

Pinpointing your problem – getting great location data

Getting an accurate location is central to identifying and reporting a problem out on the Track.

Why? Enough information needs to be given to locate the task to within 500m, although greater accuracy is ideal. If the location given is too vague, you'll be asked for more detail. This might involve collecting more information on a subsequent visit, and delay action on the task.

The amount of detail provided for the location of a task directly affects how promptly and effectively it is resolved. The PaWS District work crews *may not* prioritise a single isolated task unless it is an immediate Visitor Risk Management concern. Instead, they are likely to 'bundle' several outstanding tasks in one part of their patch into a work list – potentially combining attention to the Bibbulmun Track with other management tasks in the area. When location details are vague or inaccurate, the task won't be prioritised for any upcoming work list.

An accurate location also makes the job easier to plan and execute for PaWS crews. For example, to clear large fallen trees, they need to carry heavy chainsaws to the site and use multiple people. They will appreciate knowing that a particular tree is only a couple of hundred metres beyond a known management track, instead of the prospect of searching anywhere within a 2+km stretch. We are sure to get things actioned more promptly by the District if we make their life easier!

There are two key approaches for identifying and reporting locations on the Track: obtain accurate **GPS coordinates**; or **quantify the distance from an identifiable feature**. You should use whichever you are most comfortable with and equipped for. You are likely to know your section better than either our MAdmin or the PaWS work crews, so you are the most efficient source of an accurate location.

1. Obtain exact coordinates

Coordinates can be the most accurate, reliable and useful location data collected.

It's important to realise that GPS coordinates are only as good as their accuracy (see box 'The Accuracy of GPS locations' below, for more details). They lose utility when accurate to only a few kilometres – your section ID essentially gives the same information!

You can use an actual GPS device (for a good introduction, read a Bushwalking Victoria article on buying a GPS, found [here](#)). However, there are many smartphone apps with great GPS capability...



We recommend the app "Emergency Plus". This is designed to help a Triple Zero (000) caller provide location details required to mobilise emergency services. Hopefully you'll never need it for this purpose! However, it can also provide good GPS coordinates. When it's finished calculating the location, take a screenshot to add to your inspection report.

There are also apps which overlay location and other information onto photos – for example, **Theodolite** (for Apple IOS), **Dioptre** (for Android) and GPS Map Camera (for either OS).

It is preferred that your GPS coordinates are provided in decimal degrees. They are easier to copy and paste into mapping and GPS programs. See the companion factsheet ***Working with GPS locations in Google Maps*** for information on conversion between degrees/minutes/seconds and decimal degrees.

The accuracy of GPS locations

Whether you're using a handheld GPS or a smartphone, it helps to have some background information on the process to ensure accuracy in your coordinates.

The location 'fix' is calculated (triangulated) using at least four satellites. The accuracy is greatest when the device can 'see' satellites which are well spaced across the sky. Check out [this website](#) and also [this one](#) for an explanation.

The accuracy of a fix is best when the device is allowed time (while the fix is being calculated) for the satellites to move across the sky; this improves the triangulation. You'll have the most accurate fix when the coordinates essentially stop changing.

The coordinates for locations obtained from data attached to photographs (e.g. using Theodolite or Dioptra) can be quite inaccurate, because this GPS fix is only a "snapshot" of the satellite position and hasn't allowed sufficient time for good triangulation. For example, we've had error of 50-100km of a photo taken on the Track using Theodolite. For best results, open the app then wait (about a minute) before taking the photo.

It can be very useful to have an estimate of accuracy. The accuracy of GPS coordinates is quantified using the 'horizontal dilution of precision' (or HDOP). HDOP should be as close to 0 as possible and ideally under 2-3. If your app doesn't give HDOP, it should provide an alternative measure of accuracy. For example, Emergency Plus quantifies accuracy in metres (in the 'My Location' screen).

2. Describe and quantify the location

It is possible to accurately describe a location by identifying the **distance** and **direction** from a nearby – and readily identifiable – feature. Examples of such features include the intersection of named roads; a major bridge or crossing of a named watercourse; a reference or 'blaze' tree.

You should aim to become familiar enough with your section to have a few features you could rely on for this purpose. When you come upon a new problem, you're unlikely to be aware of the exact distance travelled after the last feature. If you are only walking your section one-way, you'll need to recall a feature known ahead. If you are making a return trip, you'll have the option of measuring the distance to a feature already passed.

Considering direction, please indicate "northbound" or "southbound" (with respect to direction along the Track; abbreviated NOBO or SOBO).

The distance can be measured in one (or more) of the following ways – choose which best suits you and the section of trail:

- Guess
Not ideal, in our experience!

- Make a distance estimate based on your walking speed
How much ground do *you* typically cover in 1 minute? 5 minutes? 10 minutes? Going uphill? Going downhill?... If you can get a sense of these answers based on walks of known distance (e.g. along streets in your suburb), walking at a similar speed as you do on the Track, you can use this to estimate distance. Of course, this will only be accurate if uninterrupted by stops to complete work. You'll need to allow for those.
- Make a distance estimate based on counting steps (pacing)
What is the length of your step? How many double paces (i.e. left, right) do *you* take in 100m? It'll likely be around 70-75 (on flat ground, at a typical speed for the Track). Work this out at home and you'll have a slightly easier and more accurate method for estimating distance – even over several hundred metres. The number of paces required to cover 100m will be less on noticeable down slopes (as you tend to take longer strides) and more when slogging uphill. Alternatively, you could use a pedometer, or app with this function.
- Measure the distance on a map
This works if you know exactly where you are on your section and can locate yourself on the map.
Use a paper map and marked string (see Tip box) – the string is flexible enough to follow the turns in the Track.
Or use the ruler tool in a digital map (like Google Maps or Google Earth).
- Refer to the Track notes for your section
The Track notes provide accurately measured waypoints within your section. The waypoints themselves will only be directly useful to the PaWS work crews if they are major identifiable features. However, the distances provided in the Track notes could give you a head start in estimating the distance between a problem and an identifiable feature, in combination with one of the other methods provided here. We have faith that your maths is up to it!
We suggest you identify – on the ground – the waypoints within the Track notes for your section (both northbound and southbound). Include a copy of the relevant page/s from the Track notes in your maintenance kit.

Tip!

Include a piece of marked string in your Track maintenance kit.

Note the scale on your map – it's likely to be 1cm = 500m (1:50,000). Mark a length of kitchen string using a fine-tipped marker in 0.5cm increments (i.e. 250m on the ground). You only need 10cm of string to measure up to 5km of Track!

Which method should you use?

Which method you choose may depend on:

- Where the location is... This might sound too obvious – but if your location is in the immediate vicinity of a readily identified feature then you can give that as the location. Anywhere else, and you'll need to do a bit more work to define it...
- Whether or not you have a device which can provide accurate GPS coordinates
- Your ability to accurately estimate distances