ECGN Standards for Local Ties

General

In general, each observation technique (GNSS, gravity, levelling, tide gauge, etc.) on an ECGN station has its own benchmark. The determination and documentation of the local ties between these benchmarks is a fundamental condition to reach the goals and project objectives.

Therefore, the benchmarks of the different observation techniques should be connected to the "main benchmark" of the ECGN station. The "main benchmark" is either identical with one of the benchmarks of the observation techniques or an additional marker.

The local ties should be determined at regular intervals – possibly twice a year. The information about the local ties has to be included in the meta data form. The local network has to be illustrated by a sketch. Additional information about location and physical situation – buildings, streets, surroundings (pictures) - are welcome.

Height component

The benchmarks of the different geodetic observation techniques at an ECGN station have to be connected by precise spirit levellings (accuracy 1 mm). The height difference has to be given as ECGN main benchmark to benchmark of the observation technique.

It means height difference is

–   GNNS benchmark minus main benchmark
–   levelling benchmark minus main benchmark
–   tide gauge benchmark minus main benchmark
–   benchmark of the gravity observation minus main benchmark
–   benchmark of other techniques (SLR, VLBI) minus main benchmark

Additional height information for tide gauge are welcome:

–   tide gauge benchmark minus tide gauge zero
–   tide gauge benchmark minus additional benchmarks

Eccentricities for 3D coordinates

Precise three dimensional eccentricities with respect to the main ECGN marker are only necessary for the GNSS, VLBI and SLR markers besides the levelling height difference.

Coordinate differences should be given in a geocentric coordinate system (ETRS89) form main benchmark to benchmark of observation technique.
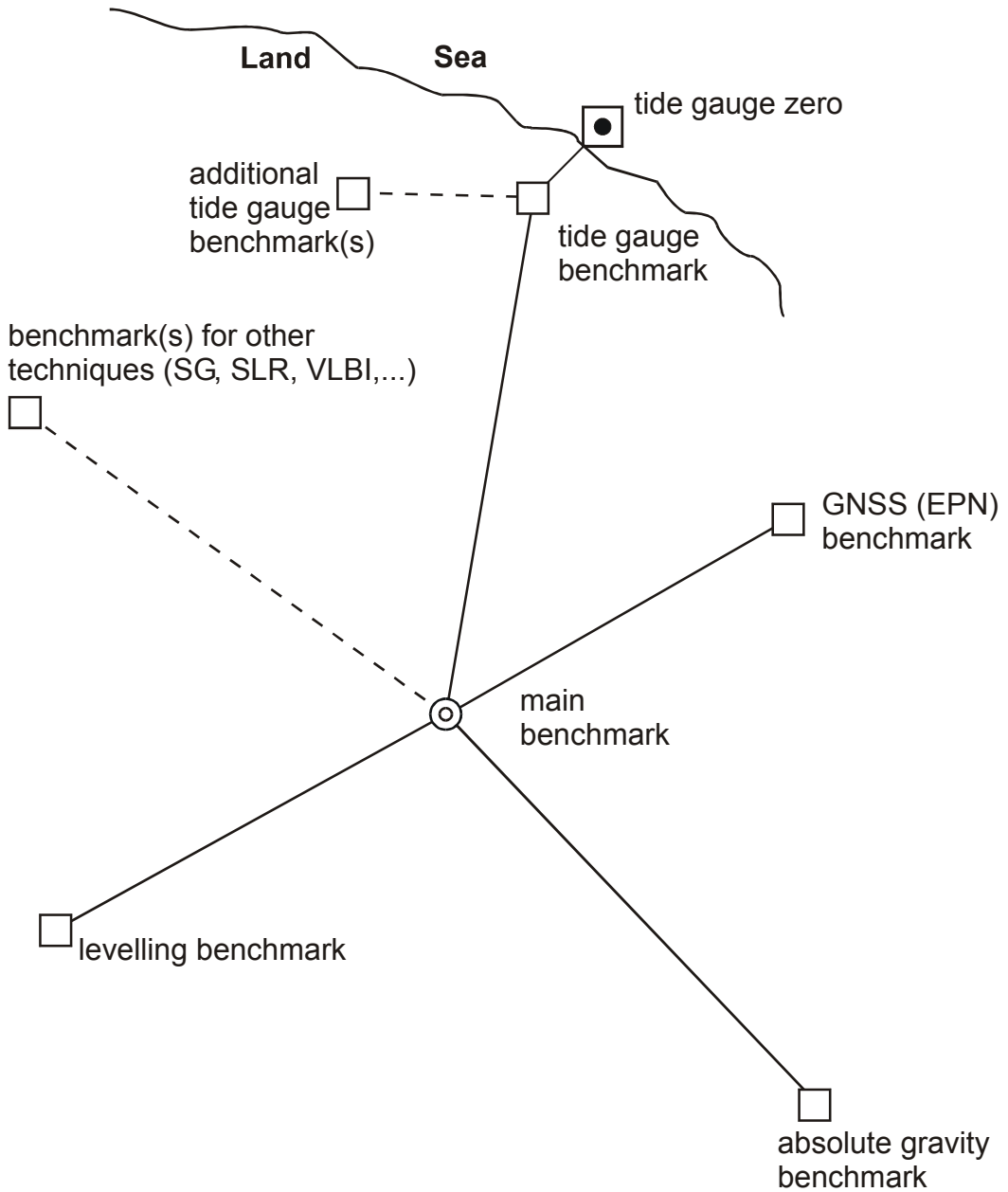
Gravity

–   reference height of final gravity value (marker or 1.00 m or 1.25 m)
–   gradient and height difference of the determination

Sketch

Please find at the additional page an example for a description of a local network.

Example for Local Ties Determination for a ECGN station

Land   Sea

● tide gauge zero

additional
tide gauge
benchmark(s)

tide gauge
benchmark

benchmark(s) for other
techniques (SG, SLR, VLBI,...)

GNSS (EPN)
benchmark

main
benchmark

levelling benchmark

absolute gravity
benchmark

——— levelling, accuracy 1 mm