, on the project and in a position to have control over the design and planning stages. The client must appoint the principal designer in writing.

The majority of the principal designer duties must be completed before work starts on site; as follows:

1) *Assist with the project set up*

One of your key duties as the principal designer is to advise and assist the client with setting up their project and understanding their duties.

This will help in gathering information about the project, assisting with coordination between others in the project team and producing the pre-construction information.

2) *Coordination of health and safety matters*

Coordination during the pre-construction stage is a vital part of your role as the principal designer. You should:

- Coordinate design work with any other designers involved.
- Provide information to other designers to help them comply with their duties.
- Make sure other designers comply with their duties.
- Oversee design decisions of other designers.
- Review design risks and assumptions of other designers.
- Record remaining design risks on a risk register (log).
- Communicate with the client and other designers

3) *Avoid, reduce, or control significant design risks*

You should work with other designers to identify significant risks that are likely to arise with the path design: while carrying out the path work, or during future work. You must make sure designers in the project team:

- Avoid (where possible) the risks associated with path design materials, processes, and procedures.
- Reduce any remaining risks.
- Control those risks to an acceptable level (as low as reasonably practicable).

You should make sure the design work carried out contributes to positive health and safety outcomes. Regular design meetings held by the principal designer with any other designers involved, can be used to:

- Discuss the significant risks that should be addressed – to see if they can be avoided altogether or reduced to an acceptable level of safety.
- Decide on the control measures to adopt.
- Agree on pre-construction information that will help the principal contractor plan and manage health and safety when carrying out the work.

4) Control of other designers

All designers involved in the project have duties under the CDM Regulations, and as the principal designer, you must make sure that they comply with their duties.

5) Assist the client with preparing the pre-construction information

Health and safety information about the path project that the client already has, or can reasonably obtain, should be collated for the pre-construction information pack.

Pre-construction information is needed by:

- Designers and contractors who are bidding for work on the project, or who have already been appointed to allow them to carry out their duties.
- Principal designers and principal contractors for planning, managing, monitoring, and coordinating the design and construction work at the pre-construction and construction phases.

The pre-construction information particularly assists the contractor (or principal contractor) to prepare the [construction phase plan](#). Some information may also be relevant for the preparation of the [health and safety file](#) by the principal designer.

Pre-construction information must be:

- Relevant to the project.
- At an appropriate level of detail.
- Proportionate to the scale and complexity of the project.
- Proportionate to the level of risks involved.

Pre-construction information should be gathered and added to as the project design work progresses, and reflect new information about the health and safety risks and how to control them. Preliminary information gathered at the start of project is unlikely to be sufficient at the construction phase.

Pre-construction information must include proportionate information about:

- The project such as the client brief and key dates of the construction phase.
- The planning and management of the project such as the resources and time allocated to each stage of the project and the arrangements to make sure that there is co-operation between duty holders and that the work is coordinated.
- The health and safety hazards on the site including the design and construction work hazards and how they will be controlled on site.
- Relevant information from an existing health and safety file, if available.

As principal designer, you should:

- Assess the adequacy of existing information.
- Advise the client on any gaps in the information that need to be filled.
- Help the client gather additional information.

At this stage you should also agree with the client when updates to the pre-construction information will be issued, for example, if they want to receive the developing information or just final versions.

The following examples may go in the pre-construction information pack:

Site and environment

- **Location and land use:** Describe the site, where it is, who owns it and major land uses (open hillside may be used for sheep grazing or deer stalking, and these will affect when and how work takes place).
- **Planning and environmental constraints:** Many upland path projects fall within sites designated for nature conservation including Sites of Special Scientific Interest, Special Areas of Conservation and Special Protection Areas. They are also often within landscape designations such as National Scenic Areas. These designated areas will require permissions to work from SNH or the local Planning authority. Safe operation on the site may be constrained by the need to minimise disturbance, and this will need to be discussed in advance with site managers and can affect timing.
- **Services:** Point out any public services crossing the site e.g. water, sewage, gas, electricity and phone cables, both below and above ground. It is the duty of the client to point these out and contact the service operator and make arrangements to work around them, with temporary disconnection if necessary.
- **Access:** Identify the route for access on foot, access for plant, parking for vehicles and the extent to which vehicles can be taken out on to the hill. Also identify walk-in times to the start of the work site.
- **Ground conditions:** Note the vegetation, slope and conditions under foot.

Design information

- **Design drawings:** A full list of information available, including site surveys, bill of quantities, specification drawings, and so on.
- **Existing safety information:** A list of any existing health and safety files, as a useful reference point and experience from earlier work on the route.
- **Significant hazards:** This is the single most important part of the pre-construction information. It identifies the most significant hazards relating to the work site and path design – the factors most influencing health and safety, and the ones that contractors should spend most time assessing and describing in their [method statements](#). Most sites have significant hazards, including:
 - exposure to extreme weather high rainfall and strong winds;
 - mountain terrain, including steep slopes, uneven surfaces and hidden drops;
 - use by the public, particularly if the public cannot be diverted off the path line while work is taking place. If work and public use will coincide it will have to be managed as people cross the site.
- Each site will also have its own intrinsic hazards, for instance:
 - materials may be imported by helicopter, or an excavator may be taken on to the site to dig borrow pits;
 - sites may have to be accessed by crossing a river, with the associated hazard of the river level rising and blocking retreat.
- **Hazardous materials:** Pathwork requires very few imported construction materials or dangerous materials to be handled. However, most projects will include fuel use and storage on site, especially where excavators and other machines are in use. The contractor will have to carry out an assessment in line with the COSHH Regulations, and also manage potential spillage to avoid pollution into the environment.
- **Waste removal:** List the types of waste that are produced and will need to be taken off site and if any special disposal is required.

Access

- **Public use:** Identify the line used by the public on site and any sections of this path that will need to be cordoned off to stop public entering work areas, or rerouted.
- If a helicopter or other machinery is needed, identify the need for a lift area, road closures or other controls.

- **Site accommodation:** Some sites have existing accommodation, such as bothies, or remote sites may have cabin systems taken out to them. Accommodation must be identified and a separate assessment made of its condition and suitability. Accommodation remains part of the work site at all times.
- **Other restrictions:** Work on site may be restricted by stalking activity, or protected species.

Site rules

- List the type of site rules that the contractor (or principal contractor) must supply, describing the normal working pattern on site. Standard sets include site rules for training, induction, equipment use, personal protective equipment, work permits, accident reporting and emergency response procedures. Identify any other site rules that the contractor (or principal contractor) should highlight in their site induction.
- **Emergency procedures:** Identify the location of the nearest hospital, doctor and emergency services. Point out to the contractor any additional emergency procedures required.

Of all the information contained in the pre-construction information pack, the identification of significant health and safety hazards and of pedestrian routes and management across the site will require the most careful judgement. If a hazard is identified as being significant the contractor (or principal contractor) must prepare a risk assessment and if required a method statement. These can assist with the preparation of the construction phase plan but may not necessarily be included in it. If the route continues to be used while construction is taking place, which is usually the case for upland pathwork in Scotland, then a short description of how the public will be safely managed across the site needs to be included in the construction phase plan. It is the responsibility of the contractor (or principal contractor) to identify all significant work or public use hazards. If a hazard is not identified at this stage, it will be omitted from the risk assessment and may not be properly managed. It is good practice to ask others who know the site to check that you have correctly identified these elements early on in the pre-construction stage.

Part of a pre-construction information template. The whole document is included in [Appendix 1](#).

PRE-CONSTRUCTION INFORMATION

<p>As a client, you must provide pre-construction information as soon as possible to every designer and contractor appointed (or being considered for appointment) to the path construction project under the Construction (Design and Management) Regulations 2015.</p> <p>Pre-construction information is information in your possession or which is reasonably obtainable by you, or by someone else on your behalf, that is <u>relevant to the path construction work</u>. The information should be of an <u>appropriate level of detail</u> and <u>proportionate to the health and safety risks involved</u>, including information about: the project; the planning and management of the project; the health and safety hazards of the site; and the significant design and construction hazards. It should also state how those hazards would be addressed. Information in any existing health and safety file, if one is available, should also be included.</p> <p>Pre-construction information should be gathered and added as the projects' planning and design progresses and reflects new information about the risks to health and safety and how they must be controlled. Preliminary information gathered at the start of the project is unlikely to be sufficient.</p>	
The Project	Details (if the question does not apply to your project, write N/A)
Have you prepared a client's project brief? (Attach a copy of your brief that outlines: the main function and operational requirements of the finished structure; your motivation for initiating the project; your health and safety expectations of how risks should be managed; the design direction you have in mind; the single point of contact for any client queries or discussions during the project; and your SMART goals and budget for delivering the project)	
What are your planned start and finish dates for the construction phase?	
Name and contact details of the client	
Name and contact details of the designer	
Name and contact details of the contractor	
Name and contact details of the principal designer (if more than one contractor involved)	

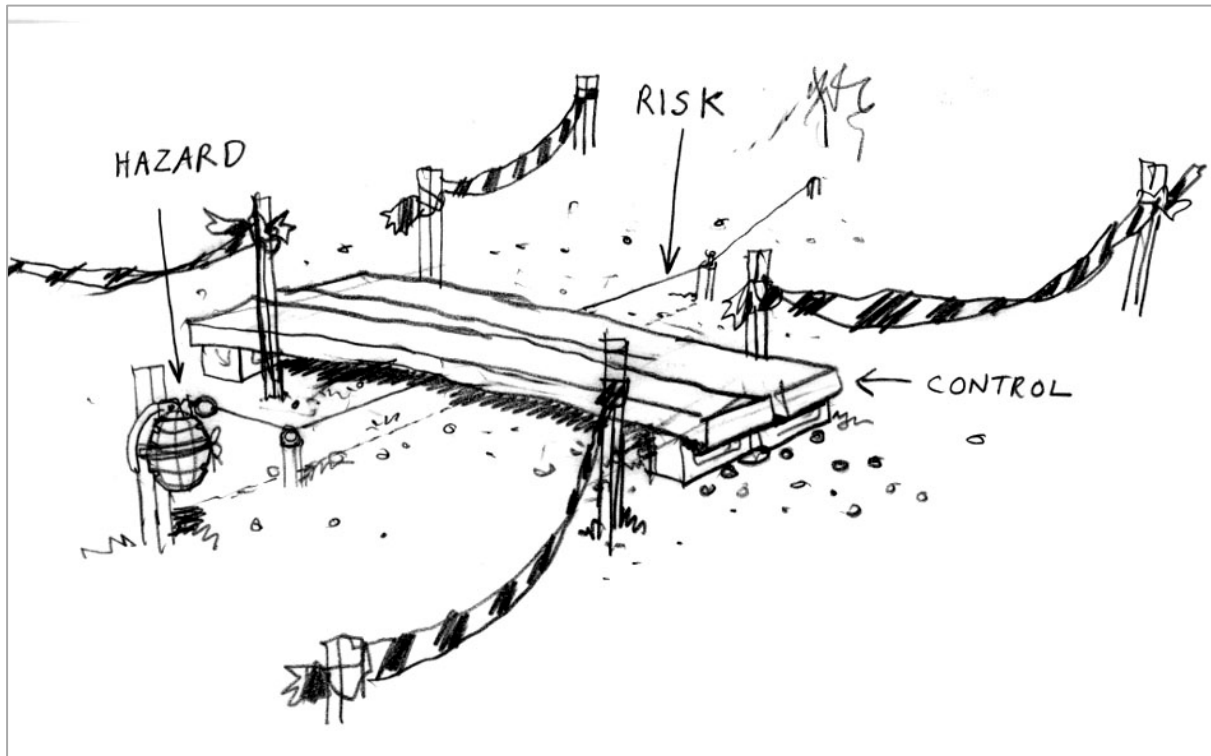
Issues

The process of looking at the health and safety issues across the whole site, from the perspective of both the client and the contractor, may throw up issues that are difficult to reconcile with the work. It may be necessary to change the design or the alignment of a path so that it is safe to build and safe for the public to use. It may be necessary to change the timing to avoid busy periods, or poor weather conditions. Mechanised working may be needed to reduce the repetitive, heavy work of excavating borrow pits, which could shift the emphasis to minimising the site impact of using machines, rather than minimising the people impact of shifting 200 tonnes of gravel by hand. Some of these issues may require other solutions and imaginative thinking from both sides of the project team. In recent years, work in very remote locations has introduced the use of remote accommodation, where cabins are flown in to accommodate teams on site. These generate their own safety issues as the team is 'at work' even when 'at rest' in the cabins, and extra evacuation, fire and radio cover is needed.

Avoiding one danger, such as moving large stones across steep slopes with bars, may give rise to other hazards, such as using a winch to move the stone. Any new method of working will need careful risk assessment and a method statement and a trial must be carried out to assess safe working practice.

Every site will need its own safety solutions. Risks should be identified in advance rather than coming across them on site; they should be thought through step by step, and the ways in which risks to the workforce can be reduced should be considered. After completion of the work, a design that will enable easy maintenance and safe public use of the site is preferred. By planning ahead, seeking advice, writing down your thoughts and actions, and looking for new solutions, you will demonstrate your competence and fulfil your health and safety responsibilities for the management of upland path work.

4.4 Assessing risks – in the design and on site



Risk assessment

Risk assessment is a fundamental part of health and safety management for all upland path work from design and construction to maintenance. Its main objective is to determine the preventative measures needed to comply with the Health and Safety at Work Act 1974, and other regulations, to reduce the number of accidents, dangerous occurrences, and ill health at work.

The Management of Health and Safety at Work Regulations 1999 require employers to carry out an assessment of the risks to which employees are exposed to at work and also to others not employed by them but affected by their work. This assessment should identify the measures the employer needs to take to reduce these risks to a minimum and comply with relevant statutory provisions.

The CDM Regulations 2015 require designers (or principal designers) to identify risks with their designs, to remove them if possible, or to reduce and control the remaining ones. If you are going to design a path or undertake the path work, you must carry out risk assessments to comply with the relevant health and safety regulations.

When to do risk assessments

It is good practice for the risk assessment process to be carried out by the designer (or principal designer) during the design stage as part of preparing path and drainage designs; and by the contractor (or principal contractor) before setting up the site and starting the path work. Their risk assessments are submitted with the method statement (if required). It is the responsibility of the contractor (or principal contractor) to compile risk assessments for the work and review with the client before the construction phase starts. The client (or the principal designer, if the client has asked them) needs to be assured that the risk assessment process is suitable and sufficient as part of the management arrangements for the project.

Further details on the risk assessment process and a worked example are included in [Appendix 2](#).

Point of work risk assessment

Generally, an employer's risk assessment is prepared before the first day work starts on site. The contractor's (or principal contractor's) site supervisor must therefore ensure that the risk assessment is correct before starting work. A simple 'point of work risk assessment' can be carried out for this task, which is based on the STAR principle: Stop, Think, Act, and Review.

Before starting work, the site supervisor can:

- **Stop** and **Think** about where they are working and what they are tasked to do.
- Start the work if it is safe to continue or **Act** to make it safe.
- When they have finished the work **Review** what has been done.
- If anything good or bad was learnt whilst doing the work, report their findings back to their employer for improvement next time.

Method statement

A method statement is a written procedure describing, in a logical sequence, exactly how a particular construction activity is to be completed safely and without risk to the health of everyone involved, including those who are nearby when the work is carried out. They are usually used when a particular sequence of tasks or way of working is required to adequately control the risk identified in the risk assessment. Method statements support the overall safe system of work an employer is required to provide.

Method statements should address the significant risks identified in the risk assessment and outline the actions needed to control those risks. It will allow the work activity to be properly planned and resourced.

Method statements are particularly helpful for:

- Higher risk, complex or unusual work activities.
- Providing simple, pictorial, task-specific information to supervisors and workers regarding how the work activity should be completed safely, and which controls should be taken.
- Providing relevant information to the contractor (or principal contractor) to assist them in preparing their construction phase plan.

The method statement is usually quite brief and contains the following information:

- Name of the contractor's company
- Title of the project
- Location of the project
- Contract number
- Title of the method statement
- Description of the work activity
- Title and reference numbers of relevant risk assessments
- Date that the work activity will start on site
- Area where the work activity will be carried out on site
- Actual or estimated duration of the work activity
- Actual or estimated number of workers involved in the work activity
- Details of all workers involved in the work activity: name, position, and specific training, skills, experience, and qualifications required
- Details of emergency arrangements: evacuation, fire, first aid, pollution, other
- Details of personal protective equipment requirements: hard hat, steel toe capped boots, hi-visibility vest, working gloves, safety glasses or goggles, ear plugs or defenders, safety harness with lanyard, other
- Details of work activities creating dust or fumes including specific controls to avoid dust or reduce dust or fumes and type of respiratory protective equipment required
- Details of hazardous materials to be used including specific controls required from COSHH risk assessment and Material Safety Data sheets
- Details of permits to work including the name of the person issuing the permit

The method statement should provide a clear description of the safe method of working including key information as sketches, details of significant risk control, the sequence of works, and a breakdown of the works:

- **The sequence of work:** There are two main options. Either all of the work on one short section of path takes place while that section is closed, with that section re-opened when work moves to the next short section of path. Alternatively, all the work is carried out along the entire section of path leaving the site open. This may be necessary if materials are all flown in by helicopter at the start of the contract. The sequence of operations determines where the focus of health and safety management is needed. When work takes place one section at a time, there is a danger that the work site will become crowded and most safety effort will be directed at protecting the workforce. When the site is left open and the work is spread out, there is a greater risk to users and visitors to the site, with open trenches and borrow pits. The emphasis will therefore be on protecting open parts of the site or re-routing users around the site for the duration of the work.
- **The breakdown of work:** Identify the specific activities that will be carried out as part of the construction work. The aim is to identify all of the different work activities for which a risk assessment will be needed. For example, the following work activities have been identified for the construction of a cross drain:
 - marking off the path and managing public access to the work area;
 - digging the trench across the route where the new path will go – working with small hand tools; manual handling of excavated spoil; safe storage of excavated spoil on site;
 - collecting the building stone – working on steep slopes; working with a winch; manual handling of stone with pinch bars;
 - constructing the drain – working with small hand tools; manual handling of stone with pinch bars;
 - rebuilding the path up to the drain – excavating a borrow pit by hand or tracked excavator; use of a power barrow;
 - reinstating the site – working with small hand tools, manual handling of turfs and spoil, use of a power barrow.

Breaking down the different tasks in this way identifies the types of work the team will do to construct drainage features and the path. Each of these work activities then requires a risk assessment to be carried out. Break the work activities down into the range of tasks, rather than the type of construction (for instance cross-drains, aggregate paths, landscaping, etc.). The hazard arises from the work activities that the individual members of the team carry out, not from what they happen to be building.

- Details of hand tools, plant and equipment types to be used to carry out the work activity, including inspections/ test certificated
- Confirmation statement for the supervisor in charge of work activity: name, position, signature and date
- Confirmation statement for plant operators - the workers carrying out the work activity: name, position, signature and date.

The most important information in the method statement is the sequence of operations and the particular operations breakdown for the project in hand. Most effort should go into describing the sequence of work and the risk assessments that need to accompany it.

Part of a method statement template. The full example is included in Appendix 1.

METHOD STATEMENT

Project name		Contract number	
Company name			
Location of site			
Title of method statement			
Description of the work to carry out			
This method statement has been prepared with the following risk assessments			
Risk assessment			
Risk assessment			
Work starts on (actual date)			
Duration of work (actual or estimated)			
Number of path workers involved (actual or estimated)			
Details of all path workers involved in the work and specific skills, experience and training required and held			
Name of path worker	Details of specific skills, experience and training required and held		

It is good practice for contractors to point out changes that will enable them to work more safely. This may include changing the timing of the work, or using machinery instead of manual construction if experienced operators are in the team who can carry out the work without damaging the site. It is also quite possible that the designer (or principal designer) might have overlooked significant hazards on the site, or included risks that the contractor does not think are significant. You should discuss these with the designer (or principal designer) and suggest including or omitting them from the pre-construction information.

4.5 CDM: Health and safety preparation before the construction phase



Preparing for action

Towards the end of the pre-construction phase, preparation for the construction phase takes place. This is the time when the contractor or principal contractor will prepare their construction phase plan; think about setting up the site with welfare facilities and how to deal with public safety. It is also the time when the principal contractor may start to hire sub-contractors to assist with the path work.

Contractor and principal contractor duties

The contractor (or principal contractor when there is more than one contractor) must complete the following duties before path work starts on site:

1) *Work and liaise with other duty holders*

The contractor must work and liaise with the client before path work starts on site. For this reason, principal contractors, or contractors, should be appointed as soon as possible in the project process. The principal contractor must work and liaise with the client and principal designer, and if involved, with other designers and contractors to make sure the path work secures health and safety for all affected persons.

The contractor should liaise with the client using their experience to discuss the path work and opportunities to improve health and safety standards during the development of the design. Similarly the principal designer must liaise with the client and principal contractor.

The contractor or principal contractor should consider these questions before the path work starts on site:

- What does the project involve?
- What are the client requirements?
- What needs to be done and when?
- How can it be done safely?
- Who do I need to do it?
- What information do I need?
- What other resources do I need?
- What could go wrong?
- Who might be harmed and how?
- What do I need to do to make it safer or healthier?

2) *Prepare the construction phase plan*

The Contractor is responsible for preparing and putting together the construction phase plan on a one contractor project. On a project involving more than one contractor, the principal contractor is responsible for preparing it and putting it together. The client must give pre-construction information to the contractor, or principal contractor, and ensure that the construction phase plan is drawn up before the construction phase commences.

The construction phase plan must be prepared and in place before setting up the construction site and path work starting. Early matters such as site mobilisation, welfare facilities and high risk work activities should be addressed first. The plan should be:

- Proportionate to the size, nature of the path work and the health and safety risks involved.
- Realistic and workable.
- Sufficiently developed to allow the path works to start on site.
- Regularly reviewed and added to as new path works start or other contractors get involved.

CONSTRUCTION PHASE PLAN	
<p>During the pre-construction phase, the principal contractor (more than one contractor involved) or contractor (only one contractor involved) must prepare a construction phase plan, before setting up the construction site.</p> <p>The construction phase plan sets out the health and safety arrangements and site rules taking account, where necessary, of the path construction activities taking place on the construction site and, where applicable, must include specific control measures concerning work, which falls within the categories set out in Schedule 3 of the Construction (Design and Management) Regulations 2015.</p>	
Company name:	
The Project	Details (if the question does not apply to your project, write N/A)
What is description of the project?	
When will the construction phase start and finish?	
Who is the client? (Name and contact details)	
Who is the designer? (Name and contact details)	
Who is the contractor? (Name and contact details)	
Who is the principal designer (Name and contact details)	
Who is the principal contractor (Name and contact details)	
What are the arrangements for this plan to be reviewed, updated and revised?	
The Management of the Construction Phase	Details (if the question does not apply to your project, write N/A)
What are the health and safety aims (goals) for the project?	
What are the arrangements for monitoring and review of health and safety performance on site?	
What are the health and safety arrangements for the construction phase?	

Part of a construction phase plan. The full example template is included in [Appendix 1](#).

The information in the plan should be project specific, not generic. The plan should only contain information that is beneficial to health and safety management on the site. The plan must be held on file by the contractor (or principal contractor) and the client and it should be accessible to all workers and contractors. Everyone should be encouraged to read it and refer to it at any time.

The following topics should be considered when drawing up the plan:

- A description of the project, including necessary dates and details of key members of the project team, e.g. the principal designer.
- The control of specific health and safety risks for the path work involved.
- The management of the work, including:
 - The health and safety aims for the project
 - The site rules
 - Arrangements to make sure there is co-operation between project team members and coordination of their work, such as regular site meetings
 - Arrangements for involving workers in health, safety and welfare matters
 - Site induction
 - Welfare facilities
 - Emergency procedures, such as fire, first aid, extreme weather events
 - Site induction
 - Welfare facilities
 - Emergency procedures, such as fire, first aid, extreme weather events

3) *Provide welfare facilities*

For all path projects, regardless of where it is, whether it is notifiable or non-notifiable and how many contractors are going to work on site, the contractor is responsible for providing welfare facilities on a one contractor project, and, the principal contractor for projects involving more than one contractor. They must make suitable arrangements for providing adequate welfare facilities on site before the path work, including setting up the site, begins. The welfare facilities must remain on site until all path work has been completed and signed off.

The welfare facilities should be suitable and sufficient for the size and nature of the project and should include:

- Lit and ventilated toilets (suitable for men and women)
- Lit and ventilated washing facilities, next to the toilets with hot (or warm water) and cold running water, soap or hand cleaner, hand towels or other means of drying hands
- Supply of drinking water and mugs
- Facilities for resting and eating with tables and chairs
- Facilities for changing out of working clothes and storing them.

The welfare facilities provided must be available at a central location that is accessible within a reasonable distance or time from where the contractor (or principal contractor) is working.

Use of a remote accommodation system to support the welfare of path workers repairing a remote upland path...

A contractor is rebuilding an eroded hill path leading to a popular Munro. It is estimated that a four-man team will take two to three months to construct an aggregate path with a side ditch and stone drainage features, with landscaping work to wider eroded areas. The start of the route is about 1½ hours walk each way from the nearest vehicle access point.

A remote accommodation system (RAS) located close to the work site (provided by the client and flown in by helicopter) will support the welfare of the path workers repairing the remote path for the period of the contract. Details of the RAS were provided in the client's pre-construction information pack issued to potential contractors at the tender stage.

Guidance on the minimum welfare facilities needed on path projects is available in [‘Managing health and safety in construction, Construction \(Design and Management\) Regulations 2015, Guidance on Regulations’](#) available on the HSE website.

4) *Appoint contractors and workers*

The principal contractor (or contractor when only one contractor is involved) is in overall control of site health and safety management. They must make sure all contractors and workers on the site have the basic skills, knowledge, training, and experience for the type of path work they are carrying out.

Workers on site must:

- Have the necessary skills, knowledge, training, and experience to carry out the path work safely without putting their own, or others, health and safety at risk.
- Be properly supervised and given clear instructions.
- Have the hand tools, equipment, plant, materials and protective clothing/equipment to do the path work safely
- Have information, discussions, and involvement about health and safety and welfare matters.

The contractor or principal contractor should provide workers with:

- Information about the health and safety risks on site and with the work and how they must be controlled.
- Clear instructions about what to do in the event of serious and imminent danger, such as emergency evacuation procedures.

When appointing other contractors the principal contractor must:

- Check the working, health and safety planning and management capabilities of the contractor they plan to use to work on site.
- Give them the relevant health and safety information from the construction phase plan for the path work they are carrying out.
- Talk about the path work with them before they start.
- Make sure that they have provided everything agreed to carry out the path work properly and safely.
- Monitor their work performance and remedy any shortcomings with them.

The principal contractor should provide an appointed contractor with:

- Details of the preparation and lead-in time.
- Details of unusual, unobvious or significant site, work, and design risks and controls.
- Details of who is in charge on site.

- Details of pre-construction information relating to the path work they have been asked to carry out.
- Details of site rules.
- Details of site induction.
- Details of welfare facilities on site.
- Details of procedures to follow if there is serious and imminent danger, such as emergency evacuation procedures.
- Details of arrangements for reporting unsafe working behaviour or conditions.

5) *Provide the right information, management, and supervision to contractors and workers*

For a one contractor project, the contractor is responsible for managing and supervising their own workers on site. For a project involving more than one contractor, the principal contractor is responsible for providing management and supervision to their own workers, and for other contractors.

Those managing and supervising the work must have the right blend of basic skills, knowledge, training, and experience. There needs to be an adequate number of supervisors to supervise the number of people working on site.

Before the path work starts, the contractor or principal contractor should assess the degree of supervision needed, taking into account the basic skills, knowledge, training, experience, and likely behaviour of the workers on site.

Public safety

The team supervisor and path workers must consider the safety of the public at all times: e.g. when accessing the site, working on the route and gathering materials in the surrounding area. Some paths have very high numbers of walkers or mountain bikers using them, particularly during the summer months. It is the responsibility of the team supervisor and path workers to ensure that any possible risk to the public from the path work or helicopter lifts are controlled. 'Suitable and sufficient' controls could be signing the works, cordoning off or re-routing around the work site.

Clearly worded information signs should be installed at all access points to the work site to advise the public:

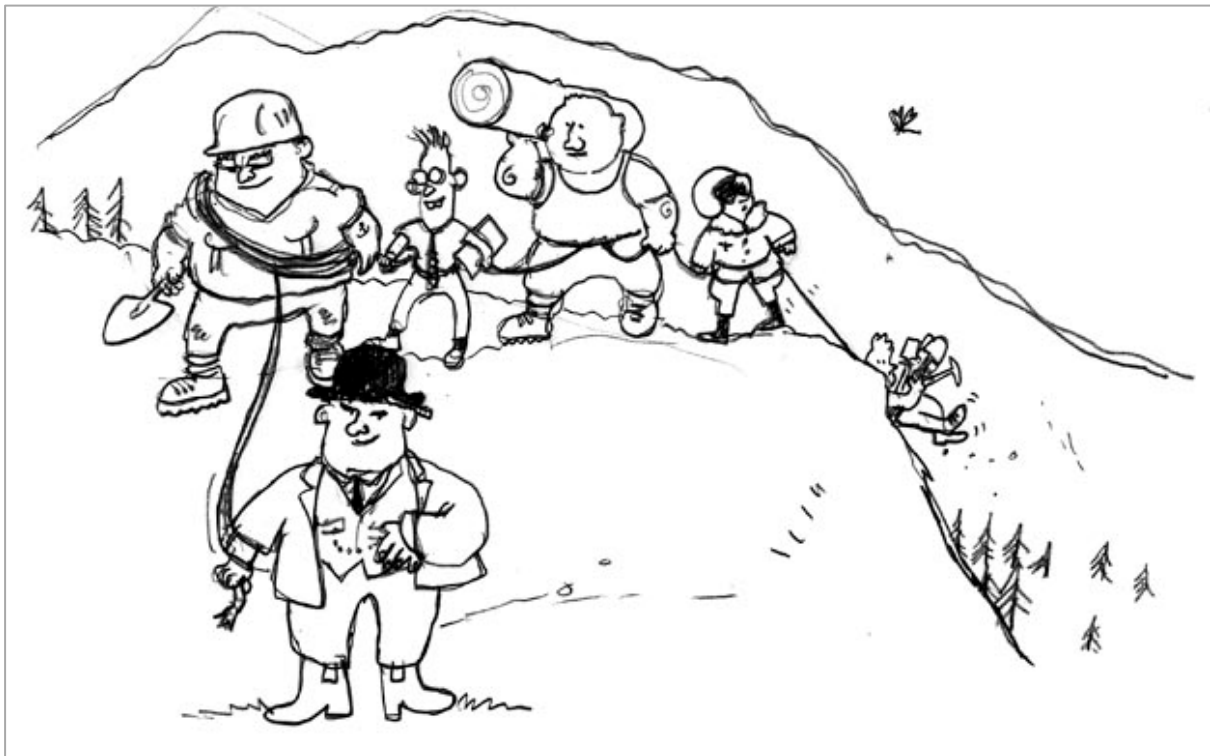
- when and where path work is taking place;
- alternative routes, particularly on very busy paths;
- diversions around the work site;
- hazards and required controls if walkers, mountain bikers or other recreational users need to walk or ride through the site.

It is also good practice to provide such information at other locations where path users may access the route, e.g. at the start of a route, or on an information panel in a car park. This alerts people to the fact that the path work is taking place on a particular route, enabling them to choose to go elsewhere if they prefer.

Any excavations, such as cross drain trenches or borrow pits, must be clearly signed with safety signs and cordoned off to prevent people, plant, or other equipment falling in. Warning tape would not be considered sufficient. Chestnut paling around the excavation is likely to be a suitable control to isolate the hazard at source from everyone not working in the work area. This is essential when the site is left unattended, particularly at weekends or after work has finished for the day.

Path work should not start on site unless either the contractor (or principal contractor) and the client are happy that the necessary management arrangements are in place to manage site health, safety and welfare. The contractor (or principal contractor) should determine whether there are any path work activities that are risky. The client must be sure that all tasks undertaken on site can be done safely. The project should only proceed when you are sure that the path work and associated tasks, such as helicopter lifts, can be carried out safely without harming anyone.

4.6 CDM: Health and safety during the construction phase



Path work underway!

All the preparation is complete, the contractor (or principal contractor) is now on site to start the path work but more importantly to manage and coordinate the construction phase, to ensure health and safety is still part of the project's management. There will be several duty holders involved at this stage - dependent on how many contractors will be delivering the path work.

Client duties

There are a number of duties the client must complete once the path works start on site.

Make sure that the construction phase plan is produced and on site

As the client, you must check that a construction phase plan has been drawn up by the contractor or by the principal contractor if there is more than one contractor.

You will need to satisfy yourself that the plan is adequate for the work. You could do this by checking with them that the content is relevant and meets the requirements of the project.

Make sure that welfare facilities are on site

Checks can be made by:

- Visiting the site
- Asking the contractor, or principal contractor, to confirm what facilities they have provided. (Note: the client can outline what welfare facilities are required for their project, and provide details in the pre-construction information.)

Check that the contractor, or principal contractor, is carrying out their CDM duties

Checks can be made by:

- Visiting the site.
- Asking the contractor or principal contractor specific questions at site meetings.

Check completion and handover arrangements

It is important that arrangements are in place for completion and handover of the project, once the path work is finished and signed off. There are number of duties for you to carry out on completion and beyond.

- For projects with more than one contractor check that the health and safety file has been prepared.

A Health and safety file only needs preparing for projects with more than one contractor. At the end of the project, the principal designer, (or the principal contractor where the principal designer has finished prior to the completion of the project), should give you the file to keep.

You and the principal designer should have agreed on the file's content, structure, and format at the start of the project. The file should be developed throughout the project, reviewed, and updated on completion of the project.

- Maintain the health and safety file and make it available.

As the client, you keep the health and safety file following completion of the project. Make sure the file is available to anyone who needs it for maintenance and future work.

Principal designer duties

There are a number of duties that the principal designer must complete once path works start on site.

Communicate with the principal contractor

The principal designer must liaise with the principal contractor for the duration of their appointment, throughout the construction phase. This communication can take place at regular site meetings.

Coordinate ongoing path design and design changes

During the construction phase, communications should cover the path design, including any changes to it, and collecting information for the health and safety file.

Regular communication will help to make sure changes with the path design are managed and coordinated throughout the construction phase.

Prepare, review, update, and revise the health and safety file

The health and safety file is only needed for projects involving more than one contractor. It should be developed throughout the construction phase, as information becomes available. The principal designer has responsibility for preparing, reviewing, updating, and revising the file as the path work progresses through to completion. An example of a health and safety file is provided in [Appendix 1](#).

The health and safety file must be appropriate to the characteristics of the project, containing relevant health and safety information that is likely to be needed to ensure health and safety is taken into account during any later work, such as maintenance.

When preparing the health and safety file, consider including the following:

- A brief description of the path work carried out.
- Hazards that have not been avoided through the design and construction processes, and how they have been addressed.
- Key structural principles and safe working loads for structures such as a bridge.
- Hazardous materials used in making structures.
- Removal or dismantling installed structures.
- Health and safety information about equipment provided for maintaining the structure.
- The nature, location and markings of significant services, including underground cables or pipes.
- As-built drawings of the structure.

There should be enough detail in the file to allow the likely risks to be identified and addressed by those carrying out the maintenance or future work and be proportionate to those risks. The information must be in a convenient form that is clear, concise, and easily understood by those who will read and need it.

The health and safety file should not include things that will not help when planning future work. Things like past pre-construction information, the construction phase plan, risk assessments, method statements, or contractual documents are not helpful for future construction work as they will no longer be relevant.

Communicate with other duty holders

The principal designer should make sure that all designers (if involved) receive and deal with any health and safety related questions, or queries, from the principal contractor regarding the path design.

Completion duties

On completion of the construction phase the principal designer must either:

- Finalise and pass the health and safety file to the client.

Where the principal designer's appointment continues to the end of the project, they must finalise the content and pass the completed file to the client to keep.

- Pass the health and safety file to the principal contractor

If the principal designer's appointment finishes before the end of the project, the partially completed health and safety file (and the responsibility for it) must be passed to the principal contractor. Once the project is finished, the principal contractor must finish the file and pass it to the client to keep.

Principal contractor duties

The principal contractor must complete the following duties once path works start on site.

Avoid and reduce risks and monitor the effectiveness of controls

During the construction phase, the principal contractor must identify the health and safety risks, controls and resources needed to avoid or reduce the risks to an acceptable level so that no one is harmed by the path work.

Safe systems of work and controls should then be monitored throughout the construction phase to make sure that they remain effective.

The principal contractor needs to ask themselves the following questions:

- Is the path work properly planned?
- Are suitable controls identified?
- Can the risks be avoided?
- Can the consequences be reduced?

- Can safer materials, plant, or equipment be used?
- Can safer work methods be used?
- What information, instructions, training and supervision is needed?
- Have I thought about all the options?

Ensure site information is understandable

The principal contractor must ensure that all site workers can understand the information that has to be provided as part of site induction, site rules or specific ways of working. They should consider the need to make greater use of pictograms or diagrams, provide translations of site rules or provide other means of support for communication. They must ensure that no worker is excluded from safety communications through a lack of appropriate support provision.

Update the construction phase plan

The construction phase plan should be updated throughout the construction stage, as new information becomes available, such as changes to the path design.

Secure the site

The principal contractor is responsible for overall site security. They must take reasonable practical steps to prevent unauthorised access to the site.

Site working areas should be cordoned off where necessary with safety signs, e.g. hazard warning signs. The site must be left in a safe condition at the end of each working day, and especially at weekends. When securing the site, close co-operation between the principal contractor and others is required to make sure the site remains secure and no one is put at risk.

Note: Securing the site in an upland environment is not about putting up hoarding or metal fencing given the location and that pathwork takes place on a mobile site that is continuously moving as sections are completed. It is probably impractical and unnecessary to guard the whole site with fencing and so safety signs may be a suitable control. However, it would not be reasonable to leave an excavation or significant drop unguarded and in those sorts of circumstances signs on their own would be insufficient and chestnut paling is probably a reasonable control.

Provide site induction

The principal contractor must make sure a suitable site induction is provided to everyone going to work on, or visit the site.

The site induction should be site specific and relevant to the size, scope, and nature of the path work and the level of risks involved. The site induction should include (but not be limited to):

- Senior management's commitment to health and safety
- An outline of the project
- Management of the site (who the team supervisor or site manager is)
- Site specific health and safety risks on site
- Controls on site for the risks
- Site rules
- Fire safety
- First aid arrangements
- Accident and incident reporting arrangements
- Emergency evacuation arrangements
- Training arrangements (toolbox talks, work task briefings)
- Path workers' health and safety consultation arrangements
- Individual path worker's health and safety responsibilities
- Site environmental protection arrangements.

Engage with path workers and other contractors (if involved)

Following the site induction, the principal contractor should continue to engage and consult with every one working on site about health and safety matters.

Path workers and other contractors can help the principal contractor make decisions about health and safety, and to manage the risks, by:

- Helping to spot the risks.
- Making sure controls are practical.
- Reporting problems with existing controls.
- Increasing commitment to health and safety.

Path workers and other contractors must be consulted, in good time, on health and safety matters on site. This could include:

- Risks arising from their path work.
- Risks from others or the environment they are working in.
- Proposals to manage and control new risks.
- The best ways of providing information and training to help them understand how to do their path work more safely.

Monitor health and safety risks on site

The principal contractor must monitor health and safety risks on site. Monitoring can be carried out through:

- Site meetings
- Routine visits
- Conversations with path workers and other contractors (if involved)
- Site inspections
- Visual checks.

Contribute to the health and safety file

The principal contractor should hand all relevant information for the health and safety file to the principal designer, throughout the construction phase. This information should be about the finished path structure, including any changes to the original path design in the form of as-built drawings, which will be needed for future work. The principal designer will then collate all the information into the agreed format for the final health and safety file and then pass the file to the client for keeping.

Finalise and hand over the health and safety file to the client

If the principal designer's appointment ends before project completion, they will hand over the partially completed health and safety file to the principal contractor, who must finalise the document and hand it over to the client on completion of the project.

Contractor duties

The contractor must complete the following duties once path works start on site.

Plan, manage, monitor and coordinate their path work:

The contractor's main duty is to plan, manage, monitor and coordinate the path work under their control so it is carried out safely. The contractor needs to:

- Address client requirements.
- Assess the pre-construction information.
- Comply with the construction phase plan.
- Make sure that those carrying out the work have the right skills, knowledge, training, experience and supervision.
- Make sure that those carrying out the work have the right plant, tools, equipment, materials and PPE.
- Pass on relevant information and instructions to path workers.

- Make sure that path workers comply with the site rules.
- Coordinate work with other contractors and the principal contractor.
- Allow path workers sufficient time to prepare and carry out the work.

Ensure site information is understandable

The contractor must ensure that all site workers can understand the information that has to be provided as part of site induction, site rules or specific ways of working. They should consider the need to make greater use of pictograms or diagrams, provide translations of site rules or provide other means of support for communication. They must ensure that no worker is excluded from safety communications through lack of appropriate support provision.

Co-operate with other duty holders

To make sure that health and safety risks are properly managed and controlled, a contractor must co-operate with the principal contractor and other contractors, as well as other duty holders who may be involved.

Make sure that a suitable site induction is provided

The contractor must provide a suitable site induction for all their path workers if they are the only contractor going to work on site. Where there is more than one contractor, the principal contractor must provide the site induction for all the path workers under their control, including those of other contractors. The site induction should include (but not be limited to):

- Senior management's commitment to health and safety
- An outline of the project
- Management of the site (who is the site manager)
- Site specific health and safety risks on site
- Controls on site for the risks
- Site rules
- Fire safety
- First aid arrangements
- Accident and incident reporting arrangements
- Emergency evacuation arrangements
- Training arrangements (toolbox talks, work task briefings)
- Path workers' health and safety consultation arrangements

- Individual path worker's health and safety responsibilities
- Site environmental protection arrangements.

Continue to engage and consult with path workers

Following the site induction, the contractor must continue to engage and consult with their path workers on site on health and safety matters.

Their path workers can help their employer make decisions about health and safety and manage the risks by:

- Helping to spot the risks.
- Making sure controls are practical.
- Reporting problems with existing control measures.
- Increasing commitment to health and safety.

Make sure that the site is secure

Where there is only one contractor, that contractor has the overall responsibility for securing the site. The contractor must make sure that their work will not put the public or others at risk.

Where there is more than one contractor, the principal contractor has the overall responsibility for site security.

Appoint path workers with the right skills, knowledge, training and experience to work safely

The contractor must make sure that all path workers have the right skills, knowledge, training and experience to work safely. When appointing or managing other contractors' workers make sure:

- They have the necessary skills, knowledge, experience and training to do the path work safely without putting their own or others' health and safety at risk.
- They are properly supervised and given clear instructions.
- They have the right tools, equipment, plant, materials and personal protective equipment to do the path work properly and safely.
- They consult on health and safety matters.
- They make arrangements for health surveillance if needed.

Provide the right supervision

The contractor must make sure that they provide the right supervision and that those supervising are competent to do so. The level of supervision should reflect the level

of risk involved with the path work. The contractor's team supervisor will need to be familiar with the type of path work to be carried out.

Path workers' duties

Report health and safety issues

Path workers must report anything they see that is likely to endanger or harm their own or others safety and health.

Co-operate with everyone involved

They must co-operate with their employer, fellow workers and other duty holders.

Path workers' expectations

Path workers should expect their employer, the contractor or principal contractor, to:

- Provide them with understandable health and safety instructions and information including site rules and a suitable site induction.
- Make sure that they and others have the necessary training to work safely and healthily.
- Consult and engage on health and safety matters with them and others.
- Create a positive health and safety culture on site for them and others.
- Provide appropriate supervision for them and others.
- Make sure that health and safety risks are managed for them and others.
- Make sure that health and safety risks are communicated to them and others.
- Explain the arrangements for co-operation and coordination to them and others.
- Make sure that there are adequate, clean and accessible welfare facilities for them and others.
- Comply with health and safety regulations for construction sites and the path work.

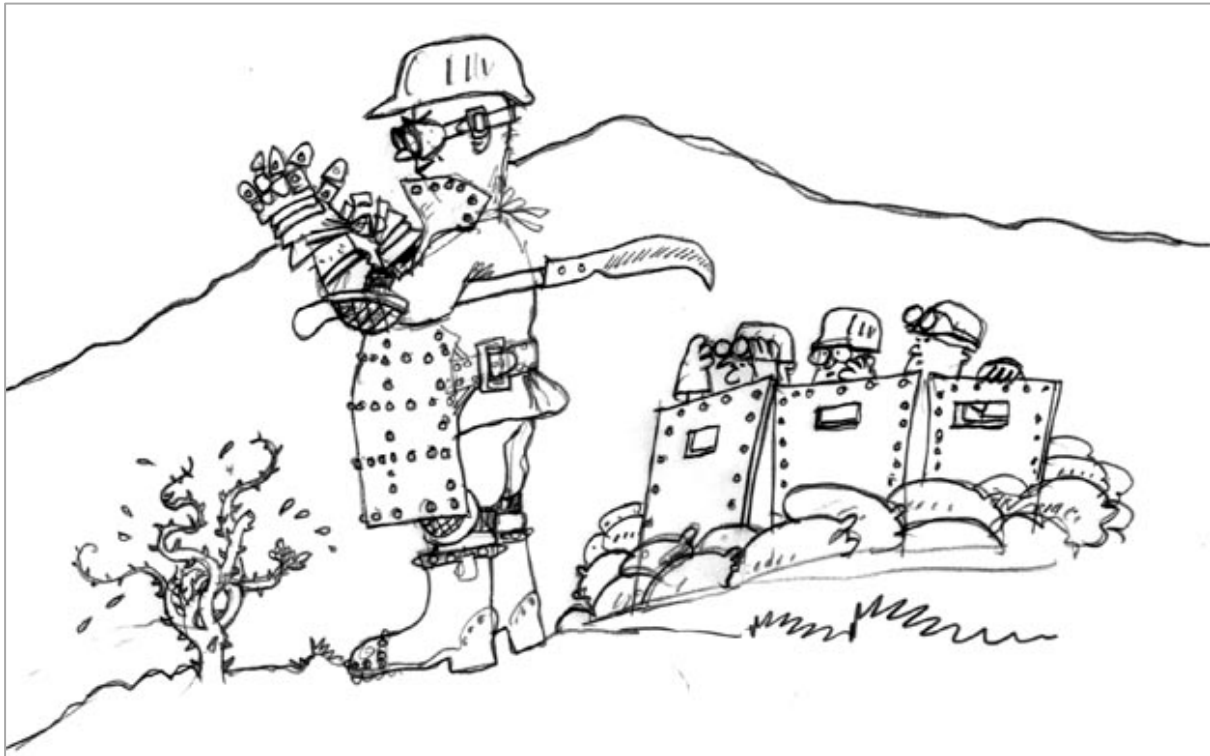
Working better together

Path workers should be involved in health and safety decisions so that they are engaged and comply, helping to make the site a safer and healthier place to work.

Work together to comply with the CDM Regulations

Remember that all of the project team must work together through the construction phase to comply with the CDM Regulations to make a project safe and successful!

4.7 Monitoring site health and safety performance



Health and safety: work in progress

There is no set format for running a construction site, but there are principles which can be applied to any site to achieve good health and safety standards. All path work must use competent, trained people, carrying out tasks within their capability, with well-maintained hand tools, plant and equipment and good team working, having due regard for their own health and safety and that of their team members, visitors to the site and the path users. Path work will draw on the information already available in the construction phase plan, the experience of the team on similar path projects and advice from specialists. The information here only describes in general how the path work will be carried out during the construction phase, it is up to the contractor's (or principal contractor's) team supervisor or the principal designer to set out how the path work will be carried out and to establish the right attitudes and health and safety culture for the site. Different sites will need different solutions and different teams develop their own ways of working. There is a great difference between a well-managed, healthy, safe and productive site and a poorly managed site. The aim is to create a productive, healthy and safe site that has good team working. Establishing and maintaining good practice on your site will have a positive impact in several areas:

- productivity: a well-managed site gets the path work done;
- safety: a well-managed site builds in health, safety and welfare with team members looking out for each other;

- quality: attention to detail helps to get the work done right the first time;
- good relations: a well-managed site keeps the client happy;
- workplace: a well-managed site is an enjoyable and happy place to work.

Path work sites that operate efficiently and safely have a good leader. Over time, you should develop your own leadership style that suits you and your team. On a well-managed site:

- everyone knows what they are doing and why;
- it is clear who makes the decisions and what has been decided;
- the opinions of the whole team are discussed and considered;
- each task is thought through with good planning and foresight;
- there is attention to detail and the motivation to get things right first time;
- there are regular reviews to see that everything is going according to plan, or if things need to be changed. The site is busy, but not rushed – there are realistic targets and rewards for good performance;
- there is a friendly attitude towards visitors to the site and passing path users, with a genuine concern for their safety and welfare.

Keeping track of health and safety on site

You will only have a limited amount of time to devote to health and safety issues on site, and these will have to be juggled with productivity and other priorities. Some health and safety issues will need to be considered every day, whereas others will need to be reviewed at different intervals as the project progresses. Do not wait for something to go wrong before you check that everything else is going right! At the beginning of the project make a list of the health and safety issues you will check at the following times:

- day 1, when the project starts;
- daily, for the duration of the project;
- weekly or fortnightly;
- at the end of the contract.

Issues to check and review are listed below.

The team

- There should be a clear chain of command, with someone to deputise when the team supervisor is not on site.

- The team should have the right skills for the jobs – matching skilled and inexperienced workers.
- There should be short team meetings to discuss progress, including health, safety and welfare issues.
- Everyone should be aware of their responsibilities and what they are doing next.

Hand tools, equipment, plant and site

- You should run through your safe systems of work procedures and check that they are being followed.
- You should keep a log of work activity on site.
- Mark out services on site.
- Mark areas to be cordoned off and check that this has been done.
- Erect site information and safety signs. Check that they are in position at the start of every day.
- Check that equipment and plant is in good working order and that the right hand tools are available for the path work.
- Check equipment and plant logs and ensure that maintenance is taking place daily and regularly.

Access

- Brief the team on public access across the site.
- Cordon off work areas or re-route around them when you want the public to stay clear.
- Speak to the public and explain why the work is taking place.
- Check that your team is making the public welcome.
- Check that the site is made safe for public use when the team is not on site working, particularly before the weekend, during any other breaks from work, and at the end of each working day.

Supervision

- Brief the path workers on the health and safety information in the construction phase plan.
- Give the relevant parts of the construction phase plan to other contractors going to work on the same site.

- Check that the construction phase plan is being used on site. Give a construction phase plan toolbox talk to check path workers understand its purpose for managing health and safety on site during the construction phase.
- Check informally that all safe systems of work procedures are taking place.
- Carry out a more thorough check of all safe systems of work, firefighting, first aid and emergency evacuation equipment and procedures; and path workers' knowledge via relevant toolbox talks.
- Make a note of health and safety issues that need attention – this is often included on the client supervisor's site visit report

Regular checks of health and safety on site

	Check
Physical environment	<ul style="list-style-type: none"> • Site information signs and site safety signs are still in position, seen and readable • Firefighting, first aid and emergency evacuation equipment • Cordoned off work areas • Alternative routes for the public • Location of borrow pits and excavation depths • Equipment and plant daily before starting engines • Hand tool condition and storage
Team work	<ul style="list-style-type: none"> • Clear leadership/supervision • Communication and team working • Readiness in the event of an emergency • Path workers have the opportunity to offer comments and solutions on health and safety matters • The team are following the procedures agreed
Team welfare	<ul style="list-style-type: none"> • General health of the path workers • Looking after one another – including concern for minor injuries and ill health • Team spirit – getting together at break times • Hygiene and cleanliness of welfare facilities on site • Attitude to the public and visitors

In order to thoroughly check that everything in the construction phase plan is either happening, or is ready to happen, it is necessary to carry out a joint health and safety inspection once or twice during the construction phase, or more regularly if path workers have raised concerns. This is a rigorous look at health and safety performance, and requires a dedicated and more formal approach. The team supervisor would lead the site visit, potentially accompanied by their employer (the contractor or principal contractor), the client and the principal designer.

The joint health and safety inspection is in addition to the routine site checks by the contractor or principal contractor described in the table above and other informal observations. It can either be on an agreed date or unscheduled. The aim is not to

catch the team out, but to have a comprehensive look at work practice to see whether it conforms to the planned way of working. Changes to either the way work is performed or the contents of the construction phase plan should be discussed. The visit may last 1–3 hours and a brief written record of performance and follow-up actions should be agreed and circulated to everyone in attendance.

Keeping site health and safety on track

If path work is not going according to the construction phase plan, then you need to act swiftly. The way in which you respond and how it is remedied will depend on the severity of the risk, whether this is the first time the problem has arisen, or if it seems to be recurring. For example:

Level of risk	Examples	Action by client	Solution by path workers
Moderate	<ul style="list-style-type: none"> • Crossing steep ground with an excavator, or power barrow in wet conditions. • Leaving hand tools strewn around the site during and at the end of the day. 	Talk to the path workers and remind them of the standard needed. Raise the issue with the team supervisor.	Keep working to a high standard. Occasional checks and reminders by the team supervisor.
Substantial	<ul style="list-style-type: none"> • Leaving open trenches, especially when no one is on site. • Rolling boulders down a slope, rather than using winches. • Moderate risks have been noted but no action has been taken. 	Stop the action by the path workers. Ask them to go through the action again following the agreed safe system of work procedure. Discuss it with the team supervisor and make a note for the file. Check that it has changed on your next site visit.	Review the way work is carried out. Team supervisor to work alongside the weaker path workers. Point out to the client when it is being done correctly next time.
Intolerable	<ul style="list-style-type: none"> • A new unplanned work operation carried out on a path used by the public. • Two or three people working in a very deep borrow pit, or close to working plant. • A substantial risk that is being repeated 	Stop the work operation immediately. Instruct that the work operation must not start until a point of work risk assessment and method statement has been prepared and you have seen it safely in operation. Write to the team supervisor, contractor, or principal contractor to confirm what is needed.	Stop the work operation and do not return to the task until the situation is remedied. Team supervisor or manager to prepare a point of work risk assessment and method statement. Team supervisor must carry out a 'dry run' and instruct the path workers, how to carry out the work operation properly and safely. Demonstrate the new procedure with the client on site, and write to inform them of the new risk assessment and method statement when you have approval to proceed.

Issues

In general, path work has a good health and safety record. There are occasional accidents on site, but because of good planning these are mostly minor events. There have been occasions when a site has been evacuated but all the training and planning has enabled this to be carried out swiftly and with a minimum of fuss. On several occasions, path teams have been called to the aid of other people on the mountain and have used their resources to help. Therefore, consider informing the Police Mountain Rescue Section of the location and duration of the project and provide full contact details and a copy of the site map and brief details of the project.

Site Inspection		Date:
Site:	Contract:	Contractor:
		Site Supervisor
Safety Management		Yes No N/A
Named Persons on Site		
First Aid Kit available		
Safety Plan available		
Named Competent Person available		
All persons understand Safety Plan		
Communication System arranged		
Site Materials and Substances stored correctly		
Emergency response system in place		
Welfare		
Personal Hygiene materials available		
Toilets available		
Rest area available		
Refuge available		
Equipment		
In good condition		
Stored safely		
Used correctly		
Environment		
Site tidy		
Waste managed		
Plant		
Is what stated on Method Statement on site		
In generally good order		
Safety attachments working		
Maintenance sheets seen		
User trained		
Up To Date Inspections		
Excavation reports seen		
Machinery reports seen		
Lifting tackle reports seen		
Lifting appliances reports seen		
People		
Wearing suitable clothing		
Working safely		
Total numbers on site as per Safety Plan		
Do they use provided Welfare facilities		
Comments:		
Action:		Follow-up date
Site Supervisor		Contractor

An area of weakness on path project sites has been poor response to minor injuries. Back pain, heat stroke, hypothermia, infected cuts and abrasions and even frostbite leading to severe blood poisoning, may start off with someone feeling unwell, in discomfort or having a small cut. Relatively minor injuries can become far more serious if they are not taken seriously and attended to immediately. Path teams often feel that they should push on if minor things go wrong, or are concerned that they may be blamed if they show any weaknesses. A strong team culture will be more open, keeping an eye on each other and not

begudging the time to get medical attention for minor problems or ailments.

The ill health part of health and safety extends beyond the site and the project in hand. Team supervisors and managers will need to have some background information about their team members and be prepared to offer support, particularly if family issues are troubling someone while they are away from home. Path workers should be reminded to have a health check for longer-term health issues that arise from outdoor manual work, such as sore shoulders, back pain and knee joints, respiratory problems or Lyme disease. The relatively small company size and transience of path teams makes it difficult to keep track of health issues, but organisations should encourage their workforce to have health checks once a year.

Review

At the end of project work on site, you will need to collect together all the information and carry out a short review of the whole contract, with particular emphasis on health and safety. This could be carried out with everyone who was involved in delivering the work on site and then between the team supervisor and the client and could be combined in one meeting. It is good practice to talk through the issues briefly, look for ways to improve the work planning and safety and record this in a short note for people working on the same site in future.

Some issues are:

- minor accidents or 'near misses' during the project;
- parts of the site, or periods of the project when the team felt uneasy or at risk;
- equipment, plant and hand tools used on site and their condition and suitability;
- a re-survey of the finished path – this is essential for future maintenance and health and safety inspections;
- a quick check through the risk assessments, method statements and construction phase plan to see if anything has been missed out or can be amended;
- any other information that should go into the health and safety file e.g. a risk assessment or method statement that is relevant to the future use of the site for maintenance by the contractors and use by the public.

At the end of the path project make a note of what would you do differently next time! Learning on the job is part of good health and safety management.

4.8 Maintaining site health and safety



Long-term health and safety

Your path project has finished and all that time spent planning and designing health and safety has paid off. The path has been repaired on time and in budget and the contractor has safely finished with nobody harmed and moved on to the next job. The maintenance phase is just beginning. You have a long-term and continuous responsibility to keep the rebuilt path in a reasonably good and safe condition, appropriate to the use and location. For path managers, this involves several tasks:

- **Keep, make available, and update a health and safety file:** N.B. A health and safety file is only required for a project involving more than one contractor. The principal designer or principal contractor will give this file to you at the end of the project. Keep your file separate from other information to avoid losing the important information that others may require urgently. Make sure that your file is available to anyone who needs to know about the information in it, e.g. volunteers carrying out routine maintenance will need to know about any hazards that have not been avoided. In addition, you must make sure that your file is revised and updated when more path work is carried out.
- **Routine safety inspections:** An inspection has to be carried out at least once a year and is carried out at the same time as maintenance visits. This will need to be more often if the path is heavily used throughout the year, or has for example been affected by flash flooding. The health and safety file details the safety checks required, what the path inspector needs to look for and record and who to pass the information to.

The first safety inspection should take place within 6 months of a rebuilt path's completion. The path is still settling in and you need to find out how much maintenance is needed in the long term. The health and safety file will therefore need to be in place within 3–4 months of completion of the path work, if it has not already been completed.

Remember that there are responsibilities under the HSWA and also the Occupiers' Liability (Scotland) Act to maintain the path in a safe condition.

To assist with maintenance, it is the client's responsibility to check that a health and safety file has been prepared and that they have received it from their principal designer or principal contractor. The handover and acceptance of the file is the formal end of the project and the start of the path manager's responsibility to maintain the route. A copy of the health and safety file and all copies of annual safety inspections should be circulated to all the organisations and people with responsibility or direct interest in maintaining the path. [CDM: Health and safety during the construction phase](#) provides more information about the health and safety file.

Risk management

Although there is a general requirement to maintain the path, this does not mean that upland sites should be rendered hazardless and harmless – eliminating natural risk is neither possible nor desirable. The site still has natural hazards, drops, slopes and uneven terrain, which are part of the excitement for users. However, a path and its drainage features must be designed and maintained so that users are not subjected to additional or unnecessary hazards, e.g. the side stones of a cross drain should be solid and unmovable so it does not collapse inwards as someone puts their weight on the stones; the shedding bar of a water bar should not be too high so it causes a trip hazard when someone is descending, the path surface should not be worn away to reveal the hardcore so it causes a trip hazard and bridge decking should be secure and sound so no one goes through it.

A risk assessment for the continuing use of the path may be useful where there are any remaining risks that are greater than trivial or insignificant, or where specific controls are required to manage risk at a reasonable level. This could be included in the health and safety file and should be short and simple, usually fitting on one page, following the same methods described in [Appendix 2](#).

5. Training and developing the project team

5.1 Identifying training and development needs



I can do that...

Fundamental to the delivery of any path project is the development of the team and the professional development of all individuals. At all levels there is an expectation that the skills, attitudes and knowledge required to deliver successful projects will be gained while these projects develop.

This section looks at how project managers can identify the skills and knowledge required to successfully deliver a project as well as provide the training and development required for both themselves and the project team. The intention is to give an overview here, as there are other training and resources that cover this subject in much more detail.

You should start with an analysis of the training and development that is required. 'The Training Cycle' or 'The Systematic approach to Training and Development' is a widely recognised and used model of the processes involved in professional development.

THE TRAINING CYCLE



This is a good place to point out that when setting any objectives for training we should be using the standard management practice of using **SMART** objectives.

S	Objectives should be specific in that they explain a number of individual tasks.
M	They are measurable in that you can determine if the tasks have been completed by checking against the targets, e.g. 2000 words, four bridges, grid reference, and so on.
A	They are achievable in that resources are available to complete the project. For example, is there sufficient time for completion and does the candidate have access to a computer?
R	They should be realistic . Clearly projects have to be set at an appropriate level and be relevant to the development of the individual. We have to ask whether the person presently has the skills to carry out the project, does he/she need training or can they learn by completing the project?
T	Finally, the project should be time-bound in that you have to set time targets for completion, and possibly for reviewing progress.

Setting **SMART** objectives ensures your team is supported to deliver within their abilities and the resources of the organisation, whilst also making the job of evaluation and review much easier.

Identify the need

Staff training needs can be identified in a number of ways, such as during interviews, through feedback from colleagues, by competence or knowledge tests, by observing work taking place, or from appraisal documents or CVs. Skills and knowledge audits and a SWOT analyses are well-known techniques that can be used for self-assessment as well as for identifying the needs of individuals and groups.

[SQA](#), [Lantra](#) and NPTC (City & Guilds) provide information about specific land based training and qualifications.

Skills and knowledge audit

A 'brainstorming' session will identify the skills, knowledge and understanding required to carry out a particular task. Skills that the project team leader might suggest are listed in the table below. By comparing the existing skills and knowledge of the team members with the recommended ones, you can determine what training is required.

Such an audit might produce the following conclusions:

Skills	Level required	Current level (or proven experience)	Development needs
Project design	Degree or HNC level management and review	SVQ level 4 Supervisory management plus some specific project training	A more advanced course in management skills
Planning and reviewing	Management Level 4 S/NVQ	Management Level 4 S/NVQ	As above
Staff management	Management Level 4 S/NVQ	Management Level 4 S/NVQ	None required
Team briefing	Management Level 4 S/NVQ	Management Level 4 S/NVQ	As above
Effective presentation	Ability to present projects to community groups	Not confident in presenting to groups	There is a need for a specific course followed up with exposure to group presentations
Report writing	Professional quality reports	Already presents high quality reports	None required
Assessment skills	Vocational Assessor Award	Holds Skills Assessor Award	Training in assessing workplace competence
Team skills	Management Level 4 S/NVQ	Management Level 4 S/NVQ	None required
Training of trainers	3- to 4-day course	Already holds three relevant training units	None required

Knowledge	Level required	Current level (or proven experience)	Development needs
Management of Health and Safety	NEBOSH level	Already holds Management Level 4 S/NVQ and has attended specific training	None required
Safety in construction legislation	NEBOSH level	As above	As above
Employment legislation	Management Level 4 S/NVQ	Management Level 4 S/NVQ	Updating courses when available
Appraisal system and how it works	Specific knowledge and use of the system	Has carried out appraisals in other organisations	Specific coaching only required
Environmental legislation	Full knowledge of relevant environmental legislation	Has full knowledge through personal research	None required

Do not be over specific about each and every aspect of the job, and do not use vague expressions: communication skills, for example, may cover questioning, listening and talking to a group. You should attempt to be as clear and concise as possible about the skill or knowledge required.

SWOT

Another simple self-assessment tool is the **SWOT** analysis or analysis of **Strengths, Weaknesses, Opportunities** and **Threats**.

This can be used on its own or with the skills and knowledge analysis. It is a good technique for helping staff to identify their own training needs with or without support.

The project team leader

Strengths	Weaknesses
<ul style="list-style-type: none"> I have a strong background in management techniques. 	<ul style="list-style-type: none"> I have not worked to any degree with groups of manual workers.
<ul style="list-style-type: none"> I have used a pc competently in previous jobs. 	<ul style="list-style-type: none"> I am unfamiliar with project management software.
<ul style="list-style-type: none"> I have a NEBOSH Certificate. 	<ul style="list-style-type: none"> Health and safety training did not cover construction regulations.

Opportunities	Threats
<ul style="list-style-type: none"> There will be a number of candidates selected for a higher level qualification in Project Management. 	<ul style="list-style-type: none"> Lack of project management skills can hamper progress.
<ul style="list-style-type: none"> Growth in the path industry may mean that there are more promotion prospects. 	<ul style="list-style-type: none"> Other candidates may have worked with manual workers. I need to improve my leadership skills.

Whatever technique is used, it is best to include this in a personal development plan (PDP). This is very often carried out as a part of an appraisal process.

An example of a personal development plan

Development issue	Reason for development	Method and date for achieving objective	Review date and comments
1. Training and assessment skills	To fulfil role in training and developing my team to meet the required job standards.	Attend training course leading to the Certificate for Skills Trainers and assessors by August 2016.	
2. Report writing	To improve my knowledge of standard report writing techniques.	Attend a short course when available by September 2016.	
3. Project management	To enable me to fully understand and manage projects.	To attend an introductory course by June 2016 with a view to commencing a certificate course in early 2017.	

The above techniques can lead to individual development plans. It is standard practice to compile these individual plans and to produce composite plans for a department or specific group. These, in turn, can then be combined with plans from other groups to form an organisational training needs analysis.

We can all do that

The department, organisational or team training needs analysis should be set out in a similar way to the PDP. However, simply compiling a list of team members' training needs may result in a list of individually identified needs and not a plan that suits the organisation or the project team. Sometimes, individuals may push for expensive training that is not a priority for the team as a whole, or inappropriate or costly training may be prioritised badly.

It is the role of the manager or team leader to analyse the identified needs in order to determine the priorities for the team as a whole and to decide in which order these needs can be met, given that there are always budgetary constraints.

In order to do this the manager or team leader has to understand a basic principle of team working:

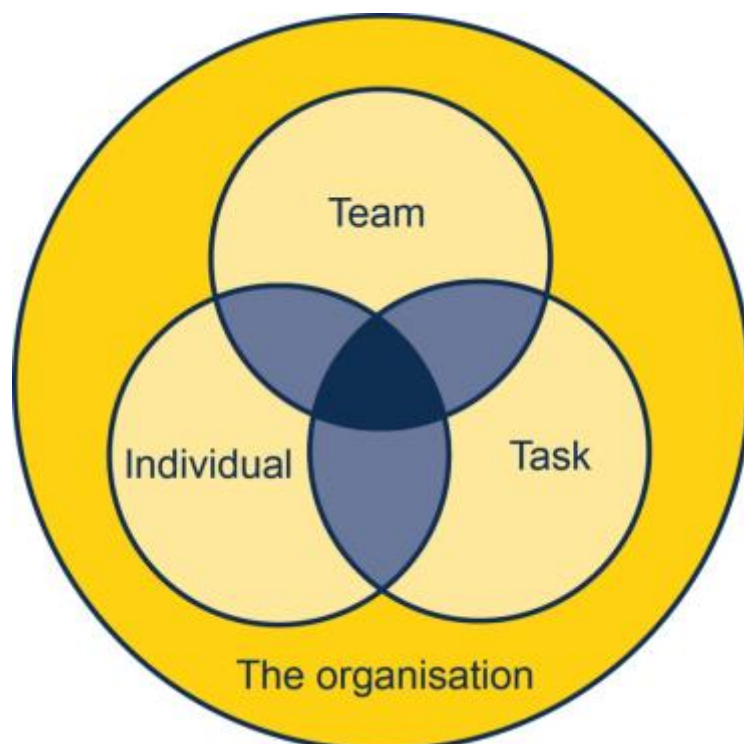
None of us works in isolation, although we sometimes would like to think we can, every action we take, everything we say has possible consequences for others in the organisation or in the team.

Focusing on getting the job done may be detrimental to other team members and affect how the team works. Pushing others to achieve difficult targets is well known to have a demotivating effect on all.

Focusing on individuals, through favouritism for example, may be detrimental to the team spirit and affect how the task is carried out.

Focusing on keeping the whole team happy may be detrimental to individual team members and affect teamwork.

It is the aim of everyone in an organisation to achieve a balance encouraging and supporting individuals so that a strong team can be built, while ensuring that the task is carried out.



The aim is to balance the needs of the team, the task and the individual. On the diagram above the best overall solution is shown by the darker colour in the centre where all three circles overlap. It is up to the team leader or manager to ensure that there is the optimum overlap so that individuals work well within the team and that the team works well together to complete the task.

Team leaders have a major role in facilitating this through their management and communication skills. Individual training needs must be analysed and prioritised to benefit the team. It could be beneficial in the long term to allow individuals to undertake a costly MBA, but it could be more productive to fund an in-house programme leading to six or seven members of staff achieving an N/SVQ in an appropriate skills area.

Once a list of needs have been determined a timescale for achieving them has to be set down. An example of a team training needs analysis is shown below.

IMMEDIATE PRIORITIES			
Need	Who?	Why?	Target date
Risk assessment	Full team	To comply with law	ASAP
Basic Health and Safety	J Kerr		
	I Smith	Team targets	-/-/-
SHORT TERM	Next month		
Survey techniques	J Kerr		
	P Weir	Identified gap through analysis	-/-/-
MEDIUM TERM	2-3 months		
Interpersonal skills	I Smith		
	D Stewart	Identified through appraisal	
Team development	Full team	Identified through team discussion	-/-/-
LONGER TERM			
SVQ In Administration	Admin team	To support training and identify further gaps	-/-/-

If the manager or team leader does this, then the team development plan is more specific to the needs of the team, more cost-effective and more likely to take the team forward in its task. The next stage is to deliver the training.

A step further - continuing professional development (CPD)

CPD is the formal and informal learning and development undertaken in order to fulfil a current role or perform a new one. It refers to the practice of recording the skills, knowledge and experience that are gained through work beyond initial training. This builds a personal reference of knowledge and experience that is then applied in the work place. It allows the individual to maintain or widen their skills base and keep abreast of developments within their profession.

Many employers encourage or develop their own CPD scheme. This can be structured as a tailored approach to learning to enhance individual competence, based upon accrued skills and practical experience. It also aids an employer's flexibility in meeting current or future skills set requirements.

Membership of a relevant industry recognized professional body is one way by which this can be attained. Candidates usually apply for associate or full membership, dependent on experience and the minimum set criteria. This can comprise providing a current job description and other supporting material followed by a verbal presentation. The benefits of membership can include access to a previously unavailable range of training and contacts in the same field of work.

5.2 Meeting the need



Meeting the need through training and development

This manual doesn't go into detail about the many ways in which training and development can be delivered. Instead, this section focuses on three areas that are pertinent to the path manager, the team member and the team. However, it is well worth taking into account that different people prefer different ways of learning.

The path manager

As a result of the training needs analysis a number of routes to development may be identified. As part of their personal development plan (PDP) managers commonly put together a portfolio of evidence showing their progress. (In some professions this is actually compulsory in order to maintain professional status.)

The contents of the portfolio should include:

- an up-to-date CV;
- qualification and course certificates;
- a record of past training and development; any analysis carried out;
- appraisal reports;
- the PDP and reviews.

This portfolio should continually be updated, and in time will provide evidence of a commitment to lifelong learning. Team members should be encouraged to keep a portfolio to recognise their achievements.

The team member (including the manager)

There are a wide variety of methods for an individual's development. Some of these are related to a team's needs, as discussed in the following section, but some of the needs may be very specific to the individual. A number of specific needs can be identified from the training needs analysis and PDPs. The team manager or trainer may then be required to determine how these needs can be met. There are a number of options.

External provision

Further education colleges and private training providers can be a source of training and development. If the courses provided match the needs identified in development plans, these can be very successful. Sometimes it is difficult to find courses that match needs completely; however, every effort should be made to ensure that the training is at the right level and will meet the identified needs.

If numbers justify it, it is usually more cost-effective for external organisations to deliver in-house training to reach specific objectives that have been agreed between the training organisations and the client.

Open learning

A wide range of open-learning packages covering both technical and interpersonal skills are available. Such courses are widely used in, for example, management training; some qualifications for managers incorporate a certain amount of open learning, some of which may be supported by mentors or tutors in the workplace or in a learning centre. This is the model used extensively by the Open University and the Open Business School.

Projects and assignments

There is very little difference between these two terms: assignments are generally written and projects are generally practical. Both start with an agreed objective or set of objectives and can be used at any level.

For instance, an assignment might have the following objectives:

1. Investigate the design for four wooden footbridges over narrow chasms with a view to producing a set of drawings for a wooden bridge over the ravine at grid reference xxxxxx.
2. Explain the rationale behind the decision to recommend this particular design.

3. Write a project plan for the commissioning of this bridge given normal team resources. Report back on this by –/–/– with a full and detailed project report laid out in standard reporting terminology. Your report should be no fewer than 2000 words, excluding relevant appendices.

Use of National and Scottish Vocational Qualifications

National and Scottish Vocational Qualifications (N/SVQs) have revolutionised training and development design and delivery.

These work based qualifications are based on National Standards. These standards have been developed by virtually every sector of industry and are laid out in a common format of **units** and **elements** of competence along with associated **performance criteria**, which state the outcome when a task is completed competently.

‘Competence’ is defined as being able to complete a task and having a full understanding of the task, as well as knowing why and how it is carried out. It also means carrying it out safely while taking into account the environment and the people who are around or involved. A path worker who moves a boulder without first carrying out a basic risk assessment of the task and does not check who is in the way or where it is going to roll is not a competent worker.

The competent path worker works with others to determine the weight of the boulder, checks where the boulder is going to roll, ensures that all safety measures are taken, uses the right tools and works with others to move the object.

This example shows that considerable time and training may be necessary to ensure that some people are able to work safely with others to carry out simple tasks. These principles are built into vocational qualifications.

A number of basic principles underlie vocational qualifications. Courses explaining these principles in more detail are available for training specialists but they are outlined below.

1. Standards are set by industry

Standards are set by the relevant sector skills councils for each industry and are accredited by awarding bodies to produce SVQs. The path industry has its own SVQs represented through an ‘industry’ recognised qualification used in tandem with the Environmental Conservation SVQ.

2. Competent performance is determined by assessment against criteria contained in the standards

Each element from these SVQs has specific performance criteria against which assessment is carried out.

3. Assessment is carried out in the workplace by trained assessors

Training courses are widely available for assessors assessing any S/NVQs. At a basic level, the training is based on four elements of the **Skills Assessor Award** containing one unit: **Assess Competent Performance**. There are four principles:

- Preparing to assess
- Planning Assessments
- Assessing Candidate Performance and Knowledge
- Confirming progression and achievement

In general, assessment in the workplace is a relatively straightforward practice usually based on work instructions or simple checklists related to the performance criteria.

The candidate for an S/NVQ will be required to, or will find it useful to, put together a portfolio. This should contain the same records of progress as described for the manager's portfolio. In addition, it will also contain evidence that will be used towards the S/NVQ, including records, testimony from others that the criteria have been met, drawings, photographs, plans, maps or other documents supporting the assessment.

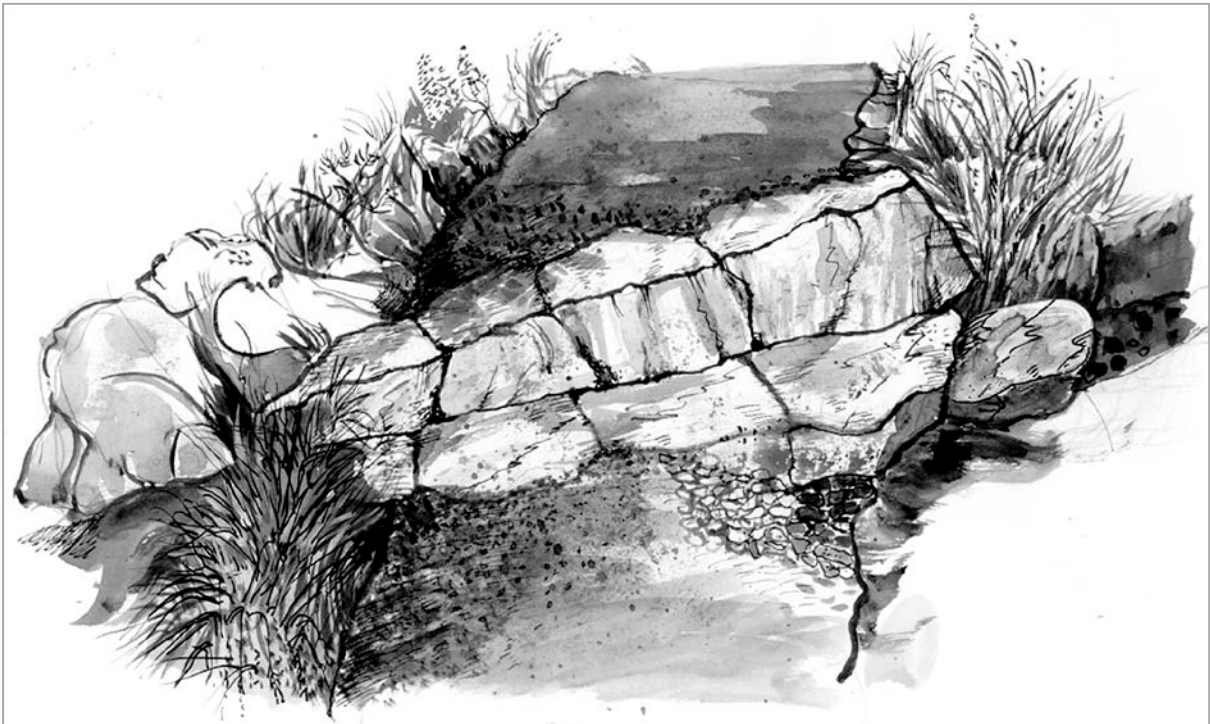
In the same way that path managers will find the portfolio-building process useful, there is a great deal to be gained in using the portfolio to reflect on learning.

The communication and planning skills learned through assessor training, including planning, questioning and giving feedback, are valuable development tools for the path manager.

On-the-job training

Although S/NVQs have revolutionised the design and delivery of training programmes, it would be wrong to suggest that on-the-job training is new. S/NVQs provide a framework and formalise a lot of good on-the-job training. The principles are fairly simple. The first step is an analysis of the tasks. These tasks are laid out in the [Upland Pathwork – Construction Standards for Scotland](#) manual. For example, constructing a stone waterbar can be presented on a task analysis sheet, which can then be used for other tasks.

Task analysis: stone waterbar



Step 1

Excavate a trench across the path

Key points

Dig the trench wide and deep enough to allow for the liner width and depth, and the required upstand of the bar stone with tread flush with the downhill path surface. The line for the trench should be at an angle to provide the required fall and disperse the flow of water.

Step 2

Position the bar stones ensuring that the required angle and fall is maintained

Set the bar stones vertically, butted tightly together, to provide an even face and even tread surface, level with the path surface.

Step 3 and so on

The example above can easily be used for a wide range of tasks; sometimes there is an extra column for health and safety issues.

Once task analysis has been carried out training can begin. There is a long-standing formula for on-the-job training:

Tell – Show – Do

Tell: Practical tasks can be learned by being told about them; it is essential that people are told about key issues or can read about them.

Show: It is necessary to demonstrate how practical tasks are carried out. In the above task, a certain amount can be learned about constructing stone waterbars by being told, but we will learn more from a demonstration; videos and diagrams also help.

Do: The most effective method of learning is by doing. This combined with being told and then being shown, means that the learner has very much more chance of both carrying out and fully understanding the task.

There is another way to look at it:

I do it - We do it - You do it

I do it – I will show you how to carry out the task.

We do it – We will do it together until you are ready.

You do it – Once you are confident you can do it on your own.

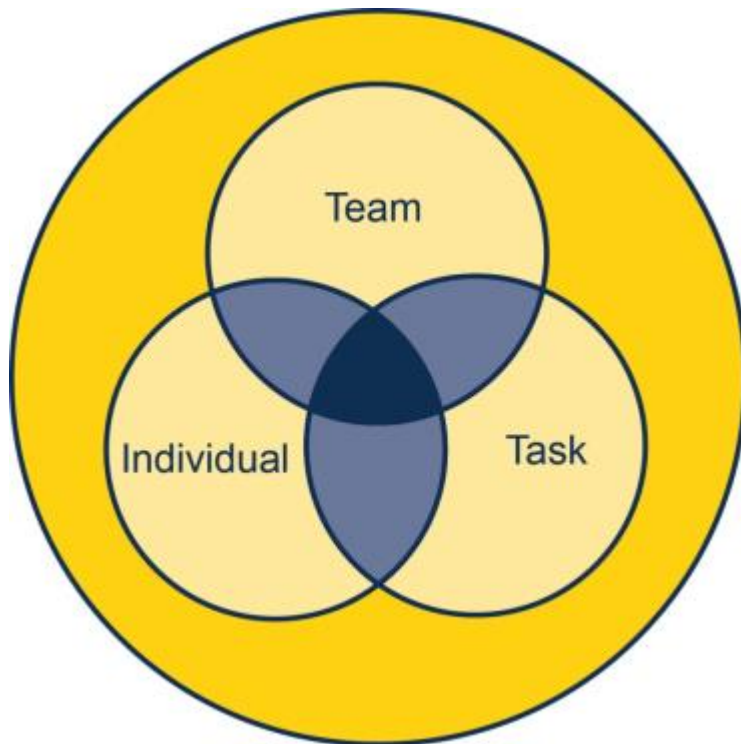
The above are standard models for training and coaching and serve as an introduction; training courses, some of them certificated, are available for trainers and coaches.

Developing the team

The need to determine the training needs of a team has been explained. Having identified the individual needs, the team has to be developed as a working unit. Fundamental to this is the role of the team leader. It has to be decided at an early stage the role that the team leader should have: whether the team will be self-managed, i.e. all team members having equal responsibility and sharing any management tasks; whether there will be a team leader who takes on any management responsibilities; or whether there will be an in-between stage in which there is a team leader who then delegates management responsibilities. The extremes are the traditional supervisor–staff relationship and the totally self-managed team who are all equally empowered to take management decisions.

There is no one model that works best in all situations or organisations. Each of these extremes and anything in between will have particular training needs and development issues.

The team development process starts with building up team relationships, understanding and communication. It is not enough to call a working group a team. The term 'team' implies shared practice, shared values, shared goals and a shared vision of the culture of the organisation. It does not imply shared interests, shared motivation or shared personal ambitions. Some organisations expect too much from the team members. However, we can all be individualistic while working towards shared targets for the company.



The **team–task–individual** approach shown is a good model for looking at team development and the aim to choose options which benefit the team, but also the needs of the task and the individual as well (shown in the diagram by the darker central area). You can start with exercises or training to help the team focus on the task and how the team can achieve it. This is sometimes called a focus event and, if well facilitated, can assist the team to develop or accept team objectives. It can be extremely motivating if the

team is fully involved in setting objectives as it can give ‘ownership’ and consequently more motivation.

Crucial to the development of the team is the development of the team leader. If you are serious about the team being ‘led’ then you must develop leadership skills in the leader. When looking at the team–task–individual model, the team leader can be seen as the person who can balance the needs of the task with the needs of the individual while helping individuals move towards team working.

The following is a good description of what the team leader might do:

Initiate

- Working with the team to define or understand team goals.
- Giving relevant information.
- Seeking specialist advice.

Plan

- Making a plan.
- Allotting tasks to or agreeing tasks with team members.
- Checking understanding of the tasks.

Control

- Reviewing performance and maintaining standards.
- Negotiating change.
- Ensuring that resources are available.
- Ensuring all actions contribute to the team objectives.

Support

- Encouraging the team.
- Meeting individual needs.
- Balancing individual needs against task and team needs.

It can be seen from the tasks above that the team leader needs to develop a range of both technical and interpersonal skills. But far more important is adopting the attitude that people count in the team–task–individual equation; the best team leader learns the technical skills while developing advanced communication skills such as influencing, negotiating and problem solving.

There are a number of ways of helping the team leader to develop, including courses and reading. Although these are extremely useful, one of the best ways of learning leadership skills is by having a good example. A new team leader supported by a mentor or coach is an effective way of learning on the job; the mentor can help the team leader reflect on the leadership skills which he/she is developing over a period of time. If this can be integrated into the overall development of the team, then all the better.

It may also be useful to look at explanations of team leadership from some famous leaders

‘The capacity and the will to rally men and women to a common purpose and the character which inspires confidence.’

Field Marshall Montgomery

‘A leader is someone who has the ability to get other people to do what they don’t want to do, and like it.’

Harry S. Truman

‘Leadership is that part of management concerned with getting results through people.’

John Adair

A short course on leadership

The six most important words..... I admit I made a mistake

The five most important words..... I am proud of you

The four most important words..... What is your opinion?

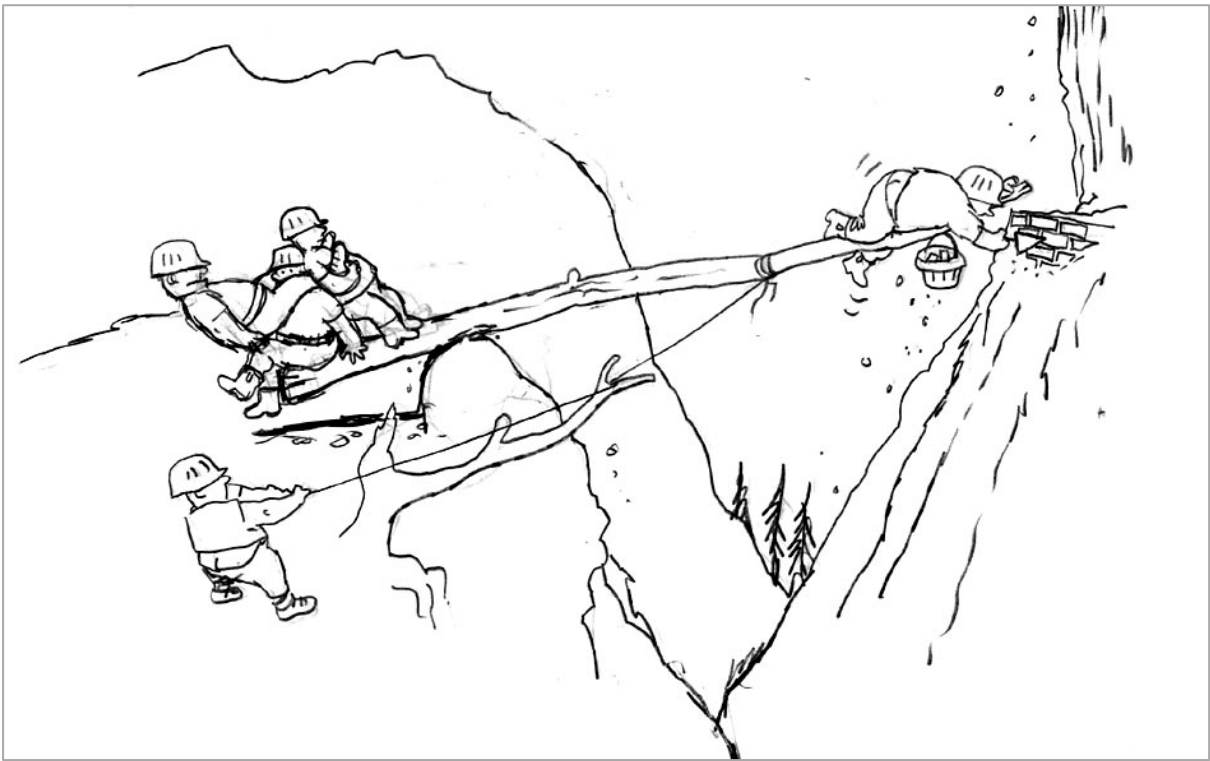
The three most important words..... If you please

The two most important words..... Thank you

The one most important word..... We

And the least important word..... I

5.3 Evaluating the development



How was it for you?

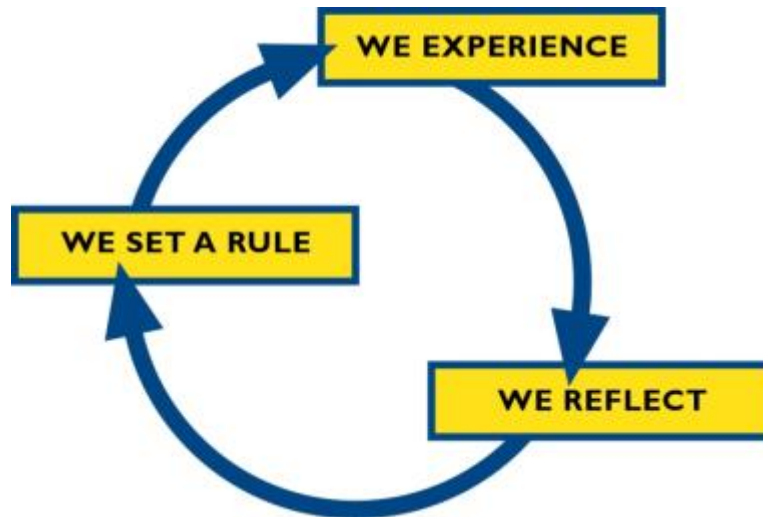
In [Identifying training and development needs](#) we looked at the training cycle, in which a need for training and development was identified; [Meeting the need](#) then described how training can be delivered, whether it is for the path manager or for a team member.

It is important for the team and the individual to determine whether the training and development has been effective. Before you do this it is useful to look at a model of how people learn. This can be interpreted in the learning cycle.

'If you don't know where you are going, you will not know when you get there.'

We experience

Think back to when you learned a certain task. Whether it was learning to ride a bike, drive a car or do a crossword, you have to start with an experience. That is, you attend a training course, try something out, are shown how to do something, watch a video, or any other method which exposes you to the skill, method, task or knowledge.



We reflect

After instruction, if you wish to learn the task or knowledge, you reflect on it. You can either think through the process, such as doing crosswords or mathematical problems, or you can practise, such as first-aid training.

We set a rule

Having reflected or practised, you can see how a task is performed and you set a rule, that is the way something that is done 'clicks'. Having set the rule, you then go on to practise the task until it is 'mastered'.

This is exactly the principle behind study skills in which the student learns a subject and then by writing essays or doing tests along with feedback from a tutor eventually understands a process.

Applying this to training and development

Training and development at any level wastes resources unless it correctly meets a need. The only way you can determine whether it has met a need is to evaluate the learning, taking into account the learning cycle. This applies to both managers and path team members.

Evaluation can exist at a number of levels, and unless you understand and use this you will not fully implement training that will meet the overall needs of the team.

Instant evaluation

We are familiar with instant evaluation sheets at the end of training courses. While these can be useful in an overall picture, they are generally of limited use as they only describe feelings at that time. They may also reflect what the learner has enjoyed rather than what he/she has actually learned.

Pre-briefing

It is more meaningful if team members are briefed by a manager before any training event to talk over the content of the training, to determine expectations and to set the scene for a debriefing.

Debriefing

Debriefing is a good way to ensure that the learner is focused and is going to be able to implement the training as soon as possible after the learning. It is also a vehicle for the manager evaluating whether this was the right training and whether it was value for money.

Learning

Many people attend courses or other training sessions but do not learn as efficiently as they could. There can be many reasons for this, including lack of motivation or poor teaching. You must determine whether any training and development is effective in assisting the learner to learn. This can be done through tests or examinations, but the most effective way in the workplace is to allow the learner to put the new knowledge into practice as soon as possible. If necessary, this can be carried out under supervision and feedback given as soon as possible. Vocational qualifications were mentioned earlier and the assessment of skills in the workplace is a major benefit of this system.

Team learning

If you are concerned not only about the learning experienced by the individual but about the team, you have also to ask whether the training has had an effect on developing the team through either learning skills or changing attitudes.

That is, if you want to review team performance and the role of training in developing and achieving this then you should previously have set team development objectives using the [SMART principles](#). The team development should contain objectives, for example:

- By the end of September 2016 two assessors will have been trained to certificate level, three coaches to skills level and five members of the team to SVQ Level 2.
- Only by evaluation can we gauge the effectiveness of training and development.

We have here specific and measurable objectives that can be evaluated easily. This can be combined with evaluations from training courses and SVQs to form an overall picture.

Organisational learning

If the evaluation of team learning is important, so is the evaluation of organisational learning. This can be compiled from team evaluation reports and take the form of a report on the overall impact of training and development on organisational objectives.

If the above approach is taken you can more easily compare what has been achieved with what was planned in the original training needs analysis and the individual, team and organisational development plans.

A checklist for evaluation

Below is a sample of the kind of questions which can and should be asked of any training and development. By no means comprehensive, it nevertheless gives guidance on what should be evaluated:

- Did the training delivered meet the identified need?
- Has the training met the individual, team or organisational objectives?
- Has the need been met completely or in part?
- What has prevented the need being met?
- Has the need been met both efficiently and in a cost-effective way?
- Was the training event satisfactory?
- Did the delivery of the training enhance learning?
- Has the learning been set at the right level?
- Has the learner been able to implement learning as soon as possible?
- Was the learner briefed and debriefed for the learning?
- Have all necessary resources been allocated to the training?
- Are these resources adequate?
- Has the development enhanced the learning needs of the team?

Appendix 1

CDM project coordination and example templates

This appendix provides tables showing the key CDM duties for a project with one contractor and a project with more than one contractor. It also provides the following example templates:

- Pre-construction information
- Method statement
- Construction phase plan
- Health and Safety file

Project Coordination for path projects with one contractor and projects with more than one contractor

As described in [CDM in upland path projects](#) the number of contractors working on site at any time determines how the project is coordinated and this influences which duty holders are appointed into the project team.

The two tables show what activities need to be carried out and by whom at each stage of the process.

CDM project activity planning - One contractor project

Project name:

Project location:

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Pre-construction	Carry out a condition or specification survey of the route to identify and gather information about site hazards and environmental issues	Client	Up to 2 years before starting works	Client may appoint specialist path surveyor to assist
	Appoint a designer with the right skills, knowledge and experience (early appointment)	Client	6 months before starting works	Health and safety advisor

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Pre-construction	Provide information to the designer e.g. an existing health and safety file (if there is one)	Client	6 months before starting works	Health and safety advisor
	Identify gaps in information and arrange for surveys	Client	6 months before starting works	Designer, health and safety advisor
	Assess the path design to eliminate risks or reduce and control remaining ones	Designer	6 months before starting works	Client, health and safety advisor
	Make changes to the path design to reduce risk	Designer	6 months before starting works	
	Provide information via a risk log to the client on significant risks and measures in the path design to reduce or control remaining risk not eliminated	Designer	6 months before starting works	
	Identify if the project meets notification rules	Client	6 months before starting works	Designer, health and safety advisor
	Prepare the pre-construction information pack	Client	3 - 6 months before starting works	Health and safety advisor
	Pass the pre-construction information pack to potential contractors	Client	2 - 3 months before starting work	
	Visit the site with potential contractors looking at path works and health and safety issues. Discuss the management of significant hazards, risks and best controls, listening to suggestions. After the visit issue updated path designs and pre-construction information, if necessary	Client, potential contractors	2 - 3 months before starting work	Designer, health and safety advisor

Phase	Activity (What needs doing?)	By whom (Who will do it)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Pre-construction	Assess returned bids from contractors, selecting and appointing a contractor with the best skills, knowledge, experience and organisational capability, to plan, manage and coordinate the path works and monitor and control health and safety on site.	Client	2 - 3 months before starting work	Designer, health and safety advisor
Construction including preparation	Notify the HSE of the project if it meets notification rules	Client	2 - 6 weeks before starting works	Designer, health and safety advisor
	Prepare a risk assessment and method statement (RAMS) for the path work activities to identify the best controls for all remaining risks in the path design and hazards on site to manage the risk for each one.	Contractor	2 - 6 weeks before starting works	
	Prepare the construction phase plan to manage all health and safety risks on site	Contractor	2 - 6 weeks before starting works	
	Check over the construction phase plan to ensure it is suitable and sufficient for delivering the path works	Client	2 - 6 weeks before starting works	Designer, health and safety advisor
	Hold a pre-start meeting on site with all parties involved to go over the path works, health and safety risks. Mark out the path works along the route	Client, contractor, designer	1 - 2 weeks before starting works	
	Set up the site with welfare facilities in place	Contractor	1 weeks before starting works	

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Construction including preparation	Check that welfare facilities are on site	Client	At least 1 week after works start	Designer, health and safety advisor
	Display F10 on site if the project is notifiable	Contractor	Once works start on site	
	Secure the site work area from unauthorised access by installing temporary barriers, site information and safety signage	Contractor	Once works start on site	
	Provide a site induction to all workers and visitors	Contractor	Once works start on site	
	Plan, manage, monitor, and coordinate the path works in accordance with the construction phase plan and RAMS	Contractor	Once works start on site	
	Hold regular visits on site with all parties involved to check on path work progress and review the construction phase plan	Client, contractor, designer	At least 1 a week	
	Update the construction phase plan whilst carrying out the path works	Contractor	Once works start on site	
	Before path works finish, check the site and works are safe for handing over	Client, contractor, designer	1 – 2 weeks before works finish	
Post construction	At least once annually, inspect the path and drainage features and prepare a maintenance report highlighting new risks to action	Client	Annually	

CDM project activity planning – More than one contractor project

Project name:

Project location:

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Pre-construction	Carry out a specification or condition survey of the route to identify and gather information about site hazards and environmental issues	Client	Up to 2 years before starting works	Client may appoint specialist path surveyor to assist
	Appoint a principal designer with the right skills, knowledge and experience (early appointment)	Client	6 months before starting works	Health and safety advisor
	Provide information to the principal designer e.g. an existing health and safety file (if there is one)	Client	6 months before starting works	Health and safety advisor
	Identify gaps in information and arrange for surveys	Principal designer, other designers if involved	6 months before starting works	Health and safety advisor
	Assess the path design to eliminate risks or reduce and control remaining ones	Principal designer, other designers if involved	6 months before starting works	Health and safety advisor
	Make changes to the path design to reduce risk	Principal designer, other designers if involved	6 months before starting works	
	Provide information via a risk log to the principal designer on significant risks and measures in the path design to reduce or control remaining risk not eliminated	Principal designer, other designers if involved	6 months before starting works	
	Provide health and safety information via a risk log to the principal designer for inclusion in the health and safety file	Other designers if involved	6 months before starting works	Principal designer

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Pre-construction	Identify if the project meets notification rules	Client	6 months before starting works	Principal designer
	Prepare the pre-construction information pack	Principal designer	3 - 6 months before starting works	Client, other designers if involved
	Pass the pre-construction information pack to potential principal contractors	Client	2 - 3 months before starting works	Principal designer
	Visit the site with potential principal contractors to look at path works and health and safety issues. Discuss management of significant hazards and risks, laying down best controls and listening to good ideas from all present. Follow the visit up by reissuing updated path designs and pre-construction information, if there have been changes	Client, potential principal contractors	2 - 3 months before starting works	Principal designer
	Assess returned bids from contractors. Select and appoint a principal contractor with the best skills, knowledge, experience and organisational capability to plan, manage and coordinate the path works and monitor and control health and safety on site	Client	2 - 3 months before starting works	Principal designer

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Construction including preparation	Notify the HSE of the project if it meets notification rules	Client	2 - 6 weeks before starting works	Principal designer
	Prepare risk assessments and method statements (RAMS) for path work activities to identify best controls for all remaining risks in the path design and hazards on site to manage risk for each one.	Principal contractor	2 - 6 weeks before starting works	
	If other contractors are carrying out part of the work, their prepared RAMS must be passed over to the principal contractor	Other contractors	2 - 6 weeks before starting works	
	Prepare the construction phase plan to manage all health and safety risks on site	Principal contractor	2 - 6 weeks before starting works	
	Check over the construction phase plan to ensure it is suitable and sufficient for delivering the path works	Client	2 - 6 weeks before starting works	Principal designer
	Hold a pre-start meeting on site with all parties involved to go over the path works, health and safety risks, and to mark out on site the path works along the route	Client, principal contractor, principal designer	1 – 2 weeks before starting works	
	Set up the site with welfare facilities in place	Principal contractor	1 week before starting works	
	Check out the site to ensure welfare facilities are on site	Client	At least 1 week after works start	Principal designer
	Display F10 on site if the project is notifiable	Principal contractor	Once works start on site	

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Construction including preparation	Secure the site work area from unauthorised access by installing temporary barriers, site information and safety signage	Principal contractor	Once works start on site	
	Provide site induction to all workers and visitors	Principal contractor	Once works start on site	
	Plan, manage, monitor, and coordinate the path works in accordance with the construction phase plan and RAMS	Principal contractor	Once works start on site	
	Hold regular visits on site with all parties involved to check on path work progress and to review the construction phase plan	Client, principal contractor, principal designer	At least 1 a week	
	Update the construction phase plan whilst carrying out the path works	Principal contractor	Once works start on site	Other contractors if involved
	Before path works finish, check site and works are safe for handing over	Client, principal contractor	1 - 2 weeks before works finish	Principal designer if still involved
	Collect health and safety information throughout the construction phase from other contractors for inclusion in the health and safety file	Principal contractor	Once works start on site	Other contractors if involved
	Pass health and safety information for health and safety file over to the principal designer	Principal contractor	Once works start on site	

Phase	Activity (What needs doing?)	By whom (Who will do it?)	By when (When will it be done by?)	Assistance if required (Who will you ask?)
Post construction	Develop and prepare or update the health and safety file	Principal designer	1 month after handover of works	
	Handover the finished health and safety file to the client to keep and make available for maintenance works.	Principal designer		Note: if the principal designers' appointment finishes before the end of the project, the principal contractor must finish off the health and safety file and hand it over to the client
	At least once annually, inspect the path and drainage features for safety issues and prepare a maintenance report highlighting new risks to action.	Client	Annually	

Pre-construction information template

This example template supplements information provided in [CDM: Health and safety during the pre-construction stage](#).

As a client, you must provide pre-construction information as soon as possible to every designer and contractor appointed (or being considered for appointment) to the path construction project under the Construction (Design and Management) Regulations 2015.

Pre-construction information is information in your possession or which is reasonably obtainable by you, or by someone else on your behalf, that is relevant to the path construction work. The information should be of an appropriate level of detail and proportionate to the health and safety risks involved, including information about: the project; the planning and management of the project; the health and safety hazards of the site; and the significant design and construction hazards. It should also state how those hazards would be addressed. Information in any existing health and safety file, if one is available, should also be included.

Pre-construction information should be gathered as the project's planning and design progresses. It should reflect new information about the risks to health and safety and how they must be controlled. Preliminary information gathered at the start of the project is unlikely to be sufficient.

The Project	Details (if the question does not apply to your project, write N/A)
Have you prepared a client's project brief? (Attach a copy of your brief that outlines: the main function and operational requirements of the finished structure; your motivation for initiating the project; your health and safety expectations of how risks should be managed; the design direction you have in mind; the single point of contact for any client queries or discussions during the project; and your SMART goals and budget for delivering the project).	
What are your planned start and finish dates for the construction phase?	
Name and contact details of the client	
Name and contact details of the designer	
Name and contact details of the contractor	
Name and contact details of the principal designer (if more than one contactor is involved)	
Name and contact details of the principal contractor (if more than one contactor is involved)	

Planning and Management of the Project	Details (if the question does not apply to your project, write N/A)
What time arrangements are you allocating to each stage of the project?	
What are your arrangements for ensuring there is communication and co-operation between duty holders?	
What are your arrangements for ensuring their work is coordinated?	
What are your arrangements for informing the public of the work and preventing them from entering work areas?	
What are your arrangements for site security?	
What are your arrangements for use of plant on site or restrictions on vehicle movements?	
What are your arrangements for fire precautions and prevention?	
What are your arrangements for site emergency procedures and means of escape?	
What are your arrangements for 'no-go' areas on site or other authorisation requirements?	
What are your arrangements for on-site smoking and parking restrictions?	
What are your arrangements for provision of welfare facilities on site?	
The Health and Safety Hazards of the Site	Details (if the question does not apply to your project, write N/A)
Boundaries and access, including temporary access, e.g. lack of parking, turning, or storage space. How will risks be controlled?	
Restrictions on deliveries, waste collection, or storage. How will risks be controlled?	
Adjacent land uses e.g. schools, railway line, or busy road. How will risks be controlled?	
Site storage of hazardous materials or substances, e.g. fuels, oils, chemicals. How will risks be controlled?	
Location of existing underground and overhead services, e.g. water, electricity, gas. How will risks be controlled?	
Ground conditions, underground structures, or watercourses where they might affect the safe use of site plant. How will risks be controlled?	

Existing site structures, e.g. stability, hazardous materials/ treatments, anchorage points for fall arrest systems, weight loadings. How will risks be controlled?	
Previous structural modifications, including weakening or strengthening of existing structures. How will risks be controlled?	
Fire damage, ground shrinkage/ movement, or poor maintenance adversely affecting the structure. How will risks be controlled?	
Any difficulties affecting safe access of site plant. How will risks be controlled?	
Health risks arising from the path construction work. How will risks be controlled?	
Health risks identified on site, e.g. tick bites	
Significant Design and Construction Hazards	Details (if the question does not apply to your project, write N/A)
What information is available for any significant design assumptions and suggested work methods, sequences or other control measures?	
What are your arrangements for coordination of ongoing design work and handling design changes during the construction phase?	
What information is available on the significant risks identified during the design of the structure?	
What materials will require particular precautions?	
Information in Existing Health and Safety File	Details (if the question does not apply to your project, write N/A)
Is there an existing health and safety file available for the structure?	
What relevant information is in the existing health and safety file that should be included in this pre-construction information?	
Other Information	Details (if the question does not apply to your project, write N/A)
Is there any other relevant information that should be included in this pre-construction information?	

Pre-construction information prepared by:

Position:

Signature:

Date:

Method statement template

This example adds to the information provided about [method statements](#) in the 'Assessing risks – in the design and on site' chapter.

Project name		Contract number	
Company name			
Location of site			
Title of method statement			
Description of the work to carry out			
This method statement has been prepared with the following risk assessments			
Risk assessment			
Risk assessment			
Work starts on (actual date)			
Duration of work (actual or estimated)			
Number of path workers involved (actual or estimated)			
Details of all path workers involved in the work and specific skills, experience and training required and held			
Name of path worker	Details of specific skills, experience and training required and held		

Emergency arrangements details:	
Fire/ evacuation	
First aid	
Pollution/ spill	
Other	
Personal protective equipment requirements	
Head (EN 397) - hard hat (only required if there is a risk of head injury, either from falling objects or banging the head)	
Feet (BS EN 345-1) - stout working boots	
Hi-vis clothing (BS EN 471) - vest or jacket	
Hands (BS EN 388) - gloves	
Eyes (BS EN 166) - goggles or spectacles	
Hearing (EN 352-1) - ear plugs or ear defenders	
Fall arrest (safety harness/ lanyards)	
Knee pads	
Wet weather clothing	
Respirator face masks	
Buoyancy aids	
Dust from construction materials is harmful and can lead to fatal lung diseases such as Silicosis	
Will your work create dust?	
What specific control measures will be used to avoid or reduce dust?	
What respiratory protective equipment will be used if dust cannot be avoided?	

Hazardous materials/ substances	
Are hazardous materials/ substances to be used?	
Are COSHH risk assessment/ material safety data sheets available?	
Attach or identify specific controls required from COSHH risk assessment	
Give a description of the safe method of work. Where appropriate include sketches, details of significant risk control, sequence of works, etc.	
Tools required	
Plant, equipment required	
Materials required	

Team supervisor in control of the work

I confirm I have read and understand the requirements of this method statement and related risk assessments. I have communicated their content to all path workers under my direct control and to those who may be affected by them.

Name	Position	Signature	Date

Path workers carrying out the work

I understand and will agree to adhere to the contents of this method statement and related risk assessments. I have attended a site induction that explained the site rules and specific health and safety arrangements, particularly worker involvement.

Name	Position	Signature	Date

Construction phase plan template

This template adds to the information provided in [CDM: Health and safety preparation before the construction phase](#).

During the pre-construction phase, the principal contractor (where more than one contractor is involved) or contractor (where only one contractor is involved) must prepare a construction phase plan, before setting up the construction site.

The construction phase plan sets out the health and safety arrangements and site rules taking account, where necessary, of the path construction activities taking place on the construction site and, where applicable, must include specific control measures concerning work, which falls within the categories set out in Schedule 3 of the Construction (Design and Management) Regulations 2015.

Company name:

The Project	Details (if the question does not apply to your project, write N/A)
What is description of the project?	
When will the construction phase start and finish?	
Who is the client? (Name and contact details)	
Who is the designer? (Name and contact details)	
Who is the contractor? (Name and contact details)	
Who is the principal designer (Name and contact details)	
Who is the principal contractor (Name and contact details)	
What are the arrangements for this plan to be reviewed, updated and revised?	
The Management of the construction phase	Details (if the question does not apply to your project, write N/A)
What are the health and safety aims (goals) for the project?	
What are the arrangements for monitoring and review of health and safety performance on site?	
What are the health and safety arrangements for the construction phase?	
What are the site rules?	
How are the site rules brought to the attention of everyone working on and visiting the site?	

What are the arrangements for ensuring that there is communication and co-operation between the members of project team?	
What are the arrangements for ensuring that their work is coordinated?	
What are the arrangements for involving path workers?	
What are the arrangements for the exchange of design information between the duty holders on site?	
What are the arrangements for handling design changes during the construction phase?	
What are the arrangements for the selection and control of contractors?	
What are the arrangements for the exchange of health and safety information between contractors?	
What are the arrangements for informing the public of the work and preventing them from entering work areas?	
What are the arrangements for site security?	
What are the arrangements for site induction?	
What are the arrangements for on-site training?	
What are the arrangements for use of plant on site or restrictions on vehicle movements?	
What are the arrangements for fire precautions and prevention?	
What are the arrangements for site emergency procedures and means of escape?	
What are the arrangements for 'no-go' areas on site or other authorisation requirements?	
What are the arrangements for on-site smoking and parking restrictions?	
What are the arrangements for provision of welfare facilities on site?	
What are the arrangements for provision of first aiders and first aid equipment?	
What are the arrangements for the production and approval of risk assessments and method statements (written safe systems of work)?	
What are the arrangements for the reporting and investigation of accidents and near misses?	

The Control of Significant Health and Safety Risks	Details (if the question does not apply to your project, write N/A)
How will risks from delivery and removal of materials (including waste) and work equipment be controlled when carrying out the work?	
How will risks from dealing with underground and overhead services be controlled when carrying out the work?	
How will risks from accommodating adjacent land uses be controlled when carrying out the work?	
How will risks from storage of hazardous materials or substances be controlled when carrying out the work?	
How will risks from temporary structures and existing unstable structures be controlled when carrying out the work?	
How will risks from working at height be controlled when carrying out the work?	
How will risks from working with or near fragile materials be controlled when carrying out the work?	
How will risks from assembling and dismantling heavy prefabricated components be controlled when carrying out the work?	
How will risks from excavations, poor ground conditions, underground structures, or watercourses, where they might affect the safe use of site plant be controlled when carrying out the work?	
How will risks from exposing path workers to the risk of drowning be controlled when carrying out the work over or near watercourses?	
How will risks from working with explosives be controlled when carrying out the work?	
How will risks from fire damage, ground shrinkage/ movement, or poor maintenance adversely affecting the structure be controlled when carrying out the work?	
How will risks from difficulties affecting safe access of site plant be controlled when carrying out the work?	
How will risks from site traffic routes and path workers working near plant be controlled when carrying out the work?	

How will risks from work that puts path workers at risk from hazardous materials, substances, and biological diseases be controlled when carrying out the work, particularly where there is a need for health monitoring?	
How will risks from the removal of asbestos found on site be controlled when carrying out the work?	
How will risks from dealing with contaminated ground on site be controlled when carrying out the work?	
How will risks from manual handling be controlled when carrying out the work?	
How will risks from noise be controlled when carrying out the work?	
How will risks from vibration be controlled when carrying out the work?	
How will risks from work that puts path workers at risk from exposure to UV radiation (from the sun), cold and wet weather be controlled when carrying out the work?	
The Health and Safety File (only required for a project involving more than one contractor)	Details (if the question does not apply to your project, write N/A)
What format and layout will the health and safety file be prepared?	
What are the arrangements for the collection and gathering of relevant health and safety information for the health and safety file?	

Construction phase plan prepared by:

Position:

Signature:

Date:

Health and safety file template

This template adds to the information provided in [CDM: Health and safety during the construction phase](#).

The principal designer must prepare and revise a health and safety file appropriate to the path construction project under the Construction (Design and Management) Regulations 2015. A file is only required for a project that involves more than one contractor. It should only contain information about the current project that is likely to be needed during any later path maintenance to ensure the health and safety of everyone involved in the work.

The principal designer must make sure the health and safety file is appropriately reviewed, updated, and revised from time to time to take account of the path construction and any design changes that have occurred. There should be enough detail to allow the likely health and safety risks to be identified, and addressed, by those carrying out the work and be proportionate to those risks. The file should not include things that will be of no help when planning future work such as pre-construction information, the construction phase plan, contract documents, risk assessments, method statement etc.

Information in the health and safety file should be clear, concise, understandable and in an accessible format so others can find and access it easily.

Brief description of the work carried out	Details (if the question does not apply to your project, write N/A)
What work has been carried out during the construction phase?	
Health and safety hazards not eliminated	Details (if the question does not apply to your project, write N/A)
What risks of health and safety hazards have not been eliminated through design and construction processes?	
How have the risks been addressed?	
Key structural principles	Details (if the question does not apply to your project, write N/A)
What are the key structural principles?	
What are the safe working loads of the structure?	
If there are any other key structural principles, what relevant information is available about them, which should be included in the health and safety file?	

Hazardous materials used	Details (if the question does not apply to your project, write N/A)
What are the hazardous materials or substances used, if any?	
Information on removal or dismantling of the structure	Details (if the question does not apply to your project, write N/A)
What are the special arrangements for removing or dismantling the structure?	
What are the special arrangements for lifting the structure?	
Is there any other relevant information, which should be included in the health and safety file?	
Health and safety information on cleaning and maintaining the structure?	Details (if the question does not apply to your project, write N/A)
What health and safety information is available for cleaning the structure?	
What health and safety information is available for maintaining the structure?	
Nature, location and markings of significant services	Details (if the question does not apply to your project, write N/A)
What information is available about underground services?	
What information is available about overhead services?	
What information is available about other services?	
As-built drawings of the structure	Details (if the question does not apply to your project, write N/A)
What as-built drawings are available for the structure? Include a copy of each drawing in the health and safety file.	

Health and safety file prepared by:

Position:

Signature:

Date:

Appendix 2

Risk Assessments

This appendix provides information on risk assessment following the Health and Safety Executive's Five Step Process:

- Step 1: Identifying the hazards.
- Step 2: Deciding who might be harmed and how.
- Step 3: Evaluating the risks and controls.
- Step 4: Recording and communicating your findings.
- Step 5: Reviewing and revising the risk assessment: learn from experience.

Risk assessment definitions

Here are some definitions that anyone carrying out a risk assessment should be familiar with.

- **ALARP** is short for 'as low as reasonably practical' describing the level to which people expect to see risks in their place of work controlled.
- **Control** is a recommended or prescribed way of carrying out the work activity that, if followed, should reduce the risk of the hazard to an acceptable level, e.g. physically remove the hazard and replace with a less hazardous one.
- **General principles of prevention** are the standard steps set out in the Management of Health and Safety at Work Regulations 1999 that employers should follow when identifying measures to take to manage risk.
- **Hazard** is something that has the potential to cause harm to a person, persons, or damage to environment.
- **Hierarchy of controls** is a tiered system of controls used to progressively remove or reduce exposure to risks.
- **Likelihood** is the chance (probability) that an accident will occur (certain, likely, possible, unlikely, highly unlikely or rare).
- **Point of work risk assessment** is a simple risk assessment carried out by a competent person, e.g. a site supervisor, to do a final check for hazards in an area of work (point of work) and to confirm that all controls are in place before the work starts.
- **Risk** is the likelihood (chance) of the potential hazard being realised and causing damage to the environment; or injury, ill health, or fatality to a person or persons.

- **Risk assessment** is a systematic process of looking at work activities and identifying hazards resulting from them. It is also about considering the likelihood of harm occurring and the severity of that harm if it occurs and putting the two together to estimate the level of risk involved in the activities. Where risk levels are considered unacceptable, e.g. high, the assessment will identify controls needed to reduce the risks to acceptable levels, as low as reasonably practicable.
- **Safe system of work** is a formal procedure that results from the systematic examination of a task in order to identify a way of working that if followed manages risks to an acceptable level.
- **Severity** is an indication of the severity of harm that can be caused by exposure to a hazard e.g. minor or major injury, ill health or death. For example, at one extreme, someone who is hit on the head by an excavator bucket might be killed, whereas the consequences of someone not using a bow saw correctly with their hand not protected by a glove might result in a cut.
- **Significant risk** is a risk that is not trivial or insignificant in nature but is capable of causing serious injury, illness or a fatality.
- **Site-specific risk assessment** is an assessment covering only hazards and controls of a work activity identified at one location.

Step 1: Identifying the hazards

Hazard identification is ongoing throughout an upland path project. The site survey (condition or specification) will identify hazards, such as the presence of steep slopes, uneven ground, wet marshy areas, or hidden drops that may cause significant risks to someone doing the path work. The design prepared, or modified, by the designer will identify hazards associated with materials, processes and sequences e.g. how to put together a bridge where the assembly is unusual. Because the work is outdoors hazards can affect path workers, as well as visitors to the site, members of the public, etc.

Examples of hazards posed by the physical environment

- Steep slopes
- Rough, uneven ground
- Hidden drops
- Fast flowing burns, rivers
- Wet marshy areas
- Exposure to extreme weather events (flash floods), high rainfall, strong winds, heavy snow, sunlight
- Wild animals carrying diseases, e.g. Lyme disease from ticks

Examples of hazards posed by hand tools, equipment and machinery

- Damaged, unmaintained hand tools
- Dust, noise, and vibration from working equipment and machinery
- Power barrow or excavator catching fire
- Excavator operating near workers
- Excavator used as lifting equipment
- Excavator digging borrow pit
- Power barrow or excavator working on or crossing difficult ground
- Pollution caused by fuel and oil leaks and spillages
- Helicopters carrying bagged materials to site

Examples of hazards posed by path work and landscaping

- Borrow pit excavation collapsing
- Dusty materials
- Working at height building a bridge without a safe working platform
- Handling of fertiliser
- Manual handling of large stone
- Untidy working area with trip hazards (hand tools lying on the ground)

Example of a hazard posed by others

- Public accessing the working area, where they cannot be diverted off the route while work is taking place.

Step 2: Deciding who might be harmed and how

Having identified the hazards, you need to identify the people who are at risk of harm. These may be general workers or those who are at risk because of the particular circumstances of the location, hazard or individual factors, for example:

- Workers including plant operators, site supervisors
- Workers needing special consideration – including someone with a hearing impairment, or who does not speak English as a first language
- Visitors to the site
- The public - particularly young people (under the age of 18)

The public

Consider the people who are using the route. Most of the public will not be aware of the hazards and risks associated with pathwork, so they must be treated as a high risk, especially for high risk activities, e.g. an excavator moving about and swinging a bucket where there is limited space for people to pass. Young people in particular are high risk, as they may have a lack of hazard awareness.

Path projects often work on routes where members of the public can appear at any time. Whilst access rights do not apply to construction sites, which include path sites, you should not try to exclude people from the whole path or site. In particular people should still be able to access areas where work is not taking place. Examples of how best to manage public access are listed in Step 3.

Step 3: Evaluating the risks and control measures

Risk is a combination of two factors: likelihood and severity. For example, moving boulders by hand to form a cross drain will create a likelihood of the worker trapping a finger between boulders. The severity of the injury would depend on the size of the stone and its momentum when the finger is trapped. Minimising this risk involves applying controls e.g. two people maneuvering larger stones; never rolling a stone into a hole if there is someone working in there; and using a pinch bar to butt stones together. This process of identifying the hazard, assessing its severity, applying a control and considering whether that control is sufficient to reduce the event to an acceptable level is what risk assessment is all about.

There are several ways to evaluate severity and likelihood and thus evaluate risk, all of which use different methods to estimate the frequency with which events will happen and the severity if they do. An example is shown below but there are many other equally valid ways of evaluating risk, so choose one that suits your organisation.

Example of a risk evaluation approach using a high, medium and low scoring system

The likelihood of a hazard actually causing harm or an accident is rated as being **High**, **Medium**, and **Low** in accordance with the following criteria:

High: happens regularly or could be a usual or common occurrence.

Medium: less regular, but still recognised as likely to happen.

Low: not happened for a long time, known to be infrequent, not likely to happen.

The severity of the harm caused by a hazard should it happen can then be categorised with the following criteria:

High: could result in a fatal accident or multiple injuries to a person or persons.

Medium: probably causes serious injury to person or persons, who would be off work for over seven days due to injuries.

Low: minor injury to a person or persons.

1. Likelihood and severity are put on a matrix as shown below. If the likelihood of the work activity causing harm is assessed as **High** and the severity of that harm is assessed as **Medium**, the risk rating would be marked at **X** on the matrix.

Likelihood (chance) of harm occurring	High		X	
	Medium			
	Low			
		Low	Medium	High
Severity (consequences) of harm				

2. The combined likelihood and severity risk rating is then evaluated by combining the likelihood with the severity of harm leading to the combined risk ratings shown below.

Likelihood (chance) of harm occurring	High	Medium/High	High	High
	Medium	Low/Medium	Medium	High
	Low	Low	Low/Medium	Medium/High
		Low	Medium	High
Severity (consequences) of harm				

- A combined risk rating of **High, or Medium/High** is an unacceptable level of risk and the work activity should not be carried out until the risk has been reduced.
- When there is a combined risk rating of **Medium or Low/Medium**, action must be taken and the work activity stopped, if necessary, to reduce the level of risk.
- If the combined risk rating is **Low**, it is acceptable to start the work activity as long as everything reasonable has been done to reduce the risk, and the assessment is reviewed at regular intervals.

By its nature, risk assessment does not deliver certainty or definite outcomes. Unless you have eliminated the risk it is still possible that the risks you have identified will be realized. Because of this, a good approach is to adopt the precautionary principle. If you are unsure of the risk of an activity, do not carry it out until you have the information you need to more accurately estimate its impact. The precautionary principle is also important because prevention often takes less time and uses less resources than cure and failure to take preventative action may result in long-term damage that is expensive to put right later on.

Significant risks (i.e. those that are not low risks) usually require that an alternative is found. This may involve re-designing the path, finding a new method of moving materials, carrying out the work at a different time of year, or looking for an entirely different solution. It is usually not possible to reduce significant risks just by providing better safety techniques. It normally requires changes to other parts of the project inputs and outputs. In reality, most high-risk project activities are avoidable and alternative solutions can be found; the majority of management effort goes into reducing significant risks to low risks.

Deciding on the controls

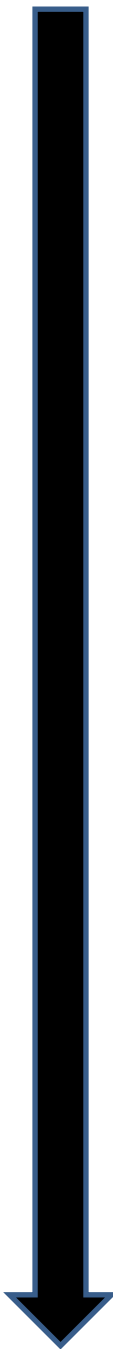
Controls are the minimum requirements to make sure that the remaining risks are reduced as low as reasonably practicable to prevent anyone being harmed. Where controls fail to reduce the risk then that is a bigger issue!

General principles of prevention

When establishing appropriate controls, the designer (or principal designer) should consider the 'general principles of prevention'. These are a precautionary principle process based on a target-setting checklist of control techniques. It is a risk management framework rather than a strict hierarchy of risk controls.

The first priority is to avoid a risk. If the risk cannot be avoided, the designer (or principal designer) must reduce it as much as possible by applying the general principles of prevention. If it is not possible to avoid the risks (the most effective option), then work down the list applying the most effective possible with PPE as a last resort (the least effective).

Example of the general principles of prevention applied to the design and installation of a bridge as part of an upland path project

<p>Controls - the controls you choose depend on the likelihood and severity of the risk. Decide what is reasonably practicable. In many cases, a combination of controls are best used together to manage the risk.</p>	<p style="text-align: center;">Most effective</p> 
<p>Avoid risks - ask yourself can I get rid of the problem (or hazard) altogether: Design the bridge so it can be assembled on the ground and lifted into position across a watercourse with a large excavator or helicopter to remove the risk of workers falling when working at height.</p>	
<p>Evaluating the risks you cannot remove: Work out whether the effort, time and expense of installing a high handrail on the bridge is appropriate if the bridge is only occasionally used by horse riders, the distance to fall is not far and the risk of a rider falling of the bridge can be reduced by using a lower handrail. Work out whether the effort, time and expense of installing anti-slip surfacing on the bridge decking is appropriate, if the risk of someone slipping over can be prevented by carrying out regular maintenance - brushing off any loose or built up debris on the decking to stop it becoming wet and slippery.</p>	
<p>Combating the risk at source: Use a safer product rather than relying on personal protective equipment/ clothing.</p>	
<p>Adapting to technical progress - consider new techniques or technologies and adopt new, safer methods of working: Prefabricating parts of the bridge off site such as concrete bank seats so no mixing of concrete takes place on site - preventing pollution to the watercourse and health risks to workers. Specify bridge decking with slip resistant surfacing to stop people slipping on a constantly wet surface.</p>	
<p>Replace the dangerous with the non-dangerous or the less dangerous - provide a less risky option: Use untreated timber or recycled plastic instead of treated timber. Use only battery-powered tools.</p>	
<p>Adopt and give collective protective measures that protect the greatest number of people priority over individual measures: Install scaffolding as a working platform to protect everyone working on the bridge at height, whereas a safety harness only protects the individual person.</p>	
<p>Give appropriate information, instructions, and training to everyone carrying out the work. Providing residual risk information on drawings is a powerful safety communication tool: Use symbols and/ or written information on drawings, plans, or instructions such as the intended sequence to assemble the prefabricated parts of a bridge that may be unknown to those tasked to put them together. Give working at height and safety harness training to workers.</p>	
<p>Provide personal protective equipment/ clothing but always as the last resort: Safety harness with lanyard</p>	

Hierarchy of risk control

Linked to the general principles of prevention is the concept of the hierarchy of risk control, i.e. risks are reduced to the lowest reasonably practicable level by taking preventative measures, in order of priority. Consider the controls in the order shown, do not simply jump straight to the easiest, least effective control to implement, which is personal protective equipment at bottom.

The hierarchy is as follows:

- Elimination (most effective control) - completely remove the hazard at source.
- Substitution (second most effective control) - replace the hazardous activity, process or substance with a less hazardous or non-hazardous one.
- Engineering controls (third most effective control) - isolate the hazard from people who could be harmed.
- Administrative controls (fourth most effective control) - change the way people work or prevent people's exposure to hazards and risks.
- Personal Protective Equipment (PPE) (least effective control) - provide PPE to cover and protect an individual person from hazards and risks.

Note - PPE can be used as a temporary control until other more effective controls are provided. In most cases, a combination of other control measures and PPE can effectively control the risk.

Control measures for physical health hazards

Path work involves many physical health hazards, such as noise, vibration, manual handling and repetitive work. You will find more information about controlling these hazards on the Health and Safety Executive's website '[Controlling physical ill health risks](#)'.

Management of public access

- Think about providing information at all access points to a site, as well as at the start of the route and at visitor facilities, e.g. a car park, or visitor centre, stating what is happening, how long the work is expected to last and contact details for your organisation.
- Where possible, provide a well-signed alternative route. Provide information on the same signs as the information about the path project so the public know where to go.
- If an alternative is not available then expect the public to access a site during works. The contractor (or principal contractor) could prepare a method statement that states how the work must be safely undertaken, when the public continue to use the route.

- Clearly sign and mark working areas using site safety signage and temporary barriers as required. It may be possible to exclude the public from small working areas for short periods with, ideally, a short diversion round the working area that is live.
- The contractor should provide banksmen (people trained to direct site plant movement on or around site) to guide machine operators when the public is present, and to stop the public when a machine is moving around a site.
- The contractor should provide banksmen to walk with and guide members of the public through the working area under their direct control. This safe system of work is particularly suitable on a high risk site where moving plant, e.g. an excavator power barrow, continues to travel backwards and forwards along the same route.
- Many paths in the uplands are busiest at the weekends, so consider whether it is reasonable to only allow work to take place on Mondays to Fridays, between specific times. Avoid bank holidays as these can be extremely busy
- Additional control measures may be necessary when considering the safety of people with disabilities, children, or visitors who may not understand written English.

Step 4: Recording and communicating your findings

Having gone through the risk assessment process, the next challenge is to communicate your findings to the workers so that they can easily follow controls to avoid the hazards. If you have five or more employees, recording your findings is a legal requirement. However, even if you have less than that, you may find it easier to manage if you have your findings written down. Whilst members of the public will not read a risk assessment they should be made aware of hazards by the use of safety signs, information notices and temporary barriers.

The level of detail in a risk assessment should be proportionate to the risks. If there are no risks or the risks are low, then the level of detail required is minimal. Concentrate on medium and high risks as these may cause serious accidents.

The Management of Health and Safety at Work Regulations 1999 does not say how a risk assessment should be laid out. An example is given here, but there are many other equally valid ways.

Example of a risk assessment

Work activity assessed	Constructing a benched aggregate path		Page 1 of 1
Organisation name		Assessment date	
Organisation address		Assessment by (print name)	
Site address (location)		Assessment review date	

What are the hazards?	Who might be harmed and how?	What are you already doing?	What further action(s) is necessary?	Action by whom?	Action by when?
Steep drop into a river alongside the working area	Excavator operator Excavator tipping over and rolling down the slope into the river	<ul style="list-style-type: none"> • Only use a tracked excavator suitable for working on steep ground to carry out the path work • Only competent operators trained and experienced in working on steep ground to operate the excavator • Excavator operator must assess the steep ground and weather conditions before starting work and monitor conditions throughout the day • Give site layout plan/ map marked with hazard warning symbol and 'Dangerous Working Area - Steep Drop' issued to excavator operator • Install warning signs at the dangerous working area to indicate a steep drop • Install safety barrier fencing along the dangerous working area to keep excavator safe distance from the steep drop • Use only a tracked excavator fitted with rollover protection system to carry out the path work 	Briefings at start of each work day to include warnings about working on steep ground with an excavator	Site supervisor	Before the work starting on site

A golden rule for communicating risk assessment findings is to keep it simple, as it is not about producing paperwork that may get ignored. It can be useful to produce a method statement that reflects the findings of the risk assessment for the same work. The controls selected for controlling risks will influence the method of carrying out the work.

Step 5: Reviewing and revising the risk assessment: learn from experience

The final step involves a review of the risk assessment and if necessary, updating. This is also a legal requirement. A review of a risk assessment should be carried out from time to time to make sure the control measures are still appropriate and effective. It should also be carried out if there is a change to the way the work has to be carried out, that might affect the health and safety of those doing it. For example:

- Using a different item of work equipment part way through the work
- The arrival of new workers on site
- A change in weather or site conditions

Health and safety regulations require that all risk assessments must be suitable and sufficient. A site supervisor given risk assessments by their employer can check and question the suitability of an assessment before accepting it - they can question anything that does not seem to be right - if in doubt they have a right to ask!

Risk assessment is all about prediction and avoidance. It is therefore an essential part of risk assessment to review the actual experience of health and safety on site and identify whether the risks were as predicted. This experience can be used in future projects to control risk better. Risk assessment needs to be an active process. It is not sufficient to wait until an accident happens before changing your risk assessment or controls. A short review by the contractor (or principal contractor) should be carried out during or at the end of each project. Your health and safety review should include:

- 'near misses' and any accidents – the events that caused it, the response once it happened and the lessons to be learned to stop it recurring;
- tasks that were unforeseen and had to be carried out unplanned;
- the effectiveness of the risk controls – are procedures difficult or cumbersome and therefore abandoned or avoided by workers? It may be possible to come up with a simpler but equally safe solution that can be used on the next project.

It is good practice for contractors to meet annually with their teams to review health and safety. This is a good opportunity to consider the effectiveness of current generic risk assessments, and spot any that need to be changed.

It should be remembered that risk assessments are good for managing easily identified and shorter-term event hazards. It is more difficult to use them for longer-term or lower-level hazards. Risk assessment is the starting point for managing safety on a site but always be mindful of longer-term, slow-changing or less visible issues that also need to be managed and reduced.

Example of the whole risk assessment process

Here's an example of a significant hazard associated with an existing aggregate path in need of rebuild, identified during the condition survey. This section of the route descends across a steep sided slope that drops to a river running through a glen.

Work activity

Constructing a benched aggregate path with a tracked excavator

Step 1 - Looking for the hazards

The significant hazard is a steep drop into a river alongside the working area.

Step 2 - Deciding who might be harmed and how

In this case, we must consider the operator of a tracked excavator.

The how is the excavator tipping over and rolling down the slope into the river which could cause bruising, fractures or a fatality.

Step 3 - Evaluating the risks and controls

The risk rating is **high** due to the high likelihood of serious injury or fatality if the excavator tips over and rolls down the slope.

Hazard elimination measures

Option 1 - Do not carry out any work on this section of the path.

- Pros - Successfully avoids the hazards.
- Cons - Strong demand for the route to be rebuilt, intolerable erosion and damage to a sensitive landscape without the work going ahead.
- Conclusion - Those not willing to actively manage the risks associated with a project often use this option as a "get out". However, it must be considered.

Option 2 - Avoid the hazard by redirecting the path on an alternative route to avoid the river valley altogether.

- Pros - This would successfully avoid the hazard
- Cons - Difficulties in negotiating more land, possible increased problems and hazards with other routes, the river is one of the key attractions for the route and people will use it anyway with the problems noted above
- Conclusion - This option is possible but undesirable; it is less attractive to users, potentially very expensive and will potentially not solve the original management issue.

Note: None of the above measures are reasonably practicable, given the nature of this hazard. The designer will look to reduce the risk so that the hazard becomes acceptable.

Risk reduction measures

Option 1 - Avoid the worst section of the steep slope along the route to minimise the need to pass through the dangerous working area.

- Pros - A realistic and cost effective solution that could reduce the risk to an acceptable level.
- Cons - The hazard is not totally eliminated.
- Conclusion - An option worth considering provided another suitable route line is available.

Option 2 - Use a tracked excavator operator who is trained and experienced in working on steep ground.

- Pros - Simple to manage and implement.
- Cons - The hazard is still present in its original form.
- Conclusion - This solution relies on the 'human factor'. Even competent trained operators can make mistakes. This is not an ideal solution in isolation.

Option 3 - Install warning signs and safety barrier fencing to indicate the dangerous working area. Formulate a safe system of work to guide and control excavator working in the dangerous working area.

- Pros - If effective, this will reduce the hazard to an acceptable level.
- Cons - Relies on the operative following a safe system of work procedure
- Conclusion - This could be a good option, but is still not ideal as the hazard has not been treated at source.

Option 4 – Work Equipment - Use a suitable tracked excavator that is wide enough to remain stable and with roll over protection system.

- Pros - This will reduce the effects of an accident, possibly to an acceptable level.
- Cons - It has not stopped an accident from happening and injuries may still occur. It still requires a safe system of work and relies on an operator using the excavator in the correct manner.
- Conclusion - This could be used in conjunction with other reduction measures, but is not acceptable on its own.

Solution

Thoroughly survey the site and investigate all possibilities for avoiding the worst of the steep ground/drops. The contractor (or principal contractor) must choose a suitable tracked excavator that will be stable and a skilled and experienced operator capable of working on steep ground, who knows the limitations. Provide information, signs and instructions to the operator to make them aware of the hazard and how to proceed through the dangerous working area.

In other words, we have used a combination of the hazard reduction measures above to provide a safe system of work. The hazard has not been totally eliminated but with careful management, a safe working environment can be achieved with minimum cost. This example is also an excellent example of how the Construction (Design and Management) Regulations 2015 should be used to manage health and safety. So the first two options, elimination and reduction of the risks would be tackled at the design stage with any residual risk left to the contractor to manage.

Step 4: Recording and communicating your findings

For a site like this, the client would communicate the hazard and the risk management procedures in several ways. The designer would highlight the dangerous working area on a site plan/ map as part of the pre-construction information, with a clear indication of where the new path and drainage system is to go. The designer (or principal designer) would discuss the hazard as part of the design process. The designer (or principal designer) would discuss the issue with the contractor at the pre-start meeting to make sure that they are aware of the hazard and the need to manage it throughout the construction phase. The contractor, as well as having written risk assessments, will need to provide a suitable safe system of work/method statement for dealing with the excavator moving through and working in the dangerous working area. The operator of the excavator will need to read the method statement before working in that area. Safety warning signs would also be placed at suitable locations warning the operator of the dangerous working area and the steep drop. Safety barrier fencing would also be installed to keep the excavator away from the steep drop. Regular site meetings will highlight the effectiveness of controls and determine whether extra controls are required.

Place information signs at all access points to warn members of the public about the path work. Provide diversions around the dangerous working area when the excavator is working in the area, if required.

Step 5: Reviewing and revising the risk assessment

As the works progress, any additional hazards will be identified, assessed and suitable controls put in place to manage them. The effectiveness of the existing controls should also be assessed and if necessary, new control measures implemented. It is essential for the contractor (or principal contractor) to encourage their excavator operator, site supervisor and other workers to feedback on the suitability of the risk assessment so it can be reviewed effectively.

An alternative format for a risk assessment is given below, but as stated previously there are many other equally valid formats.

Example of a risk assessment

Organisation name				
Project name				
Project location				
Assessment date	Assessment review date	Name and contact details of assessor	Assessment number	
Work activity	Constructing a benched aggregate path			
Persons at risk	Excavator operator			
Hazard no. 1	Steep drop into a river			
Risk controls	<ul style="list-style-type: none"> • Only use a tracked excavator suitable for working on steep ground to carry out the path work. • Only use a tracked excavator fitted with a rollover protection system to carry out the path work. • Only competent excavator operators trained and experienced in working on steep ground to operate the tracked excavator. • The excavator operator must assess the steep ground and weather conditions before starting work in the morning and monitor conditions throughout the day. • Give a site layout plan/ map with hazard warning symbols and 'Dangerous Working Area - Steep Drop' to excavator operators. • Install warning signs at the dangerous working area to indicate a steep drop. • Install safety barrier fencing along the dangerous working area to keep excavators a safe distance from the steep drop. 		Owners of the risks/ date by which actions must be taken Site supervisor Before the date of work starting on site	
Risk rating	High	Medium	Low	Combined risk rating
Likelihood of harm		X		High
Severity of harm	X			

Further Reading

Path design and construction

[Upland Path Work – Construction Standards for Scotland](#)

Upland Path Advisory Group (2015)

[Constructed Tracks in the Scottish Uplands](#)

Scottish Natural Heritage (2015)

[Lowland Path Construction - A guide to good practice](#)

Paths for All

[Mending our Ways; the quality approach to managing upland paths](#)

British Upland Footpath Trust (1998) - now the [Upland Path Trust](#)

Outlines the principles for upland path work, with good and bad examples

[Paths and Climate change](#)

Scottish Natural Heritage (2011)

[Path Bridges - Planning, Design, Construction and Maintenance](#)

Paths for All (2010)

[Scottish Access and Technical Information Network](#)

SATIN shares technical information and promotes good practice.

Path accessibility and promotion

[Countryside Access Design Guide](#)

Scottish Natural Heritage (2002)

[Countryside for All Good Practice Guide](#) - Fieldfare Trust (2005)

Includes the [standards](#) for full accessibility in rural and working landscapes

[Multi-use and accessibility factsheet](#)

Paths for All

[The Path Manager's guide to grading](#)

Paths for All, Scottish Natural Heritage and Forestry Commission Scotland (2016)

A standard path grading system for waymarked paths in Scotland

Legal information

[Health and Safety Executive](#)

Comprehensive information about health and safety at work

[A Brief Guide to Occupiers' Legal Liabilities in Scotland](#)

Scottish Natural Heritage (2005)

[Scottish Outdoor Access Code](#) - Scottish Natural Heritage

Information about statutory access rights, responsibilities and management of access in Scotland