Description of Coastal Topographic Surveys

Output data from Coastal Topographic Surveys

Version 1.1

This document describes the output data from transects surveyed as part of the Anglian Coastal Monitoring project.

Transects lines are surveyed for elevation levels and give a cross section profile through the coastal zone.

Method

Specification

Surveyors are conducted according to the Environment Agency's National Standard Contract and Specification for Surveying Services and the Standard Technical specifications.

Beach surveys are carried out on foot by a surveyor with a GNSS (Global Navigation Satellite System) staff, coordinated with a base station and the OS Smartnet network. The singlebeam and multibeam surveys are carried out with a boat mounted echosounder and use RTK (Real Time Kinematic).

Transect extent

The start of a transect is considered to be 20 m from the toe of the landward side of a defence/embankment/first dune from the shoreline. This point may not be the same as the zero chainage point (ZCP) in the data which may have been established from a Permanent Ground Marker brass benchmark plate. The ZCP is maintained for all surveys so that profiles obtained from all survey types (topographic, hydrographic and LiDAR) can be compared. Measurements will be taken at the crest of a defence feature and either side at the toe. Topographic surveys will extend to the seaward limit (ideally Mean Low Water Spring), while hydrographic surveys will usually run to a depth of closure or the 10 m depth contour. In areas of The Wash tidal windows and terrain may not allow for the seaward limit to be reached on foot, either the survey will run as far as is possible to survey, or an alternative end coordinate will be designated.

Onshore measurements are taken at 20m intervals and at all breaks of slope, and any changes in geology, sediment type and/or habitat type along the transect. Depth Soundings are recorded at maximum intervals of 1 second or 5 m (whichever is smaller). Positions are recorded at maximum intervals of 2 seconds or 10 m (whichever is smaller).

Transects are spaced at a minimum interval of 1 km. However the spatial resolution may be increased to meet the monitoring requirements for a frontage. Transect locations are planned annually and the number of transects may vary between years or seasonal campaigns.

Survey timing

Topographic surveys occur during Low Water spring tide times in order to achieve the required seaward extent, unless agreed otherwise. While hydrographic surveys take place on High Water, to ensure a maximum depth of water on the nearshore.

There are two seasonal campaigns of survey, in the Winter (January to March) and in the Summer (June to September). In addition, some transects are surveyed quarterly and so include in Spring and Autumn surveys, or even on a monthly basis for the duration of a scheme or project.

Accuracy

The expected accuracy of current Kinematic GNSS data collectors is a horizontal precision of 15 mm and a vertical precision of 10 mm. Older data would be expected to be less accurate, especially prior to the introduction of GPS surveys in 2001.

Data output

Data format

The transect data are supplied depending on the downloaded specification from the DEFRA Digital Surveys Platform. Available formats are:

- Shapefile
- ESRI File Geodatabase
- Keyhole Markup Language
- Mapinfo
- GeoJSON
- Mapinfo TAB
- Geomgrpahic Markup Language

Each download contains a Topographic Points and Topographic Lines file.

The Topographic Points are the individual x,y,z and subtrate points surveyed.

The Topographic Lines describes the maximum length of each survey and attribute information

Substrate codes

B	Boulders
CE	Cliff edge
CF	Cliff face
CT	Cliff top
D	Dune
DV	Dune, vegetated
F	Forested (may be planted on old dune)
FB	Obstruction (foreign body interfacing with surface)
G	Gravel
GM	Gravel & mud
GR	Grass
GS	Gravel & Sand
HW	High Water Mark
M	Mud
MS	Mud & Sand
P1	Marker point
P2	Marker point
PP	Photo point
R	Rock (bedrock & solid geology not including placed material)
S	Sand
SD	Sea Defence (rock armour, concrete, embankment etc)
SM	Vegetated Saltmarsh
W	Water body
X	Mixture - all material
ZCP	Zero Chainage Point (zero Coordinates)
NR	No record
ZZ	No record