

## **Appendix R**

### **Materials Balance for Volumes of Material for Storage, Disposal and Reinstatement**



# Corrib Onshore Pipeline

## Materials Balance (Peat and Stone)



Project:- MDR0470 - Corrib Onshore Pipeline  
 Date:- 8-Jan-09  
 By:- N. Boyce  
 Checked:- K McMorland

### Key

	Non Bog land areas
	Intact Peatland / SAC. No stock-piling within working area
	Disturbed Peatland. Stock-piling within working area
	Forested Peatland. Stock-piling within working area

### Notes

- [1] Peat depth is too shallow for a stone road
  - [2] probe location is off the line of the pipeline
  - [3] including turves
  - [4] no SI data available
  - [5] Trial pit did not reach firm ground, therefore depths are estimates.
- Blue text Indicate values that have been adjusted by hand

	Volume of peat for disposal	Volume of stone required	Volume of stone for disposal
	m3	m3	m3
stone road	72,226	117,755	
peat plug	-2,593		
non-peatland area		4,240	
pipe stringing / access	0	14,825	12,375
site compound	-810	33,350	30,325
Miscellaneous Stone Out			20,000
<b>Total</b>	<b>68,823</b>	<b>170,170</b>	<b>62,700</b>



**Corrib Onshore Pipeline**  
Materials Balance (Peat and Stone)



Project:- MDR0470 - Corrib Onshore Pipeline  
Date:- 8-Jan-09  
By:- N. Boyce  
Checked:- K. McMorland

Key	
	Non Bog land areas
	Intact Peatland / SAC. No stock-piling within working area
	Disturbed Peatland. Stock-piling within working area
	Forested Peatland. Stock-piling within working area

A=Turves at 0.50 m thick  
B=replaced peat layer 0.10 m thick  
C=peat to be disposed various m thick  
D=peat remaining above firm ground 0.50 m thick  
W=width of stone road 9.00 m  
X=depth to firm bearing various m

**Notes**

- [1] Peat depth is too shallow for a stone road
- [2] probe location is off the line of the pipeline
- [3] including turves
- [4] no SI data available
- [5] Trial pit did not reach firm ground, therefore depths are estimates.

Blue text Indicate values that have been adjusted by hand

Probe No.	Chainage (scaled)	Segment length	Existing Ground Level - interpolated (for info only)	Depth to firm Stratum	Volume of peat to be Excavated <sup>[3]</sup> (incl. turves)	Volume of stone required <sup>[3]</sup>	Volume of peat to be reinstated (incl. turves)	Turves to be removed/reinstated (SAC turves only)	Volume of peat for disposal	Volume of 'Other Material'	Comments
	(km)	(m)	(m)	(m)	(m3)	(m3)	(m3)	(m3)	(m3)	(m3)	
<b>Start of Rossport Commonage</b>											
SV2008091601	86.08	57.50	26.55	1.10	310.50	273.13	310.50		0.00		
20080729-12 <sup>[1]</sup>	86.11	61.50	25.21	0.75	138.38	0.00	0.27		0.00		BH2 indicates that below the peat layer there is 'dense brown and grey sub-angular to rounded silty sandy GRAVEL with some cobbles'
SV2008091602	86.18			3.40	0.00	0.00	0.00				
20080728-01	86.20	91.00	23.87	3.48	2,440.62	3,113.51	491.40		1,949.22		
20080728-02	86.29	57.00	22.53	2.80	1,179.90	1,404.48	307.80		872.10		
20080729-11	86.32	72.50	22.06	3.90	2,218.50	2,942.77	391.50		1,827.00		
20080729-10	86.43	90.50	20.72	3.80	2,687.85	3,533.12	488.70		2,199.15		
20080729-09	86.50	80.50	20.80	3.70	2,318.40	3,019.56	434.70		1,883.70		
20080729-08	86.59	97.50	21.76	2.75	1,974.37	2,337.32	526.50		1,447.87		
SV2008093002	86.61	18.50		2.40	316.35	359.64	99.90		216.45		
SV2008100801	86.63	143.50		2.25	2,260.13	2,521.65	774.90		1,485.23		
20080729-07	86.69	75.00		2.75	1,518.75	1,797.94	405.00		1,113.75		
20080729-06	86.78	102.00	26.00	2.30	1,652.40	1,855.38	550.80		1,101.60		
20080728-03	86.90	61.50		1.69	658.67	676.38	332.10		326.57		TRX2
20080729-03	86.90	51.50		1.20	324.45	296.64	278.10		46.35		
20080729-02	87.00	94.00		2.90	2,030.40	2,443.06	507.60	423.00	1,522.80		
20080813-01	87.09	48.50		2.80	1,003.95	1,195.04	261.90	218.25	742.05		
20080729-01	87.10	42.00		2.80	869.40	1,034.88	226.80	189.00	642.60		
20080729-05	87.18	44.00		3.35	1,128.60	1,421.75	237.60	198.00	891.00		
20080715-15	87.19	6.50		3.50	175.50	224.32	35.10	29.25	140.40		
20080728-04	87.19	7.50		2.90	162.00	194.93	40.50	33.75	121.50		
20080729-04	87.20	36.00		3.60	1,004.40	1,296.00	194.40	162.00	810.00		
SV2008093004	87.22	30.00		3.50	810.00	1,035.30	162.00	135.00	648.00		
20080813-04	87.26	32.50		3.40	848.25	1,073.80	175.50	146.25	672.75		
SV2008093005	87.28	12.50		3.80	371.25	488.00	67.50	56.25	303.75		
20080813-02	87.29	37.00		3.50	999.00	1,276.87	199.80	166.50	799.20		
20080715-14	87.32	34.50		5.00	1,397.25	2,034.12	186.30	155.25	1,210.95		
20080813-07	87.35	27.00		3.60	753.30	972.00	145.80	121.50	607.50		
20080715-13	87.38	73.00		3.00	1,642.50	1,997.28	394.20		1,248.30		
20080715-11 <sup>[1]</sup>	87.50	104.00		0.25	234.00	240.50	561.60	468.00	-327.60		RDX2
20080715-10 <sup>[1]</sup>	87.59	95.00		0.75	213.75	130.39	513.00	427.50	-299.25		RDX2
20080715-09	87.69	87.50		1.20	551.25	504.00	472.50	393.75	78.75		
SV2008091503	87.71	35.00		2.40	598.50	680.40	189.00	157.50	409.50		
20080813-08	87.76	15.00		1.70	162.00	166.65	81.00	67.50	81.00		
SV2008091504	87.74	5.00		1.80	58.50	61.20	27.00	22.50	31.50		
20080715-08	87.77	75.00		1.80	877.50	918.00	405.00	337.50	472.50		
20080715-07	87.89	75.00		2.20	1,147.50	1,272.00	405.00	337.50	742.50		
SV2008091502	87.92	52.50		2.25	826.88	922.56	283.50	236.25	543.38		
20080715-06	88.00	50.00		3.90	1,530.00	2,029.50	270.00	225.00	1,260.00		
SV2008091501	88.02	47.50		4.00	1,496.25	2,002.60	256.50	213.75	1,239.75		
20080715-05	88.03	35.00		4.20	1,165.50	1,587.60	189.00	157.50	976.50		
20080715-04	88.09	47.50		5.00	1,923.75	2,800.60	256.50	213.75	1,667.25		
20080715-03	88.11	15.00		5.00	607.50	884.40	81.00	67.50	526.50		
SV2008100101	88.12	35.00		3.50	945.00	1,207.85	189.00	157.50	756.00		
SV2008100102	88.15	30.00		4.80	1,161.00	1,663.20	162.00	135.00	999.00		
SV2008100103	88.18	62.50		4.80	2,418.75	3,465.60	337.50	281.25	2,081.25		
20080715-02 <sup>[2]</sup>	88.22	47.50		4.20	1,581.75	2,154.60	256.50	213.75	1,325.25		
20080715-01	88.28	115.00		1.50	1,035.00	1,024.65	621.00	517.50	414.00		RDX3 BH3 indicates that below the peat layer there is 'Medium dense grey silty SAND with cobbles'
20080730-01 <sup>[1]</sup>	88.43	87.50		0.51	7.87	424.38	472.50	393.75			RDX3
20080730-02 <sup>[1]</sup>	88.45	62.50		1.36	483.75	463.60	337.50				
20080730-03 <sup>[1]</sup>	88.52	50.00		1.36	387.00	370.88	270.00				
<b>Upper Crossing</b>											
BH008-07	89.55	99.00		3.00	2,227.50	2,708.64	534.60	445.50	1,692.90		
[4]	89.75	200.00		3.00	4,500.00	5,472.00	1,080.00	900.00	3,420.00		
<b>Not Peatland</b>											
[4]	90.20										
BH009C-07	90.38	279.50		3.00	6,288.75	7,647.12	1,509.30		4,779.45		
	90.76	413.50		2.60	9,675.90	9,097.00	2,232.90		7,443.00	4,651.87	Peat recorded down to 2.6m on v. soft clay down to 4.35 (SPT = 0) on dense sand (SPT=6) TP ended at 2.10m TP ended at 2.30m
TP-05 <sup>[5]</sup>	91.21	324.00		3.00	7,290.00	8,864.64	1,749.60		5,540.40		TP ended at 2.60m
TP-04 <sup>[5]</sup>	91.41	200.00		3.00	4,500.00	5,472.00	1,080.00		3,420.00		TP ended at 3.20m
TP-03 <sup>[5]</sup>	91.61	125.00		3.50	3,375.00	4,313.75	675.00		2,700.00		
TP-02 <sup>[5]</sup>	91.66	85.00		3.00	1,912.50	2,325.60	459.00		1,453.50		
TPg <sup>[5]</sup>	91.78	210.00		3.20	5,103.00	6,333.60	1,134.00		3,969.00		
TP-01 <sup>[5]</sup>	92.08	259.50									Existing stone road
TP1 <sup>[5]</sup>	92.30	241.50									Existing stone road
<b>Terminal</b>											

**Summary**

Total Intact and SAC	1,569			30,096	38,830	8,470	7,058	22,090		
Total Cutover, non SAC	1,767			35,218	42,518	9,207		25,610		
Forest Area	1,358			31,856	36,407	7,331		24,526		
<b>TOTALS</b>	<b>4,693</b>			<b>97,170</b>	<b>117,755</b>	<b>25,008</b>	<b>7,058</b>	<b>72,226</b>		

**Segment Lengths**

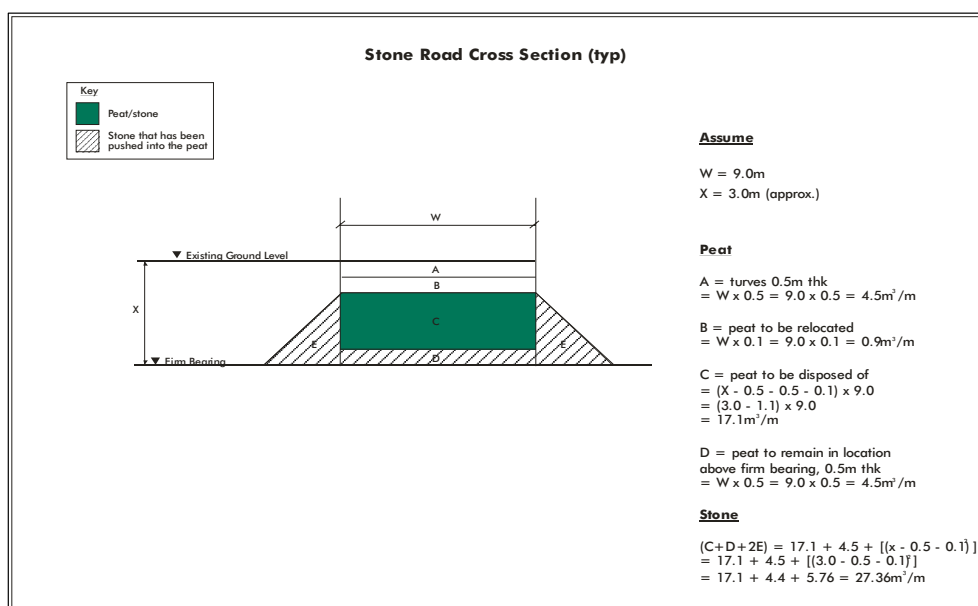
Segment lengths are calculated as follows:-

The first half of the segment is the distance between the bore hole in consideration and the previous bore hole, divided by two.

The second half of the segment is the distance between the bore hole in consideration and the following bore hole, divided by two.

These two halves are added together to form a segment length.

By calculating the segment length in this way, variations in the distance between the bore holes and the effect of differentiating peat depths, will be reduced as much as possible.



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Key	
	Non Bog land areas
	Intact Peatland / SAC. No stock-piling within working area
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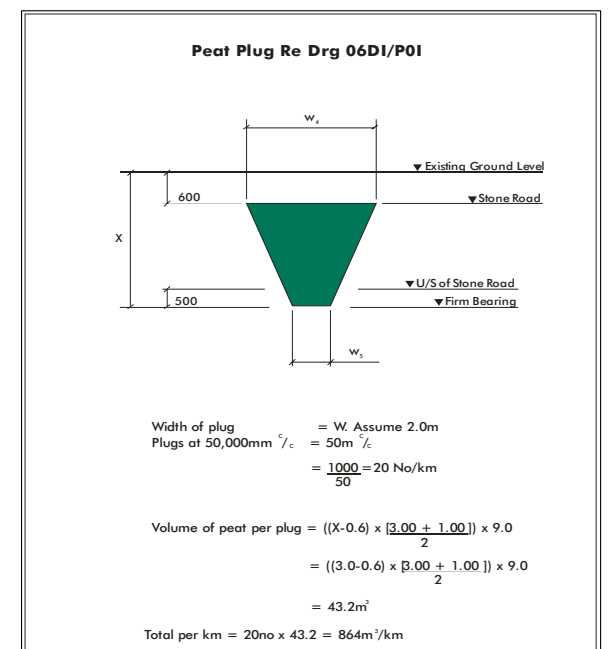
Within Stone Road  
A=Turves at 0.50 m thick  
B=replaced peat layer 0.10 m thick  
W<sub>4</sub> = width at top = 3.00 m  
W<sub>5</sub> = width at bottom = 1.00 m  
L = length = 9.00 m  
X = depth to firm ground = various m

**Notes**  
[1] Peat depth is too shallow for a stone road  
[2] probe location is off the line of the pipeline  
[3] including turves  
[4] no SI data available  
[5] Trial pit did not reach firm ground, therefore depths are estimates.  
**Blue text** Indicate values that have been adjusted by hand

Location	Chainage	Width at top (m)	Width at bottom (m)	Length (m)	Depth to Firm Bearing (estimated from probes and TP) (m)	Volume of peat required (m3)	Comments
Non Peat Land Area	83.49						Non Peat Land Area
Lower Crossing	83.91						Lower Crossing
	84.54						
Non Peat Land Area	84.59						Non Peat Land Area
[1]	85.99	3.000	1.000	9.00	0.75		
[1]	86.04	3.000	1.000	9.00	0.75		
[1]	86.09	3.000	1.000	9.00	0.75		
	86.14	3.000	1.000	9.00	1.66	19.08	
	86.19	3.000	1.000	9.00	2.57	35.46	
	86.24	3.000	1.000	9.00	3.48	51.84	
	86.29	3.000	1.000	9.00	2.80	39.60	
	86.34	3.000	1.000	9.00	3.13	45.59	
	86.39	3.000	1.000	9.00	3.46	51.48	
	86.44	3.000	1.000	9.00	3.80	57.60	
	86.49	3.000	1.000	9.00	3.70	55.80	
	86.54	3.000	1.000	9.00	3.23	47.25	
	86.59	3.000	1.000	9.00	2.75	38.70	
	86.64	3.000	1.000	9.00	2.75	38.70	
	86.69	3.000	1.000	9.00	2.75	38.70	
	86.74	3.000	1.000	9.00	2.53	34.65	
	86.79	3.000	1.000	9.00	2.30	30.60	
	86.84	3.000	1.000	9.00	2.00	25.11	
	86.89	3.000	1.000	9.00	1.69	19.62	
	86.94	3.000	1.000	9.00	2.09	26.87	
	86.99	3.000	1.000	9.00	2.50	34.15	
	87.00	3.000	1.000	9.00	2.90	41.40	
	87.05	3.000	1.000	9.00	2.85	40.50	
	87.10	3.000	1.000	9.00	2.80	39.60	
	87.15	3.000	1.000	9.00	3.20	46.80	
	87.20	3.000	1.000	9.00	3.60	54.00	
	87.25	3.000	1.000	9.00	3.40	50.40	
	87.30	3.000	1.000	9.00	3.50	52.20	
	87.37	3.000	1.000	9.00	3.00	43.20	
	87.42	3.000	1.000	9.00	2.08	26.64	
	87.47	3.000	1.000	9.00	1.17	10.26	
[1]	87.52	3.000	1.000	9.00	0.25		
[1]	87.54	3.000	1.000	9.00	0.50		
[1]	87.59	3.000	1.000	9.00	0.75		
[1]	87.64	3.000	1.000	9.00	0.98		
	87.69	3.000	1.000	9.00	1.20	10.80	
	87.74	3.000	1.000	9.00	1.50	16.20	
	87.79	3.000	1.000	9.00	1.80	21.60	
	87.84	3.000	1.000	9.00	2.00	25.20	
	87.89	3.000	1.000	9.00	2.20	28.80	
	87.94	3.000	1.000	9.00	2.85	40.50	
	87.99	3.000	1.000	9.00	3.90	59.40	
	88.04	3.000	1.000	9.00	4.45	69.30	
	88.09	3.000	1.000	9.00	5.00	79.20	
	88.14	3.000	1.000	9.00	4.73	74.34	
	88.19	3.000	1.000	9.00	4.47	69.66	
	88.24	3.000	1.000	9.00	4.20	64.80	
	88.29	3.000	1.000	9.00	1.50	16.20	
	88.35	3.000	1.000	9.00	1.45	15.36	
	88.40	3.000	1.000	9.00	1.41	14.53	
	88.45	3.000	1.000	9.00	1.36	13.68	
	88.50	3.000	1.000	9.00	1.36	13.68	
Upper Crossing	88.55						Upper Crossing
	89.55	3.000	1.000	9.00	3.00	43.20	
	89.60	3.000	1.000	9.00	3.00	43.20	
	89.65	3.000	1.000	9.00	3.00	43.20	
	89.70	3.000	1.000	9.00	3.00	43.20	
	89.75	3.000	1.000	9.00	3.00	43.20	
	89.80	3.000	1.000	9.00	3.00	43.20	
	89.85	3.000	1.000	9.00	3.00	43.20	
	89.90	3.000	1.000	9.00	3.00	43.20	
Non Peat Land Area	89.95						Non Peat Land Area
	90.20	3.000	1.000	9.00	3.00	43.20	
	90.25	3.000	1.000	9.00	3.00	43.20	
	90.30	3.000	1.000	9.00	3.00	43.20	
	90.35	3.000	1.000	9.00	3.00	43.20	
	90.38	3.000	1.000	9.00	3.00	43.20	
	90.43	3.000	1.000	9.00	3.00	43.20	
	90.48	3.000	1.000	9.00	3.00	43.20	
	90.53	3.000	1.000	9.00	3.00	43.20	
	90.58	3.000	1.000	9.00	3.00	43.20	
	90.63	3.000	1.000	9.00	3.00	43.20	
	90.68	3.000	1.000	9.00	3.00	43.20	
	91.70	3.000	1.000	9.00	3.00	43.20	
	91.75						existing stone road
Terminal	92.56						Terminal

**Summary**

Total non bog land areas						
Total Intact and SAC						1,074
Total Cutover, non SAC						1,174
Forest Area						346
<b>TOTALS</b>						<b>2,593</b>



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### Non Peatland Areas

F = H = top soil removed      0.250 m thick  
 G = sub soil                      various m  
 W<sub>1</sub> = width of trench at top      5.00 m  
 W<sub>2</sub> = width of trench at bott      2.15 m  
 X = depth                              2.80 m  
 W = working width                      8.00 m

### Notes

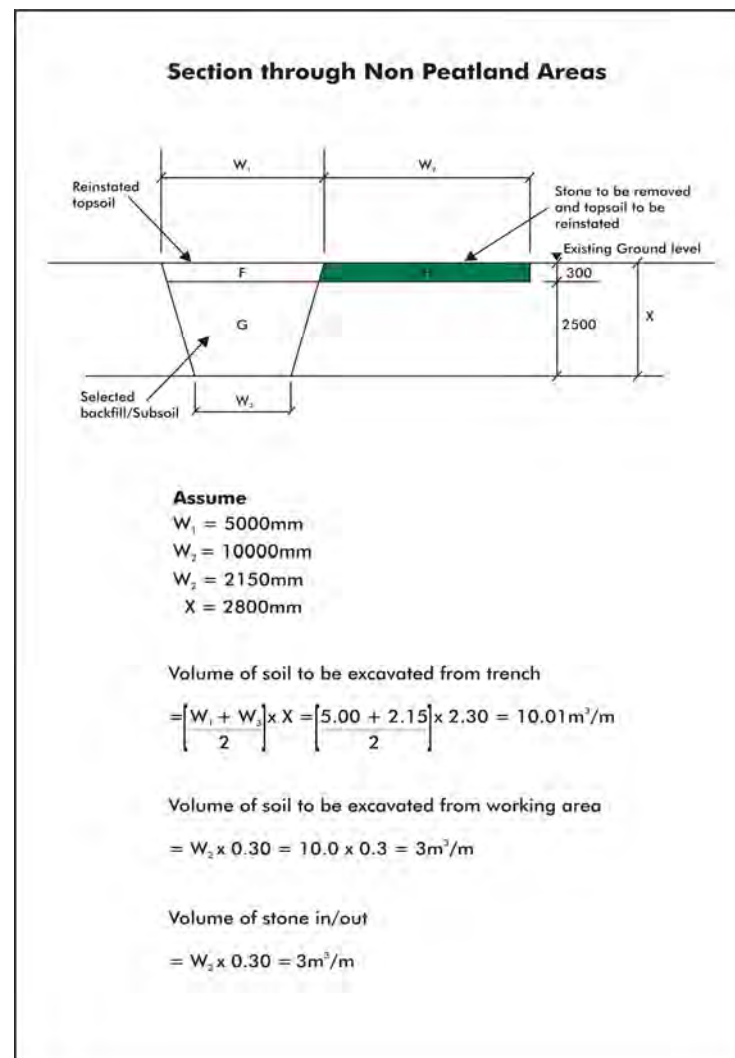
- [1] Peat depth is too shallow for a stone road
- [2] probe location is off the line of the pipeline
- [3] including curves
- [4] no SI data available
- [5] Trial pit did not reach firm ground, therefore depths are estimates.
- [6] Soil will be reinstated by spreading in the locally vicinity
- [7] Stone will be left in place at the request of the landowner

Blue text Indicate values that have been adjusted by hand

Location	Chainage	sector length	Width at top	Width at bottom	working width	Depth	Volume of sub soil to be excavated and used as back fill	Volume of top soil to be excavated and reinstated [6]	Stone required and disposed [7]	Comments
		(m)	(m)	(m)	(m)	(m)	(m3)	(m3)	(m3)	
	83.49	420.00	5.00	2.15	8.00	2.80	3,828.83	1,365.00	840.00	LV1
Lower Crossing	83.91 84.54									Lower Crossing
	85.99	1,450.00	5.00	2.15	8.00	2.80	13,218.56	4,712.50	2,900.00	
Upper Crossing	88.55 89.55									Upper Crossing
	89.95	250.00	5.00	2.15	8.00	2.80	2,279.06	812.50	500.00	
Terminal	92.56									Terminal

### Summary

Total non Peatland areas		2,120					19,326	6,890	4,240	
Total Intact and SAC										
Total Cutover, non SAC										
Forest Area										
<b>TOTALS</b>		<b>2,120</b>					<b>19,326</b>	<b>6,890</b>	<b>4,240</b>	



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Notes	
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Peatland Areas	
A=Turves at	0.50 m thick
B=replaced peat layer	0.10 m thick
C=peat to be disposed	various m thick
D=peat remaining above firm ground	0.50 m thick
W=width of stone road	9.00 m
X=depth to firm bearing	various m

Non Peatland Areas	
F=H=top soil removed	0.250 m thick
X=depth to firm bearing	3.00 m
Width of Stone Access Track	10.00 m

Site Compound	Width (m)	Length (m)	Volume of soil / peat to be excavated <sup>[3]</sup> (m3)	Volume of stone required - General (m3)	Volume of stone required - Stone Road (m3)	Volume of Stone to be disposed of (m3)	Volume of top soil / peat to be reinstated - General (m3)	Volume of peat to be reinstated - Stone Road (m3)	Volume of Peat to be disposed of (m3)	Comments
1	50	40	500	500	100	600	500	500		250 mm of Stone over the entire compound, to give an all weather working surface, excluding the Stone Access Track for pipe laying passes through the site compound
2	80	50	1,000	1,000	125	1,125	1,000	1,000		250 mm of Stone over the entire compound, to give an all weather working surface, excluding the Stone Access Track for pipe laying passes through the site compound
<b>Lower Crossing</b>										
3	150	50	1,750	1,750			1,750			250 mm of Stone over the entire compound, to give an all weather working surface, excluding the Stone Access Track for pipe laying passes through the site compound
4	80	50	1,000	1,000			1,000			250 mm of Stone over the entire compound, to give an all weather working surface
5	80	50	4,000	4,000		4,000	4,000			Multiple geogrid and geotextile layers with 1000mm of stone on top, over entire compound (2no.) to form an all weather working surface.
5	150	120		18,000		18,000	0			Multiple geogrid and geotextile layers with 1000mm of stone on top, over entire compound (2no.) to form an all weather working surface.
6	50	150	3,075	3,075		3,075	3,075			500 mm of stone over the entire compound, to give an all weather working surface, excluding the Stone Access Track for pipe laying passes through the site compound
<b>Upper Crossing</b>										
7	150	50	3,525	3,525		3,525	3,525			500 mm of stone over the entire compound, to give an all weather working surface, excluding the Stone Access Track for pipe laying passes through the site compound
8	40	25	500	500			500	810	-810	As agreed with Cbyrne 15th Dec 08: the compound already has stone on it. Allow for 50% of the area with 500mm stone. In addition allow for 9m wide access track from compound back to the permanent wayleave (say 40m long x 0.5m deep)
<b>Terminal</b>										

Total non peatland areas			4,250	4,250	225	30,325	4,250			
Total Intact and SAC			4,000	4,000			4,000			0
Total Cutover, non SAC			6,600	24,600			6,600			0
Forest Area			500	500				810		-810
<b>TOTALS</b>			<b>15,350</b>	<b>33,350</b>	<b>225</b>	<b>30,325</b>	<b>15,350</b>	<b>810</b>		<b>-810</b>

Pipe String Areas Access Roads	Width (m)	Length (m)	Volume of soil / peat to be excavated <sup>[3]</sup> (m3)	Volume of stone required (m3)	Volume of Stone to be removed (m3)	Volume of top soil / peat to be reinstated (m3)	Volume of Peat to be disposed of (m3)	Comments
Access to LV1	6	1,050	1,575	1,575	68	68		Access road to LV1 and L1. 600m to be permanent, 450m to temporary
Access to pipeline at chainage 85.00	6	300	450	450	0	450		Access to pipeline at chainage 85.00. 6m wide by 250mm deep stone
Pipe stringing at site compound 6	50	200	5,000	5,000	3,000			Multiple geogrid and geotextile layers with 500mm of stone on top.
Pipe stringing at site compound 7	50	375	9,375	9,375	9,375	9,375		Multiple geogrid and geotextile layers with 500mm of stone on top.
Access at site compound 8	25	40	500	500	0	0		
<b>TOTALS</b>			<b>14,825</b>	<b>14,825</b>	<b>12,375</b>	<b>9,825</b>		