

Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Appendix 9C Borehole Logs for Piezometers 8_21 and 9_21 from GWP (2022)



wsp

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Environmental Statement: Appendix 9C Borehole Logs for Piezometers 8_21 and 9_21 from GWP (2022)

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 62282762 OUR REF. NO. 6MT ES / APPENDIX 9C BOREHOLE LOGS FOR PIEZOMETERS 8_21 AND 9_21 FROM GWP (2022)

DATE: MAY 2024

WSP Canon Court West Abbey Lawn Shrewsbury SY2 5DE Phone: +44 1743 342 000

WSP.com

CIMP		G	₩₽°	onsulta	ants			Rotary Core Log	Borehole No. 2021-8		
Project	Name:	V	Voodlea	ze Qua	rry	Proj	ect No.:	Co-ords: 365121E - 187706N	Hole Type:		
Locatio	n:	<u>ד</u>	Tythering	gton		Hole	e Inclinatio	n: QOO Collar Level: 89.4m AOD	Scale:		
Client:		ŀ	lanson /	Aggrega	ates	Hole	e Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR		
Run Depth	Corir	ig Indic	;es (%)	Drill Depth	Drill Thickness	Reduce Level	d Legend	Stratum Description			
0.00 - 2.70	0	0	0		2.85			Not recovered.			
2.70 - 3.60	83	40	24	2.85	1.20	86.55		Pale grey and orangey brown, strong, perhaps very strong but broken, weathere very fine grained without banding, bioclasts or fossils. All core is fractured and b colours from weathering, especially on fracture surfaces. Fractures close spaced derived from horizontal suture stylolites.	ed LIMESTONE. Massive and roken. Orange brown I, some fractures possibly		
3.60 - 5.20	100	61	33	4.05 4.80	0.75	85.35 84.60		Pale grey and very pale grey, strong, LIMESTONE. Massive, very fine grained, w small (<2mm across) irregular shaped blebs. No veining. Slightly weathered on fractures Pale grey, moderately strong CALCAREOUS MUDSTONE. Gradational with limest	ithout fossils. Trace pyrite in medium to close spaced		
5.20 -	100	83	83		0.70			fine grained. Weakly laminated with bedding at 65 degrees to the core axis. Clos often filled with soft, grey CLAY (forming c. 5% of the interval).	se spaced open fractures,		
5.50 - 6.50	100	90	63	5.50	2.45	83.90		Pale grey to grey, moderately strong, ARGILLACEOUS LIMESTONE. Gradational Massive, locally weakly laminated, very fine grained. No fossils. Trace small pyrit reticulate hairline veinlets or bleaching (reduction) tracts. Medium spaced fractu	with calcareous mudstone. e blebs. Locally somewhat res.		
6.50 - 7.75 7.75	100	96 53	96	7 95		81 45					
				8.10	0.15	81.30		Not recovered. Slightly brownish grey, moderately stiff CLAY.			
8.00 - 9.50	93	51	39	0.55	0.95	01.05		Grey to pale grey, strong, LIMESTONE. Weakly banded (banding of slight grey of grained, with trace to minor bioclastic grains. Some bands contain occasional to Near the top of the interval the limestone contains scatted lensoid or lenticular of up to 20mm long. <1% hairline and fine (<1mm wide) calcite veins. Medium, low with trace slight brown discolouration. One fracture perhaps along a stylolite. @11.20 Planar interface between pale grey and grey limestone, presumed bedd	colour contrasts), fine common brachiopods. arker grey (micritic?) clasts ocally close, spaced fractures ng, at 45 degrees to the		
				9.30	1.10	80.10		core axis Brown and pale brownish grey, moderately strong CALCAREOUS MUDSTONE. M laminated, frequent bleaching (reduction) in irregular but rounded masses or alc calcite veins to 1mm wide. Medium to close spaced fractures	/ lassive to weakly banded or ng thin linear tracts.<1%		
Contractor: Apex Ri					1	<u> </u>		Remarks:			
F	Rig Type: Wireline							1m wide void at 141m.			
Core	Core Diameter: HQ (63										

	1	G	WP	onsult	ants							Borehole No.
		U		onourt	into			Rotar	y Core	e Log		2021-8
GWP.	onsultants								•			Sheet 2 of 22
Project	Name:	V e	Voodlea xtensio	ize Qua n	rry	Proj	ect No.: TY	THEXT	Co-ords: (NGR)	365121E - 18	7706N	Hole Type: RC
Locatio	n:	Т	ytherin	gton		Hole	e Inclinatio	n: 90°	Collar Level:	89.4m AOD		Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	e Azimuth:	0°	Drilling Dates:	26/11/2021 -	05/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduce Level	d Legend			Stratum Desci	ription	
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)	Brown and pale bro	ownish grey, mode	rately strong CALCAR	EOUS MUDSTONE. M	lassive to weakly banded or
9.50 - 11.00	100	90	47	10.40	0.95	79.00		Calcite veins to 1m Pale slightly brown Mudstone). Massiv becoming less mud @11.20-11.35 brec slightly undulating	m wide. Medium to ish grey. Moderate e and laminated, l ddy (argillaceous) d ccia of brownish gre (eroded?) contact	close spaced fracture y strong, ARGILLACE ocally with thin fine g own-hole, <1% calcit y limestone in matrix at base at 65 degrees	OUS LIMESTONE (Ba: rained bands, possibly e veins. Medium spa of pale limestone or to core axis.	se of Clifton Down y with bioclastic grains, ced fractures. vein calcite with sharp
11.00 - 12.50	100	92	75	11.35		78.05		Very pale grey to p grained to fine grai fractures, slight bro fractures orientated very strong rock.	ully Oolite). Massive, fine ns. Medium to close spaced es with trace pyrite. Some ngs when struck suggesting			
12.50 - 14.00	100	56	46									
14.00 - 15.50	100	57	49		5.75							
15.50 - 17.10	100	74	68									
17.10 - 18.65	100	100	96	17.10		- 72.30		Pale grey, strong, p limestone .No bedd degrees to the core rings when struck s	perhaps very strong ding. No fossils. T e axis, perhaps per suggesting very str	J. LIMESTONE. Massi race hairline and fine pendicular to bedding ong rock but breaks v ng rock but breaks v	ive, fine grained and (<1mm wide) calcite , Medium, locally clos vith a single hammer	fine grained oolitic 2 veins often art c. 25 to 30 5e, spaced fractures. Core blow.
18.65 - 20.10	100	100	90									
Co	ontracto	or:	Apex	1	1	I		Remarks:				
Rig Type: Wireline								Remarks: 1m wide void at 141m.				
Core	Rig Type: Wireline							•				
				3)				J				

	ſ	G	WF) consulta	ants				Borehole No.
		Ŭ						Rotary Core Log	2021-8
GWP	onsultants								Sheet 3 of 22
Project	Name:	۷ و	Voodl extens	eaze Qua ion	rry	Proj	ect No.: TY	HEXT Co-ords: 365121E - 18	7706N Hole Type: RC
Locatio	n:	٦	Tyther	ington		Hole	e Inclinatio	Collar Level: 89.4m AOD	Scale: 1:50
Client:		ŀ	lanso	n Aggreg	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 -	05/01/2022 Logged By: SJR
Run Depth (m)	Corir TCR	ng India	es (%)	Drill Depth	Drill Thickness (m)	Reduced Level	d Legend	Stratum Desc	ription
20.10 - 21.70	100	72	66		6.50			Pale grey, strong, perhaps very strong, LIMESTONE. Mass limestone .No bedding. No fossils. Trace hairline and fine degrees to the core axis, perhaps perpendicular to beddin rings when struck suggesting very strong rock but breaks	ive, fine grained and fine grained oolitic (<1mm wide) calcite veins often art c. 25 to 30 , Medium, locally close, spaced fractures. Core with a single hammer blow.
21.70 - 23.30	100	86	68						
23.30 - 24.80	100	28	28	23.60	1.10	65.80		Pale grey, strong, LIMESTONE. As previous interval excep fractures	t the core is broken on close to very close spaced
24.80 - 26.30	100	83	66					Pale grey and pale grey to grey, strong, locally only moder and not obviously oolitic, becoming slightly darker and coa grains. Trace hairline calcite veins. Medium and close spa core (presumed bedding parallel) and at low angles to the	ately strong, LIMESTONE. Massive, fine grained rser grained down-hole. No fossils or bioclastic zed fractures, often both across the width of the core axis (resulting in low RQD)
26.30 - 27.80	100	60	53		4.70				
27.80 - 29.40	100	38	38			60.00			
				29.40		50.00		Pale grey and grey, strong, perhaps very strong, LIMESTC fine grained and fine to medium grained, perhaps oolitic b partial bivalve fossil found on broken core surface. <1% of veining. variably wide to close spaced fractures but mainly	NE. Gradational with previous interval. Massive, ut not obviously so. Mostly unfossiliferous but one alcite veins with occasional reticulate hairline medium spaced. Core rings when struck
						1			
Co	ontracto	or:	Apex					Remarks:	
F	lig Type	:	Wireli	ne				1m wide void at 141m.	
Core	e Diame	eter:	HQ (6	3.5mm)					

		G	WP.	onsulta	ints			_	Borehole No.
								Rotary Core Log	2021-8
GWP co	onsultants	V	Voodloa		rn/	Proj	ect No ·		Sheet 4 of 22
Project	Name:	e	xtensio	n n	iiy		TY	THEXT (NGR) 365121E - 187706N	RC
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corin	ıg Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	l Legend	Stratum Description	
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)		Pale grey and grey, strong, perhaps very strong, LIMESTONE. Gradational with	previous interval. Massive,
29.40 - 31.00	100	81	77	-				partial bivalve fossil found on broken core surface. <1% calcite vein swith occas veining. variably wide to close spaced fractures but mainly medium spaced. Cor suggesting very strong rock.	ional reticulate hairline re rings when struck
31.00 - 32.50	100	100	96	32.35	2.95	57.05		Pale area to area strong LIMECTONE. Magning you find and find aminod lim	
32.50 - 34.10	100	92	92					Pale grey to grey, strong, LIMESTONE. Massive, very fine and fine grained lime coarser down-hole, not noticeably oolitic, with minor fine to medium grained bio weakly defined centimetric bands, occasional crinoid ossicles and local trace arc. shells Trace small rounded blebs of calcite 10 10mm across, possible poorly pre- to <1% fine calcite veinlets. Variably wide to close spaced fractures (mostly med weakly stylolitic in habit.	estone, pernaps becoming clastic fragments, locally in late (presumed brachiopod) served macro fossils. Trace lium spaced), occasionally
34.10 - 35.50	100	100	94						
35.50 - 37.10	100	87	87		9.05				
37.10 - 38.60	100	100	97						
38.60 - 40.10	100	100	100						
Co	ontracto	r:	Apex	•	•	•	•	Remarks:	
R	Contractor: Apex Rig Type: Wireline							1m wide void at 141m.	
Core	e Diame	ter:	HQ (63.	5mm)					
				•					

	/	G	WP.	consult	ante							Borehole No.
		U		Jonouri	into			Rotar	y Core	e	Log	2021-8
GWP	onsultants								-			Sheet 5 of 22
Project	Name:	V e	Voodlea xtensio	aze Qua n	rry	Pro	ject No.: TY	THEXT	Co-ords: (NGR)	3	365121E - 187706N	Hole Type: RC
Locatio	n:	Т	ytherin	gton		Ho	le Inclinatio	n: 90°	Collar Level:	8	39.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Ho	le Azimuth:	0°	Drilling Dates:	s: 2	26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduce	ed Legend				Stratum Description	1
(m)	TCR	SCR	RQD	(m)	(m)	(mAOI		'Pale grey to grey,	strong, LIMESTO	DNE.	Massive, very fine and fine grained lin	nestone, perhaps becoming
40.10 - 41.20	100	97	92					weakly defined cer shells Trace small to <1% fine calcite weakly stylolitic in	timetric bands, oc rounded blebs of e veinlets. Variably habit.	f calci	, with minor minor meaning pranted by ional crinoid ossicles and local trace are ite 10 10mm across, possible poorly pr de to close spaced fractures (mostly me	uate (presumed brachiopod) eserved macro fossils. Trace adium spaced), occasionally
41.20 - 42.75	100	97	97	41.40	2.35	- 48.00	MESTONE (Top of the pidal limestone, banding on debris, crinoid ossicles e axis. Locally irregular but ns. Medium to wide spaced					
42.75 - 44.30	100	100	100	43.75		45.65		Pale grey to grey, s Weakly banded with	strong, CRINOIDA	AL LI	MESTONE (Base of the Crinoidal Sub-b	and of the Gully Oolite).
44.30 - 45.80	100	91	80		2.10			to 30mm long, som <1% calcite veinle At the base of the bioclastic limestone	he bands with com ts, often hairline. interval grey crino e with sharp basal	mmoi Mec oidal Il con	n to abundant arcuate shells in section dium spaced fractures. limestone grades downhole into very p tact at 45 degrees to the core axis to o	, presumed brachiopods. bale grey and coarse grained larker grey limestone below.
				45.85		43.55		Grey, strong LIMES bioclastic limestone fine (<1mm wide)	STONE (Top of Bla e. Faint and some calcite veins. Medi	ack R ewha dium	Rock Limestone). Massive, very fine gra at irregular or blotchy colour contrasts to wide spaced fractures.	ined micritic to fine grained (not banding). Trace to <1%
45.80 - 47.40	100	94	92		2.20							
47.40 - 48.90	100	100	100	48.05		41.35		Grey, strong LIMES with medium to co. and trace brachiop spaced horizontal s @48.50-48.85 Dist @50.10-50.70 Fra	TONE. Massive, fi arse grained biocla ods. <1% fine an suture stylolites. M inct pale grey to g cture with brown v	fine g lastic nd ha Mediu grey wea	grained limestone with gradational wid c fragments, mostly crinoid debris, crini airline calcite veins, locally veins to 3m um spaced fractures. band with crinoid fossils thering staining along thin (2mm wide)	e-spaced decimetric bands bid ossicles locally common, m wide. Medium to wide p calcite vein at low angle to
48.90 - 50.40	100	100	83			-		the core axis with i	non-solid core and	d low	v RQD.	
Contractor: Apex						Remarks:						
F	Rig Type: Wireline							1m wide void a	t 141m.			
Cor	e Diame	eter:	HO (63	.5mm)				1				
				.Sinni)				J				

GWP	onsultants	G	WP	consulta	unts			Rotary Core Log	Borehole No. 2021-8 Sheet 6 of 22
Project	Name:	V e	Voodlea xtensio	aze Quai n	rry	Proj	ect No.: TY	Co-ords: 365121E - 187706N	Hole Type: RC
Locatio	on:	Т	ytherin	gton		Hole	e Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	e Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduce Level	d Legend	Stratum Description	
50.40 - 52.00 52.00 - 53.60	100	77	48	-				Grey, strong LIMESTONE. Massive, fine grained limestone with gradational wide- with medium to coarse grained bioclastic fragments, mostly crinoid debris, crinoid and trace brachiopods. <1% fine and hairline calcite veins, locally veins to 3mm spaced horizontal suture stylolites. Medium spaced fractures. @48.50-48.85 Distinct pale grey to grey band with crinoid fossils @50.10-50.70 Fracture with brown weathering staining along thin (2mm wide) of the core axis with non-solid core and low RQD.	spaced decimetric bands d ossicles locally common, wide. Medium to wide calcite vein at low angle to
53.60 - 55.10	100	100	87	-	10.90				
55.10 - 56.65	100	100	82						
56.65 - 58.20	100	100	95	-					
58.20 - 59.70	100	99	87	58.95		- 30.45		Grey, strong LIMESTONE. Weakly banded, fine grained, perhaps fine grained biog grained bioclastic fragments. No macro fossils except sparse crinoid ossicles. Ban degrees to the core axis. Trace hairline calcite veins. Trace only of stylolites. Mee fractures.	clastic with minor medium ding (bedding) at c. 65 dium, locally close, spaced
Ca	ontracto	or:	Apex	1	1	1	<u> </u>	Remarks:	
F	Rig Type: Wireline							1m wide void at 141m.	
Core	Core Diameter: HQ (63.5mm)								

	1	G	WP.	onsulta	ants				Borehole No.
								Rotary Core Log	2021-8
GWP co	onsultants	v	Voodlea	ize Oua	rrv	Proje	ect No.:	Co-ords'	Sheet 7 of 22 Hole Type:
Project	Name:	e	xtensio	n	,		TY	THEXT (NGR) 365121E - 187706N	RC
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth (m)	Corir TCR	ng Indic	es (%) ROD	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend	Stratum Description	
59.70 - 61.20	100	94	88					Grey, strong LIMESTONE. Weakly banded, fine grained, perhaps fine grained bio grained bioclastic fragments. No macro fossils except sparse crinoid ossicles. Bar degrees to the core axis. Trace hairline calcite veins. Trace only of stylolites. Me fractures.	clastic with minor medium nding (bedding) at c. 65 dium, locally close, spaced
61.20 - 62.70	100	100	98		3.85				
62.70 - 64.20	100	100	100	62.80		- 26.60		Pale grey to grey, strong, LIMESTONE. Gradational from previous interval. Very banded, mainly very fine grained with trace to minor bioclastic fragments, some often in bands or patches. Locally somewhat breccia textured limestone with rou fine grained and slightly darker than the matrix. Trace calcite veins. Medium ar suture stylolites, some very convoluted, some as open factures containing trace medium and wide spaced fractures.	weakly gradationally obviously crinoidal debris inded masses that are very id wide spaced horizontal smears of grey clay. Overall
64.20 - 65.70	100	100	96		5.60				
65.70 - 67.20	100	100	100						
67.20 - 68.50	100	100	100	68 40		21.00			
68.50 - 70.05	100	97	78	0.10	2.90			Grey, strong LIMESTONE. Variably massive, weakly and moderately banded with medium to coarse grained bioclastic fragments, some bands with most bioclastic (<1mm) pores, some crinoid or shelly fragments but no complete macro fossils. Trace horizontal suture stylolites. Medium to close spaced fractures.	bands with more or less fragments have 1-2% fine Trace hairline calcite veins.
			Annes					Demarke	
		or:	Apex					Remarks:	
	Rig Type: Wireline								
Core	Core Diameter: HQ (63.5mm)								

	/	G	WP	consult	ants						Borehole No.
		Ŭ		o o no uno				Rotar	y Core	e Log	2021-8
GWP	onsultants								-		Sheet 8 of 22
Project	Name:	V e	Voodlea	aze Qua on	rry	Proje	ect No.: TY	THEXT	Co-ords: (NGR)	365121E - 187706N	Hole Type: RC
Locatio	n:	Т	ytherir	ngton		Hole	Inclinatio	n: 90°	Collar Level:	89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggreg	ates	Hole	Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth (m)	Corir TCR	ng Indic	es (%)	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend			Stratum Description	
70.05 - 71.60	100	100	75	71.30		- 18.10		Grey, strong LIMES medium to coarse of (<1mm) pores, son Trace horizontal sul Pale grey to grey, s fragments with son chuldites Variable	TONE. Variably ma grained bioclastic fr ne crinoid or shelly ture stylolites. Med trong LIMESTONE. ne complete crinoid	ssive, weakly and moderately banded wi agments, some bands with most bioclast fragments but no complete macro fossils dium to close spaced fractures. Weakly banded coarse grained bioclastic lossicles but no other macro fossils. Trac of fractures, Very beyon core a base of	h bands with more or less ic fragments have 1-2% fine . Trace hairline calcite veins. ilimestone, common coarse e calcite veinlets. Trace
71.60 -	100	100		74.60	3.30	14.00		bot no core loss.	wide to close space	eu nactures, very proken core at base of	
77.60	100	100		74.00	1.45	- 13 35		Pale grey to grey, s fragments and trace spaced fractures.	trong LIMESTONE.	Generally massive with minor fine to coa to calcite veins and one stylolitic fracture	rse grained bioclastic in this interval. Medium
				-	2.80	- 13.35		Pale grey, strong LI locally fragments al Medium and wide s	IMESTONE. Weakh oundant, including paced fractures.	y banded, with some bands of coarse gra some complete crinoid ossicles. Trace ca	ined bioclastic limestone, lcite veins. Trace stylolites.
77.60 - 79.20	100	100	100	78.85		- 10.55		Pale grey and pale limestone with occa	grey to grey, stron sional lamellae of	g, locally moderately strong, LIMESTONE darker grey limestone. Minor quantities o I dobic but no complete occideo se other	. Massive and weakly banded f medium to coarse grained
79.20 - 80.70	100	100	95					porous. Weak band stylolites. Variably core loss. @85-35-85.45 anne	s, pernaps crinoida ding and laminatior close to wide space ealed (syn-sedimen	tary?) breccia with angular pale grey lime	e calcite veinlets. No 50 (base of Run 56) but no estone clasts matrix
	ntracto		Aney	1				Remarks			
-	Contractor: Apex					1m wide void at	t 141m				
	ug Type	::	wirelin	e					. 1 1111.		
Core	e Diame	eter:	HQ (63	.5mm)							

	/	G	WP.	consulta	ante								Borehole No.
		U		Jonsuite	into			Rotar	y Core	e Lo	q		2021-8
GWP	onsultants								-				Sheet 9 of 22
Project	Name:	V e	Voodlea xtensio	aze Qua n	rry	Proj	ect No.: TY	THEXT	Co-ords: (NGR)	365121	E - 187706N		Hole Type: RC
Locatio	n:	Т	ytherin	gton		Hole	e Inclinatio	n: 90°	Collar Level:	89.4m /	AOD		Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	e Azimuth:	0°	Drilling Dates:	26/11/2	2021 - 05/01/2	022	Logged By: SJR
Run Depth	Corir	ng India	es (%)	Drill Depth	Drill Thickness	Reduced Level	d Legend			Stratu	m Description		
(m) 80.70 - 82.20 - 83.60 - 83.60 - 85.20 -	TCR 100 100 100 97 100	SCR 100 81 100 89 100	RQD 86 81 100 84 100	(m) (m) 86.10 86.50 87.45	(m) 7.25 0.40 0.95	(mAOD 3.30 2.90 1.95		Pale grey and pale limestone with occa bioclastic fragments porous. Weak band stylolites. Variably core loss. @85-35-85.45 anne supported in darker developed texture v developed texture	grey to grey, stron isional lamellae of s, perhaps crinoida ding and lamination close to wide space ealed (syn-sedimer grey limestone m with fine/hairline ca with fine/hairline ca oderately strong to at sandy calcareou ong to moderately s cut by c 5% calci ong to moderately s cut by c s% calci to	ng, locally mo darker grey al debris but in ns at c. 65 di eed fractures. Intary?) breccc latrix. 10cm of alcite veining out the veining of t	derately strong, LIM imestone. Minor qua no complete ossicles agrees to the core as Very broken core@8 ia with angular pale of iown-hole from this is following the clast no following the clast no strone BRECCIA. Rou- h trace clay. Adjacen STONE BRECCIA. Rou- h trace clay. Adjacen STONE. Grey limestre de Smm calcite vein is degrees to the core of moderately strong, fine grained micritic v bands of more obvic blebby calcite massa e veinlets. Occasiona having trace grey cla	ESTONE. M Inities of m or other m vis. Trace c 33.4-83.60 grey limest sub-interval nargins.	Aassive and weakly banded acro fossils. Locally weakly alcite veinlets. No (base of Run 56) but no one clasts matrix I similar less well isimilar less well limestone clasts in ochrous cut by networks of ochre inor medium grained soned white and orange ciated with veins texture, perhaps clayey. E. Massive, locally weakly fine to medium grained stic limestone with coarse across possible poorly ced suture stylolites.
89.70	100	98	98										
-			A					Demovilier					
Contractor: Apex						Kemarks:	+ 1/1 m						
F	Rig Type: Wireline					1m wide void at 141m.							
Core	e Diame	eter:	HQ (63	.5mm)]					

	/	G	WP.	onsulta	ints				Borehole No.
								Rotary Core Log	2021-8
GWP	onsultants		Vaadlaa			D	ningt No.		Sheet 10 of 22
Project	Name:	v e	xtensio	ize Qua n	rry	P	TY	Co-ords: 365121E - 187706N	RC
Locatio	n:	Т	ytherin	gton		Ho	le Inclinatio	n: 200° Collar Level: 89.4m AOD	Scale: 1:50
Client:		ŀ	lanson	Aggrega	ates	Ho	le Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduc Leve	ed I Legend	Stratum Description	
(m)	TCR	SCR	RQD	(m)	(m)	(mAO	D)	Grey to dark grey strong, locally perhaps strong to moderately strong, LIMESTO	NE. Massive, locally weakly
89.70 - 91.30	100	100	100	-				laminated with slightly darker grey lamellae, very fine grained micritic with mino bioclastic grains, perhaps crinoidal, and occasional bands of more obviously bioc grains and trace crinoid and possible coral Sparse blebby calcite masses to Smn preserved macro fossils (also coral?). Trace calcite veinlets. Occasional wide sp Medium to wide spaced fractures, a few fractures having trace grey clay fill.	r fine to medium grained lastic limestone with coarse n across possible poorly aced suture stylolites.
91.30 - 92.95	100	98	98		7.05				
92.95 - 94.40	100	95	92						
94.40 - 96.00	100	100	100	94.50	2.60	5.10		Grey strong to very strong LIMESTONE. Much as previous interval but with occa limestone bands 50 to 100mm wide with common to abundant crinoid ossicles a Elsewhere only faint banding or lamination. Trace to <1% fine and hairline calcit spaced fractures in this interval	isional distinct crinoidal nd stem fragments. ie veins. Mostly wide
96.00 - 97.50	100	100	100	97.10		-7.70		Grey, strong LIMESTONE Much as interval 87 45-94 50, mostly massive limeston	e with local trace banding.
97.50 - 98.95	97	97	96		4.40			and with minor bioclastic fragments. No obvious macro fossils. Trace to <1% ca wide spaced fractures	cite veins. Medium and
98.95 - 100.60	100	100	100						
	ontracto	or:	Aney	I	1	I		Remarks	
			Mirolin					1m wide void at 141m.	
н к	ay iype		wireline	-					
Core	e Diame	eter:	HQ (63.	.5mm)					

	/	G	₩ P ₀	onsulta	ints			Rotary Core Log	Borehole No. 2021-8
GWP	onsultants							, 5	Sheet 11 of 22
Project	Name:	V e	Voodlea xtensio	ize Quai n	rry	Proje	ect No.: TY	Co-ords: 365121E - 187706N	Hole Type: RC
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50
Client:		ŀ	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth (m)	Corir TCR	ng Indic	es (%) ROD	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend	Stratum Description	
								Grey, strong LIMESTONE Much as interval 87.45-94.50, mostly massive limeston and with minor bioclastic fragments. No obvious macro fossils. Trace to <1% cal wide spaced fractures	e with local trace banding, cite veins. Medium and
100.60 102.10	100	100	100	101.50		-12.10		Pale grey, strong LIMESTONE. Weakly to moderately banded, mostly very fine c	r fine grained with trace
								bioclastic fragments, with occasional decimetric scale bands with coarse grained common macro fossils, mainly arcuate shell sections of brachiopods (locally abur segments of crinoid stem. Trace calcite veins becoming more abundant (to <1% angles to the core axis, cream and 1-3mm wide. Wide spaced stylolites, one occ Overall medium spaced fractures. Locally broken core.	bioclastic fragments and idant), crinoid ossicles and b) down-hole, often at low urring as an open fracture.
102.10	10 60 100 93 93 3.80				3.80				
103.60 - 105.10	100	79	67						
105.10 106.60	100	100	100	105.30		-15.90		Grey, strong LIMESTONE, massive without banding, fine grained, trace bioclastic fossils. Trace fine calcite veins. Wide spaced horizontal suture stylolites. Media fractures.	fragments and no macro im, locally close, spaced
106.60 	100	100	100		2.80				
108.10 109.60	100	100	94	108.10	2.80	-18.70		Grey, strong, LIMESTONE. Weakly banded fine grained massive limestone grada centimetres wide with bioclastic fragments and often including minor crinoid ossi slightly argillaceous down-hole with increasing proportions of bioclastic fragment spaced fractures.	itional to bands a few cles. Limestone becoming s and macro fossils. Medium
Co	ontracto	or:	Apex					Remarks:	
F	lig Type	:	Wireline	9				1m wide void at 141m.	
Core	e Diame	eter:	HQ (63.	5mm)					

	1	G	WP.	consulta	ants						Borehole No.
		Ŭ						Rotar	y Core	e Log	2021-8
GWP	onsultants								-		Sheet 12 of 22
Project	Name:	V e	Voodlea xtensio	aze Qua n	rry	Proje	ect No.: TY	THEXT	Co-ords: (NGR)	365121E - 187706N	Hole Type: RC
Locatio	n:	T	ytherin	gton		Hole	Inclinatio	90°	Collar Level:	89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corin	ig Indic	es (%)	Drill Depth	Drill	Reduced	l Legend			Stratum Description	·
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)		Grev. strong. LIME	STONE. Weakly ba	anded fine grained massive limestone g	radational to bands a few
109.60 	100	99	93	110.90		-21.50		centimetres wide w slightly argillaceous spaced fractures.	v strong to modera	achts and often including minor crinoid acreasing proportions of bioclastic fragm	E Banded and laminated gray.
111.10 	100	100	94	-	3.00			and dark grey argill and grey argill argillaceous limesto but sometimes waa and grains through small (5 to 10mm a locally close, space	, such de l'indextone e one (tending to cale y or undulating, lo out. Crinoid and br across) solitary cora d fractures.	with limestone bands, locally with evry careous mudstone). Banding generally ically with possible bioturbation. Abunda rachiopod macro fossils common, locally als in cross section. No calcite veins or s	ark grey to black lamellae of at 70 degrees to the core axis int coarse bioclastic fragments abundant, and occasional tylolites. Medium to wide,
112.60 114.10	100	100	100	113.90		-24.50					
114.10	100	100	100		2.30			bioclastic limestone 3mm across. Mediu	. Minor macro fos im spaced fracture:	sils, mainly crinoid ossicles but with trac	iain to coalse graned re coral. <1% calcite veins to
115.60 117.15	100	100	95	116.20		-26.80		Grey and dark grey slightly argillaceous fossils especially cr Medium coaced fra	r, strong, ARGILLAG limestone with co inoid ossicles, local	CEOUS LIMESTONE. Weakly banded an barse grained bioclastic fragments, most lly abundant, with trace brachiopods an	d laminated argillaceous and ly crinoidal, and common macro d coral. No mudstone lamellae.
					1.45			Note: Run 79 label of all subsequent ri fromimperial sized	led by drillers as 11 uns re-calculated (i core barrel being n	17.10-118.20 contains 1.55m of core. R in addition to slight over and under 0.05 neasured in metres).	un mislabelled by 0.5m. Depth m measures due to core
117.15	100	100	100	117.65	1.60	-28.25		Grey, strong LIMES without lamellae. I other macro fossils	TONE. Massive an Bioclastic fragment . <1% calcite veins	d weakly banded, very fine to coarse gr s becoming more abundant down-hole. s to 2mm wise. Medium spaced fracture	ained bioclastic limestone Minor crinoid ossicles and no es.
118.70 120.15	100	100	97	119.25		-29.85		Grey, locally dark g variably bioclastic, somewhat variable structures, perhaps Medium spaced fra	rey, strong LIMEST mostly crinoidal, in 55 to 70 degrees t s bioturbation), Min ctures.	TONE, Banded, locally laminated, slightl gradational bands, with trace argillace to the core axis, sometimes undulating, or complete crinoid ossicles and short s	y argillaceous limestone, Jus limestone lamellae. Bedding locally contorted (sedimentary tem pieces, trace brachiopods.
Contractor: Apex								Remarks:			
R	lig Type	:	Wireline	2				1m wide void a	t 141m.		
Core	e Diame	ter:	HQ (63	.5mm)							

	/	G	GWP consultants						Borehole No.					
								Rotary Core Log	2021-8					
GWP	onsultants	V	Voodlea	ize Oliai	rv	Proie	ect No.:	Co-ords	Sheet 13 of 22 Hole Type:					
Project	Name:	e	xtensio	n	•,		TY	THEXT (NGR) 365121E - 187706N	RC					
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 200° Collar Level: 89.4m AOD	Scale: 1:50					
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR					
Run Depth	Corin	Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	Legend	Stratum Description						
120.15	100	100	91	-	3.50			Grey, locally dark grey, strong LIMESTONE, Banded, locally laminated, slightly an variably bioclastic, mostly crinoidal, in gradational bands, with trace argillaceous somewhat variable 55 to 70 degrees to the core axis, sometimes undulating, loc structures, perhaps bioturbation), Minor complete crinoid ossicles and short sten Medium spaced fractures.	rgillaceous limestone, limestone lamellae. Bedding ally contorted (sedimentary n pieces, trace brachiopods.					
121.70 123.20	83	83	83	122.75 123.00	0.25	-33.35 -33.60		Not recovered: assumed location of core loss represented by gap in core box, C don't fit mechanically or lithologically. No evidence of broken core or clay.	ore on either side of gap					
123.20 124.70	100	100	96		1.85			race grey limestone lamellae, coarse grained bioclastic grains very common to a with occasional complete ossicles. One 5-8mm wide calcite vein at c 20 degrees perpendicular to bedding. Medium, locally medium to wide, spaced fractures.	s to the core axis and					
124.70 - 126.25	100	99	99	124.85		-35.45		Pale grey and grey, strong LIMESTONE. Weakly to moderately banded, very fine coarse grained bioclastic limestone, with grey limestone lamellae, some wavy. Nossicles and trace brachiopods and solitary coral in bioclastic parts. <1% calcite 10mm wide at low angle to the core axis. Occasional (wide spaced) stylolites. If fractures	grained micritic and fine to finor to common crinoid veins, one calcite vein to Medium to close spaced					
126.25 127.85	100	100	88		3.35									
127.85 - 129.45	100	100	100	128.20		-38.80		Grey, strong, LIMESTONE. Weakly to moderately banded, locally laminated, slightly argillaceous limestone, medium to coarse grained bioclastic grains in a very fine grained matrix. Locally abundant crinoidal debris including whole ossicles and stem pieces, locally common. Possible trace brachiopods and coral. Banding at c 60 degrees to the core axis. <1% calcite veins, locally >5mm wide. Medium to wide spaced fractures. @129.05-129.30 bands of very fine grained micrite with rounded clasts of bioclastic limestone.						
Contractor: Apex					1		1	Remarks:						
R	lig Type	:	Wireline	9				1m wide void at 141m.						
Core	Rig Type:		HQ (63.	5mm)										
				,										

	(GWP consultants						•		Borehole No.		
								Rotary	y Core	e Log	2021-8		
GWP	onsultants	V	Voodlez		rrv	Proje	ect No.:		Co-ords:		Sheet 14 of 22 Hole Type:		
Project	Name:	e	xtensio	n n	,		TY	THEXT	(NGR)	365121E - 187706N	RC		
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	on: 90°	Collar Level:	89.4m AOD	Scale: 1:50		
Client:		ŀ	lanson	Aggrega	ates	Hole	Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By: SJR		
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	l Legend			Stratum Description			
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)		Grey, strong, LIMES	TONE. Weakly to	moderately banded, locally laminated, sli	ghtly argillaceous limestone,		
129.45								including whole ossi	rained bioclastic g cles and stem piec core axis	rains in a very fine grained matrix. Locall ces, locally common. Possible trace brachi ralcite veins, locally >5mm wide. Medium	y abundant crinoidal debris opods and coral. Banding at to wide spaced fractures		
- 131.00	100	100	95					@129.05-129.30 bar	nds of very fine gr	rained micrite with rounded clasts of biocl	astic limestone.		
				_				I I	, ,				
					4.30			I I					
121.00								L I T					
131.00	100	100	94					I I					
132.50								I					
								I					
				132.50		-43.10		Grey, locally dark gr	ey, strong ARGILL	ACEOUS LIMESTONE. Banded or laminate	ed, slightly argillaceous		
								limestone with lame places these tending	llae and thin (to 5 to calcareous mu	0mm wide) bands of dark grey to black a udstone. Banding at c. 60 degrees to the	rgillaceous limestone, in core axis. Coarse grained		
132.50								bioclastic fragments ossicles and short ar	abundant except ticulated stem fra	In the dark grey lamellae and bands when agments common to abundant. Occasional	e they are absent. Crinoidal shell fragments (assumed		
- 134.00	100	100	100					brachiopods) and tra	ace solitary coral.	Medium to close spaced fractures			
134.00	100	100	95										
135.50													
					5.65			-					
				-									
135.50													
- 137.00	100	99	93										
137.00	100	100	100										
138.55													
				138.15		- 48.75		Pale grey, locally gre	ey, strong LIMEST	ONE, Pale grey transitional to grey at top	and base of interval. Faintly		
								abundant, often crin	oidal. Minor band	ds (50 to 100m wide) with abundant arcuate the core axis. Trace calcite veins. Mediur	ate shells of brachiopods in m to wide spaced fractures		
					1.35			I I					
138 55								I					
-	100	100	100										
				139.50		-50.10		Grey to pale grey, st	rong LIMESTONE	Fine grained micritic with minor bioclast	ic fragments, mainly crinoid		
							wide associated with weak gradational zones of bleaching of the adjacent limestone. Trace fine calcite						
Co	ontracto	or:	Apex					Remarks:					
F	kig Type		Wireline Im wide void at 141m.										
Core	e Diame	eter:	HQ (63	.5mm)									

	r	G	WP	consult	ants						Borehole No.
		Ŭ		onouri				Rotar	y Core	e Log	2021-8
GWP	nsultants								-		Sheet 15 of 22
Project	Name:	V e	Voodlea xtensio	aze Qua n	rry	Proj	ect No.: TY	THEXT	Co-ords: (NGR)	365121E - 187706N	Hole Type: RC
Locatio	า:	Т	ytherin	gton		Hole	e Inclinatio	n: 90°	Collar Level:	89.4m AOD	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	e Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduce Level	d Legend		÷	Stratum Description	·
(m)	100	SCR	RQD	(m)	(m)	(mAOD)	Grey to pale grey,	strong LIMESTONE	Fine grained micritic with minor biocla	stic fragments, mainly crinoid
				140 55	1.05	-51 15		wide associated wi veinlets. Variably w	th weak gradationa vide to close spaced	d fractures and local broken core.	estone. Trace fine calcite
140.30	27	15		140.65	0.10	-51.25		Pale greyish brown Not recovered: voi	soft CLAY with m d. Drillers report n	inor small rounded pieces of limestone. o resistance to advancing the drill bit. A	ssumed karstic cavity
141.50	27	15	11		0.80						
				141.45 141.50	<u>8:05</u> 8:18	-52.05 -52.10		Grey, strong LIMES	STONE, medium gra	ained bioclastic without fossils. Re-drille	d end. Fallen from cavity?
				141.60 141.80	0.20	-52.20 -52.40		Pale ochre or yello Pale grey to grey, s fragments and arci	wy brown, extreme strong LIMESTONE uate shell sections,	ly soft to runny CLAY . Fine to medium grained bioclastic lime locally common. c. 1% fine calcite vein	stone with some large s, trace larger veins to 10mm
141.50 - 143.00	93	74	74		1 20			wide. Medium spac	ed fractures.	,	atona rimmad bu white calaite
					1.20			veining. Possible sr	oid with vuggy calcite filled with mudstor	ne?	
				- 143.00		-53.60		Grev, strong, LIME	tic grains, mostly crinoidal		
								debris with occasio several orientation	5mm wide, mostly fine, of		
143.00	93	77	77		1.35						
144.50	55										
				144.35		-54.95		Grey and white, st	ong, LIMESTONE E	BRECCIA. 50% grey limestone, as the pr	evious interval, and 50% white
				144.75	0.40	-55.35		calcite veining. Lim matrix. Partially br	estone with reticular oken core. Mediur	ate network veining grading to angular of m to very close spaced fractures, some v	lasts of limestone in calcite vith ochre/orange staining.
144.50								variably slightly da and trace to comm	rker/paler bands, lo on, locally abundar	ocally with non-argillaceous lamellae and nt, macro fossils with brachiopods especi	sedimentary ?load structures, ally common in bands near the
- 145.95	100	100	100					top and base of int ossicles. Trace to	erval, minor solitar <1% fine calcite ve	y coral to 15mm across in cross sections eins. Medium spaced fractures, trace sty	, and locally abundant crinoid lolitic.
								4 6 7			
								9 0 9			
145.95	100	100	100		4.10			d d			
117.50								C C			
147.50	100	97	97								
149.00	100	57	57								
				148.85		-59.45		Grev to pale grev.	strong LIMESTONE	Weakly banded with occasional bands	lenses or irregular angular
				_				and sub-angular cla variable fine to coa	ast-like masses of p rse bioclastic grain	pale fine grained bioclastic limestone in r is; perhaps syn-sedimentary rip-up featu	nassive grey limestone with res or bioturbation. Crinoid
149.00	100	93	86					wide to close space	ed fractures.	accusional to common, locally abullually	, mar date corai. Valiably
Contractor: Apex								Remarks:			
R	ig Type	:	Wireline	9				1m wide void a	t 141m.		
Core	Rig Type: Core Diameter:		HQ (63	.5mm)				1			

	/	G	WP	onsulta	ints							Borehole No.
		U		onsurt	into			Rotary Co	ore	e Log		2021-8
GWP	onsultants											Sheet 16 of 22
Project	Name:	V e	Voodlea extensio	ize Quai n	rry	Proje	ect No.: TY	Co-ords THEXT (NGR)	:	365121E -	187706N	Hole Type: RC
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Lo	evel:	89.4m AOI)	Scale: 1:50
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling	Dates:	26/11/202	1 - 05/01/2022	Logged By: SJR
Run Depth (m)	Corir TCR	ng Indic	es (%)	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend			Stratum D	escription	
					2.70			Grey to pale grey, strong LIM and sub-angular clast-like mar variable fine to coarse bioclas and brachiopod macro fossils wide to close spaced fractures	ESTONE. sses of p tic grains variably 5.	. Weakly banded vale fine grained i s; perhaps syn-se occasional to cor	with occasional bands, lu pioclastic limestone in ma dimentary rip-up feature nmon, locally abundant, v	enses or irregular angular ssive grey limestone with s or bioturbation. Crinoid with trace coral. Variably
150.60 - 152.20	100	100	92	151.55		-62.15		Pale grey to grey, strong LIMI common crinoid and brachiop core axis. Variable close to w	rval but without the pale calcite veins to 3mm wide	bands/clasts. Minor to , mostly at low angles to the		
152.20 153.80	100	97	88		1.95							
153.80	100	100	100	153.50	1.45	64.10		Grey, strong, LIMESTONE. M grained bioclastic fragments.	, very fine grained micriti alcite veins. Medium spa	c limestone with minor fine iced fractures		
155.15 156.70	100	100	100	_	2.25			Pale grey, locally grey, strong variable distribution of mediu degrees to the core axis. Trac calcite veins to 4mm wide at v	LIMEST n graine e to min very low	ONE. Mostly wea d bioclastic grain or crinoid quantii angles to the cor	kly banded, pale grey fin s, and one well defined b ies of ossicles and trace e axis. Trace stylolites. I	e grained limestone with and of grey limestone at 60 prachiopods. <1% to 1% fedium spaced fractures.
156.70 - 158.20	i6.70 - i8.20 100 62 57 157.20 -67.80 -67.80 ALTERED LIMESTONE, with 5% fine calcite veining, in places anastomosing, and wide ochre-coloured vein at low angle to the core axis with trace ochre coloured adjacent limestone that above the vein is like the previous interval with yellow st pores, below is like the next interval. Close spaced fractures and broken core in							y moderately weak, d one slightly vuggy 5mm clay and sandy texture in taining and minor small part. Possible minor fault.				
158.20 159.80	100	100	94	158.30	1.50	68.90		Slightly brownish grey, strong and medium grained bioclasti limestone crystalline texture a calcite veins. Medium spaced @158.70-158.85 with sub-rou @159.45 irregular fracture, pe	E. Very fine grained, mas fossils. Rock has weak tone content: assume do arse white calcite to 20m mm fill of soft grey clay	sive, locally with minor fine reaction to cold HCl, typical omitised limestone. Trace m across, assumed void fill.		
<u> </u>				159.80		-70.40		Pale grey, strong, LIMESTONE	E. Massi	ve with only one	gradational band with so	me fine to medium grained
Co	ontracto	or:	Apex					Remarks:				
F	Rig Type	:	Wireline	2				1m wide void at 141m.				
Core	Core Diameter:		HQ (63.	.5mm)								

	/	G	WP	onsulta	ints			Rotary Core Log	Borehole No. 2021-8					
GWP	onsultants								Sheet 17 of 22					
Project	Name:	V e	Voodlea xtensio	ize Qua n	rry	Proj	ect No.: TY	Co-ords: 365121E - 187706N	Hole Type: RC					
Locatio	n:	Т	ytherin	gton		Hole	e Inclinatio	n: 200° Collar Level: 89.4m AOD	Scale: 1:50					
Client:		ŀ	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR					
Run Depth (m)	Corir TCR	ng Indic	es (%) ROD	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD	d Legend	Stratum Description						
159.80	100	100	100		1.90			Pale grey, strong, LIMESTONE. Massive with only one gradational band with so bioclastic fragments and no macro fossils. Gradational lower contact with next ir 3mm wide. Medium spaced, tight (closed) horizontal suture stylolites. Medium s	me fine to medium grained Iterval. <1% calcite veins to paced fractures					
161.30 - 162.80	100	85	77	161.70		-72.30		Grey and slightly brownish grey, strong, DOLOMITIC LIMESTONE. Weak reaction dolomitised limestone. Massive and very fine grained, locally with faint banding fossils. Trace fine calcite veins. Trace horizontal suture stylolites. Medium and fracture at base of interval with trace grey clay fill. @164.55-164.60 Very pale grey fine grained limestone band with sharp but und @164.75-164.90 Very pale fine grained rounded mass of limestone with sharp c parallel to presumed bedding. almost full width of the core.	n to cold HCI: assumed , no bioclastic fragments or close spaced fractures, ulating contacts. ontact, clast-like, elongate					
162.80 - 164.35	100	100	95					@165.05 Somewhat irregular to sub-angular mass of calcite to 30mm across, pc @166.40-166.60 zone with fine to 2mm wide somewhat reticulate reddish brown	ossible void fill n veins, perhaps haematite					
164.35 - 165.90	100	100	100		8.90									
165.90 167.45	100	100	95											
167.45 - 168.90	100	100	100											
168.90 	100	100	100											
			A					Demovies						
		11	Apex					In wide void at 141m						
R	lig Type	:	Wireline	9										
Core	Rig Type: Core Diameter:		HQ (63.	5mm)										

		G	WP consultants								Borehole No.			
		Ŭ		onourre	into .			Rotar	y Core	e Log		2021-8		
GWP	onsultants								-			Sheet 18 of 22		
Project	Name:	V e	Voodlea extensio	ize Qua n	rry	Proje	ect No.: TY	THEXT	Co-ords: (NGR)	365121E ·	- 187706N	Hole Type: RC		
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90°	Collar Level:	89.4m AO	D	Scale: 1:50		
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0°	Drilling Dates:	26/11/202	21 - 05/01/2022	Logged By: SJR		
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	l Legend			Stratum I	Description			
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)		Grey and slightly b	rownish grey, stron	g, DOLOMITIC	LIMESTONE. Weak reactio	n to cold HCI: assumed		
							\square	fossils. Trace fine c	alcite veins. Trace interval with trace	horizontal sutu grey clay fill.	re stylolites. Medium and	close spaced fractures,		
170.50 172.00	100	92	89	170.60		- 81.20		@164.55-164.60 V @164.75-164.90 V parallel to presume @165.05 Somewha <u>@166.40-166.60 zz</u> Pale grey, strong. I macro fossils. <19 core axis. Trace sty	e band with sharp but und s of limestone with sharp or core. calcite to 30mm across, po nat reticulate reddish brow um grained, only trace of l ed, <1mm to 5mm wide, n ractures.	lulating contacts. contact, clast-like, elongate ossible void fill n veins, perhaps haematite bioclastic fragments, no nostly at low angles to the				
172.00	93	93	89	-										
172.50														
172.50	100	100	100		4.90									
175.00 176.50	100	100	89	175.50	1.45	-86.10		Pale grey, locally p banded, with some and trace shell, pre	d, massive and weakly sils including crinoid ossicles actures					
176.50 178.00	100	92	86	176.95	1.05	- 87.55		Pale grey, locally o locally reticulate, h on surfaces on one @177.05-177.20 O vein at c 50 degree	with common to abundant, k brown ?weathered staining e veins. One planar calcite					
178.00	100	97	91	- 178.00		-88.60		Grey and pale grey, locally grey to dark grey, strong LIMESTONE. Massive and weakly to moderately banded limestone with occasional decimetric sized bands of darker grey weakly argillaceous limestone with minor bioclastic fragments and common macro fossils including crinoid, solitary coral and brachiopods, in paler grey limestone without bioclasts or fossils. Banding (bedding) at c 45 degrees to the core axis, unusually shallow, <1% hairline and fine calcite veins, locally 1% in almost reticulate disposition accompanied, where most abundant, with weak bleaching of the host limestone. Medium and close spaced fractures.						
Co	Contractor: Apex				<u>I</u>	1	1	Remarks:						
F	Rig Type	2:	Wireline	9				1m wide void a	t 141m.					
Core	e Diame	eter:	HQ (63.	.5mm)										
				.,				J						

	/	G	WP.	consulta	ints						Borehole No.				
		Ŭ						Rotary	y Core	e Log	2021-8				
GWP	onsultants										Sheet 19 of 22				
Project	Name:	V e	Voodlea	aze Qua n	rry	Proj	ect No.: TY	THEXT	Co-ords: (NGR)	365121E - 187706N	Hole Type: RC				
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90°	Collar Level:	89.4m AOD	Scale: 1:50				
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By: SJR				
Run Depth	Corin	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	Legend			Stratum Description					
179.50 - 181.00	100	100	79					Grey and pale grey, banded limestone wi minor bioclastic frag paler grey limestone unusually shallow,. accompanied, where fractures.	Grey and pale grey, locally grey to dark grey, strong LIMESTONE. Massive : banded limestone with occasional decimetric sized bands of darker grey wea minor bioclastic fragments and common macro fossils including crinoid, solit paler grey limestone without bioclasts or fossils. Banding (bedding) at c 45 unusually shallow,. <1% hairline and fine calcite veins, locally 1% in almos accompanied, where most abundant, with weak bleaching of the host limest fractures.						
181.00 - 182.60	100	100	98		4.75										
182.60 184.10	100	79	79	182.75		93.35		Grey and dark grey, fine grained limestor of the rock mass. Bi seen in the previous the argillaceous part @184.50-184.65. Bi location of 150mm a	Iding some bands of massive, s limestone comprising c 1% adual change in dip from that crinoid and coral, common in es, locally broken core. ight brown soft clay. Possible						
184.10 	90	90	78												
185.60 187.10	100	100	95		5.90										
187.10 188.70	100	98	95	188.65		99 25									
188.70 - 190.20	100	100	95		1.40	-		crystalline texture, with very faint lamination in places, trace possible bioclastic fragments. Weak or zero reaction to cold HCl. <1% fine and hairline calcite veins. Medium spaced fractures.							
			A					Demoster							
		n'i	Apex					Remarks:							
R	ug Type	:	Wireline	9					171111.						
Core	e Diame	eter:	HQ (63.	.5mm)											

		G	WP.	consulta	ants				Borehole No.						
								Rotary Core Log	2021-8						
GWP	onsultants		Voodles		rny	Proj	ect No ·		Sheet 20 of 22						
Project	Name:	e	xtensio	n n	iiy		TY	THEXT (NGR) 365121E - 187706N	RC						
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50						
Client:		ŀ	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR						
Run Depth	Corir	ng India	es (%)	Drill Depth	Drill Thickness	Reduced Level	Legend	Stratum Description							
(11)	TCK	SCK	RQD	190.05		-100.65		Slightly brownish dark grey, strong to very strong, DOLOMITIC LIMESTONE. Max	ssive, very fine grained,						
190.20	100	100	94		3.15			teaction to cold HCI. <1% fine and hairline calcite veins. Medium spaced fractu Pale grey and grey, strong LIMESTONE. Moderately banded or laminated, very i bands of fine grained ?bioclastic limestone, some slightly argillaceous, one 20cm like the previous interval, and trace of argillaceous limestone lamellae. Some bar grains and macro fossils, locally common, especially crinoid ossicles and brachiop to 1% calcite veins to 3mm wide, variable orientations. Medium and close space	res. fine grained with gradational band of dolomitic limestona has include coarse bioclastic pod shells in section. <1% ad fractures.						
191.70 193.20	100	95	89	- 193 20		- 103 80									
193.20 - 194.70	100	100	87	193.20	1.15	104 95	d and laminated bioclastic short (<10mm) articulated e and calcareous mudstone d breaking easily along Medium spaced fractures.								
194.70 - 196.20	100	100	95		3.50		ce argillaceous lamellae, nm wide and often at low d close spaced fractures:								
196.20 197.85	97	97	72												
197.85 199.30	93	93	60	- 197.85	3.45	108.45		Grey and dark grey, locally black, moderately strong, ARGILLACEOUS LIMESTONE (Base of Black Rock view of the strong). Strongly banded and laminated with dark grey to black calcareous mudstone bands mostly clumestone). Strongly banded and laminated with dark grey to black calcareous mudstone bands mostly clumestone). Strongly banded and laminated with dark grey to black calcareous mudstone bands mostly clumestone (Carse bioclastic grains common with some complete crinoid ossicles, trace crinoid stem segments, and trace bands with arcuate brachiopod shells to 30mm across in cross section. <1% calcite veins to 5mm wide. Medium and close spaced fractures, mostly bedding parallel, and core breaks easily along bedding planes at c. 60 degrees to the core axis							
Co	ontracto	or:	Apex					Remarks:							
F	Rig Type	:	Wireline	5				1m wide void at 141m.							
Core	e Diame	eter:	HQ (63	.5mm)											

	1	G	WP	consulta	unts						Borehole No.	
		Ŭ		consurt	into			Rotar	y Core	e Log	2021-8	
GWP	onsultants									3	Sheet 21 of 22	
Project	Name:	V	Voodlea	aze Qua	rry	Proj	ect No.:		Co-ords:	365121E - 187706N	Hole Type:	
Locatio	n:	<u>т</u>	ytherir	ngton		Hole	e Inclinatio	n: ΩΩο	Collar Level:	89.4m AOD	Scale:	
Client:		F	lanson	Aggrega	ates	Hole	e Azimuth:	0°	Drilling Dates:	26/11/2021 - 05/01/2022	Logged By:	
Run	Corir	ng Indic	es (%)	Drill	Drill	Reduce	d				551	
Depth (m)	TCR	SCR	RQD	Depth (m)	Thickness (m)	Level (mAOD	Legend			Stratum Description		
199.30 - 200.80	97	97	84	_				Grey and dark grey Limestone). Strong <10mm thick, and common with some brachiopod shells to spaced fractures, m the core axis	, locally black, mo ly banded and lan occasional bands o complete crinoid o 30mm across in nostly bedding para	derately strong, ARGILLACEOUS LIMEST minated with dark grey to black calcareou of non-argillaceous paler grey limestone ossicles, trace crinoid stem segments, an cross section. <1% calcite veins to 5mm allel, and core breaks easily along beddin	DNE (Base of Black Rock s mudstone bands mostly Coarse bioclastic grains d trace bands with arcuate wide. Medium and close g planes at c. 60 degrees to	
200.80 202.30	100	99	74	201.30	1.45	111.90		Dark grey, strong, l Very fine grained, h grey limestone cont calcareous (no reac breaks are along sp	of Lower Limestone Shale). bands 10-30mm wide of pale Some mudstone is non- very close spaced but all			
202.30 203.80	100	100	93	202.75	1.40	113.35		Pale grey and dark without bioclastic g lamellae of dark gre shells, locally bands Medium spaced frac	nogenous limestone either with bands and undulating arcuate sections of brachiopod one. Trace calcite veins.			
203.80 205.40	100	100	94	204.15		114.75		Dark grey and grey dark grey calcareou grey, coarse graine crinoid debris incluo veins. Fractures va degrees to the core	nded and faintly laminated nds 10 to 120mm wide of me with minor to common vith brachiopods. No calcite bedding planes at c 60			
205.40 207.00	100	100	92	_	4.65							
207.00 208.50	100	99	78	-								
208.50	97	97	97	208.80	0.85	119.40 120.25		Pale grey and dark 20% bands and lan bioclastic fragments	grey, moderately s nellae of dark grey s and occasional co	strong LIMESTONE. Fine to medium grain y argillaceous limestone and black calcare rinoid ossicles. Trace calcite veins. Mediu	ned pale grey limestone with c ous mudstone. Minor m spaced fractures.	
				210.00	0.35	-120.60		laminations, beddin	ig at 55-65 degree	es to the core axis. Medium fractures. Co	re breaks on bedding planes	
								Bomarke				
		л: 	Apex					memarks:	t 141m			
	Rig Type:		wirelin	e					. 171111.			
Core	e Diame	ter: HQ (63.5mm)										

	8	G	WP.	onsulta	ants			.	Borehole No.		
								Rotary Core Log	2021-8		
GWP co	snsultants	v	Voodlea	ize Oua	rrv	Proje	ect No.:	Co-ords.	Sheet 22 of 22 Hole Type:		
Project	Name:	e	xtensio	n	,		TY	THEXT (NGR) 365121E - 187706N	RC		
Locatio	n:	Т	ytherin	gton		Hole	Inclinatio	n: 90° Collar Level: 89.4m AOD	Scale: 1:50		
Client:		F	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 26/11/2021 - 05/01/2022	Logged By: SJR		
Run Depth	Corir TCR	ng Indic	es (%)	Drill Depth (m)	Drill Thickness	Reduced Level	l Legend	Stratum Description			
210.00	97	96	81	211.55	1.55	-122.15		Pale grey and dark grey, strong and moderately strong LIMESTONE. Medium g with c 25% bands and lamellae of dark grey argillaceous limestone and calcare include minor bioclastic grains. Occasional macro fossils (crinoid, brachiopod) in 60 degrees to the core axis. Trace calcite veins plus a 20mm wide vein at base spaced fractures, mostly bedding parallel.	ained pale grey limestone ous mudstone some of which discrete bands. Bedding at of interval. Medium and close		
211.50 213.10	100	100	98		1.70			Dark grey and pale grey, moderately strong CALCAREOUS MUDSTONE. Lamina pale grey medium grained limestone with bioclastic fragments. Occasional brac Trace calcite veins. Medium and close spaced fractures mostly bedding parallel	ted mudstone with bands of hiopods in discrete bands.		
213.10 	100	100	70	213.25	0.75	123.85 124.60		ace bioclastic grains and d base of interval. c 1%			
				214.40		-125.00		Pale grey, strong LIMESTONE. Medium grained, perhaps bioclastic but without	coarse bioclastic fragments,		
					0.60			with lamellae and bands (<10mm wide) or argillaceous limestone and calcared crinoid ossicles and possible trace brachiopods. 1% calcite veins. Medium space	us mudstone, some with ed fractures.		
214.60 216.10	100	100	91	215.00	0.95	-125.60		Dark grey, moderately strong to moderately weak CALCAREOUS MUDSTONE. L lenticular bedding at c 60 degrees to the core axis. No fossils or bioclastic frage spaced fractures all bedding parallel	aminated, planar and nents. Medium and close		
				215.95	0.15	-126.55 -126.70		Pale grey, strong LIMESTONE, fine to medium grained, 2% calcite veins, no for	sils, no fractures		
Co	Contractor: Apex							Remarks:			
R	Rig Type:		Wireline	9				1m wide void at 141m.			
Core	Core Diameter:		HQ (63.	.5mm)							

ETT.		ATION DETAILS			<u> </u>				Ø	EES	(oN)	D / FLUSH m fellow- dS Copy White - Site Copy
Gener D-Leach		INSTALL Barehole		J.0.205		x xeo	210	51010	Diameter Well Casing	oven ocreen Gravel Rentonite	Gas Bung End Cap	Cover Type RAISE Water Level
rno Rescere	In fracte	Granding Time Reason									(hrs)	te.
The services or the client or	Tel: 01656 749149 E-mail: admin@apex-drilling.com Rig Ti	CC(All ACM 215-150M -	13kall Somn Pipe - Ison	(lale) fact +						(No) Fixed Plant.	(No) Standing Times	Signed by Client Dat
	Document	necovery &		0						m Core Boxes	m SPT/CPT	
δ	king 29	LI ILICKIESS								-		
pring 23852	Mor Day									(No) Casing	(No) W. Samples	Signed by Apex
Contract Name	Sheet of of									Site Moves	Return Moves	and Office Standing of the second sec

	/	G	WP	consult	ants							Borehole No.	
		Ŭ		onouri				Rotar	y Core	e Log		2021-9	
GWP.	onsultants									_		Sheet 1 of 7	
Project	Name:	۱	Woodlea extensio	aze Qua n	rry	Proje	ect No.: TY	THEXT	Co-ords: (NGR)	365054E - 18756	94N	Hole Type: RC	
Locatio	on:	٦	Tytherin	gton		Hole	e Inclinatio	on: 90°	Collar Level:	90.8m AOD		Scale:	
Client:		ŀ	Hanson	Aggrega	ates	Hole	e Azimuth:	0°	Drilling Dates:	10/01/2022 - 13/	/01/2022	Logged By:	
Run	Corii	ng India	ces (%)	Drill	Drill	Reduced	н Н					310	
Depth (m)	TCR	SCR	RQD	Depth (m)	Thickness (m)	Level (mAOD)	Legend			Stratum Descriptio	n		
0.00 - 2.70	0	0	0		2.70			not recovered.					
2.70 -				- 2.70	0.30	88.10		Pale grey, strong a brown on fractures	nd moderately stro and in adjacent ro	ng slightly weathered SAN ck. Traces of orange-brov	IDSTONE. Fine gra	ained, massive. Orange soft clay. Much broken.	
3.40	43	10	0	5.00	0.40	07.00		Not recovered.					
3.40 -	40 - 10 50 13 0 3.40 0.35 87.40 63.40 0 3.75 0.35 87.05 63.75							Pale yellow brown, textures or bedding	moderately strong g apparent, no read	to weak weathered SILTS to weak weathered SILTS to HCl. In part weath	TONE. Massive, where to clayey fin	very fine to fine grained, no le sand with orangey-brown	
4.10	50	13	0	3.75	0.35	87.05		Not recovered.					
				4.10	0.30	86.70		Pale yellowish brow brown staining on	IE, Fine grained, r re.	massive, with orangey-			
4.10 - 5.10	60	8	0	4.40	0.30	86.40		Pale yellow-brown fine grained sands	to yellowish grey, stone or siltstone. 1	stiff and moderately soft SA x 30mm core piece of dark	ANDY CLAY with f k grey argillaceous	ragments of weathered s limestone not in situ!	
					0.40	00.10		Not recovered.					
5.10 - 6.60	100	61	35	- 5.10 5.25	0.15	- 85.70 - 85.55		Pale grey, moderat Pale grey, strong S coarser grained ba Locally slightly calc	ely stiff, slightly SA ANDSTONE. Weak nds, unsorted but o areous in ground r	NNDY CLAY ly to moderately banded or overall interval becomes co mass to sand grains. Close	n scales 5-10mm, barse grained and spaced fractures	gradational fine and slightly porous down-hole.	
				6.20 6.45	0.25	84.60	0000	Pale grey and crea previous interval, c	m, strong and mod last-supported sub	lerately strong CONGLOME -rounded and sub-angular	RATE, gradationa very fine grained	I from coarse sandstone in sandstone clasts in weakly	
			F	6.60	0.15	84.20	0000	Pale grey, moderat Pale grey, moderat	Close spaced fracti ely soft, slightly SA ely strong CONGLO	ures ANDY CLAY with minor san DMERATE (Base of Cromha	dstone fragments Ill Sandstone). As	interval 5.25-6.20. Close	
				6.95	0.35	83.85		spaced fractures. Pale grey, very stif	f CLAY locally trans	sitional to very weak but in	durated mudstone	e. (Top of Clifton Down	
6.60 - 8.10	87	44	10	7.30		83.50		Pale greyish brown	, moderately stron	g MUDSTONE. Massive, ve	ery fine grained.	No bedding but locally	
					0.60			very broken at bas	e: broken but no fr	ractures.			
				7.90 8.10	0.20	82.90 82.70		Not recovered.	av moderately stro	ng locally moderately was			
8.10 - 9.00	100	19	0	_	1.40		$\frac{1}{2}$ $\frac{1}{2}$ brown, organgey brown and grey, very fine grained, melange-like mudstone masses, sometimes as c $\frac{1}{2}$ $\frac{1}{2}$						
9.00 - 10.50	100	51	16	9.50		81.30		Pale grey, locally p fine grained, mass mudstone veins to	ale brown or grey, ive limestone, varia clast-supported su	strong and moderately str ably brecciated, textures fro b-rounded clasts of grey o	ong LIMESTONE E om limestone with r pale brown (argi	BRECCIA. Pale grey, very thin grey or brown ? illaceous) limestone in a	
C	ontracto	or:	Apex					Remarks:					
F	Rig Type	e:	Wireline	9				Wireline drilling.					
Cor	Core Diameter:		HQ (63	.5mm)]					

		G	WP.	consulta	ants		Borehole No. 2021-9								
GWP	onsultants								Sheet 2 of 7						
Project Name: Woodleaze Quarry Project Name:				rry	Proje	ect No.: TY	Hole Type:								
Location: Tytherington					Hole	Inclinatio	n: 90° Collar Level: 90.8m AOD	Scale: 1:50							
Client:		ŀ	lanson	Aggrega	ates	Hole	Azimuth:	0° Drilling Dates: 10/01/2022 - 13/01/2022	Logged By: SJR						
Run Depth (m)	Corir TCR	ng India	es (%) RQD	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend	Stratum Description							
				-	1.45			Pale grey, locally pale brown or grey, strong and moderately strong LIMESTONE fine grained, massive limestone, variably brecciated, textures from limestone wit mudstone veins to clast-supported sub-rounded clasts of grey or pale brown (are pale brown fine grained matrix. No calcite veins. Fractures close spaced, locally i	BRECCIA. Pale grey, very h thin grey or brown ? gillaceous) limestone in a nedium spaced.						
10.50 - 12.00	100	100	49	10.95	1.05	79.85		A Ple grey, strong and moderately strong LIMESTONE. Very fine grained, massive, locally incipient brect of style as previous interval or banded with thin muddy (argillaceous) lamellae at c 65 degrees to the c axis, some of the weaker lamellae with trace clay.							
12.00 - 13.50	100	100	98	12.00 12.10	0.10	78.80 78.70		Grey, strong ALGAL LIMESTONE, with finely laminated ?algal sub-botryoidal mat Pale grey, strong LIMESTONE. Very fine and fine grained, massive or faintly ban 60 degrees to the core axis (presumed bedding) with trace clay in an otherwise s calcite veins. Medium spaced fractures. @12,70-12.75 zone with elongated rounded blebs of calcite to 5mm long, elonga Perhaps of bioclastic origin.	s and ovoid masses ded. Trace weak planes at strong limestone. Trace fine ate parallel to bedding.						
				13.55	0.70	77.25		Brown and greyish brown, strong, locally weak or very weak, ARGILLACEOUS LIMESTONE. Muddy strong limestone with minor thin bands of weak mudstone and very stiff clay at 60 degrees to the core axis. Medium to close spaced fractures: rock breaks easily along weak zones.							
13.50 - 15.00	100	91	73	14.25	0.75	ned with minor medium or ng. No grain size sorting or									
				15.00	0.20	75.80		Not recovered.							
				15.20	0.55	/5.60		Brownish grey, moderately strong and moderately weak MUDSTONE. Massive, w texturally to limestones, perhaps indurated. No reaction to HCI except bleaches veins. Medium spaced fractures. Broken core and trace clay at top of interval.	ery fine grained, similar brown colour. Trace calcite						
16.50	87	79	63	15.75		75.05		Pale grey to slightly brownish grey, strong and moderately strong LIMESTONE. With minor fine grained zones and trace medium grains, not bioclastic. <1% calc spaced fractures.	Massive, very fine grained, ite veins. Medium to close						
16.50 - 18.00	100	80	55	10.05	2.30	70.75									
18.00 - 19.50	100	68	51	- 18.05		/2./5		Brown, greyish brown and pale greyish brown, moderately weak and moderately Massive, very fine grained, trace bedding, locally with minor (<5mm wide) clay b Medium and close spaced fractures with some broken core. @20.70-20.95 weak banding with minor lamellae and flat and small elongate (ta parallel to bedding at 55 to 65 degrees to the core axis. @20.95-21.05 Limestone band with 60x10mm lensoid void lined with vuggy calc @23.90-24.05 zone with colonial coral, corallites c 1mm in diameter.	strong MUDSTONE. pands. Trace calcite veins. bular) mudstone clasts ite.						
Co	ontracto	or:	Apex					Remarks:							
F	Rig Type	2:	Wireline	9				ivvireine drilling.							
Core Diameter:		HQ (63.	.5mm)												

		G	WP	consulta	ints								Borehole No.
		Ŭ		onourru			Rotary Core Log						2021-9
GWP	onsultants												Sheet 3 of 7
Project	Name:	V e	Voodlea xtensic	aze Quai on	rry	Proj	ect No.: TY	THEXT	Co-ords: (NGR)	30	65054E - 187564	N	Hole Type: RC
Locatio	Location: Tytherington						e Inclinatio	n: 90°	Collar Level:	90	0.8m AOD		Scale: 1:50
Client:	lient: Hanson Aggregates						e Azimuth:	0°	Drilling Dates:	: 10	0/01/2022 - 13/0	1/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduce Level	d Leaend				Stratum Description		
(m)	TCR	SCR	RQD	(m)	(m)	(mAOD)	Brown, greyish brow	rown, greyish brown and pale greyish brown, moderately weak and moderately str				
								Massive, very fine g Medium and close s	prained, trace bedo paced fractures w	dding, with s	ome broken core.	nm wide) clay b	oands. Trace calcite veins.
19.50 - 21.10	100	84	66	-				@20.70-20.95 weal parallel to bedding @20.95-21.05 Lime @23.90-24.05 zone	c banding with mir at 55 to 65 degree stone band with 6 with colonial cora	inor la ees to 60x10 al, co	amellae and flat and sma the core axis. Omm lensoid void lined v rallites c 1mm in diamet	all elongate (ta vith vuggy calci er.	bular) mudstone clasts ite.
21.10 - 22.60	100	84	62		6.05								
22.60 - 24.10	100	99	85										
				24.10		66.70		Duraum ta huraumiah					
24.10 -	24.10							grained mudstone t with mudstone tow Medium spaced frac	exture with reaction ards the base of the ctures. @24.15 30	tion to the in 30mm	 b) HCI, perhaps transition terval. Weak decimetric wide area with colonial 	al to argillaceou scale banding coral as in prev	us limestone, gradational . Trace calcite veins. vious interval
25.60	100	55	00	25.00	0.60	65.80		Brown and greyish banding, locally wit fractures.	brown, moderately h laminations at 6	ely stro 60 deg	ong and moderately wea grees to the core axis. T	ak, MUDSTONE race calcite vei	. Very fine grained, trace ns. Medium spaced
				- 25.60		65.20		Grey and brownish massive or faintly b	grey, moderately anded. No fossils	stron	ng, locally strong, ARGIL ace calcite veins. Mediu	LACEOUS LIME m and close sp	STONE. Fine grained, aced fractures, locally
25.60								broken core. @26.55-26.70 Band bleached to pale gr	l of pale greyish b ev in zones c 200r	brown)mm y	n stiff clay, adjacent lime wide	estone above ar	nd below gradationally
27.20	100	71	66					@26.65-26.70 Sligh and below. @27.85 10mm wide	tly orangey brown	n mo nodera	derately stiff clay with sl ately stiff clay with adjac	light bleaching ent bleaching i	of adjacent limestone above n limestone above
				_	3.10								
27.20 - 28.70	100	76	71										
				28.70		62.10		Prown and and	un moderateles s	atro -		ME Variation	wained weakly baststart
28.70 - 30.20	100	100	93		1.10			Brown and pale bro decimetric scales. V @29.35-29.40 pale @29.75 10mm wide	wn, moderately st Veak reaction to H brown stiff clay e band if pale brov	HCl ex	CALCAREOUS MUDSTC kcept locally in minor ba	nds of mudstor	rained, weakiy banded on ne. Trace calcite veins.
				29.80		61.00		Pale grey to grey, s	trong LIMESTONE	E. Fir	ne grained, massive, Tra	ce possible arc	uate shell pieces (perhaps
		n':	Apex					Kemarks: Wireling drilling					
	ug Type	:	wireline	e									
Core Diameter:			HQ (63	.5mm)									

		G	WP.	onsulta	ints			Rotary Core Log	Borehole No. 2021-9
GWP.	onsultants							Sheet 4 of 7	
Project	Name:	V e	Voodlea xtensio	ize Quai n	rry	Proje	ect No.: TY	Hole Type: RC	
Locatio	Location: Tytherington						Inclinatio	n: Collar Level: 90.8m AOD	Scale: 1:50
Client:	Client: Hanson Aggregates						Azimuth:	0° Drilling Dates: 10/01/2022 - 13/01/2022	Logged By: SJR
Run Depth	Corir	ng Indic	es (%)	Drill Depth	Drill Thickness (m)	Reduced Level	Legend	Stratum Description	
30.20 - 31.70	100	97	94	21.75	1.95	E0.05		Pale grey to grey, strong LIMESTONE. Fine grained, massive, Trace possible ard brachiopods). <1% calcite veins. Medium spaced factures.	uate shell pieces (perhaps
31.70 - 33.30	100	95	72	31.75	1.75			Brown and greyish brown, moderately strong MUDSTONE. Very fine grained, m banded with trace bedding planes at c 70m degrees to the core axis. No reaction colour bleaching, perhaps dolomitic mudstone. 1-2% calcite veining but locally to locally to 20mm, occasionally anastomosing and locally with weak bleaching of a and close spaced fractures mostly crossing bedding, trace brown clay on a few f @33.15-33.20 pale grey, fine to medium grained homogenous limestone band, i lined void. 5mm weak and friable mudstone at base. @34.20-34.25 Weak band of crumbly mudstone	assive to very weakly n to cold HCI except surface o 5%, mostly 2-4mm wide, djacent mudstone. Medium ractures. ncludes small vuggy calcite
33.30 - 34.85	100	100	59		5.15				
34.85 - 36.30	100	99	70						
36.30 - 37.90	97	84	79	36.90	1.65	- 53.90		Brown and dark brown, moderately strong to strong MUDSTONE. Very fine grain noted below). No reaction to HCI. <1% calcite veins. Medium spaced fractures @37.55-37.70 finely laminated mudstone, including thin bands of breccia of sma mudstone clasts.	ned, massive (except as all ?rip-up matrix-supported
37.90 - 39.40	97	92	81	38.55	1.50	- 52.25		Brown, locally pale brown, moderately strong and moderately weak, locally wea grained, massive. No reaction to HCI. <1% calcite veins, locally with blotchy red which is spatially associated with veining. Medium to close spaced fractures, ma bedding at c 65 degrees to the core axis.	k, MUDSTONE. Very fine uction bleaching some of any fractures are partings on
39.40 - 40.40	100	88	88						
Co	ontracto	or:	Apex					Remarks:	
R	lig Type	:	Wireline	3				Wireline drilling.	
Core	e Diame	eter:	HQ (63.	.5mm)					

		G	WP.	consults	ants								Borehole No.	
		Ŭ		onourre		Rotary Core Log							2021-9	
GWP.	onsultants												Sheet 5 of 7	
Project	Name:	۷ د	Voodlea extensio	aze Qua n	rry	Proje	ect No.: TY	THEXT	Co-ords: (NGR)	3650)54E - 187564N	N	Hole Type: RC	
Locatio	on:	Г	ytherin	igton		Hole	Inclinatio	n: 90°	Collar Level:	90.8	m AOD		Scale: 1:50	
Client:	Client: Hanson Aggregates						Azimuth:	0°	Drilling Dates:	10/0)1/2022 - 13/01	/2022	Logged By: SJR	
Run Depth	Corii	ng Indic	es (%)	Drill Depth	Drill Thickness	Reduced Level	l Legend	Stratum Description						
(m)	TCR	SCR	RQD	(m) 40.05	(m)	(mAOD) 50.75		Brown, locally pale	brown, moderatel	ly strong	and moderately weak	k, locally weak	, MUDSTONE. Very fine	
40.70 -	100	69	52	-	1.80			grained, massive. I which is spatially a <u>bedding at c 65 de</u> Greyish brown to <u>p</u> massive, trace calc Medium to close sp	h blotchy redu fractures, mar g MUDSTONE. tches not obvi h trace grey c	ction bleaching some of ny fractures are partings on Very fine grained and iously related to veining. lay.				
				41.85		- 48.95		Pale slightly brown but perhaps dolom @42.30-42.40 with medium spaced fra	Pale slightly brownish grey, strong MUDSTONE. Very fine grained, unusually strong, no reaction to cold HCl but perhaps dolomitic, massive or faintly laminated, with discrete well laminated bands @41.85-41.95 and @42.30-42.40 with planar and lenticular bedding at c 50 degrees to the core axis. Trace calcite veins, medium spaced fractures.					
42.20 - 43.70	100	94	70		1.75									
				43.60 43.70	0.10	47.20 47.10		Slightly brownish g Pale brown and pa developed planar a	rey, very weak MU le brownish grey, s	JDSTONE strong an	with minor clay and moderately strong	MUDSTONE.	Laminated with well	
43.70 - 45.10	100	94	84		1.55			the core axis, mud argillaceous limest fractures	stone gradational to an	to bands .0% of th	c 100mm wide of fine le interval. Trace calc	e to medium g ite veins. Med	dium to close spaced	
				45.25	0.25	- 45.55		Brown, moderately	strong, MUDSTON	ery fine graine	d, non-calcareous			
45.10 - 46.60	100	77	67	45.50	1.20	- 45.30		Pale brown, and pa characteristics as in fractures	ale brownish grey, nterval 43.70-45.2	strong to 5 but wit	o moderately strong M hout limestone bands	IUDSTONE. La a. No calcite ve	minated with the same eins. Medium spaced	
46.60 - 48.20	100	63	46.70 44.10 Brown, strong, moderately strong and moderately weak MUDSTONE. Mass calcareous, trace blotchy reduction to grey not spatially associated with the Medium to close spaced fractures, often bedding parallel, with broken core mudstone at base of interval and of Run 32. 38 1.50		E. Massive ver with the trace an core in c 3	y fine grained, non- calcite veins in the interval. 00mm of moderately weak								
				- 48.20		- 42.60		Pale grey and brow and veined by brow clasts of limestone	vn, moderately stro vn calcareous mud , more commoniv I	ong LIME Istone, lo limestone	STONE BRECCIA. Fir ocally mudstone matri: a is mudstone veined	ne grained, ma x-supported sr with veining sa	assive limestone brecciated nall (<10mm) sub-rounded omewhat reticulate in	
48.20 - 49.80	100	100	100	100 48.95	0.75	- 41.85		Pale slightly brown perhaps slightly are of the same style a	ish grey to brownis gillaceous (muddy) as the mudstone in	ish grey, i) or micrit	moderately strong LIN tic, with trace thin (< vious interval.	MESTONE. Mas 5mm) brown o	sspaced fractures.	
					1.10	-								
C	ontracto	or:	Apex					Remarks:						
F	Rig Type	2:	Wireline	e				Uvireline drilling.						
Cor	e Diame	eter:	HQ (63	.5mm)				1						
L				,				J						

		G	₩P	consulta	ants								Borehole No.	
							Rotary Core Log						2021-9	
GWP	onsultants							-	-		_		Sheet 6 of 7	
Project	Name:	V e	Voodle extensio	aze Qua on	rry	Proj	oject No.: Co-ords: 365054E - 187564N TYTHEXT (NGR) 365054E - 187564N				N	Hole Type: RC		
Locatio	n:	Т	ytherir	ngton		Hole	Hole Inclination: G0° Collar Level: 90.8m AOD					Scale: 1:50		
Client:	Client: Hanson Aggregates						Azimuth:	0°	Drilling Dates:	10	0/01/2022 - 13/01	L/2022	Logged By: SJR	
Run Depth	Corir	ıg Indic	ces (%) Drill Drill Re Depth Thickness L				d Legend		I		Stratum Description	I		
(m)	TCR	SCR	RQD	(m) 50.05	(m)	(mAOD) 40.75		Pale slightly brownis	h grey to brownis	ish gre	ey, moderately strong LII	MESTONE. Ma	ssive, very fine grained,	
49.80 - 51.40	100	93	82	_	1.70			of the same style as Pale slightly brownis weakly banded or w calcareous mudstom close spaced fractur	f the same style as the mudstone in the previous interval. ale slightly brownish to greyish brown, moderately strong, ARGILLACEOUS LIN eakly banded or weakly laminated, variably argillaceous/muddy, with bands 5 alcareous mudstone forming 5-10% of the interval. Bedding c 55 degrees to t ose spaced fractures.				ESTONE. Variably massive, o 150mm wide of e core axis. Medium and	
51.40 - 53.00	100	89	70	51.75	2.30	39.05			Pale slightly brownis grained, laminated c argillaceous. Lamina base. c 2% veins of Medium and close sp	h grey to pale gre or banded with we ations at 45 degre very coarse calci paced fractures, n	reyish reak cr rees to cite, o mostly	brown, strong to moder colour contrasts, brownish o the core axis near the t ften vuggy, to 30mm wic y bedding parallel parting	ately strong L1 n bands and la cop of the inte de and at c 30 gs.	IMESTONE. Very fine or fine mellae probably rval, 60 degrees near the degrees to the core axis.
53.00 - 54.50	100	89	66	54.05	0.35	- 36.75 - 36.40		Brown and grey-bro and medium spaced clay.	wn, moderately w fractures, core br	weak	and weak, CALCAREOUS s easily on bedding. @54	MUDSTONE, 15 band 30m	weakly laminated. Close m wide grey-brown stiff	
				1	0.35			Brown and white, m as previous interval	oderately strong a with 50% coarse	and r calcit	moderately weak CALCAR te veining at low angles t	to the core axi	ONE BRECCIA. Mudstone	
54.50 - 56.00	100	61	35	54.75	1.55	- 36.05		Brown, locally pale to locally weakly lamina otherwise calcite vei the base of Run 37	brownish grey, mc ated, non calcarec ning is absent. M	nodera eous n Mediu	ately weak and weak MUI nudstone. One coarse ca im and close spaced fract	DSTONE. Ven Icite vein near ures, broken o	y fine grained, massive, the top of the interval core in part, especially at	
				56.30		34.50		Pale grey, strong LI	MESTONE. Very fi	fine gr	rained, massive, with a w	veakly brecciat	ted texture with hairline and	
56.00 - 57.50	100	92	85	56.70	0.40	34.10		Brown, weak MUDS	rONE with beige r	rtly ar reduc	nastomosing veinlets. Sha ction tracks along calcite	veins and acro	act at 60 degrees to the CA.	
				50.65	0.65	33.93		Pale grey to pale bro colour bleaching witi slightly vuggy calcite	own, moderately s h HCl, more stron e vein 10-20mm w	stron ngly c wide a	g ARGILLACEOUS LIMES calcareous at base of inte at low angle to the core a	TONE. Very w rval. Perhaps axis. Basal co	eakly calcareous at top with dolomitic. c 10% is coarse ntact not apparent.	
57.50 - 59.00	100	86	81	- 57.50	1.75	33.30		Pale grey and slight grained, non oolitic, moderate brecciation marked by complex Medium spaced frac	y brownish pale g massive, locally v n by reticulate find calcite veining at tures.	grey, with w he bro t low a	strong, LIMESTONE (Bas weak brecciation of the s own veinlets. 2% coarse angle to core axis formin	se of Clifton Da tyle seen in in and vuggy ca g contact with	own Mudstone). Very fine terval 56.30-56.70, locally lcite veins. Base of interval oolitic limestone below.	
59.00 - 60.60	100	98	89	59.25	1.35	31.55	key key kei incorrect incorrect inco key key key incorrect incorrect inco key key kei incorrect incorrect inco	Pale grey, strong LII banding or brecciation fractures.	MESTONE (Top of on. c 1% calcite v	of Gull veins	ly Oolite). Fine grained a s to 5mm wide sub-parall	nd fine graine el to the core	d oolitic, massive, no axis. Medium spaced	
Co	ontracto	r:	Apex					Remarks:						
R	Rig Type	:	Wirelin	e				Wireline drilling.						
Core Diameter:		HQ (63	3.5mm)											

		G	WP _°	onsulta	ints			Borehole No. 2021-9			
GWP	Name:	٧	Voodlea	ze Qua	rry	Proje	Project No.: Co-ords: 365054E - 187564N				Sheet 7 of 7 Hole Type:
Location: Tytherington				Hole	I Y Inclinatio	n: 90°	Collar Level:	90.8m AOD	Scale: 1:50		
Client:	ent: Hanson Aggregates			Hole	Azimuth:	0°	Drilling Dates:	10/01/2022 - 13/01/2022	Logged By: SJR		
Run Depth (m)	Corin TCR	g Indic SCR	es (%) ROD	Drill Depth (m)	Drill Thickness (m)	Reduced Level (mAOD)	Legend			Stratum Description	
							Incorrect incorrect inco key key ke incorrect incorrect inco key key ke incorrect incorrect inco	Pale grey, strong banding or breccia fractures.	LIMESTONE (Top of ation. c 1% calcite v	Gully Oolite). Fine grained and fine grain veins to 5mm wide sub-parallel to the core	ed oolitic, massive, no e axis. Medium spaced
				60.60		30.20				End of Borehole at 60.600m	
Co	ontracto	r:	Apex	1	1		1	Remarks:			
R	lig Type	:	Wireline	2				Wireline drillin	g.		
Core Diameter:		HQ (63.	5mm)								

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