QuarryDesign Quarrying Sector Geological, Geotechnical and Surveying Consultants

Tel. +44 (0)1275 543983. www.quarrydesign.com

Wrotham Quarry

Annual Report for Western Slope Monitoring

April 2019

Client

Ferns Aggregates

Site

Wrotham Quarry

Report Title

Annual Report for

Western Slope Monitoring

April 2019

Site N° : 00484

Project N° : 190410

Report Date : 24th May 2019

Prepared on behalf of QuarryDesign by:	**G Wadsworth** Engineering Geologist	BSc(Hons), MSc, FGS	....
Checked on behalf of QuarryDesign by:	**R Wilks** Senior Engineer	BSc(Hons),CEng, CEnv, MIMMM, MIQ, BNUC-S	....

Author Profiles

Grace Wadsworth *(Engineering Geologist) obtained an honours Degree in Geology awarded from the University of Portsmouth in 2014 and a Master of Science in Engineering Geology also awarded from the University of Portsmouth in 2017. Grace is a Fellow of the Geological Society and is a Technical Member of the Institute of Quarrying. Since the age of 16 (prior to, and during her 1st and 2nd years at University), Grace was a volunteer crew member of the Lyme Regis Lifeboat (and at the time was the youngest ever off-shore crew member). Following her 1st Degree, Grace spent 2 years living and working in New Zealand. After completing her Master's Degree and before joining LMCL in April 2018, Grace was employed by Hydrock Consultants undertaking Phase 1 and Phase 2 geotechnical and environmental site investigations. She also holds a Coptrz Certificate to commercially fly Small Unmanned Aerial Systems.*

Rupert Wilks *(Senior Engineer / UAS Pilot) has an honours degree in Environmental Science with Engineering Geology at the University of Lancaster in 1992. He is a Chartered Engineer and Chartered Environmentalist with the Institute of Materials, Minerals and Mining. He has previously been employed by AIG Consulting, Encia Consulting and Stratus Environmental where he has worked in the ground engineering, geotechnical, waste management and contaminated land sectors and was involved with the design and management of engineering projects in the waste management sector before joining LMCL in May 2016. He also holds a Basic National UAS Certificate (BNUCs) to commercially fly Small Unmanned Aerial Systems.*

Company Profile

Land and Minerals Consulting Ltd (LMCL) *was formed in 2004 as a geological, geotechnical and surveying consultancy. The Company adopted the trading name* ***QuarryDesign*** *in 2006 to promote its links with the mineral planning consultancy QuarryPlan Ltd. LMCL specialise in the "remote" acquisition of survey, geological and geotechnical data using their Optech ILRIS long-range high-accuracy LiDAR scanners and their various UAV mounted aerial systems. Since 2013, LMCL also trades under the name of* ***DroneSurv*** *(a name more suited to aerial work outside of the quarrying industry).*

LMCL not only has the expertise to acquire the data; but have the experience, software and hardware to process the data into formats required by a wide range of industry standard surveying, geological modelling, geotechnical analysis and numerical modelling software. With that software, they are able to undertake both the analysis and subsequent designs for excavations, tips and lagoons in both engineering soil materials and rock masses. They also provide Reserve and Resource Statements to The PERC Reporting Standard, Due Diligence for mineral acquisitions and act as Expert Witness.

LMCL have undertaken projects for a wide range of industries including surface and underground mining, quarrying, coastal erosion surveys, sink-hole and crown-hole surveys, rock-fall surveys, and slope monitoring surveys. They have worked extensively in the UK and also worked in Ireland, France, Norway, Spain, Portugal, Gibraltar and Bangladesh.

Under the QuarryDesign trading name, the Company was awarded Joint Runner-up in the Engineering Initiatives category of the Mineral Planning Association's Health and Safety Awards 2013 for their use of Terrestrial LiDAR and UAV for remote Surveying and Geological / Geotechnical mapping.

TABLE OF CONTENTS

LIST OF APPENDICES

(Separate Bound Report)

Appendix I: Inclinometer Data – Displacements Over Time for Selected Depths

Appendix II: Inclinometer Data – ITM Monitoring Report

Appendix III: Buttress of northern slope below I4 plans

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 QuarryPlan contracted QuarryDesign, on behalf of Ferns Aggregates (Ferns), to undertake a review of the monitoring data that is being collected on a slope in the north western part of Wrotham Quarry.

1.1.2 This is the second annual report analysing the monitoring data that has been collected by Ferns.

1.1.3 QuarryDesign completed a Geotechnical Assessment and an Annual Report for Monitoring for Wrotham Quarry during early 2019; previous to this, QuarryDesign have completed various projects at Wrotham involving survey and design work throughout 2015, 2016, 2017 and an updated survey in early 2019.

1.2 Site Description

1.2.1 Wrotham Quarry is located ~12km east of Sevenoaks and ~12km west of Maidstone, Kent, with the closest village of Addington ~700m to the south. Light vehicle access to the site offices is at British National Grid Reference $^{5}65050_{E}$, $^{1}59467_{N}$ via the Addington Lane which runs from Addington to Trottiscliffe. Goods vehicle access to the site is via the A20 Ford Lane.

1.2.2 Wrotham Quarry was previously owned and operated by Hanson Aggregates (Hanson). During the summer of 2015, the operation was passed to the land owner (Ferns).

1.2.3 At the time that Ferns took control of the site, the workings in Wrotham Quarry included an inactive excavation area on the west of the site, north of the M20 motorway.

1.2.4 A reservoir with an area of ~33,000m^2, is located on the western boundary of the inactive excavation area on the west of the site.

1.2.5 The ground to the east of the reservoir (the “Western Extraction Area”) was excavated by Hanson as part of the quarry workings, leaving a ~27m high slope (the “Western Slope”), with a crest that is ~30m from the eastern boundary of the reservoir.

1.2.6 QuarryDesign have been advised that a failure occurred at some point on the Western Slope. The slope was ‘repaired’ and instrumentation was installed, to monitor the slope and safeguard the reservoir.

2 HISTORY OF SLOPE AND MONITORING INSTRUMENTATION

2.1 Slope History

2.1.1 A full slope history has been provided in the previous slope monitoring report from April 2017, Report ref: 00484-170214.

2.1.2 The main points are summarised below:

2.1.3 A review of Aerial Imagery allowed to form a timeline of the construction of the reservoir and the progression of the quarry (Table 1, imagery issued in Appendix I in Report ref: 00484-170214).

Table 1: Summary of Site Activity From Aerial Imagery			
Figure	**Period**	**Quarrying (distance between western quarry face and boundary of the reservoir)**	**Other Activity**
1	1960	~1km	Construction of the reservoir ongoing at this time
2	1960 – 1990	~600m	Reservoir constructed, no quarrying evident
3	1990 – 2003	~250m	-
4	2003 – 2007	~60m	-
5	2007 – 2011	~30m	Water damage can be seen on the slope, with a possible repair in the central part of the slope;
6	2011 – 2013		A buttress appears to have been placed at the toe of the slope in the central section, slope was also re-graded;
7	2013 – 04/2015		A shallow slope failure is apparent in the southwestern corner the slope;
8	04/2015 – 06/2015		Vegetation growth appears over the slope failure which appears to have been remediated;
9	05/2016 – 04/2019		-

2.1.4 The main historic slope failure occurred in Dec/Jan of 2009/10. The slip continued to increase in extent, particularly in the southern part of the buttress. It is understood that there had been considerably higher rainfall in November 2009 that is likely to have contributed to the slip.

2.1.5 Large scale remedial works including buttressing of the slope continued (designed by GWP Consultants) over the next couple of years including the addition of a French drain at the top of the slope to provide a preferential pathway to divert surface water to the south, away from the slope.

2.1.6 In addition to the main failure in 2009/2010, the aerial imagery shows that, prior to 2013, there have been small shallow failures within the southwestern part of the slope.

2.1.7 For the slope in question, it is understood that the monitoring infrastructure described in Section 2.2 was installed in 2003 to act as an early warning of any slope movement on what would become the westernmost extent of excavation of the quarry.

2.2 Monitoring Instrumentation

2.2.1 It has been indicated to QuarryDesign that during August 2003 ITM Monitoring (ITM) installed:

- Four inclinometers (I1, I2, I3 and I4);
- Six Vibrating Wire Piezometers (VWPs), two VWPs each in three different boreholes (P1a, P1b, P2 a, P2b, P3a, P3b and P3c); and,
- One standpipe piezometer (P3c).

2.2.2 It is assumed that the monitoring hardware was documented at the time of installation. However, QuarryDesign have not been provided any reports with this detail.

2.2.3 QuarryDesign note that, at the time of installation, the western quarry face was ~250m to the east and therefore, the instruments would have been installed prior to any excavation activity in this area of the site for the reasons described in 2.1.4. above

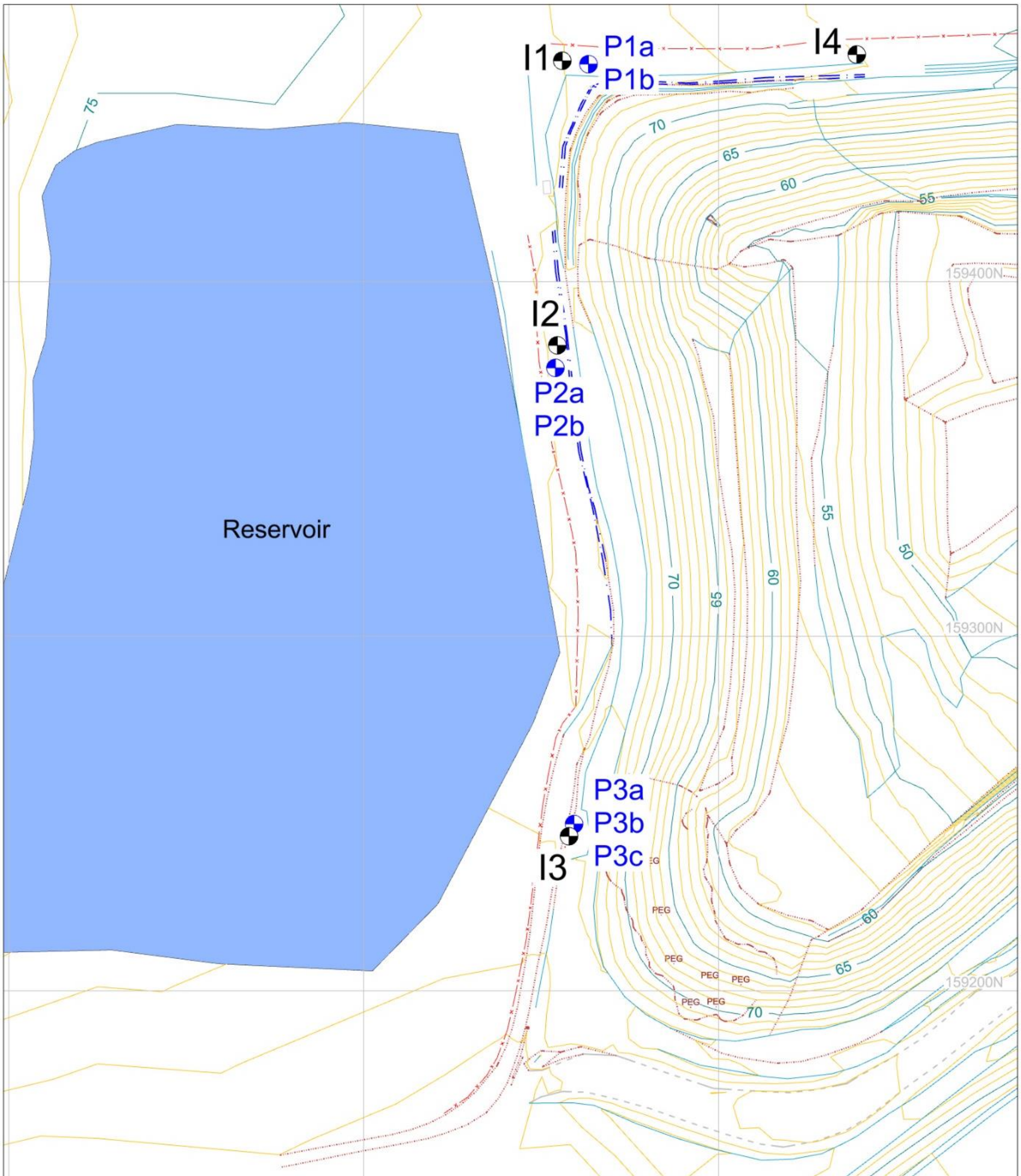
2.2.4 Based on an assessment of the site geology (presented in Section 3) The inclinometers and piezometers appear to have been installed through the Gault Clay strata and into the underlying Folkstone Bed sands. This allows monitoring of the full depth of the Gault Clay which is considered to be the strata most at risk of slope failure with the most significant failure plane possibly being the boundary between the Gault Clay and the underlying sands. However, Quarry Design understand that the 2009/2010 failure may have been confined to a sand buttress constructed over the Gault Clay face to protect the clay from weathering and provide additional stability.

2.2.5 ITM Monitoring have indicated that the instrumentation was monitored on a quarterly period from September 2003 to February 2010, monthly from March 2010 to October 2013 and quarterly from April 2014. Note that the data that has been provided to QuarryDesign dates from 29/02/2008.

2.2.6 The location of the ITM instrumentation is shown in Excavation Diagram 1 on the following page with basic information in Table 2 below.

Table 2: Inclinometer Information

Instrument	Easting	Northing	Level of Top of Instrument (mAOD)	Instrument Depth (m)
I1	564155.941	159462.315	73.097	18.0
I2	564154.549	159382.036	72.938	17.5
I3	564157.559	159243.572	73.161	14.5
I4	564238.905	159464.085	71.037	17.5



Excavation Diagram 1: *Plan showing instrumentation in the Western Slope (topographic survey is from QuarryDesign 2015 UAV survey which includes more detail than the 2016 survey in this area*

2.3 Observations from Geotechnical Assessments

2.3.1 The Geotechnical Assessment for Wortham Quarry was undertaken in January 2019 (Report ref – 00484-181120/GEW). Previously tension cracks had been noted on the restored western slopes (Report ref – 00484-170214), these were inspected during the most recent January Geotechnical Assessment inspection and no further movement or tension cracks were observed.

2.3.2 **Recommendation:** it is recommended that the tension crack features are routinely inspected by on site staff for signs of movement.

3 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

3.1 Geological Setting

3.1.1 Wrotham Quarry is covered by the British Geological Survey (BGS) 1:50,000 scale map number 287 'Sevenoaks', an extract of which is shown in Image 1 below with the location of the slope indicated with a red circle.

3.1.2 The site excavates sand from the Folkestone Beds, a subdivision of the Cretaceous Lower Greensand Formation. The Folkestone Beds consist of predominantly fine to medium quartzose sands deposited in clearly defined horizons.

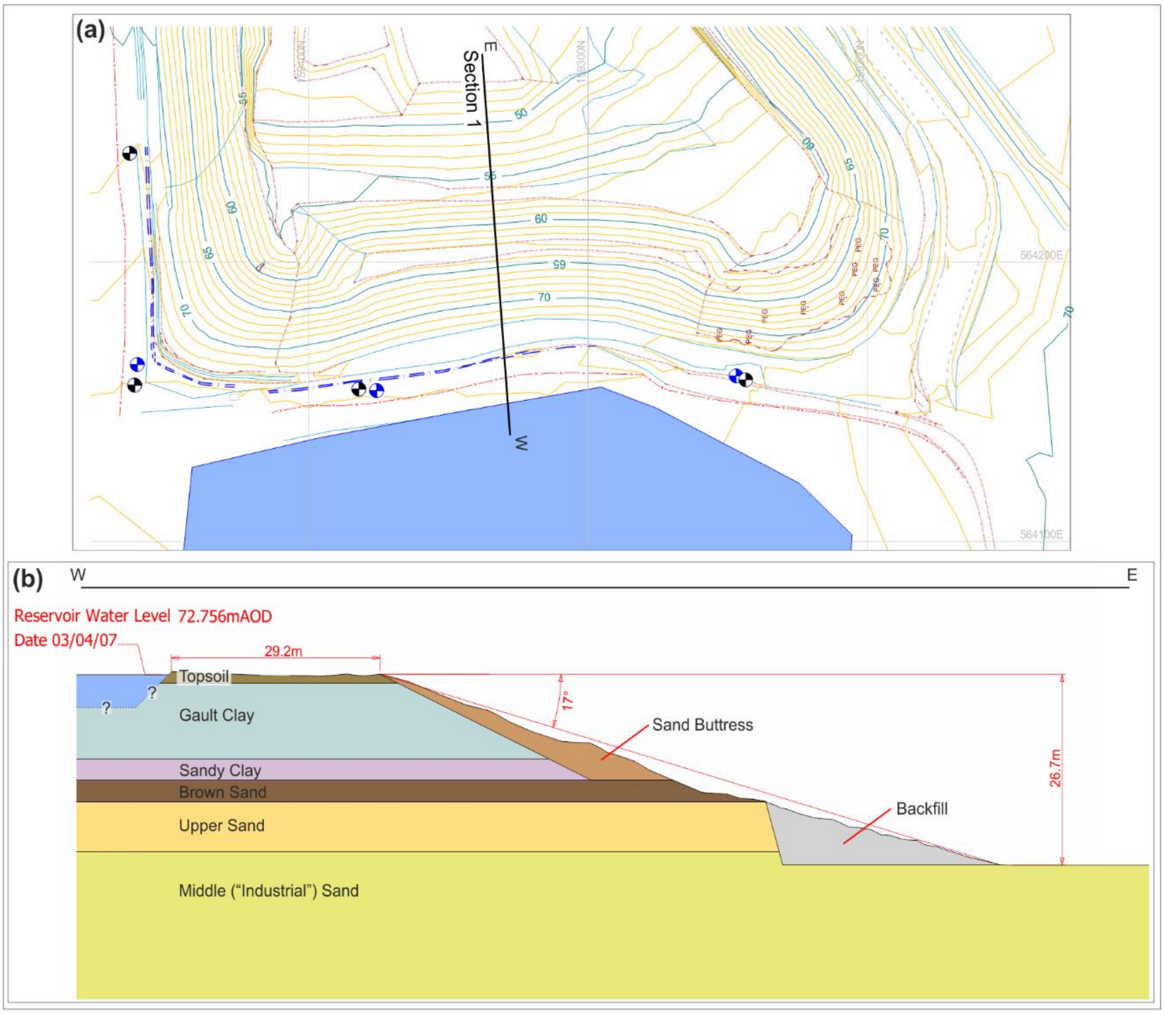
3.1.3 The Folkestone beds are overlaid by Gault Clay. The Gault Clay is widespread across southern England and known to be a weak unit at the base of which spring lines often form.

3.1.4 Regionally the strata dips 1-2° towards the north-northwest.

3.1.5 The Upper Sand within the Folkestone Beds was extracted during the quarrying of the Western Excavation Area. Above the Upper Sand, the remaining part of the Western Slope comprises ~3m Brown Sand, ~3m of a Sandy Clay unit, ~10.5m of Gault Clay and ~1.25m of topsoil.

3.1.6 Using borehole data provided by the British Geological Survey (BGS Borehole TQ65NW29 at NGR 564130,159390) and local knowledge on the quarry faces and previous working practices at Wrotham, QuarryDesign have created a geological section through the Western Slope, as provided below in Schematic Cross-Section 1.

Image 1: *Local Geology with Gault Clay strata in dark blue and Folkestone Bed strata in light green (Not to Scale)*



Schematic Cross-Section 1: *Section through the centre of the Western Slope with a plan showing the section location (a) and geological interpretation based on borehole data (b)*

3.2 Hydrogeology

3.2.1 Wrotham Quarry is located close to the Trosley Pumping Station. As noted by GWP in the previous Geotechnical Assessments for the site, the groundwater in this area is depressed locally to between 32mAOD and 34mAOD.

3.2.2 Data from the monitoring of the groundwater monitoring borehole P3C, is presented in Chart 1 below. The chart shows a gradually increasing groundwater level in the vicinity of the slope from around 30m AOD in 2003 to around 35m AOD from first records to the most recent readings in April 2019. The groundwater currently lies in the sand strata, well below the level of the Gault Clay and the base of the inclinometers at around 55m AOD.

3.2.3 The construction details (slope angles and depth) of the surface water reservoir adjacent to the Western Slope are unknown, therefore QuarryDesign are unable to comment on the interaction between the reservoir and the slope, other than by interpreting the piezometer data that has been provided.

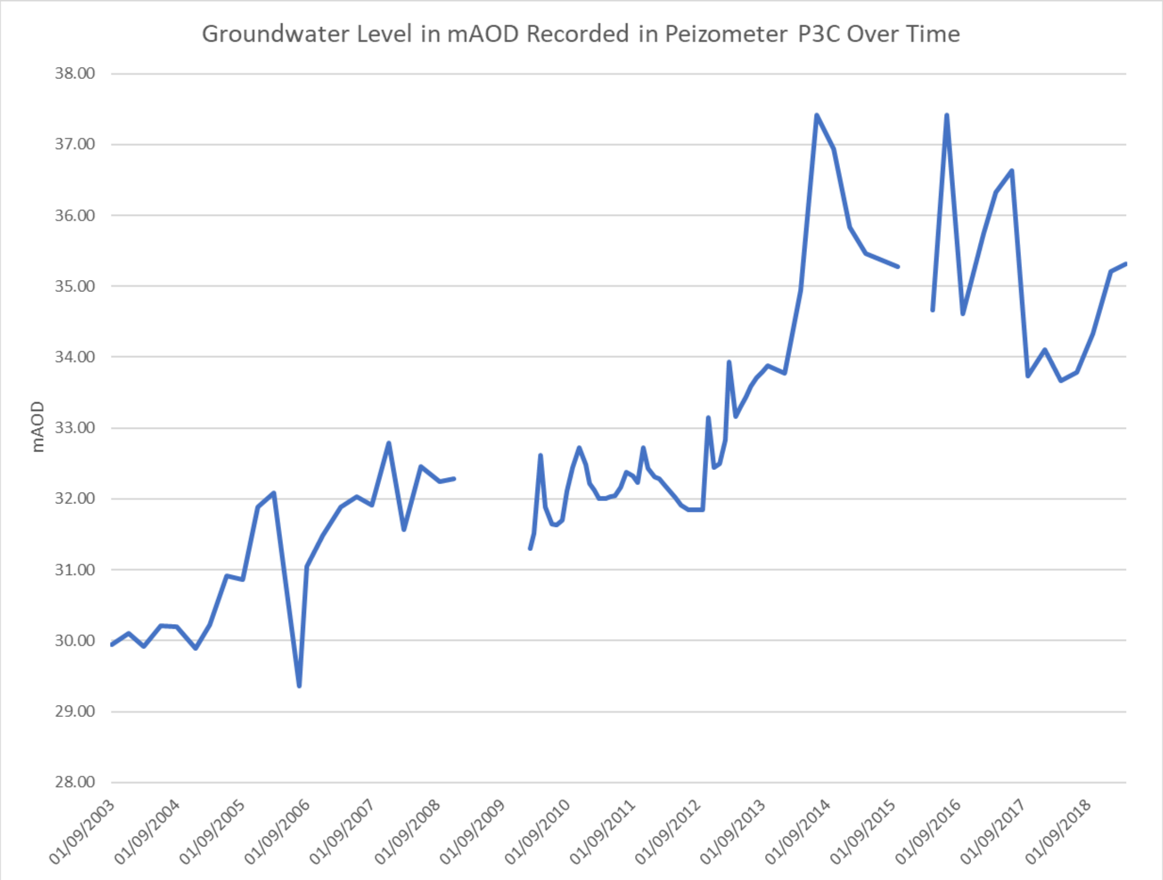


Chart 1: Plot of ground water levels (m AOD) over time in P3C

4 ANALYSIS OF MONITORING DATA

4.0.1 QuarryDesign have received data collected by ITM Soils from 2008 up until the most recent site monitoring visit on the 5th April 2019. The data is continuous from 2008 for Inclinometers I1, I2 and I4. There are some gaps in the data for inclinometer I3 however, the I3 data is continuous from 2011 to present.

4.1 Inclinometer Installations

4.1.1 Data from inclinometers include readings of motion in two orientations which should be chosen in mind of the anticipated motion on a slope, as shown in Diagram 1a. ITM have indicated the main reference directions as per Diagram 1b. Table 2 provides information on the location and depth of each inclinometer.

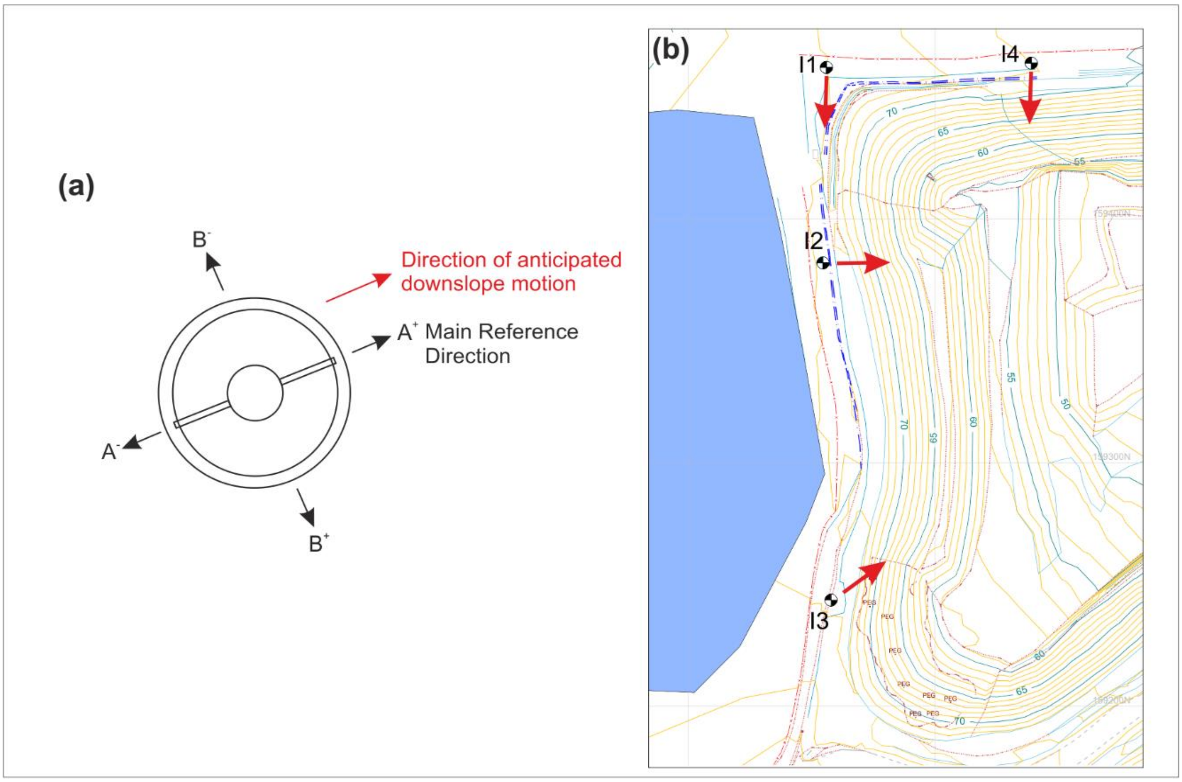


Diagram 1: *Industry standard for inclinometer installation (a) and main reference directions as indicated by ITM*

4.1.2 QuarryDesign were provided with several files containing both the raw and the corrected data for the inclinometers on the Western Slope from 2008. As part of the monitoring, ITM provide reports (in pdf format) which include graphs, generated using ITMSoil's In-Site software. The most recent ITM Monitoring Report is presented in Appendix II.

4.1.3 An example of the ITM data is shown in Chart 2 (overleaf), data from one particular inclinometer (I3) in the southwestern corner of the slope for an 18 month period. The cumulative data plot shows deflections of around 10mm to 30mm, relative to the original 2003 installation datum, at depths of ~8m and ~12m.

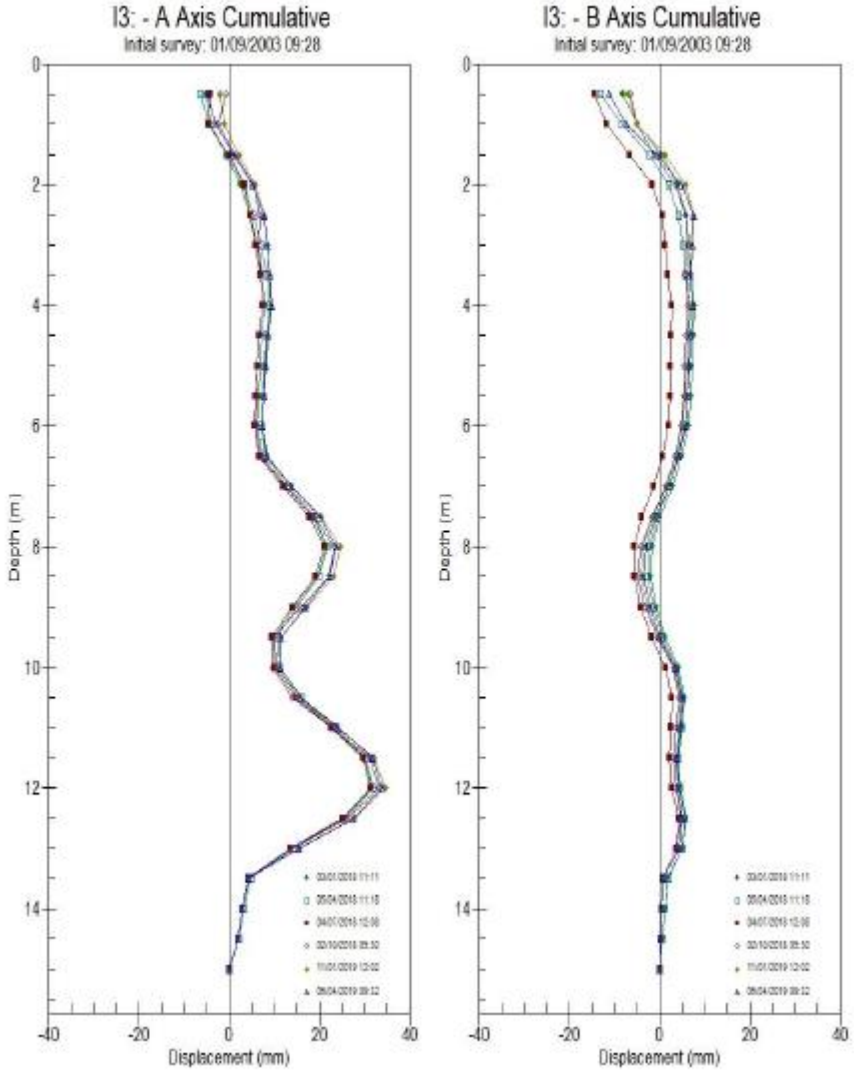


Chart 2: *Data plot from April 2019 ITM report for inclinometer I3*

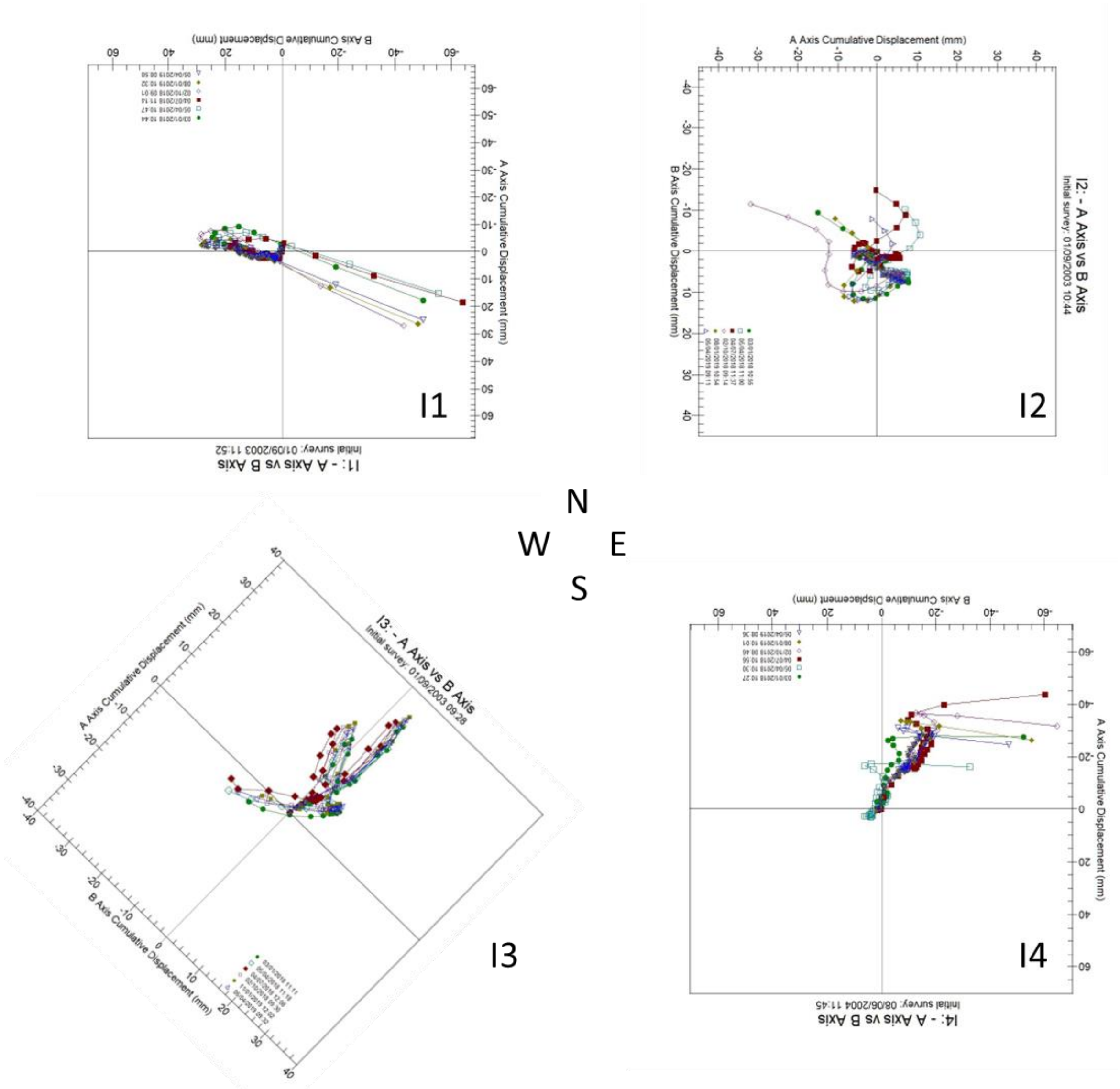


Chart 3: A Axis vs B Axis plots for Cumulative direction of movement from April 2019 ITM report

4.1.4 The plots in Chart 3 show the cumulative movement of the inclinometers relative to their installation in 2003, for an 18-month period from the April 2019 ITM report.

4.1.5 From the raw ITM data. QuarryDesign have created charts that show the displacement at selected depths for each inclinometer over the full period of data available. These charts are presented in Appendix I.

4.1.6 In the following Sections, QuarryDesign present the available data for each inclinometer, both as a summary from the previous report and detail from the current analysis.

4.2 Observations from Previous Analysis of Inclinometer Data

4.2.1 Generally, Inclinometers I2 and I4 show seasonal fluctuations of movement at shallow depths. This is likely due to the swelling and shrinkage of cohesive soil due to local vegetation and variable water inputs through the cycle of the seasons. Apart from these seasonal variations the following points were previously noted:

- Location I1: Ongoing slight movements to the east and south in this location although confined to the upper 1m to 2m, and a slight movement to the west at depth over the last couple of months;
- Location I2: Slight underlying trend of moment to the east of the upper 2m in this location;
- Location I3: Slight trend for displacement in the A+ direction (northeast/ downslope) since February 2015 for all levels of the inclinometer above 13.0m;
- Location I4: There is a slight displacement of material above 13m to the south(downslope) and west since July 2017. With approximately 5-10mm in the top 6m and 2-5mm above 13m bgl. This may be due to seasonal fluctuations or a precursor to further movement.

4.3 Observations from Current Analysis of Inclinometer Data

4.3.1 **Inclinometer I1**: There appears to be very little change in displacement since 2008 at any level in the 'A' Plane of movement (north/south), with the exception of a recent trend for movement in the A+ direction (south) at a level of 0.5-1.5m below ground level (bgl). Movements in the A+ direction is in the region of 27mm since 2015. However, the movement has decreased in the last reading from April 2019 by 2.0mm.

4.3.2 In the 'B' Plane (east/west) there seems to be a general trend for movement towards the B- (east) direction in the upper 2m in the order of 10mm in since 2008. In the last year there was a movement of up to approximately 15mm in the B+ direction below 6m and 5mm below 12m, but these movements have generally remained steady in the last 8 months.

4.3.3 Overall in the I1 location this equates to slight movements at shallow depth to the south and east at the surface. In the last few months there has been movement towards the west in the magnitude of up to 20mm at surface and 2mm at depth, which may be a precursor to further movement downslope.

4.3.4 **Inclinometer I2**: The general observations made in the last monitoring review seem to show the same results as previously, with no major differences in the last year. There appears to be little change in displacement since 2008 at most depths in the 'A' Plane of movement (east/west), with the exception of a seasonal trend for movement at levels between 0.5m and 4.5m below ground level (bgl). Movements in this plane are in the region of 30mm on a seasonal basis. Also, in the 'A' plane, there is an underlying trend of movement in the A+ (east/downslope) direction amounting to around 10mm since 2009.

4.3.5 In the 'B' Plane (north/south) there seems to have been very little relative displacement at any level since 2009. Apart from the readings in July 2018 where there is movement at depth of up to 5mm in the B- (North) direction. This has since returned back to values more typical of this Inclinometer.

4.3.6 Overall in the I2 location, there are seasonal displacements and a slight trend of movement east (downslope) at surface. In the last couple of months there has been movement at depth in the northerly direction (B-).

4.3.7 **Inclinometer I3**: There appears to be little change in displacement since 2012 at any depth in the 'A' Plane (northeast/southwest) of movement. The only observation is a slight trend for displacement in the A+ direction (northeast/downslope) since February 2015 for all levels of the inclinometer above 13.0m. This trend is very slight, only in the order of 5mm. However, it should be noted when reviewing future data, as it may be a precursor for a more significant movement towards the north east. In the last few months there has been approxiamtly 4mm movement towards the A- direction (southwest).

4.3.8 In the 'B' Plane (northwest/southeast) there is very little relative displacement at any level since 2010, with the exception of a very slight movement in the B- plane (north west) for the upper 12.5m in July 2018 amounting to only around 5mm to 2mm in movement. This has since moved back in the B+ direction to previous levels apart from in the top 1.5m where it is continuing to fluctuate in the last few months with up to 10mm.

4.3.9 Overall in the I3 location, the results equate to a slight movement at shallow depth to the north east and, at both shallow and at depth in the north west direction.

4.3.10 **Inclinometer I4**: In the 'A' Plane of movement (north/south), there appears to be a seasonal trend for movement at levels between 0.5m and 6m bgl. Movements in this plane are in the region of 20mm to 30mm on a seasonal basis. Since the last report there was significant movement in the A- direction (north) from 30mm to 5mm at depths above 17m bgl. In the last year the movement has mainly plateaued out, with a slight movement towards A+ direction again. However, at depths between 13m and 15mbgl this movement has continued to move towards the north (A-) at 5mm in the last year.

4.3.11 In the 'B' Plane (east/west) there seems to be also a seasonal displacement although this only seems to have an effect to around 3.0mbgl. At depth of 0.5m bgl, the movement since 2008 has been in the region of 25mm in the B- direction (east). After the last report there has been significant movement towards the B- direction at depth, up to 17mbgl in the region of 5mm to 30mm. In the last year this movement has plateaued out or started to move in slight increments back in the B+ direction by approximately 5mm. Between 12.5m and 14m bgl the movement has continued in a westerly direction by approximately 3mm.

4.3.12 When the significant movement was noted in July 2018, an inspection around the area of I4 was undertaken by onsite staff. However, no significant movement was noted apart from some cracking around the concrete holding the borehole. This extreme movement is thought to be due to the extreme dry and hot weather during the summer of 2018.

4.3.13 Overall in the I4 location, there are seasonal fluctuations in displacements at shallow depths There has been significant and uncharacteristic movement (~20mm) in the last year in towards the north and east directions at depth.

4.3.14 This data shows that the northern slope around I4 is moving with the most significant movements at a depth which seems to correspond to the base of the Gault Clay (Although no direct geological data is available from boreholes for this slope the strata is estimated from visual surveys and a nearby BGS borehole record. Although not affecting the reservoir, if this slope were to move significantly, it could fail outside the site boundary into the neighbouring field to the north. From the most recent survey (February 2019, undertaken by quarry design), these overburden slopes beneath I4 are considered to be too steep for long term stability (1v:1.8h, 29°) especially considering that the upper approximately 15m of the slope will comprise Gault Clay.

4.3.15 As this northern slope is showing signs of movement, it is recommended that the slope is buttressed to create an overall angle at or shallower than 1v:3h (~18°). A quick volume calculation has been undertaken and this possible configuration would need approximately 55,000m³ of material (Appendix III). This buttress would need to be constructed with the inclusion of adequate drainage to the crest and toe. Reinstating the original French Drains on the slope and adding new drains where necessary to connect into the existing system. If the slope is not buttressed it is recommended that the northern slope is closely monitored and inspected for signs of large-scale instability such as bulging of the middle or toe of the slope or tension cracks at the top of the slope.

4.4 Piezometer Data

4.4.1 Vibrating Wire Piezometers (VPWs) are present at the locations of Inclinometers I1, I2 and I3. It is understood that each instrument has one tip at a deep level (1A, 2A and 3A) and one tip at a shallow level (1B, 2B and 3B).

4.4.2 These instruments monitor the pore water pressure in the strata. A graph of the readings from these instruments over time is presented in Chart 4 overleaf. No data has been collected for VWPs 3A and 3B since April 2016 due to burial of this instrument.

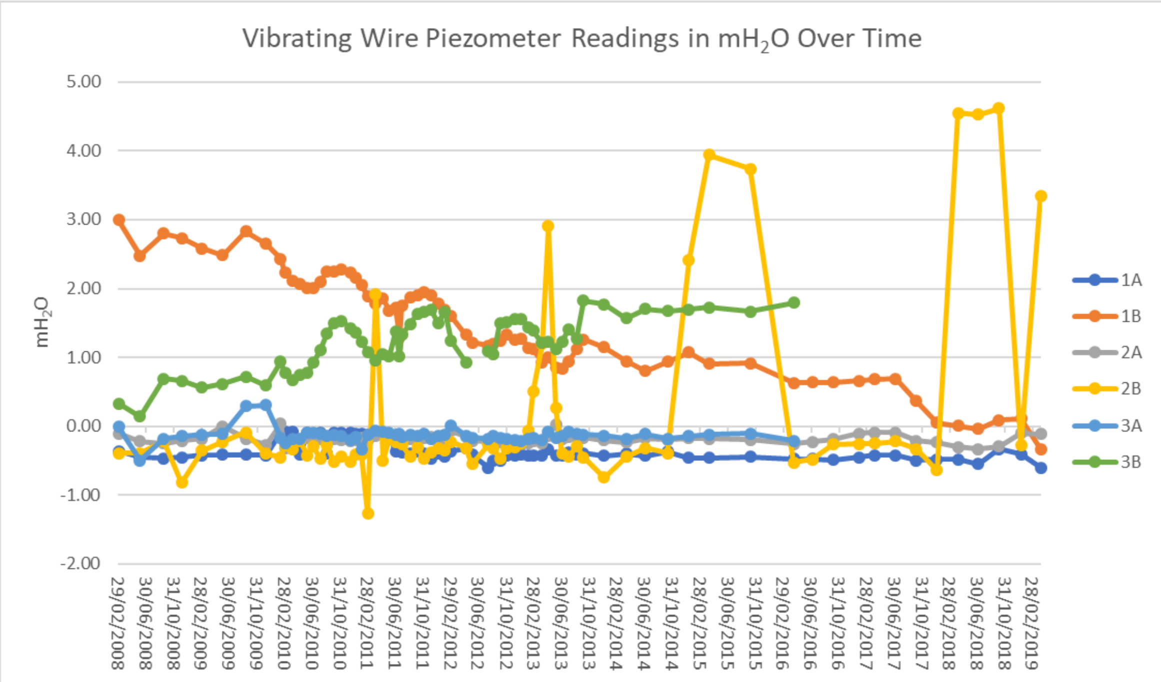


Chart 4: *Vibrating Wire Piezometer Data*

4.4.3 From Chart 4 the following points can be made:

- The tips at the deeper levels (1A, 2A and 3A) in the VWPs show consistent, near zero or slightly negative pore water pressures;
- VWP 1B continues to show a decrease in pore water pressure over time;
- 2B shows fluctuating behaviour, with high pore water pressures over the last year, decreasing in January 2019 then rising again in the most recent readings from 5th April 2019. Although these readings are high it is still generally in line with what has been recorded previously.
- 3B has shown a general increase in pore water pressure since 2008 however, this has remained steady since October 2010 until it was buried in 2016.

4.4.4 An increase in pore water pressure can lead to a reduction in shear strength in cohesive soils, increasing the likelihood of a failure. Therefore, continued monitoring of these installations is recommended.

5 CONCLUSIONS AND RECOMMENDATIONS

5.0.1 An analysis of the available inclinometer data in Section 4 has noted seasonal fluctuations seen in Inclinometers I2 and I4 at shallow depths. These are likely due to the swelling and shrinkage of cohesive soils due to local vegetation and variable water inputs through the cycle of seasons. Over and above the seasonal fluctuations, there are several points to note as follows:

- Location I1: slight movements at shallow depth to the south and east (downslope). In the last few months there has been movement towards the west in the magnitude of up to 20mm at the surface and 2mm at depth, this could be a precursor to further movement downslope;
- Location I2: a very slight trend of movement east (downslope) at surface. In the last couple off months there has been movement at depth in the northerly direction (B-);
- Location I3: slight movement at shallow depth to the north east and, at both shallow and at depth in the north west direction;
- Location I4 there is significant and uncharacteristic, movement (~20mm) in the last year in the north and east direction at depth.

5.0.2 QuarryDesign note that some of the cumulative data may exhibit a certain amount of bias shift error. Bias shift errors are small errors which occur when the data reduction procedure of the standard two pass survey is unable to eliminate the entire value of the bias from the probe. Some specialist software, such as In-Site software, may be able to correct for these errors and it is recommended that this is explored in if significant fluctuations are noted. These small errors are not considered to be of concern in the long-term interpretation of the data presented in Appendix I, as it is considered that underlying trends can be seen over the occasional noise of other small errors.

5.0.3 An analysis of the available data has found no evidence for any significant recent movements of the western slope although the points of note listed above should be kept in mind and compared against future monitoring results as they become available.

5.0.4 Recommendations are as follows:

- The quarterly monitoring of these installations should continue along with an annual analysis of the available data;
- A visual inspection of the slope by the site-based staff is recommended on a monthly basis, to check for any changes in the historic tension cracks at the top of the slope; in particular the northern slope (below I4) should be inspected where recent motion has been recorded above 17m bgl;
- Due to this recent motion, QuarryDesign recommend that consideration should be given to the buttressing of the northern slopes below I4. An overall slope angle of shallower than 1v:3h is recommended, including adequate drainage or this slope should be closely monitored for large scale movement; and
- VWP P3 has been reported as being unable to be monitored due to the headworks being buried. An additional recommendation is therefore for the site to undertake the necessary remedial works as soon as possible to relocate the headworks and enable VWP P3 to continue to be monitored.

BACK PAGE – REPORT END