AT THE EDGE MOUNTAINEERING

"Your greatest failure is not to try"

NAVIGATION STRATEGIES

PART 4.3: PLANNING A ROUTE

Welcome to part 3 of my Navigation Strategies series. In this part, we will focus on Why and how to plan a route.

In whatever form, we all plan routes. From just suggesting a summit to a friend to full blown writing down your plan for a multiday expedition. You may have never 'properly' planned a route before, but it is important to understand why we need to plan and how best to plan to ensure safety in the hills and mountains.

Before we start to plan a route, we must first understand why we need to plan.

To put these skills into practice and to learn more, take a look at my Navigation Courses I offer.

All **confirmed bookings** will receive a **10% discount** code to use on **Harvey Maps** products from their site.

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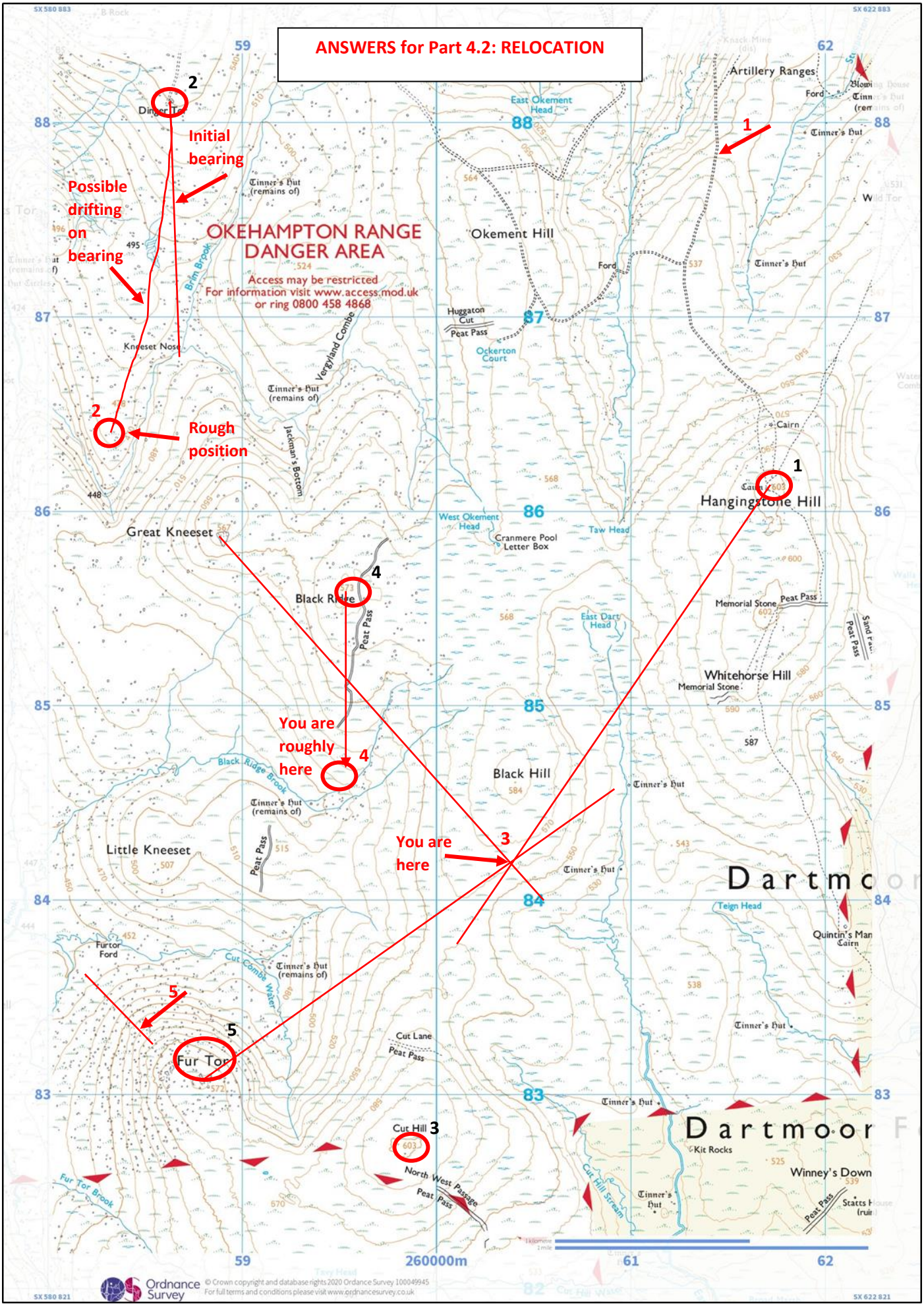
MOUNTAIN TRAINING
ASSOCIATION


ANSWERS for Part 4.2: RELOCATION
Initial bearing
Possible drifting on bearing
Rough position
You are roughly here
You are here
OKEHAMPTON RANGE DANGER AREA
Access may be restricted
For information visit www.access.mod.uk
or ring 0800 458 4868
Artillery Ranges
Okement Hill
Hangingstone Hill
Great Kneeset
Black Ridge
Black Hill
Whitehorse Hill
Little Kneeset
Fur Tor
Cut Hill
Dartmoor
Tinner's Hut (remains of)
Tinner's Hut
East Okement Head
West Okement Head
Taw Head
East Dart Head
Teign Head
Peat Pass
Ordnance Survey
260000m

Why plan a route?

The hills and mountains of the UK are dangerous, there is no denying that. We plan to avoid traffic and road closures in our everyday lives, so why then do some people not plan for a day in the hills and mountains? Planning a walk has many benefits:

- Potential hazards and problems identified.
- Gives an estimate of time.
- A third party knows your plan.
- Spending time studying the map.
- Helps to practice skills (measuring distances/bearings etc).
- Serves as an aide memoire.

Potential hazards and problems identified:

Think about what hazards or problems you may encounter in the hills and mountains. Steep ground, cliffs, bogs, rivers etc. By planning a route, we can think about the problems these hazards could possibly present to us and work out ways in which to avoid them or reduce the risk. For example, your intended route may cross a river at a ford. What if on the day of your walk, heavy rain has fallen the night before and the ford is now impassable? Knowing you cross a ford before hand can lead you into thinking about alternative routes, for example, is there a footbridge further along the river you could divert to? Knowing this in advanced could save you time trying to re-plan your walk en route or making a decision at the spur of the moment which may put you in danger.

Gives an estimate of time:

You may have an intended route in mind, but how long is it going to take? What time do you need to set off or what time do you need to be back? In the winter, day light hours are shorter, so by knowing what time it gets dark and how long it will roughly take to walk our route, we can work back to decide a setting off time to avoid walking in the dark. Darkness raises the risk level, especially for inexperienced walkers and many mountain rescues have involved walkers and climbers who have become benighted in the mountains. Having a rough time that you will return can also be used by a third party to possibly alert the emergency services if you are late arriving back.

A third party knows your plan:

Leaving a plan of your intended route with a friend or family member means someone else is aware of your plan. As mentioned above, this can be used to alert the emergency services if you do not arrive back in time. Leaving a route trace, your intended plan, escape routes, group member details and rough timings can all be used to limit the search area. It is important to discuss a strategy or contingency plan, with whom ever you leave your plan with, in the event you do not arrive back in time. If you state you will arrive back by 16:00 but haven't arrived by 16:05, this is not a cause for concern for your third party to call Mountain Rescue. You may just be walking slower than expected or decided to take longer breaks. If, however, you are not back by 18:00, then this may be a cause for concern. Decide a cut off time with your third party as to when they should start to become concerned about your where abouts. The best-case scenario is you will be able to contact each other. Check in with your third party from time to time, letting them know if you will be slightly late, have changed your route or that you have had an accident. Worse case scenario, you are not back by your cut off time and are unable to contact each other. **Remember to contact your third party to let them know that you are back down off the hill or mountain as soon as possible!**

https://www.bbc.co.uk/news/uk-england-54737813

Spend time studying the map:

Who doesn't love looking at maps? Spending time at home planning your route means you have time to study the map and look into detail along your intended route in comfort. You may spot other potential hazards, an alternative route or something interesting to go and explore. It helps to imbed your route in your mind and plan for the more difficult sections of the route. Are there any symbols along the route you are unfamiliar with? Spend the time at home studying the map to learn them.

Helps to practice skills:

Spread out on the living room floor, heating on, coffee nearby and the T.V. on in the background; a comfortable environment in which to practice skills such as measuring distances and bearings on a map. We will go into detail later about how to plan a route, but these skills not only help you plan how long the route will take (see ***estimate of time*** above), they are also skills which you will use on the actual walk. Practicing them at home in a comfortable environment helps to improve your confidence and ability to use these skills in the mountain environment.

Serves as an aide memoire:

Once you have planned your room at home, you can take a copy with you on your walk to act as an aide memoire. The details you have written down can prompt you whilst on the walk and help you navigate, especially if you have planned in detail difficult or complex sections of the route. Your plan may even include escape routes or alternative plans that you can consult en route.

Planning a route can prepare you mentally for the walk and excite or motivate you. Knowing why we need to plan a route we can now learn how to plan a route.

How to plan a route

Experienced walkers are able to devise a plan quite quickly using strategies they have developed over time. For the inexperienced walker, these processes may take time at first, but it is an important learning process that will become second nature over time as they gain more experience. We can break down route planning into the following steps:

1. **Factors to consider.**
2. **The planning process.**
3. **Recording the route plan.**
4. **Re-planning on the route.**
5. **Reviewing the route.**

Factors to consider:

Duration/distance:
How long do you want to be out for? The length of time you have available to you also dictates how far you are going to plan to walk. Work back from the time that you want, or need, to be back for and plan for breaks and stops. Decide on a start time and work out what time that leaves you to complete your walk. Knowing that you want to be out for 5 hours, we can use Naismith's rule (average pace of 4kph) to work out that it would be unrealistic to plan a route of 20km or more. Even 20km over 5 hours in the mountains for the average person is pretty unrealistic! In this case, a more realistic distance would be 15km or less.

Personal/group physical ability:
You know what you are capable of and how fit you are, so plan your route accordingly. I wouldn't expect an inexperienced hill walker to plan and execute the Welsh 3000ers in under 24hours, not safely at least! A more realistic approach would be to start small and build up from there. Start with short, easy routes and progress to longer distances or more complex ground. Know your ability and your physical limits. And more importantly, know the ability of the group. Plan a walk with the ability of the WHOLE group in mind. Leave your ego at home. I wouldn't plan to take my family along the Snowdon Horseshoe but I would plan for them to walk the Llanberis Path. They achieve the same goal (summit of Snowdon) but it has been planned to cater for their abilities (lack of scrambling experience).

Objectives:
This one seems obvious, but it can be overlooked. Have an objective or an aim in mind. What is the purpose of your walk? Is it distance, a specific summit or possibly exploring an area? It could be even more specific, for example, you want to do a ridge walk, circular or linear walk. Objectives can be found by using resources as inspiration: books, websites, magazines, blogs or even social media. Have you read an article in a magazine about a summit? Heard about tick lists such as the Wainwrights or Munros? What about seeing an image on social media and thought 'I want to go there!'? Gain inspiration and think about an aim or objective for your walk.

Weather:
Everyone likes to talk about the weather! And the weather plays an important part in the planning process. Is it wise to do a ridge walk in strong winds? Can your route be carried out during or after heavy rainfall? What 'enjoyment' factor will the weather have on your intended route? Consider the wind direction in relation to your route. Is it better to do the route in reverse instead so not to be walking into the wind a majority of the day? Look at the weather forecast and plan or adjust your route accordingly. It is also worth remembering that we do occasionally get nice weather days in the hills and mountains! Are you realistically going to cover long distances over complex ground in 25+ degree heat with minimal water courses along the route?

Having chosen an object, considered your ability or that of the group and considered the weather, it is now time to plan your route in full.

Planning Process:

Maps:
Once you have a route in mind, it is time to start thinking about what maps you will need. Harvey's Map, OS map or both? What scale or scales do you want or need? Does the route cross over between two maps? Refer to my article Introduction to Maps: Part 1.1: Scales for more information about choosing a map.

Logistics:
Before you even begin your walk, you must first get to the start. Where is the start? Look for good start and finish points. These are usually car parks or laybys. Guidebooks, websites and articles usually specify a start and finish point. Think about how you are going to get the start and/or back to the finish. You may have driven to a park and ride and caught a bus to the start point. What time are the buses and when is the last bus back? Are there any other considerations you need to take into account such as avoiding bird nesting areas, or even Firing Range times? Sections of the Pembroke Coast Path and the North Moor of Dartmoor are closed to the public when the military is firing (for obvious reasons!). Check local firing timetables to make sure it doesn't impact your route.

Choose points of interest:
Once you have your map or maps, start to look at the area of your route and see if you can pick out points of interest. These could be summits, bodies of water, interesting spot feature (such as building ruins or footbridges), anything that you could use as a waypoint and obvious features you can navigate between. Start to look at the most attractive route options between these points.

Infill sections:
Now that you have chosen your points of interest, think about how you will travel between them. Look for obvious changes in direction, for example a junction in a footpath, that you could use as waypoint or points along the route that may appear to be difficult to navigate so must be broken down into smaller legs. Start connecting your points of interest.

Trial and Error:
Once you have a rough route plotted on your map, look back over it and check to see if there is anything you missed or could change. Is that the most suitable route between those two points of interest? Is there a more obvious feature you could use as a waypoint or point of interest?

Escape routes + alternative routes/options:
Once you have a rough route marked up, look around it to find suitable options to 'escape' from the route in an emergency. This usually means dropping down to a road and/or area of habitation to get help. In the early stages of your walk it may be easiest to head back to the start point. Towards the end, it may be easiest to continue to the finish point. But during the walk, you may need to descend into a valley to get help. Escape routes are usually clear, easier (note: not always 'easy') routes for you to follow to get off the mountain.

Also consider having alternative routes or options to potentially cut your route short. These could also be your escape routes. You may find you need to cut a route short due to fatigue, mentality, injury, time or weather conditions. Having other route options allows you to possibly extend your route, avoid problems or obstacles, or to account for the weather conditions. Is it worth heading to the summit in sideways rain and thick fog, or shall we cut our route short and head back down into the valley?

Recording the route:

We have our route. We have considered the factors, chosen our objective, plotted points of interest and now it's time to start recording our route plan. All the above is too much information to remember so it is usually best to have it written down in some form or another.

Route Card:
Route Cards are a table form of recording your route with rows and columns, much like an Excel spreadsheet. They are time consuming but are a useful planning tool. As mentioned above in '**Why plan a route'**, route cards allow you to spend time studying the map, practicing navigational skills such as measuring distance and bearings and serve as an aide memoire for you if taken en route. Route cards are good for beginner walkers planning their first routes for the above reasons and they help break the route down into smaller, more manageable chunks. One disadvantage of route cards is their lack of flexibility if taken too seriously. If you decide to lengthen your route, your initial route card does not take this into consideration, meaning total timings and distances will be inaccurate and whole legs will be missing (the legs you have added whilst en route). There are many forms of route card templates you can find online, but they should all consist of the following columns:

- Leg number
- Leg description
- Distance
- Duration
- Direction
- Height Gained
- Total time of leg
- Description

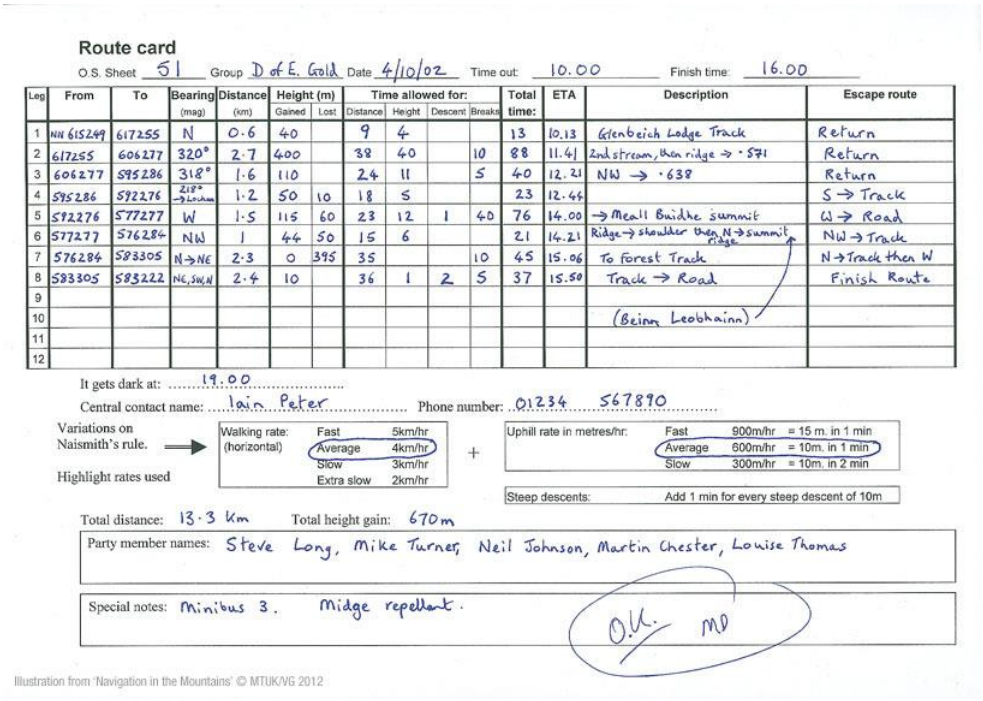
- Escape notes
- Total distance
- Total time

Along with the above columns, they should also have space to include:

- Group member details and contact numbers
- Date
- Estimated Start time
- Estimated time of arrival (Finish time)

You will find route cards that have lots more information such as useful phone numbers, navigational prompts (Naismith's rule as an example), sunrise and sunset times, estimated time of arrival for each leg, map sheet name and number (E.g. Harvey Map Superwalker - Dartmoor North or OS Explorer – Dartmoor – OL28) and areas to write other notes. These are great, but I find they clutter an already very detailed document and these other bits of information either only benefit a third party or can be written down elsewhere.

Take a look below at an example route card:



Route card

O.S. Sheet 51 Group D of E. Gold Date 4/10/02 Time out: 10.00 Finish time: 16.00

Leg	From	To	Bearing (mag)	Distance (km)	Height (m) Gained	Height (m) Lost	Time allowed for: Distance	Height	Descent	Breaks	Total time:	ETA	Description	Escape route
1	NN 615249	617255	N	0·6	40		9	4			13	10.13	Glenbeich Lodge Track	Return
2	617255	606277	320°	2·7	400		38	40		10	88	11.41	2nd stream, then ridge → ·571	Return
3	606277	595286	318°	1·6	110		24	11		5	40	12.21	NW → ·638	Return
4	595286	592276	218° →Loch	1·2	50	10	18	5			23	12.44		S → Track
5	592276	577277	W	1·5	115	60	23	12	1	40	76	14.00	→ Meall Buidhe summit	W → Road
6	577277	576284	NW	1	44	50	15	6			21	14.21	Ridge → shoulder then N → summit ridge	NW → Track
7	576284	583305	N→NE	2·3	0	395	35			10	45	15.06	To Forest Track	N → Track then W
8	583305	583222	NE, SW, N	2·4	10		36	1	2	5	37	15.50	Track → Road	Finish Route
9														
10													(Beinn Leobhainn)	
11														
12														

It gets dark at: 19.00

Central contact name: Iain Peter Phone number: 01234 567890

Variations on Naismith's rule. Highlight rates used

Walking rate: (horizontal) Fast 5km/hr; Average 4km/hr; Slow 3km/hr; Extra slow 2km/hr

+

Uphill rate in metres/hr: Fast 900m/hr = 15 m. in 1 min; Average 600m/hr = 10m. in 1 min; Slow 300m/hr = 10m. in 2 min

Steep descents: Add 1 min for every steep descent of 10m

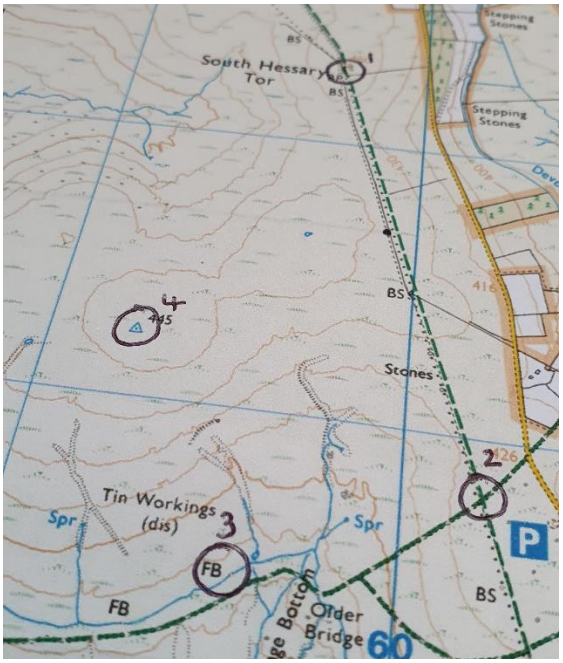
Total distance: 13·3 km Total height gain: 670m

Party member names: Steve Long, Mike Turner, Neil Johnson, Martin Chester, Louise Thomas

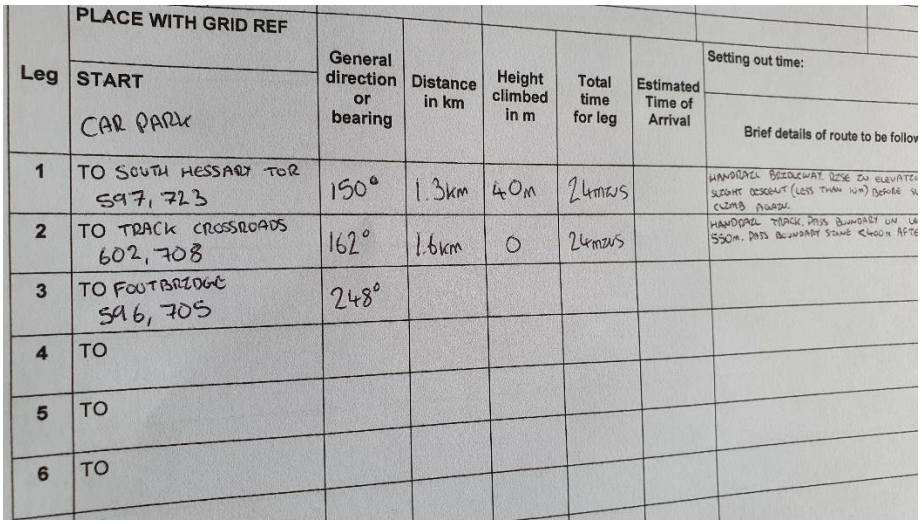
Special notes: Minibus 3. Midge repellant. O.K. MD

Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

To plan a route using a route card, first we must mark our points of interest or possible waypoints to form legs and number them.

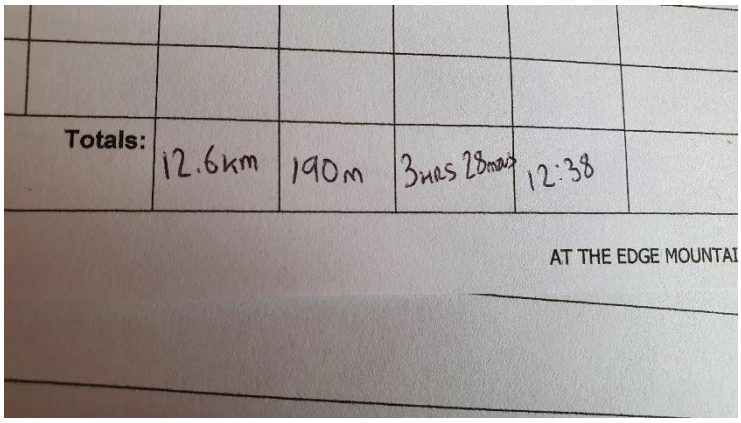


We can now work out the distance, duration, direction, height gained, total time for leg, description and escape notes for each leg.



Leg	PLACE WITH GRID REF START	General direction or bearing	Distance in km	Height climbed in m	Total time for leg	Estimated Time of Arrival	Setting out time: Brief details of route to be follow
	CAR PARK						
1	TO SOUTH HESSARY TOR 597, 723	150°	1.3km	40m	24mins		HANDRAIL BRIDLEWAY. RISE TO ELEVATIO SLIGHT DESCENT (LESS THAN 10M) BEFORE SL CLIMB AGAIN.
2	TO TRACK CROSSROADS 602, 708	162°	1.6km	0	24mins		HANDRAIL TRACK. PASS BOUNDARY ON L 550m. PASS BOUNDARY STONE 400m AFTE
3	TO FOOTBRIDGE 596, 705	248°					
4	TO						
5	TO						
6	TO						

We continue this process for all the legs until we are at the finish of our route. We can now work out total distance and time for our route:



Totals:	12.6km	190m	3hrs 28mins	12:38	

AT THE EDGE MOUNTAI

Route card descriptions can be as detailed as you like, containing information about tick off features, catching features, other bearings and navigational techniques and strategies you will use on that leg. Or they can be vague with just enough info to prompt you on the ground.

It is worth noting here that if you are producing route cards for your walks, try not to have too many legs. Depending on the length and complexity of your route, pick between 6 to 10 waypoints or legs between your start and finish point. And if you are planning a multiday walk or expedition, you will need a route card **PER DAY**. So, for a 3 day walk, you will have 3 route cards.

Another disadvantage of a route card is that it doesn't give you a visual representation of your route. For this, you may want one of the following instead of, or combined with your route card.

Trace of the route:

A visual representation of your route is easier for a third party to interpret than a written route card. Once you have your route planned, you can overlay your map with tracing paper and draw along your intended route (adding arrows to show intended direction of travel), circling waypoints and adding your escape routes and alternative routes. When tracing your route, it is important for you to add at least 2 grid corners to the trace so the route can be lined up on a map. These grid corners are where an easting and northing intersect each other, and you label them with their grid number. See the example below for a better understanding:

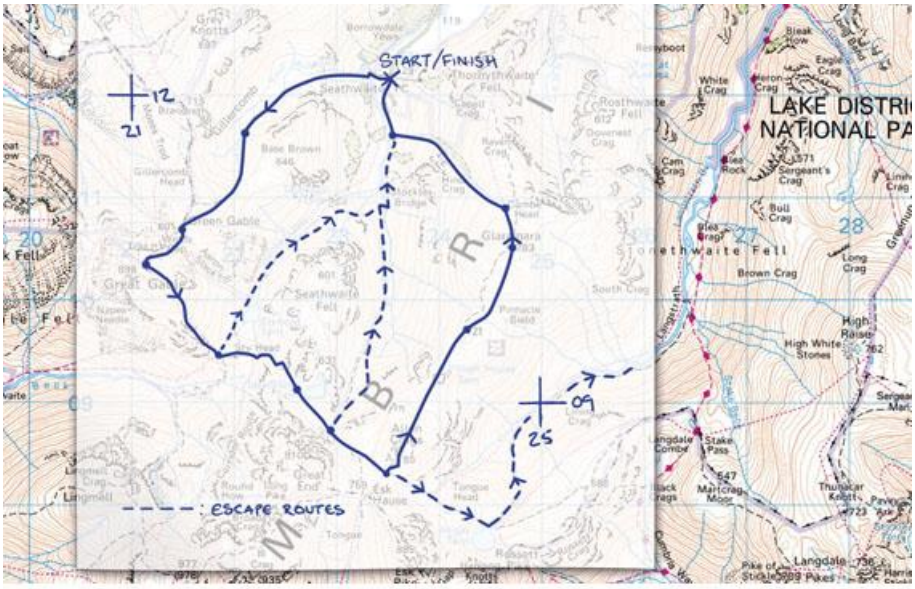
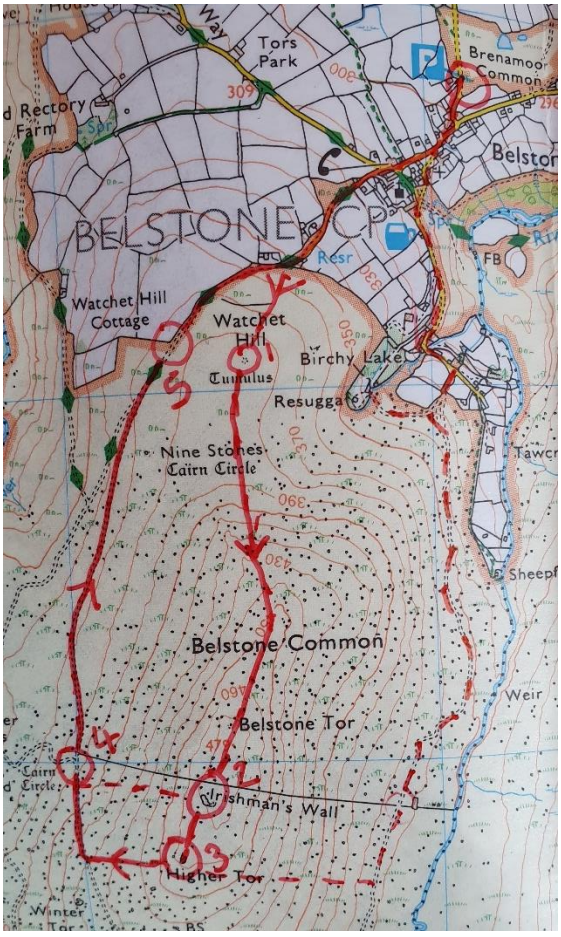


Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

Marking on a laminated map:
The benefit of marking on a laminated map is you are able to wipe it off at a later date. It is best to use a fine line permanent marker and ideally use different colours or different lines (solid and dashed) to mark your route and escape routes/alternative routes. Try not to use a black pen as it can obscure the detail on a map and may possibly be confused with other features already marked on the map. You can use the pen to annotate sections of the route, both during planning and when on route. There have been times when I have been out navigating and a feature is shown on the map but doesn't appear on the ground. I have annotated my maps accordingly to show this.



Digital mapping:
Technology is now a big part of our life, there is no denying that. It gets a lot of bad press, especially in the outdoors as more and more mountain rescue incidents involve rescuing people relying on technology and it failing them. We cannot ignore technology, nor should we see it as a bad thing, but instead we should embrace it and use it carefully but not to rely upon it.

The main digital mapping software's people use are OS Maps and Viewranger. I am not going to go into detail on how to use these (that might come in a future article), instead I will explain their uses to us whilst planning a route.

Mapping software can take most of the hard work out of planning a route for us, if used properly! It can instantly tell us our distance between legs, a rough bearing, height gained and give us a grid reference of our waypoints. Once the route has been plotted, the software tells us total distance, height gained, time and produces a route card for us. We can drop a pin on our start point and do one of two things:

- **Click or tap on our points of interest/waypoints.**
- **Click along the whole route we intend to take.**

Clicking waypoints:
This is a rough way of plotting our route as the only points on the map will be our waypoints, start and end points. A straight line will link between our points. This gives us a rough estimate of distance and direction, but it gives us an inaccurate height gained and an unrealistic view of our intended route. This is because the software will only plot the height gained along the plotted route (in this case, the straight line between points). Benefits of doing this though is it is quick to plot a route and serves as a rough idea of the route as we can decide our options between each point.

Clicking along the route:
This is far more accurate as we can plot waypoints along the entire route we intend to take, clicking at every change of direction. This is far more time consuming though. Depending on how accurate you have been plotting your route, you will end up with dozens of waypoints. You can include only your planned waypoints/points of interest by clicking on that waypoint and adding a title and description. Only these waypoints will then be displayed on the route card at the end. The title of the waypoint will describe what it is (track junction, summit name, name of feature etc). The description could be a detailed description of how you will navigate to that leg.

Once you have plotted your route, you can print copies of the map along with the route card. Print the map to scale, laminate it and you can take it with you on your route. Another copy can be left with a third party. Do not become lazy though! Alternate planning routes using digital mapping and an actual map. By all means, plot your route digitally, but practice measuring distances and bearings etc using the printout or a map, writing out a route card and then checking with the digital route card.

One final point to note: You can adjust walking speed in the settings, so the time given reflects what you predict to walk. You can also change the settings of the route overlay in terms of line colour, thickness and transparency.

Scanned/photocopy of the map:

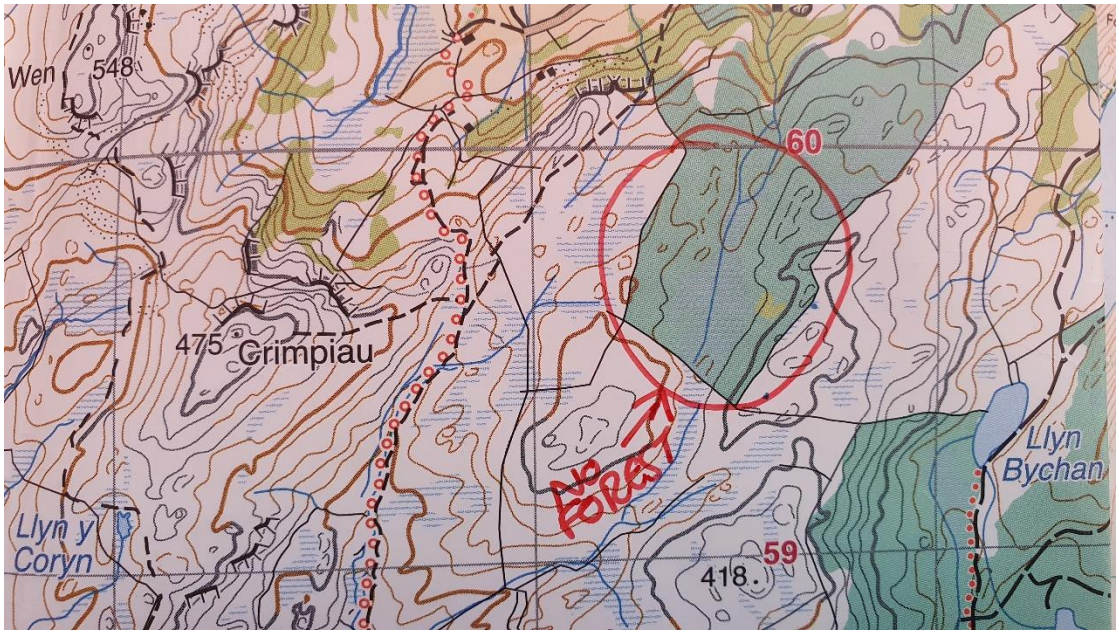
This is more useful to your third part as you can scan or photocopy your map, highlight your route and leave it with them along with a route card and map trace (the map trace must be done off the scanned or photocopied map in case, during the printing/scanning, the scale doesn't match that of an actual map).

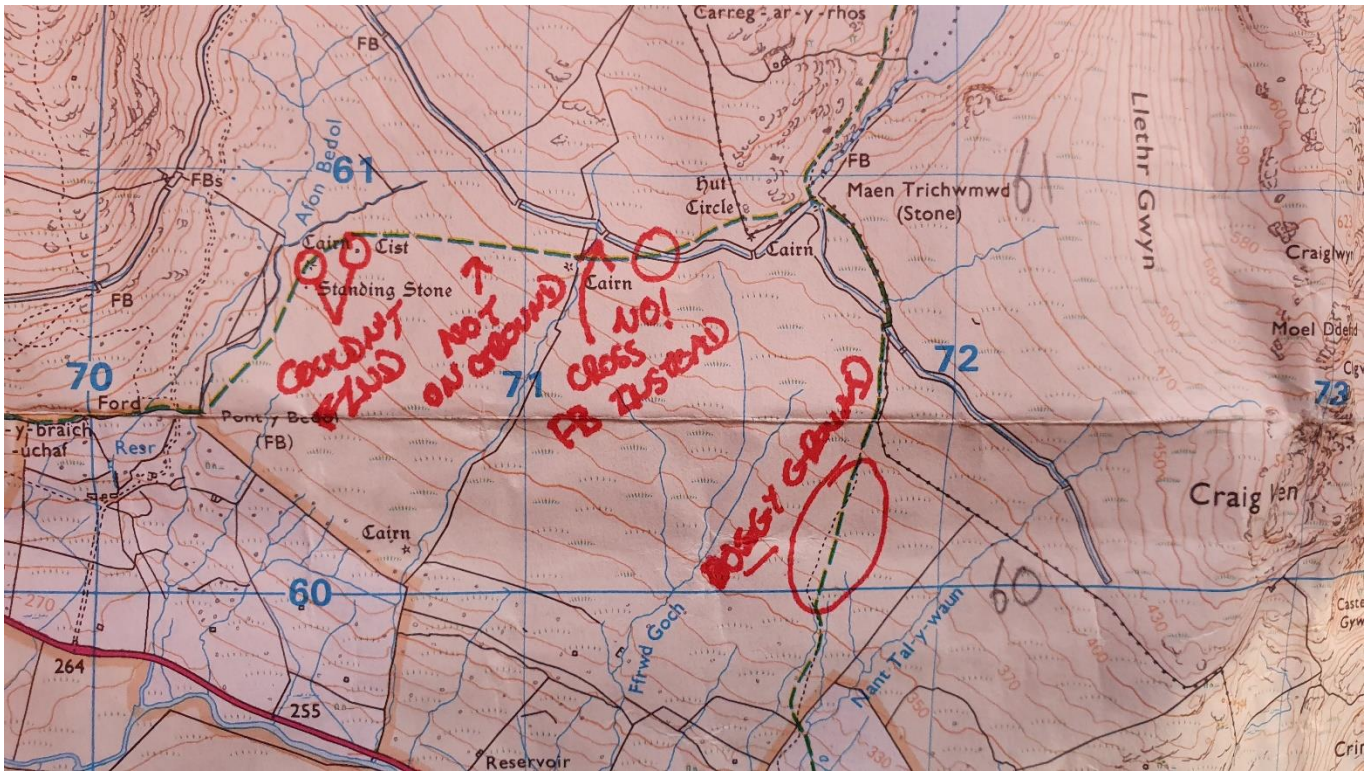
By scanning or photocopying a map, you can also use the copies to plot a route, annotate and refine your route without ruining your main map. You can take your copied map with you to give you a visual overview of your route without marking it on your map, thus prolonging the life and detail of a map.

Practice recording a route and over time it will become easier and quicker. Practice using all of these methods and work out which one, or ones, that best suit you. I would suggest, to begin with, practice writing out a full card from a map and then work with combining some of the other ways above. E.g. route card and mapping software combo.

Re-planning on the route

With all of the above in mind, route planning doesn't stop once you are carrying out your walk. We continue to plan along the route, for example, using the 4 D's and 5 What's to help us navigate between legs. Check you planned times with your actual times to ensure you are on track or haven't under or overestimated your timings. Take notes along the route for any inconsistencies you may find, as mentioned above (features that are not on the ground but marked on the map etc).





Use your judgment and experience to carry out dynamic risk assessments along the route. Continue to assess your ability and mentality, as well as the group's, along the route and have decision points along the route as to when you will turn back or use an escape route/alternative route when needed. Leave your ego at home!

Decision points and knowing when to use your escape/alternative routes will depend on environmental, physical and mental factors. The hardest decision to make is to decide whether to start your route or not! The most important thing to remember is to consult the entire group and make decisions as a whole group.

Planning a route is all part of the fun! For me, it gets me excited and inspired to head out into the hills and mountains. Browse through guidebooks, websites and articles to gain inspiration. Pull out a map and study it. Plan your route, but most importantly, have fun! Route planning shouldn't be a chore!

Inspiration and Resources

Here is a short list of inspiration and downloadable resources to help you plan routes:

Cicerone Guidebooks
UK Hill Walking - Routes
Trail Magazine (Website and Magazine)
The Great Outdoors (Website and Magazine)

At The Edge Mountaineering Downloads and Resources (links and downloadable resources)

Next up:

The next article in this series will be **Part 4: Putting it all together**

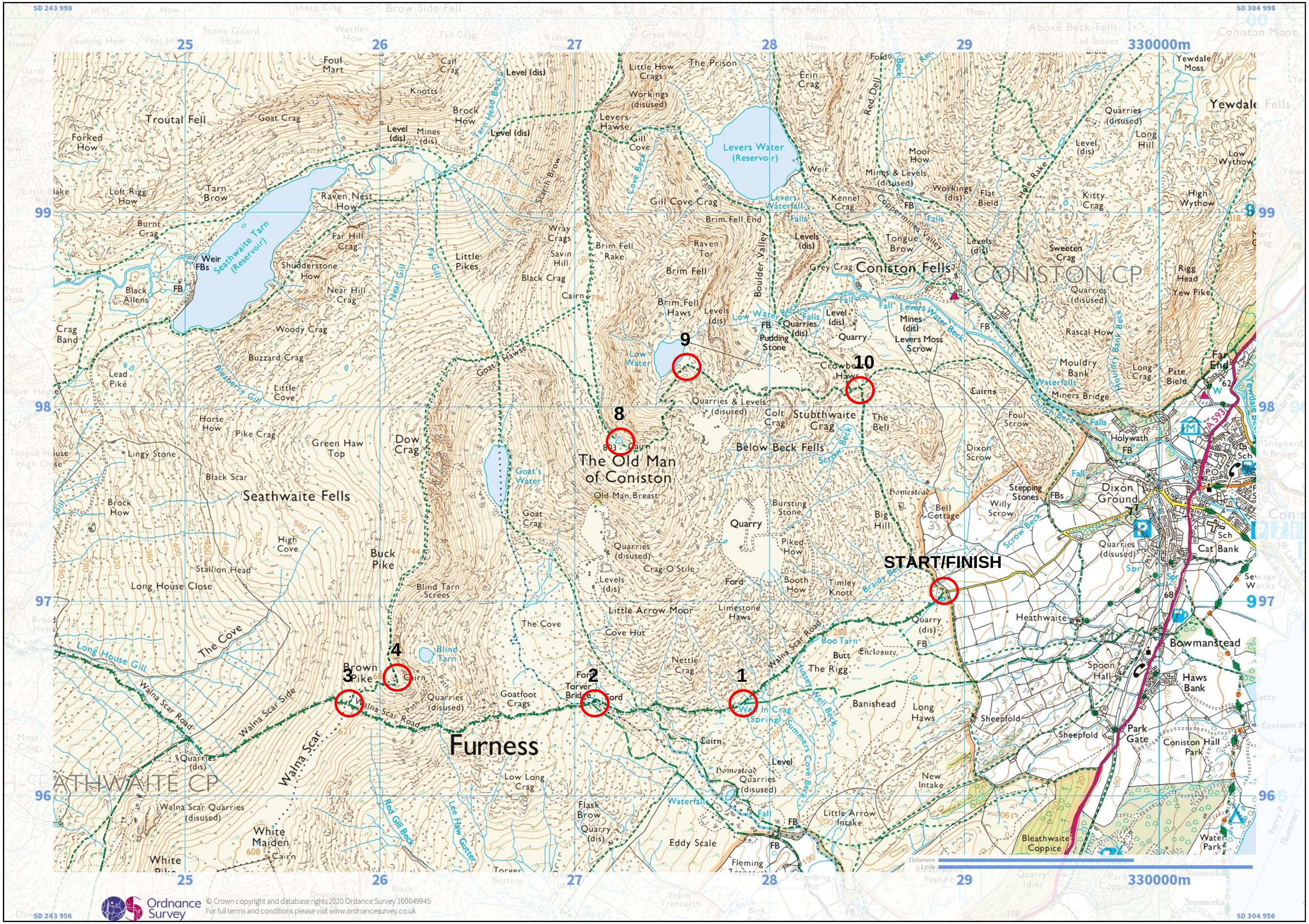
See you At The Edge!

Questions

Below is the question sheet to this article.

The map you require is attached. You will need to print this out but ENSURE you print it ACTUAL SIZE and not FIT/FILL TO PAGE. Take a look at and check your printer settings before printing and then check the measurements with a ruler. A grid square should be 4cm x 4cm.

A part filled route card is also attached. Fill in the blank sections of the route card. There are a few blank legs for you to pick your own points of interest/waypoints.



Route Name: Old Man of Coniston via Dow Crag: OS Explorer Map OL 6 / Harvey Superwalker Map – Lake District West							Tel Nos:
Day of the week:	Date:	Day number:	Names of team members:				

Leg	PLACE WITH GRID REF START	General direction or bearing	Distance in km	Height climbed in m	Total time for leg	Estimated Time of Arrival	Setting out time: <decide yourself> Brief details of route to be followed	Escape/Notes
1	TO Track Junction	241°		60m				Reverse route
2	TO Track Junction/Torver Bridge SD 273, 964		0.6	70m	16 mins		Gradual rise up hill. Pass paths on left + right. Handrail stream on left to Torver Bridge	
3	TO Walna Scar Col SD 258, 964	271°		260m			Path rises gradually then onto steep rocky ground. Cross stream, continue to col.	
4	TO Brown Pike				11.5 mins			
5								
6								
7								
8	TO Old Man of Coniston Summit SD 272, 978							
9	TO Corner of track by lake SD 275, 982							
10	TO Track Junction							
11	TO Walna Scar Car Park							Continue on route
	Totals:							

MORE DETAILS

Leg	Details
1	
2	
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