


Flat Cliffs Ground Investigation

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Analysis of cliff monitoring data

Scarborough Borough Council

January 2013



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Document history

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Contents

1	Monitoring rationale	1
2	Results	4
2.1	Subsurface ground movement (inclinometers)	4
2.1.1	Standard Inclinometers	4
2.1.2	Acoustic Inclinometer	1
2.2	Groundwater (piezometers)	1
2.3	Weather records	3
3	Implications to cliff behaviour	9
A.1	Inclinometer Data	
A.2	Piezometer Data	
A.3	Climate data	

1 Monitoring rationale

Flat Cliffs is a privately owned residential settlement located on the coastal slopes of Filey Bay, south of the town of Filey. The settlement includes around 50 homes, some of which are permanent residences, and a Yorkshire Water pumping station. The settlement is served via a single road down the cliffs and through a privately owned holiday park at Primrose Valley. The Shoreline Management Plan policy for Flat Cliffs is no active intervention and therefore Scarborough Borough Council (SBC) do not propose to undertake works in the area.

The DEFRA-approved Filey coastal defence strategy study (Halcrow, 2002) confirmed that Flat Cliffs was formed of thick and variable glacial sediments prone to cliff instability, landslip and coastal erosion. The investigation indicated a variety of cliff failure mechanisms in operation, with differing degrees of activity. The work also highlighted the sensitivity of Flat Cliffs to the continued effects of coastal erosion and groundwater, which act to unload the toe of the landslide and trigger ground movement and landslip, respectively.

The consequences of ongoing cliff instability and ground movement include damage to property, buildings, the access road and services. There is real concern that the access road could collapse at any time, which would prevent vehicular access into and out of Flat Cliffs. The decline in stability of the undercliff due to progressive coastal erosion and loss of slope support, coupled with accelerated ground movement rates, are likely to cause more widespread and serious damage to property, buildings and services, requiring an increasing level of investment to maintain serviceability. In the long-term, occupation of Flat Cliffs is unlikely to be sustainable due to the risk of cliff instability and coastal erosion.

Uncertainty remained following the 2002 strategy study, and acting on this Scarborough Borough Council (SBC) commissioned Halcrow in 2011 to undertake a ground investigation and stability report to improve understanding of the hazards and risk posed by ground instability at Flat Cliffs. The location of boreholes and instruments installed during the ground investigation is shown in Figure 1-1. The interpretive report (Halcrow, 2012) documents the future requirements for cliff monitoring that will provide forewarning to residents and a management plan for the council and emergency services. Cliff stability analysis of the northern part of the site, centred on the access road, indicates the slopes here have a small margin of stability against failure based on average groundwater conditions. Evidence of tension cracks and ongoing settlement of the road indicate that pre-failure of the cliffs has occurred. Analysis indicated that only a small rise in groundwater level could result in major failure of the Flat Cliffs with consequential damage and risk to the access road, properties and safety of residents.

Subsequent to completion of the ground investigation, monitoring data has been collected from instrumentation on a monthly basis. This information can be used to determine the relationships between rainfall, groundwater and ground movement, which is critical information for management of landslide risk.

This document forms one of a series of reports (Table 1) that summarises the results of *in situ* monitoring at Flat Cliffs and provides the Council with an interpretation of the data.

Table 1: Programme of monitoring and data analysis reports

Date	Activity
July – September 2011	Flat Cliffs ground investigation. Installation of monitoring (see Halcrow, 2012)
September 2011 to July 2012	Equilibrating of monitoring devices and monthly collection, review and quality checks of data
July 2012	Interim monitoring report reviewing data to June 2012
July to December 2012	Monthly collection, review and quality checks of data
January 2013	Final monitoring report and recommendations (this report)
January 2013 to January 2018	Council committed to recording weather data at Flat Cliffs for five years.

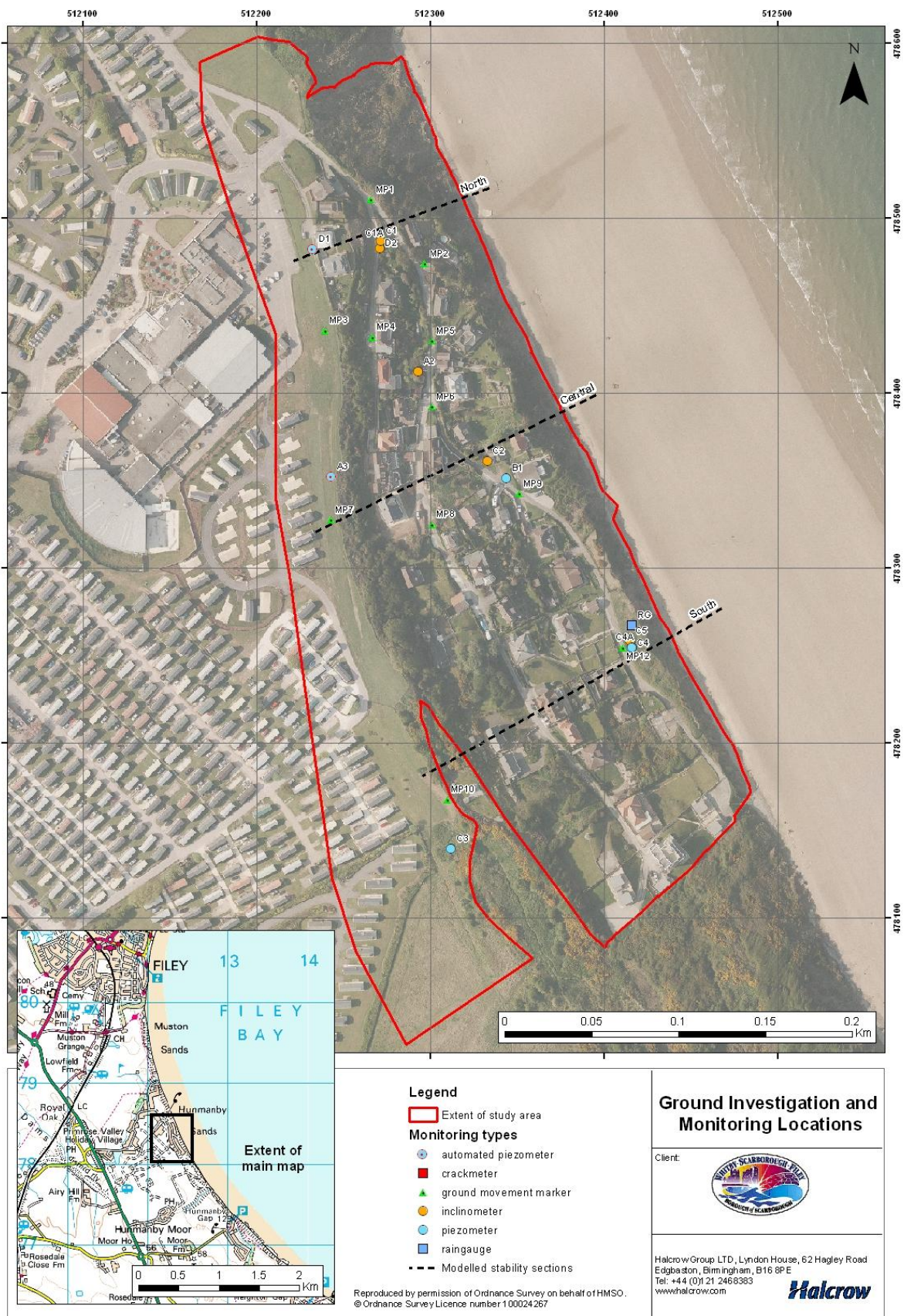


Figure 1-1: Location of ground investigation and monitoring data

2 Results

2.1 Subsurface ground movement (inclinometers)

Four standard inclinometers were installed during the Allied Exploration & Geotechnics Ltd (AEG) 2011 ground investigation. Three devices were installed within new exploration holes (C1, C2 and C5) and one was installed in an existing hole (A2). One acoustic inclinometer (C1A) was installed adjacent to a standard inclinometer (C1) to provide continuous recording of subsurface ground movement and for research purposes by Loughborough University. Details of these installations are summarised in Table 2 below.

Table 2: Summary of Inclinometer Installation

Exploratory hole	Installation depth (m bgl)
C1	25.00
C1A	25.00
C2	19.00
C5	16.00
A2	27.00

The standard inclinometers have been monitored on an approximately monthly basis following their installation in August and September 2011. The first monitoring was undertaken in November 2011 once the instrumentation had equilibrated.

2.1.1 Standard Inclinometers

Inclinometer data up to December 2012 has been reviewed and the findings are presented in Table 3 below. The data sheets relating to each monitoring visit are included in Appendix A.1.

The reference direction (Axis A) of the inclinometers is aligned in the direction of the slope, with Axis B perpendicular to the slope. Flat Cliffs has an approximately northeast facing slope, meaning the A axis is aligned approximately northeast-southwest and the B axis, approximately northwest-southeast.

Table 3 highlights that negligible movement predominates, with small movements in C5 and to a lesser extent in C2 and C1. The inclinometer in hole C5 is showing a small degree of possible surface creep, with up to 5mm of movement having occurred in the upper 5m of the installation, albeit only very small (<1mm) amounts of movement have occurred since June 2012.

The main direction of movement in C5 is to the northwest (i.e. perpendicular to the slope), which is in the direction of the B axis. The data shows that movement is fluctuating and not cumulative in one direction, suggesting the anomalous movement direction probably relates to seasonal swelling and shrinkage of clay soils surrounding the borehole. Cross-reference to the geomorphological map indicates no obvious association with active landslide features, although it may be associated with the pre-failure headscarp of a coastal mudslide. The depth of ground movement is

within glacial sediments and no correlation to a particular horizon or geological boundary was observed, albeit the very small movement observed at 13.5m in C1 occurs above subtle change in strata from stiff clay to firm clay. Further monitoring data will help to determine the long-term pattern of ground movement.

Table 3: Summary of movement indicated by inclinometer data (m below ground level).

Exploratory hole	Nov 2011	Jan 2012	Feb 2012	March 2012	Apr 2012	May 2012	Jun 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012
C1	Negligible movement at 10m depth*	Negligible movement at 17m depth*	Negligible movement at 17m depth*	Negligible movement at 17m depth**	Negligible movement at 17m depth*	Negligible movement at 17m depth*	Negligible movement at 17m depth*	Negligible*	Negligible*	Negligible movement 13.5m depth*	Negligible*	Negligible movement at 13.5m depth*
C2	None	Negligible movement at 12m depth*	Negligible movement at 12m depth**	Negligible movement at 12m depth*	Negligible	2mm movement between 12m & 16m depth	2mm movement between 12m & 16m depth	Negligible	Negligible	Negligible	Negligible	Negligible
C5	Negligible movement at 10m depth*	2 mm of surface creep in the upper 2.5m	2 mm of surface creep in the upper 2.5m	2 mm of surface creep in the upper 2.5m	3.5 mm of surface creep in the upper 5m	3.5mm of surface creep in the upper 5m	5 mm of surface creep in the upper 5m	3 mm of surface creep in the upper 5m	4 mm surface creep in the upper 5m	Negligible	Negligible	Negligible
A2	Negligible	Negligible movement at 20 m and 5 m depth*	Negligible movement at 20 m and 5 m depth*	Negligible movement at 20 m and 5 m depth*	Negligible movement at 20 m and 5 m depth*	Negligible movement at 20 m depth*	Negligible movement at 20 m and 5 m depth*	Negligible	Negligible	Negligible	3.5 mm along length of tube (probable systematic error)	Negligible (no systematic error)

Note:

* movement of up to 2 mm is within the range of accuracy of the device and cannot be relied on.

Movements coloured **yellow** are at the 2 mm limit of accuracy. Movements coloured **orange** are greater than the 2 mm limit of accuracy.

2.1.2 Acoustic Inclinometer

An experimental acoustic inclinometer was installed at location C1A by Loughborough University. The waveguide, comprising a steel tube surrounded by gravel backfill, was installed to a depth of 25 metres below ground level on 27th July 2011. The cover system was constructed and a Slope ALARMS acoustic emission sensor was installed on 14th September 2011. Acoustic emission (AE) monitoring has been continuous from this date until the present time. A solar panel was installed on 9th February 2012 to charge the batteries and minimise the need for site visits. Between 14th September 2011 and 4th July 2012, a total of eight site visits have been made to check the installation, install the solar panels and read the adjacent inclinometer casing (C1). The inclinometer casing has been read on six occasions (including the first base readings) by Loughborough University in addition to the regular monitoring by AEG. The Slope ALARMS sensor is set to provide a text message if pre-determined thresholds of AE activity are exceeded in each monitoring period (i.e. a check is made 30 minute period). Using a GSM modem, data is downloaded from the sensor every week to check operation.

The AE monitoring has not detected any movement of the landslide to date. No messages have been received to indicate that thresholds have been exceeded during the monitoring period. The inclinometer readings from location C1 also indicate that the landslide has been stable during the monitoring period. Precipitation levels were low from September 2011 until April 2012 and therefore stability of the landslide is not unexpected. It does not appear that the higher than average rainfall in the period April to December 2012 has resulted in slope movements, but there may be a lag between rainfall, elevated groundwater levels and ground movements of some months. The AE monitoring and inclinometer measurements are consistent.

2.2 Groundwater (piezometers)

Five vibrating wire piezometers were installed by AEG in 2011, three within new exploratory holes (C3S, C3D and C4A), one with a double installation to target two horizons (C3) and two within existing exploratory holes from the Norwest Holst 2001 ground investigation (A3 and D1) to automate equipment that had previously been monitored by hand. Details of these installations are summarised in Table 4. One existing 19mm standpipe piezometer was also monitored in B1.

Table 4: Summary of Piezometer Installation

Exploratory Hole Reference	Ground Level (m AOD)	Installation Depth (m bgl)
B1	15.24	24.90*
C3S (Shallow)	34.5	14.50
C3D (Deep)	34.5	24.50
C4A	11.80	15.50
A3	36.80	30.50
D1	36.10	20.50

**this is the original depth of installation for the piezometer that subsequently failed.*

Table 5 summarises the groundwater levels recorded by the vibrating wire piezometers. The groundwater elevations presented are corrected to ordnance datum. In general the groundwater appears to have been constant in two of the locations (A3, and C4) and patterns of rising water levels (interrupted by fluctuations) in C3D, C3S and D1(new). Very sudden, very large rises and falls ($>\pm 1\text{m}$ in $<1\text{hr}$) in D1 (new) and C3 deep are likely related to instrumentation difficulties or flooding; relative variations in ground water depth between these sharp changes are likely to be accurate but absolute levels are not.

The data from the standpipe piezometer installed in borehole B1, which was drilled as part of the Norwest Holst 2001 investigation, recorded a peak groundwater level in April 2012. This coincides with a period of high rainfall, the peak of which occurs shortly afterwards during week 18 (week commencing 30 April 2012). Thereafter groundwater level drops to 12.5-13.0 mAOD before rising again through November and December to nearly ground level (15.24 mAOD).

Figures A.2.1, A.2.2 and A.2.3 in Appendix A2 show a summary plot of the information presented in Table 5.

Table 5: Summary of groundwater levels recorded by vibrating wire piezometer installations.

Exploratory Hole Ref.	Groundwater Level		Comments
	Highest Recorded	Lowest Recorded	
	m AOD	m AOD	
B1	15.24 (ground level)	11.13	Standpipe piezometer dipped 15 times between 27 th July 2011 and 20 th December 2012. From July 2011 to March 2012, water levels fluctuate between 11 and 12m AOD. There is then a rise as levels peak on 19 th April at 15m then drop to around 13m subsequently until November and December when levels rise again to near surface level (15.24m AOD).
C3S (Shallow)	27.79	22.79	A linear trend of steadily increasing groundwater level with time from September 2011 (23.8m AOD) to May 2012 (24.4m AOD). No data were recorded between 14 May 2012 and 30 September 2012. The trend of rising water level continues September to December, albeit with significant fluctuations up to a maximum of 27.8m AOD.
C3D (Deep)	28.16	21.76	The lowest groundwater was encountered at 21.76 mAOD on 13 December 2012 and highest at 28.16 mAOD on 21 December 2012. The groundwater level rises from around 22.0 to 28.0m AOD in January 2012 and then fluctuates between this depth and 24.46 mAOD until the end of April 2012; small fluctuations occur between 27.0 and 27.5 m AOD until July 2012 and slightly larger fluctuations (between 27.0 and 28.0m AOD) until December 2012.
C4	8.4	7.5	This shows a relatively flat profile of ground water at around 8.0 mAOD with fluctuations of $<0.5\text{m}$ in either direction throughout the monitoring period.

Exploratory Hole Ref.	Groundwater Level		Comments
A3	18.62	17.82	A static pattern around 18.0m AOD has been encountered since monitoring began in September 2011 to December 2012.
D1	19.09	18.73	A static pattern around 19.0m AOD has been encountered since monitoring began in September 2011 until January 2012 at which point the installation stopped working and no further data was collected. This installation was removed and replaced with D1 (new) in May 2012, which described below.
D1 (new)	28.17	18.17	Installed in May 2012. Between May and June 2012 the groundwater level rose reaching a peak of 24.8 mAOD on 12 June 2012 before falling to around 24.6 mAOD on 24 June 2012. This was followed by a further rise to just over 24.0 mAOD and fall to 23.1mAOD in late June and early July 2012. Groundwater levels rose, with large fluctuations of up to 3m, until early August when the data shows a sudden drop to around 18.6m. Following this there is a trend of increasing groundwater levels, interrupted by peaks in 19.2 and 20.0 mAOD in late September and mid-October respectively. From late November the trend of increasing groundwater levels is overlain by a pattern of large, sharp fluctuations until the end of December 2012.

2.3 Weather records

A weather station was installed at Flat Cliffs in September 2011 as part of the ground investigation. Meteorological information is collected every 15 minutes and is automatically uploaded to a website, where it can be viewed online or downloaded. The data collected to date are provided in Appendix A3.

Data from 29 September 2011 to 3 January 2013 has been downloaded and analysed. Figure 2 shows total rainfall by month, Figure 3 shows maximum wind speed by month, Figure 4 shows wind speed and direction by season and Figure 5 shows average air temperature by month.

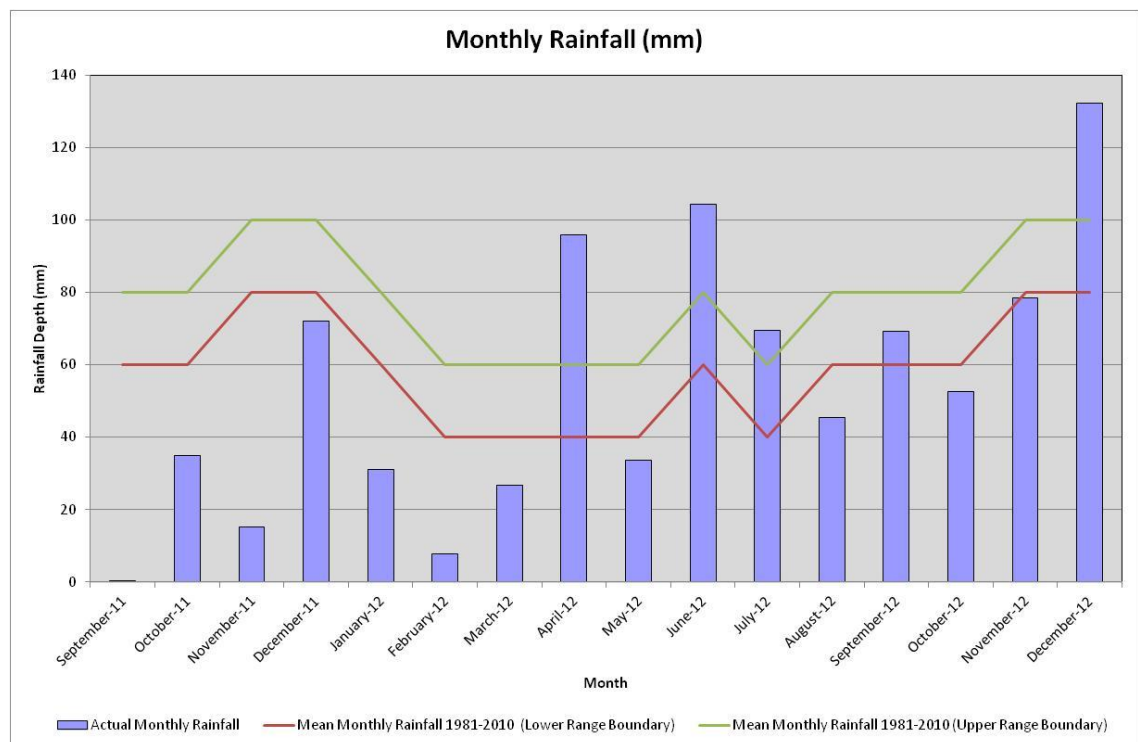


Figure 2. Total actual monthly rainfall (mm), September 2011 to December 2012, and average monthly rainfall (mm) 1981-2010. NB September 2011 data is not for the whole month. Average Monthly rainfall from www.metoffice.gov.uk/climate/uk/averages/ukmapavg.html.

Figure 2 highlights the monthly recorded rainfall, together with average monthly rainfall for the Filey area over the 30 year period from 1981 to 2010. The graph highlights the very low rainfall received in Autumn 2011 to Spring 2012, where only April 2012 was higher than average and November 2011 and January to March 2012 were particularly dry. Also highlighted are the wet summer, autumn and winter of 2012, where June, July and December were all wetter than average, and September and November being close to average values. December 2012 was particularly wet, receiving around twice the average rainfall for that month. The annual rainfall for 2012 was 747 mm while the average annual rainfall is 600 to 700mm. This indicates rainfall was between 7% and 25% higher than average (depending on whether the upper or lower bound of average rainfall is taken), albeit concentrated in April, June and December 2012. Looking forward, it would be valuable to consider historical monthly rainfall data to understand where the data presented in figure 2 and future monitoring data fits within the overall range of rainfall variability. This may allow a better understanding of potential threshold rainfall conditions that control groundwater levels and potentially, as a consequence, ground movements. Specifically further review after March would be beneficial to understand the relationship between rainfall, groundwater and ground movement over the winter period.

Wind speed is summarised in Figure 3 that shows the maximum speed recorded in each month period and the Beaufort scale storm force thresholds. The peak wind speed recorded over the monitoring period is 15 mph (Storm force 4, Moderate Breeze) in December 2012. Storm force 4 winds were also recorded in October 2011, January 2012 and April 2012. The absence of high velocity winds through the

monitoring period indicates relatively calm conditions were experienced, suggesting that erosion of the cliff toe will have been limited.

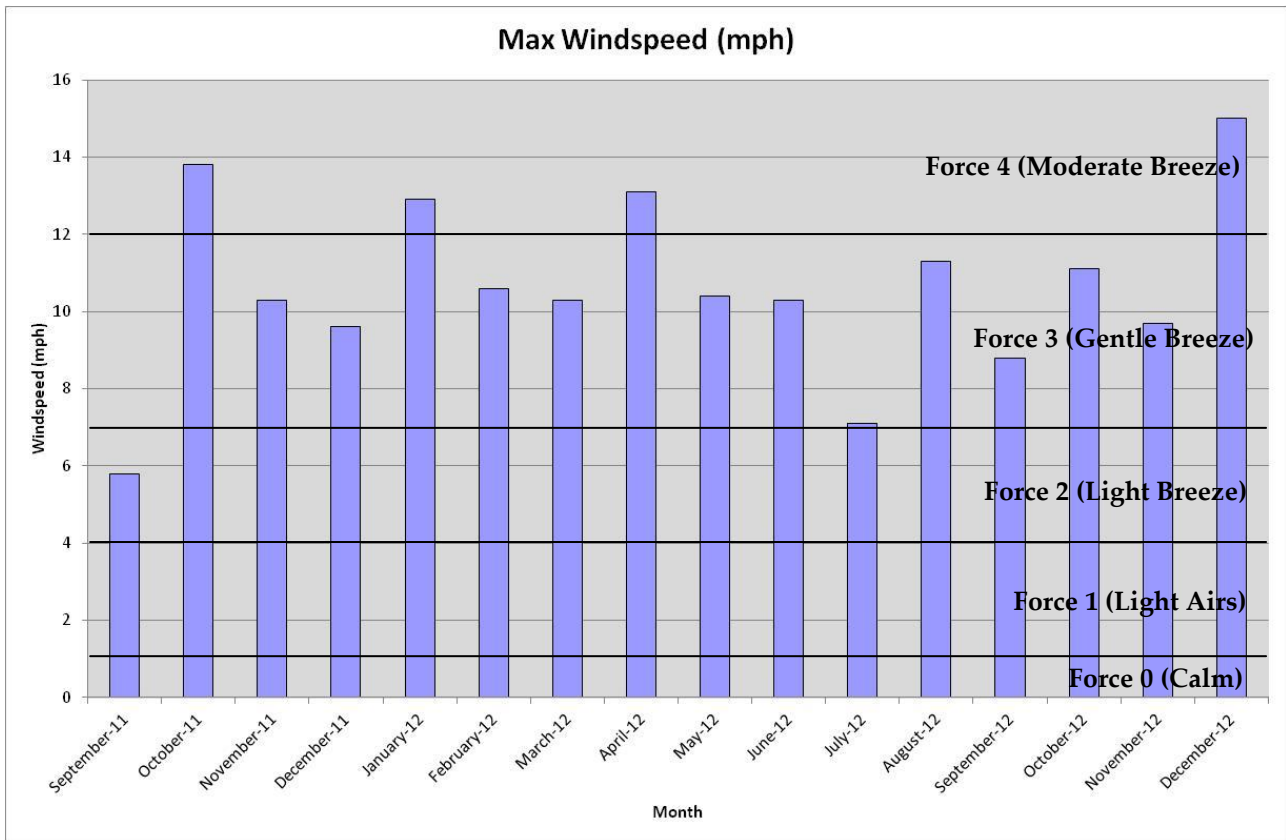


Figure 3. Maximum weekly wind speed (mph), September 2011 to December 2012. NB September 2011 data is partial.

Wind direction and speed for the monitoring period are summarised in Figure 4a-g). The data are presented for all of 2012 and for the constituent seasons (where winter is December, January and February; spring is March, April and May; summer is June, July and August; and autumn is September, October and November).

The wind rose for all of 2012 shows that onshore winds, from all directions between north, west and south are most common, but that the strongest winds are from offshore (i.e. from the east), with occasional strong winds coming from the northwest.

There is considerable variation in direction of most frequent and strongest winds when viewed on a seasonal basis. In general, the autumn and winter months were characterised by commonest winds from onshore directions, but with strongest winds coming from both onshore and offshore directions. In contrast, spring and summer winds are most frequent from the northwest (onshore), with a secondary component from the southeast (offshore). The strongest winds again come from both onshore and offshore sources.

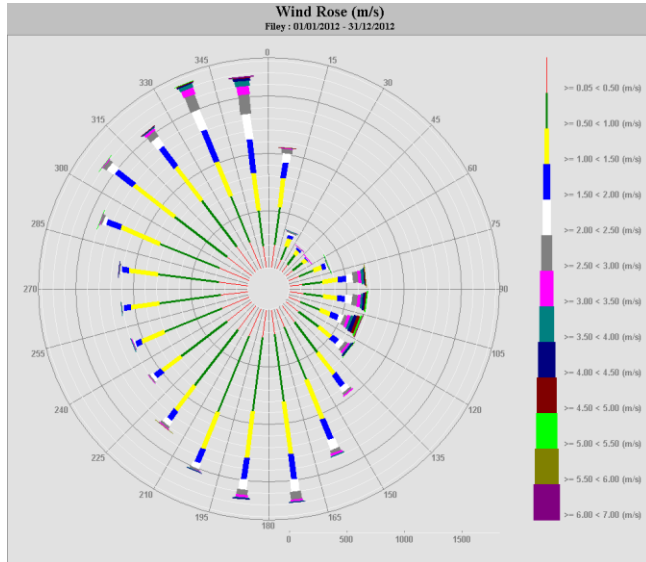


Figure 4a. All wind data, 2012

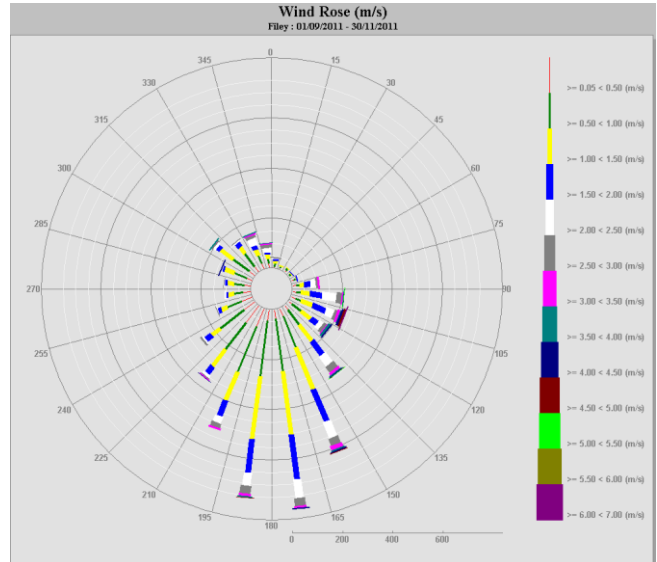


Figure 4b. Wind data, Autumn 2011.

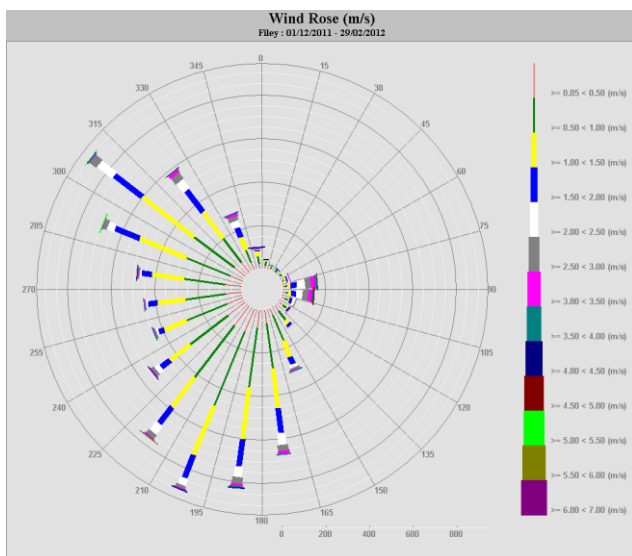


Figure 4c. Wind data, Winter, 2011/12

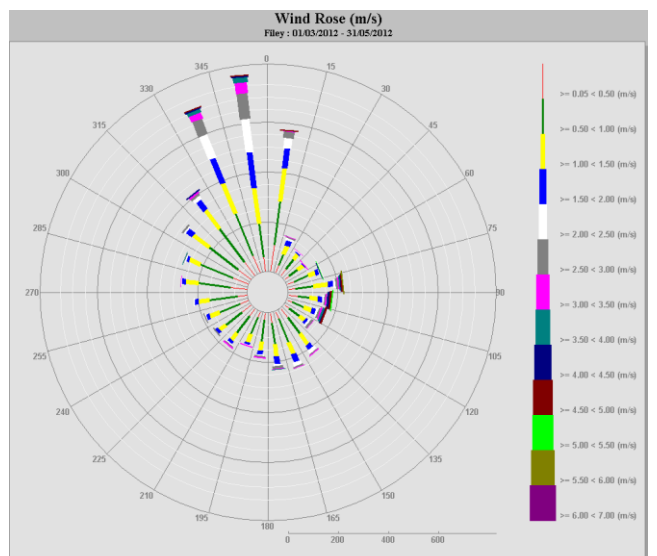


Figure 4d. Wind data, Spring 2012

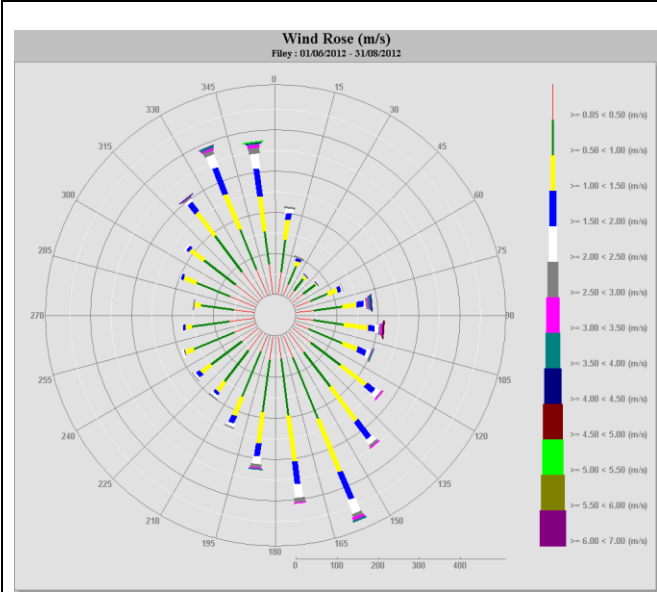


Figure 4e. Wind data, Summer, 2012

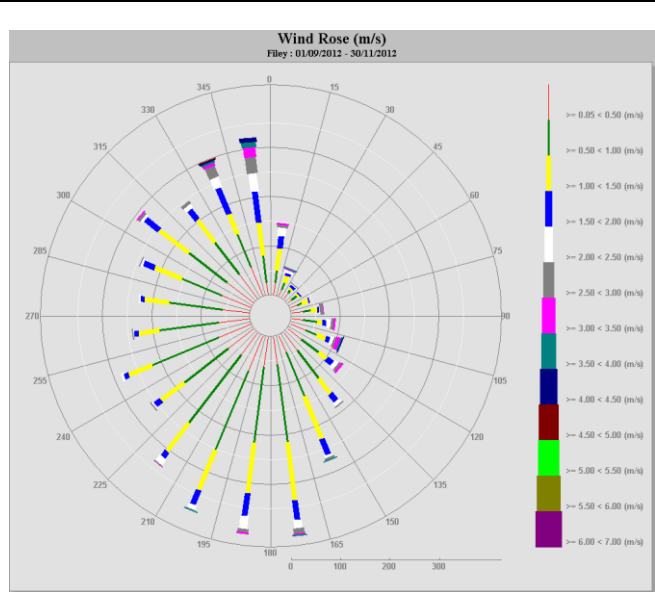


Figure 4f. Wind data, Autumn 2012

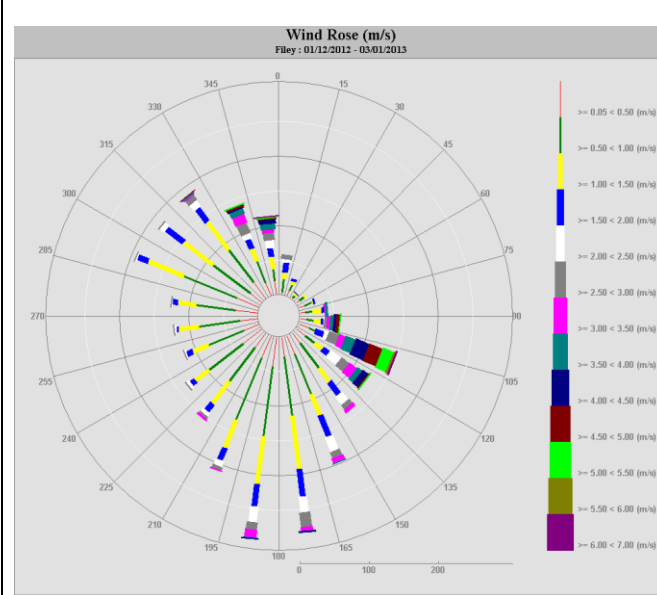


Figure 4g. Wind data, Winter 2012/13 (partial – to 3 Jan 2013)

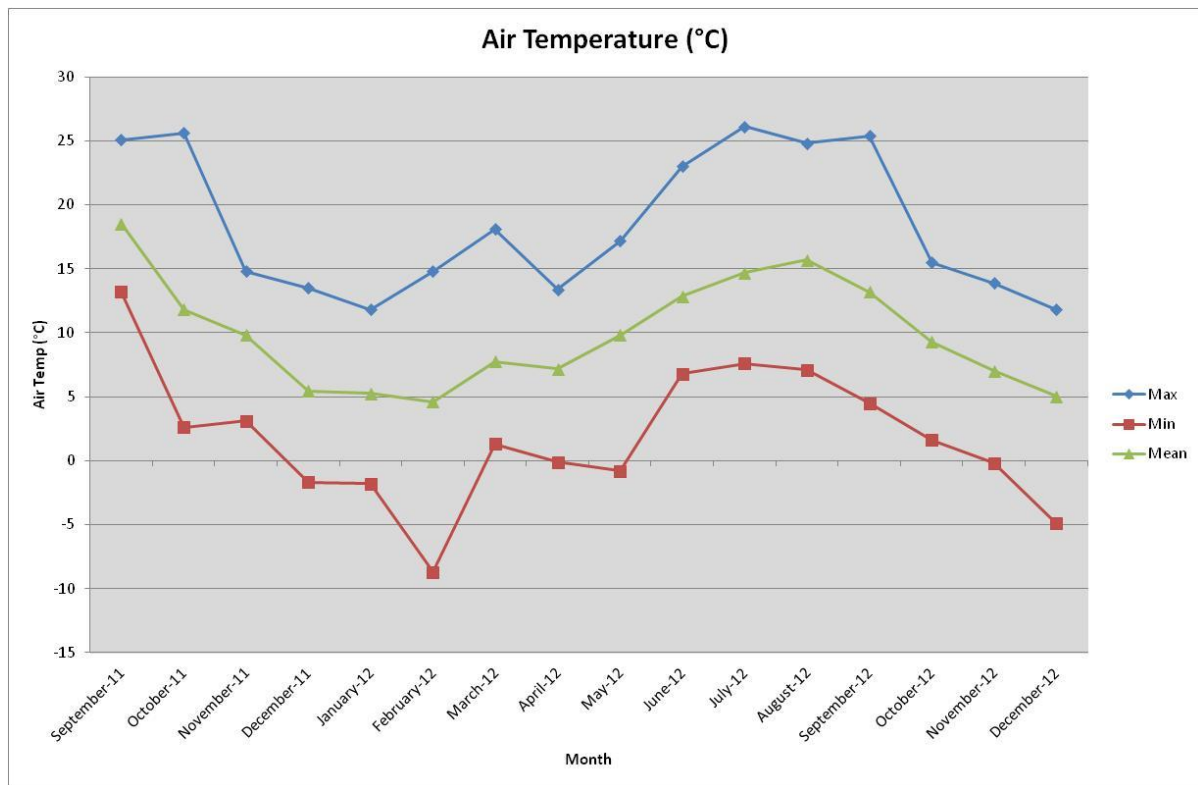


Figure 5. Monthly air temperature data, September 2011 to December 2012. NB September 2011 data is partial.

Air temperature is presented in Figure 5 that presents the data as minimum, maximum and means for each month. The data highlight the atypically warm autumn of 2011, the mild winter of 2011/12 and the cool spring of 2012.

3 Implications to cliff behaviour

The total monthly rainfall shown on Figure 2 highlights the exceptionally wet conditions experienced from April to December of 2012. This follows an unusually dry winter period, with only December 2011 being particularly wet. These data are therefore the opposite of the expected pattern of rainfall of relatively wet winters and relatively dry summers. The total rainfall that fell in 2012 was 747mm, slightly higher than the average of 600-700mm recorded for the 30 year period from 1981 to 2010.

Despite the very high rainfall in the latter half of 2012, the piezometers do not consistently show rising groundwater levels. The vibrating wire piezometer installed in C4A (adjacent to inclinometer C5) has shown the groundwater level to be consistently at c.8m OD and no significant increase in groundwater has been recorded in this location throughout the monitoring period. Vibrating wire piezometers installed in the cliff top (A3, C3S, C3D and D1) have either shown a constant or rising groundwater level within the slope, with occasional peaks superimposed onto the trend, associated with intense rainfall events. D1 also shows a rising groundwater pressure, with superimposed fluctuations.

The standpipe piezometer installed in the existing borehole B1, near the bottom of the cliff, does record a peak in groundwater level, possibly associated with intense rainfall in April to May 2012. The groundwater level remained higher than before the April-May rainfall peak before showing a rise in groundwater levels through November and December 2012 as rainfall appears to return to near- average, then above average conditions.

Together, these data suggest a relatively poor correlation between rainfall and groundwater response at Flat Cliffs in the vibrating wire piezometers and a better correlation in the single standpipe piezometer. This may be due to the exceptionally dry conditions prevalent in early 2012, meaning that groundwater has been recovering from unusually low levels. Alternatively, it may reflect the complex geology, characterised by laterally and vertically discontinuous aquifer gravel lenses.

The December 2012 rainfall did not result in significant movement in the inclinometers with only limited signs of movement being noted in C5 during January 2012. The inclinometer in C5 shows a small degree of surface creep, with up to 5mm of movement having occurred in the upper 5m of the installation. The data from April 2012 to June showed further amounts of surface creep. While the months of May and June 2012 were significantly wetter than expected for the time of year and may be responsible for the continued movement in C5, the net movement is limited, with data showing movement in one month and recovery in later months. This suggests swelling of clay soils in response to wetting and drying may be responsible rather than true down-slope ground movement. The pattern of slight movements, not always in the same direction, in the upper 5m at C5 seems to indicate a continuation of this pattern. The associated piezometer is C4, which shows no response to rainfall. This suggests no association between rainfall and groundwater level and associated small ground movement. Therefore it is possible that the piezometer is not currently placed at the most appropriate depth to monitor the relationship between the shallow movements in the upper soils and groundwater.

All other inclinometers, and the experimental acoustic inclinometer installed by Loughborough University, have shown negligible subsurface ground movement.

In summary the data indicate that the wet spring and summer of 2012 has had no detected impact on groundwater and ground movement at Flat Cliffs, nor did the wet weather that continued throughout the autumn. This may reflect the dry autumn and winter period of 2011 resulting in depressed groundwater levels such that the wet spring/summer of 2012 rainfall has been dissipated as surface water run-off and accommodated without triggering ground movement. It is also likely there is a lag of many months between rainfall, rising groundwater and ground movement known as antecedent effects.

The atypical nature of the monitoring period would make further monitoring to better understand the relationship between rainfall, groundwater and ground movement valuable, particularly comparison of antecedent responses with historical data over the winter period between September and March.



Appendix A

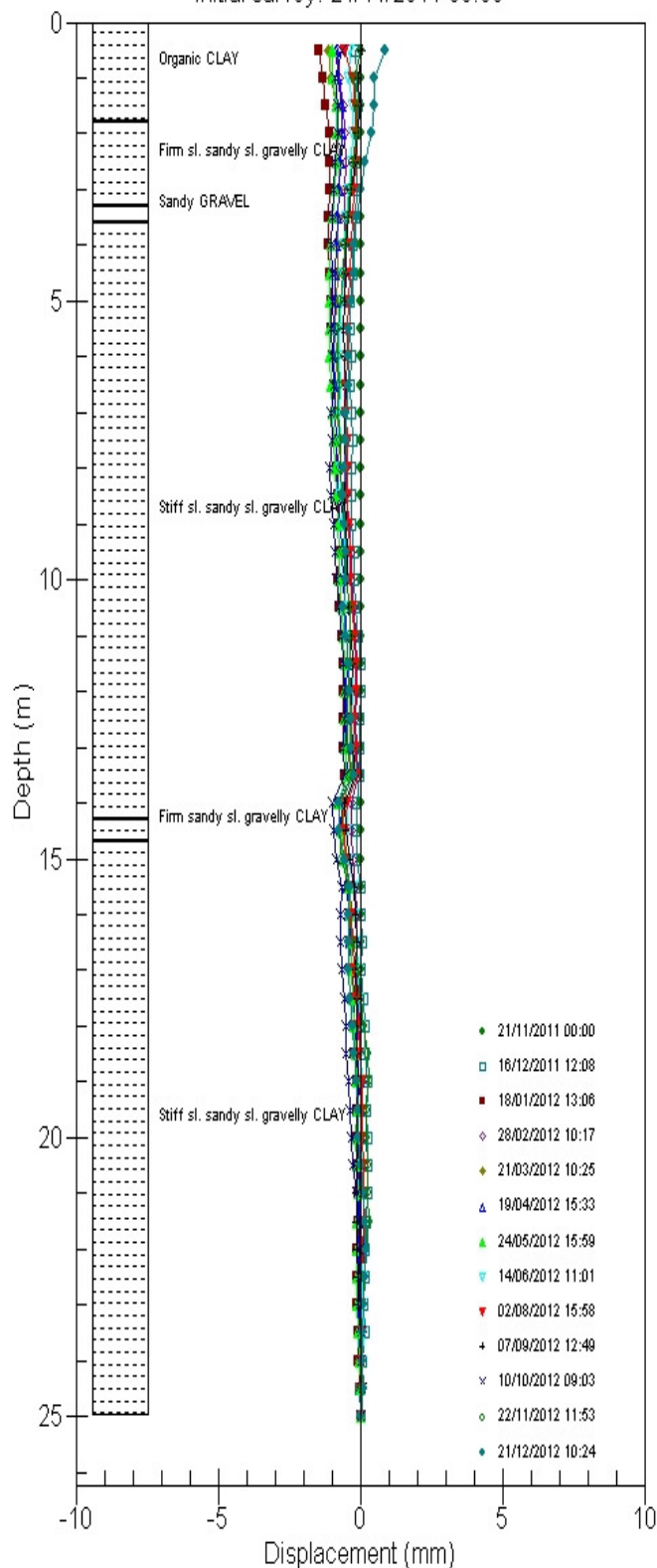
Monitoring data – October 2011 to December 2012

A.1 Inclinometer Data

Monitoring results up to December 2012 for C1, C2, C5 & A2 are provided in the electronic version of this report.

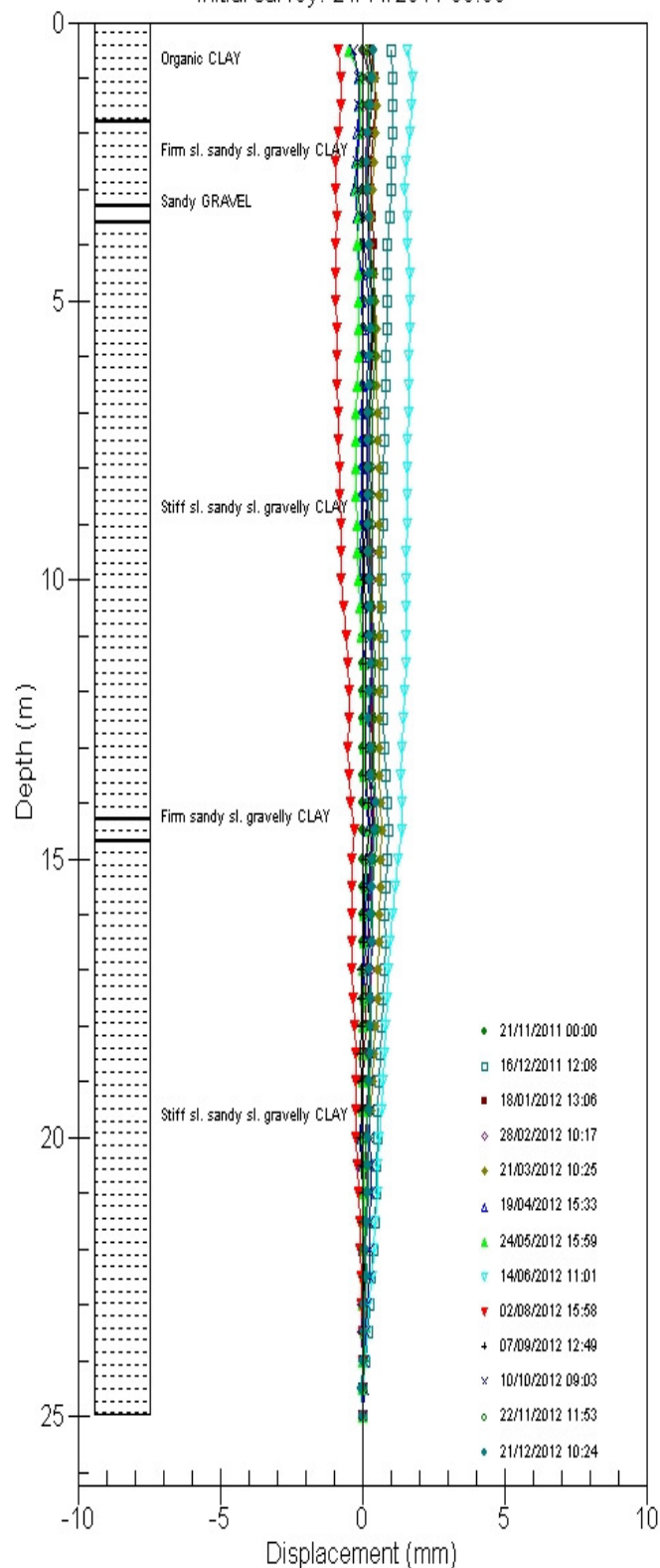
3833:BHC1 - A Axis Cumulative

Initial survey: 21/11/2011 00:00



3833:BHC1 - B Axis Cumulative

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C1

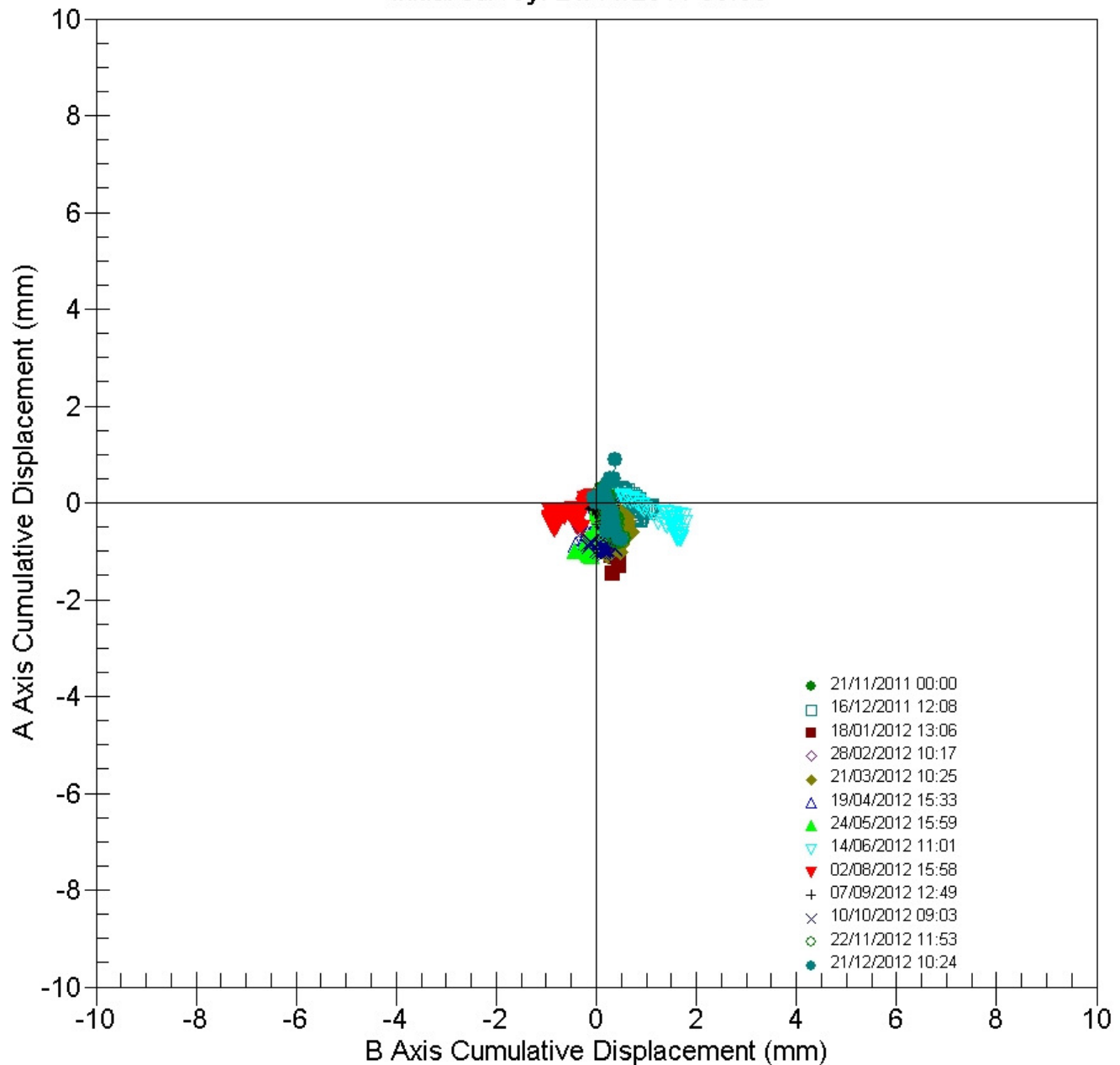
COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

3833:BHC1 - A Axis vs B Axis

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C1

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Cumulative Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 12:08 (mm)	18/01/2012 13:06 (mm)	28/02/2012 10:17 (mm)	21/03/2012 10:25 (mm)	19/04/2012 15:33 (mm)	24/05/2012 15:59 (mm)	14/06/2012 11:01 (mm)
0.5	0.00	-0.18	-1.45	-0.81	-1.11	-0.85	-0.99	-0.34
1.0	0.00	-0.12	-1.31	-0.74	-1.01	-0.80	-0.95	-0.41
1.5	0.00	-0.08	-1.21	-0.59	-0.85	-0.66	-0.83	-0.28
2.0	0.00	-0.10	-1.07	-0.55	-0.79	-0.64	-0.81	-0.26
2.5	0.00	-0.11	-1.05	-0.52	-0.75	-0.69	-0.84	-0.32
3.0	0.00	-0.14	-1.09	-0.53	-0.75	-0.73	-0.89	-0.39
3.5	0.00	-0.15	-1.12	-0.56	-0.78	-0.78	-0.99	-0.49
4.0	0.00	-0.26	-1.11	-0.56	-0.77	-0.83	-1.04	-0.54
4.5	0.00	-0.25	-1.09	-0.57	-0.79	-0.86	-1.06	-0.61
5.0	0.00	-0.34	-1.04	-0.56	-0.82	-0.88	-1.07	-0.65
5.5	0.00	-0.35	-1.02	-0.58	-0.86	-0.92	-1.09	-0.72
6.0	0.00	-0.33	-0.97	-0.57	-0.84	-0.90	-1.06	-0.72
6.5	0.00	-0.35	-0.92	-0.55	-0.79	-0.86	-1.01	-0.71
7.0	0.00	-0.32	-0.89	-0.55	-0.78	-0.86	-0.99	-0.74
7.5	0.00	-0.29	-0.84	-0.51	-0.74	-0.81	-0.91	-0.70
8.0	0.00	-0.33	-0.81	-0.49	-0.70	-0.78	-0.86	-0.68
8.5	0.00	-0.32	-0.76	-0.48	-0.66	-0.76	-0.85	-0.68
9.0	0.00	-0.30	-0.77	-0.42	-0.60	-0.70	-0.79	-0.60
9.5	0.00	-0.22	-0.71	-0.32	-0.49	-0.62	-0.72	-0.50
10.0	0.00	-0.22	-0.78	-0.31	-0.47	-0.57	-0.73	-0.46
10.5	0.00	-0.15	-0.71	-0.23	-0.38	-0.54	-0.66	-0.40
11.0	0.00	-0.05	-0.63	-0.16	-0.31	-0.47	-0.60	-0.31
11.5	0.00	0.01	-0.61	-0.12	-0.28	-0.45	-0.56	-0.24
12.0	0.00	0.02	-0.60	-0.14	-0.31	-0.48	-0.57	-0.24
12.5	0.00	-0.02	-0.59	-0.15	-0.34	-0.49	-0.57	-0.23
13.0	0.00	-0.03	-0.58	-0.14	-0.34	-0.49	-0.53	-0.20
13.5	0.00	-0.04	-0.52	-0.09	-0.31	-0.43	-0.46	-0.16
14.0	0.00	-0.14	-0.70	-0.32	-0.58	-0.73	-0.77	-0.47
14.5	0.00	-0.12	-0.57	-0.30	-0.59	-0.70	-0.70	-0.45
15.0	0.00	-0.11	-0.50	-0.27	-0.56	-0.61	-0.58	-0.40
15.5	0.00	0.00	-0.38	-0.15	-0.41	-0.44	-0.40	-0.23
16.0	0.00	0.01	-0.36	-0.14	-0.40	-0.40	-0.36	-0.18
16.5	0.00	0.05	-0.33	-0.13	-0.35	-0.36	-0.32	-0.12
17.0	0.00	0.04	-0.28	-0.12	-0.32	-0.32	-0.29	-0.08
17.5	0.00	0.10	-0.22	-0.08	-0.24	-0.24	-0.24	-0.04
18.0	0.00	0.14	-0.20	-0.05	-0.20	-0.16	-0.21	0.01
18.5	0.00	0.16	-0.20	-0.01	-0.15	-0.12	-0.19	0.04
19.0	0.00	0.24	-0.12	0.08	-0.07	-0.04	-0.13	0.09
19.5	0.00	0.23	-0.13	0.08	-0.07	-0.05	-0.14	0.07
20.0	0.00	0.24	-0.11	0.08	-0.06	-0.05	-0.15	0.08
20.5	0.00	0.27	-0.09	0.10	-0.04	-0.04	-0.13	0.09
21.0	0.00	0.27	-0.07	0.14	0.00	-0.02	-0.10	0.12
21.5	0.00	0.21	-0.07	0.14	-0.02	-0.03	-0.10	0.13
22.0	0.00	0.19	-0.11	0.10	-0.05	-0.07	-0.13	0.09
22.5	0.00	0.17	-0.12	0.09	-0.05	-0.08	-0.13	0.09
23.0	0.00	0.10	-0.10	0.06	-0.07	-0.09	-0.12	0.07
23.5	0.00	0.15	-0.06	0.07	-0.02	-0.04	-0.07	0.10
24.0	0.00	0.07	-0.05	0.04	-0.02	-0.03	-0.05	0.09
24.5	0.00	-0.02	0.01	0.04	0.04	0.02	0.03	0.07
25.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Cumulative Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:58 (mm)	07/09/2012 12:49 (mm)	10/10/2012 09:03 (mm)	22/11/2012 11:53 (mm)	21/12/2012 10:24 (mm)
0.5	-0.55	0.09	-0.64	0.04	0.90
1.0	-0.29	-0.06	-0.86	-0.21	0.49
1.5	-0.15	-0.04	-0.80	-0.12	0.49
2.0	-0.15	-0.09	-0.80	-0.14	0.39
2.5	-0.17	-0.19	-0.86	-0.24	0.19
3.0	-0.22	-0.30	-0.92	-0.35	0.03
3.5	-0.29	-0.42	-1.00	-0.47	-0.13
4.0	-0.32	-0.48	-1.02	-0.55	-0.21
4.5	-0.36	-0.51	-0.99	-0.60	-0.23
5.0	-0.39	-0.54	-0.97	-0.71	-0.29
5.5	-0.46	-0.57	-1.01	-0.80	-0.39
6.0	-0.48	-0.55	-0.96	-0.80	-0.40
6.5	-0.49	-0.51	-0.94	-0.74	-0.41
7.0	-0.51	-0.53	-1.01	-0.78	-0.48
7.5	-0.46	-0.52	-0.96	-0.69	-0.51
8.0	-0.47	-0.53	-1.07	-0.69	-0.56
8.5	-0.47	-0.54	-1.03	-0.66	-0.60
9.0	-0.42	-0.50	-0.93	-0.57	-0.55
9.5	-0.36	-0.44	-0.90	-0.60	-0.49
10.0	-0.36	-0.45	-0.83	-0.50	-0.48
10.5	-0.29	-0.40	-0.75	-0.36	-0.57
11.0	-0.22	-0.32	-0.66	-0.33	-0.48
11.5	-0.18	-0.27	-0.58	-0.34	-0.38
12.0	-0.19	-0.29	-0.55	-0.47	-0.34
12.5	-0.21	-0.29	-0.55	-0.44	-0.30
13.0	-0.17	-0.25	-0.58	-0.43	-0.30
13.5	-0.14	-0.15	-0.53	-0.31	-0.22
14.0	-0.48	-0.54	-0.98	-0.72	-0.76
14.5	-0.53	-0.50	-0.95	-0.74	-0.73
15.0	-0.50	-0.37	-0.82	-0.64	-0.56
15.5	-0.35	-0.19	-0.66	-0.42	-0.38
16.0	-0.32	-0.16	-0.69	-0.41	-0.39
16.5	-0.27	-0.13	-0.68	-0.24	-0.39
17.0	-0.20	-0.15	-0.63	-0.08	-0.39
17.5	-0.13	-0.12	-0.57	0.03	-0.34
18.0	-0.07	-0.11	-0.51	0.13	-0.26
18.5	-0.01	-0.12	-0.50	0.27	-0.21
19.0	0.06	-0.08	-0.39	0.33	-0.12
19.5	0.07	-0.12	-0.38	0.24	-0.10
20.0	0.09	-0.14	-0.33	0.23	-0.05
20.5	0.11	-0.14	-0.26	0.29	0.03
21.0	0.12	-0.11	-0.12	0.25	0.11
21.5	0.11	-0.11	-0.05	0.29	0.19
22.0	0.06	-0.10	-0.05	0.20	0.23
22.5	0.04	-0.09	-0.03	0.12	0.17
23.0	0.02	-0.05	-0.01	0.11	0.11
23.5	0.05	0.03	0.04	0.09	0.09
24.0	0.03	0.05	0.04	0.05	0.09
24.5	0.05	0.09	0.08	0.06	0.12
25.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Cumulative Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 12:08 (mm)	18/01/2012 13:06 (mm)	28/02/2012 10:17 (mm)	21/03/2012 10:25 (mm)	19/04/2012 15:33 (mm)	24/05/2012 15:59 (mm)	14/06/2012 11:01 (mm)
0.5	0.00	1.04	0.32	0.02	0.22	-0.39	-0.43	1.58
1.0	0.00	1.07	0.46	0.26	0.47	-0.14	-0.05	1.77
1.5	0.00	1.09	0.45	0.17	0.50	-0.13	-0.06	1.75
2.0	0.00	1.05	0.39	0.16	0.45	-0.17	-0.09	1.67
2.5	0.00	1.00	0.33	0.13	0.39	-0.20	-0.17	1.54
3.0	0.00	1.00	0.30	0.13	0.37	-0.24	-0.20	1.52
3.5	0.00	0.97	0.38	0.23	0.31	-0.17	-0.13	1.60
4.0	0.00	0.87	0.40	0.22	0.29	-0.19	-0.15	1.58
4.5	0.00	0.88	0.39	0.29	0.40	-0.04	-0.12	1.69
5.0	0.00	0.87	0.40	0.30	0.44	-0.01	-0.11	1.70
5.5	0.00	0.86	0.40	0.31	0.50	0.02	-0.10	1.71
6.0	0.00	0.84	0.35	0.28	0.50	0.00	-0.14	1.67
6.5	0.00	0.83	0.32	0.28	0.51	0.00	-0.17	1.64
7.0	0.00	0.79	0.25	0.27	0.53	-0.01	-0.20	1.62
7.5	0.00	0.77	0.23	0.27	0.55	-0.02	-0.19	1.62
8.0	0.00	0.75	0.22	0.29	0.58	-0.01	-0.20	1.60
8.5	0.00	0.74	0.22	0.31	0.60	-0.02	-0.20	1.60
9.0	0.00	0.72	0.25	0.34	0.59	-0.04	-0.19	1.59
9.5	0.00	0.69	0.25	0.35	0.60	-0.06	-0.17	1.57
10.0	0.00	0.70	0.29	0.37	0.60	-0.05	-0.13	1.57
10.5	0.00	0.71	0.33	0.38	0.62	0.01	-0.08	1.57
11.0	0.00	0.72	0.36	0.38	0.61	0.04	-0.01	1.57
11.5	0.00	0.73	0.38	0.38	0.60	0.06	0.05	1.55
12.0	0.00	0.76	0.37	0.36	0.60	0.05	0.07	1.51
12.5	0.00	0.76	0.34	0.31	0.58	0.05	0.07	1.44
13.0	0.00	0.80	0.37	0.29	0.58	0.07	0.08	1.39
13.5	0.00	0.85	0.35	0.26	0.58	0.07	0.09	1.34
14.0	0.00	0.90	0.40	0.31	0.66	0.17	0.20	1.41
14.5	0.00	0.91	0.41	0.36	0.71	0.24	0.24	1.39
15.0	0.00	0.88	0.32	0.31	0.65	0.16	0.15	1.24
15.5	0.00	0.83	0.27	0.32	0.64	0.15	0.12	1.16
16.0	0.00	0.78	0.23	0.32	0.62	0.12	0.09	1.09
16.5	0.00	0.84	0.21	0.34	0.61	0.13	0.07	0.97
17.0	0.00	0.79	0.16	0.30	0.57	0.08	0.04	0.92
17.5	0.00	0.75	0.14	0.31	0.54	0.09	0.06	0.90
18.0	0.00	0.70	0.10	0.27	0.48	0.05	0.04	0.84
18.5	0.00	0.65	0.08	0.25	0.43	0.03	0.04	0.80
19.0	0.00	0.60	0.04	0.21	0.36	0.01	0.02	0.74
19.5	0.00	0.57	0.05	0.17	0.30	0.01	0.03	0.68
20.0	0.00	0.53	0.04	0.12	0.23	-0.01	0.01	0.59
20.5	0.00	0.51	0.04	0.10	0.20	0.02	0.05	0.56
21.0	0.00	0.49	0.05	0.08	0.18	0.06	0.09	0.53
21.5	0.00	0.45	0.03	0.04	0.15	0.05	0.08	0.47
22.0	0.00	0.39	0.02	0.01	0.13	0.05	0.08	0.39
22.5	0.00	0.33	0.05	0.01	0.11	0.09	0.09	0.34
23.0	0.00	0.27	0.03	-0.02	0.10	0.08	0.04	0.22
23.5	0.00	0.21	0.05	-0.01	0.10	0.08	0.05	0.16
24.0	0.00	0.11	0.05	0.00	0.09	0.08	0.03	0.13
24.5	0.00	0.04	0.02	-0.01	0.03	0.05	0.00	0.04
25.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

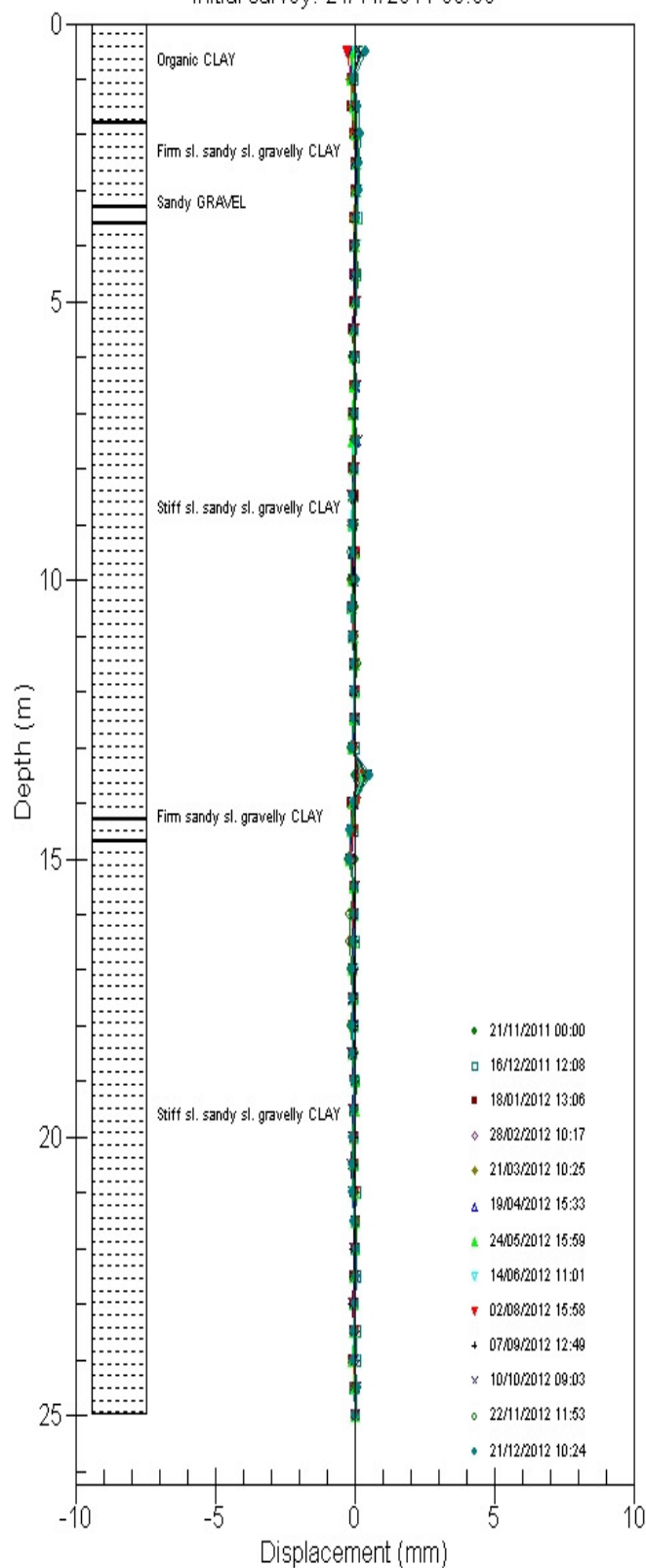
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Cumulative Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:58 (mm)	07/09/2012 12:49 (mm)	10/10/2012 09:03 (mm)	22/11/2012 11:53 (mm)	21/12/2012 10:24 (mm)
0.5	-0.84	0.28	-0.33	0.16	0.39
1.0	-0.72	0.32	-0.13	0.23	0.37
1.5	-0.73	0.31	-0.11	0.22	0.29
2.0	-0.81	0.26	-0.13	0.23	0.23
2.5	-0.92	0.20	-0.17	0.19	0.17
3.0	-0.92	0.20	-0.15	0.17	0.22
3.5	-0.87	0.24	0.00	0.28	0.24
4.0	-0.94	0.26	0.06	0.29	0.25
4.5	-0.93	0.30	0.19	0.41	0.28
5.0	-0.91	0.34	0.22	0.45	0.31
5.5	-0.87	0.36	0.24	0.47	0.32
6.0	-0.88	0.31	0.20	0.44	0.26
6.5	-0.86	0.29	0.17	0.41	0.24
7.0	-0.83	0.25	0.16	0.38	0.22
7.5	-0.81	0.23	0.15	0.36	0.23
8.0	-0.80	0.18	0.15	0.36	0.21
8.5	-0.78	0.15	0.16	0.36	0.22
9.0	-0.75	0.12	0.16	0.34	0.22
9.5	-0.75	0.09	0.17	0.32	0.22
10.0	-0.72	0.08	0.20	0.32	0.25
10.5	-0.62	0.12	0.26	0.37	0.24
11.0	-0.56	0.13	0.31	0.41	0.29
11.5	-0.51	0.14	0.33	0.43	0.31
12.0	-0.46	0.13	0.30	0.42	0.26
12.5	-0.45	0.13	0.26	0.40	0.22
13.0	-0.48	0.13	0.28	0.41	0.30
13.5	-0.47	0.12	0.26	0.40	0.33
14.0	-0.40	0.23	0.38	0.52	0.50
14.5	-0.28	0.26	0.38	0.56	0.47
15.0	-0.37	0.14	0.26	0.44	0.38
15.5	-0.36	0.09	0.23	0.38	0.34
16.0	-0.34	0.05	0.21	0.37	0.32
16.5	-0.37	0.07	0.24	0.35	0.37
17.0	-0.35	-0.01	0.18	0.28	0.28
17.5	-0.29	0.00	0.24	0.29	0.31
18.0	-0.26	-0.04	0.25	0.25	0.29
18.5	-0.23	-0.05	0.27	0.23	0.29
19.0	-0.20	-0.03	0.28	0.20	0.28
19.5	-0.20	-0.03	0.29	0.20	0.26
20.0	-0.22	-0.06	0.28	0.13	0.21
20.5	-0.16	-0.03	0.30	0.15	0.20
21.0	-0.11	0.02	0.31	0.15	0.20
21.5	-0.07	0.02	0.28	0.11	0.16
22.0	-0.05	0.03	0.24	0.09	0.13
22.5	-0.02	0.07	0.24	0.11	0.15
23.0	-0.03	0.02	0.16	0.06	0.07
23.5	0.00	0.03	0.13	0.06	0.08
24.0	0.04	0.03	0.08	0.07	0.03
24.5	0.02	0.00	0.03	0.01	-0.04
25.0	0.00	0.00	0.00	0.00	0.00

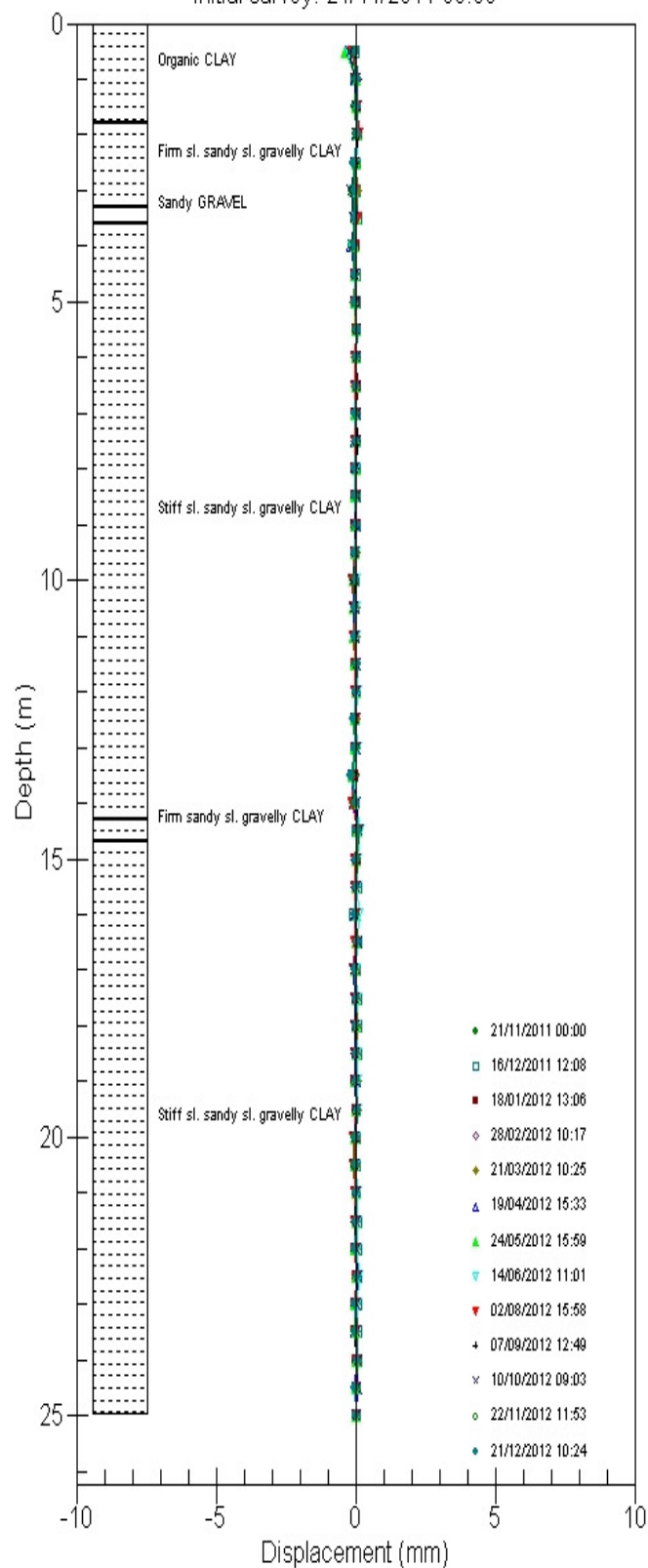
3833:BHC1 - A Axis Incremental

Initial survey: 21/11/2011 00:00



3833:BHC1 - B Axis Incremental

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C1

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Incremental Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 12:08 (mm)	18/01/2012 13:06 (mm)	28/02/2012 10:17 (mm)	21/03/2012 10:25 (mm)	19/04/2012 15:33 (mm)	24/05/2012 15:59 (mm)	14/06/2012 11:01 (mm)
0.5	0.00	-0.06	-0.14	-0.07	-0.10	-0.05	-0.04	0.07
1.0	0.00	-0.04	-0.11	-0.15	-0.16	-0.14	-0.13	-0.13
1.5	0.00	0.02	-0.14	-0.04	-0.06	-0.03	-0.02	-0.01
2.0	0.00	0.01	-0.02	-0.02	-0.04	0.05	0.03	0.06
2.5	0.00	0.03	0.04	0.00	0.00	0.04	0.05	0.07
3.0	0.00	0.01	0.04	0.03	0.03	0.05	0.10	0.10
3.5	0.00	0.11	-0.01	0.00	0.00	0.05	0.05	0.05
4.0	0.00	-0.01	-0.02	0.01	0.02	0.03	0.02	0.07
4.5	0.00	0.09	-0.05	-0.01	0.02	0.01	0.01	0.04
5.0	0.00	0.01	-0.02	0.02	0.04	0.04	0.03	0.07
5.5	0.00	-0.02	-0.05	-0.01	-0.02	-0.01	-0.03	0.00
6.0	0.00	0.02	-0.05	-0.02	-0.05	-0.04	-0.05	-0.01
6.5	0.00	-0.03	-0.03	0.00	-0.01	0.00	-0.02	0.03
7.0	0.00	-0.04	-0.06	-0.04	-0.05	-0.05	-0.08	-0.04
7.5	0.00	0.05	-0.03	-0.03	-0.04	-0.04	-0.05	-0.02
8.0	0.00	-0.01	-0.05	0.00	-0.04	-0.01	-0.01	0.00
8.5	0.00	-0.02	0.01	-0.07	-0.07	-0.06	-0.06	-0.08
9.0	0.00	-0.08	-0.06	-0.10	-0.11	-0.08	-0.07	-0.10
9.5	0.00	0.00	0.07	-0.02	-0.03	-0.05	0.00	-0.04
10.0	0.00	-0.07	-0.07	-0.07	-0.08	-0.03	-0.07	-0.07
10.5	0.00	-0.10	-0.08	-0.08	-0.08	-0.08	-0.06	-0.09
11.0	0.00	-0.06	-0.02	-0.04	-0.03	-0.02	-0.04	-0.07
11.5	0.00	-0.01	-0.01	0.02	0.03	0.04	0.01	0.01
12.0	0.00	0.05	-0.01	0.01	0.04	0.01	0.00	-0.01
12.5	0.00	0.00	-0.01	-0.01	0.00	0.00	-0.04	-0.03
13.0	0.00	0.01	-0.06	-0.04	-0.04	-0.06	-0.07	-0.05
13.5	0.00	0.11	0.18	0.23	0.28	0.30	0.31	0.31
14.0	0.00	-0.02	-0.13	-0.02	0.01	-0.03	-0.07	-0.02
14.5	0.00	-0.02	-0.07	-0.04	-0.04	-0.09	-0.13	-0.06
15.0	0.00	-0.11	-0.12	-0.12	-0.15	-0.17	-0.18	-0.17
15.5	0.00	-0.02	-0.02	-0.01	-0.01	-0.05	-0.04	-0.05
16.0	0.00	-0.04	-0.03	-0.02	-0.05	-0.04	-0.05	-0.07
16.5	0.00	0.01	-0.05	0.00	-0.03	-0.04	-0.03	-0.04
17.0	0.00	-0.06	-0.07	-0.05	-0.08	-0.08	-0.05	-0.04
17.5	0.00	-0.04	-0.01	-0.03	-0.05	-0.07	-0.03	-0.05
18.0	0.00	-0.02	-0.01	-0.04	-0.05	-0.04	-0.02	-0.03
18.5	0.00	-0.07	-0.07	-0.09	-0.08	-0.08	-0.05	-0.05
19.0	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.02
19.5	0.00	-0.01	-0.02	0.00	-0.01	0.00	0.01	-0.01
20.0	0.00	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01
20.5	0.00	-0.01	-0.02	-0.04	-0.04	-0.02	-0.04	-0.03
21.0	0.00	0.06	0.00	0.00	0.02	0.01	0.00	-0.01
21.5	0.00	0.02	0.04	0.04	0.03	0.04	0.03	0.04
22.0	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.00
22.5	0.00	0.06	-0.02	0.03	0.01	0.01	-0.01	0.01
23.0	0.00	-0.04	-0.04	0.00	-0.05	-0.05	-0.05	-0.03
23.5	0.00	0.08	-0.01	0.02	0.00	-0.01	-0.02	0.02
24.0	0.00	0.09	-0.06	0.01	-0.05	-0.05	-0.07	0.01
24.5	0.00	-0.02	0.01	0.04	0.04	0.02	0.03	0.07
25.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Incremental Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:58 (mm)	07/09/2012 12:49 (mm)	10/10/2012 09:03 (mm)	22/11/2012 11:53 (mm)	21/12/2012 10:24 (mm)
0.5	-0.26	0.15	0.22	0.25	0.42
1.0	-0.14	-0.02	-0.07	-0.09	0.00
1.5	0.00	0.05	0.00	0.02	0.10
2.0	0.02	0.10	0.06	0.11	0.21
2.5	0.05	0.11	0.06	0.11	0.16
3.0	0.07	0.12	0.08	0.12	0.16
3.5	0.03	0.06	0.01	0.08	0.07
4.0	0.04	0.03	-0.02	0.05	0.03
4.5	0.03	0.02	-0.02	0.11	0.06
5.0	0.08	0.04	0.04	0.10	0.10
5.5	0.01	-0.02	-0.04	0.00	0.01
6.0	0.01	-0.04	-0.03	-0.06	0.01
6.5	0.02	0.02	0.07	0.04	0.07
7.0	-0.06	-0.01	-0.05	-0.09	0.03
7.5	0.02	0.01	0.11	0.00	0.05
8.0	0.00	0.00	-0.04	-0.03	0.04
8.5	-0.05	-0.04	-0.10	-0.09	-0.06
9.0	-0.06	-0.06	-0.03	0.03	-0.06
9.5	0.00	0.01	-0.07	-0.10	-0.01
10.0	-0.07	-0.04	-0.08	-0.14	0.10
10.5	-0.07	-0.08	-0.09	-0.03	-0.10
11.0	-0.04	-0.05	-0.07	0.01	-0.10
11.5	0.01	0.02	-0.03	0.13	-0.04
12.0	0.03	0.01	0.00	-0.03	-0.04
12.5	-0.04	-0.05	0.03	0.00	0.00
13.0	-0.03	-0.10	-0.05	-0.12	-0.08
13.5	0.34	0.39	0.45	0.41	0.54
14.0	0.06	-0.04	-0.03	0.03	-0.03
14.5	-0.03	-0.13	-0.13	-0.10	-0.17
15.0	-0.15	-0.18	-0.16	-0.22	-0.18
15.5	-0.03	-0.04	0.03	-0.01	0.01
16.0	-0.06	-0.03	-0.02	-0.18	0.01
16.5	-0.07	0.03	-0.05	-0.15	-0.01
17.0	-0.07	-0.03	-0.06	-0.11	-0.05
17.5	-0.07	-0.01	-0.05	-0.09	-0.08
18.0	-0.06	0.01	-0.02	-0.14	-0.05
18.5	-0.07	-0.03	-0.11	-0.06	-0.09
19.0	-0.01	0.04	-0.01	0.09	-0.03
19.5	-0.02	0.01	-0.05	0.01	-0.05
20.0	-0.02	0.00	-0.07	-0.05	-0.08
20.5	-0.02	-0.03	-0.14	0.04	-0.09
21.0	0.01	0.00	-0.07	-0.04	-0.08
21.5	0.05	-0.01	0.00	0.10	-0.04
22.0	0.02	-0.01	-0.02	0.07	0.06
22.5	0.02	-0.04	-0.01	0.02	0.06
23.0	-0.03	-0.08	-0.05	0.01	0.02
23.5	0.02	-0.03	0.00	0.05	0.00
24.0	-0.02	-0.03	-0.03	-0.01	-0.02
24.5	0.05	0.09	0.08	0.06	0.12
25.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Incremental Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 12:08 (mm)	18/01/2012 13:06 (mm)	28/02/2012 10:17 (mm)	21/03/2012 10:25 (mm)	19/04/2012 15:33 (mm)	24/05/2012 15:59 (mm)	14/06/2012 11:01 (mm)
0.5	0.00	-0.03	-0.14	-0.24	-0.26	-0.26	-0.38	-0.19
1.0	0.00	-0.02	0.01	0.09	-0.02	-0.01	0.00	0.02
1.5	0.00	0.04	0.06	0.02	0.05	0.04	0.03	0.07
2.0	0.00	0.05	0.05	0.02	0.06	0.03	0.08	0.13
2.5	0.00	0.00	0.04	0.00	0.03	0.04	0.03	0.02
3.0	0.00	0.04	-0.08	-0.10	0.06	-0.07	-0.07	-0.08
3.5	0.00	0.09	-0.03	0.01	0.02	0.01	0.02	0.01
4.0	0.00	-0.01	0.01	-0.07	-0.11	-0.15	-0.04	-0.11
4.5	0.00	0.01	-0.01	-0.02	-0.04	-0.04	-0.01	-0.01
5.0	0.00	0.01	0.00	0.00	-0.06	-0.02	-0.01	0.00
5.5	0.00	0.02	0.05	0.03	0.00	0.02	0.04	0.04
6.0	0.00	0.01	0.03	0.00	-0.02	0.00	0.03	0.03
6.5	0.00	0.04	0.07	0.01	-0.02	0.01	0.03	0.01
7.0	0.00	0.03	0.02	0.00	-0.01	0.01	0.00	0.01
7.5	0.00	0.02	0.01	-0.02	-0.04	-0.01	0.01	0.01
8.0	0.00	0.01	0.00	-0.02	-0.01	0.01	0.00	0.01
8.5	0.00	0.02	-0.02	-0.02	0.01	0.02	-0.01	0.01
9.0	0.00	0.03	-0.01	-0.01	-0.01	0.02	-0.02	0.02
9.5	0.00	-0.01	-0.03	-0.02	0.01	-0.01	-0.04	0.01
10.0	0.00	-0.01	-0.05	-0.01	-0.03	-0.06	-0.06	0.00
10.5	0.00	-0.01	-0.03	0.00	0.01	-0.03	-0.07	0.00
11.0	0.00	-0.01	-0.01	0.01	0.01	-0.02	-0.07	0.01
11.5	0.00	-0.03	0.00	0.02	0.00	0.00	-0.02	0.04
12.0	0.00	0.00	0.03	0.04	0.02	0.00	0.00	0.07
12.5	0.00	-0.05	-0.03	0.02	0.00	-0.02	-0.02	0.04
13.0	0.00	-0.05	0.01	0.03	0.00	0.00	-0.01	0.05
13.5	0.00	-0.05	-0.05	-0.05	-0.09	-0.10	-0.11	-0.07
14.0	0.00	-0.01	-0.01	-0.05	-0.05	-0.06	-0.05	0.02
14.5	0.00	0.03	0.09	0.06	0.06	0.08	0.09	0.15
15.0	0.00	0.05	0.05	-0.01	0.02	0.01	0.03	0.09
15.5	0.00	0.06	0.04	-0.01	0.02	0.03	0.03	0.07
16.0	0.00	-0.06	0.01	-0.02	0.01	-0.01	0.02	0.11
16.5	0.00	0.05	0.06	0.04	0.04	0.05	0.03	0.06
17.0	0.00	0.04	0.02	-0.01	0.02	-0.01	-0.02	0.01
17.5	0.00	0.05	0.04	0.04	0.06	0.05	0.02	0.06
18.0	0.00	0.06	0.02	0.02	0.05	0.02	0.01	0.03
18.5	0.00	0.05	0.04	0.04	0.07	0.03	0.02	0.06
19.0	0.00	0.03	-0.01	0.04	0.06	0.00	-0.01	0.06
19.5	0.00	0.03	0.01	0.06	0.07	0.02	0.02	0.10
20.0	0.00	0.03	0.00	0.02	0.03	-0.03	-0.04	0.03
20.5	0.00	0.02	-0.01	0.02	0.02	-0.04	-0.04	0.03
21.0	0.00	0.04	0.01	0.04	0.04	0.01	0.01	0.06
21.5	0.00	0.06	0.01	0.03	0.02	0.01	0.01	0.07
22.0	0.00	0.06	-0.03	0.00	0.01	-0.04	-0.01	0.06
22.5	0.00	0.06	0.02	0.03	0.01	0.01	0.05	0.12
23.0	0.00	0.06	-0.02	0.00	0.00	0.00	-0.01	0.06
23.5	0.00	0.10	0.00	-0.02	0.01	-0.01	0.02	0.03
24.0	0.00	0.07	0.03	0.02	0.06	0.03	0.03	0.09
24.5	0.00	0.04	0.02	-0.01	0.03	0.05	0.00	0.04
25.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

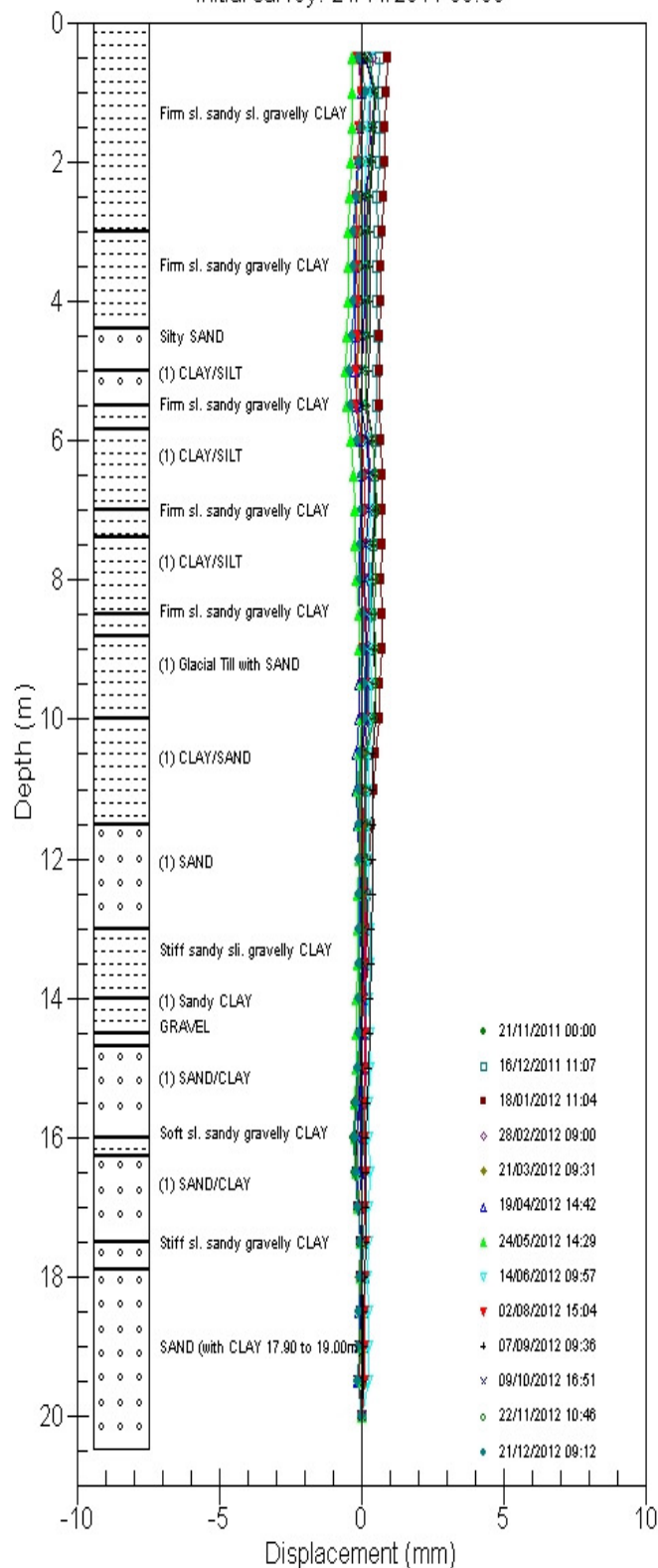
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C1
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

Incremental Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:58 (mm)	07/09/2012 12:49 (mm)	10/10/2012 09:03 (mm)	22/11/2012 11:53 (mm)	21/12/2012 10:24 (mm)
0.5	-0.12	-0.04	-0.20	-0.06	0.02
1.0	0.00	0.01	-0.02	0.01	0.08
1.5	0.08	0.05	0.02	-0.02	0.06
2.0	0.11	0.06	0.04	0.04	0.06
2.5	0.00	0.00	-0.02	0.02	-0.05
3.0	-0.05	-0.04	-0.15	-0.11	-0.02
3.5	0.07	-0.03	-0.07	-0.01	0.00
4.0	0.00	-0.04	-0.13	-0.13	-0.04
4.5	-0.03	-0.04	-0.03	-0.04	-0.03
5.0	-0.03	-0.02	-0.01	-0.02	0.00
5.5	0.01	0.05	0.04	0.03	0.06
6.0	-0.02	0.02	0.03	0.03	0.01
6.5	-0.04	0.05	0.01	0.03	0.02
7.0	-0.02	0.02	0.01	0.02	-0.01
7.5	-0.01	0.05	0.00	0.00	0.02
8.0	-0.02	0.03	0.00	0.00	0.00
8.5	-0.02	0.03	0.00	0.03	0.00
9.0	0.00	0.03	-0.01	0.01	0.00
9.5	-0.03	0.01	-0.03	0.01	-0.03
10.0	-0.11	-0.04	-0.06	-0.06	0.01
10.5	-0.06	-0.01	-0.05	-0.03	-0.05
11.0	-0.05	-0.01	-0.02	-0.03	-0.03
11.5	-0.05	0.01	0.03	0.01	0.05
12.0	-0.02	0.00	0.04	0.02	0.04
12.5	0.03	-0.01	-0.02	-0.01	-0.08
13.0	-0.01	0.01	0.02	0.00	-0.03
13.5	-0.07	-0.11	-0.12	-0.12	-0.17
14.0	-0.13	-0.03	0.00	-0.03	0.03
14.5	0.09	0.11	0.11	0.12	0.09
15.0	-0.01	0.06	0.03	0.06	0.04
15.5	-0.02	0.04	0.02	0.01	0.02
16.0	0.03	-0.02	-0.03	0.02	-0.05
16.5	-0.01	0.08	0.07	0.08	0.09
17.0	-0.07	-0.01	-0.06	-0.01	-0.03
17.5	-0.02	0.04	-0.01	0.04	0.02
18.0	-0.03	0.01	-0.02	0.02	0.00
18.5	-0.03	-0.01	-0.01	0.03	0.01
19.0	-0.01	0.00	-0.01	0.01	0.02
19.5	0.02	0.03	0.01	0.07	0.05
20.0	-0.06	-0.03	-0.02	-0.01	0.01
20.5	-0.05	-0.05	-0.01	-0.01	0.00
21.0	-0.04	0.00	0.03	0.04	0.05
21.5	-0.01	-0.01	0.03	0.02	0.03
22.0	-0.03	-0.03	0.00	-0.02	-0.01
22.5	0.01	0.05	0.08	0.05	0.08
23.0	-0.03	-0.01	0.04	0.00	-0.01
23.5	-0.04	0.00	0.04	-0.01	0.05
24.0	0.02	0.03	0.05	0.05	0.07
24.5	0.02	0.00	0.03	0.01	-0.04
25.0	0.00	0.00	0.00	0.00	0.00

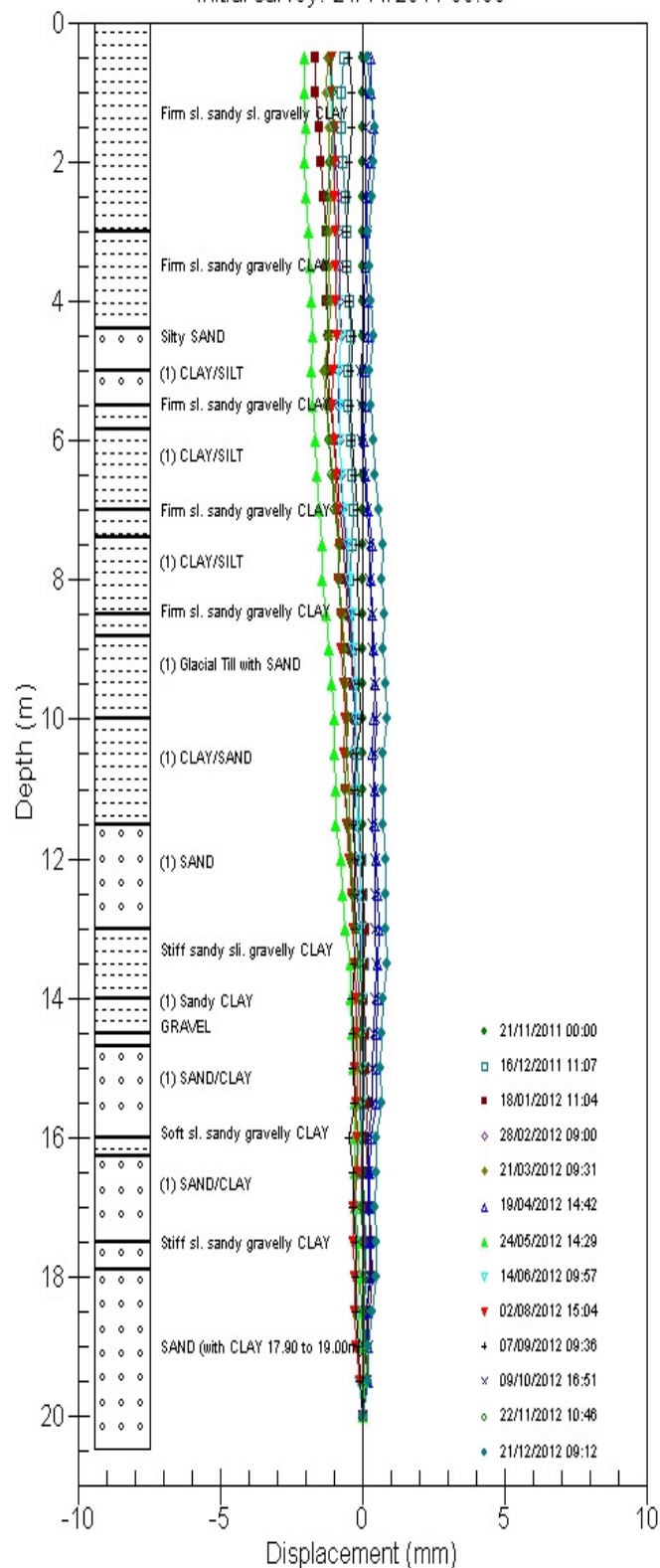
3833:BHC2 - A Axis Cumulative

Initial survey: 21/11/2011 00:00



3833:BHC2 - B Axis Cumulative

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C2

COMPANY: Allied Exploration & Geotechnics Limited

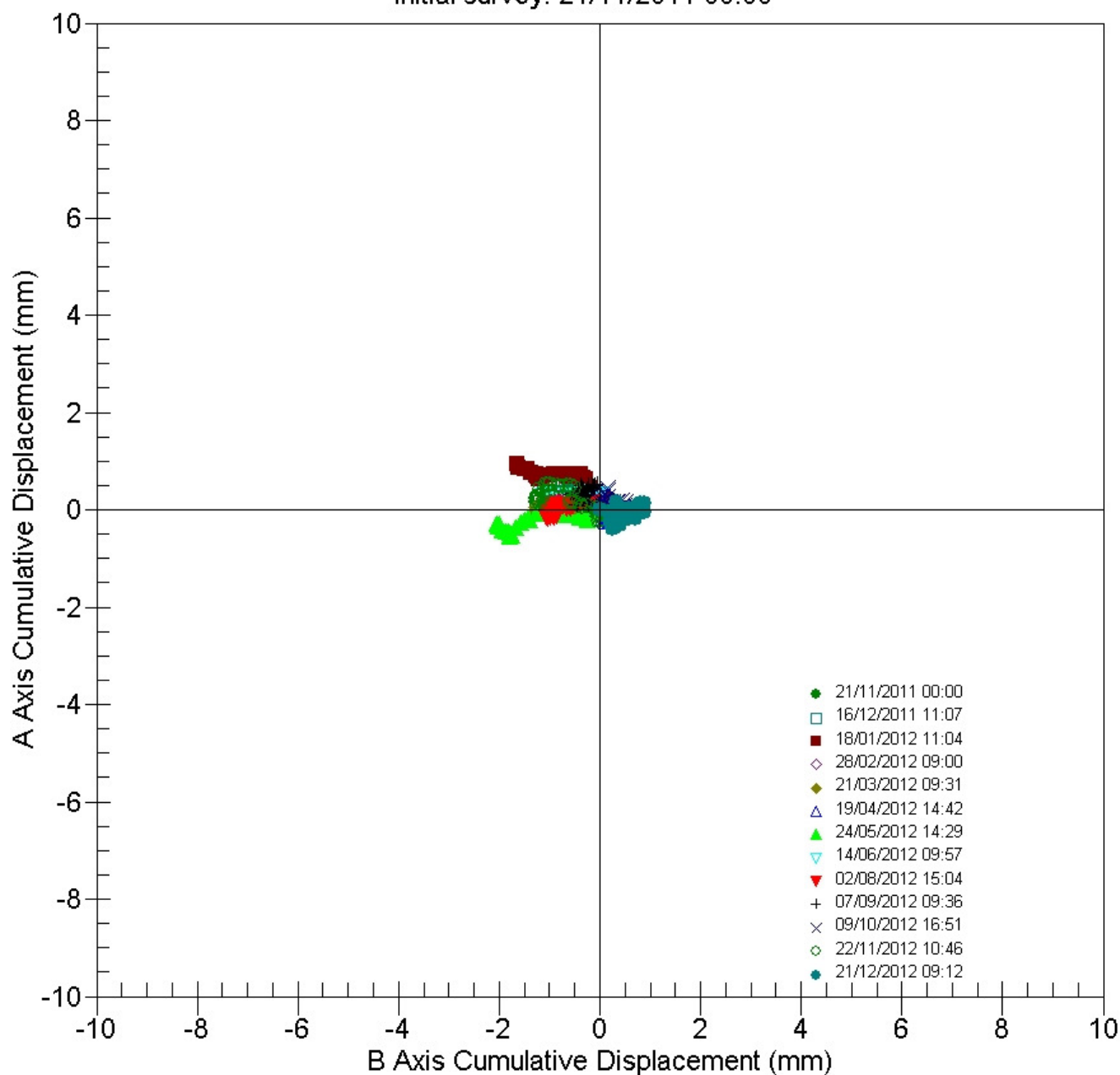
CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)

(1) Description derived from drillers daily reports.

3833:BHC2 - A Axis vs B Axis

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C2

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)

(1) Description derived from drillers daily reports.

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Cumulative Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:07 (mm)	18/01/2012 11:04 (mm)	28/02/2012 09:00 (mm)	21/03/2012 09:31 (mm)	19/04/2012 14:42 (mm)	24/05/2012 14:29 (mm)	14/06/2012 09:57 (mm)
0.5	0.00	0.62	0.94	0.38	0.09	-0.01	-0.30	0.31
1.0	0.00	0.60	0.86	0.31	0.04	0.00	-0.29	0.29
1.5	0.00	0.63	0.84	0.30	0.03	-0.06	-0.32	0.22
2.0	0.00	0.62	0.82	0.28	0.02	-0.14	-0.34	0.19
2.5	0.00	0.57	0.77	0.20	-0.03	-0.21	-0.42	0.11
3.0	0.00	0.57	0.74	0.16	-0.06	-0.24	-0.44	0.09
3.5	0.00	0.57	0.71	0.16	-0.08	-0.24	-0.45	0.08
4.0	0.00	0.55	0.67	0.16	-0.08	-0.23	-0.47	0.08
4.5	0.00	0.58	0.64	0.18	-0.08	-0.21	-0.49	0.07
5.0	0.00	0.55	0.63	0.16	-0.12	-0.23	-0.54	0.01
5.5	0.00	0.54	0.64	0.18	-0.09	-0.19	-0.51	0.02
6.0	0.00	0.52	0.70	0.26	-0.03	-0.09	-0.36	0.18
6.5	0.00	0.47	0.74	0.31	0.03	-0.03	-0.25	0.28
7.0	0.00	0.46	0.72	0.31	0.02	-0.03	-0.21	0.29
7.5	0.00	0.40	0.71	0.27	0.00	-0.07	-0.21	0.26
8.0	0.00	0.36	0.69	0.26	0.00	-0.09	-0.15	0.29
8.5	0.00	0.36	0.74	0.26	0.02	-0.07	-0.09	0.33
9.0	0.00	0.28	0.72	0.24	0.02	-0.07	-0.05	0.33
9.5	0.00	0.27	0.64	0.23	0.03	-0.07	0.01	0.36
10.0	0.00	0.24	0.63	0.21	0.03	-0.06	0.03	0.36
10.5	0.00	0.19	0.48	0.14	-0.03	-0.15	-0.08	0.27
11.0	0.00	0.18	0.43	0.11	-0.04	-0.16	-0.11	0.25
11.5	0.00	0.16	0.35	0.11	-0.01	-0.11	-0.09	0.27
12.0	0.00	0.16	0.26	0.11	-0.01	-0.08	-0.09	0.27
12.5	0.00	0.15	0.22	0.11	0.00	-0.04	-0.11	0.27
13.0	0.00	0.15	0.21	0.15	0.02	-0.01	-0.11	0.29
13.5	0.00	0.14	0.24	0.17	0.01	0.00	-0.13	0.30
14.0	0.00	0.13	0.09	0.16	-0.03	0.00	-0.16	0.25
14.5	0.00	0.10	0.03	0.16	-0.05	0.01	-0.16	0.29
15.0	0.00	0.12	-0.02	0.16	-0.06	0.03	-0.16	0.30
15.5	0.00	0.09	-0.06	0.14	-0.11	-0.01	-0.19	0.28
16.0	0.00	0.06	-0.10	0.13	-0.13	-0.05	-0.21	0.28
16.5	0.00	0.04	-0.17	0.14	-0.11	-0.03	-0.16	0.30
17.0	0.00	0.04	-0.11	0.15	-0.09	0.01	-0.10	0.28
17.5	0.00	0.09	-0.03	0.16	-0.04	0.03	-0.02	0.27
18.0	0.00	0.10	-0.01	0.12	-0.05	0.00	-0.01	0.22
18.5	0.00	0.09	0.02	0.08	-0.04	-0.05	0.01	0.24
19.0	0.00	0.06	-0.01	0.05	-0.01	-0.08	0.03	0.26
19.5	0.00	0.04	-0.08	0.03	0.02	-0.10	0.05	0.25
20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Cumulative Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:04 (mm)	07/09/2012 09:36 (mm)	09/10/2012 16:51 (mm)	22/11/2012 10:46 (mm)	21/12/2012 09:12 (mm)
0.5	-0.13	0.10	0.15	0.28	-0.05
1.0	0.02	0.50	0.45	0.48	0.16
1.5	-0.06	0.43	0.39	0.40	0.03
2.0	-0.10	0.38	0.33	0.35	-0.08
2.5	-0.15	0.32	0.13	0.27	-0.19
3.0	-0.16	0.31	0.11	0.23	-0.25
3.5	-0.15	0.33	0.12	0.23	-0.27
4.0	-0.14	0.32	0.12	0.21	-0.28
4.5	-0.12	0.32	0.08	0.20	-0.31
5.0	-0.17	0.24	0.00	0.15	-0.40
5.5	-0.16	0.22	-0.03	0.16	-0.38
6.0	0.03	0.42	0.19	0.41	-0.12
6.5	0.12	0.50	0.26	0.52	0.00
7.0	0.14	0.49	0.25	0.53	0.03
7.5	0.09	0.42	0.17	0.46	-0.03
8.0	0.08	0.43	0.14	0.49	-0.01
8.5	0.11	0.46	0.14	0.46	0.05
9.0	0.09	0.47	0.15	0.49	0.09
9.5	0.10	0.50	0.17	0.50	0.13
10.0	0.10	0.51	0.16	0.45	0.12
10.5	0.02	0.40	0.03	0.19	-0.05
11.0	0.03	0.39	0.01	0.16	-0.07
11.5	0.08	0.42	0.03	0.15	-0.06
12.0	0.09	0.42	0.03	0.11	-0.06
12.5	0.11	0.40	0.05	0.05	-0.06
13.0	0.13	0.38	0.07	0.07	-0.06
13.5	0.12	0.36	0.05	0.02	-0.06
14.0	0.07	0.30	0.01	-0.08	-0.08
14.5	0.13	0.30	-0.01	-0.09	-0.10
15.0	0.14	0.26	-0.04	-0.11	-0.11
15.5	0.10	0.20	-0.08	-0.20	-0.17
16.0	0.11	0.16	-0.18	-0.24	-0.22
16.5	0.15	0.18	-0.16	-0.20	-0.17
17.0	0.12	0.15	-0.09	-0.13	-0.10
17.5	0.14	0.15	-0.03	-0.02	-0.02
18.0	0.12	0.12	-0.01	-0.03	-0.02
18.5	0.11	0.09	-0.03	-0.07	-0.06
19.0	0.13	0.07	-0.07	-0.09	-0.10
19.5	0.13	0.08	-0.10	-0.10	-0.13
20.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Cumulative Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:07 (mm)	18/01/2012 11:04 (mm)	28/02/2012 09:00 (mm)	21/03/2012 09:31 (mm)	19/04/2012 14:42 (mm)	24/05/2012 14:29 (mm)	14/06/2012 09:57 (mm)
0.5	0.00	-0.65	-1.64	-1.16	-1.22	0.33	-2.00	-1.07
1.0	0.00	-0.73	-1.63	-1.10	-1.27	0.33	-2.04	-1.11
1.5	0.00	-0.74	-1.50	-1.00	-1.19	0.40	-1.99	-1.03
2.0	0.00	-0.71	-1.44	-0.92	-1.15	0.31	-2.02	-1.03
2.5	0.00	-0.61	-1.35	-0.85	-1.13	0.19	-1.95	-0.99
3.0	0.00	-0.55	-1.27	-0.82	-1.18	0.13	-1.87	-0.87
3.5	0.00	-0.53	-1.25	-0.78	-1.15	0.14	-1.83	-0.87
4.0	0.00	-0.47	-1.24	-0.77	-1.10	0.23	-1.79	-0.81
4.5	0.00	-0.41	-1.17	-0.76	-1.18	0.20	-1.76	-0.73
5.0	0.00	-0.51	-1.20	-0.86	-1.34	0.12	-1.80	-0.81
5.5	0.00	-0.48	-1.13	-0.85	-1.27	0.11	-1.74	-0.77
6.0	0.00	-0.42	-1.00	-0.80	-1.15	0.09	-1.66	-0.78
6.5	0.00	-0.36	-0.90	-0.75	-1.04	0.14	-1.57	-0.75
7.0	0.00	-0.33	-0.78	-0.68	-0.95	0.22	-1.49	-0.65
7.5	0.00	-0.35	-0.66	-0.56	-0.83	0.35	-1.39	-0.49
8.0	0.00	-0.45	-0.60	-0.54	-0.81	0.30	-1.41	-0.47
8.5	0.00	-0.43	-0.48	-0.43	-0.70	0.38	-1.25	-0.35
9.0	0.00	-0.36	-0.39	-0.38	-0.65	0.40	-1.16	-0.30
9.5	0.00	-0.31	-0.33	-0.32	-0.60	0.44	-1.06	-0.23
10.0	0.00	-0.20	-0.28	-0.26	-0.54	0.41	-0.98	-0.23
10.5	0.00	-0.16	-0.28	-0.37	-0.54	0.36	-1.00	-0.28
11.0	0.00	-0.12	-0.21	-0.29	-0.46	0.44	-0.92	-0.21
11.5	0.00	-0.10	-0.15	-0.29	-0.44	0.45	-0.91	-0.19
12.0	0.00	-0.03	-0.04	-0.23	-0.34	0.52	-0.74	-0.08
12.5	0.00	0.00	0.04	-0.18	-0.29	0.55	-0.67	-0.09
13.0	0.00	0.07	0.13	-0.08	-0.21	0.61	-0.59	-0.02
13.5	0.00	0.07	0.07	-0.05	-0.15	0.57	-0.41	-0.02
14.0	0.00	0.04	0.10	-0.10	-0.20	0.53	-0.41	0.03
14.5	0.00	0.06	0.14	-0.09	-0.18	0.52	-0.35	0.01
15.0	0.00	0.07	0.14	-0.08	-0.18	0.49	-0.32	0.01
15.5	0.00	0.08	0.21	-0.05	-0.17	0.49	-0.25	0.02
16.0	0.00	0.03	0.14	-0.02	-0.25	0.30	-0.25	-0.14
16.5	0.00	0.04	0.24	-0.04	-0.21	0.28	-0.27	-0.16
17.0	0.00	0.10	0.27	0.00	-0.22	0.25	-0.27	-0.24
17.5	0.00	0.12	0.30	0.05	-0.17	0.27	-0.19	-0.21
18.0	0.00	0.13	0.35	0.11	-0.08	0.28	-0.11	-0.20
18.5	0.00	0.03	0.27	0.07	-0.04	0.18	-0.16	-0.18
19.0	0.00	0.05	0.14	0.01	0.04	0.20	-0.01	-0.15
19.5	0.00	0.08	0.17	0.11	0.13	0.21	0.07	-0.12
20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

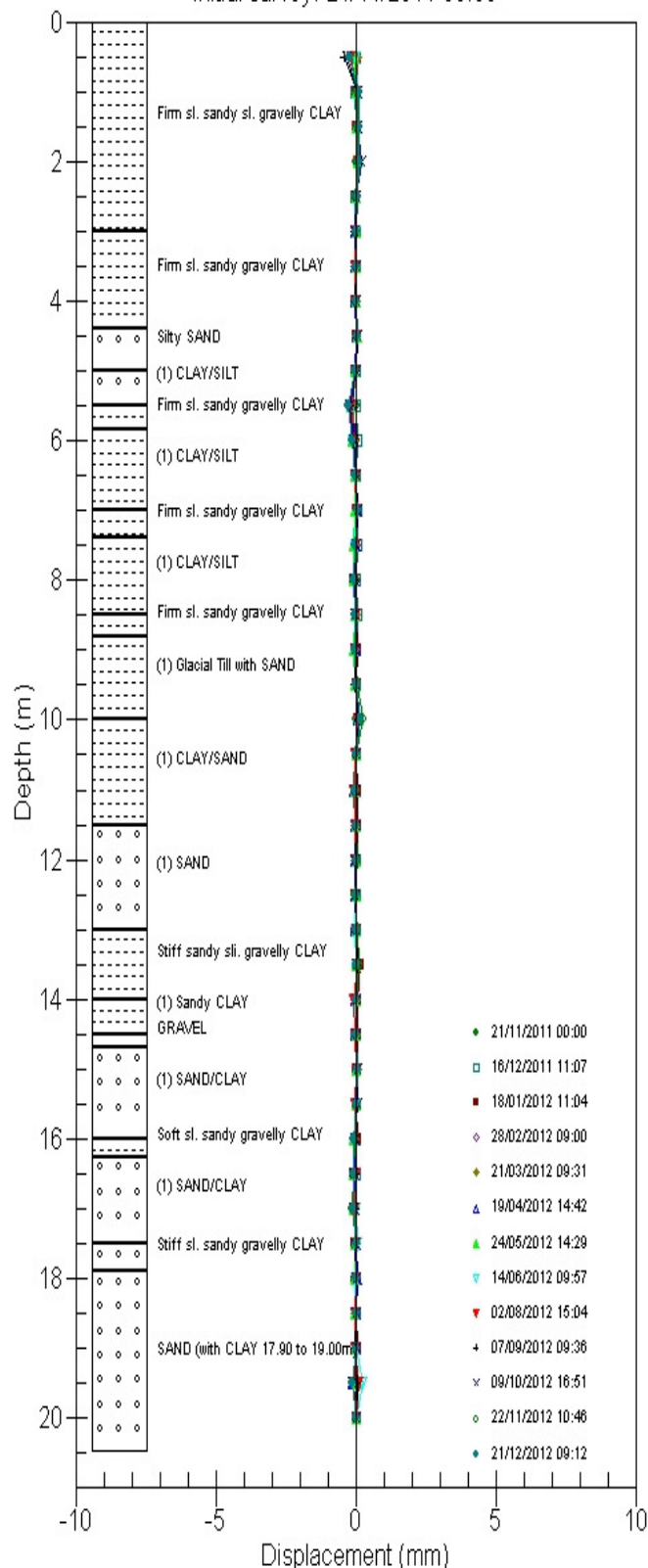
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Cumulative Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:04 (mm)	07/09/2012 09:36 (mm)	09/10/2012 16:51 (mm)	22/11/2012 10:46 (mm)	21/12/2012 09:12 (mm)
0.5	-1.05	-0.46	0.06	-1.10	0.18
1.0	-1.08	-0.38	0.14	-1.02	0.33
1.5	-0.99	-0.34	0.14	-1.02	0.44
2.0	-1.00	-0.44	0.11	-1.12	0.41
2.5	-0.98	-0.48	0.10	-1.21	0.36
3.0	-0.92	-0.55	0.16	-1.26	0.21
3.5	-0.92	-0.53	0.10	-1.25	0.25
4.0	-0.91	-0.43	0.09	-1.23	0.33
4.5	-0.86	-0.29	0.08	-1.21	0.40
5.0	-1.03	-0.42	-0.08	-1.27	0.25
5.5	-1.05	-0.42	-0.03	-1.20	0.30
6.0	-0.98	-0.35	-0.01	-1.18	0.39
6.5	-0.92	-0.24	0.05	-1.06	0.46
7.0	-0.88	-0.15	0.16	-0.99	0.58
7.5	-0.79	-0.12	0.26	-0.80	0.72
8.0	-0.82	-0.16	0.24	-0.83	0.68
8.5	-0.75	-0.10	0.34	-0.72	0.77
9.0	-0.72	-0.11	0.37	-0.66	0.76
9.5	-0.64	-0.11	0.43	-0.57	0.82
10.0	-0.59	-0.04	0.50	-0.50	0.88
10.5	-0.64	-0.22	0.43	-0.54	0.76
11.0	-0.59	-0.24	0.40	-0.57	0.74
11.5	-0.52	-0.32	0.36	-0.51	0.76
12.0	-0.43	-0.25	0.46	-0.39	0.84
12.5	-0.37	-0.24	0.44	-0.35	0.83
13.0	-0.31	-0.21	0.47	-0.24	0.82
13.5	-0.24	-0.28	0.51	-0.06	0.88
14.0	-0.20	-0.37	0.43	-0.04	0.76
14.5	-0.23	-0.29	0.41	-0.03	0.70
15.0	-0.24	-0.30	0.35	0.00	0.66
15.5	-0.21	-0.26	0.34	0.05	0.71
16.0	-0.14	-0.43	0.23	-0.02	0.51
16.5	-0.18	-0.32	0.22	0.01	0.49
17.0	-0.29	-0.32	0.20	-0.02	0.43
17.5	-0.29	-0.21	0.30	0.05	0.51
18.0	-0.25	-0.20	0.33	0.10	0.51
18.5	-0.24	-0.22	0.13	0.07	0.35
19.0	-0.21	-0.14	0.22	0.14	0.22
19.5	-0.08	-0.07	0.18	0.20	0.21
20.0	0.00	0.00	0.00	0.00	0.00

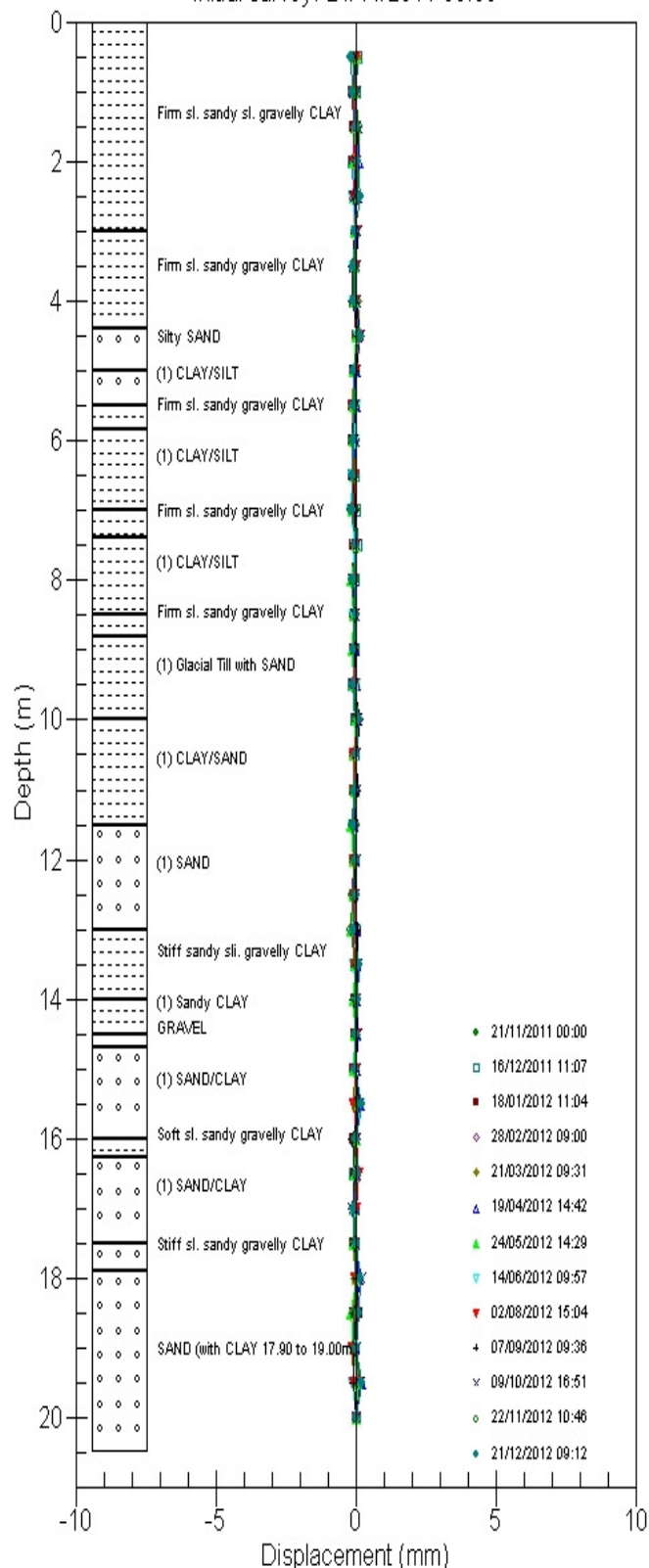
3833:BHC2 - A Axis Incremental

Initial survey: 21/11/2011 00:00



3833:BHC2 - B Axis Incremental

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C2

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)

(1) Description derived from drillers daily reports.

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Incremental Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:07 (mm)	18/01/2012 11:04 (mm)	28/02/2012 09:00 (mm)	21/03/2012 09:31 (mm)	19/04/2012 14:42 (mm)	24/05/2012 14:29 (mm)	14/06/2012 09:57 (mm)
0.5	0.00	0.02	0.08	0.08	0.05	-0.01	0.00	0.02
1.0	0.00	-0.02	0.03	0.01	0.01	0.06	0.03	0.07
1.5	0.00	0.01	0.02	0.03	0.01	0.08	0.02	0.04
2.0	0.00	0.06	0.06	0.08	0.05	0.07	0.08	0.08
2.5	0.00	0.00	0.03	0.04	0.03	0.04	0.02	0.02
3.0	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00
3.5	0.00	0.02	0.04	0.00	0.00	-0.01	0.02	0.00
4.0	0.00	-0.03	0.03	-0.01	0.00	-0.01	0.01	0.01
4.5	0.00	0.03	0.01	0.02	0.04	0.02	0.05	0.06
5.0	0.00	0.01	-0.01	-0.02	-0.04	-0.04	-0.03	-0.02
5.5	0.00	0.02	-0.06	-0.08	-0.06	-0.11	-0.16	-0.16
6.0	0.00	0.05	-0.04	-0.06	-0.06	-0.06	-0.11	-0.11
6.5	0.00	0.01	0.02	0.00	0.01	-0.01	-0.04	-0.01
7.0	0.00	0.05	0.00	0.04	0.02	0.05	-0.01	0.02
7.5	0.00	0.05	0.03	0.01	-0.01	0.01	-0.05	-0.03
8.0	0.00	0.00	-0.05	0.01	-0.02	-0.01	-0.07	-0.04
8.5	0.00	0.08	0.03	0.02	0.00	-0.01	-0.04	0.00
9.0	0.00	0.01	0.07	0.01	-0.01	0.00	-0.06	-0.03
9.5	0.00	0.03	0.02	0.03	0.00	0.00	-0.01	0.00
10.0	0.00	0.05	0.15	0.07	0.06	0.09	0.11	0.09
10.5	0.00	0.01	0.05	0.03	0.01	0.01	0.03	0.02
11.0	0.00	0.02	0.08	-0.01	-0.03	-0.05	-0.01	-0.02
11.5	0.00	0.00	0.09	0.00	-0.01	-0.03	0.00	0.00
12.0	0.00	0.01	0.04	0.00	0.00	-0.04	0.01	0.00
12.5	0.00	0.00	0.01	-0.03	-0.03	-0.04	0.01	-0.02
13.0	0.00	0.00	-0.03	-0.02	0.01	-0.01	0.02	-0.01
13.5	0.00	0.01	0.15	0.01	0.04	0.00	0.02	0.05
14.0	0.00	0.03	0.05	-0.01	0.02	-0.01	0.01	-0.03
14.5	0.00	-0.02	0.05	0.00	0.00	-0.02	0.00	-0.02
15.0	0.00	0.03	0.04	0.02	0.05	0.04	0.03	0.03
15.5	0.00	0.03	0.05	0.01	0.02	0.04	0.01	0.00
16.0	0.00	0.02	0.07	-0.01	-0.02	-0.02	-0.05	-0.02
16.5	0.00	0.00	-0.06	-0.01	-0.02	-0.04	-0.05	0.03
17.0	0.00	-0.05	-0.08	0.00	-0.05	-0.02	-0.08	0.01
17.5	0.00	-0.01	-0.02	0.04	0.01	0.04	-0.01	0.05
18.0	0.00	0.01	-0.03	0.03	-0.02	0.05	-0.02	-0.03
18.5	0.00	0.03	0.02	0.03	-0.03	0.02	-0.02	-0.02
19.0	0.00	0.02	0.07	0.03	-0.02	0.02	-0.01	0.01
19.5	0.00	0.04	-0.08	0.03	0.02	-0.10	0.05	0.25
20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Incremental Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:04 (mm)	07/09/2012 09:36 (mm)	09/10/2012 16:51 (mm)	22/11/2012 10:46 (mm)	21/12/2012 09:12 (mm)
0.5	-0.15	-0.40	-0.30	-0.20	-0.21
1.0	0.08	0.07	0.06	0.08	0.13
1.5	0.04	0.05	0.07	0.05	0.11
2.0	0.05	0.07	0.20	0.08	0.11
2.5	0.00	0.00	0.02	0.04	0.06
3.0	-0.01	-0.01	-0.01	0.00	0.03
3.5	0.00	0.01	0.00	0.01	0.01
4.0	-0.02	0.00	0.03	0.01	0.03
4.5	0.05	0.08	0.08	0.05	0.08
5.0	-0.02	0.02	0.02	-0.01	-0.02
5.5	-0.18	-0.20	-0.22	-0.25	-0.26
6.0	-0.09	-0.08	-0.07	-0.11	-0.12
6.5	-0.02	0.01	0.01	-0.01	-0.03
7.0	0.04	0.07	0.09	0.07	0.06
7.5	0.01	-0.01	0.03	-0.03	-0.02
8.0	-0.02	-0.03	0.00	0.03	-0.05
8.5	0.02	-0.01	-0.01	-0.03	-0.04
9.0	-0.01	-0.03	-0.02	-0.01	-0.04
9.5	0.01	-0.01	0.01	0.05	0.01
10.0	0.08	0.11	0.13	0.26	0.17
10.5	-0.01	0.01	0.02	0.03	0.02
11.0	-0.05	-0.03	-0.03	0.01	-0.01
11.5	-0.01	0.01	0.00	0.04	0.00
12.0	-0.01	0.02	-0.01	0.06	0.00
12.5	-0.02	0.02	-0.02	-0.02	0.00
13.0	0.00	0.02	0.01	0.05	0.00
13.5	0.06	0.06	0.04	0.10	0.02
14.0	-0.07	0.01	0.02	0.01	0.01
14.5	-0.01	0.03	0.03	0.02	0.01
15.0	0.04	0.06	0.05	0.09	0.07
15.5	-0.02	0.04	0.10	0.04	0.05
16.0	-0.03	-0.02	-0.02	-0.04	-0.05
16.5	0.03	0.03	-0.07	-0.07	-0.07
17.0	-0.02	0.00	-0.06	-0.12	-0.09
17.5	0.03	0.03	-0.02	0.01	0.00
18.0	0.00	0.03	0.02	0.04	0.04
18.5	-0.02	0.02	0.04	0.02	0.03
19.0	0.00	-0.01	0.03	0.01	0.03
19.5	0.13	0.08	-0.10	-0.10	-0.13
20.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Incremental Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:07 (mm)	18/01/2012 11:04 (mm)	28/02/2012 09:00 (mm)	21/03/2012 09:31 (mm)	19/04/2012 14:42 (mm)	24/05/2012 14:29 (mm)	14/06/2012 09:57 (mm)
0.5	0.00	0.07	-0.02	-0.07	0.05	0.00	0.03	0.04
1.0	0.00	0.01	-0.13	-0.10	-0.08	-0.07	-0.05	-0.08
1.5	0.00	-0.03	-0.05	-0.08	-0.04	0.08	0.03	0.00
2.0	0.00	-0.10	-0.09	-0.07	-0.02	0.13	-0.06	-0.05
2.5	0.00	-0.06	-0.08	-0.03	0.05	0.06	-0.08	-0.12
3.0	0.00	-0.02	-0.02	-0.04	-0.02	-0.02	-0.05	-0.01
3.5	0.00	-0.05	-0.01	-0.02	-0.05	-0.09	-0.04	-0.05
4.0	0.00	-0.06	-0.07	-0.01	0.08	0.04	-0.03	-0.08
4.5	0.00	0.10	0.03	0.10	0.17	0.08	0.05	0.08
5.0	0.00	-0.02	-0.07	0.00	-0.07	0.00	-0.06	-0.03
5.5	0.00	-0.06	-0.13	-0.05	-0.13	0.02	-0.08	0.01
6.0	0.00	-0.07	-0.10	-0.04	-0.11	-0.04	-0.09	-0.03
6.5	0.00	-0.03	-0.12	-0.08	-0.09	-0.08	-0.09	-0.10
7.0	0.00	0.02	-0.13	-0.12	-0.12	-0.13	-0.10	-0.16
7.5	0.00	0.09	-0.06	-0.02	-0.03	0.04	0.02	-0.02
8.0	0.00	-0.02	-0.12	-0.12	-0.11	-0.07	-0.16	-0.12
8.5	0.00	-0.07	-0.09	-0.05	-0.06	-0.02	-0.09	-0.05
9.0	0.00	-0.04	-0.06	-0.06	-0.04	-0.04	-0.10	-0.07
9.5	0.00	-0.12	-0.05	-0.06	-0.07	0.03	-0.08	0.01
10.0	0.00	-0.04	0.00	0.11	0.00	0.05	0.02	0.05
10.5	0.00	-0.04	-0.07	-0.08	-0.09	-0.09	-0.08	-0.07
11.0	0.00	-0.02	-0.06	0.00	-0.02	-0.01	-0.01	-0.02
11.5	0.00	-0.06	-0.11	-0.06	-0.10	-0.06	-0.17	-0.10
12.0	0.00	-0.03	-0.07	-0.05	-0.05	-0.03	-0.07	0.01
12.5	0.00	-0.07	-0.09	-0.11	-0.08	-0.07	-0.09	-0.07
13.0	0.00	0.00	0.06	-0.03	-0.06	0.04	-0.18	0.01
13.5	0.00	0.03	-0.03	0.05	0.05	0.04	0.00	-0.05
14.0	0.00	-0.01	-0.04	-0.01	-0.02	0.01	-0.06	0.02
14.5	0.00	-0.02	-0.01	-0.01	0.00	0.03	-0.03	0.00
15.0	0.00	-0.01	-0.07	-0.03	-0.01	0.00	-0.07	-0.01
15.5	0.00	0.05	0.07	-0.03	0.08	0.18	0.01	0.16
16.0	0.00	-0.01	-0.09	0.03	-0.04	0.03	0.02	0.02
16.5	0.00	-0.06	-0.04	-0.05	0.01	0.03	0.00	0.09
17.0	0.00	-0.02	-0.03	-0.05	-0.05	-0.02	-0.08	-0.03
17.5	0.00	-0.01	-0.05	-0.06	-0.09	-0.01	-0.08	-0.01
18.0	0.00	0.10	0.08	0.03	-0.04	0.11	0.05	-0.02
18.5	0.00	-0.02	0.13	0.07	-0.08	-0.02	-0.15	-0.03
19.0	0.00	-0.03	-0.03	-0.10	-0.08	-0.01	-0.08	-0.03
19.5	0.00	0.08	0.17	0.11	0.13	0.21	0.07	-0.12
20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

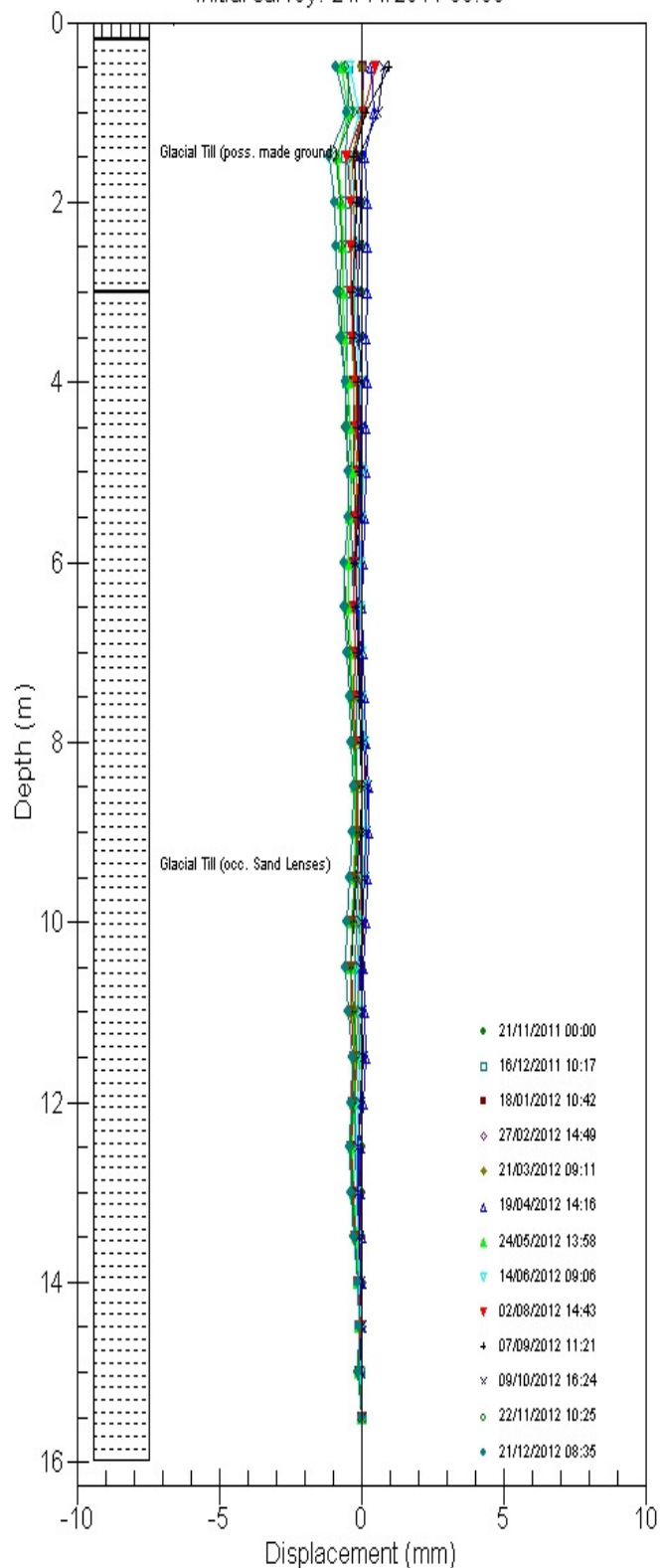
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey 21/11/2011 @ 00:00 (from readings taken on 14/11/2011)
 (1) Description derived from drillers daily reports.

Incremental Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:04 (mm)	07/09/2012 09:36 (mm)	09/10/2012 16:51 (mm)	22/11/2012 10:46 (mm)	21/12/2012 09:12 (mm)
0.5	0.03	-0.09	-0.08	-0.08	-0.15
1.0	-0.09	-0.04	0.00	-0.01	-0.11
1.5	0.01	0.10	0.03	0.11	0.03
2.0	-0.02	0.05	0.01	0.09	0.05
2.5	-0.06	0.07	-0.06	0.05	0.15
3.0	0.00	-0.02	0.05	-0.01	-0.05
3.5	-0.01	-0.10	0.01	-0.02	-0.07
4.0	-0.05	-0.14	0.01	-0.02	-0.07
4.5	0.17	0.13	0.16	0.06	0.16
5.0	0.02	0.00	-0.04	-0.07	-0.05
5.5	-0.06	-0.07	-0.02	-0.02	-0.09
6.0	-0.06	-0.11	-0.07	-0.12	-0.07
6.5	-0.04	-0.09	-0.11	-0.08	-0.13
7.0	-0.09	-0.03	-0.11	-0.18	-0.14
7.5	0.03	0.04	0.02	0.03	0.03
8.0	-0.07	-0.06	-0.10	-0.11	-0.09
8.5	-0.03	0.01	-0.02	-0.07	0.00
9.0	-0.08	0.00	-0.07	-0.08	-0.06
9.5	-0.05	-0.07	-0.07	-0.07	-0.06
10.0	0.05	0.18	0.07	0.04	0.12
10.5	-0.06	0.01	0.03	0.03	0.02
11.0	-0.06	0.09	0.04	-0.06	-0.02
11.5	-0.09	-0.07	-0.09	-0.12	-0.08
12.0	-0.06	0.00	0.02	-0.04	0.02
12.5	-0.07	-0.03	-0.03	-0.11	0.01
13.0	-0.07	0.07	-0.04	-0.18	-0.06
13.5	-0.04	0.09	0.08	-0.02	0.12
14.0	0.03	-0.08	0.03	-0.01	0.07
14.5	0.00	0.01	0.05	-0.04	0.03
15.0	-0.03	-0.04	0.02	-0.05	-0.05
15.5	-0.06	0.18	0.11	0.07	0.20
16.0	0.04	-0.11	0.01	-0.03	0.02
16.5	0.11	0.00	0.03	0.03	0.06
17.0	0.00	-0.11	-0.10	-0.07	-0.08
17.5	-0.04	-0.01	-0.04	-0.06	0.00
18.0	-0.01	0.02	0.20	0.03	0.16
18.5	-0.02	-0.08	-0.09	-0.07	0.13
19.0	-0.13	-0.07	0.04	-0.06	0.01
19.5	-0.08	-0.07	0.18	0.20	0.21
20.0	0.00	0.00	0.00	0.00	0.00

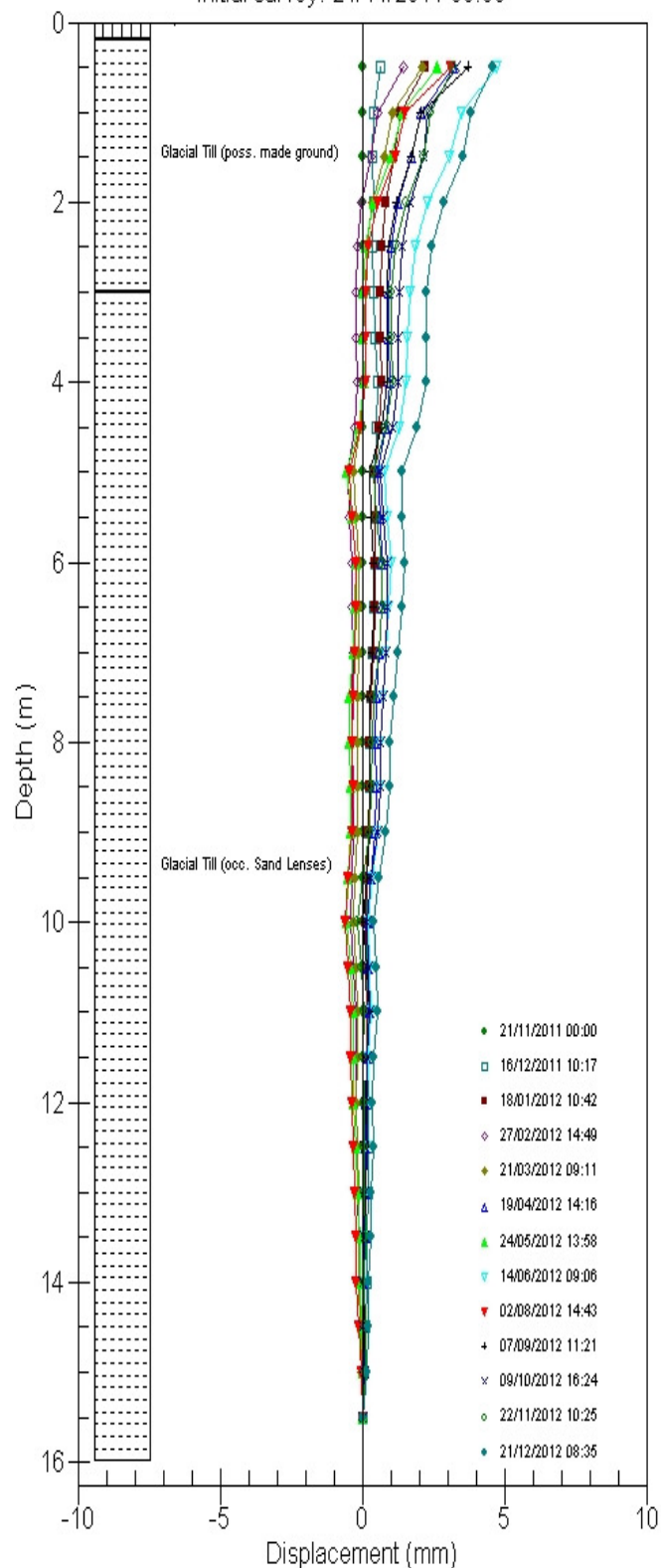
3833:BHC5 - A Axis Cumulative

Initial survey: 21/11/2011 00:00



3833:BHC5 - B Axis Cumulative

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C5

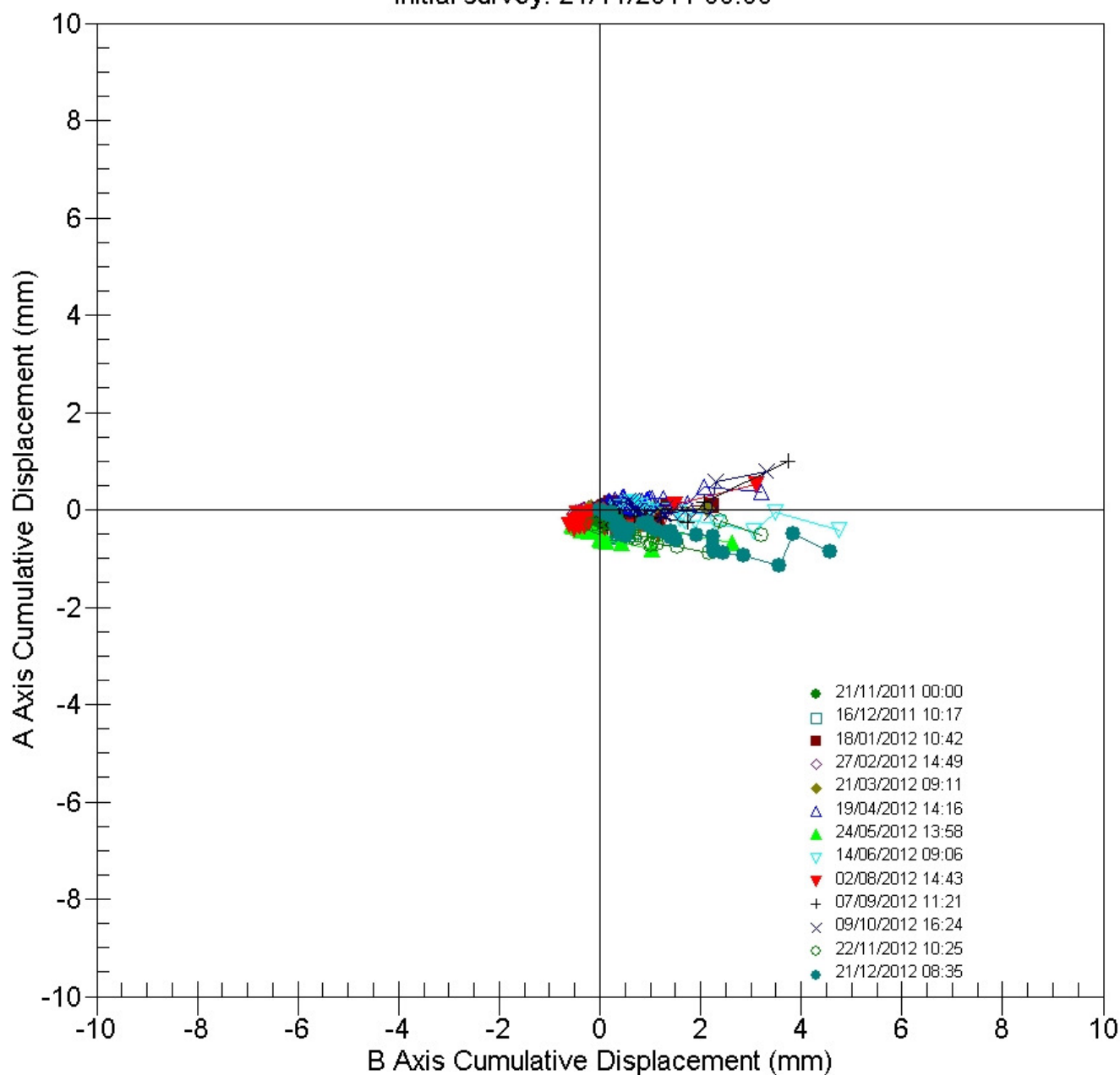
COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

3833:BHC5 - A Axis vs B Axis

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C5

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Cumulative Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 10:17 (mm)	18/01/2012 10:42 (mm)	27/02/2012 14:49 (mm)	21/03/2012 09:11 (mm)	19/04/2012 14:16 (mm)	24/05/2012 13:58 (mm)	14/06/2012 09:06 (mm)
0.5	0.00	-0.46	0.08	0.07	0.01	0.36	-0.69	-0.43
1.0	0.00	-0.47	0.05	0.04	0.05	0.47	-0.45	-0.07
1.5	0.00	-0.55	-0.22	-0.30	-0.31	0.12	-0.82	-0.45
2.0	0.00	-0.54	-0.19	-0.24	-0.26	0.23	-0.69	-0.30
2.5	0.00	-0.54	-0.22	-0.19	-0.27	0.23	-0.66	-0.24
3.0	0.00	-0.51	-0.21	-0.14	-0.27	0.21	-0.63	-0.23
3.5	0.00	-0.50	-0.25	-0.14	-0.31	0.17	-0.60	-0.19
4.0	0.00	-0.49	-0.27	-0.08	-0.24	0.23	-0.45	-0.04
4.5	0.00	-0.42	-0.26	-0.05	-0.21	0.18	-0.41	-0.02
5.0	0.00	-0.38	-0.26	-0.05	-0.18	0.14	-0.33	0.07
5.5	0.00	-0.37	-0.21	-0.06	-0.18	0.10	-0.41	0.00
6.0	0.00	-0.33	-0.21	-0.06	-0.17	0.06	-0.44	-0.05
6.5	0.00	-0.28	-0.13	-0.08	-0.18	0.04	-0.43	-0.04
7.0	0.00	-0.21	-0.04	-0.07	-0.13	0.09	-0.35	0.00
7.5	0.00	-0.19	0.04	-0.05	-0.07	0.13	-0.32	0.05
8.0	0.00	-0.18	0.13	-0.02	0.00	0.19	-0.26	0.10
8.5	0.00	-0.16	0.13	0.01	0.05	0.25	-0.20	0.15
9.0	0.00	-0.13	0.13	0.00	0.04	0.26	-0.22	0.12
9.5	0.00	-0.14	0.09	-0.02	0.00	0.22	-0.25	0.06
10.0	0.00	-0.17	0.07	-0.05	-0.06	0.16	-0.32	-0.04
10.5	0.00	-0.20	0.01	-0.09	-0.13	0.10	-0.37	-0.10
11.0	0.00	-0.19	0.02	-0.05	-0.10	0.12	-0.32	-0.08
11.5	0.00	-0.17	0.02	0.02	-0.06	0.17	-0.22	-0.01
12.0	0.00	-0.21	-0.03	-0.04	-0.13	0.07	-0.26	-0.11
12.5	0.00	-0.20	-0.08	-0.07	-0.19	-0.01	-0.30	-0.18
13.0	0.00	-0.16	-0.07	-0.03	-0.17	-0.01	-0.26	-0.17
13.5	0.00	-0.14	-0.06	0.00	-0.13	0.01	-0.19	-0.12
14.0	0.00	-0.10	-0.03	0.01	-0.09	0.04	-0.13	-0.06
14.5	0.00	-0.07	-0.01	0.02	-0.05	0.04	-0.07	0.01
15.0	0.00	-0.02	-0.01	-0.02	-0.07	-0.01	-0.07	-0.05
15.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Cumulative Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 14:43 (mm)	07/09/2012 11:21 (mm)	09/10/2012 16:24 (mm)	22/11/2012 10:25 (mm)	21/12/2012 08:35 (mm)
0.5	0.51	0.99	0.78	-0.53	-0.87
1.0	0.09	0.16	0.58	-0.25	-0.49
1.5	-0.51	-0.27	-0.07	-0.89	-1.14
2.0	-0.38	-0.16	-0.04	-0.76	-0.94
2.5	-0.35	-0.21	-0.06	-0.71	-0.89
3.0	-0.36	-0.30	-0.12	-0.74	-0.86
3.5	-0.32	-0.28	-0.10	-0.71	-0.75
4.0	-0.15	-0.10	0.03	-0.55	-0.56
4.5	-0.15	-0.13	-0.02	-0.55	-0.52
5.0	-0.09	-0.09	-0.01	-0.47	-0.44
5.5	-0.16	-0.12	-0.03	-0.46	-0.46
6.0	-0.25	-0.24	-0.21	-0.61	-0.61
6.5	-0.27	-0.19	-0.18	-0.54	-0.58
7.0	-0.23	-0.12	-0.08	-0.40	-0.48
7.5	-0.25	-0.09	-0.02	-0.33	-0.42
8.0	-0.20	-0.03	0.10	-0.24	-0.34
8.5	-0.15	0.01	0.19	-0.13	-0.26
9.0	-0.16	-0.04	0.18	-0.14	-0.29
9.5	-0.23	-0.16	0.11	-0.22	-0.39
10.0	-0.32	-0.27	0.02	-0.32	-0.49
10.5	-0.38	-0.34	-0.03	-0.37	-0.54
11.0	-0.34	-0.28	0.02	-0.28	-0.46
11.5	-0.24	-0.17	0.10	-0.17	-0.32
12.0	-0.30	-0.26	-0.02	-0.26	-0.37
12.5	-0.34	-0.36	-0.14	-0.35	-0.42
13.0	-0.28	-0.32	-0.13	-0.29	-0.34
13.5	-0.21	-0.21	-0.10	-0.23	-0.24
14.0	-0.11	-0.13	-0.03	-0.14	-0.14
14.5	-0.04	-0.07	0.00	-0.08	-0.06
15.0	-0.07	-0.08	-0.06	-0.10	-0.10
15.5	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Cumulative Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 10:17 (mm)	18/01/2012 10:42 (mm)	27/02/2012 14:49 (mm)	21/03/2012 09:11 (mm)	19/04/2012 14:16 (mm)	24/05/2012 13:58 (mm)	14/06/2012 09:06 (mm)
0.5	0.00	0.66	2.22	1.45	2.12	3.22	2.64	4.75
1.0	0.00	0.40	1.37	0.52	1.09	2.08	1.40	3.49
1.5	0.00	0.37	1.14	0.30	0.81	1.75	1.03	3.05
2.0	0.00	0.39	0.83	-0.04	0.37	1.27	0.43	2.33
2.5	0.00	0.38	0.68	-0.19	0.17	1.04	0.12	1.90
3.0	0.00	0.40	0.64	-0.21	0.12	0.93	0.02	1.70
3.5	0.00	0.47	0.66	-0.20	0.02	0.93	0.01	1.60
4.0	0.00	0.53	0.69	-0.18	0.08	0.97	0.06	1.57
4.5	0.00	0.51	0.61	-0.29	-0.05	0.83	-0.12	1.30
5.0	0.00	0.45	0.44	-0.49	-0.31	0.52	-0.53	0.80
5.5	0.00	0.46	0.47	-0.43	-0.21	0.62	-0.37	0.90
6.0	0.00	0.46	0.47	-0.35	-0.10	0.70	-0.23	1.01
6.5	0.00	0.41	0.43	-0.33	-0.10	0.67	-0.26	0.94
7.0	0.00	0.36	0.40	-0.33	-0.10	0.61	-0.33	0.83
7.5	0.00	0.29	0.30	-0.37	-0.16	0.52	-0.43	0.72
8.0	0.00	0.26	0.26	-0.37	-0.18	0.47	-0.46	0.66
8.5	0.00	0.24	0.24	-0.33	-0.17	0.48	-0.43	0.63
9.0	0.00	0.22	0.22	-0.31	-0.16	0.45	-0.41	0.56
9.5	0.00	0.17	0.14	-0.37	-0.26	0.30	-0.52	0.36
10.0	0.00	0.14	0.10	-0.40	-0.31	0.20	-0.57	0.21
10.5	0.00	0.17	0.13	-0.30	-0.22	0.23	-0.42	0.27
11.0	0.00	0.22	0.18	-0.20	-0.15	0.26	-0.31	0.32
11.5	0.00	0.21	0.14	-0.22	-0.18	0.18	-0.33	0.22
12.0	0.00	0.19	0.10	-0.23	-0.20	0.12	-0.29	0.17
12.5	0.00	0.20	0.12	-0.17	-0.17	0.13	-0.22	0.18
13.0	0.00	0.20	0.13	-0.16	-0.14	0.11	-0.18	0.14
13.5	0.00	0.18	0.10	-0.13	-0.11	0.10	-0.09	0.13
14.0	0.00	0.15	0.07	-0.14	-0.11	0.04	-0.09	0.06
14.5	0.00	0.12	0.06	-0.09	-0.06	0.03	-0.05	0.06
15.0	0.00	0.10	0.06	-0.02	-0.01	0.05	0.02	0.05
15.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

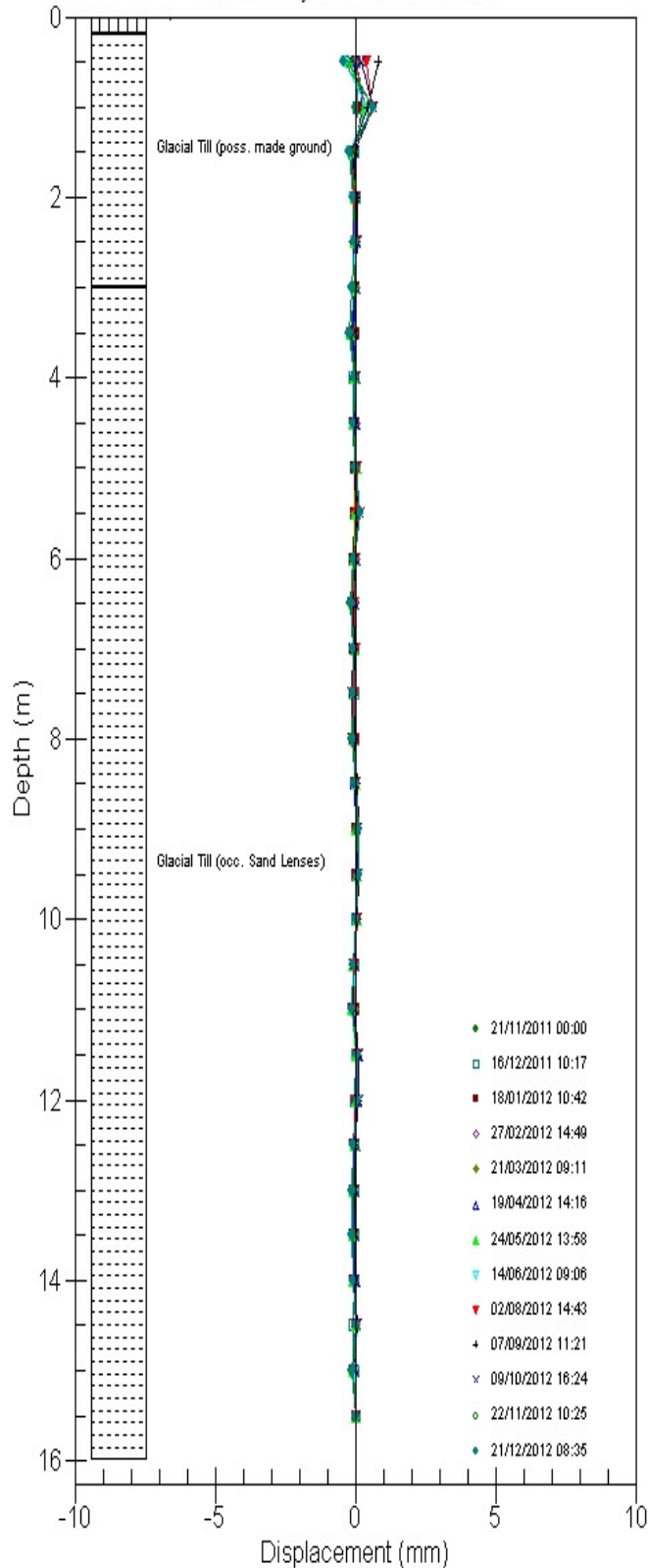
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Cumulative Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 14:43 (mm)	07/09/2012 11:21 (mm)	09/10/2012 16:24 (mm)	22/11/2012 10:25 (mm)	21/12/2012 08:35 (mm)
0.5	3.12	3.74	3.32	3.22	4.58
1.0	1.49	2.07	2.31	2.41	3.85
1.5	1.17	1.75	2.19	2.19	3.57
2.0	0.53	1.21	1.69	1.53	2.86
2.5	0.23	0.94	1.41	1.15	2.44
3.0	0.11	0.87	1.30	1.01	2.27
3.5	0.11	0.88	1.27	1.04	2.25
4.0	0.13	0.89	1.28	1.09	2.26
4.5	-0.07	0.68	1.05	0.84	1.93
5.0	-0.45	0.26	0.65	0.39	1.43
5.5	-0.37	0.29	0.73	0.49	1.41
6.0	-0.20	0.40	0.90	0.71	1.52
6.5	-0.23	0.39	0.90	0.67	1.42
7.0	-0.26	0.35	0.86	0.58	1.28
7.5	-0.32	0.25	0.71	0.43	1.10
8.0	-0.35	0.25	0.65	0.35	0.99
8.5	-0.32	0.27	0.62	0.33	0.96
9.0	-0.34	0.28	0.54	0.26	0.86
9.5	-0.50	0.15	0.32	0.01	0.58
10.0	-0.61	0.04	0.15	-0.15	0.40
10.5	-0.49	0.15	0.23	-0.03	0.50
11.0	-0.40	0.24	0.25	0.07	0.54
11.5	-0.43	0.18	0.14	0.03	0.42
12.0	-0.37	0.16	0.10	0.05	0.38
12.5	-0.30	0.16	0.09	0.07	0.39
13.0	-0.29	0.13	0.06	0.06	0.32
13.5	-0.23	0.13	0.08	0.12	0.33
14.0	-0.20	0.05	0.02	0.09	0.23
14.5	-0.13	0.07	0.04	0.12	0.21
15.0	-0.02	0.05	0.05	0.12	0.16
15.5	0.00	0.00	0.00	0.00	0.00

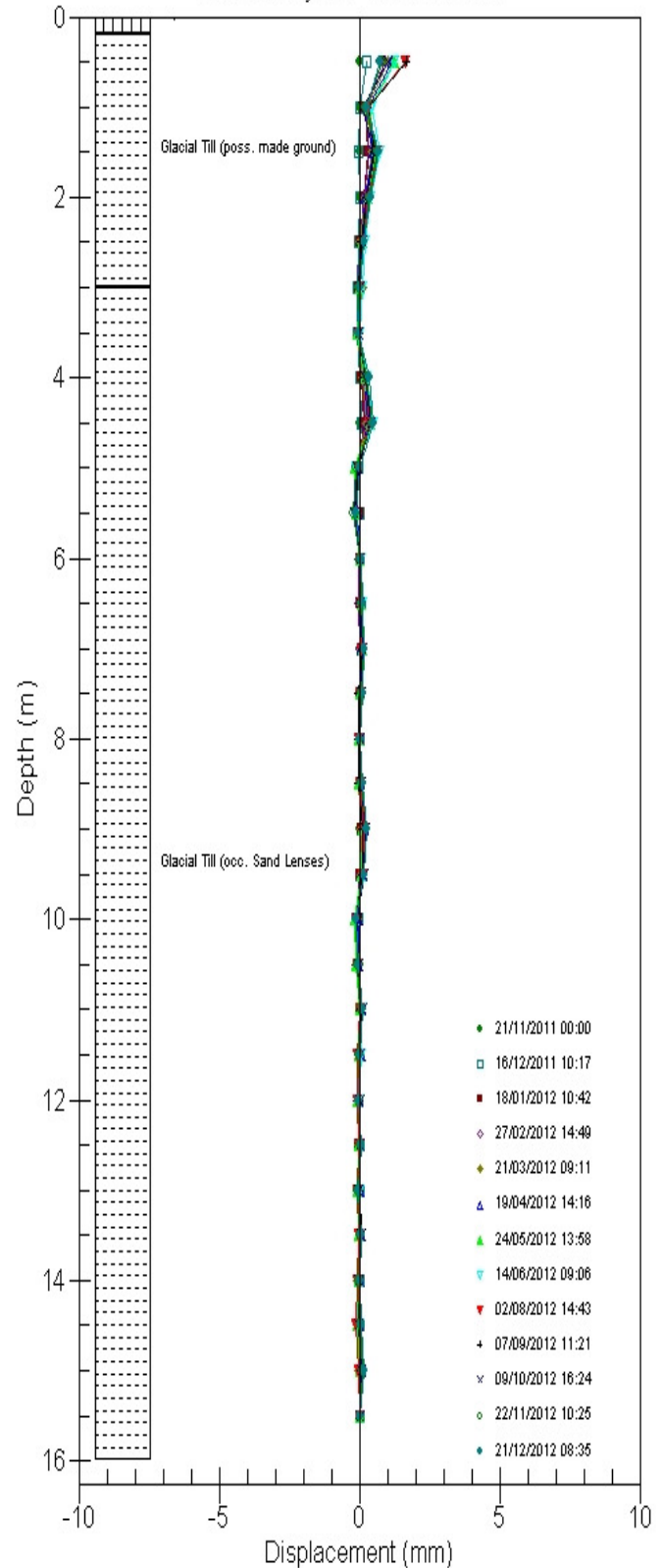
3833:BHC5 - A Axis Incremental

Initial survey: 21/11/2011 00:00



3833:BHC5 - B Axis Incremental

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-C5

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Incremental Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 10:17 (mm)	18/01/2012 10:42 (mm)	27/02/2012 14:49 (mm)	21/03/2012 09:11 (mm)	19/04/2012 14:16 (mm)	24/05/2012 13:58 (mm)	14/06/2012 09:06 (mm)
0.5	0.00	0.01	0.02	0.03	-0.04	-0.11	-0.24	-0.36
1.0	0.00	0.07	0.27	0.34	0.37	0.35	0.37	0.39
1.5	0.00	-0.01	-0.03	-0.06	-0.06	-0.11	-0.13	-0.15
2.0	0.00	0.00	0.02	-0.05	0.01	-0.01	-0.04	-0.07
2.5	0.00	-0.03	0.00	-0.05	0.01	0.02	-0.02	-0.01
3.0	0.00	-0.01	0.04	-0.01	0.04	0.05	-0.04	-0.04
3.5	0.00	-0.01	0.02	-0.06	-0.07	-0.06	-0.15	-0.15
4.0	0.00	-0.07	-0.01	-0.03	-0.03	0.05	-0.05	-0.02
4.5	0.00	-0.04	-0.01	0.00	-0.03	0.04	-0.08	-0.10
5.0	0.00	-0.01	-0.05	0.00	0.00	0.04	0.08	0.07
5.5	0.00	-0.04	-0.01	0.00	-0.01	0.04	0.04	0.05
6.0	0.00	-0.05	-0.08	0.02	0.00	0.01	-0.02	0.00
6.5	0.00	-0.07	-0.09	-0.01	-0.05	-0.05	-0.08	-0.05
7.0	0.00	-0.03	-0.08	-0.02	-0.05	-0.04	-0.04	-0.04
7.5	0.00	-0.01	-0.09	-0.03	-0.07	-0.05	-0.05	-0.05
8.0	0.00	-0.01	0.00	-0.04	-0.05	-0.07	-0.06	-0.05
8.5	0.00	-0.04	0.00	0.01	0.01	-0.01	0.01	0.03
9.0	0.00	0.01	0.04	0.02	0.04	0.04	0.04	0.06
9.5	0.00	0.03	0.03	0.03	0.07	0.06	0.07	0.11
10.0	0.00	0.03	0.06	0.04	0.07	0.07	0.05	0.06
10.5	0.00	0.00	-0.01	-0.03	-0.03	-0.02	-0.05	-0.02
11.0	0.00	-0.02	0.00	-0.08	-0.04	-0.05	-0.10	-0.06
11.5	0.00	0.04	0.06	0.06	0.08	0.10	0.04	0.10
12.0	0.00	0.00	0.04	0.03	0.06	0.08	0.04	0.07
12.5	0.00	-0.04	-0.01	-0.03	-0.02	0.00	-0.04	-0.01
13.0	0.00	-0.03	-0.01	-0.03	-0.04	-0.02	-0.07	-0.05
13.5	0.00	-0.04	-0.03	-0.01	-0.04	-0.03	-0.07	-0.06
14.0	0.00	-0.03	-0.02	-0.01	-0.04	0.00	-0.06	-0.07
14.5	0.00	-0.05	0.00	0.04	0.02	0.05	0.00	0.05
15.0	0.00	-0.02	-0.01	-0.02	-0.07	-0.01	-0.07	-0.05
15.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Incremental Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 14:43 (mm)	07/09/2012 11:21 (mm)	09/10/2012 16:24 (mm)	22/11/2012 10:25 (mm)	21/12/2012 08:35 (mm)
0.5	0.42	0.83	0.20	-0.28	-0.39
1.0	0.60	0.43	0.66	0.65	0.66
1.5	-0.13	-0.11	-0.04	-0.14	-0.20
2.0	-0.03	0.05	0.02	-0.05	-0.05
2.5	0.01	0.09	0.06	0.03	-0.03
3.0	-0.04	-0.03	-0.02	-0.03	-0.11
3.5	-0.17	-0.18	-0.13	-0.16	-0.20
4.0	0.00	0.03	0.05	0.00	-0.04
4.5	-0.06	-0.04	-0.01	-0.09	-0.07
5.0	0.07	0.02	0.02	-0.01	0.01
5.5	0.09	0.12	0.18	0.15	0.16
6.0	0.02	-0.05	-0.03	-0.07	-0.03
6.5	-0.04	-0.07	-0.11	-0.15	-0.11
7.0	0.01	-0.03	-0.06	-0.07	-0.06
7.5	-0.05	-0.06	-0.11	-0.10	-0.08
8.0	-0.06	-0.05	-0.10	-0.11	-0.09
8.5	0.01	0.06	0.01	0.01	0.03
9.0	0.07	0.12	0.08	0.08	0.11
9.5	0.09	0.12	0.09	0.11	0.10
10.0	0.06	0.07	0.05	0.05	0.05
10.5	-0.03	-0.06	-0.05	-0.08	-0.08
11.0	-0.11	-0.12	-0.08	-0.11	-0.14
11.5	0.07	0.09	0.12	0.09	0.05
12.0	0.04	0.11	0.12	0.09	0.05
12.5	-0.06	-0.04	-0.01	-0.05	-0.08
13.0	-0.08	-0.11	-0.04	-0.07	-0.10
13.5	-0.10	-0.09	-0.06	-0.09	-0.10
14.0	-0.07	-0.06	-0.04	-0.06	-0.08
14.5	0.03	0.01	0.06	0.02	0.03
15.0	-0.07	-0.08	-0.06	-0.10	-0.10
15.5	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Incremental Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 10:17 (mm)	18/01/2012 10:42 (mm)	27/02/2012 14:49 (mm)	21/03/2012 09:11 (mm)	19/04/2012 14:16 (mm)	24/05/2012 13:58 (mm)	14/06/2012 09:06 (mm)
0.5	0.00	0.26	0.85	0.93	1.03	1.15	1.24	1.26
1.0	0.00	0.04	0.24	0.23	0.29	0.33	0.37	0.44
1.5	0.00	-0.02	0.30	0.34	0.44	0.48	0.61	0.73
2.0	0.00	0.01	0.15	0.15	0.20	0.24	0.31	0.43
2.5	0.00	-0.02	0.05	0.02	0.05	0.10	0.11	0.21
3.0	0.00	-0.07	-0.02	-0.01	0.11	0.00	0.01	0.10
3.5	0.00	-0.06	-0.03	-0.02	-0.07	-0.04	-0.05	0.03
4.0	0.00	0.02	0.08	0.11	0.13	0.15	0.18	0.27
4.5	0.00	0.06	0.17	0.20	0.27	0.30	0.41	0.50
5.0	0.00	-0.01	-0.03	-0.06	-0.10	-0.10	-0.16	-0.10
5.5	0.00	0.00	0.00	-0.08	-0.12	-0.09	-0.14	-0.11
6.0	0.00	0.04	0.04	-0.02	0.00	0.03	0.03	0.07
6.5	0.00	0.05	0.04	0.00	0.00	0.06	0.07	0.10
7.0	0.00	0.07	0.10	0.04	0.06	0.10	0.10	0.12
7.5	0.00	0.03	0.04	0.00	0.02	0.05	0.03	0.06
8.0	0.00	0.02	0.01	-0.04	-0.01	-0.01	-0.04	0.03
8.5	0.00	0.01	0.02	-0.02	0.00	0.03	-0.01	0.07
9.0	0.00	0.05	0.07	0.06	0.10	0.15	0.11	0.20
9.5	0.00	0.03	0.05	0.03	0.05	0.11	0.05	0.15
10.0	0.00	-0.03	-0.04	-0.10	-0.08	-0.03	-0.15	-0.05
10.5	0.00	-0.05	-0.05	-0.10	-0.08	-0.04	-0.12	-0.05
11.0	0.00	0.01	0.04	0.02	0.04	0.09	0.03	0.10
11.5	0.00	0.01	0.04	0.01	0.02	0.06	-0.04	0.05
12.0	0.00	-0.01	-0.01	-0.06	-0.03	-0.01	-0.07	0.00
12.5	0.00	0.00	-0.01	-0.01	-0.02	0.01	-0.04	0.04
13.0	0.00	0.02	0.02	-0.02	-0.03	0.01	-0.08	0.01
13.5	0.00	0.04	0.03	0.00	0.00	0.06	0.00	0.07
14.0	0.00	0.03	0.01	-0.05	-0.06	0.00	-0.04	-0.01
14.5	0.00	0.02	0.00	-0.07	-0.05	-0.02	-0.07	0.01
15.0	0.00	0.10	0.06	-0.02	-0.01	0.05	0.02	0.05
15.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

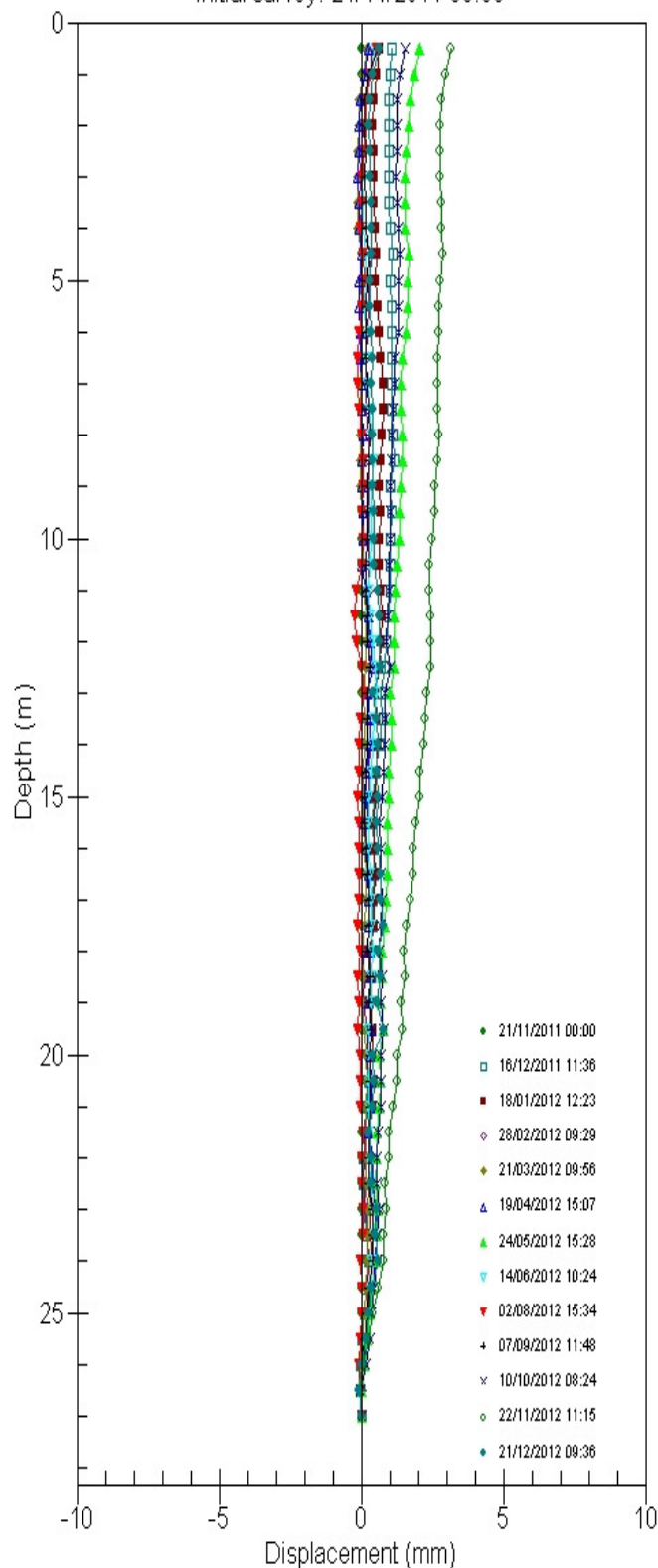
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-C5
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from initial readings taken 14/11/2011).

Incremental Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 14:43 (mm)	07/09/2012 11:21 (mm)	09/10/2012 16:24 (mm)	22/11/2012 10:25 (mm)	21/12/2012 08:35 (mm)
0.5	1.63	1.67	1.01	0.81	0.73
1.0	0.32	0.32	0.12	0.23	0.28
1.5	0.64	0.55	0.50	0.66	0.71
2.0	0.31	0.27	0.28	0.38	0.42
2.5	0.12	0.07	0.11	0.15	0.17
3.0	0.00	-0.01	0.03	-0.04	0.02
3.5	-0.02	-0.01	-0.01	-0.04	-0.01
4.0	0.20	0.21	0.23	0.24	0.33
4.5	0.37	0.43	0.41	0.45	0.50
5.0	-0.07	-0.04	-0.09	-0.11	0.01
5.5	-0.18	-0.11	-0.17	-0.22	-0.11
6.0	0.03	0.01	0.00	0.03	0.09
6.5	0.03	0.04	0.05	0.09	0.14
7.0	0.06	0.11	0.14	0.16	0.18
7.5	0.03	0.00	0.07	0.08	0.11
8.0	-0.03	-0.01	0.03	0.02	0.03
8.5	0.02	-0.01	0.08	0.07	0.11
9.0	0.17	0.14	0.23	0.25	0.28
9.5	0.11	0.11	0.17	0.15	0.18
10.0	-0.12	-0.11	-0.08	-0.12	-0.11
10.5	-0.09	-0.09	-0.02	-0.09	-0.04
11.0	0.02	0.06	0.11	0.03	0.12
11.5	-0.05	0.02	0.04	-0.01	0.03
12.0	-0.07	0.00	0.01	-0.02	-0.01
12.5	-0.01	0.02	0.03	0.00	0.07
13.0	-0.06	0.00	-0.02	-0.06	-0.01
13.5	-0.03	0.08	0.07	0.04	0.10
14.0	-0.07	-0.02	-0.03	-0.03	0.02
14.5	-0.11	0.01	-0.01	0.00	0.06
15.0	-0.02	0.05	0.05	0.12	0.16
15.5	0.00	0.00	0.00	0.00	0.00

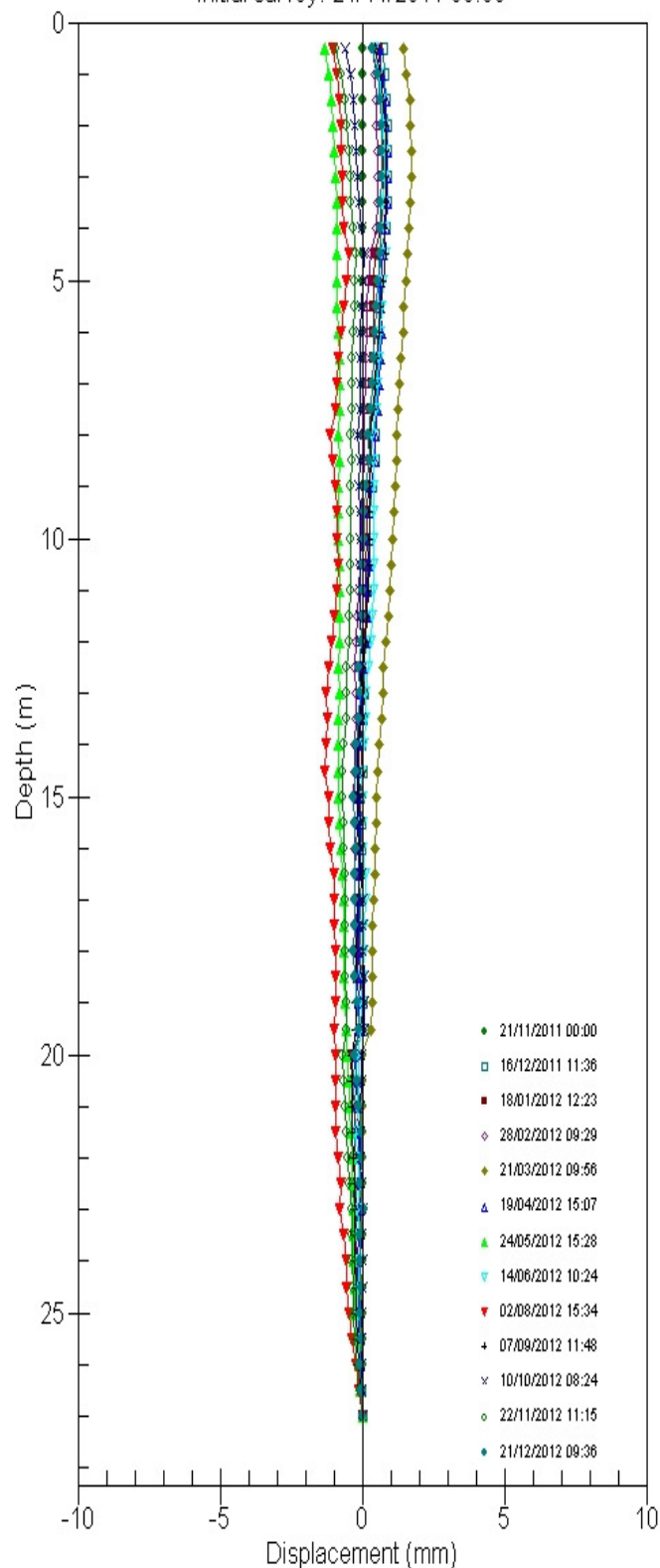
3833:BHA2 - A Axis Cumulative

Initial survey: 21/11/2011 00:00



3833:BHA2 - B Axis Cumulative

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-A2

COMPANY: Allied Exploration & Geotechnics Limited

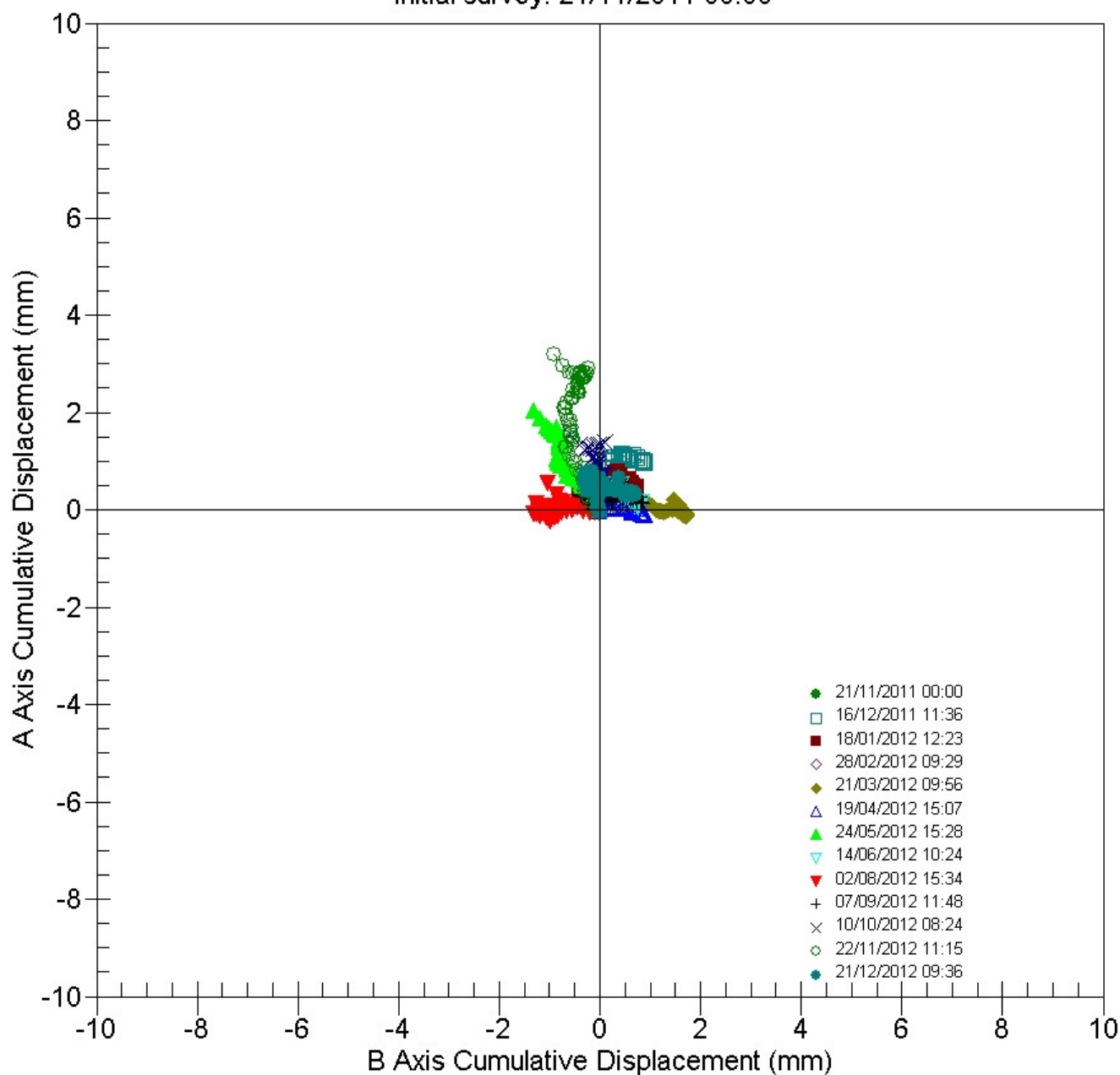
CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

(1) Pre-existing inclinometer borehole installed by others.

3833:BHA2 - A Axis vs B Axis

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-A2

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

(1) Pre-existing inclinometer borehole installed by others.

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Cumulative Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:36 (mm)	18/01/2012 12:23 (mm)	28/02/2012 09:29 (mm)	21/03/2012 09:56 (mm)	19/04/2012 15:07 (mm)	24/05/2012 15:28 (mm)	14/06/2012 10:24 (mm)
0.5	0.00	1.07	0.64	0.42	0.20	0.27	2.05	0.52
1.0	0.00	1.02	0.56	0.32	0.10	0.11	1.88	0.30
1.5	0.00	0.96	0.45	0.16	-0.06	-0.04	1.73	0.16
2.0	0.00	0.96	0.42	0.09	-0.09	-0.08	1.67	0.15
2.5	0.00	0.97	0.46	0.03	-0.10	-0.09	1.62	0.15
3.0	0.00	0.97	0.47	-0.02	-0.14	-0.11	1.56	0.11
3.5	0.00	0.99	0.43	0.01	-0.13	-0.10	1.56	0.10
4.0	0.00	1.02	0.50	0.04	-0.12	-0.08	1.57	0.06
4.5	0.00	1.13	0.53	0.34	0.01	0.03	1.71	0.15
5.0	0.00	1.02	0.51	0.28	-0.02	-0.06	1.66	0.16
5.5	0.00	1.05	0.61	0.27	0.01	-0.06	1.63	0.14
6.0	0.00	1.06	0.63	0.23	0.02	-0.02	1.58	0.18
6.5	0.00	1.05	0.71	0.18	-0.01	-0.01	1.47	0.19
7.0	0.00	1.06	0.78	0.17	-0.03	0.03	1.43	0.23
7.5	0.00	1.09	0.77	0.19	-0.04	0.04	1.40	0.30
8.0	0.00	1.12	0.73	0.24	-0.03	0.07	1.44	0.37
8.5	0.00	1.14	0.70	0.28	-0.03	0.03	1.44	0.43
9.0	0.00	1.04	0.65	0.27	-0.02	0.04	1.40	0.38
9.5	0.00	1.08	0.68	0.27	0.00	0.07	1.37	0.35
10.0	0.00	1.02	0.65	0.28	0.06	0.05	1.34	0.35
10.5	0.00	1.00	0.63	0.24	0.07	0.04	1.28	0.33
11.0	0.00	1.03	0.70	0.24	0.12	0.19	1.22	0.29
11.5	0.00	0.98	0.71	0.25	0.15	0.28	1.19	0.30
12.0	0.00	0.87	0.71	0.26	0.17	0.33	1.16	0.39
12.5	0.00	0.83	0.66	0.30	0.18	0.39	1.17	0.52
13.0	0.00	0.69	0.50	0.21	0.08	0.22	1.04	0.53
13.5	0.00	0.71	0.57	0.31	0.13	0.31	1.08	0.45
14.0	0.00	0.63	0.59	0.32	0.11	0.30	1.05	0.40
14.5	0.00	0.50	0.49	0.26	0.06	0.17	0.99	0.33
15.0	0.00	0.46	0.50	0.24	0.09	0.15	0.97	0.26
15.5	0.00	0.39	0.46	0.18	0.10	0.13	0.93	0.28
16.0	0.00	0.44	0.47	0.16	0.14	0.17	0.91	0.28
16.5	0.00	0.44	0.50	0.16	0.17	0.24	0.92	0.31
17.0	0.00	0.39	0.43	0.14	0.15	0.27	0.87	0.35
17.5	0.00	0.38	0.45	0.11	0.12	0.28	0.84	0.34
18.0	0.00	0.29	0.29	0.03	0.03	0.20	0.71	0.39
18.5	0.00	0.36	0.38	0.12	0.05	0.32	0.75	0.34
19.0	0.00	0.27	0.30	0.09	0.02	0.25	0.71	0.34
19.5	0.00	0.35	0.42	0.20	0.11	0.35	0.80	0.27
20.0	0.00	0.29	0.42	0.21	0.16	0.31	0.65	0.32
20.5	0.00	0.25	0.44	0.22	0.20	0.36	0.67	0.27
21.0	0.00	0.19	0.42	0.17	0.19	0.34	0.64	0.25
21.5	0.00	0.14	0.25	0.10	0.16	0.27	0.55	0.28
22.0	0.00	0.08	0.29	0.10	0.17	0.38	0.54	0.27
22.5	0.00	0.07	0.28	0.08	0.15	0.40	0.49	0.33
23.0	0.00	0.12	0.31	0.17	0.22	0.51	0.58	0.41
23.5	0.00	0.18	0.32	0.22	0.21	0.53	0.55	0.45
24.0	0.00	0.24	0.40	0.26	0.20	0.52	0.53	0.33
24.5	0.00	0.15	0.30	0.23	0.15	0.39	0.41	0.33
25.0	0.00	0.12	0.26	0.23	0.10	0.33	0.33	0.27
25.5	0.00	0.04	0.14	0.18	0.03	0.20	0.21	0.13
26.0	0.00	-0.03	0.07	0.09	-0.03	0.06	0.10	0.03
26.5	0.00	-0.03	-0.01	0.00	-0.06	-0.02	0.01	-0.01
27.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Cumulative Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:34 (mm)	07/09/2012 11:48 (mm)	10/10/2012 08:24 (mm)	22/11/2012 11:15 (mm)	21/12/2012 09:36 (mm)
0.5	0.56	0.58	1.54	3.19	0.65
1.0	0.31	0.24	1.33	2.96	0.39
1.5	0.17	0.13	1.24	2.83	0.30
2.0	0.14	0.13	1.25	2.80	0.29
2.5	0.10	0.14	1.25	2.77	0.31
3.0	0.03	0.14	1.23	2.76	0.33
3.5	0.02	0.16	1.28	2.83	0.37
4.0	-0.02	0.15	1.29	2.83	0.37
4.5	0.07	0.27	1.37	2.90	0.36
5.0	0.11	0.23	1.33	2.80	0.29
5.5	0.04	0.19	1.32	2.75	0.30
6.0	-0.06	0.19	1.30	2.73	0.36
6.5	-0.14	0.18	1.15	2.68	0.39
7.0	-0.14	0.20	1.16	2.70	0.38
7.5	-0.05	0.25	1.13	2.71	0.41
8.0	0.02	0.30	1.08	2.73	0.43
8.5	0.09	0.28	1.05	2.70	0.42
9.0	0.06	0.22	1.00	2.62	0.42
9.5	0.02	0.20	1.00	2.58	0.46
10.0	0.06	0.20	1.01	2.49	0.46
10.5	0.01	0.16	0.97	2.41	0.47
11.0	-0.16	0.17	0.97	2.41	0.58
11.5	-0.23	0.20	0.95	2.43	0.65
12.0	-0.16	0.24	0.90	2.43	0.66
12.5	0.01	0.33	1.01	2.47	0.69
13.0	0.14	0.22	0.85	2.30	0.42
13.5	-0.02	0.23	0.85	2.27	0.56
14.0	-0.08	0.21	0.82	2.20	0.58
14.5	-0.07	0.15	0.77	2.10	0.53
15.0	-0.14	0.12	0.73	2.09	0.59
15.5	-0.08	0.11	0.66	1.93	0.56
16.0	-0.07	0.15	0.70	1.84	0.59
16.5	-0.09	0.20	0.70	1.84	0.69
17.0	-0.08	0.24	0.71	1.74	0.71
17.5	-0.12	0.28	0.70	1.62	0.77
18.0	-0.05	0.23	0.62	1.48	0.58
18.5	-0.10	0.33	0.72	1.54	0.70
19.0	-0.05	0.27	0.69	1.40	0.56
19.5	-0.12	0.35	0.79	1.46	0.78
20.0	-0.03	0.29	0.68	1.28	0.40
20.5	-0.05	0.31	0.70	1.27	0.45
21.0	-0.01	0.31	0.67	1.12	0.41
21.5	0.06	0.25	0.58	0.99	0.26
22.0	0.01	0.27	0.56	0.96	0.37
22.5	0.02	0.25	0.52	0.82	0.36
23.0	0.08	0.40	0.62	0.86	0.54
23.5	0.08	0.40	0.56	0.77	0.51
24.0	-0.01	0.40	0.56	0.76	0.58
24.5	0.03	0.28	0.47	0.59	0.35
25.0	0.04	0.22	0.37	0.40	0.25
25.5	-0.02	0.12	0.30	0.25	0.16
26.0	-0.05	0.02	0.18	0.08	0.04
26.5	-0.05	-0.04	-0.05	-0.03	-0.06
27.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Cumulative Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:36 (mm)	18/01/2012 12:23 (mm)	28/02/2012 09:29 (mm)	21/03/2012 09:56 (mm)	19/04/2012 15:07 (mm)	24/05/2012 15:28 (mm)	14/06/2012 10:24 (mm)
0.5	0.00	0.74	0.59	0.39	1.48	0.58	-1.30	0.44
1.0	0.00	0.79	0.63	0.43	1.57	0.69	-1.18	0.59
1.5	0.00	0.86	0.74	0.52	1.68	0.82	-1.06	0.71
2.0	0.00	0.88	0.75	0.52	1.71	0.86	-1.01	0.75
2.5	0.00	0.89	0.74	0.53	1.72	0.88	-0.96	0.77
3.0	0.00	0.89	0.75	0.53	1.72	0.89	-0.91	0.78
3.5	0.00	0.88	0.72	0.53	1.70	0.87	-0.89	0.76
4.0	0.00	0.84	0.66	0.50	1.65	0.82	-0.87	0.77
4.5	0.00	0.65	0.47	0.32	1.62	0.73	-0.86	0.83
5.0	0.00	0.61	0.42	0.23	1.54	0.67	-0.89	0.76
5.5	0.00	0.59	0.42	0.18	1.45	0.64	-0.88	0.69
6.0	0.00	0.58	0.43	0.17	1.43	0.67	-0.81	0.65
6.5	0.00	0.55	0.40	0.14	1.37	0.64	-0.79	0.59
7.0	0.00	0.52	0.35	0.10	1.31	0.59	-0.78	0.54
7.5	0.00	0.48	0.32	0.08	1.26	0.54	-0.77	0.50
8.0	0.00	0.47	0.32	0.05	1.20	0.47	-0.82	0.38
8.5	0.00	0.43	0.30	0.08	1.21	0.46	-0.77	0.39
9.0	0.00	0.38	0.23	0.02	1.17	0.32	-0.81	0.41
9.5	0.00	0.28	0.15	-0.02	1.12	0.27	-0.82	0.42
10.0	0.00	0.25	0.16	-0.05	1.07	0.25	-0.82	0.39
10.5	0.00	0.19	0.13	-0.09	1.03	0.23	-0.80	0.42
11.0	0.00	0.16	0.12	-0.14	0.97	0.18	-0.79	0.39
11.5	0.00	0.13	0.10	-0.17	0.91	0.16	-0.78	0.35
12.0	0.00	0.10	0.07	-0.20	0.84	0.10	-0.78	0.30
12.5	0.00	0.06	0.03	-0.25	0.75	0.01	-0.82	0.22
13.0	0.00	0.08	0.06	-0.22	0.72	0.00	-0.80	0.13
13.5	0.00	0.04	0.02	-0.24	0.68	-0.05	-0.81	0.13
14.0	0.00	0.00	-0.04	-0.27	0.61	-0.11	-0.85	0.05
14.5	0.00	0.00	-0.02	-0.28	0.55	-0.11	-0.84	0.00
15.0	0.00	-0.05	-0.08	-0.29	0.52	-0.15	-0.83	0.04
15.5	0.00	-0.02	-0.07	-0.29	0.49	-0.14	-0.79	0.02
16.0	0.00	-0.02	-0.05	-0.28	0.47	-0.12	-0.74	0.04
16.5	0.00	-0.11	-0.12	-0.27	0.46	-0.12	-0.69	0.13
17.0	0.00	-0.09	-0.13	-0.25	0.43	-0.12	-0.67	0.10
17.5	0.00	-0.07	-0.13	-0.23	0.38	-0.14	-0.65	0.07
18.0	0.00	-0.09	-0.14	-0.22	0.35	-0.17	-0.65	0.08
18.5	0.00	-0.03	-0.09	-0.18	0.34	-0.15	-0.63	0.00
19.0	0.00	0.03	-0.04	-0.12	0.34	-0.12	-0.58	-0.03
19.5	0.00	0.06	-0.01	-0.09	0.31	-0.11	-0.55	-0.09
20.0	0.00	-0.36	-0.40	-0.37	0.00	-0.27	-0.54	-0.11
20.5	0.00	-0.31	-0.34	-0.35	-0.02	-0.22	-0.47	-0.13
21.0	0.00	-0.28	-0.29	-0.35	-0.03	-0.18	-0.43	-0.17
21.5	0.00	-0.24	-0.22	-0.34	-0.03	-0.13	-0.38	-0.22
22.0	0.00	-0.25	-0.24	-0.34	-0.03	-0.12	-0.35	-0.15
22.5	0.00	-0.27	-0.28	-0.34	-0.05	-0.12	-0.34	-0.09
23.0	0.00	-0.17	-0.20	-0.26	-0.04	-0.07	-0.29	-0.15
23.5	0.00	-0.23	-0.26	-0.23	-0.08	-0.13	-0.32	-0.09
24.0	0.00	-0.20	-0.23	-0.17	-0.09	-0.15	-0.31	-0.09
24.5	0.00	-0.14	-0.16	-0.13	-0.09	-0.15	-0.28	-0.16
25.0	0.00	-0.13	-0.14	-0.11	-0.09	-0.17	-0.24	-0.18
25.5	0.00	-0.09	-0.11	-0.09	-0.08	-0.14	-0.19	-0.16
26.0	0.00	-0.05	-0.08	-0.06	-0.05	-0.09	-0.14	-0.09
26.5	0.00	-0.02	-0.03	-0.03	-0.03	-0.05	-0.07	-0.05
27.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

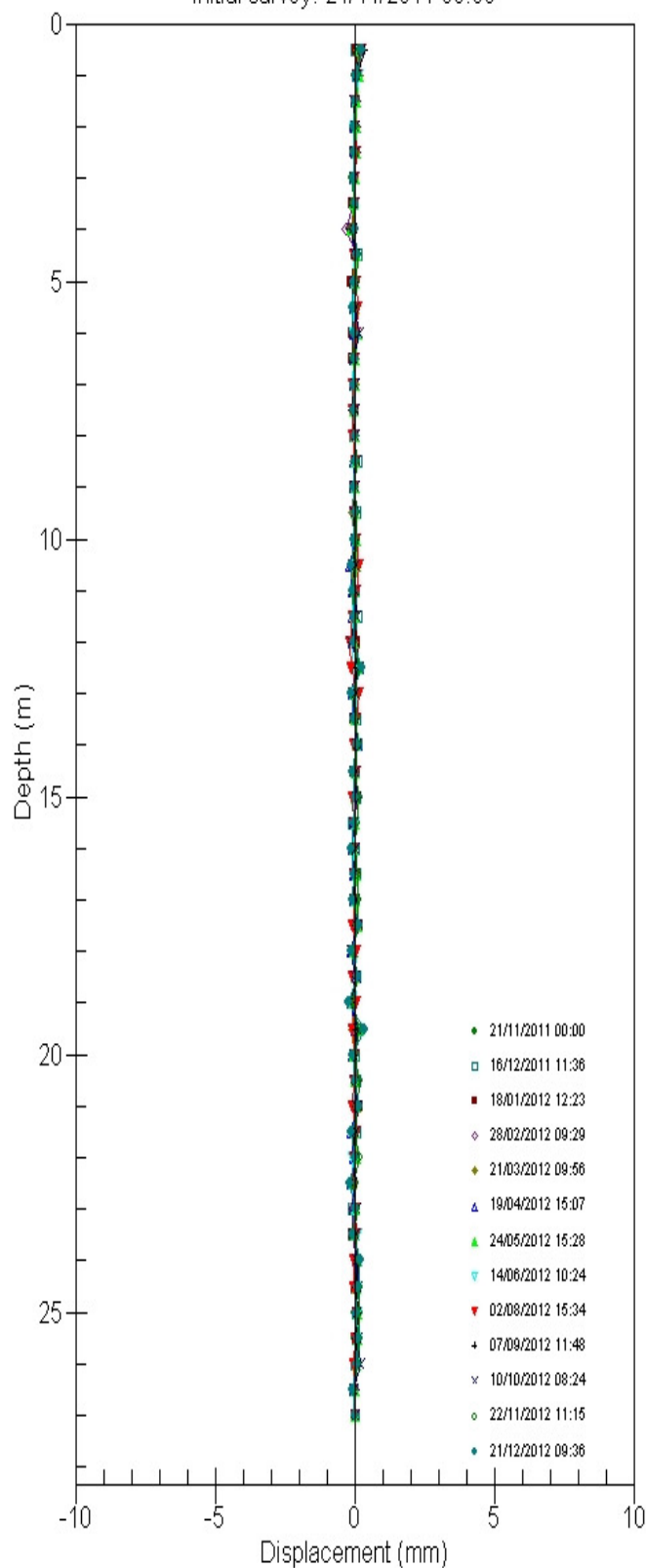
PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Cumulative Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:34 (mm)	07/09/2012 11:48 (mm)	10/10/2012 08:24 (mm)	22/11/2012 11:15 (mm)	21/12/2012 09:36 (mm)
0.5	-1.02	0.45	-0.57	-0.91	0.37
1.0	-0.87	0.64	-0.40	-0.73	0.53
1.5	-0.80	0.74	-0.31	-0.60	0.65
2.0	-0.74	0.82	-0.25	-0.53	0.67
2.5	-0.72	0.84	-0.20	-0.46	0.70
3.0	-0.69	0.85	-0.15	-0.41	0.69
3.5	-0.68	0.82	-0.10	-0.38	0.66
4.0	-0.65	0.81	-0.04	-0.31	0.66
4.5	-0.44	0.82	0.09	-0.21	0.66
5.0	-0.54	0.72	0.02	-0.26	0.56
5.5	-0.64	0.65	-0.03	-0.28	0.51
6.0	-0.75	0.59	-0.06	-0.30	0.46
6.5	-0.83	0.52	-0.08	-0.34	0.39
7.0	-0.89	0.47	-0.08	-0.35	0.34
7.5	-0.95	0.41	-0.08	-0.36	0.29
8.0	-1.13	0.27	-0.15	-0.42	0.22
8.5	-1.03	0.29	-0.08	-0.36	0.26
9.0	-0.95	0.26	-0.10	-0.42	0.14
9.5	-0.87	0.26	-0.09	-0.43	0.09
10.0	-0.90	0.25	-0.09	-0.43	0.07
10.5	-0.86	0.26	-0.06	-0.40	0.05
11.0	-0.90	0.22	-0.06	-0.43	0.02
11.5	-0.98	0.18	-0.05	-0.45	0.00
12.0	-1.06	0.12	-0.03	-0.46	-0.02
12.5	-1.15	0.01	-0.08	-0.54	-0.11
13.0	-1.27	-0.06	-0.06	-0.54	-0.07
13.5	-1.21	-0.06	-0.04	-0.56	-0.12
14.0	-1.26	-0.15	-0.10	-0.66	-0.21
14.5	-1.31	-0.18	-0.11	-0.69	-0.23
15.0	-1.19	-0.16	-0.11	-0.71	-0.31
15.5	-1.18	-0.16	-0.09	-0.66	-0.27
16.0	-1.14	-0.14	-0.05	-0.63	-0.24
16.5	-0.99	-0.10	0.00	-0.59	-0.27
17.0	-0.99	-0.15	0.01	-0.59	-0.27
17.5	-0.97	-0.17	0.02	-0.59	-0.28
18.0	-0.91	-0.20	0.03	-0.59	-0.30
18.5	-0.95	-0.22	0.07	-0.58	-0.25
19.0	-0.92	-0.20	0.10	-0.54	-0.19
19.5	-0.98	-0.22	0.06	-0.54	-0.14
20.0	-0.93	-0.38	-0.03	-0.69	-0.24
20.5	-0.91	-0.37	-0.04	-0.65	-0.18
21.0	-0.91	-0.35	-0.06	-0.61	-0.11
21.5	-0.94	-0.34	-0.07	-0.54	-0.02
22.0	-0.84	-0.31	-0.06	-0.48	-0.02
22.5	-0.73	-0.28	-0.04	-0.44	-0.06
23.0	-0.78	-0.28	0.01	-0.36	0.07
23.5	-0.64	-0.26	-0.01	-0.38	-0.07
24.0	-0.55	-0.24	0.00	-0.38	-0.07
24.5	-0.52	-0.23	0.01	-0.33	-0.04
25.0	-0.45	-0.22	-0.03	-0.31	-0.05
25.5	-0.34	-0.17	-0.03	-0.24	-0.05
26.0	-0.21	-0.11	-0.02	-0.16	-0.06
26.5	-0.10	-0.04	-0.01	-0.06	-0.01
27.0	0.00	0.00	0.00	0.00	0.00

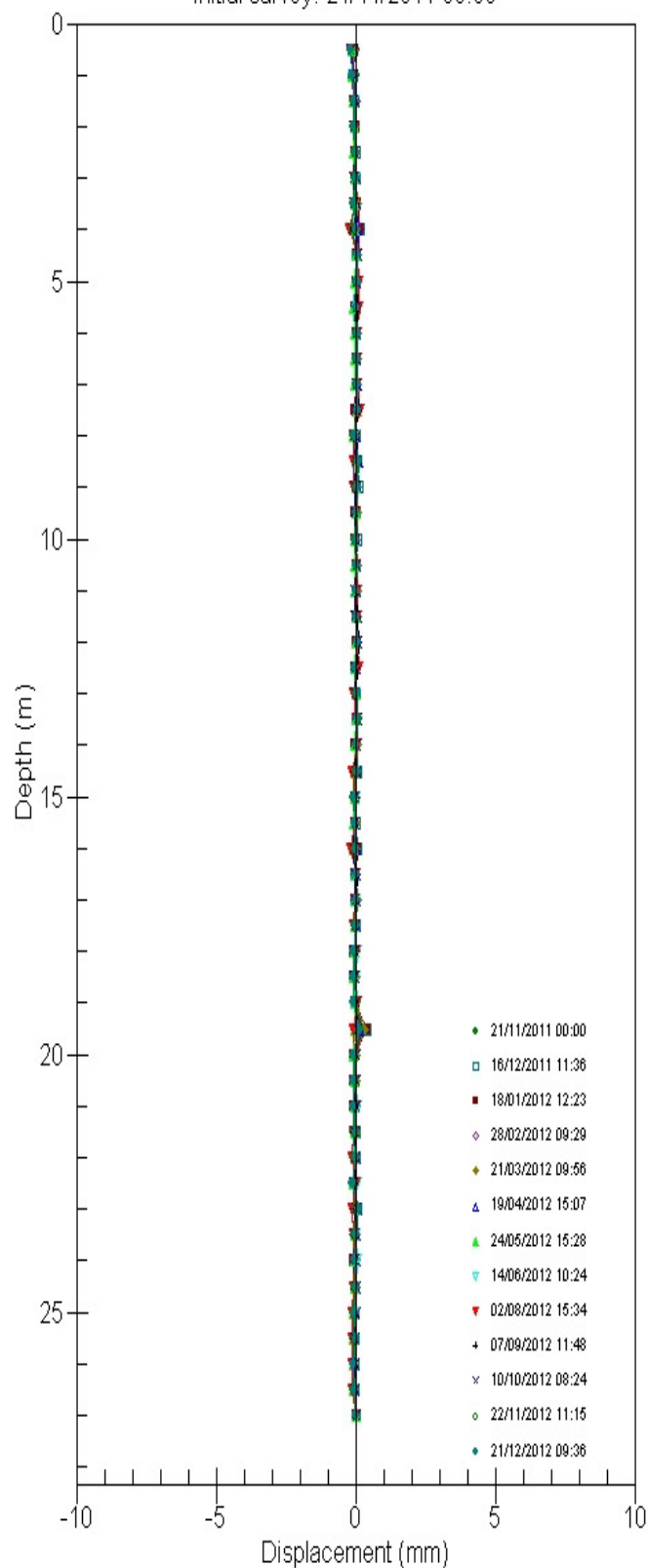
3833:BHA2 - A Axis Incremental

Initial survey: 21/11/2011 00:00



3833:BHA2 - B Axis Incremental

Initial survey: 21/11/2011 00:00



PROJECT: 3833

SITE: Filey Flat Cliffs: Ground Investigation

INSTALLATION: BH-A2

COMPANY: Allied Exploration & Geotechnics Limited

CLIENT: Scarborough Borough Council

NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)

(1) Pre-existing inclinometer borehole installed by others.

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Incremental Deflection Data in A Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:36 (mm)	18/01/2012 12:23 (mm)	28/02/2012 09:29 (mm)	21/03/2012 09:56 (mm)	19/04/2012 15:07 (mm)	24/05/2012 15:28 (mm)	14/06/2012 10:24 (mm)
0.5	0.00	0.05	0.08	0.10	0.11	0.16	0.17	0.22
1.0	0.00	0.06	0.11	0.17	0.15	0.16	0.16	0.15
1.5	0.00	0.00	0.03	0.07	0.03	0.03	0.06	0.01
2.0	0.00	-0.01	-0.04	0.06	0.02	0.02	0.06	0.00
2.5	0.00	0.00	-0.01	0.05	0.04	0.01	0.05	0.04
3.0	0.00	-0.03	0.03	-0.03	-0.01	-0.01	0.00	0.01
3.5	0.00	-0.03	-0.07	-0.03	-0.02	-0.02	-0.01	0.03
4.0	0.00	-0.11	-0.03	-0.30	-0.13	-0.11	-0.14	-0.09
4.5	0.00	0.11	0.03	0.07	0.04	0.09	0.05	-0.01
5.0	0.00	-0.03	-0.10	0.00	-0.03	-0.01	0.03	0.01
5.5	0.00	-0.01	-0.03	0.05	-0.01	-0.04	0.05	-0.04
6.0	0.00	0.01	-0.08	0.05	0.03	-0.01	0.11	-0.01
6.5	0.00	-0.01	-0.07	0.01	0.02	-0.04	0.05	-0.05
7.0	0.00	-0.03	0.01	-0.01	0.01	-0.01	0.03	-0.07
7.5	0.00	-0.03	0.04	-0.05	-0.01	-0.02	-0.03	-0.07
8.0	0.00	-0.02	0.03	-0.04	0.00	0.03	0.00	-0.06
8.5	0.00	0.10	0.05	0.01	-0.01	-0.01	0.04	0.06
9.0	0.00	-0.04	-0.03	-0.01	-0.02	-0.03	0.02	0.03
9.5	0.00	0.06	0.03	-0.01	-0.06	0.02	0.03	0.00
10.0	0.00	0.02	0.03	0.04	-0.01	0.02	0.07	0.02
10.5	0.00	-0.03	-0.07	0.00	-0.05	-0.15	0.05	0.04
11.0	0.00	0.05	-0.02	-0.01	-0.02	-0.09	0.03	-0.01
11.5	0.00	0.11	0.00	-0.01	-0.02	-0.05	0.03	-0.09
12.0	0.00	0.04	0.06	-0.04	-0.01	-0.06	-0.01	-0.13
12.5	0.00	0.15	0.16	0.09	0.11	0.17	0.13	-0.01
13.0	0.00	-0.02	-0.07	-0.10	-0.05	-0.09	-0.04	0.07
13.5	0.00	0.08	-0.02	0.00	0.01	0.01	0.03	0.05
14.0	0.00	0.13	0.10	0.06	0.05	0.13	0.06	0.07
14.5	0.00	0.04	-0.01	0.02	-0.03	0.02	0.02	0.07
15.0	0.00	0.07	0.04	0.06	-0.01	0.03	0.05	-0.02
15.5	0.00	-0.06	-0.01	0.03	-0.04	-0.04	0.02	0.00
16.0	0.00	0.00	-0.03	0.00	-0.04	-0.07	-0.01	-0.03
16.5	0.00	0.05	0.07	0.02	0.02	-0.03	0.05	-0.04
17.0	0.00	0.01	-0.02	0.04	0.04	-0.01	0.03	0.01
17.5	0.00	0.09	0.17	0.08	0.09	0.08	0.13	-0.05
18.0	0.00	-0.07	-0.09	-0.09	-0.03	-0.11	-0.04	0.05
18.5	0.00	0.09	0.08	0.03	0.04	0.07	0.05	0.00
19.0	0.00	-0.08	-0.13	-0.11	-0.09	-0.10	-0.10	0.07
19.5	0.00	0.07	0.00	-0.01	-0.05	0.05	0.16	-0.05
20.0	0.00	0.03	-0.02	-0.01	-0.04	-0.05	-0.02	0.04
20.5	0.00	0.06	0.03	0.05	0.01	0.02	0.03	0.03
21.0	0.00	0.05	0.17	0.07	0.03	0.07	0.09	-0.04
21.5	0.00	0.07	-0.04	0.00	-0.01	-0.12	0.01	0.02
22.0	0.00	0.01	0.01	0.02	0.02	-0.02	0.05	-0.06
22.5	0.00	-0.05	-0.03	-0.09	-0.07	-0.12	-0.09	-0.09
23.0	0.00	-0.05	-0.01	-0.05	0.01	-0.02	0.03	-0.03
23.5	0.00	-0.06	-0.08	-0.04	0.02	0.02	0.02	0.12
24.0	0.00	0.09	0.10	0.03	0.05	0.12	0.12	0.00
24.5	0.00	0.03	0.04	0.00	0.05	0.07	0.08	0.06
25.0	0.00	0.08	0.13	0.06	0.07	0.13	0.12	0.14
25.5	0.00	0.07	0.07	0.09	0.06	0.14	0.11	0.11
26.0	0.00	0.00	0.08	0.09	0.03	0.07	0.09	0.03
26.5	0.00	-0.03	-0.01	0.00	-0.06	-0.02	0.01	-0.01
27.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Incremental Deflection Data in A Axis (mm):

Depth (m)	02/08/2012 15:34 (mm)	07/09/2012 11:48 (mm)	10/10/2012 08:24 (mm)	22/11/2012 11:15 (mm)	21/12/2012 09:36 (mm)
0.5	0.25	0.34	0.21	0.22	0.26
1.0	0.14	0.11	0.10	0.13	0.09
1.5	0.03	0.00	-0.01	0.03	0.01
2.0	0.05	-0.01	0.01	0.03	-0.03
2.5	0.07	0.00	0.01	0.01	-0.02
3.0	0.01	-0.03	-0.05	-0.07	-0.04
3.5	0.03	0.01	-0.02	-0.01	0.00
4.0	-0.09	-0.12	-0.08	-0.06	0.00
4.5	-0.04	0.04	0.05	0.10	0.07
5.0	0.06	0.04	0.00	0.05	-0.01
5.5	0.11	0.00	0.02	0.02	-0.07
6.0	0.07	0.01	0.15	0.05	-0.02
6.5	0.01	-0.02	-0.01	-0.01	0.01
7.0	-0.09	-0.05	0.03	-0.01	-0.03
7.5	-0.07	-0.05	0.05	-0.02	-0.02
8.0	-0.07	0.02	0.03	0.03	0.01
8.5	0.03	0.06	0.05	0.08	0.00
9.0	0.03	0.02	0.00	0.03	-0.05
9.5	-0.04	0.01	-0.01	0.09	0.00
10.0	0.06	0.04	0.04	0.09	-0.01
10.5	0.17	-0.01	0.00	0.00	-0.11
11.0	0.08	-0.03	0.03	-0.03	-0.06
11.5	-0.08	-0.03	0.05	0.00	-0.01
12.0	-0.17	-0.09	-0.11	-0.04	-0.03
12.5	-0.13	0.11	0.16	0.17	0.27
13.0	0.16	0.00	0.00	0.03	-0.14
13.5	0.05	0.01	0.02	0.07	-0.02
14.0	0.00	0.06	0.05	0.10	0.05
14.5	0.07	0.03	0.04	0.00	-0.07
15.0	-0.06	0.01	0.07	0.16	0.03
15.5	-0.02	-0.04	-0.05	0.09	-0.03
16.0	0.02	-0.05	0.00	0.01	-0.10
16.5	-0.01	-0.05	-0.01	0.10	-0.01
17.0	0.04	-0.03	0.01	0.12	-0.06
17.5	-0.07	0.05	0.08	0.13	0.19
18.0	0.06	-0.10	-0.10	-0.05	-0.13
18.5	-0.05	0.06	0.03	0.14	0.14
19.0	0.06	-0.08	-0.10	-0.06	-0.21
19.5	-0.09	0.06	0.11	0.18	0.38
20.0	0.02	-0.02	-0.01	0.01	-0.05
20.5	-0.04	0.00	0.03	0.15	0.04
21.0	-0.07	0.06	0.09	0.13	0.15
21.5	0.06	-0.02	0.02	0.03	-0.12
22.0	-0.01	0.02	0.04	0.15	0.01
22.5	-0.06	-0.15	-0.10	-0.04	-0.18
23.0	0.00	0.00	0.06	0.09	0.03
23.5	0.09	0.00	0.00	0.01	-0.07
24.0	-0.04	0.12	0.08	0.17	0.23
24.5	-0.01	0.06	0.11	0.19	0.10
25.0	0.05	0.11	0.06	0.16	0.09
25.5	0.04	0.09	0.13	0.17	0.12
26.0	-0.01	0.06	0.22	0.11	0.09
26.5	-0.05	-0.04	-0.05	-0.03	-0.06
27.0	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Incremental Deflection Data in B Axis (mm):

Depth (m)	21/11/2011 00:00 (mm)	16/12/2011 11:36 (mm)	18/01/2012 12:23 (mm)	28/02/2012 09:29 (mm)	21/03/2012 09:56 (mm)	19/04/2012 15:07 (mm)	24/05/2012 15:28 (mm)	14/06/2012 10:24 (mm)
0.5	0.00	-0.05	-0.04	-0.04	-0.09	-0.10	-0.12	-0.15
1.0	0.00	-0.07	-0.11	-0.09	-0.12	-0.13	-0.12	-0.12
1.5	0.00	-0.02	-0.01	0.00	-0.03	-0.04	-0.06	-0.05
2.0	0.00	-0.01	0.01	-0.01	-0.01	-0.02	-0.05	-0.02
2.5	0.00	0.00	0.00	0.00	0.00	-0.01	-0.05	-0.01
3.0	0.00	0.01	0.03	0.00	0.02	0.02	-0.02	0.02
3.5	0.00	0.03	0.06	0.03	0.05	0.05	-0.02	-0.01
4.0	0.00	0.19	0.19	0.18	0.03	0.10	-0.01	-0.06
4.5	0.00	0.05	0.05	0.09	0.08	0.06	0.03	0.07
5.0	0.00	0.02	0.01	0.06	0.09	0.03	0.00	0.07
5.5	0.00	0.01	-0.01	0.01	0.02	-0.03	-0.07	0.04
6.0	0.00	0.03	0.02	0.03	0.06	0.03	-0.02	0.06
6.5	0.00	0.03	0.05	0.03	0.06	0.04	-0.01	0.05
7.0	0.00	0.05	0.04	0.02	0.05	0.06	-0.01	0.04
7.5	0.00	0.01	0.00	0.04	0.07	0.07	0.05	0.13
8.0	0.00	0.04	0.02	-0.03	-0.01	0.02	-0.05	-0.01
8.5	0.00	0.05	0.08	0.06	0.04	0.14	0.05	-0.01
9.0	0.00	0.10	0.08	0.04	0.05	0.06	0.01	-0.02
9.5	0.00	0.03	-0.01	0.02	0.05	0.02	0.00	0.03
10.0	0.00	0.06	0.03	0.04	0.04	0.02	-0.01	-0.02
10.5	0.00	0.03	0.01	0.06	0.07	0.04	-0.01	0.03
11.0	0.00	0.03	0.02	0.02	0.06	0.02	-0.01	0.03
11.5	0.00	0.03	0.03	0.03	0.07	0.06	0.00	0.05
12.0	0.00	0.04	0.04	0.05	0.09	0.09	0.04	0.09
12.5	0.00	-0.01	-0.02	-0.02	0.03	0.01	-0.01	0.09
13.0	0.00	0.04	0.04	0.02	0.04	0.05	0.01	0.00
13.5	0.00	0.04	0.06	0.03	0.07	0.06	0.04	0.08
14.0	0.00	-0.01	-0.02	0.01	0.05	0.00	-0.01	0.05
14.5	0.00	0.05	0.06	0.01	0.03	0.04	-0.02	-0.05
15.0	0.00	-0.03	-0.02	-0.01	0.03	-0.01	-0.04	0.02
15.5	0.00	0.01	-0.02	-0.01	0.01	-0.03	-0.05	-0.02
16.0	0.00	0.09	0.07	-0.02	0.02	0.00	-0.05	-0.09
16.5	0.00	-0.02	0.01	-0.02	0.03	0.00	-0.02	0.03
17.0	0.00	-0.02	0.01	-0.02	0.05	0.02	-0.01	0.03
17.5	0.00	0.01	0.01	-0.01	0.02	0.02	-0.01	-0.01
18.0	0.00	-0.06	-0.05	-0.04	0.02	-0.02	-0.02	0.08
18.5	0.00	-0.06	-0.05	-0.06	0.00	-0.03	-0.05	0.03
19.0	0.00	-0.03	-0.02	-0.03	0.03	-0.01	-0.03	0.06
19.5	0.00	0.43	0.39	0.28	0.31	0.16	-0.01	0.02
20.0	0.00	-0.05	-0.06	-0.03	0.02	-0.05	-0.07	0.02
20.5	0.00	-0.03	-0.05	0.01	0.01	-0.04	-0.05	0.03
21.0	0.00	-0.04	-0.07	-0.02	0.00	-0.05	-0.05	0.05
21.5	0.00	0.01	0.03	0.00	0.00	-0.01	-0.03	-0.07
22.0	0.00	0.02	0.04	0.00	0.02	0.00	0.00	-0.06
22.5	0.00	-0.10	-0.08	-0.08	-0.02	-0.05	-0.06	0.06
23.0	0.00	0.06	0.06	-0.02	0.04	0.06	0.03	-0.06
23.5	0.00	-0.02	-0.03	-0.06	0.01	0.02	-0.01	0.00
24.0	0.00	-0.07	-0.07	-0.04	0.00	0.00	-0.04	0.07
24.5	0.00	-0.01	-0.02	-0.02	0.01	0.01	-0.04	0.02
25.0	0.00	-0.03	-0.03	-0.03	-0.02	-0.03	-0.05	-0.02
25.5	0.00	-0.04	-0.03	-0.03	-0.03	-0.05	-0.05	-0.07
26.0	0.00	-0.03	-0.05	-0.03	-0.02	-0.05	-0.06	-0.05
26.5	0.00	-0.02	-0.03	-0.03	-0.03	-0.05	-0.07	-0.05
27.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROJECT: 3833
 SITE: Filey Flat Cliffs: Ground Investigation
 INSTALLATION: BH-A2
 COMPANY: Allied Exploration & Geotechnics Limited
 CLIENT: Scarborough Borough Council
 NOTE: Initial Average Survey: 21/11/2011 @ 00:00 (from readings taken 11/11/2011)
 (1) Pre-existing inclinometer borehole installed by others.

Incremental Deflection Data in B Axis (mm):

Depth (m)	02/08/2012 15:34 (mm)	07/09/2012 11:48 (mm)	10/10/2012 08:24 (mm)	22/11/2012 11:15 (mm)	21/12/2012 09:36 (mm)
0.5	-0.16	-0.19	-0.18	-0.18	-0.16
1.0	-0.07	-0.10	-0.09	-0.13	-0.12
1.5	-0.06	-0.08	-0.06	-0.08	-0.03
2.0	-0.02	-0.02	-0.05	-0.07	-0.03
2.5	-0.02	-0.01	-0.04	-0.04	0.01
3.0	-0.02	0.03	-0.06	-0.03	0.03
3.5	-0.03	0.01	-0.06	-0.07	-0.01
4.0	-0.20	-0.01	-0.13	-0.10	0.00
4.5	0.10	0.10	0.07	0.05	0.10
5.0	0.11	0.08	0.05	0.02	0.06
5.5	0.11	0.05	0.03	0.02	0.05
6.0	0.08	0.07	0.02	0.03	0.07
6.5	0.05	0.05	0.00	0.01	0.05
7.0	0.06	0.06	0.00	0.01	0.05
7.5	0.18	0.14	0.07	0.06	0.07
8.0	-0.09	-0.02	-0.07	-0.05	-0.03
8.5	-0.09	0.04	0.03	0.06	0.12
9.0	-0.08	0.00	-0.01	0.01	0.05
9.5	0.03	0.01	-0.01	0.00	0.02
10.0	-0.05	-0.01	-0.02	-0.02	0.02
10.5	0.05	0.03	0.00	0.02	0.02
11.0	0.08	0.05	-0.01	0.02	0.02
11.5	0.07	0.06	-0.02	0.01	0.02
12.0	0.10	0.11	0.05	0.09	0.09
12.5	0.12	0.07	-0.02	0.00	-0.04
13.0	-0.06	0.01	-0.01	0.02	0.05
13.5	0.04	0.08	0.06	0.10	0.09
14.0	0.05	0.03	0.01	0.03	0.01
14.5	-0.11	-0.02	0.00	0.02	0.08
15.0	-0.01	0.00	-0.02	-0.06	-0.03
15.5	-0.04	-0.02	-0.03	-0.03	-0.03
16.0	-0.15	-0.04	-0.05	-0.04	0.03
16.5	0.00	0.05	-0.01	0.00	0.00
17.0	-0.02	0.03	-0.01	0.00	0.01
17.5	-0.06	0.03	-0.02	-0.01	0.02
18.0	0.03	0.02	-0.03	-0.01	-0.06
18.5	-0.03	-0.03	-0.03	-0.03	-0.06
19.0	0.06	0.03	0.04	0.00	-0.05
19.5	-0.05	0.15	0.09	0.14	0.10
20.0	-0.02	-0.01	0.01	-0.04	-0.07
20.5	-0.01	-0.02	0.02	-0.04	-0.07
21.0	0.03	-0.01	0.01	-0.07	-0.09
21.5	-0.09	-0.03	-0.01	-0.05	0.01
22.0	-0.11	-0.02	-0.01	-0.04	0.03
22.5	0.05	-0.01	-0.05	-0.08	-0.13
23.0	-0.14	-0.02	0.02	0.02	0.14
23.5	-0.09	-0.02	-0.01	-0.01	0.01
24.0	-0.03	-0.01	-0.01	-0.05	-0.03
24.5	-0.07	-0.02	0.03	-0.02	0.01
25.0	-0.11	-0.05	0.01	-0.07	-0.01
25.5	-0.13	-0.06	-0.01	-0.08	0.02
26.0	-0.10	-0.07	-0.02	-0.10	-0.05
26.5	-0.10	-0.04	-0.01	-0.06	-0.01
27.0	0.00	0.00	0.00	0.00	0.00

A.2 Piezometer Data

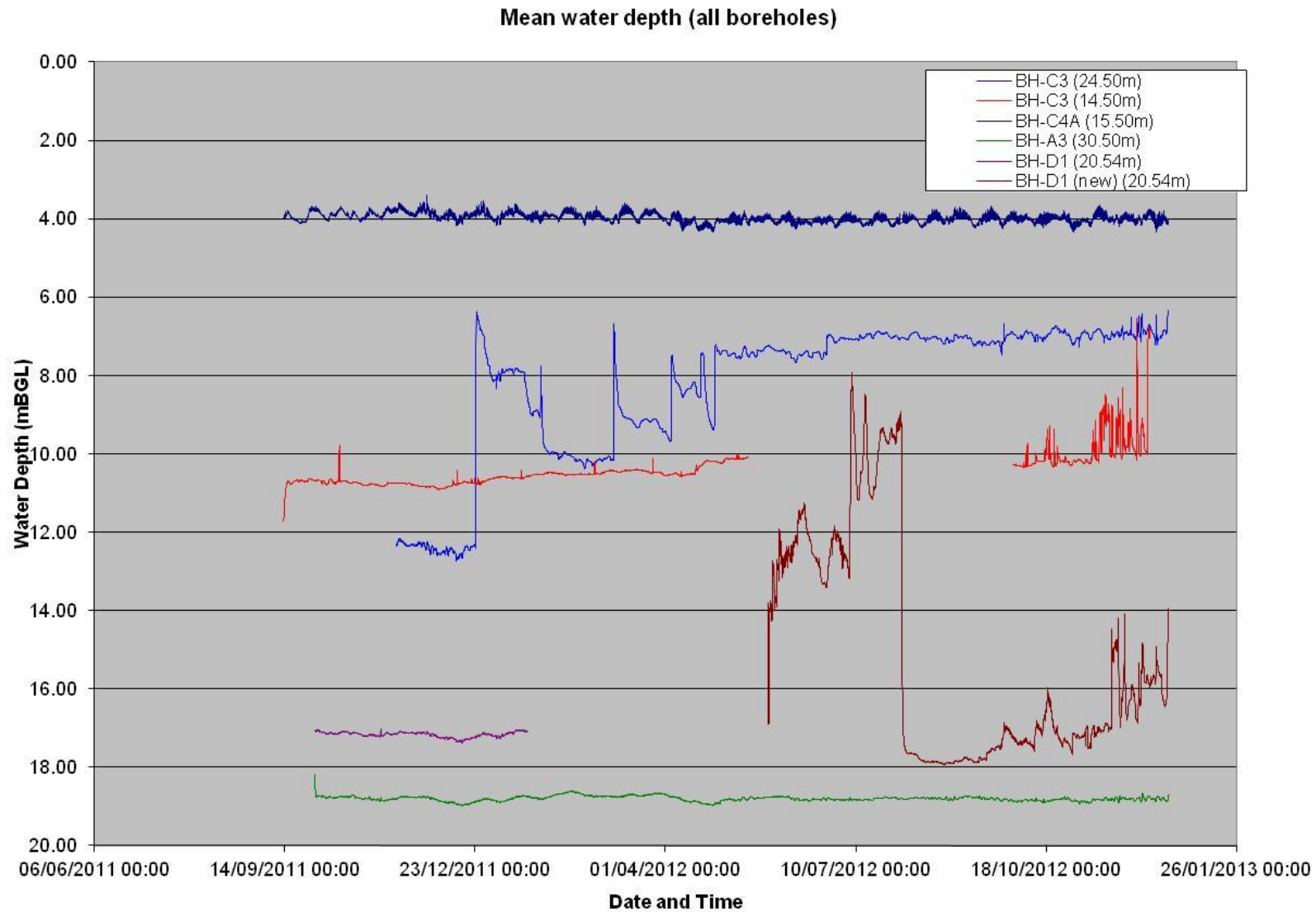


Figure A.2.1: Summary plot showing vibrating wire piezometers data (depth of water below ground surface)

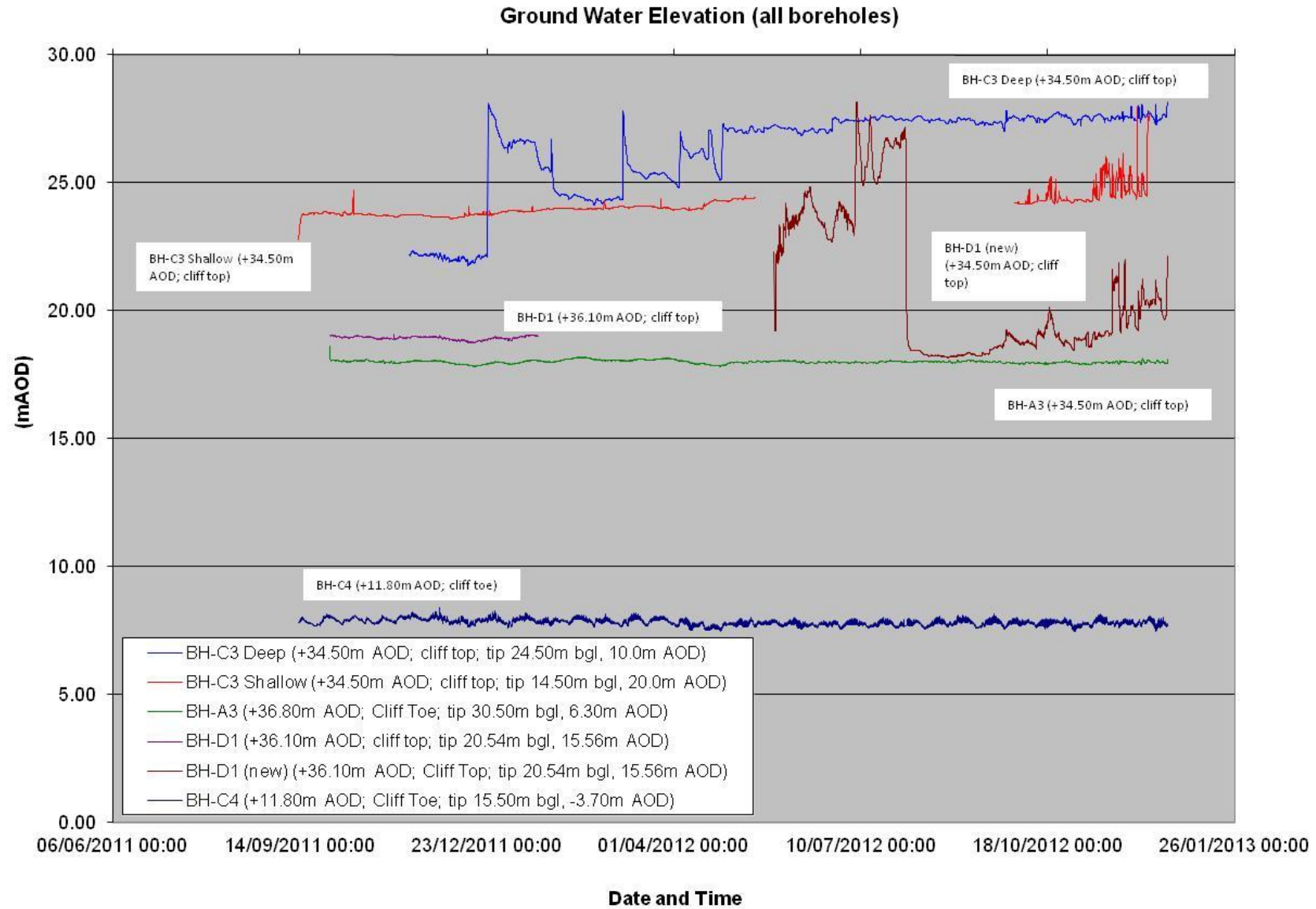


Figure A.2.2. Summary plot showing vibrating wire piezometers data (corrected to m AOD)

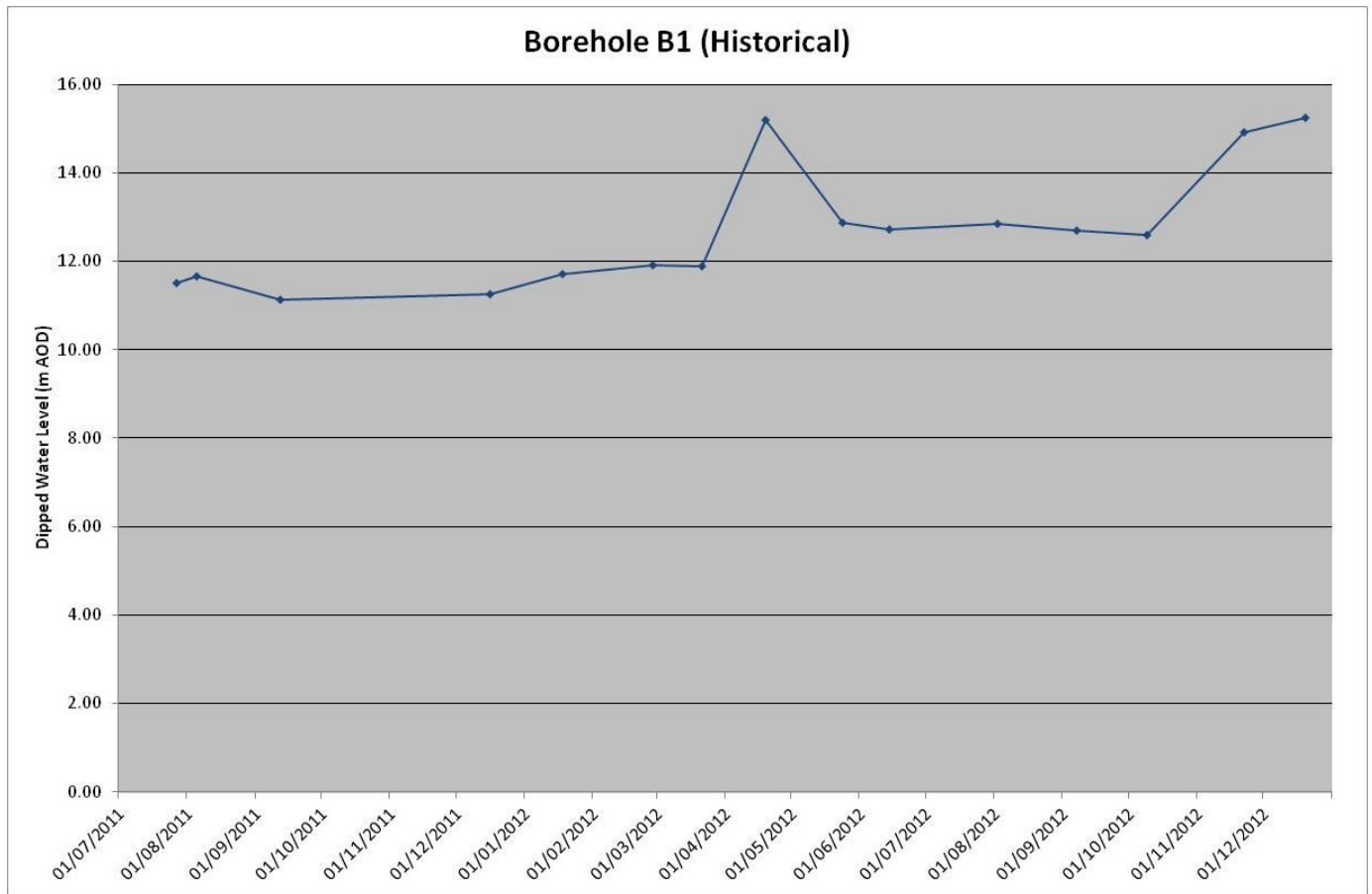


Figure A.2.3. Summary plot showing vibrating wire piezometers data (corrected to m AOD)

A.3 Climate data

Full climate records are provided in the digital version of this report