

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179650E - 65340N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 31/05/2012-13/06/2012	<b>Level:</b> 2.63 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.50-10.00	B	N=2 (2,1/0,1,1,0)	10.00		Very soft, light grey, slightly sandy SILT. Sand is fine.	[Pattern]	
		9.50-10.00	D						
		9.50-10.00	ES						
		10.00	SPT						
		10.00-10.45	SPTLS						
		10.50-11.50	P	40% recovery					
		11.50	D						
		11.50-12.00	B	N=2 (2,1/0,1,0,1)	12.00			[Pattern]	
		11.50-12.00	ES						
		12.00	SPT						
		12.00-12.45	SPTLS						
		12.50-13.50	P	50% recovery					
		13.50	D						
		13.50-14.00	B	N=2 (1,0/1,0,1,0)	14.00			[Pattern]	
		13.50-14.00	ES						
		14.00	SPT						
		14.00-14.45	SPTLS						
		14.50-15.50	B	0% recovery				[Pattern]	
		14.50-15.50	P						
		15.50	D						
		15.50-16.00	B						
		15.50-16.00	ES	N=3 (1,0/1,0,1,1)	16.00			[Pattern]	
		16.00	SPT						
		16.00-16.45	SPTLS						
		16.50-17.50	P						
		17.50	D						
		17.50-18.00	B	50 (10,15/25,25 for 10mm)	18.00	-15.37	18.00	[Pattern]	
		17.50-18.00	ES						
		18.00	CPT						
							Light brown/ grey, slightly sandy gravelly CLAY.		

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-		5.00m	250mm	250mm	4.60 to 4.70	0030	Chisel
					9.00m	250mm	200mm	5.10	0100	Chisel
					25.00m	200mm	200mm	5.86	0130	Chisel
								6.70	0100	Chisel
								6.80	0100	Chisel
								6.80	0100	Chisel

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.4m. Borehole terminated at required depth. Falling head permeability tests carried out . 2No. 50mm dia standpipes with geosock installed, response zone from 8.2m to 16.7m and from 6.0m to 1.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	31/05/2012	-	Start of Borehole
	-	-	-	-	31/05/2012	-	End of shift
	-	-	-	-	05/06/2012	4.40m	Start of shift
	-	-	-	-	05/06/2012	6.80m	End of shift
				-	06/06/2012	6.80m	Start of shift
				-	06/06/2012	11.50m	End of shift

<b>Equipment &amp; Methods:</b> Dando 2000
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179650E - 65340N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 31/05/2012-13/06/2012	<b>Level:</b> 2.63 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		19.00	D				Light brown/ grey, slightly sandy gravelly CLAY.		
		19.00-19.50 19.00-19.50	B ES						
		21.00-21.50	B			-17.37	GRAVEL with cobbles.		
		22.00 22.00	SPT SPTLS	N=2 (0,0/0,1,1,0)	22.00	-19.27	Very soft, light brown CLAY.		
		25.00 25.00	SPT SPTLS	N=4 (1,1/1,1,1,1)	25.00	-22.37	End of Borehole at 25.00 m		

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-		5.00m	250mm	250mm	4.60 to 4.70	0030	Chisel
					9.00m	200mm	200mm	5.10	5.20	0100
					25.00m	200mm	200mm	5.86	6.00	0130
								6.70	6.80	0100
								6.80	6.90	0100

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.4m. Borehole terminated at required depth. Falling head permeability tests carried out. 2No. 50mm dia standpipes with geosock installed, response zone from 8.2m to 16.7m and from 6.0m to 1.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	31/05/2012	-	Start of Borehole
	-	-	-	-	31/05/2012	-	End of shift
	-	-	-	-	05/06/2012	4.40m	Start of shift
	-	-	-	-	05/06/2012	6.80m	End of shift
	-	-	-	-	06/06/2012	6.80m	Start of shift
<b>Equipment &amp; Methods:</b> Dando 2000	-	-	-	-	06/06/2012	11.50m	End of shift





<p><b>Number:</b> BH309</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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<p><b>Number:</b> BH309</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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Number:

BH309

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





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P12030  
Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179778E - 65373N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 26/04/2012-02/05/2012	<b>Level:</b> 4.59 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
						4.19	0.40	Processed SLAG consisting of sand and gravel sized material with approximately 20% cobbles and boulders sized pieces and 5% plastic and metal. Partially consolidated.	
		1.00 1.00 1.00 1.00	B D ES ES					Processed SLAG consisting of sand and gravel sized material with approximately 20% cobbles and boulders sized pieces and 5% plastic and metal. Appears predominantly consolidated.	1
		2.00 2.00 2.00	B D ES			2.99	1.60	Black/ grey, processed SLAG. Material is predominantly fine-grained with approximately 50% gravel and cobble sized pieces with pockmarked surfaces.	2
		3.00 3.00 3.00	B D ES			1.99 1.69	2.60 2.90	Processed SLAG consisting of sand and gravel sized material with approximately 20% cobbles and boulders sized pieces and metal. Appears predominantly consolidated.	3
		4.00 4.00 4.00	B D ES					Unprocessed SLAG consisting of sand and gravel sized material with approximately 20% cobbles and boulders sized pieces and metal. Weathering resulted in white staining on metal.	4
		5.00 5.00 5.00	B D ES						5
		6.00 6.00 6.00	B D ES		6.10	-0.81	5.40	Unprocessed SLAG consisting predominantly of silt and sand (approximately 60%) with gravel sized material with approximately 20% cobbles and boulders sized pieces and metal. Weathering resulted in white staining on metal.	6
		6.00-7.00	B					Unprocessed, pockmarked SLAG composed of small to medium sized pieces.	
		7.00 7.00	D ES			-2.31	6.90	Unprocessed, angular SLAG with pockmarked cobbles. 6.9m - 8.3m: Water added to boring. 8.3m - 7.4m: Blowback. Redrilled.	7
		7.00-8.00 7.00-8.00	B D					7.8m - 7.9m: Shards of angular metal.	
		8.00 8.00	CPT ES	59 (7,8/9,12,18,20 for 10mm)	8.00				8
		8.00-9.00 8.00-9.00	B D			-3.71	8.30	Unprocessed, grey, angular, molten looking SLAG with small to medium sized, grey, pockmarked cobbles	
		9.00	CPT	(50 for 5mm/25 for 0mm)	9.00	-4.41	9.00		
Continued next sheet									

Groundwater:					Hole Information:			Chiselling:		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
4.20m	-	-	-	-	6.10m	-	-	5.60 to 5.80	0040	Chisel
6.00m	4.70m	20min	-	-	9.25m	200mm	200mm	6.40 to 6.60	0030	Chisel
					9.60m	250mm	250mm	7.10 to 7.20	0040	Chisel
								7.20 to 7.30	0020	Chisel
								7.40 to 7.50	0025	Chisel

<b>Remarks:</b> Excavated to 6.1m using 21t tracked excavator. Casing installed at 6.1m. Borehole terminated due to obstruction. Falling head permeability test carried out . 50mm dia standpipe installed, response zone from 9.6m to 2.0m	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	26/04/2012	0.00m	Start of Borehole
	-	-	-	-	26/04/2012	0.00m	End of shift
	2.90m	-	-	-	27/04/2012	0.00m	Start of shift
	-	-	-	-	27/04/2012	6.50m	End of shift
	4.80m	-	-	-	30/04/2012	6.50m	Start of shift
<b>Equipment &amp; Methods:</b> Dando 2000	-	-	-	-	30/04/2012	8.30m	End of shift



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**Drilled By**  
RN  
**Logged By**  
MH

Borehole No  
**BH310A**  
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179778E - 65373N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 26/04/2012-02/05/2012	<b>Level:</b> 4.59 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.00	ES						
					9.25	-4.66	9.25	Unprocessed, grey, streaked white, SLAG with small to medium sized cobbles of unprocessed Slag with pieces of refractory.  Unprocessed, grey, streaked white SLAG with small to medium sized pockmarked, angular, molten looking cobbles and pieces of refractory.  End of Borehole at 9.60 m	
					9.60	-5.01	9.60		

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
4.20m	-	-	-	-	6.10m	-	-	5.60 to 5.80	0040	Chisel
6.00m	4.70m	20min	-	-	9.25m	200mm	200mm	6.40 to 6.60	0030	Chisel
					9.60m	250mm	250mm	7.10 to 7.20	0040	Chisel
								7.20 to 7.30	0020	Chisel
								7.40 to 7.50	0025	Chisel

<b>Remarks:</b> Excavated to 6.1m using 21t tracked excavator. Casing installed at 6.1m. Borehole terminated due to obstruction. Falling head permeability test carried out . 50mm dia standpipe installed, response zone from 9.6m to 2.0m	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	26/04/2012	0.00m	-	26/04/2012	0.00m	Start of Borehole
	-	27/04/2012	0.00m	2.90m	27/04/2012	0.00m	End of shift
	-	27/04/2012	6.50m	4.80m	30/04/2012	6.50m	End of shift
	-	30/04/2012	6.50m	5.00m	30/04/2012	8.30m	Start of shift
	-	30/04/2012	8.30m				End of shift

**Equipment & Methods:** Dando 2000





Number:

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Cork County Council





<b>Number:</b> BH310A	<b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council	
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**Number:**

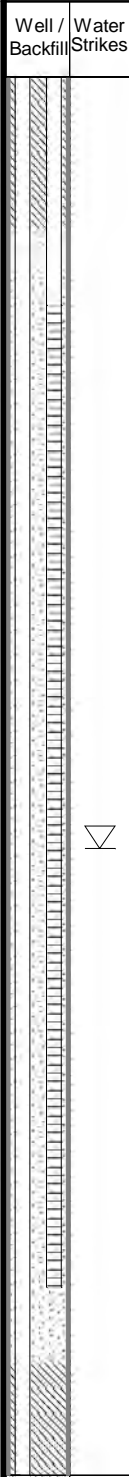
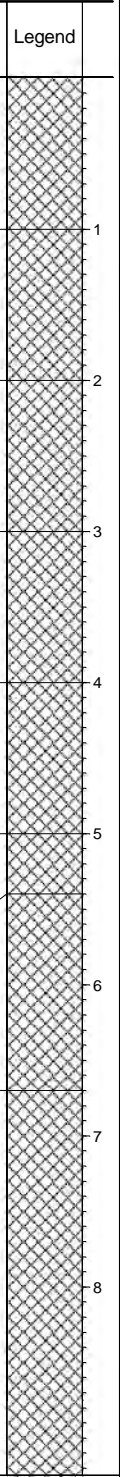
**BH310A**

**Project**  
**Project No**  
**Client**

Haulbowline East Tip  
P12030  
Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179771E - 65354N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 04/05/2012-15/05/2012	<b>Level:</b> 5.03 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		1.00 1.00 1.00	B D ES		4.03	1.00	Light to dark grey, processed SLAG in sandy gravelly form with large, consolidated pieces (Approx. 300mm x 400mm) and 1% scrap metal and refractory brick. 0.0m - 1.0m: Rock breaker used to break up consolidated slag.		
		2.00 2.00 2.00	B D ES		3.03	2.00	Light to dark grey, processed SLAG in sandy gravelly form with some pockmarked, boulder sized pieces, scrap metal; rebar (Approx. 3%) and occasional refractory bricks.		
		3.00 3.00 3.00	B D ES		2.03	3.00	Light to dark grey, processed SLAG in sandy gravelly form with occasional light grey, stained, cobble and boulders sized pieces and scrap metal (5%).		
		4.00 4.00 4.00	B D ES		1.03	4.00	Light to dark grey, processed SLAG in sandy gravelly form with grey/ white/ yellow cobble and boulder sized pockmarked pieces.		
		5.00 5.00 5.00 5.40	B D ES ES		5.00	0.03 5.40	Light to dark grey, processed SLAG in sandy gravelly form with grey/ white/ yellow cobble and boulder sized pockmarked pieces and scrap metal (Approx. 10%).		
		5.50-6.00	B				Unprocessed SLAG with metal and concrete waste.		
		6.00 6.00 6.00	CPT D ES	25 (25,25/25)		6.00			
		6.50-7.00	B			-1.67	6.70		Light to dark grey, unprocessed SLAG in granular and cobbles sized form.
		7.00 7.00 7.00	CPT D ES	25 (25,25/25)		7.00			
		7.50-8.00	B						
		8.00 8.00 8.00	CPT D ES	50 (15,10 for 20mm/20,20,10 for 300)					
		8.50-9.00	B						
		9.00 9.00	CPT D	N=26 (10,12/13,8,4,1)		9.00			

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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<b>Groundwater:</b> Struck Rose to After Sealed Comment 5.10m - - - Steady inflow.			<b>Hole Information:</b> Hole Depth Hole Diameter Casing Diameter 5.00m 24.50mm 200mm			<b>Chiselling:</b> Depths (m) Time (hhmm) Tool 5.40 to 5.60 0100 Chisel 5.60 5.80 0100 Chisel 5.80 6.00 0100 Chisel 6.00 6.30 0200 Chisel 6.30 6.40 0130 Chisel		
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<b>Remarks:</b> Excavated to 5.4m using 21t tracked excavator. Casing installed at 5.0m. Borehole terminated due to obstruction. Falling head permeability tests carried out. 2No. 50mm dia standpipes with geosock installed, response zone from 8.0m to 1.5m and from 21.5m to 11.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	04/05/2012	-	-	Start of Borehole		
	-	04/05/2012	-	-	End of shift		
	3.00m	08/05/2012	5.00m	-	Start of shift		
	3.00m	08/05/2012	6.00m	-	End of shift		
3.00m	09/05/2012	6.00m	-	Start of shift			
-	09/05/2012	6.70m	-	End of shift			

<b>Equipment &amp; Methods:</b> Dando 2000
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65354N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 04/05/2012-15/05/2012	<b>Level:</b> 5.03 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.00	ES			-4.27	9.30	Light to dark grey, unprocessed SLAG in granular and cobbles sized form.	
		9.50-10.50	P	100% recovery				Very soft, grey, slightly sandy SILT. Sand is fine.	
		11.00	B						
		11.00	D						
		11.00	ES						
		11.00	ES						
		11.50	SPT	N=2 (1,1/0,0,1,1)	11.50				
		11.50-11.95	SPTLS						
		13.00-14.00	P	100% recovery					
		14.50	B						
		14.50	D						
		14.50	ES						
		15.00	SPT	N=4 (1,2/1,1,1,1)	15.00				
		15.00-15.45	SPTLS						
		16.00-16.45	U	22blows 100% recovery					
		17.00	B						
		17.00	D						
		17.00	ES						
		17.50	SPT	N=6 (1,1/2,1,1,2)	17.50			SILT is soft to firm at 17.5m.	
		17.50-17.95	SPTLS						
		18.00-18.45	U	26blows 100% recovery					

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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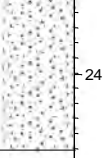
<b>Groundwater:</b> Struck Rose to After Sealed Comment 5.10m - - - Steady inflow.					<b>Hole Information:</b> Hole Depth Hole Diameter Casing Diameter 5.00m 200mm 200mm			<b>Chiselling:</b> Depths (m) Time (hhmm) Tool 5.40 to 5.60 0100 Chisel 5.60 5.80 0100 Chisel 5.80 6.00 0100 Chisel 6.00 6.30 0200 Chisel 6.30 6.40 0130 Chisel		
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<b>Remarks:</b> Excavated to 5.4m using 21t tracked excavator. Casing installed at 5.0m. Borehole terminated due to obstruction. Falling head permeability tests carried out . 2No. 50mm dia standpipes with geosock installed, response zone from 8.0m to 1.5m and from 21.5m to 11.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	04/05/2012	-	-	-	-	Start of Borehole
	-	04/05/2012	-	-	-	-	End of shift
	3.00m	08/05/2012	5.00m	-	-	-	Start of shift
	3.00m	08/05/2012	6.00m	-	-	-	End of shift
3.00m	09/05/2012	6.00m	-	-	-	Start of shift	
-	09/05/2012	6.70m	-	-	-	End of shift	

<b>Equipment &amp; Methods:</b> Dando 2000
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65354N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 04/05/2012-15/05/2012	<b>Level:</b> 5.03 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		19.00	B				Very soft, grey, slightly sandy SILT. Sand is fine.		
		19.00	D						
		19.00	ES						
		19.50	SPT	N=7 (1,2/2,1,2,2)	19.50				
		19.50-19.95	SPTLS						
		20.50-20.95	U	27blows 100% recovery					
		21.00	B						
		21.00	D						
		21.00	ES						
		21.50	SPT	N=8 (1,2/2,1,2,3)	21.50				
	21.50-21.95	SPTLS							
	22.50-22.95	U	30blows 100% recovery						
	23.00	B							
	23.00	D							
	23.00	ES							
	23.50-23.80	B		-18.47	23.50	Light grey/ brown, slightly sandy GRAVEL with some cobbles.			
	24.00	CPT	50 (10,15/13,14,16,7 for 20mm)	24.00					
	24.50	CPT	25 (25,25/25)	24.50	-19.47	24.50			
						End of Borehole at 24.50 m			

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b> Struck 5.10m Rose to - After - Sealed - Comment: Steady inflow.				<b>Hole Information:</b> Hole Depth 5.00m Hole Diameter 24.50m Casing Diameter 200mm			<b>Chiselling:</b> Depths (m) Time (hhmm) Tool 5.40 to 5.60 0100 Chisel 5.60 5.80 0100 Chisel 5.80 6.00 0100 Chisel 6.00 6.30 0200 Chisel 6.30 6.40 0130 Chisel		
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<b>Remarks:</b> Excavated to 5.4m using 21t tracked excavator. Casing installed at 5.0m. Borehole terminated due to obstruction. Falling head permeability tests carried out. 2No. 50mm dia standpipes with geosock installed, response zone from 8.0m to 1.5m and from 21.5m to 11.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	04/05/2012	-	-	-	-	Start of Borehole
	-	04/05/2012	-	-	-	-	End of shift
	3.00m	08/05/2012	5.00m	-	-	-	Start of shift
	3.00m	08/05/2012	6.00m	-	-	-	End of shift
3.00m	09/05/2012	6.00m	-	-	-	Start of shift	
-	09/05/2012	6.70m	-	-	-	End of shift	

<b>Equipment &amp; Methods:</b> Dando 2000
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<p><b>Number:</b> BH310B</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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**Number:**

**BH310B**

**Project**  
**Project No**  
**Client**

Haulbowline East Tip  
P12030  
Cork County Council





Number:

**BH310B**

**Project**  
**Project No**  
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<b>Number:</b> BH310B	<b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council	
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**Number:**

**BH310B**

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**Number:**

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Client**

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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179771E - 65362N	<b>Hole Type:</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 21/05/2012-07/06/2012	<b>Level:</b> 5.20 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend	
		Depth (m)	Type	Results						
▽		0.00-0.40	B			4.80	0.40	1		
		0.00-0.40	D							
		0.00-0.40	ES							
		0.60-0.80	B							
		0.60-0.80	D							
		0.60-0.80	ES							
		2.10	B						2	
		2.10	D							
		2.10	ES							
		2.80	B							
		2.80	D							
		2.80	ES							
		4.00	B							3
		4.00	D							
		4.00	ES							
	5.20	B	4							
	5.20	D								
	5.20	ES								
				5						
					6					
						7				
							8			

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet		
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
4.60m	-	-	-		5.20m	76mm	131mm			
					27.60m	131mm	76mm			
					36.70m					

<b>Remarks:</b> Excavated to 5.2m using 21t tracked excavator. Drilled to 36.7m using well drilling rig inserting 200mm diameter steel casing. 125mm HDPE liner grouted in place from GL to 39.6m. Rotary cored from 39.6m to 47.6m. Borehole left open from 39.6m to 47.6m. Secured with an upright cover.	<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks			
	-	-	-	21/05/2012	0.00m	Start of Borehole			
	-	-	-	21/05/2012	5.20m	End of shift			
	-	-	-	05/06/2012	5.20m	Start of shift			
	-	-	-	05/06/2012	36.70m	End of shift			
	-	-	-	06/06/2012	36.70m	Start of shift			
<b>Equipment &amp; Methods:</b>		Soil Mech PSM 8G		Compressed air-mist flush.		-	06/06/2012	36.70m	End of shift



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**Drilled By**  
 GW  
**Logged By**  
 PL/ DMC

**Borehole No**  
**BH310C**  
 Sheet 2 of 6

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65362N	<b>Hole Type</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 21/05/2012-07/06/2012	<b>Level:</b> 5.20 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							SLAG.		
					-5.47	10.67	SILT.		
					-11.56	16.76	GRAVEL.		

Water Depth (m) Type Results Casing Level Depth Continued next sheet

<b>Groundwater:</b> Struck 4.60m Rose to - After - Sealed - Comment -	<b>Hole Information:</b> Hole Depth 5.20m 27.60m 36.70m Hole Diameter 76mm 131mm Casing Diameter 131mm 76mm	<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool
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<b>Remarks:</b> Excavated to 5.2m using 21t tracked excavator. Drilled to 36.7m using well drilling rig inserting 200mm diameter steel casing. 125mm HDPE grouted in place from GL to 39.6m. Rotary cored from 39.6m to 47.6m. Borehole left open from 39.6m to 47.6m. Secured with an upright cover.	<b>Equipment &amp; Methods:</b> Soil Mech PSM 8G Compressed air-mist flush.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	-	21/05/2012	0.00m	Start of Borehole
-	-	-	-	21/05/2012	5.20m	End of shift
-	-	-	-	05/06/2012	5.20m	Start of shift
-	-	-	-	05/06/2012	36.70m	End of shift
-	-	-	-	06/06/2012	36.70m	Start of shift
-	-	-	-	06/06/2012	36.70m	End of shift





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**Drilled By**  
GW  
**Logged By**  
PL/ DMC

**Borehole No**  
**BH310C**  
Sheet 3 of 6

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65362N	<b>Hole Type</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 21/05/2012-07/06/2012	<b>Level:</b> 5.20 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							GRAVEL.		
					-17.66	22.86	CLAY.		
					-22.23	27.43			

Water Depth (m) Type Results Casing Level Depth Continued next sheet

<b>Groundwater:</b> Struck 4.60m Rose to - After - Sealed - Comment -					<b>Hole Information:</b> Hole Depth 5.20m 27.60m 36.70m Hole Diameter 76mm 131mm Casing Diameter 131mm 76mm			<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool		
--	--	--	--	--	--	--	--	--	--	--

<b>Remarks:</b> Excavated to 5.2m using 21t tracked excavator. Drilled to 36.7m using well drilling rig inserting 200mm diameter steel casing. 125mm HDPE liner grouted in place from GL to 39.6m. Rotary cored from 39.6m to 47.6m. Borehole left open from 39.6m to 47.6m. Secured with an upright cover.	<b>Equipment &amp; Methods:</b> Soil Mech PSM 8G Compressed air-mist flush.		<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
			-	21/05/2012	0.00m	Start of Borehole		
			-	21/05/2012	5.20m	End of shift		
			-	05/06/2012	5.20m	Start of shift		
			-	05/06/2012	36.70m	End of shift		
			-	06/06/2012	36.70m	Start of shift		
		-	06/06/2012	36.70m	End of shift			







<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65362N	<b>Hole Type</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 21/05/2012-07/06/2012	<b>Level:</b> 5.20 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Rotary Coring					Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	TCR	SCR	RQD	Fractures					
		36.70-38.20	3	0	0				Weathered Limestone recovered as: Cobbles and Boulders of limestone lithology.		
		38.20-39.70	3	0	0						
		39.70-43.10	0	0	0		-34.50	39.70	Weathered Limestone recovered as: Limestone GRAVEL.		
		43.10-44.60	20	0	0		-37.90	43.10	Weathered Limestone.		
		44.60-45.60	90	73	62		-39.40	44.60	Strong, pale grey LIMESTONE. Weathering: Moderately weathered. Clay smearing along fracture surfaces. Pervasive orange and black staining. Pitted surfaces. Fractures: Closely spaced, 45 degree fractures with planar rough surfaces. Sub-horizontal fractures with planar smooth surfaces. 44.6m - 45.6m: Fracture index - 5. 45.6m - 47.0m: Fracture index - 6.		
						3mm min					

Water | Depth (m) | TCR | SCR | RQD | Fracture spacing | Casing | Level | Depth | Continued next sheet

<b>Groundwater:</b> Struck 4.60m Rose to - After - Sealed - Comment -	<b>Hole Information:</b> Hole Depth 5.20m, 27.60m, 36.70m Hole Diameter 76mm, 131mm Casing Diameter 131mm, 76mm	<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool
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<b>Remarks:</b> Excavated to 5.2m using 21t tracked excavator. Drilled to 36.7m using well drilling rig inserting 200mm diameter steel casing. 125mm HDPE liner grouted in place from GL to 39.6m. Rotary cored from 39.6m to 47.6m. Borehole left open from 39.6m to 47.6m. Secured with an upright cover.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	21/05/2012	0.00m	Start of Borehole
		-	21/05/2012	5.20m	End of shift
		-	05/06/2012	5.20m	Start of shift
		-	05/06/2012	36.70m	End of shift
		-	06/06/2012	36.70m	Start of shift
		-	06/06/2012	36.70m	End of shift

**Equipment & Methods:** Soil Mech PSM 8G  
Compressed air-mist flush.





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**Drilled By**  
GW  
**Logged By**  
PL/ DMC

**Borehole No**  
**BH310C**  
Sheet 6 of 6

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179771E - 65362N	<b>Hole Type</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 21/05/2012-07/06/2012	<b>Level:</b> 5.20 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Rotary Coring				Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	TCR	SCR	RQD					
		45.60-47.00	39	30	7	110mm avg 150mm max			Strong, pale grey LIMESTONE. Weathering: Moderately weathered. Clay smearing along fracture surfaces. Pervasive orange and black staining. Pitted surfaces. Fractures: Closely spaced. 45 degree fractures with planar rough surfaces. Sub-horizontal fractures with planar smooth surfaces. 47.0m - 47.6m: Fracture index - 3.	
		47.00-47.60	31	27	19		47.60	-42.40		
									End of Borehole at 47.60 m	

Water	Depth (m)	TCR	SCR	RQD	Fracture spacing	Casing	Level	Depth
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<b>Groundwater:</b> Struck 4.60m Rose to - After - Sealed - Comment -					<b>Hole Information:</b> Hole Depth 5.20m 27.60m 36.70m Hole Diameter 76mm 131mm Casing Diameter 131mm 76mm			<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool		
--	--	--	--	--	---	--	--	--	--	--

<b>Remarks:</b> Excavated to 5.2m using 21t tracked excavator. Drilled to 36.7m using well drilling rig inserting 200mm diameter steel casing. 125mm HDPE liner grouted in place from GL to 39.6m. Rotary cored from 39.6m to 47.6m. Borehole left open from 39.6m to 47.6m. Secured with an upright cover.	<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	21/05/2012	0.00m	Start of Borehole
	-	-	-	21/05/2012	5.20m	End of shift
	-	-	-	05/06/2012	5.20m	Start of shift
	-	-	-	05/06/2012	36.70m	End of shift
	-	-	-	06/06/2012	36.70m	Start of shift
<b>Equipment &amp; Methods:</b> Soil Mech PSM 8G Compressed air-mist flush.		-	-	06/06/2012	36.70m	End of shift





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**Number:**

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**Number:**

**BH310C**

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Number:

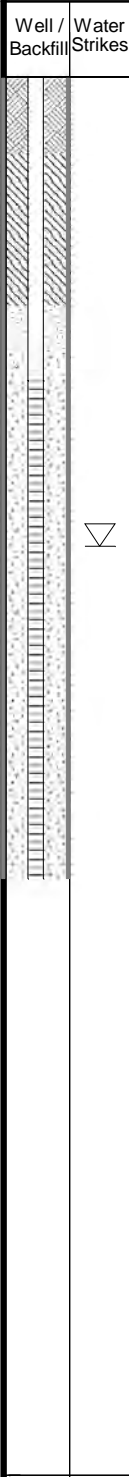
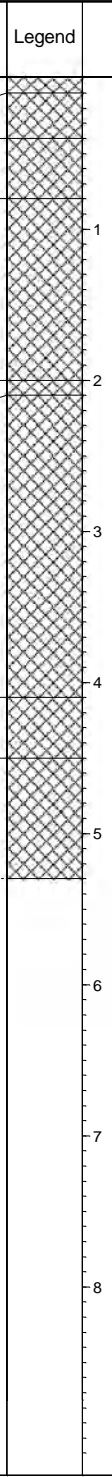
RC310C

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Project No  
Client

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P12030  
Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179571E - 65247N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 22/05/2012-28/05/2012	<b>Level:</b> 3.35 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00-0.30	B		3.25	0.10	Light grey, granular, unprocessed SLAG.		
		0.00-0.30	D				Dark grey, unprocessed SLAG.		
		0.00-0.30	ES		2.95	0.40	Light brown/ grey, unprocessed SLAG with approx. 50% refractory brick.		
		0.50-0.60	B				Unprocessed SLAG in granular form with light brown/ dark grey refractory bricks (approx. <1%) and small, pockmarked pieces of slag.		
		0.50-0.60	D		2.55	0.80			
		0.50-0.60	ES						
		1.60-1.80	D				Grey, unprocessed SLAG in granular form.		
		1.60-1.80	B		1.35	2.00			
		1.60-1.80	D		1.25	2.10			
									Dark brown. grey, unprocessed SLAG in granular and cobble form with refractory brick (approx. <1%).
		3.50	B						
		3.50	D						
		3.50	ES						Unprocessed SLAG with pockmarked pieces and fragments of refractory bricks (approx. 5%).
					-0.76	4.10			
									Light to dark grey, unprocessed SLAG in granular and cobble form.
	4.50	B		4.50	-1.16	4.50			
	4.50	D							
	4.50	ES					End of Borehole at 5.30 m		
	5.00	CPT	(25,50 for 0mm)	5.00					
	5.00-5.30	B							
	5.00-5.30	ES	(50 for 0mm)	5.30	-1.96	5.30			
	5.30	CPT							
	5.30	D							

Water	Depth (m)	Type	Results	Casing	Level	Depth
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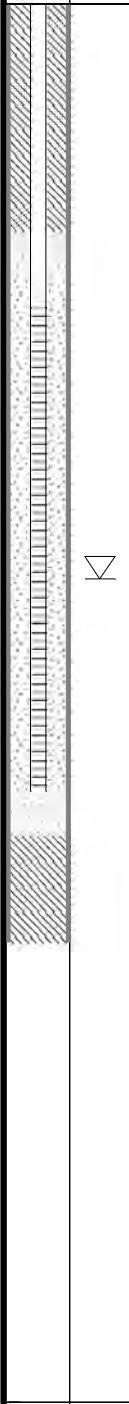
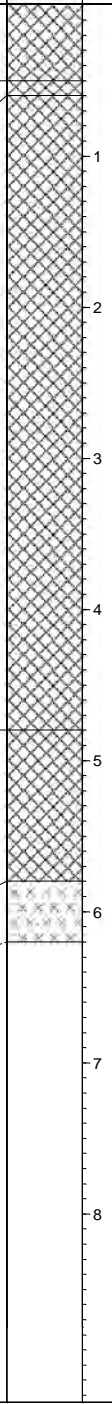
<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
3.10m	-	-	-	Slow inflow.	4.50m	200mm	200mm	4.50 to 5.30	0300	Chisel
					5.30m			5.25 to 5.30	0230	Chisel

<b>Remarks:</b> Excavated to 4.5m using 21t tracked excavator. Casing installed at 4.5m. Borehole terminated due to obstruction. Falling head permeability tests carried out . 50mm dia standpipe installed, response zone from 5.3m to 2.8m	<b>Shift Data:</b>			
	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	22/05/2012	-	Start of Borehole
	-	22/05/2012	-	End of shift
	-	25/05/2012	4.50m	Start of shift
	-	25/05/2012	5.30m	End of shift
	3.00m	28/05/2012	5.30m	Start of shift
	-	28/05/2012	5.30m	End of Borehole

**Equipment & Methods:** Dando 2000



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179638E - 65266N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 25/04/2012-26/04/2012	<b>Level:</b> 2.87 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.50-0.60	ES			2.37 2.27	0.50 0.60	Made ground: Dark brown, slightly clayey sandy GRAVEL with steel wire, concrete, red brick and fabric - possible demolition material. Black SLUDGE/ SAND with approximately 20% glass, gravel or fine sand.	
		1.00-1.20	B					Made ground: Dark brown, slightly clayey sandy GRAVEL with approximately 50% steel wire, concrete, red brick and fabric - possible demolition material and approximately 50% light grey/ cream ash like material with yellow bricks - possible refractory waste.	
		1.00-1.20	D						
		1.00-1.20	ES						
		2.00-2.10	B						
		2.00-2.10	D						
		2.00-2.10	ES						
		3.00-3.10	ES						
		3.00-3.10	B						
		3.00-3.10	D						
		3.60-3.80	ES					3.6m: Black, iridescent SLUDGE surrounded by metal - possible old barrel. 4.0m - 4.8m: Odour of hydrocarbons. Water is iridescent.	
		4.00-4.10	B						
	4.00-4.10	D							
	4.00-4.10	ES							
					-1.93	4.80		Made ground: Dark brown, slightly clayey sandy GRAVEL with boulders, approximately 50% sludge, 25% steel wire, concrete, red brick and fabric - possible demolition material and approximately 25% light grey/ cream ash like material with yellow bricks - possible refractory waste. 4.8m - 5.8m: Becoming oily in appearance.	
	5.00-5.10	B							
	5.00-5.10	D							
	5.00-5.10	ES							
	6.00-6.10	B							
	6.00-6.10	D			6.10				
	6.00-6.10	ES			6.20				
								End of Borehole at 6.20 m	

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b> Struck 3.80m Rose to - After - Sealed - Comment: Standing water at 3.8m.	<b>Hole Information:</b> Hole Depth: 6.10m, 6.20m Hole Diameter: 200mm Casing Diameter: 200mm	<b>Chiselling:</b> Depths (m) to: Time (hhmm): Tool:
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<b>Remarks:</b> Excavated to 6.1m using 21t tracked excavator. Casing installed at 6.1m. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 5.2m to 2.0m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	25/04/2012	0.00m	Start of Borehole
		-	25/04/2012	6.10m	End of shift
		3.00m	26/04/2012	6.10m	Start of shift
			26/04/2012	6.20m	End of Borehole

**Equipment & Methods:** Dando 2000





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<p><b>Number:</b> BH312A</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179642E - 65271N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 01/05/2012-04/05/2012	<b>Level:</b> 2.76 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		1.00	B			1.76	1.00	Mill Scale with some scrap metal and occasional refractory brick.  0.45m - 0.7m: Unprocessed SLAG.	1
		1.00	D					Mill Scale with some sand, gravel, occasional refractory bricks and a minute amount of household waste including textiles.	
		1.00	ES						
		2.00	B			0.76	2.00	Dark brown, Mill Scale with sand, gravel, occasional scrap material and occasional refractory bricks and timber.	2
		2.00	D						
		2.00	ES						
		2.50	ES			-0.04	2.80	Light grey, unprocessed SLAG.	3
		2.50	B						
		2.50	D						
		2.50	ES			-0.24	3.00	Unprocessed SLAG with some scrap metal and occasional refractory bricks.	4
		4.00	B			-0.84	3.60	Scrap metal with refractory bricks, sands, gravels and some black demolition waste. 3.6m - 4.0m: Odour of hydrocarbons noted. Iridescent water.	
		4.00	D						
		4.00	ES						5
		4.50	ES					4.5m: Steel barrels encountered with tar inside (sampled).	
		5.00	B			5.00	5.00	Soft to firm, grey SILT.	
		5.00	D						6
		5.00	ES						
		5.50	CPT	N=6 (1,1/2,1,1,2)		5.50			
		5.50	ES						7
		5.50-6.00	B						
		6.00	D						
		6.00-7.00	P	100% recovery					8
		7.50	SPT	N=5 (1,1/2,1,1,1)		7.50			
		7.50	ES						
		7.50-7.95	SPTLS						9
		7.50-8.00	B						
		8.00	D						
		8.00-9.00	P	100% recovery					

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet		
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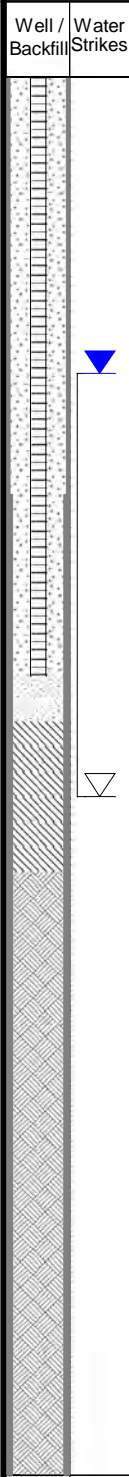
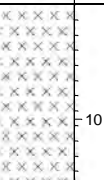
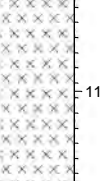

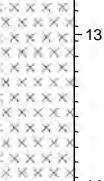
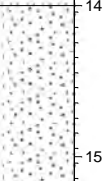
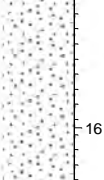
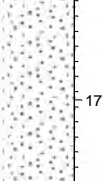
<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
3.40m	11.20m	20min	-		5.00m	250mm	250mm	14.15 to 14.38	0100	Chisel
14.00m					12.00m	200mm	200mm	15.30	16.10	0100
					19.10m			16.30	16.30	0045
								17.00	17.30	0130
								17.30	17.50	0100

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 5.0m. Borehole terminated due to obstruction. 50mm dia standpipe with geosock installed, response zone from 13.2m to 7.2m. Falling head test carried out.	<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	30/04/2012	0.00m	Start of Borehole
	-	-	-	30/04/2012	5.00m	End of shift
	4.50m	-	-	01/05/2012	5.00m	Start of shift
	7.80m	-	-	01/05/2012	10.00m	End of shift
	-	-	02/05/2012	10.00m	Start of shift	
	-	-	02/05/2012	14.00m	End of shift	

**Equipment & Methods:** Dando 2000



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179642E - 65271N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 01/05/2012-04/05/2012	<b>Level:</b> 2.76 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.50	SPT	N=6 (1,1/2,1,2,1)	9.50		Soft to firm, grey SILT.		
		9.50	D						
		9.50	ES						
		9.50-9.95	SPTLS	25blows					
		9.50-10.00	B	100% recovery					
		10.00	U						
		10.45-10.60	D						
		11.50	SPT	N=7 (1,1/2,2,1,2)	11.50				
		11.50	D						
		11.50	ES						
		11.50-11.95	D						
		11.50-12.00	B	0% recovery	12.00				
		12.00	P						
		13.20-13.65	U	28blows 100% recovery					
	14.00	CPT	N=37 (5,5/6,8,10,13)	14.00	-11.24	14.00	Dense GRAVEL with cobbles.		
	14.00-14.50	B							
	15.50	CPT	N=46 (8,10/15,16,15,-)	15.50					
	15.50-16.00	B							
	17.00	CPT	25 (50 for 50mm/25 for 10mm)	17.00					
	17.80-18.20	B			-15.04	17.80	Sandy GRAVEL. 17.8m: Blowing sands.		

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet		
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
3.40m	11.20m	20min	-	-	5.00m	250mm	250mm	14.15 to 14.38	0100	Chisel
14.00m					12.00m	200mm	200mm	15.30 to 16.10	0100	Chisel
					19.10m			16.30 to 16.30	0045	Chisel
								17.00 to 17.30	0130	Chisel
								17.30 to 17.50	0100	Chisel

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 5.0m. Borehole terminated due to obstruction. 50mm dia standpipe with geosock installed, response zone from 13.2m to 7.2m. Falling head test carried out.	<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	30/04/2012	0.00m	Start of Borehole
	-	-	-	30/04/2012	5.00m	End of shift
	4.50m	-	-	01/05/2012	5.00m	Start of shift
	7.80m	-	-	01/05/2012	10.00m	End of shift
	-	-	02/05/2012	10.00m	Start of shift	
	-	-	02/05/2012	14.00m	End of shift	

<b>Equipment &amp; Methods:</b> Dando 2000
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**Drilled By**  
JC  
**Logged By**  
GB

**Borehole No**  
**BH312B**  
Sheet 3 of 3

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179642E - 65271N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 01/05/2012-04/05/2012	<b>Level:</b> 2.76 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		18.50	CPT	N=28 (3,4/6,6,7,9)	18.50	-15.84	18.60	Sandy GRAVEL.	
		18.60-19.00	B					GRAVEL with cobbles.	
		19.10	CPT	25 (50 for 40mm/25 for 10mm)	19.10	-16.34	19.10	End of Borehole at 19.10 m	

Water	Depth (m)	Type	Results	Casing	Level	Depth	Chiselling:
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter
3.40m	-	20min	-	-	5.00m	-	-
14.00m	11.20m	-	-	-	12.00m	250mm	250mm
					19.10m	200mm	200mm

Remarks:	Shift Data:	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	30/04/2012	5.00m	End of shift
		4.50m	01/05/2012	5.00m	Start of shift
		7.80m	01/05/2012	10.00m	End of shift
		-	02/05/2012	10.00m	Start of shift
		-	02/05/2012	14.00m	End of shift

**Equipment & Methods:** Dando 2000





<p><b>Number:</b> BH312B</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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<p><b>Number:</b> BH312B</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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**Number:**

**BH312B**

**Project  
Project No  
Client**

Haulbowline East Tip  
P12030  
Cork County Council





**Number:**

**BH312B**

**Project**  
**Project No**  
**Client**

Haulbowline East Tip  
P12030  
Cork County Council





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**Logged By**  
GB/ DOC

**Borehole No**  
**BH312C**  
Sheet 1 of 4

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179643E - 65266N	<b>Hole Type:</b> Rotary Cored
<b>Client:</b> Cork County Council	<b>Dates:</b> 10/05/2012-31/05/2012	<b>Level:</b> 3.35 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend	
		Depth (m)	Type	Results						
▽						2.55	0.80	Dark grey, unprocessed SLAG with occasional, pockmarked, cobble sized pieces.	1 2 3 4 5 6 7 8	
						1.15	2.20	Dark brown/ grey, unprocessed SLAG in granular and cobble sized form with some cream/ white SLAG, waste steel (approx. 15%), demolition waste - glazed tiles (approx. 5%) and plastic (approx. 1%).		
						0.55	2.80	Dark brown/ grey, unprocessed SLAG in granular and cobble to boulder sized pieces with waste steel (approx. 5%), refractories (approx. 2.5%) and waste sheet plastic (approx. 0.5%).		
						5.00	-1.65	5.00		SILT

Continued next sheet

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b> Struck 2.50m Rose to - After - Sealed - Comment Steady inflow.					<b>Hole Information:</b> Hole Depth 5.00m 16.00m 26.20m 32.50m Hole Diameter 131mm 131mm 76mm Casing Diameter 131mm 131mm 76mm			<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool		
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<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Drilled to 26.2m using well drilling rig. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 32.5m to 25.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	10/05/2012	0.00m	Start of Borehole
	-	-	-	-	10/05/2012	5.00m	End of shift
	-	-	-	-	30/05/2012	5.00m	Start of shift
	-	-	-	-	30/05/2012	26.20m	End of shift
	-	-	-	-	31/05/2012	26.20m	Start of shift
					31/05/2012	26.20m	End of Borehole

<b>Equipment &amp; Methods:</b>	Soil Mech PSM 8G Compressed air-mist flush.
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Borehole No  
**BH312C**  
Sheet 3 of 4

**Project Name:**

Haulbowline East Tip

**Project No.:**

P12030

**Co-ords:** 179643E - 65266N

**Hole Type:**

Rotary Cored

**Client:** Cork County Council

**Dates:**

10/05/2012-31/05/2012

**Level:** 3.35 m AOD

**Scale:**

1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							GRAVEL.		
		26.20			26.20	-22.85	26.20		
		26.20-27.70	97	91 87	100.00%		26.20		
							Strong, grey LIMESTONE. Weathering: Slightly weathered. Brown oxide staining and clay smearing. Fractures: Medium spaced. 60 degree dip with undulating rough surfaces. Sub-horizontal dip with undulating smooth surfaces.		

Continued next sheet

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-	Steady inflow.	5.00m	-	-	to		
					16.00m	131mm	131mm			
					26.20m	131mm	131mm			
					32.50m	76mm	76mm			

<b>Remarks:</b>	Excavated to 5.0m using 21t tracked excavator. Drilled to 26.2m using well drilling rig. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 32.5m to 25.5m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
			-	10/05/2012	0.00m	Start of Borehole
-	10/05/2012	5.00m	End of shift			
-	30/05/2012	5.00m	Start of shift			
-	30/05/2012	26.20m	End of shift			
-	31/05/2012	26.20m	Start of shift			
-	31/05/2012	26.20m	End of Borehole			

**Equipment & Methods:** Soil Mech PSM 8G  
Compressed air-mist flush.





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Borehole No  
**BH312C**  
Sheet 4 of 4

**Project Name:**

Haulbowline East Tip

**Project No.:**

P12030

**Co-ords:** 179643E - 65266N

**Hole Type:**

Rotary Cored

**Client:** Cork County Council

**Dates:**

10/05/2012-31/05/2012

**Level:** 3.35 m AOD

**Scale:**

1:50

Well / Backfill	Water Strikes	Rotary Coring				Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	TCR	SCR	RQD					
		27.70-29.30	100	88	81				Remaining Detail : 26.20m - 27.70m : 26.2m - 27.7m: Fracture index - 5.  27.7m - 29.3m: Fracture index - 5.	28
		29.30-30.90	100	100	91			6mm min 330mm avg 760mm max	29.3m - 30.9m: Fracture index - 6.	29
		30.90-32.50	100	100	100				30.9m - 32.5m: Fracture index - 2.	30
		32.50				32.50	-29.15	32.50	End of Borehole at 32.50 m	31
										32
										33
										34
										35

Water	Depth (m)	TCR	SCR	RQD	Fracture spacing	Casing	Level	Depth		
Struck	Rose to	After	Sealed	Comment	<b>Hole Information:</b>			<b>Chiselling:</b>		
2.50m	-	-	-	Steady inflow.	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
					5.00m	-	-	to		
					16.00m	131mm	131mm			
					26.20m	131mm	131mm			
					32.50m	76mm	76mm			

Remarks:	Shift Data:	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
Excavated to 5.0m using 21t tracked excavator. Drilled to 26.2m using well drilling rig. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 32.5m to 25.5m.		-	10/05/2012	0.00m	Start of Borehole
		-	10/05/2012	5.00m	End of shift
		-	30/05/2012	5.00m	Start of shift
		-	30/05/2012	26.20m	End of shift
		-	31/05/2012	26.20m	Start of shift
		-	31/05/2012	26.20m	End of Borehole

**Equipment & Methods:** Soil Mech PSM 8G  
Compressed air-mist flush.





Number:

BH312C

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





**Number:**

**BH312C**

**Project  
Project No  
Client**

Haulbowline East Tip  
P12030  
Cork County Council





Number:

BH312C

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





<p><b>Number:</b> BH312C</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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**Number:**

**BH312C**

**Project**  
**Project No**  
**Client**

Haulbowline East Tip  
P12030  
Cork County Council





Number:

RC312C

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





Number:

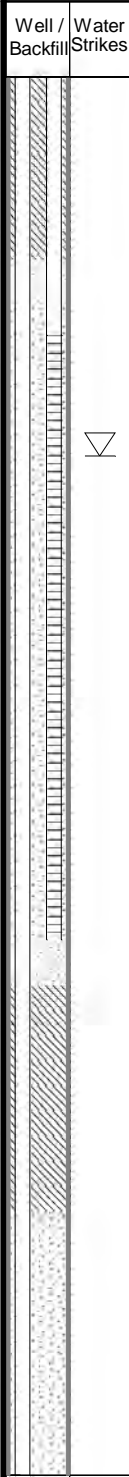
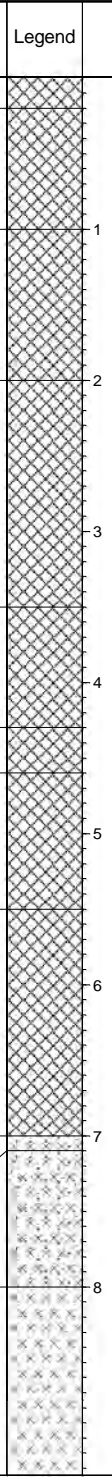
RC312C

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179706E - 65276N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 16/05/2012-25/05/2012	<b>Level:</b> 2.61 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
						2.41	0.20	Light grey, granular, processed SLAG.	
								Dark grey/ black, solid, processed SLAG with approx. (<1% steel).	
			1.00	B		1.61	1.00	Unprocessed SLAG with refractories (approx. 2%).	
			1.00	D					
			1.00	ES					
			2.00	B		0.61	2.00	Unprocessed SLAG with refractories (approx. 1%).	
			2.00	D					
			2.00	ES					
			3.00	ES				Unprocessed SLAG.	
			3.00	B		-0.89	3.50		
			3.00	D					
			3.00	ES				BOULDERS with clay/ sea shell and bricks.	
			4.50	B		-1.69	4.30		
			4.50	D		-1.99	4.60		
			4.50	ES				Light to dark grey, unprocessed SLAG in granular and cobble form with occasional pieces of refractory.	
			4.50-5.50	B					
		4.50-5.50	D						
		5.00	ES						
		5.00	ES						
		5.50	CPT	50 (18,7 for 0mm/25 for 5mm)	5.50	-2.89	5.50	Light to dark grey, unprocessed SLAG in granular and cobble form with occasional pieces of waste steel.	
		5.50-6.00	B						
		5.50-6.00	D						
		6.00	ES				Very soft, grey, slightly gravelly slightly sandy SILT.		
		6.00-7.00	B						
		6.00-7.00	D						
		7.00	ES			-4.39	7.00	Very soft, light grey, slightly sandy slightly gravelly SILT. Sand is fine. Gravel is fine to coarse, angular to subangular.	
		7.10	SPT	N=1 (0,0/0,1,0,0)	7.10	-4.49	7.10		
		7.10-7.55	SPTLS						
		7.00-8.00	B				Firm, light grey, slightly sandy SILT.		
		7.00-8.00	D						
		8.00	ES			-5.39		8.00	
		8.00-9.00	P	100% recovery					











Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-		4.60m	200mm	200mm	4.80 to 5.20	0035	Chisel
					25.30m			5.30 to 5.60	0130	Chisel
								5.60 to 6.00	0100	Chisel
								6.00 to 6.20	0100	Chisel
								6.20 to 6.20	0130	Chisel

<b>Remarks:</b> Excavated to 4.6m using 21t tracked excavator. Casing installed at 3.8m. Borehole terminated due to obstruction. Falling head permeability tests carried out . 2No. 50mm dia standpipes with geosock in stalled, response zone from 25.3m to 21.1m and from 5.7m to 1.7m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	16/05/2012	-	Start of Borehole
	-	-	-	-	16/05/2012	-	End of shift
	-	-	-	-	17/05/2012	3.80m	Start of shift
	-	-	-	-	17/05/2012	6.00m	End of shift
	-	-	-	-	18/05/2012	6.00m	Start of shift
<b>Equipment &amp; Methods:</b> Dando 2000	-	-	-	1.80m	18/05/2012	6.00m	Start of shift
	-	-	-	4.00m	18/05/2012	8.00m	End of shift



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179706E - 65276N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 16/05/2012-25/05/2012	<b>Level:</b> 2.61 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.50-10.00	B	N=10 (2,3/3,2,3,2)	10.00		Firm, light grey, slightly sandy SILT.		
		9.50-10.00	D						
		9.50-10.00	ES						
		10.00	SPT						
		10.00-10.45	SPTLS						
		11.00	SPT	N=10 (2,2/3,2,2,3)	11.00				
		11.00-11.45	SPTLS						
		11.50-12.00	B						
		11.50-12.00	D						
		11.50-12.00	ES						
		12.00-13.00	P	100% recovery					
		13.50	SPT	N=7 (1,1/2,2,1,2)	13.50				
		13.50-13.95	SPTLS						
		13.50-14.00	B						
		13.50-14.00	D						
		13.50-14.00	ES						
		14.00-15.00	P	100% recovery					
		15.00	SPT	N=5 (2,2/1,2,1,1)	15.00				
		15.00-15.45	SPTLS						
		15.50-16.00	B						
		15.50-16.00	D			-13.39	16.00		
		15.50-16.00	ES						
		17.00-17.45	SPTLS						
		17.50	B						
		17.50	D						
		17.50	ES						

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-		4.60m	200mm	200mm	4.80 to 5.20	0035	Chisel
					25.30m			5.30 5.60	0130	Chisel
								6.00 6.00	0100	Chisel
								6.00 6.20	0100	Chisel
								6.20 6.20	0130	Chisel

<b>Remarks:</b> Excavated to 4.6m using 21t tracked excavator. Casing installed at 3.8m. Borehole terminated due to obstruction. Falling head permeability tests carried out. 2No. 50mm dia standpipes with geosock in stalled, response zone from 25.3m to 21.1m and from 5.7m to 1.7m.	<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	16/05/2012	-	Start of Borehole
	-	-	-	16/05/2012	-	End of shift
	-	-	3.80m	17/05/2012	3.80m	Start of shift
	-	-	6.00m	17/05/2012	6.00m	End of shift
	1.80m	-	18/05/2012	6.00m	Start of shift	
	4.00m	-	18/05/2012	8.00m	End of shift	

<b>Equipment &amp; Methods:</b> Dando 2000
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179706E - 65276N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 16/05/2012-25/05/2012	<b>Level:</b> 2.61 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
						-15.89	18.50	Dark grey, slightly sandy SILT. Medium dense, slightly sandy GRAVEL.	19
		19.00	SPT	N=13 (2,3/3,4,3,3)	19.00				
		19.00-19.45	SPTLS						
		19.50	B			-16.89	19.50	Medium dense, slightly sandy clayey GRAVEL.	20
		19.50	D						
		20.50	CPT	N=20 (5,5/6,5,5,4)	20.50				21
		22.00	CPT	N=22 (4,5/5,6,5,6)	22.00				22
		22.00	B						
		22.00	D						
		24.00	CPT	N=41 (5,9/10,15,8,8)	24.00			Dense below 24.0m.	24
		24.00	B						
		25.30	CPT	(75 for 5mm)	25.30	-22.69	25.30	End of Borehole at 25.30 m	25
									26

Water	Depth (m)	Type	Results	Casing	Level	Depth					
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Chiselling:	Depths (m)	Time (hhmm)	Tool
2.50m	-	-	-		4.60m	200mm	200mm	4.80 to 5.20	0035		Chisel
					25.30m			5.30 to 5.60	0130		Chisel
								5.60 to 6.00	0100		Chisel
								6.00 to 6.20	0100		Chisel
								6.20 to 6.20	0130		Chisel

<b>Remarks:</b> Excavated to 4.6m using 21t tracked excavator. Casing installed at 3.8m. Borehole terminated due to obstruction. Falling head permeability tests carried out. 2No. 50mm dia standpipes with geosock in stalled, response zone from 25.3m to 21.1m and from 5.7m to 1.7m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	16/05/2012	-	Start of Borehole
	-	-	-	-	16/05/2012	-	End of shift
	-	-	-	1.80m	17/05/2012	3.80m	Start of shift
	-	-	-	4.00m	17/05/2012	6.00m	End of shift
	-	-	-	-	18/05/2012	6.00m	Start of shift
					18/05/2012	8.00m	End of shift

**Equipment & Methods:** Dando 2000





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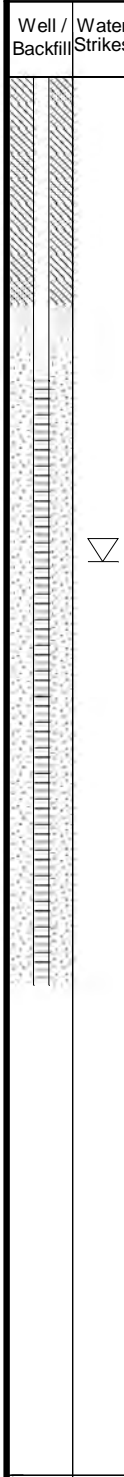
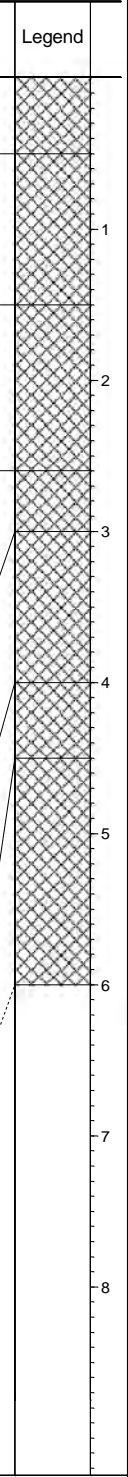
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<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179682E - 65223N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 27/04/2012-30/04/2012	<b>Level:</b> 3.86 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		0.00-0.50	B		6.00	-2.14	6.00		
		0.00-0.50	D						
		0.00-0.50	ES						
		1.50	B						
		1.50	D						
		1.50	ES						
		1.50	ES						
		2.20	ES						
		2.20	ES						
		2.20	B						
		2.20	D						
		3.20	B						
		3.20	D						
		3.20	ES						
		3.20	ES						
		4.20	B						
		4.20	D						
		4.20	ES						
	5.30	B							
	5.30	D							
	5.30	ES							
	5.30	ES							

Water	Depth (m)	Type	Results	Casing	Level	Depth
Struck	3.20m	Rose to	-	6.00m	-	-
After	-	Sealed	-	-	-	-
Comment	-	-	-	-	-	-

<b>Remarks:</b> Excavated to 6.0m using 21t tracked excavator. Borehole terminated due to obstruction. 50mm dia standpipe installed, response zone from 6.0m to 2.0m.	<b>Hole Information:</b>		<b>Chiselling:</b>			
	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
	6.00m	-	-	6.00 to 6.00	0200	Chisel
<b>Shift Data:</b>		Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks	
		4.50m	30/04/2012	6.00m	End of Borehole	
		-	27/04/2012	0.00m	Start of Borehole	
		-	27/04/2012	6.00m	End of shift	
		4.50m	30/04/2012	6.00m	Start of shift	

**Equipment & Methods:** Dando 2000





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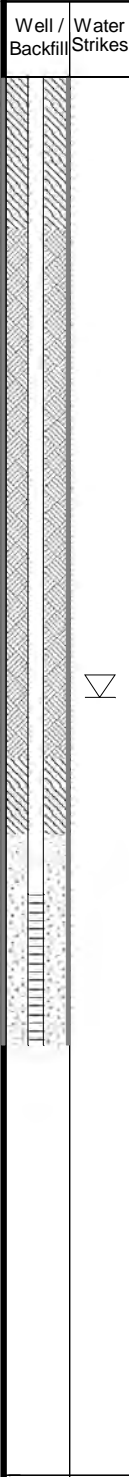
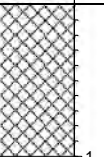
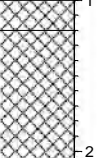
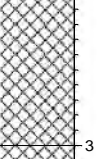
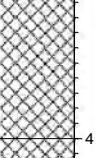
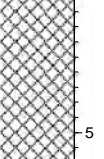
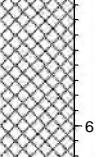
**BH314**

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**Client**

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P12030  
Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179768E - 65278N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 18/05/2012-23/05/2012	<b>Level:</b> 3.60 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend	
		Depth (m)	Type	Results						
		1.00	B			2.60	1.00	Light to dark grey, unprocessed SLAG in granular and cobble form, with Approximately 2% waste steel and 2% plastic household waste.		
		1.00	D			2.40	1.20	Light to dark grey, unprocessed SLAG in granular and cobble form and approximately 10% waste steel.		
		1.00	ES							
			2.00	B				Light to dark grey, unprocessed SLAG in granular and cobble form and approximately 10% waste steel and 1% waste timber.  2.0m - 3.0m: Possible odour of hydrocarbons noted.		
			2.00	D						
			2.00	ES						
			3.00	ES			0.60	3.00	Light to dark grey, pockmarked, unprocessed SLAG in granular and cobble form with approximately 5% waste steel.	
			3.00	B						
			3.00	D						
			4.00	B			-0.40	4.00	Light to dark grey, pockmarked, unprocessed SLAG in granular and cobble sized form with minor amounts of plastic.	
			4.00	D						
			4.00	ES						
		5.00	B							
		5.00	D							
		5.00	ES							
		6.00	CPT	N=65 (11,12/15,15,15,20)	6.00					
		6.00	B							
		6.00	D							
		6.00	ES	50 (20,5 for 20mm/25,25 for 10mm)	6.40					
		6.40	CPT			-2.80	6.40	End of Borehole at 6.40 m		

Water	Depth (m)	Type	Results	Casing	Level	Depth	Chiselling:		
Struck	4.10m	Rose to	-				Depths (m)	Time (hhmm)	Tool
After	-	Sealed	-	6.40m	200mm	200mm	4.30 to 5.50	0230	Chisel
Comment	-		Steady inflow				5.80 to 6.40	0230	Chisel
							6.40 to 6.40	0400	Chisel

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.3m. Falling head test carried out. Borehole terminated due to obstruction. 50mm dia standpipe with geosock installed, response from 6.4m to 5.4m	<b>Hole Information:</b>			<b>Chiselling:</b>		
	Hole Depth Hole Diameter Casing Diameter			Depths (m) Time (hhmm) Tool		
	6.40m 200mm 200mm			4.30 to 5.50 0230 Chisel		
				5.80 to 6.40 0230 Chisel		
				6.40 to 6.40 0400 Chisel		
<b>Equipment &amp; Methods:</b> Dando 2000	<b>Shift Data:</b>					
	Groundwater			Shift (dd/mm/yyyy) Casing depth Remarks		
	-			18/05/2012 0.00m Start of Borehole		
	4.00m			18/05/2012 5.00m End of shift		
	3.10m			22/05/2012 5.00m Start of shift		
4.10m			22/05/2012 6.40m End of shift			
-			23/05/2012 6.40m Start of shift			
-			23/05/2012 6.40m End of Borehole			





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Client

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Cork County Council





<p><b>Number:</b> BH315</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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<p><b>Number:</b> BH315</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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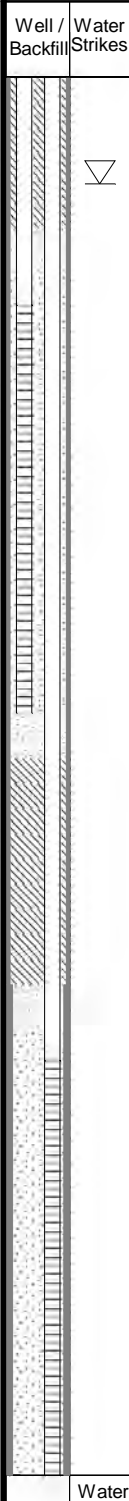
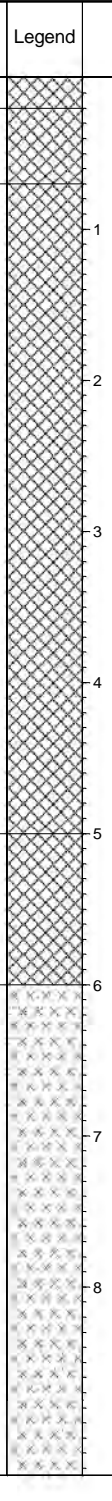
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Cork County Council



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179681E - 65405N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 06/06/2012-13/06/2012	<b>Level:</b> 1.27 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend		
		Depth (m)	Type	Results							
	▽	0.20-0.50	B			1.07	0.20	Dark grey, unprocessed SLAG.			
		0.20-0.50	D			Red/ brown, unprocessed SLAG.					
		0.20-0.50	ES								
		0.20-0.50	ES			0.57	0.70	Grey, unprocessed SLAG/ furnace SLAG in pockmarked cobble form (approx. 50%), metal waste (approx. 10%), glass, bottles, rags, bones, naval crockery, plastics (approx. 5%) and refractories (approx. 2%).			
		2.00	B								
		2.00	D								
		2.00	ES								
		4.00	ES			5.00	-3.73	5.00		Light to dark grey, unprocessed SLAG with gravel and some cobbles.	
		4.00	B								
		4.00	D								
		5.00	CPT			N=23 (5,5/6,5,6,6)	5.00	-3.73		5.00	Very soft, light grey, slightly sandy SILT. Sand is fine.
		5.00-5.50	B			6.00	-4.73	6.00			
		5.00-5.50	ES								
		5.60	D								
		6.00	SPT			N=3 (2,1/0,0,1,2)	6.00	-4.73		6.00	0% recovery
		6.00-6.45	SPTLS								
		6.60	D			8.00	8.00	8.00		N=4 (1,0/0,1,2,1)	
		6.50-7.00	B								
6.50-7.00	ES										
7.00-7.45	U	0% recovery	8.00	8.00	N=4 (1,0/0,1,2,1)						
7.50	D										
8.00	SPT	0% recovery	8.00	8.00	N=4 (1,0/0,1,2,1)						
8.00-8.45	SPTLS										
8.60	D										
8.50-9.00	B	0% recovery	8.00	8.00	N=4 (1,0/0,1,2,1)						
8.50-9.00	ES										
9.00-9.45	U	0% recovery	8.00	8.00	N=4 (1,0/0,1,2,1)						
9.00-9.45	B										
9.00-9.45	ES	0% recovery	8.00	8.00	N=4 (1,0/0,1,2,1)						
9.00-9.45	B										

<b>Groundwater:</b> Struck 0.70m Rose to - After - Sealed - Comment -	<b>Hole Information:</b> Hole Depth 5.00m 6.00m 24.70m Hole Diameter 300mm 200mm Casing Diameter 300mm 200mm	<b>Chiselling:</b> Depths (m) Time (hhmm) Tool 4.00 to 4.40 0100 Chisel 5.20 5.30 0100 Chisel 21.60 21.80 0030 Chisel 23.80 23.00 0100 Chisel 24.60 24.70 0100 Chisel
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<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.0m. Falling head test carried out. Borehole terminated due to obstruction. 2No. 50mm dia standpipes installed, response zone from 4.2m to 1.5m and from 19.7m to 6.5m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	06/06/2012	-	Start of Borehole
		-	06/06/2012	-	End of shift
		5.00m	11/06/2012	4.00m	Start of shift
		2.50m	11/06/2012	7.00m	End of shift
		10.00m	12/06/2012	7.00m	Start of shift
			12/06/2012	20.00m	End of shift

**Equipment & Methods:** Dando 2000

Continued next sheet



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.</b> P12030	<b>Co-ords:</b> 179681E - 65405N	<b>Hole Type</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 06/06/2012-13/06/2012	<b>Level:</b> 1.27 m AOD	<b>Scale</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		9.00-9.50					Very soft, light grey, slightly sandy SILT. Sand is fine.	[Pattern]	
		9.60	D						
		10.00	SPT	N=6 (1,2/2,1,2,1)	10.00			10	
		10.00-10.45	SPTLS						
		10.60	D						
		10.50-11.00	B						
		10.50-11.00	ES						
		11.00	U	0% recovery				11	
		11.00-11.50	B						
		11.60	D						
		12.00	SPT	N=2 (1,0/0,1,0,1)	12.00			12	
		12.00-12.45	SPTLS						
		12.60	D						
		12.50-13.00	B						
		12.50-13.00	ES					13	
		13.50-14.00	B						
		14.00	SPT	N=2 (1,0/0,1,1,0)	14.00			14	
		14.00-14.45	SPTLS						
		14.60	D						
		14.50-15.00	ES					15	
		15.00-15.45	U	100% recovery					
		15.50	B						
		15.50	D						
		16.00	SPT	N=1 (1,0/0,0,1,0)	16.00			16	
		16.00-16.45	SPTLS						
		16.60	D						
		16.50-17.00	B						
		16.50-17.00	ES					17	
		17.00-17.45	U	100% recovery					
		17.50	D						
		18.00	SPT	N=2 (1,0/0,1,1,0)	18.00				
		18.00-18.45	SPTLS						

Water	Depth (m)	Type	Results	Casing	Level	Depth	Continued next sheet
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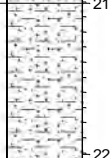
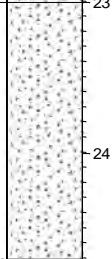
<b>Groundwater:</b>					<b>Hole Information:</b>			<b>Chiselling:</b>		
Struck	Rose to	After	Sealed	Comment	Hole Depth	Hole Diameter	Casing Diameter	Depths (m)	Time (hhmm)	Tool
0.70m	-	-	-		5.00m	-	300mm	4.00 to 4.40	0100	Chisel
					6.00m	300mm	300mm	5.20 to 5.30	0100	Chisel
					24.70m	200mm	200mm	21.60 to 21.80	0030	Chisel
								23.80 to 23.00	0100	Chisel
								24.60 to 24.70	0100	Chisel

<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.0m. Falling head test carried out. Borehole terminated due to obstruction. 2No. 50mm dia standpipes installed, response zone from 4.2m to 1.5m and from 19.7m to 6.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	-	-	-	06/06/2012	-	Start of Borehole
	-	-	-	-	06/06/2012	-	End of shift
	-	-	-	4.00m	11/06/2012	4.00m	Start of shift
	-	-	-	7.00m	11/06/2012	7.00m	End of shift
			7.00m	12/06/2012	7.00m	Start of shift	
			20.00m	12/06/2012	20.00m	End of shift	

**Equipment & Methods:** Dando 2000



<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179681E - 65405N	<b>Hole Type:</b> Cable Percussion
<b>Client:</b> Cork County Council	<b>Dates:</b> 06/06/2012-13/06/2012	<b>Level:</b> 1.27 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
		18.60	D				Very soft, light grey, slightly sandy SILT. Sand is fine.		
		18.50-19.00	B						
		18.50-19.00	B						
		19.00-19.45	U	0% recovery					
		19.50	D						
		19.50-20.00	B						
		20.00	SPT	N=1 (1,0/0,0,1,0)	20.00				
		20.60	D						
		20.50-21.00	B						
		20.50-21.00	ES						
		21.00	CPT	N=20 (3,3/3,6,6,5)	21.00	-19.73	21.00	Stiff, brown, slightly sandy slightly gravelly CLAY with occasional cobbles.	
		21.60	D						
		21.50-22.00	B						
		22.00	CPT	N=18 (2,2/3,5,5,5)	22.00				
		22.50-23.00	ES						
	23.00	CPT	N=32 (2,3/5,9,12,6)	23.00	-21.73	23.00	Medium dense, blue/ grey, slightly sandy GRAVEL.		
	23.60	D							
	23.50-24.00	B							
	24.00	CPT	N=25 (5,4/4,9,6,6)	24.00					
	24.50-24.70	B							
	24.60	D		24.70	-23.43	24.70	End of Borehole at 24.70 m		

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b> Struck 0.70m Rose to - After - Sealed - Comment -					<b>Hole Information:</b> Hole Depth Hole Diameter Casing Diameter 5.00m - 300mm 300mm 6.00m 300mm 300mm 24.70m 200mm 200mm			<b>Chiselling:</b> Depths (m) Time (hhmm) Tool 4.00 to 4.40 0100 Chisel 5.20 5.30 0100 Chisel 21.60 21.80 0030 Chisel 23.80 23.00 0100 Chisel 24.60 24.70 0100 Chisel		
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<b>Remarks:</b> Excavated to 5.0m using 21t tracked excavator. Casing installed at 4.0m. Falling head test carried out. Borehole terminated due to obstruction. 2No. 50mm dia standpipes installed, response zone from 4.2m to 1.5m and from 19.7m to 6.5m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	06/06/2012	-	-	-	-	Start of Borehole
	-	06/06/2012	-	-	-	-	End of shift
	-	11/06/2012	4.00m	-	-	-	Start of shift
	5.00m	11/06/2012	7.00m	-	-	-	End of shift
2.50m	12/06/2012	7.00m	-	-	-	Start of shift	
10.00m	12/06/2012	20.00m	-	-	-	End of shift	

**Equipment & Methods:** Dando 2000





**Number:**

**BH316**

**Project  
Project No  
Client**

Haulbowline East Tip  
P12030  
Cork County Council





Number:

BH316

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





Number:

BH316

Project  
Project No  
Client

Haulbowline East Tip  
P12030  
Cork County Council





<p><b>Number:</b> BH316</p>	<p><b>Project</b> Haulbowline East Tip <b>Project No</b> P12030 <b>Client</b> Cork County Council</p>	
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Number:

BH316

Project  
Project No  
Client

Haulbowline East Tip  
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**Number:**

**BH316**

**Project**  
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**Number:**

**BH316**

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Drilled By  
GW  
Logged By

Borehole No  
**BH117R**  
Sheet 1 of 3

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179564E - 65306N	<b>Hole Type:</b> RO
<b>Client:</b> Cork County Council	<b>Dates:</b> 12/06/2012-13/06/2012	<b>Level:</b> 3.32 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
						2.52	0.80	Driller described: Grout.	
								Driller described: GRAVEL.	
						-1.18	4.50	Driller described: Grout.	
						-2.88	6.20	Driller described: Silty GRAVEL.	
						-3.18	6.50	Driller described: SILT.	
								Continued next sheet	

<b>Groundwater:</b> Struck 4.50m Rose to - After - Sealed - Comment -	<b>Hole Information:</b> Hole Depth 24.40m Hole Diameter 131mm Casing Diameter 131mm	<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool
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<b>Remarks:</b> Existing installation removed. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 21.4m to 14.4m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	12/06/2012	0.00m	Start of Borehole
		-	12/06/2012	24.00m	End of shift
		3.68m	13/06/2012	24.00m	Start of shift
		-	13/06/2012	24.40m	End of Borehole

**Equipment & Methods:** Soil Mech PSM 8G





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Borehole No  
**BH117R**  
 Sheet 2 of 3

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179564E - 65306N	<b>Hole Type:</b> RO
<b>Client:</b> Cork County Council	<b>Dates:</b> 12/06/2012-13/06/2012	<b>Level:</b> 3.32 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							Driller described: SILT.		
					-11.18	14.50	Driller described: SAND AND GRAVEL		
							Continued next sheet		

<b>Groundwater:</b> Struck 4.50m Rose to - After - Sealed - Comment	<b>Hole Information:</b> Hole Depth 24.40m Hole Diameter 131mm Casing Diameter 131mm	<b>Chiselling:</b> Depths (m) to Time (hhmm) Tool
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<b>Remarks:</b> Existing installation removed. Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 21.4m to 14.4m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	12/06/2012	0.00m	Start of Borehole
		3.68m	12/06/2012	24.00m	End of shift
		-	13/06/2012	24.00m	Start of shift
		-	13/06/2012	24.40m	End of Borehole

**Equipment & Methods:** Soil Mech PSM 8G









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Borehole No  
**BH125R**  
Sheet 1 of 4

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179727E - 65402N	<b>Hole Type:</b> RO
<b>Client:</b> Cork County Council	<b>Dates:</b> 08/06/2012-11/06/2012	<b>Level:</b> 3.70 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
						3.50	0.20	Driller described: Concrete.	
						2.90	0.80	Driller described: Bentonite.	
								Driller described: GRAVEL.	
						0.20	3.50	Driller described: Silty GRAVEL.	

Continued next sheet

Water	Depth (m)	Type	Results	Casing	Level	Depth
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<b>Groundwater:</b> Struck    Rose to    After    Sealed    Comment 0.80m    -    -    -    -					<b>Hole Information:</b> Hole Depth    Hole Diameter    Casing Diameter 36.00m    131mm    131mm			<b>Chiselling:</b> Depths (m)    Time (hhmm)    Tool to		
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<b>Remarks:</b> Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 30.0m to 27.0m.	<b>Shift Data:</b>			Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
	-	08/06/2012	0.00m	-	08/06/2012	31.50m	Start of Borehole
	-	11/06/2012	31.50m	-	11/06/2012	31.50m	Start of shift
	-	11/06/2012	36.00m	-	11/06/2012	36.00m	End of Borehole
<b>Equipment &amp; Methods:</b> Soil Mech PSM 8G							





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Borehole No  
**BH125R**  
 Sheet 2 of 4

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179727E - 65402N	<b>Hole Type:</b> RO
<b>Client:</b> Cork County Council	<b>Dates:</b> 08/06/2012-11/06/2012	<b>Level:</b> 3.70 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							Driller described: Silty GRAVEL.		
					-7.80	11.50	Driller described: SILT.		
Continued next sheet									

<b>Groundwater:</b> Struck 0.80m	Rose to -	After -	Sealed -	Comment	<b>Hole Information:</b> Hole Depth 36.00m	Hole Diameter 131mm	Casing Diameter 131mm	<b>Chiselling:</b> Depths (m) to	Time (hhmm)	Tool
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<b>Remarks:</b> Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 30.0m to 27.0m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	08/06/2012	0.00m	Start of Borehole
		-	08/06/2012	31.50m	End of shift
		-	11/06/2012	31.50m	Start of shift
		-	11/06/2012	36.00m	End of Borehole

**Equipment & Methods:** Soil Mech PSM 8G





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Borehole No  
**BH125R**  
 Sheet 3 of 4

<b>Project Name:</b> Haulbowline East Tip	<b>Project No.:</b> P12030	<b>Co-ords:</b> 179727E - 65402N	<b>Hole Type:</b> RO
<b>Client:</b> Cork County Council	<b>Dates:</b> 08/06/2012-11/06/2012	<b>Level:</b> 3.70 m AOD	<b>Scale:</b> 1:50

Well / Backfill	Water Strikes	Samples & In Situ Testing			Casing / Flush	Level (m AOD)	Depth (m)	Stratum Description	Legend
		Depth (m)	Type	Results					
							Driller described: SILT.		
					-18.80	22.50	Driller described: Dark grey, SAND AND GRAVEL.		
					-20.30	24.00	Driller described: Yellow, coarse, blowing SAND AND GRAVEL.		
							Continued next sheet		

Water	Depth (m)	Type	Results	Casing	Level	Depth
Struck	0.80m	Rose to	-			
		After	-			
		Sealed	-			
		Comment				

Hole Information:			Chiselling:		
Hole Depth	Hole Diameter	Casing Diameter	Depths (m) to	Time (hhmm)	Tool
36.00m	131mm	131mm			

<b>Remarks:</b> Borehole terminated at required depth. 50mm dia standpipe installed, response zone from 30.0m to 27.0m.	<b>Shift Data:</b>	Groundwater	Shift (dd/mm/yyyy)	Casing depth	Remarks
		-	08/06/2012	0.00m	Start of Borehole
		-	08/06/2012	31.50m	End of shift
		-	11/06/2012	31.50m	Start of shift
		-	11/06/2012	36.00m	End of Borehole

<b>Equipment &amp; Methods:</b> Soil Mech PSM 8G
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