

Cell 1 Coastal Monitoring Programme

Topographic Surveys

Academy Geomatics Ltd

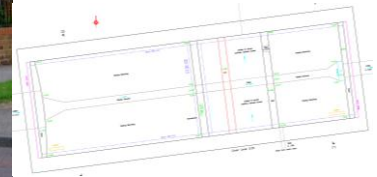
- Based in Newcastle upon Tyne.
- Over 25 years surveying experience.
- Survey coverage throughout the UK.
- Extensive client base in many different industries.
- Involved in monitoring the NE Coast since 2002.

Company Overview

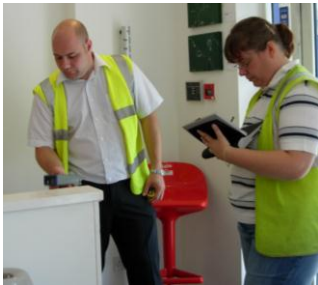
Topographic



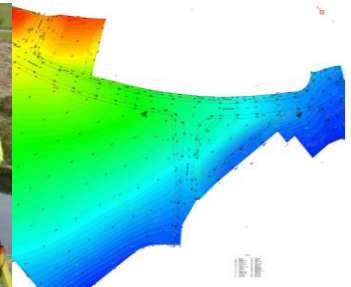
Drainage



Measured Building



Environmental



Laser Scanning



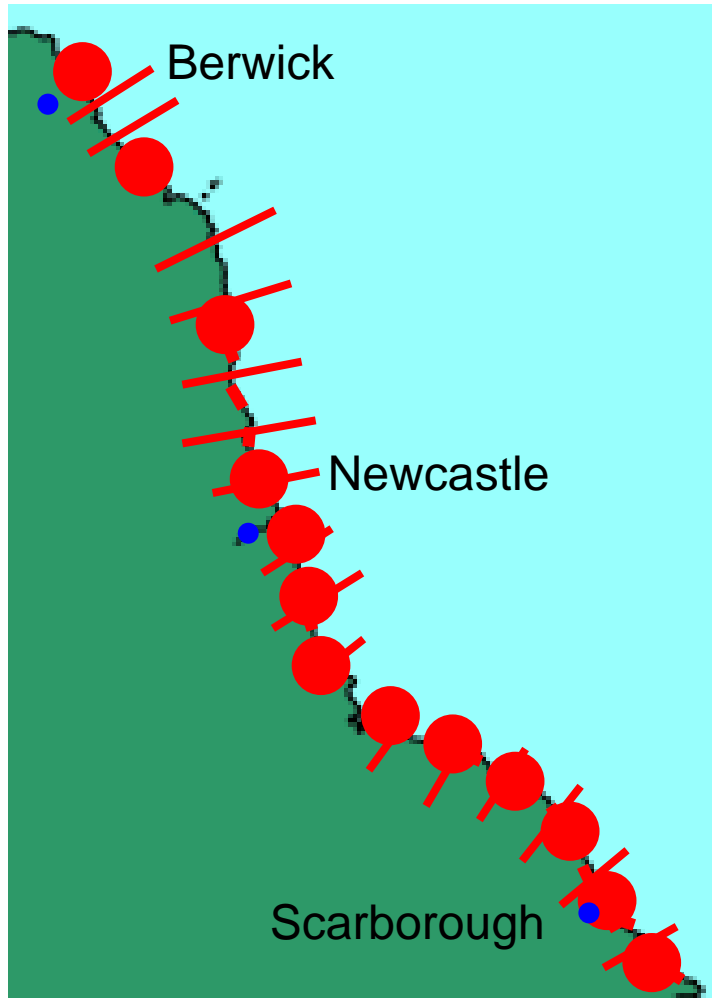
Railway



Buried Utilities



Cell 1 Coastal Monitoring Programme



250 Section Profiles

22 Topographic Survey Areas

125 Virtual Monitoring Points

4 Cliff Top Surveys

Full Measure – 3 Months

September to November

Partial Measure – 2 Months

March to April

Equipment Used

1. GPS

VRS Network GPS



Base & Rover



GPS needs clear sky view

Connected via SIM card

No infrastructure needed

Needs mobile coverage

Dependent on carrier
bandwidth

Instant results

Connected via radio link

Needs pre-established marker

Independent of external infrastructure

Limited by radio range

Needs post processing

2. Total Station



Used to fill in where GPS can not be used

Section Profiles

A ranging rod is placed at the start co-ordinate of the section using GPS.

Section Line Example



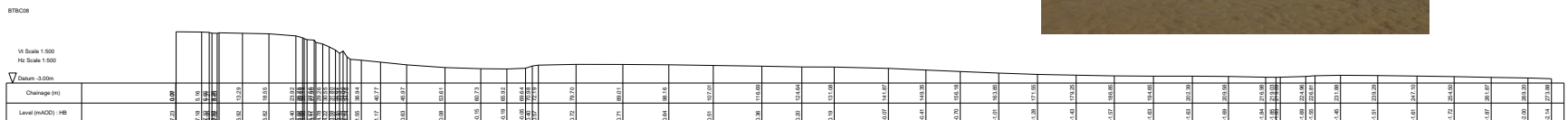
The surveyor sets out the section line, towards the sea, placing ranging rods at key locations, to aid visibility.



The profile is then measured back toward land, whilst the assistant documents the profile with photographs.



Section Plot

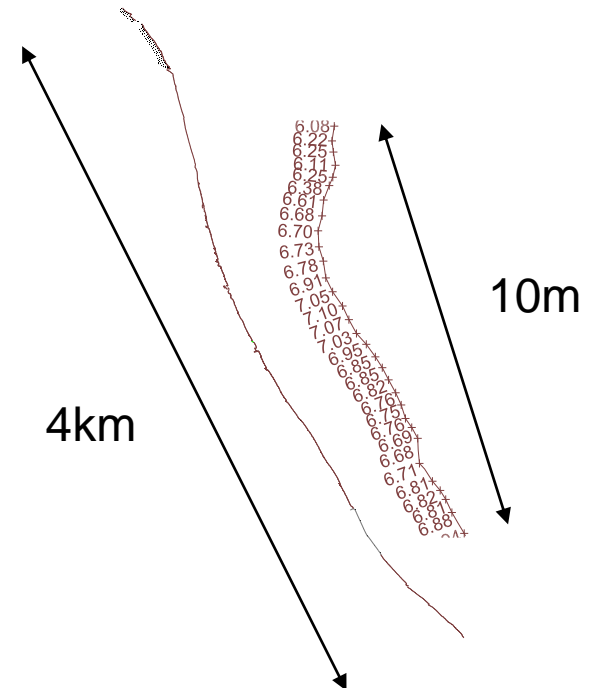


Cliff Tops

Cambois Cliff Top Example



Very detailed cliff top line survey.
Measured using GPS.
Concentrated point spacing.
Intensive surveying.

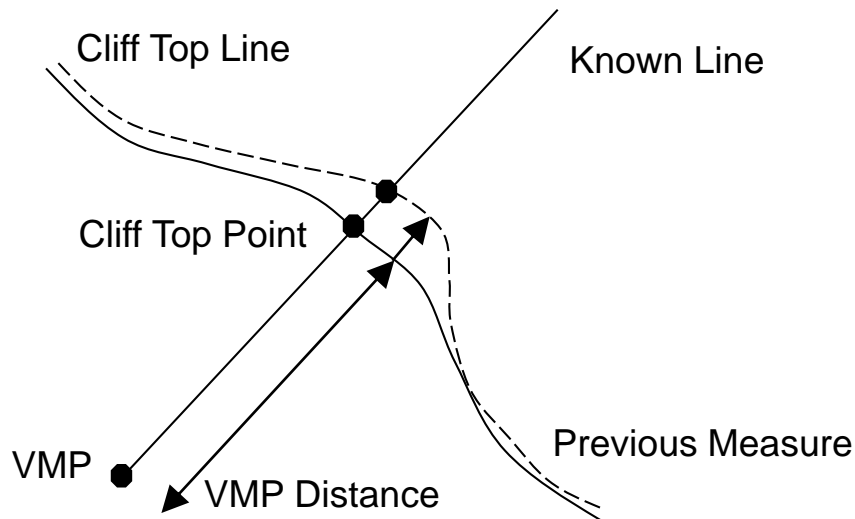


Virtual Monitoring Points

VMP's are less intensive than the full cliff top surveys.

One point is surveyed on the intersection of the cliff top line and a known, co-ordinated line.

Results in distance measurement – easy to compare.



Sample Data

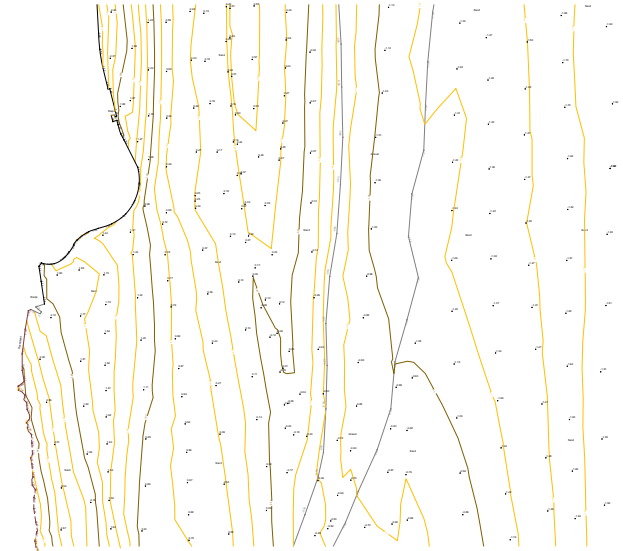
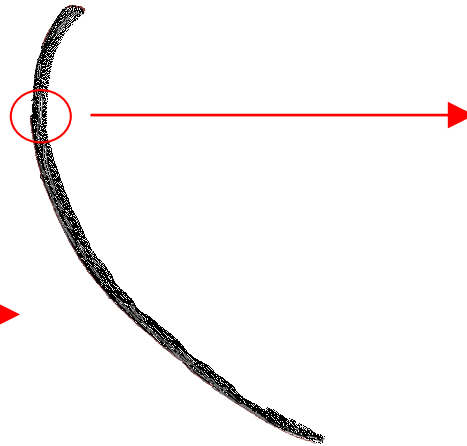
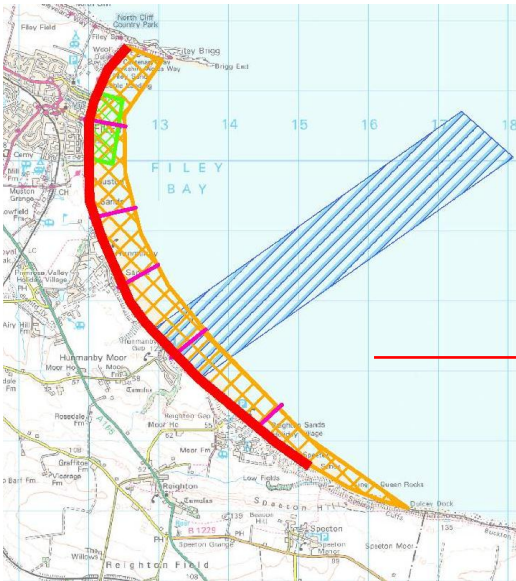
Date	Distance (m)
2009 P	10.09
2009 F	10.23
2010 P	10.22
2010 F	7.57
2011 P	6.87
2011 F	6.89
2012 P	6.99
2012 F	6.93
2013 P	6.87
2013 F	6.85

Topographic Survey

Survey between beach top and low water.

20m maximum survey grid – generally closer spacing.

All features on beach to be surveyed.



Topographic Survey

3-4 survey teams on a beach at one time – gives optimal snapshot of beach.

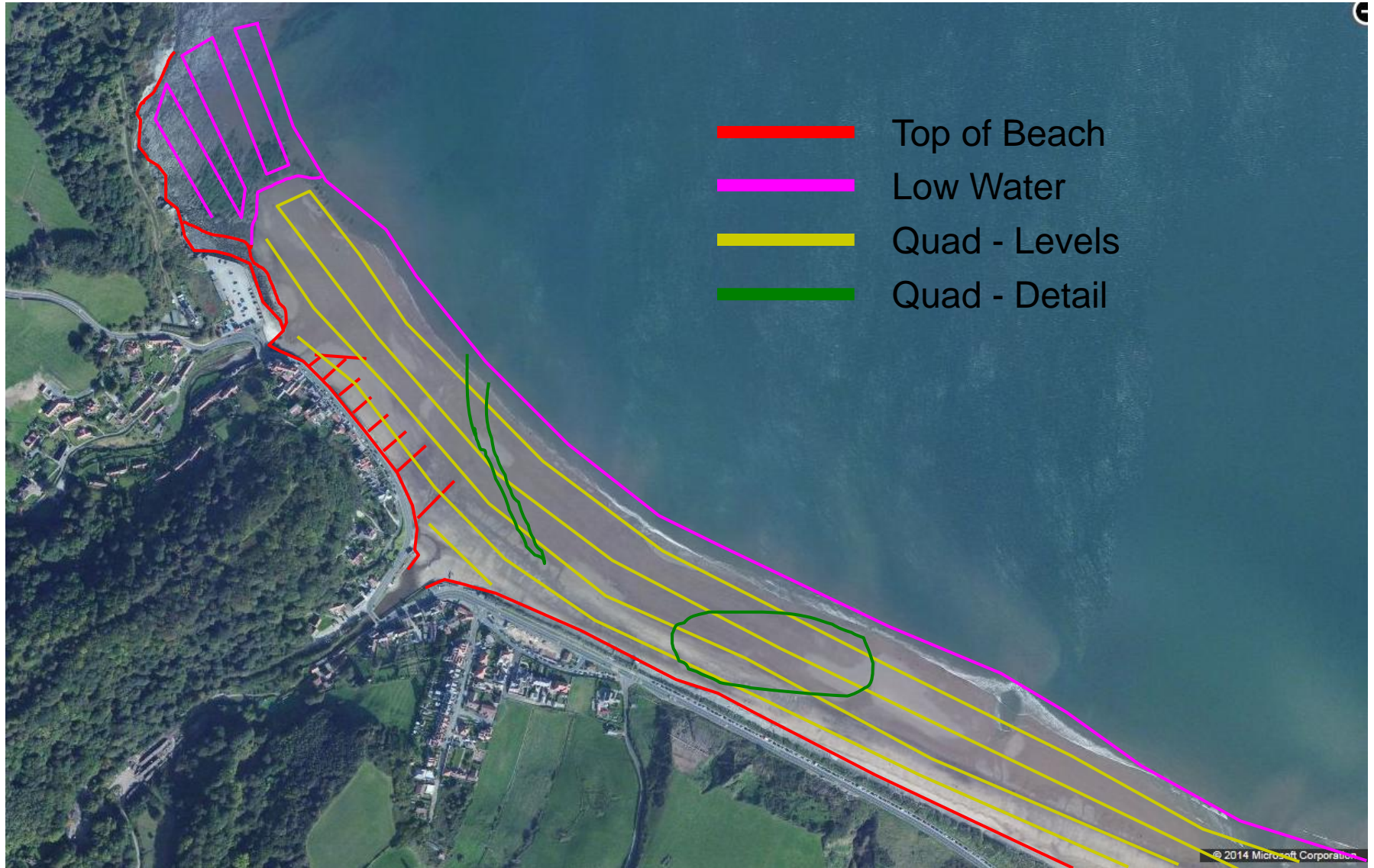
Three discrete areas of survey on beach.

- 1 Top of beach - GPS or instrument.
Can include - Cliffs, dunes, sea defences, ramps, steps, revetments, groynes.
- 2 Mid beach - Mobile GPS.
Can include - Beach levels, berms, hollows, mounds, areas of gravel.
- 3 Low water levels - GPS.
Can include - Levels in water, rock, sea defences.

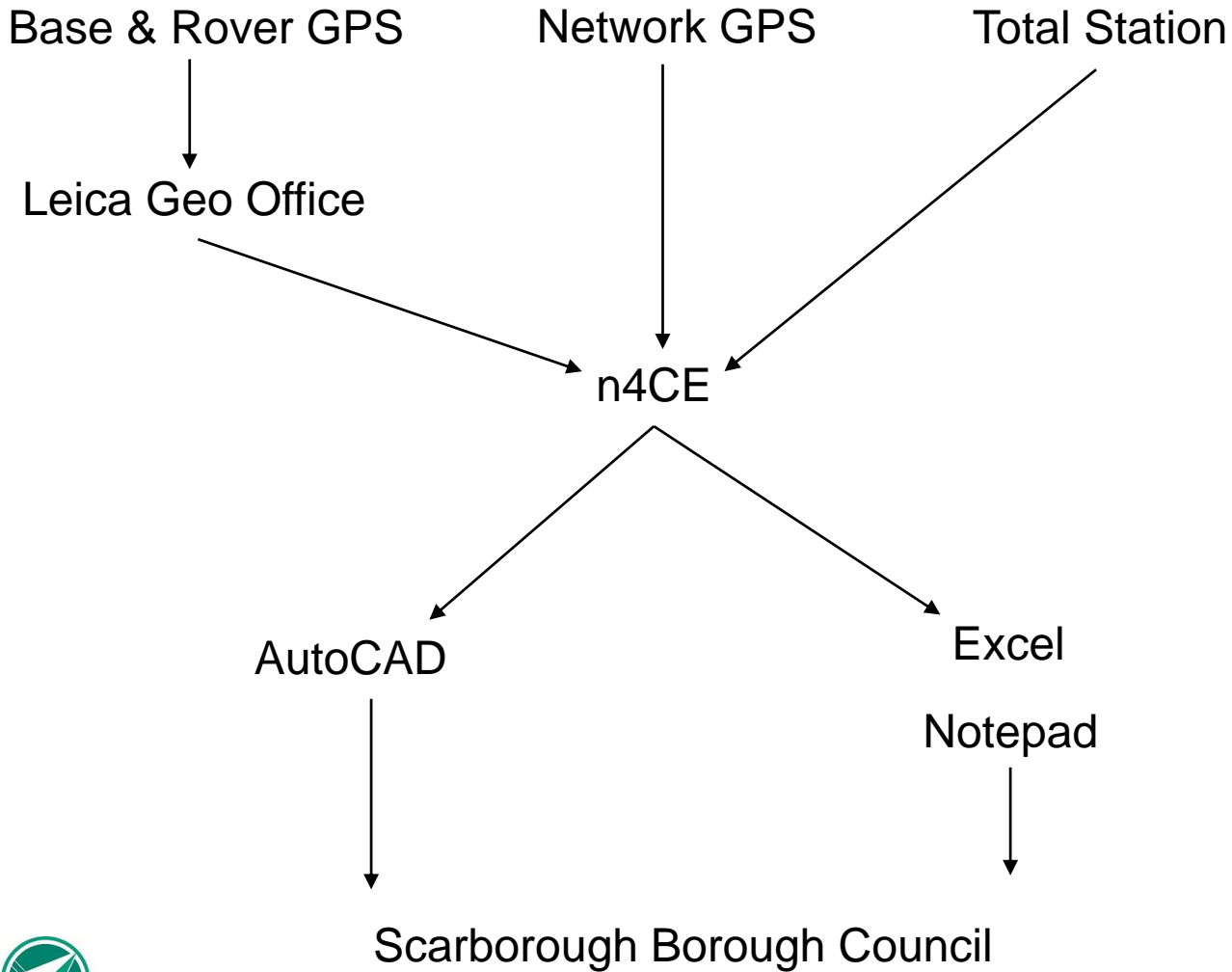
Mobile Survey Platform



Whitby Example



Results





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