







<b>Drilling Method</b> Cable Percussion and Rotary <b>Equipment</b> Dando 2000 Knebel <b>Crew/Vessel</b> J Burnlees/D McGlyn <b>Dates Drilled</b> Start 15/10/2015 End 28/10/2015		<b>Borehole Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m <b>Casing Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		<b>BOREHOLE No.</b> BH24000 <b>Coordinates (National Grid)</b>  <b>Ground Level</b> E N m OD	
<b>Logged by</b> CC 29/10/2015 <b>Compiled by</b> clm 16/11/2015 <b>Approved by</b> BC 19/01/2015					

Date & Time	Casing Depth (m)	Depth to Water (m)	Sample Details			SFT Blows/N Drive mm	U100 Blows/ Recovery mm	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type	No.						
15/10	1.20		0.50	D	1			Grass over MADE GROUND: Tarmacadam.	(0.15)	83.60	
			0.50-0.80	B	2			Light brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to medium of pelite and psammite.	0.15		
			1.00	D	3				(1.05)		
			1.00-1.20	B	4						
	2.00		1.20-1.65	UT	5	S27	35/450	Firm to stiff light brown slightly sandy SILT. Sand is predominantly fine.	1.20	82.55	
			1.70	D	6			ALLUVIUM			
			2.00	D	7						
			2.00-2.45	D	8						
			2.00-2.50	B	9						
	3.00		3.00	D	10		50/450				
			3.00-3.45	UT	11						
			3.50	D	12						
	4.00		4.00	D	13	S47					
			4.00-4.45	D	14						
			4.00-4.50	B	15						
			5.00	D	16						

**Remarks** (See notes & keysheets)

- Prior to boring a Cable Avoidance Tool (CAT) survey was carried out. An inspection pit (minimum dimension approx 400mm x 400mm) was hand-dug to 1.20m depth and rescanned using the CAT to check for services. Services were not located.
- Chiselled using CH from 16.20m to 16.50m (60 mins); chiselled using CH from 16.50m to 16.70m (90 mins); chiselled using CH from 21.20m to 21.20m (60 mins).
- See separate sheet for installation.
- Groundwater not encountered during boring.

Scale 1:25


27/06/2016

**Project**  
A9 TAY CROSSING TO BALLINLUIG  
TRANSPORT SCOTLAND


**Contract No.** G151043UB  
**Figure No.** FR15 (1 of 8)

<b>Drilling Method</b> Cable Percussion and Rotary <b>Equipment</b> Dando 2000 Knebel <b>Crew/Vessel</b> J Burnlees/D McGlyn <b>Dates Drilled</b> Start 15/10/2015 End 28/10/2015		<b>Borehole Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m <b>Casing Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		<b>BOREHOLE No.</b> BH24000 <b>Coordinates</b> (National Grid) [REDACTED] E Ground Level [REDACTED] N m OD	
		<b>Logged by</b> CC 29/10/2015	<b>Compiled by</b> c1m 16/11/2015	<b>Approved by</b> BC 19/01/2015	


Date & Time	Casing Depth (m)	Depth to Water (m)	Sample Details			SPT Blows/N Drive mm	U100 Blows/ Recovery mm	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type	No.						
	5.00		5.00-5.45	UT	17		42/450				
			5.50	D	18						
			6.00	D	19						
	6.00		6.50-6.95 6.50-7.00 6.50-6.95	D B	20 21	S48					
			7.00	D	22						
			7.30 7.30-7.80	D B	23 24						
	7.50		8.00 8.00-8.45 8.00-8.50	D D B	25 26 27	S43	Below 8.00m: Stiff sandy and grey brown.				
			9.00	D	28				(15.00)		
	9.00		9.50-9.95 9.50-10.00	D B	29 30	S43	Between 9.50m and 10.00m: Clayey.				
			10.00	D	31						

**Remarks**  
(See notes & keysheets)

Scale 1:25

 27/06/2016	<b>Project</b> A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND	<b>Contract No.</b> G151043UB <b>Figure No.</b> FR15 (2 of 8)
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301/04

Drilling Method		Cable Percussion and Rotary		Borehole Diameter		Casing Diameter		BOREHOLE No.		BH24000		
Equipment		Dando 2000 Knobel		250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		Coordinates (National Grid)		E N m OD		
Crew/Vessel		J Burnlees/D McGlyn		Logged by		Compiled by		Approved by				
Dates Drilled		Start 15/10/2015 End 28/10/2015		CC 29/10/2015		clm 16/11/2015		SC 19/01/2015				
Date & Time	Casing Depth (m)	Depth to Water (m)	Sample Details			SPT Blows/N Drive mm	U100 Blows/ Recovery mm	Description of Strata		Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type	No.	Test	Result					
	10.50		11.00 11.00-11.45 11.00-11.50	D D B	32 33 34	S46						
15/10	12.00	DRY	12.00	D	35							
16/10	12.00	DRY										
	12.00		12.50-12.89 12.50-13.00	D B	36 37	S50/ 234						
			13.00	D	38							
	13.50		14.00 14.00-14.56 14.00-14.50	D D B	39 40 41	S50/ 229		Below 14.00m: Very stiff.				
			15.00	D	42							
Remarks (See notes & keyshots)												
Scale 1:25												
						Project A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND				Contract No. G151043UB		
27/06/2016										Figure No. FR15 (3 of 8)		
301/04												

Drilling Method		Cable Percussion and Rotary		Borehole Diameter		Casing Diameter		BOREHOLE No.		BH24000	
Equipment		Dando 2000 Knebel		250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		Coordinates (National Grid)		E N m OD	
Crew/Vessel		J Burnlees/D McGlyn		Logged by		Compiled by		Approved by			
Dates Drilled		Start 15/10/2015 End 28/10/2015		CC		clm		SC			
				29/10/2015		16/11/2015		19/01/2015			

Date & Time	Casing Depth (m)	Depth to Water (m)	Sample Details			SPT Blows/N Drive mm	U100 Blows/ Recovery mm	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From	To	Type						
16/10	15.00	DRY									
19/10	15.00	DRY	15.50-15.80		D	43	S50/ 75				
			15.50-16.00		B	44					
			16.00		D	45					
			16.20		D	46					
			16.20-16.60		B	47		Light grey brown subangular to subrounded fine to coarse GRAVEL of mixed lithologies with high cobble content. Cobbles are subrounded probably of psammite (up to 180mm x 140mm).	16.20	67.55	
								RIVER TERRACE DEPOSIT	(0.80)		
			16.70		D	48					
			16.70-17.00		B	49					
	16.50		17.00		D	50					
			17.00-17.30		D	51	S50/ 151	Very stiff light grey brown slightly sandy SILT. Sand is fine to coarse. Driller notes boulders.	17.00	66.75	
			17.00-17.50		B	52		RIVER TERRACE DEPOSIT	(1.50)		
19/10	18.00	DRY	18.00		D	53					
20/10	18.00	DRY									
	18.00		18.50-18.78		D	54	S50/ 126				
			18.50-19.00		B	55		Very stiff light grey brown slightly gravelly slightly sandy SILT. Gravel is subangular to subrounded fine of mixed lithologies. Sand is fine to coarse.	18.50	65.25	
								ALLUVIUM	(2.50)		
			19.00		D	56					
			20.00		D	57		Below 20.00m: Sandy.			


  

Remarks  
(See notes & keysheets)

Scale 1:25

 27/08/2016	Project A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND	Contract No. G151043UB  Figure No. FR15 (4 of 8)
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301/04

<b>Drilling Method</b> Cable Percussion and Rotary <b>Equipment</b> Dando 2000 <b>Drill Fluid</b> Knebel <b>Crew/Vessel</b> J Burnless/D McGlyn <b>Dates Drilled</b> Start 15/10/2015 End 28/10/2015		<b>Borehole Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		<b>Casing Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		<b>BOREHOLE No.</b> BH24000 <b>Coordinates (National Grid)</b> <span style="background-color: black; color: black;">[REDACTED]</span> E <b>Ground Level</b> <span style="background-color: black; color: black;">[REDACTED]</span> N m OD	
		<b>Logged by</b> CC 29/10/2015		<b>Compiled by</b> clm 16/11/2015		<b>Approved by</b> BC 19/01/2015	



Date & Time	Casing Depth (m)	Water Depth (m) (Flush Return) %	Sample/Core Recovery				SPT Blows /N Core Size (mm)	Result or U100 Blows/ Rec. mm or Fracture Index	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type	No.	TCR %						
20/10	19.50		20.00-20.27	D	58		S50/137		Between 20.65m and 21.45m: Assumed zone of core loss.			
			20.00-20.50	B	59							
	21.00	DRY	21.00-21.06				S50/33					
	21.20	DRY	21.00-21.06	D	60							
26/10	21.20	(100) 14.80	20.65-21.65	20					Dense grey to brown angular to well rounded fine to coarse GRAVEL of mixed lithologies including pelite, psammite, quartzite and granite with medium cobble content. Cobbles are subangular to rounded (100mm x 70mm x 70mm) of mixed lithologies including pelite, quartzite and granite. (CQI=1).	-21.00	62.75	
	21.65	GL	21.65-22.10				C39		GLACIOFLUVIAL DEPOSIT At 21.20m: Driller notes dark grey psammite. Possible boulder. Between 21.65m and 22.55m: Assumed zone of core loss.			
		(100)	21.65-22.65	10								
									Between 22.65m and 23.50m: Assumed zone of core loss.			
		(100)	22.65-23.65	15								
	23.65	GL	23.65-24.03				S50/230		Between 23.65m and 24.45m: Assumed zone of core loss.			
		(100)	23.65-24.65	20								
24.65	14.80	24.65-24.99				C50/190		Between 24.65m and 25.65m: Assumed zone of core loss.	(4.65)			



**Remarks**  
(See notes & key sheets)

Scale 1:25

 27/05/2016	<b>Project</b> A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND	<b>Contract No.</b> G151043UB
		<b>Figure No.</b> FR15 (5 of 8)


308/03


<b>Drilling Method</b> Cable Percussion and Rotary <b>Equipment</b> Dando 2000 <b>Drill Fluid</b> Knebel <b>Crew/Vessel</b> Air/Hist <b>Dates Drilled</b> J Burnlees/D McGlyn Start 15/10/2015 End 28/10/2015		<b>Borehole Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		<b>Casing Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		<b>BOREHOLE No.</b> BH24000 <b>Coordinates (National Grid)</b>  <b>E</b> <b>Ground Level</b>  <b>N</b> <b>m OD</b>	
<b>Logged by</b> CC 29/10/2015		<b>Compiled by</b> clm 16/11/2015		<b>Approved by</b> BC 19/01/2015			


Date & Time	Casing Depth (m)	Water Depth (m) (Flush Return %)	Sample/Core Recovery				SPT Blows / IN Core Size (mm)	Result or Fracture Index	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type	No.	TCR %						
		(80)	24.65-25.50	0								
			25.77-25.95	C	62					25.65	58.10	
26/10	21.05	18.90	(50) 25.50-26.50	85	85	79		5	Very strong thinly foliated dark grey fine grained PELITE with very thin extremely close to closely spaced bands of psammite and very thin extremely close to closely spaced bands of quartz. Weathering: fresh with local slight discolouration of brown staining on fracture surfaces. Fracture set 1: 0 degrees to 10 degrees closely to medium spaced planar smooth locally rough. Fracture set 2: inclined 30 degrees to 50 degrees widely spaced locally closely spaced planar rough.			
27/10	21.05	25.70						NI	SOUTHERN HIGHLAND GROUP Between 26.50m and 26.58m: Non intact.			
		(100)	26.50-27.80	100	89	77		10				
			27.53-27.65	C	63			NI	Between 27.24m and 27.29m: Non intact.			
								4				
		(100)	27.80-28.80	100	40	40		NI	Between 28.25m and 28.80m: Non intact.			
27/10	26.35	28.30						8	Between 28.92m and 29.08m: Non intact.			
28/10	26.35	28.30	(100) 28.80-29.50	100	100	100		NI				
			29.28-29.44	C	64			5				
								AZCL	Between 29.50m and 29.70m: Assumed zone of core loss			

**Remarks**  
(See notes & key sheets)

Scale 1:25

 27/05/2018	<b>Project</b> A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND	<b>Contract No.</b> G151043UB <b>Figure No.</b> FR15 (6 of 8)
	304/03	

<b>Drilling Method</b> Cable Percussion and Rotary <b>Equipment</b> Dando 2000 <b>Drill Fluid</b> Knebel <b>Crew/Vessel</b> J Burnlees/D McGlyn <b>Dates Drilled</b> Start 15/10/2015 End 28/10/2015		<b>Borehole Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m 110mm to 35.00m		<b>Casing Diameter</b> 250mm to 3.00m 200mm to 21.20m 150mm to 26.35m		<b>BOREHOLE No.</b> BH24000 <b>Coordinates (National Grid)</b>  E N m OD <b>Ground Level</b>	
<b>Logged by</b> CC 29/10/2015		<b>Compiled by</b> clm 16/11/2015		<b>Approved by</b> BC 19/01/2015			

Date & Time	Casing Depth (m)	Water Depth (m) (Flush Return %)	Sample/Core Recovery			SPT Blows /N Core Size (mm)	Result or Fracture Index	Description of Strata	Depth (Thickness) (m)	Level m OD	Legend
			Depth (m) From To	Type TCR %	No. SCR %						
28/10	26.35	32.40	30.45-30.70	C	65		3	Below 30.45m: Medium strong.	(9.35)		
			29.50-32.00	92	87	87					
			31.75-32.00	C	66						
			32.00-35.00	100	86	74					
			33.57-34.00	C	67						
			34.43-34.60	C	68						
			Between 32.52m and 32.60m: Non intact.	NI							
			Between 34.30m and 34.36m: Non intact.	NI							
			Between 34.75m and 35.00m: Non intact.	8							
			End of Borehole	NI							
<b>Remarks</b> (See notes & keysheets)											
<b>Scale</b> 1:25											
 27/06/2016						<b>Project</b> A9 TAY CROSSING TO BALLINLUIG TRANSPORT SCOTLAND			<b>Contract No.</b> G151043UB <b>Figure No.</b> FR15 (7 of 8)		

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