(My note: the “Plot Demarcation” addition is optional. It could be included without the “Trimble GeoXH 6000 DGPS” specific subsection.)

## Plot Demarcation

To ensure accurate logging of plot co-ordinates in the field:

* The DGPS device should have a clear view of the sky and obstacles like trees and buildings should be avoided.
* Points should be logged for 30 secs or more to achieve the best possible accuracy.
* Where the Trimble GeoXH 6000 DGPS device is being used:
  + One should use accuracy-based logging, with a required accuracy of less than 1m, to ensure that only positions that meet the specified accuracy are logged. See section 5 of the GeoExplorer 6000 Series User Guide for more details (Trimble Navigation Limited, 2011a).
  + Enable logging of carrier phase data to support the best possible differential correction accuracy. See section 10 of the TerraSync Getting Started Guide for more details (Trimble Navigation Limited, 2011c).
  + Points should be logged until the Predicted Postprocessed Accuracy (PPA) value is below 50cm.

## Post Processing

GPS locations must be differentially corrected to achieve sub-meter accuracy. Differential correction can be achieved in real-time whilst in the field, or as a post-processing operation using suitable software, such as Trimble GPS Pathfinder. Real-time correction requires field internet access to the TrigNet base station data (NGI, 2013), or a second GPS receiver to be set up as a base station at a known location in the study area. Post-processing is applied post field sampling, on a workstation with access to TrigNet data. A site installed base station is not required for post-processing and it is therefore the simpler, and recommended option for the GEF study areas.

Where possible, multiple TrigNet base stations should be used for post-processing to help average out errors. Stations within 200km of the study area are preferred. For Baviaanskloof, these are the “TrigNet Beaufort West”, “TrigNet George”, “TrigNet Graaff Reinett” and “TrigNet Port Elizabeth” stations.

To perform differential correction using Trimble GPS Pathfinder software (more detail can be found in Trimble GPS Pathfinder Getting Started Guide (Trimble Navigation Limited, 2011b)):

* Transfer the plot location files from the DGPS device to the workstation using the “Data Transfer” utility.
* Start the “Differential Correction” utility and select the files that were transferred in the previous step.
* Choose the “Use multiple base providers” option and select a suitable group of TrigNet base stations for providing differential correction data.
* Proceed with the differential correction. Correction data will be downloaded for the selected base stations and applied to the plot location files.
* When the process has completed, check the output logs for errors and make sure the corrected accuracy is less than 1m.

## References

NGI (2013) *NGI TrigNet*, *Department of Rural Development and Land Reform (DRDLR)*. Available at: http://www.ngi.gov.za/index.php/what-we-do/geodetic-and-control-survey-services/37-trignet-continuously-operating-gnss-network (Accessed: 3 July 2018).

Trimble Navigation Limited (2011a) *GeoExplorer 6000 Series User Guide*. 1.00. Available at: trl.trimble.com/dscgi/ds.py/Get/File-606658/GeoExpl6000\_UserGde\_RevG\_ENG.pdf.

Trimble Navigation Limited (2011b) *GPS Pathfinder Office Software Getting Started Guide*. Available at: trl.trimble.com/dscgi/ds.py/Get/File-579190/PFO\_GSG\_520A\_ENG.pdf.

Trimble Navigation Limited (2011c) *TerraSync Software Getting Started Guide*. 5.20. Trimble Navigation Limited. Available at: http://trl.trimble.com/docushare/dsweb/Get/Document-730848/TerraSync\_GSG.pdf.