

8.1.1 Zone A

Should provide stable conditions for residential development pending the usual specific geotechnical assessments undertaken for the purposes of subdivision consent and foundation design. Likely to provide ground conditions suitable for either traditional NZS3604 design or SED.

8.1.2 Zone C

Requires further and comprehensive geotechnical investigation to better delineate the Zone C boundaries. Subsequent to further investigations the geotechnical risks, in particular relating to potential instability within the Zone, will be better understood. This will lead to developing a ground model from which areas of potential development can be identified with and without engineering solutions needed to mitigate risk associated with ground conditions and natural hazards. SED is likely to be required for all dwellings within Zone C.

While further investigation is likely to identify specific areas suitable for development of building platforms, sections of the Zone C are likely to remain unsuitable for residential development.

Any areas within Zone C identified as potential building platforms must remain cognisant of the Building Act 2004, in particular Sections 71 & 72, that address building on land subject to natural hazards.

8.1.3 Zone B

Our current investigations to date indicate that sections of Zone B should provide stable conditions for residential development. However, in order to delineate these areas further detailed geotechnical assessment and study is required so that the zone can be reclassified into either Zone A or Zone C.

The spatial extent of the zones is shown on Drawing 005 as shaded areas. The zones are summarised as follows:

8.2 ZONE A

8.2.1 General

Zone A (shaded light green) includes the western and central portions of the subdivision down-slope of the landslide zone. The slopes are typically gently to moderately sloping.

Development within Zone A would likely consist of construction closely following the existing slope contour given the relatively shallow nature of schist bedrock.

8.2.2 Potential Risks

The main risks to subdivision development within the Zone A include:

- Rock fall: rock fall from loose boulders and destabilized bluffs poses a risk to the upper portions of Zone A. Rock fall can be managed via a number of methods including rock pinning, removal of loose boulders, slope planting, debris diversion structures, benches and retained walls / fences.

- **Schist rock:** While the proposed SED philosophy of the subdivision means that large excavations for individual residential dwellings are not anticipated, significant excavation of schist rock may be required to form access-ways and individual building platforms depending on the slope geometry. This can be costly and time consuming for both the developer and lot owners. This can be managed to a degree by adopting SED dwellings, single lane roads, passing bays, off-street parking, houses constructed on existing slope grades.
- **Surface water flow paths:** The overland flow paths which extend through Zone A may require diversion or development positioned to allow the progress of the surface water features.

11.3 ZONE B

Zone B (shaded yellow) includes the upper landslide areas within the central portion of the site and the eastern steep slopes below the mapped landslide zone. These areas may provide suitable subdivision development areas for residential purposes with appropriate SED foundation and structural design, slope stabilization solutions, constraints on site earthworks and controls on development pending further geotechnical analysis.

11.4 ZONE C

Zone C (shaded light blue) includes the steep slopes located along the toe of the landslide. The slopes are heavily disturbed with a number of 'geologically' recent tension cracks were observed within these slopes. Given the scale of the slope movement and slope steepness, it is likely that development within Zone C will be cost prohibitive considering the likely engineered solutions required to adequately stabilise the slopes. However, pending further investigation, parts of Zone C may provide specific building platforms suitable for SED dwellings provided Sections 71 & 72 of the Building Act 2004 are appropriately addressed and satisfied.

Forestation has been demonstrated to have a positive impact on shallow slope stability within superficial soils and can provide protection against soil erosion and debris flow. However recent studies and experience from Christchurch has shown that trees are not as successful in mitigating slope stability issues and are also prone to fire and disease, which effectively removes them from the equation.

Zone C is currently being cleared of its remnant forestry cover. Therefore, consideration should be given to the impact this may have on site and whether planting of more appropriate species has merit.

9 FUTURE WORKS

We understand that if the development progresses, this will be undertaken in a staged process beginning within the lower southern portion of the site and migrating to the western portions. This is considered to be feasible and specific investigation of "Stage 1" should be undertaken for the purposes of subdivision consent. We can provide a program of investigations around this as required.

As discussed previously, we also recommend that survey marks are protected and continued to be monitored.

We also recommend that the testing data of the borehole core be reviewed when complete.

10 LIMITATIONS

10.1 GENERAL

Ground Consulting Ltd has undertaken this assessment in accordance with the brief as provided, based on the site and location as shown on Drawing 003. This report has been provided for the benefit of our client, and for the authoritative council to rely on for the purpose of processing the consent for the specific project described herein. No liability is accepted by this firm or any of its directors, servants or agents, in respect of its use by any other person, and any other person who relies upon information contained herein does so entirely at their own risk.

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The sub-surface conditions have been extrapolated between the investigations undertaken. Whilst care has been taken to provide sufficient sub-surface information following best practice, no guarantee can be given on the validity of the inference made and it must be appreciated that actual conditions could vary from the assumed model.

10.2 FURTHER INVESTIGATIONS REQUIRED

This assessment has been undertaken for the proposed site development to date. Any structural changes, alterations and additions made to the proposed development should be checked by a suitably qualified person and may require further investigations and analysis.

Geotechnical inspections will be required during construction to assess site slopes, foundation excavations, retaining walls and other geotechnical aspects of the development. This is to ensure ground conditions encountered are in accordance with the findings of this assessment. If ground conditions differ from those presented in this report, advice on design and construction modifications should be sought from a suitably qualified person.

11 REFERENCES

Bell Geoconsulting Ltd (2018): Unpublished consulting report (BGL Reference 1908/01) dated 31 October 2018 for Steve Middleton.

Stossel, D L (1990): *The Engineering Geology of Frankton Arm*. Unpublished MSc Thesis, University of Canterbury.

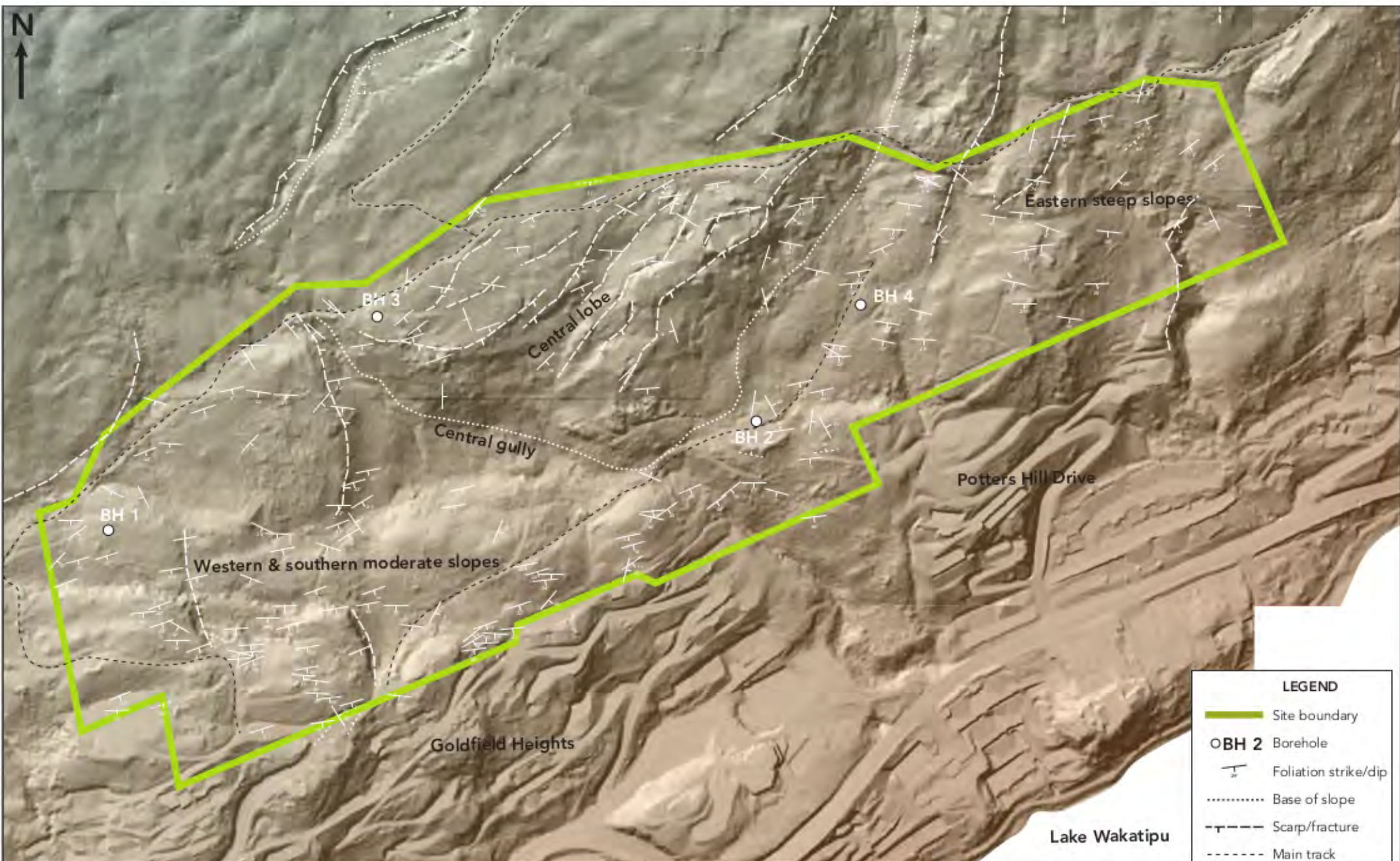
DRAWINGS



Rev	Date	Status	Drafted	Reviewer	File Ref.
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					1:20,000
					0 80 400 800m
					Project No. 4726
					Report Ref. R4726-1
					Drawing No. 001



Rev	Date	Status	Drafted	Reviewer	File Ref.
A	07/05/2019	Issued	S.W	FW	MAC:\Projects\45504726\4550-1\4550726-1A-DRW\02.dwg
					Scale (A4) 1:3000
					0 85 170m
					Project No. 4726
					Report Ref. R4726-1
					Drawing No. 002



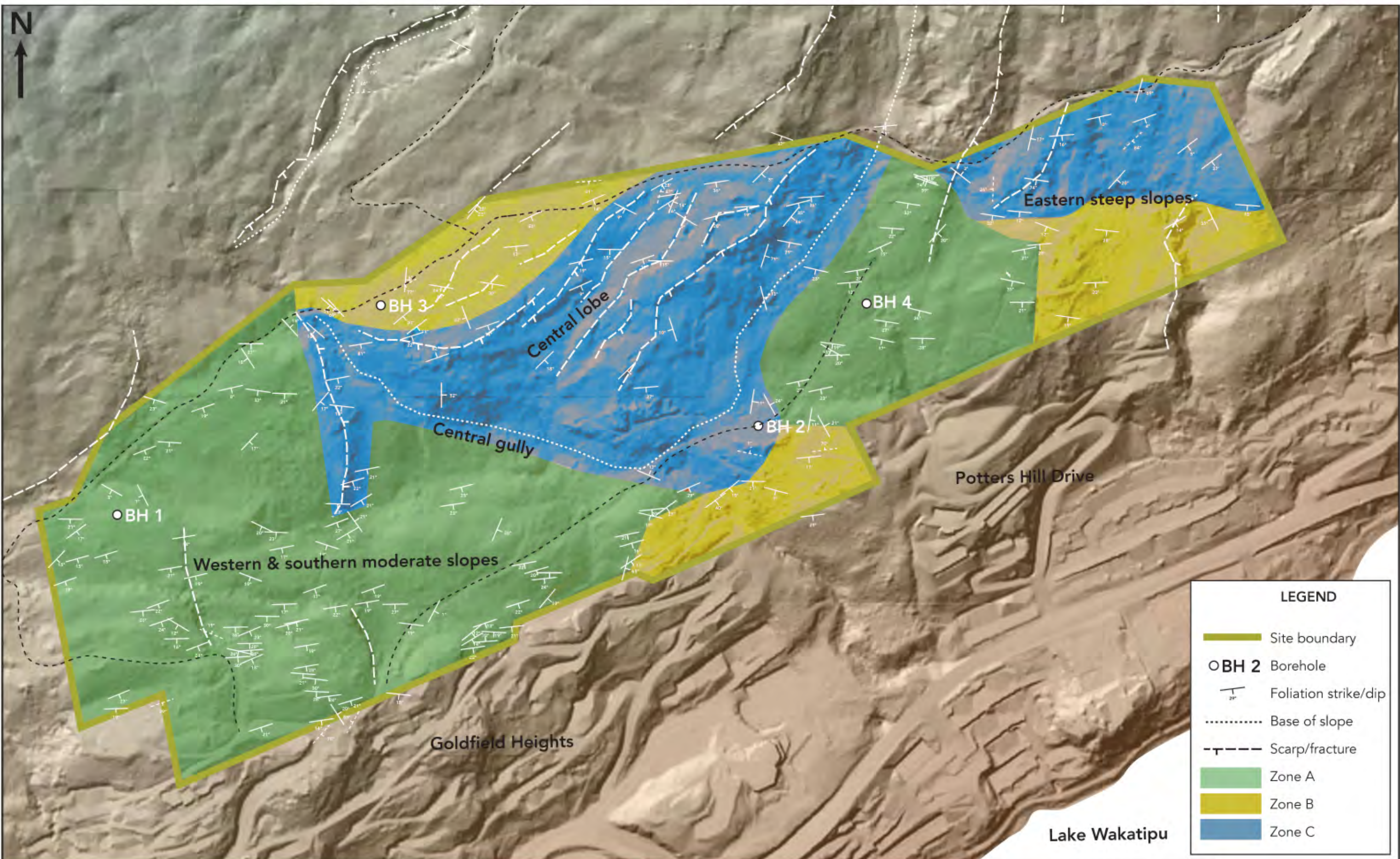


LEGEND

- Site boundary
- BH 2 Borehole
- Foliation strike/dip
- - - - - Base of slope
- T - - - Scarp/fracture
- - - - - Major scarp
- Mapped landslide (in vicinity of site)



Rev	Date	Status	Drafted	Reviewer	File Ref.
A	07/05/2019	Issued	S.W	FW	MAC:\Projects_45504726\R4726-1A\R4726-1A-DWG004
					Scale (A4) 1:6000
					0 170 340m
					Project No. 4726
					Report Ref. R4726-1
					Drawing No. 004



APPENDIX A: INVESTIGATION LOGS



BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
		25 50 75 100%	25 50 75		0 10 20 30 40 50 60 70 80 90 100				
Moderately weathered, light grey, fine fabric, foliation, gently inclined, laminated, weak. Schist. Alpha = 70.	Rotary cored	100%			0-10				
Slightly weathered, light grey, weak. Fault		90%			10-20				
Unweathered, light grey, fine fabric, foliation, gently inclined, laminated, moderately strong. Schist. Alpha = 70.		100%	50%	10	20-30				
Unweathered, light grey, weak. Fault.		90%		20	30-40				
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong. Schist. Alpha = 70.		100%	50%		40-50				
Slightly weathered, light grey, foliation, gently inclined, laminated, moderately strong. Orange staining in places. Possible increased quartz content in places. Schist. Alpha = 70. 100mm thick foliation shears at 2.8m & 3.1m.		90%	50%	30	50-60				
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong. Schist. Alpha = 70.		100%	50%		60-70				
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong. Schist, becoming more pelitic (darker) in appearance, quartz segregation more marked. Alpha = 70.		100%	50%	40	70-80				

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	50				25	50	5	10	15	20	25	30	35	40			
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, becoming more pelitic (darker) in appearance, quartz segregation more marked Alpha = 70.	Rocky core	100%	100%	50%	0.0		5	10	15	20	25	30	35	40	45				
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, Alpha = 70.		91%	91%		0.5		5	10	15	20	25	30	35	40	45				
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, Alpha = 70.		100%	100%	50%	1.0		5	10	15	20	25	30	35	40	45				
Unweathered, dark grey, weak, Fault		91%	91%		1.5		5	10	15	20	25	30	35	40	45				
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, Alpha = 70.		100%	100%	50%	2.0		5	10	15	20	25	30	35	40	45				

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		ROD (%)		DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	75	25	75			5	10	15	20	25	30	35	40	45				
Unweathered, dark grey, foliation, gently inclined, shaly laminated, moderately strong, Schist, Alpha = 70.	Rocky core	100%		50%		0	10	15	20	25	30	35	40	45						
Unweathered, dark grey, foliation, gently inclined, shaly laminated, moderately strong, Schist, Alpha = 70.		100%		50%		10	10	15	20	25	30	35	40	45						
Unweathered, dark grey, foliation, gently inclined, shaly laminated, weak, Schist, Alpha = 70.		70%		50%		20	10	15	20	25	30	35	40	45						
Unweathered, dark grey, weak, fault, 1.6m of core loss, schist reduced to gravel, suspended fines washed out by drilling fluids. Occasional sections where foliation still visible, alpha looks consistent ~70.		40%		50%		30	10	15	20	25	30	35	40	45						

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, dark grey, weak, fault, 1.6m of core loss, some reduced to gravel, suspended fines, washed out by drilling fluids. Occasional sections where foliation still visible, alpha looks consistent ~ 70.	Rotary cored	40%	25%						
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist Alpha ~ 70.		91%	50%	15.0					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist Alpha ~ 65, 10mm foliation shear at 16.9m.		100%	50%						
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist Alpha ~ 65.		100%	50%	70.0					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist Alpha ~ 65.		100%	50%	18.0					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist Alpha ~ 70.		91%	50%	30.0					

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	75				25	75	5	10	15	20	25	30	35	40			
Unweathered, dark grey; foliation, gently inclined, finely laminated, moderately strong. Schist. Alpha = 70.	Rotary core	90%			20.0		5	10	15	20	25	30	35	40	45				
Unweathered, light grey; foliation, gently inclined, laminated, moderately strong. Schist. More psammic (lighter) appearance, less intense quartz banding. Alpha = 70. Drilling mis-lube, 0.4m core loss, signs of spinning core.		100%			21.0														
Unweathered, light green; foliation, gently inclined, laminated, moderately strong. Schist. Alpha = 70.		100%		50%	23.0														
Unweathered, dark grey; foliation, gently inclined, finely laminated, moderately strong. Schist. Darker more pelitic appearance. Alpha = 70.		100%		50%	24.0														

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH1

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Brook

START DATE: 15/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 15/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION

METHOD

TCR (%)

ROD (%)

DEPTH

GRAPHIC
/ SBT

SPT Blows
(uncorrected)

DATA

WATER

INSTALLATION

SCM 25m

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH2

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 16/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 17/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	RQD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION					
		25 50 75	25 50 75		0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200 9210 9220 9230 9240 9250 9260 9270 9280 9290 9300 9310 9320 9330 9340 9350 9360 9370 9380 9390 9400 9410 9420 9430 9440 9450 9460 9470 9480 9490 9500 9510 9520 9530 9540 9550 9560 9570 9580 9590 9600 9610 9620 9630 9640 9650 9660 9670 9680 9690 9700 9710 9720 9730 9740 9750 9760 9770 9780 9790 9800 9810 9820 9830 9840 9850 9860 9870 9880 9890 9900 9910 9920 9930 9940 9950 9960 9970 9980 9990 10000									
Highly weathered; light grey, very weak, Schist derived gravels with occasional cobble, assume fines washed out by drilling.		50%	90%											
Moderately weathered; light grey, foliation, gently inclined, laminated; weak, Schist, Alpha = 50 (not likely in situ).		80%	90%											
Highly weathered; light grey, very weak, Fault.		80%	90%											
Slightly weathered; dark grey, foliation, gently inclined, laminated; weak, Schist, darker pelitic appearance, Alpha = 70.		90%	90%											
Unweathered; dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, orange staining, Occasional quartz veins at 30 to core axis, Alpha = 70.		90%	90%											
Moderately weathered; dark grey, foliation, gently inclined, thinly laminated; weak, Fault/crush zone, Foliation still visible, alpha = 70.		50%	90%											
Unweathered; dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, Alpha = 65.		100%	90%											
Highly weathered; dark grey, weak, Fault, schist derived crushed material, Margins parallel to foliation.		50%	90%											
Slightly weathered; dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, orange staining, Alpha = 65.		90%	90%											
Highly weathered; dark grey, weak, Fault, Schist derived gravels, fines washed out by drilling.		50%	90%											
Slightly weathered; dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, minor orange staining, Alpha = 55.		90%	90%											
Moderately weathered; dark grey, weak, Fault, Schist, reduced to gravel, suspect fines washed out by drilling fluids.		50%	90%											
Unweathered; dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, Alpha = 45.		90%	90%											

REMARKS

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HOLE DEPTH: 26.5m

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BOREHOLE LOG

HOLE NO.:

BH2

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 16/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 17/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong. Schist. Alpha = 45.	Rocky core	25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70		100%	5 10 15 20 25 30 35 40 45			
Moderately weathered, dark grey, foliation, gently inclined, finely laminated, weak. Schist. Crushed zone, but foliation intact. Alpha = 45.		80%							
Moderately weathered, dark grey, foliation, gently inclined, finely laminated, weak. Schist, crushed and broken with foliation still visible in places. Alpha = 60. Silt filled joint perpendicular to foliation.		80%		6.0					
Moderately weathered, dark grey, foliation, gently inclined, finely laminated, very weak. Schist, crushed in places but generally intact. Two 30mm faults parallel to foliation. Alpha = 65.		90%							
Highly weathered, dark grey, very weak. Fault. Schist derived fragments.		80%		7.0					
Unweathered, dark grey, foliation, gently inclined, laminated, moderately strong. Schist. 5mm quartz vein perpendicular to foliation. Alpha = 70.		90%							
Moderately weathered, dark grey, foliation, gently inclined, finely laminated, weak. Schist crush/fault zone. Foliation intact in places, zones of fault gouge or gravels in others. Alpha = 70.		70%		8.0					
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong. Schist. Darker more pulpy appearance. Alpha = 70.		90%		9.0					

REMARKS

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HOLE DEPTH: 26.5m

Created: 5/29/2019 12:45:20 PM



BOREHOLE LOG

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BH2

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CO-ORDINATES: 0mE, 0mN ()

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OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong. Schist. Darker more polished appearance. Alpha = 70		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, very weak; Fault. Schist, reduced to gravel, fines washed out by drilling.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, very weak; Fault. Gouge, may have been compacted during drilling.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, very weak; Fault. Fines washed out of schist derived gravels.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark brown, extremely weak; Fault. Gravely gouge.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, very weak; Fault, some fines washed out.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Completely weathered, dark grey, extremely weak; Fault gouge.		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, very weak; Fault. Sandy gravels and occasional cobbles. Occasional intact schist. Alpha = 45		25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70			5 10 15 20 25 30 35 40 45			

REMARKS

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HOLE DEPTH: 26.5m

Created: 5/29/2019 12:45:21 PM



BOREHOLE LOG

HOLE NO.:

BH2

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 16/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 17/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Highly weathered; dark grey, very weak, Fault. Sandy gravels and occasional cobbles. Occasional intact schist. Alpha = 45	Rotary cored	25 50 75	25 50 75	0	0	5 10 15 20 25 30 35 40 45			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong; Schist. Alpha = 60.		70	75	15.0					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong; Schist. Alpha = 60.		90	75	20.0					
Highly weathered, dark grey, weak, Fault. Schist derived gravel.		30	75	25.0					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong; Schist. Alpha = 60.		90	75	30.0					
Moderately weathered, dark grey, foliation, gently inclined, thinly laminated, weak, Fault, intact schist with zones of gravel, cobbles in places. Alpha = 60.		50	75	35.0					
Moderately weathered, dark grey, foliation, gently inclined, thinly laminated, weak, Schist. Crush zone, foliation intact. Alpha = 60.		80	75	40.0					
Highly weathered, dark grey, weak, Fault. Schist derived gravels.		30	75	45.0					
Unweathered, dark grey, foliation, gently inclined, thinly		90	75	50.0					

REMARKS

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HOLE DEPTH: 26.5m

Created: 5/29/2019 12:45:21 PM



BOREHOLE LOG

HOLE NO.:

BH2

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 16/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 17/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		ROD (%)		DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	75	25	75			5	10	15	20	25	30	35	40	45	50			
laminated, moderately strong Schist. Alpha = 60	Rotary cored	90%	90%	30%	30%		11.1													
Moderately weathered, dark grey, foliation, gently inclined, thinly laminated, weak, Fault. Schist derived gravel (fines washed out), with intact schist in places. Alpha = 60.		50%	50%	30%	30%	20.0														
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Quartz veins perpendicular to foliation, orange staining in places. Alpha = 65.		100%	100%	30%	30%															
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, more granitic appearance. Alpha = 65.		100%	100%	30%	30%	22.0														
Highly weathered, light grey, foliation, gently inclined, laminated, very weak, Fault. Schist derived gravel with some gouge. Intact schist in places.		50%	50%	30%	30%															
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Alpha = 65.		90%	90%	30%	30%	23.0														
Moderately weathered, light grey, foliation, gently inclined, laminated, weak, Fault. Gravels with intact schist in places.		50%	50%	30%	30%	24.0														
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, gneiss appearance. Alpha = 70.		100%	100%	30%	30%															

REMARKS

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HOLE DEPTH: 26.5m

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BOREHOLE LOG

HOLE NO.:

BH2

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 16/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 17/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	RQD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, light gray, foliation, gently inclined, laminated, Schist. Core damaged in transit. At least one fault in the interval.	Rotary coring	25 30 35 40 45 50 55 60 65 70	25 30 35 40 45 50 55 60 65 70	0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0 45.0	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45				
	ECOT 26.5m			0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0 45.0					

REMARKS

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HOLE DEPTH: 26.5m

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BOREHOLE LOG

HOLE NO.:

BH3

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 18/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 29/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Moderately weathered, light brown, foliation, gently inclined, laminated; weak, Schist. Orange staining. Core quite disked. Two small faults with fine gravel infill parallel to foliation.	Rotary cored	25 50 75	25 50 75		1.0	5 10 15 20 25 30 35 40 45			
Slightly weathered, light grey, foliation, gently inclined, laminated; moderately strong, Schist. Occasional orange staining. Occasional voids in quartz veins (chlorite dissolution?). Alpha = 65.		25 50 75	25 50 75		1.0	5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, foliation, gently inclined, thinly laminated; very weak. Fault. Darker more pelitic looking schist derived gravels and sands. Schist intact in places. Alpha = 65.		25 50 75	25 50 75	2.0	1.0	5 10 15 20 25 30 35 40 45			
Unweathered, dark grey, foliation, gently inclined, thinly laminated; moderately strong, Schist. Occasional voids in quartz veins. Alpha = 70.		25 50 75	25 50 75	3.0	1.0	5 10 15 20 25 30 35 40 45			
Unweathered, dark grey, foliation, gently inclined, thinly laminated; moderately strong, Schist, darker pelitic appearance. Increased chlorite content in quartz veins? Alpha = 70.		25 50 75	25 50 75	4.0	1.0	5 10 15 20 25 30 35 40 45			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Occasional quartz veins at 30 to core axis. Alpha = 70.		25 50 75	25 50 75		1.0	5 10 15 20 25 30 35 40 45			

REMARKS

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HOLE DEPTH: 24.5m

Created: 5/29/2019 12:45:21 PM



BOREHOLE LOG

HOLE NO.:

BH3

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 18/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 29/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Occasional quartz veins at 30 to core axis. Alpha = 70.	Rotary cored	25 100%	25 100%	0	11	5			
Highly weathered, light grey, very weak. Fault. Schist derived gravels, suspect fines washed out during drilling.		75 100%	75 100%	0	11	10			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Alpha = 65.		75 100%	75 100%	0	11	15			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. More pelitic dark material. Alpha = 65.		75 100%	75 100%	0	11	20			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. psammitic appearance. Alpha = 60.		75 100%	75 100%	0	11	25			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Darker pelitic material, orange staining in places. foliation variable in places. Alpha = 65.		75 100%	75 100%	0	11	30			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Alpha = 60.		75 100%	75 100%	0	11	35			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 65.		75 100%	75 100%	0	11	40			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist. Alpha = 65.		75 100%	75 100%	0	11	45			

REMARKS

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HOLE DEPTH: 24.5m

Created: 5/29/2019 12:45:21 PM



BOREHOLE LOG

HOLE NO.:

BH3

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 18/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 29/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, Alpha = 65.	Rotary cored	25 50 75	25 50 75		100%	5 10 15 20 25 30 35 40 45			
Moderately weathered, dark grey, foliation, gently inclined, thinly laminated, weak Schist, Alpha = 70.		90%	60%	110					
Moderately weathered, light grey, foliation, gently inclined, laminated, weak Schist, Alpha = 70.		100%	80%	120					
Moderately weathered, light grey, foliation, gently inclined, laminated, very weak Schist. Core broken for no apparent reason, Alpha = 70.		90%	60%	130					
Unweathered, light grey, moderately strong, Schist, Alpha = 75.		100%	80%	140					
Unweathered, dark grey, foliation, gently inclined, laminated, moderately strong, Schist, Orange staining in places, Alpha = 70.		100%	80%	150					
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, Alpha = 70.		100%	80%	160					
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Darker more pelitic appearance, color definition becoming more subtle, Alpha = 70.		90%	60%	170					
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, Alpha = 70.		100%	80%	180					

REMARKS

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HOLE DEPTH: 24.5m

Created: 5/29/2019 12:45:21 PM



BOREHOLE LOG

HOLE NO.:

BH3

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 18/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 29/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	RQD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION	
Unweathered, light grey, foliation gently inclined, laminated, moderately strong, Schist. Alpha = 70.	Rotary cored	70%	70%	0.0	100%	5				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Minor orange staining. Alpha = 65.		65%	65%	0.5	100%	10				
Highly weathered, dark grey, very weak, Fault. Schist derived gravel and coarse sand.		50%	50%	1.0	100%	15				
Unweathered, dark brown, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha 65.		65%	65%	1.5	100%	20				
Highly weathered, dark grey, very weak, Fault, gravely clayey soil.		50%	50%	2.0	100%	25				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 65.		65%	65%	2.5	100%	30				
Highly weathered, dark grey, very weak, Fault. Gravel and sands with indurated schist common. Alpha = 45.		45%	45%	3.0	100%	35				
		45%	45%	3.5	100%	40				
		45%	45%	4.0	100%	45				
		45%	45%	4.5	100%	50				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 65.	Rotary cored	65%	65%	5.0	100%	55				
		65%	65%	5.5	100%	60				
		65%	65%	6.0	100%	65				
		65%	65%	6.5	100%	70				
		65%	65%	7.0	100%	75				
		65%	65%	7.5	100%	80				
		65%	65%	8.0	100%	85				
		65%	65%	8.5	100%	90				
		65%	65%	9.0	100%	95				
		65%	65%	9.5	100%	100				
	Rotary cored	65%	65%	10.0	100%	105				
		65%	65%	10.5	100%	110				
		65%	65%	11.0	100%	115				
		65%	65%	11.5	100%	120				
		65%	65%	12.0	100%	125				
		65%	65%	12.5	100%	130				
		65%	65%	13.0	100%	135				
		65%	65%	13.5	100%	140				
		65%	65%	14.0	100%	145				
		65%	65%	14.5	100%	150				
	Rotary cored	65%	65%	15.0	100%	155				
		65%	65%	15.5	100%	160				
		65%	65%	16.0	100%	165				
		65%	65%	16.5	100%	170				
		65%	65%	17.0	100%	175				
		65%	65%	17.5	100%	180				
		65%	65%	18.0	100%	185				
		65%	65%	18.5	100%	190				
		65%	65%	19.0	100%	195				
		65%	65%	19.5	100%	200				
	Rotary cored	65%	65%	20.0	100%	205				
		65%	65%	20.5	100%	210				
		65%	65%	21.0	100%	215				
		65%	65%	21.5	100%	220				
		65%	65%	22.0	100%	225				
		65%	65%	22.5	100%	230				
		65%	65%	23.0	100%	235				
		65%	65%	23.5	100%	240				
		65%	65%	24.0	100%	245				
		65%	65%	24.5	100%	250				
	Rotary cored	65%	65%	25.0	100%	255				
		65%	65%	25.5	100%	260				
		65%	65%	26.0	100%	265				
		65%	65%	26.5	100%	270				
		65%	65%	27.0	100%	275				
		65%	65%	27.5	100%	280				
		65%	65%	28.0	100%	285				
		65%	65%	28.5	100%	290				
		65%	65%	29.0	100%	295				
		65%	65%	29.5	100%	300				
	Rotary cored	65%	65%	30.0	100%	305				
		65%	65%	30.5	100%	310				
		65%	65%	31.0	100%	315				
		65%	65%	31.5	100%	320				
		65%	65%	32.0	100%	325				
		65%	65%	32.5	100%	330				
		65%	65%	33.0	100%	335				
		65%	65%	33.5	100%	340				
		65%	65%	34.0	100%	345				
		65%	65%	34.5	100%	350				
	Rotary cored	65%	65%	35.0	100%	355				
		65%	65%	35.5	100%	360				
		65%	65%	36.0	100%	365				
		65%	65%	36.5	100%	370				
		65%	65%	37.0	100%	375				
		65%	65%	37.5	100%	380				
		65%	65%	38.0	100%	385				
		65%	65%	38.5	100%	390				
		65%	65%	39.0	100%	395				
		65%	65%	39.5	100%	400				
	Rotary cored	65%	65%	40.0	100%	405				
		65%	65%	40.5	100%	410				
		65%	65%	41.0	100%	415				
		65%	65%	41.5	100%	420				
		65%	65%	42.0	100%	425				
		65%	65%	42.5	100%	430				
		65%	65%	43.0	100%	435				
		65%	65%	43.5	100%	440				
		65%	65%	44.0	100%	445				
		65%	65%	44.5	100%	450				
	Rotary cored	65%	65%	45.0	100%	455				
		65%	65%	45.5	100%	460				
		65%	65%	46.0	100%	465				
		65%	65%	46.5	100%	470				
		65%	65%	47.0	100%	475				
		65%	65%	47.5	100%	480				
		65%	65%	48.0	100%	485				
		65%	65%	48.5	100%	490				
		65%	65%	49.0	100%	495				
		65%	65%	49.5	100%	500				
	Rotary cored	65%	65%	50.0	100%	505				
		65%	65%	50.5	100%	510				
		65%	65%	51.0	100%	515				
		65%	65%	51.5	100%	520				
		65%	65%	52.0	100%	525				
		65%	65%	52.5	100%	530				
		65%	65%	53.0	100%	535				
		65%	65%	53.5	100%	540				
		65%	65%	54.0	100%	545				
		65%	65%	54.5	100%	550				
	Rotary cored	65%	65%	55.0	100%	555				
		65%	65%	55.5	100%	560				
		65%	65%	56.0	100%	565				
		65%	65%	56.5	100%	570				
		65%	65%	57.0	100%	575				
		65%	65%	57.5	100%	580				
		65%	65%	58.0	100%	585				
		65%	65%	58.5	100%	590				
		65%	65%	59.0	100%	595				
		65%	65%	59.5	100%	600				
	Rotary cored	65%	65%	60.0	100%	605				
		65%	65%	60.5	100%	610				
		65%	65%	61.0	100%	615				
		65%	65%	61.5	100%	620				
		65%	65%	62.0	100%	625				
		65%	65%	62.5	100%	630				
		65%	65%	63.0	100%	635				
		65%	65%	63.5	100%	640				
		65%	65%	64.0	100%	645				
		65%	65%	64.5	100%	650				
	Rotary cored	65%	65%	65.0	100%	655				
		65%	65%	65.5	100%	660				
		65%	65%	66.0	100%	665				
		65%	65%	66.5	100%	670				
		65%	65%	67.0	100%	675				
		65%	65%	67.5	100%	680				
		65%	65%	68.0	100%	685				
		65%	65%	68.5	100%	690				
		65%	65%	69.0	100%	695				
		65%	65%	69.5	100%	700				
	Rotary cored	65%	65%	70.0	100%	705				
		65%	65%	70.5	100%	710				
		65%	65%	71.0	100%	715				
		65%	65%	71.5	100%	720				
		65%	65%	72.0	100%	725				
		65%	65%	72.5	100%	730				
		65%	65%	73.0	100%	735				
		65%	65%	73.5	100%	740				
		65%	65%	74.0	100%	745				
		65%	65%	74.5	100%	750				
	Rotary cored	65%	65%	75.0	100%	755				
		65%	65%	75.5	100%	760				
		65%	65%	76.0	100%	765				
		65%	65%	76.5	100%	770				
		65%	65%	77.0	100%	775				
		65%	65%	77.5	100%	780				
		65%	65%	78.0	100%	785				
		65%	65%	78.5	100%	790				
		65%	65%	79.0	100%	795				
		65%	65%	79.5	100%	800				
	Rotary cored	65%	65%	80.0	100%	805				
		65%	65%	80.5	100%	810				
		65%	65%	81.0	100%	815				
		65%	65%	81.5	100%	820				
		65%	65%	82.0	100%	825				
		65%	65%	82.5	100%	830				
		65%	65%	83.0	100%	835				
		65%	65%	83.5	100%	840				
		65%	65%	84.0	100%	845				
		65%	65%	84.5	100%	850				
	Rotary cored	65%	65%	85.0	100%	855				
		65%	65%	85.5	100%	860				
		65%	65%	86.0	100%	865				
		65%	65%	86.5	100%	870				
		65%	65%	87.0	100%	875				
		65%	65%	87.5	100%	880				
		65%	65%	88.0	100%					



BOREHOLE LOG

HOLE NO.:

BH3

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 18/04/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 29/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		ROD (%)		DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	75	25	75			5	10	15	20	25	30	35	40	45	50			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 65.	Rotary core																			
Highly weathered, dark grey, very weak, Fault. Schist derived gravel.																				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Occasional voids in quartz veins. Alpha = 60.																				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 60.																				
Moderately weathered, dark grey, foliation, gently inclined, thinly laminated, weak, Schist. Alpha = 60.																				
Highly weathered, dark grey, very weak, Fault. Schist derived gravel and clay.																				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist. Alpha = 60.																				
	BOH: 24.5m																			

REMARKS

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HOLE DEPTH: 24.5m

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BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	RQD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
slightly weathered; dark brown; weak. Topsoil with fragments of weathered schist.	Rocky core	25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0	75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1				



BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)		RQD (%)		DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)										DATA	WATER	INSTALLATION
		25	75	25	75			5	10	15	20	25	30	35	40	45	50			
Slightly weathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, darker pelitic appearance, alpha = 90. Occasional orange staining on quartz veins and joint planes. RQD probably more representative of previous interval damaged by mis-tube.	Rotary cored	90%	90%	30%	75%	5.0		10	15	15	15	15	15	15	15	15	15			
Unweathered, dark grey, gently inclined, weak Fault, schist derived gravels. Fault margins parallel to foliation (alpha = 80).		90%	90%	30%	75%	5.5		10	15	15	15	15	15	15	15	15	15			
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong, Schist, darker pelitic appearance, alpha = 90. Occasional weathering in quartz veins, occasional cross-cutting quartz veins (alpha = 20).		90%	90%	30%	75%	6.0		10	15	15	15	15	15	15	15	15	15			
Unweathered, dark grey, gently inclined, weak Fault, Schist derived gravels with occasional cobbles. Margins appear parallel to foliation (alpha = 90).		90%	90%	30%	75%	7.0		10	15	15	15	15	15	15	15	15	15			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, lighter psammitic appearance with occasional bands of darker material, alpha = 90. Cross-cutting quartz vein (alpha = 25).		90%	90%	30%	75%	8.0		10	15	15	15	15	15	15	15	15	15			
Unweathered, dark grey, foliation, gently inclined, laminated, moderately strong, Schist, lighter psammitic appearance, alpha = 90. High RQD.		90%	90%	30%	75%	9.0		10	15	15	15	15	15	15	15	15	15			

REMARKS



BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, dark grey, foliation, gently inclined, laminated, moderately strong, Schist, lighter psammitic appearance, alpha = 90, High ROD	Rotary cored	25 50 75	25 50 75		0	0			
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, darker pelitic appearance, alpha = 80.		90%	80%		10	10			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, lighter psammitic appearance, alpha = 90.		100%	80%	10	20	20			
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, darker pelitic appearance, alpha = 80.		100%	40%	20	30	30			
Moderately weathered, light grey, foliation, gently inclined, laminated, very weak, Schist, lighter psammitic appearance, alpha = 90, Some orange staining in quartz veins.		100%	70%	30	40	40			
Unweathered, dark grey, foliation, gently inclined, finely laminated, moderately strong, Schist, darker pelitic appearance, alpha = 80.		100%	70%	40	50	50			
Unweathered, light grey, foliation, gently inclined, laminated, moderately strong, Schist, lighter psammitic appearance, occasional orange staining in quartz veins, alpha = 90.		90%	70%	50	60	60			

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, light grey, foliation gently inclined, laminated, moderately strong. Schist, lighter psammitic appearance, occasional orange staining in quartz veins, alpha = 80.	Rocky core	25 50 75	25 50 75		100	5 10 15 20 25 30 35 40 45			
Unweathered, dark grey, foliation gently inclined, thinly laminated, moderately strong. Schist, darker pelitic appearance, occasional orange staining in quartz veins, alpha = 80.		25 50 75	25 50 75		100	5 10 15 20 25 30 35 40 45			
Unweathered, light grey, foliation gently inclined, laminated, moderately strong. Schist, lighter psammitic appearance, alpha = 80.		25 50 75	25 50 75	100	100	5 10 15 20 25 30 35 40 45			
Unweathered, dark grey, foliation gently inclined, thinly laminated, moderately strong. Schist, darker appearance, alpha = 80.		25 50 75	25 50 75	100	100	5 10 15 20 25 30 35 40 45			

REMARKS

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HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Block

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION	METHOD	TCR (%)	ROD (%)	DEPTH	GRAPHIC / SBT	SPT Blows (uncorrected)	DATA	WATER	INSTALLATION
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong. Schist, darker appearance, alpha = 90.	Rotary corer	25 50 75	25 50 75		100% 100% 100%	5 10 15 20 25 30 35 40 45			
Highly weathered, dark grey, foliation, gently inclined; weak. Fault schist derived gravels, margins parallel to foliation.		70%	80%	21.0	100% 100% 100%				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong. Schist, darker pettic appearance, alpha = 80.		25 50 75	25 50 75	22.0	100% 100% 100%				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong. Schist, darker appearance, alpha = 90.		25 50 75	25 50 75	23.0	100% 100% 100%				
Unweathered, dark grey, foliation, gently inclined, thinly laminated, moderately strong. Schist, darker appearance, alpha = 90. Small fault at 24.2m, parallel to foliation.		25 50 75	25 50 75	24.0	100% 100% 100%				

REMARKS

Page 5 of 6

HOLE DEPTH: 25m

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BOREHOLE LOG

HOLE NO.:

BH4

CLIENT: Gavin Moore
PROJECT: Mooreliving - Subdivision Feasibility

JOB NO.:

R4726

SITE LOCATION: Middleton Brook

START DATE: 23/05/2019

CO-ORDINATES: 0mE, 0mN ()

END DATE: 24/04/2019

DATUM: Ground

RIG:

OPERATOR: Jamie Edgar

DESCRIPTION

METHOD

TCR (%)

ROD (%)

DEPTH

GRAPHIC
/ SBT

SPT Blows
(uncorrected)

DATA

WATER

INSTALLATION

SCM 25m

REMARKS

Page 6 of 6

HOLE DEPTH: 25m

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Ground Consulting Ltd



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Tel: 03 442 5700

20 July 2022

Mr Gavin Moore

Silver Creek Ltd
820 Frankton Road
Queenstown

CC: Joshua Moore

By Email

Dear Gavin,

RE: RE-CLASSIFICATION OF SUBDIVISION DEVELOPMENT ZONES

Background

In 2019 GCL was commissioned by Silver Creek Limited to conduct a geotechnical feasibility assessment of what has become known as Silver Creek subdivision to assess potential for future development.

The intent of this report was to characterise ground conditions across the subdivision, identify areas where development will require different levels of remediation and/or engineering controls, and provide commentary on potential geotechnical risks associated with future development.

Recommendations provided in the report were underpinned by review of previous studies in the area, a significant amount of field/structural mapping, four diamond drilled boreholes, and interpretation of all of these. Given the amount of vegetation across the subdivision at the time findings and recommendations were provided with the caveat that further investigation be undertaken on an ongoing basis once clearance of vegetation commenced.

See GCL report R4726-1B Combined.pdf for further information.

Development Zones

As previously indicated, the initial geotechnical feasibility assessment was undertaken when the majority of the site was heavily forested and was prepared for the purpose of due diligence for future residential development of the block.

Since this initial report was authored, several key factors have occurred that now allow GCL to revise the initial subdivision development zones and locations, they are as followed:

- With tree clearance now complete on a large portion of the site, more detailed inspections of the site have become possible.
- GCL have been actively involved with monitoring of earthworks under RM200095. During the course of these site visits, additional specific investigation have been undertaken in several areas where future development is proposed. *Please refer to SIN 4736-12 Combined.pdf & L4726-1E Combined.pdf.*
- The completion of Laura Gneskos thesis on “*Geomorphology And Geotechnical Characterization Of The Queenstown Hill Landslide*”. This thesis performed an in-depth investigation into the geomorphology and geotechnical properties of the Queenstown Hill landslide and included detailed lidar mapping along with in the field investigation, paired with a detailed ground model that allowed for better understanding of the implications for future land development.

Given that points outlined above, GCL have redefined the three development zones outlined in Section 8 of the original report to a new four zone model that are outlined below with locations defined in the updated drawing R4726-1C-005.

Revised Development Zones for Residential Construction (Drawing 005)

Zone A

Zone A (shaded green) includes the western and eastern portions of the subdivision. The slopes are typically gently to moderately sloping. Zone A provides stable conditions for residential development and are likely to provide ground conditions suitable for traditional NZS3604 design.

Zone B

Zone B (shaded yellow) includes the upper area within the central portion of the site and the lower slopes of the central gully. Our current site investigations to date indicate that Zone B provides stable conditions for residential development with appropriate SED foundations and structural design. *Please refer to SIN 4736-12 Combined.pdf & L4726-1E Combined.pdf for site specific inspection reports.*

Zone C

Zone C (shaded orange) includes areas in on the eastern & western slope as well as centrally located along the toe of the relic landslide. Based on future further geotechnical investigation, these areas will be better understood and will be rezoned as either with (Zone B, yellow) and without (Zone A, green) SED solutions. Appropriate SED foundations and structural design will most likely be required for dwellings within Zone C. With further investigation, some sections of the Zone C may potentially remain unsuitable for residential development (Zone D, red).

Zone D

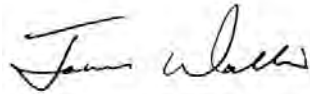
Zone D (shaded red) includes the steep slopes located along the central gully and certain areas located within the landslide toe. Given the large number of relic landforms present in these areas, it is unlikely that development within Zone C will occur give the considerable costs associated with the engineered solutions required to adequately stabilise the slopes.

Closure

We trust that this meets your immediate needs and provides an objective assessment of the overall geotechnical risks for the Silver Creek subdivision, as they currently stand.

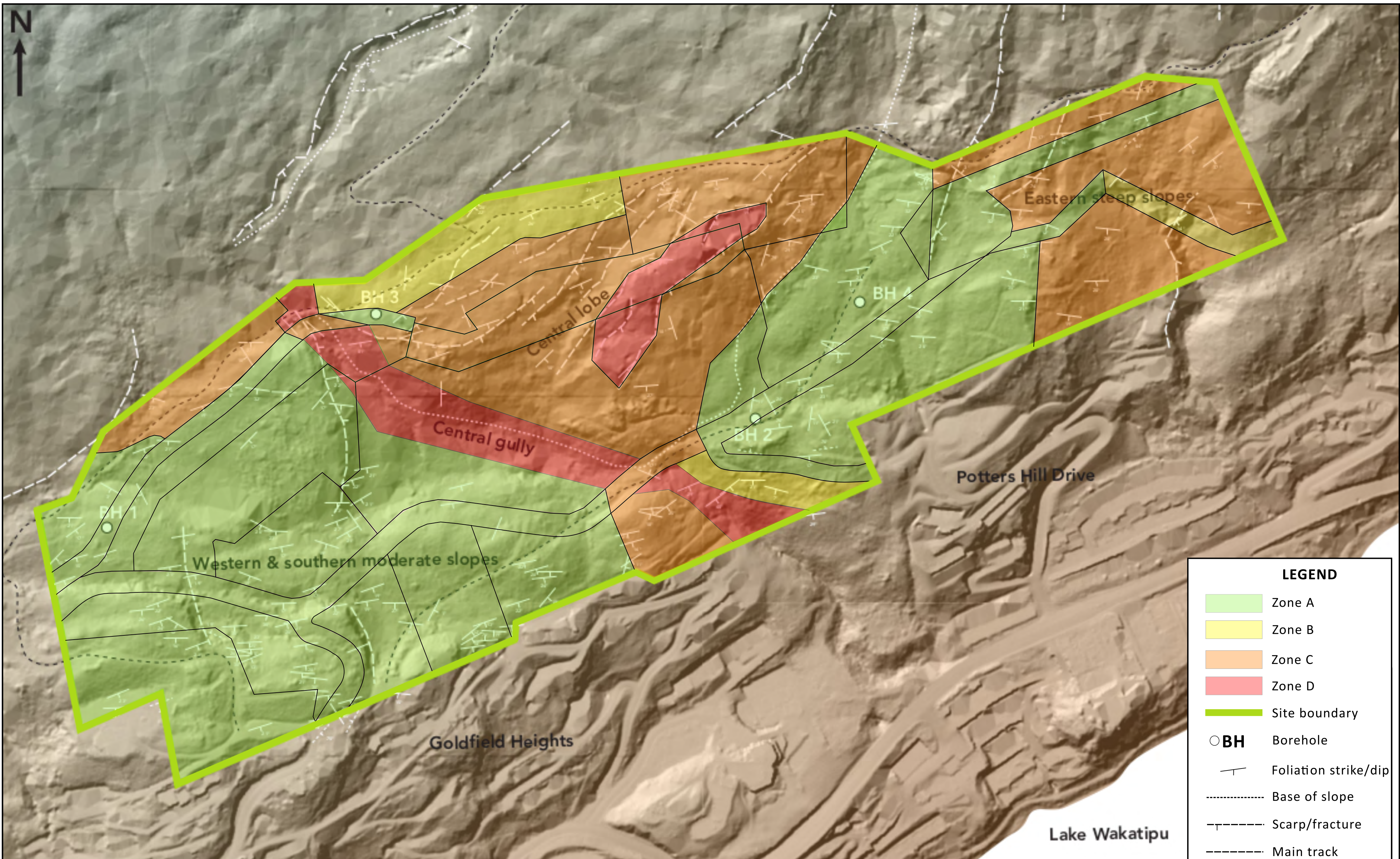
Should you require any further information regarding this, or any other, project please do not hesitate to contact me.

Yours sincerely,



James Wallis

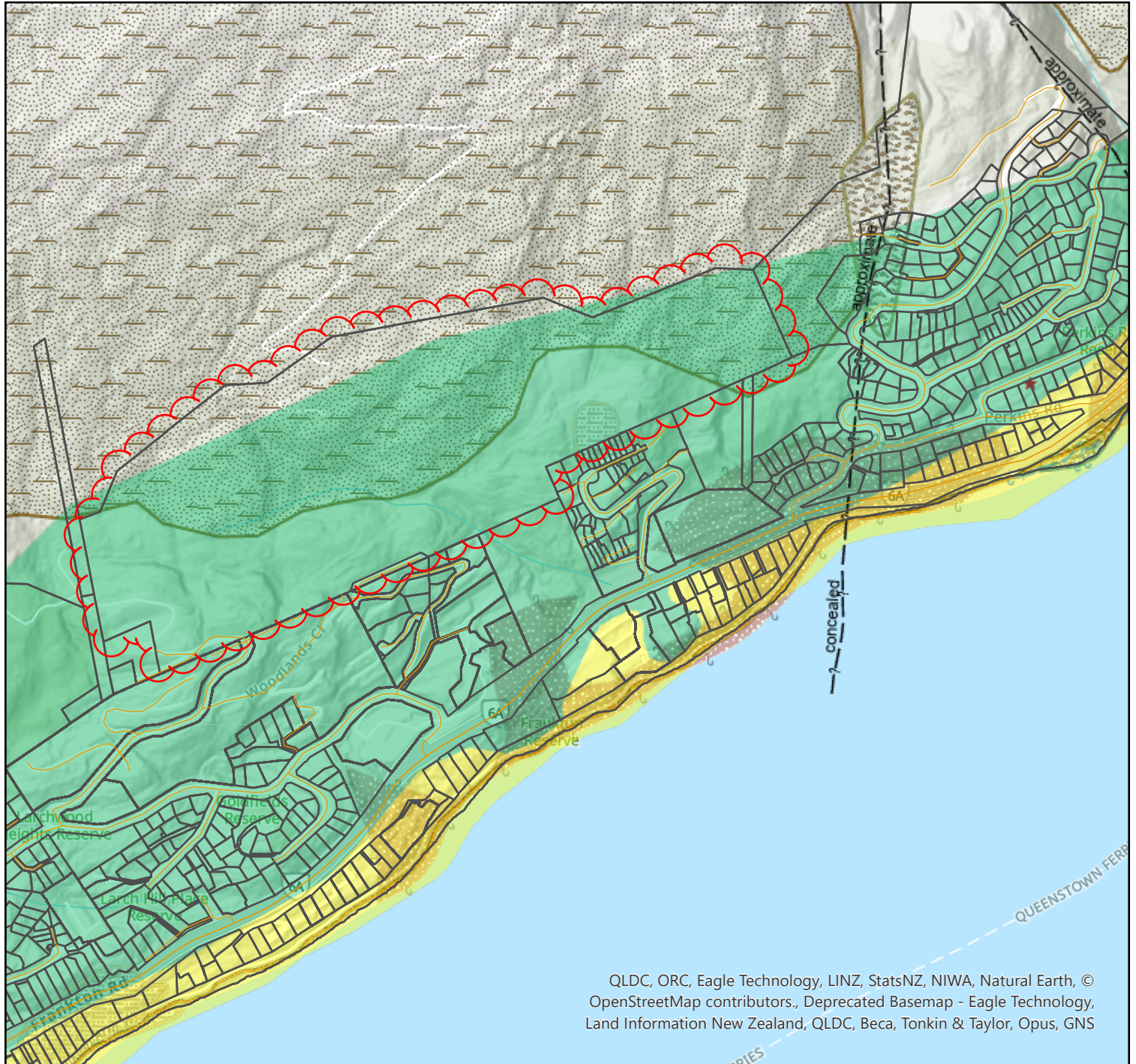
Engineering Geologist BSc MEngNZ



LEGEND

- Zone A
- Zone B
- Zone C
- Zone D
- Site boundary
- BH Borehole
- Foliation strike/dip
- Base of slope
- Scarp/fracture
- Main track

QLDC Natural Hazards Map



QLDC, ORC, Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., Deprecated Basemap - Eagle Technology, Land Information New Zealand, QLDC, Beca, Tonkin & Taylor, Opus, GNS

Roads

Parcels and Properties

Dangerous Goods License

POTENTIALLY
CONTAMINATED SITE

Building Act Hazards

Faults 2001 GNS

Inactive Fault - Location
approximate

2012 ORC Aggregation -
Rainfall Flooding

Return Period of Flood Events

150 Year

100 Year

75 Year

50 Year

**2012 Tonkin & Taylor Local
Analysis - Aggregation**

Classification

LIC 1 - Nil to Low

LIC 1 (P) - Probably Low

**2007 GNS Regional Analysis -
Otago Alluvial Fans Project**

Active, Composite - Location
approximate

**Landslide Areas - ORC
Regional Analysis**

Active Pre-existing Schist
Debris Landslides

Pre-existing Schist Debris
Landslides (Activity Unknown)

Slope Failure Hazard in
Superficial Deposits

0 0.25 0.5 1 km

Scale: 1:9,028

Map Date:
26/04/2024



The information provided on this map is intended to be general information only. While considerable effort has been made to ensure that the information provided on this map is accurate, current and otherwise adequate in all respects, Queenstown Lakes District Council does not accept any responsibility for content and shall not be responsible for, and excludes all liability, with relation to any claims whatsoever arising from the use of this map and data held within.

