ALLEGIANCE MINING NL ZEEHAN JOINT VENTURE
AVEBURY PROSPECT
A004

Collar coordinates	354,625.3mE 5,357,371.9mN 146.0mRL	**Final hole depth**	**226.3m**
Collar bearing	353°		
Collar dip	-50°	**Hole details**	0.0m to 3.0m HW
Coordinate system	AMG		3.0m to 56.0m HQ
			56.0m to 226.3m NQ

Drilled to test western end of a magnetic anomaly on the Avebury grid

Commenced	5 February 1999	**Drilled by**	Diamond Drilling Tasmania
Completed	18 February 1999	**Logged by**	Mick McKeown (McKeown Mining)

SUMMARY OF RESULTS

from m	to m	description	length m	Ni %	S %	As ppM
54.3	55.3	serepentinite	1.0	0.55	0.42	200
130.1	179.9	serpentinite	49.8	0.70	1.09	1283
137.3	146.3	serpentinite	9.0	1.02	1.20	100
151.1	157.1	serpentinite	6.0	1.29	1.45	2833

Down hole camera surveys

bhid	at	brg	dip
A004	0	352.7	-50
A004	61	352.7	-50.0
A004	112	352.7	-50.0
A004	160	352.7	-50.5
A004	211	352.7	-50.5

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
0.0	16.0	**CLAY AND CLAYSTONE**	0.0	7.6	1.5	20				
			7.6	10.6	1.8	60				
		Orange and brown clay and claystone (after rock) with common limonite on fractures in the claystone.	10.6	13.6	0.8	27				
			13.6	16.0	0.8	33				
		BCA is obscure.								
		The interval is puggy to rubbly.								
		The contact with the next interval is gradational (weathering).								
16.0	27.6	**CLAYSTONE AND CHERT**	16.0	19.6	1.3	36				
			19.6	20.4	0.8	100				
		Brown and tan claystone (after rock) and minor grey chert with common limonite on fractures.	20.4	22.6	0.3	14				
			22.6	25.6	1.5	50				
			25.6	27.6	0.8	40				
		BCA is obscure.								
		The interval is puggy to rubbly.								
		The contact with the next interval is gradational (weathering).								
27.6	40.5	**HORNFELS AND CHERTY HORNFELS**	27.6	28.3	0.7	100				
			28.3	29.1	0.6	75				
		Grey and lesser purple grey hornfels and lesser light grey cherty hornfels with common limonite on joints and fractures, trace to sparse quartz as stringers and lace veining, sparse narrow clayey zones.	29.1	30.2	1.1	100				
			30.2	31.2	1.0	100				
			31.2	32.8	1.6	100				
			32.8	33.3	0.5	100				
		BCA is obscure.	33.3	34.0	0.7	100				
			34.0	34.6	0.6	100				
		The interval is extremely broken to crumbly.	34.6	35.1	0.5	100				

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
			35.1	35.4	0.3	100				
		The contact with the next interval is sharp but broken.	35.4	35.6	0.2	100				
			35.6	36.5	0.9	100				
			36.5	37.0	0.5	100				
			37.0	37.6	0.5	83				
			37.6	37.9	0.3	100				
			37.9	38.8	0.9	100				
			38.8	40.4	1.6	100				
40.5	43.7	**CHERT SKARN**	40.4	41.4	1.0	100	40.5	41.5	0.015	1.00
			41.4	42.7	1.3	100	41.5	42.5	0.015	<0.01
		Green, purple (axinitic) and green black chert and skarnised chert with common axinite, common chlorite, sparse schorl as small clots less than 2cm across, trace to sparse green serpentine on joints, and sparse puggy clay on joints.	42.7	43.6	0.9	100	42.5	43.7	0.025	<0.01
		BCA is obscure.								
		The interval is extremely broken to extremely broken.								
		The contact with the next interval is sharp but broken.								
43.7	44.7	**CHERT AND SCHORL**	43.6	44.2	0.6	100	43.7	44.7	0.105	<0.01
			44.2	44.7	0.5	100				
		Dark green to grey black chert with common schorl as clots and patches up to 5cm across, and trace crystalline pyrite.								
		BCA is obscure.								
		The interval is rubbly.								

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		The contact with the next interval is sharp but broken.								
44.7	45.9	**SERPENTINITE** Light green serpentinite (siliceous?) and sparse included dark green serpentinite fragments up to 5cm across, trace quartz as stringers, trace brown sphalerite as blebs and in some quartz stringers, trace to sparse calcite as stringers, rare chloritic stylolites, and trace schorl? as flecks. BCA is obscure. The interval is unbroken. The contact with the next interval is sharp but irregular.	44.7	46.1	1.4	100	44.7	45.9	0.020	0.10
45.9	51.3	**SERPENTINITE** Mottled light to mid green serpentinite with sparse to minor magnetite as stringers and flecks, trace calcite as stringers, and trace pentlandite as rare disseminations. BCA is obscure. The interval is broken. The contact with the next interval is gradational (lithology).	46.1 49.2	49.2 52.4	3.1 3.2	100 100	45.9 46.9 47.9 48.9 50.1	46.9 47.9 48.9 50.1 51.3	0.045 0.055 0.065 0.095 0.150	<0.01 <0.01 <0.01 <0.01 0.02
51.3	61.2	**SERPENTINITE** Grey green serpentinite with minor to abundant magnetite as stringers, flecks and patches up to 10cm across, trace to sparse calcite as stringers, trace quartz as blebs,	52.4 55.5 56.0 58.6	55.5 56.0 58.6 61.1	3.1 0.5 2.6 2.5	100 100 100 100	51.3 52.3 53.3 54.3	52.3 53.3 54.3 55.3	0.285 0.270 0.270 0.545	0.18 0.21 0.47 0.42

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		trace pentlandite in calcite stringers and as disseminations associated with magnetite, and trace crystalline pyrite in calcite stringers and on joints.					55.3	56.3	0.240	0.14
							56.3	57.3	0.145	0.07
							57.3	58.3	0.170	0.08
		The interval is microfaulted in part.					58.3	59.3	0.170	0.10
							59.3	60.3	0.245	0.18
		BCA is obscure.					60.3	61.2	0.220	0.11
		The interval is broken, particularly along calcite stringers.								
		The contact with the next interval is sharp at 60 degrees to the core axis.								
61.2	86.3	**SERPENTINITE**	61.1	64.1	3.0	100	61.2	62.2	0.255	0.12
			64.1	67.3	3.2	100	62.2	63.2	0.230	0.12
		Very dark green to black massive serpentinite and patches of light green serpentinite,	67.3	70.5	3.2	100	63.2	64.2	0.240	0.12
		with minor to common magnetite as crystalline masses throughout, trace pentlandite	70.5	73.6	3.1	100	64.2	65.2	0.215	0.10
		as disseminations, sparse calcite as stringers, and trace to sparse chrysotilic green	73.6	76.6	3.0	100	65.2	66.2	0.215	0.14
		serpentine as stringers and on joints.	76.6	79.3	2.7	100	66.2	67.2	0.210	0.14
			79.3	82.2	2.9	100	67.2	68.2	0.200	0.16
		BCA is obscure.	82.2	85.4	3.2	100	68.2	69.2	0.170	0.18
							69.2	70.2	0.200	0.20
		The interval is broken in part near chrysotilic serpentine stringers.					70.2	71.2	0.190	0.17
							71.2	72.2	0.180	0.15
		The contact with the next interval is sharp at 40 degrees to the core axis.					72.2	73.2	0.180	0.14
							73.2	74.2	0.175	0.15
86.3	88.2	**SERPENTINISED GABBRO**	85.4	88.5	3.1	100	74.2	75.2	0.170	0.16
							75.2	76.2	0.180	0.17
		Light to dark green serpentinite after coarse grained crystalline gabbro, with abundant					76.2	77.2	0.195	0.18
		magnetite in more serpentinised (less crystalline) patches and sparse magnetite in					77.2	78.2	0.280	0.19
		gabbroic (more crystalline) parts, trace pentlandite as very rare disseminations,					78.2	79.2	0.195	0.13
		and sparse green serpentine as stringers and veinlets,					79.2	80.2	0.200	0.16
							80.2	81.2	0.185	0.13

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		The coarse grained texture is preserved throughout.					81.2	82.2	0.195	0.14
							82.2	83.2	0.185	0.14
		The interval is generally unbroken.					83.2	84.2	0.195	0.13
							84.2	85.2	0.170	0.17
		The contact with the next interval is sharp at 40 degrees to the core axis.					85.2	86.3	0.195	0.08
							86.3	87.3	0.150	0.02
88.2	101.5	**MOTTLED SERPENTINITE**	88.5	90.7	2.2	100	87.3	88.2	0.130	0.02
			90.7	93.8	3.1	100	88.2	89.2	0.140	<0.01
		Mottled grey green and light green serpentinite with abundant magnetite as	93.8	96.9	3.1	100	89.2	90.2	0.130	0.01
		crystalline patches, blebs and stringers, trace pentlandite as rare disseminations	96.9	100.0	3.1	100	90.2	91.2	0.155	0.01
		becoming sparse towards 101.5m, trace calcite as stringers, and sparse green	100.0	101.6	1.6	100	91.2	92.2	0.170	0.04
		serpentine as stringers and veinlets.					92.2	93.2	0.170	0.04
							93.2	94.2	0.175	0.04
		The mottled effect reflects the original coarse grained gabbroic texture.					94.2	95.2	0.145	0.08
							95.2	96.2	0.180	<0.01
		At 101.2m, very dark magnetite stringers cut gunmetal black magnetite patches.					96.2	97.2	0.315	0.12
							97.2	98.2	0.450	0.09
		BCA is obscure.					98.2	99.2	0.480	0.07
							99.2	100.2	0.285	0.06
		The interval is broken to very broken.					100.2	101.5	0.355	0.07
		The contact with the next interval is gradational (lithology).								
101.5	124.1	**SERPENTINITE**	101.6	103.6	2.0	100	101.5	102.5	0.280	0.18
			103.6	106.6	3.0	100	102.5	103.5	0.375	0.19
		Black serpentinite with common to locally abundant magnetite, sparse pentlandite as	106.6	109.6	3.0	100	103.5	104.5	0.295	0.18
		disseminations and blebs, and trace to sparse white chrysotilic serpentine as stringers.	109.6	112.2	2.6	100	104.5	105.5	0.220	0.14
			112.2	115.2	3.0	100	105.5	106.5	0.350	0.13
		BCA is obscure.	115.2	118.2	3.0	100	106.5	107.5	0.320	0.11
			118.2	120.7	2.5	100	107.5	108.5	0.245	0.12
		The interval is broken in part near chrysotilic stringers.	120.7	123.9	3.2	100	108.5	109.5	0.275	0.09

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from m	to m	DESCRIPTION
		The contact with the next interval is sharp at 30 degrees to the core axis.
124.1	124.3	**SERPENTINITE BRECCIA**
		Black serpentinite clasts up to 2cm across in grey puggy matrix.
		VCA is 30 degrees to the core axis.
		The interval is extremely broken and puggy.
		The contact with the next interval is sharp at 30 degrees to the core axis.
124.3	133.9	**SERPENTINITE**
		As between 101.5m and 124.1m.
		BCA is obscure.
		The interval is broken in part.
		The contact with the next interval is sharp at 50 degrees to the core axis.
133.9	134.0	**SERPENTINITE AND MONTMORILLONITE**
		Black serpentinite with abundant montmorillonite as stringers at 50 degrees to the core axis.
		The contact with the next interval is sharp at 50 degrees to the core axis.

from m	to m	rec m	rec %
123.9	127.0	3.1	100
127.0	130.2	3.2	100
130.2	133.0	2.8	100
133.0	136.2	3.2	100

from m	to m	Ni %	S %
109.5	110.5	0.280	0.08
110.5	111.5	0.220	0.08
111.5	112.5	0.420	0.07
112.5	113.5	0.405	0.07
113.5	114.5	0.215	0.12
114.5	115.5	0.385	0.13
115.5	116.5	0.300	0.17
116.5	117.5	0.260	0.14
117.5	118.5	0.285	0.12
118.5	119.5	0.310	0.13
119.5	120.5	0.335	0.18
120.5	121.5	0.310	0.21
121.5	122.8	0.500	0.37
122.8	124.1	0.175	0.23
124.1	125.1	0.160	0.20
125.1	126.1	0.185	0.14
126.1	127.1	0.240	0.20
127.1	128.1	0.215	0.18
128.1	129.1	0.275	0.24
129.1	130.1	0.230	0.22
130.1	131.1	0.325	0.36
131.1	132.1	0.545	0.52
132.1	133.9	0.620	0.56

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
134.0	137.3	**SILICEOUS SERPENTINITE**					133.9	134.9	0.500	0.47
							134.9	136.1	0.515	0.51
		Light green and grey green siliceous serpentinite with common magnetite as first generation flecks and patches and second generation stringers, sparse pentlandite as blebs, flecks and small ragged patches up to 2cm across associated with the second generation magnetite, and trace green serpentine as stringers.					136.1	137.3	0.345	0.38
		BCA is obscure.								
		The interval is broken in part.								
		The contact with the next interval is sharp, broken and brecciated.								
137.3	139.1	**SILICEOUS SERPENTINITE**	136.2	138.0	1.8	100	137.3	138.3	1.190	1.44
			138.0	139.6	1.6	100	138.3	139.3	1.340	1.47
		Light green to grey siliceous serpentinite with common to abundant magnetite as patches, sparse to minor pentlandite as flecks and small patches, sparse green serpentine as stringers, and sparse calcite as stringers and veinlets.								
		Near both contacts, the interval is brecciated with pale green matrix.								
		BCA is obscure.								
		The interval is extremely broken.								
		The contact with the next interval is sharp, broken and brecciated.								
139.1	139.6	**SILICEOUS SERPENTINITE**					139.3	140.3	1.570	1.85
		Pale green to grey siliceous serpentinite with common pentlandite as flecks accumulating to small patches, minor magnetite as flecks and veinlets, and trace								

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		chrysotile as stringers. BCA is obscure. The interval is broken. The contact with the next interval is gradational (lithology).								
139.6	149.3	**SILICEOUS SERPENTINITE** Pale green to grey serpentinite with common to abundant magnetite as patches (accumulating to massive magnetite in part, magnetite abundant near start grading to common at near end of interval), sparse to minor pentlandite as blebs and flecks, sparse green serpentine as stringers, and sparse calcite as vuggy veinlets. Very coarse gabbroic texture has been preserved in part. BCA is obscure. The interval is broken. The contact with the next interval is sharp but irregular.	139.6 142.6 145.2 148.2	142.6 145.2 148.2 149.8	3.0 2.6 3.0 1.6	100 100 100 100	140.3 141.3 142.3 143.3 144.3 145.3 146.3 147.3 148.3	141.3 142.3 143.3 144.3 145.3 146.3 147.3 148.3 149.3	1.040 0.360 1.440 0.710 0.385 1.110 0.275 0.430 0.280	1.17 0.42 1.68 0.81 0.49 1.46 0.37 0.57 0.42
149.3	151.1	**XENOLITH** Mottled brown to green and lesser black chert/hornfels xenolith with trace pentlandite as flecks, sparse schorl as flecks, and sparse green serpentine on joints. This is a very altered rock. BCA is obscure.	149.8	151.6	1.8	100	149.3 150.1	150.1 151.1	0.185 0.525	0.14 0.79

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		The interval is very broken.								
		The contact with the next interval is sharp but irregular.								
151.1	163.9	**SERPENTINITE**	151.6	154.6	3.0	100	151.1	152.1	1.380	1.80
			154.6	157.6	3.0	100	152.1	153.1	1.620	1.97
		Pale green to grey green serpentinite becoming darker in colour towards 163.5m, with common, locally abundant, magnetite, and sparse to minor pentlandite as flecks, blebs and small patches.	157.6	160.6	3.0	100	153.1	154.1	0.610	0.78
			160.6	163.6	3.0	100	154.1	155.1	0.615	0.77
							155.1	156.1	1.920	2.31
							156.1	157.1	1.600	1.04
		The interval has an extremely coarse remnant gabbroic or, perhaps, a brecciated texture.					157.1	158.1	0.190	0.17
							158.1	159.1	0.345	0.18
							159.1	159.9	1.000	0.69
		BCA is obscure.					159.9	160.9	0.480	0.32
							160.9	161.9	0.420	0.47
		The interval is generally unbroken.					161.9	162.9	0.360	0.41
							162.9	163.9	0.630	0.86
		The contact with the next interval is gradational (lithology).								
163.9	165.5	**SERPENTINITE**	163.6	166.6	3.0	100	163.9	164.9	1.880	2.71
							164.9	165.9	0.550	0.61
		Pale green to grey green serpentinite with minor magnetite as small crystalline patches, and sparse to minor pentlandite as flecks, blebs and small patches.								
		BCA is obscure.								
		The interval is generally unbroken.								
		The contact with the next interval is gradational (lithology).								

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from m	to m	DESCRIPTION
165.5	173.1	**SERPENTINITE** As between 163.5m and 165.5m but with minor tremolite? or altered feldspar? as small crystalline patches. 166.70m to 166.75m: puggy zone: fault? The contact with the next interval is gradational (lithology).
173.1	174.6	**SERPENTINITE** Massive, mottled light to mid green serpentinite with minor magnetite as stringers, and sparse pentlandite as flecks and occasional small patches. BCA = 50 degrees (magnetite banding) The interval is generally unbroken. The contact with the next interval is gradational (lithology).
174.6	184.2	**SILICEOUS ROCK** Grey siliceous rock and minor quartz rock with sparse remnant feldspar? patches, minor pentlandite as flecks and patches throughout, and sparse calcite as veinlets. 179.9m to 180.2m: quartz vein with puggy clay and minor schorl 182.0m to 182.1m: chert xenolith 182.2m to 183.0m: chert xenolith BCA is obscure.

from m	to m	rec m	rec %
166.6	169.6	3.0	100
169.6	172.6	3.0	100
172.6	175.6	3.0	100
175.6	178.6	3.0	100
178.6	181.6	3.0	100
181.6	184.6	3.0	100

from m	to m	Ni %	S %
165.9	166.9	0.400	0.30
166.9	167.9	0.245	0.33
167.9	168.9	0.405	0.57
168.9	169.9	0.705	0.25
169.9	170.9	1.060	1.09
170.9	172.0	0.840	0.47
172.0	173.1	0.490	0.24
173.1	174.9	0.220	1.50
174.9	175.9	0.230	2.52
175.9	176.9	0.810	4.88
176.9	177.9	0.410	2.74
177.9	178.9	0.375	2.55
178.9	179.9	0.605	4.11
179.9	180.9	0.235	2.60
180.9	182.2	0.145	2.09
182.2	183.2	0.150	1.10
183.2	184.2	0.215	1.62

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		The interval is generally unbroken but extremely broken from 179.9m to 180.2m. The contact with the next interval is sharp but irregular.								
184.2	186.1	**CHERT AND SILTSTONE** Brown chert and green fine grained altered siltstone with sparse to minor schorl as stringers and veinlets, sparse leucoxene? spotting in chert, sparse light green serpentine as veinlets, and sparse crystalline quartz as veinlets. BCA is irregular. The interval is broken. The contact with the next interval is sharp at 30 degrees to the core axis: fault.	184.6	187.6	3.0	100	184.2	185.0	0.160	0.28
186.1	187.9	**SCHORL ROCK** Semi-massive schorl with pale green crystalline tremolite? as matrix in part, sparse red sphalerite as flecks, trace to sparse pyrite as flecks, and trace pink cassiterite? flecks. 186.1m to 186.2m: puggy serpentine: fault. BCA is obscure. The contact with the next interval is gradational (mineralogy).								
187.9	223.6	**CHERT AND HORNFELS** Grey, red, green and white chert and lesser green hornfels with sparse schorl as stringers and crystalline patches, trace to sparse crystalline quartz as stringers, sparse	187.6 190.6 193.6 196.6	190.6 193.6 196.6 198.9	3.0 3.0 3.0 2.3	100 100 100 100				

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from m	to m	DESCRIPTION	from m	to m	rec m	rec %	from m	to m	Ni %	S %
		axinite as patches, for example at 193.0m, sparse red sphalerite as rare flecks associated with axinite at 193.3m and 200.3m, and trace bright green diopside? as a veinlet at 193.0m.	198.9	201.9	3.0	100				
			201.9	205.0	3.1	100				
			205.0	208.1	3.1	100				
			208.1	210.6	2.5	100				
			210.6	211.6	1.0	100				
			211.6	214.6	3.0	100				
		197.4m to 199.5m: a very brecciated chert zone with minor quartz as stringers.	214.6	217.6	3.0	100				
			217.6	220.6	3.0	100				
		BCA is	220.6	223.6	3.0	100				
			223.6	226.3	2.7	100				
		The interval is generally unbroken.								
		END OF HOLE AT 226.3m.								

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