A5.2 Geotechnical Summary Table

Table 1: Geotechnical Summary Table of Proposed Road Development

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
Section 1 EW01	CUT	0+040	0+500	Na Foraí Maola	460	1.63	0.14	-3.13	-1.06	Peat over granite derived glacial gravels with areas of made ground	0.50	20.98	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace peat / made ground Assess for possible contaminates / chemically aggressive ground
Section 1 EW02	FILL	0+500	2+770	Na Foraí Maola to An Chloch Scoilte	2270	5.38	1.65	-3.34	-0.22	Peat over granite derived glacial gravels and some deposits of cohesive glacial till with areas of made ground	0.60	45.37	1V:2H side slopes Excavate and replace peat / soft areas / made ground Assess for possible contaminates / chemically aggressive ground
Section 1 EW03	FILL	2+820	3+100	Ballard West	280	5.66	2.47	0	0	Peat over granite derived glacial gravels overlying granite bedrock	0.50	39.90	1V:2H side slopes Excavate and replace peat / soft areas Assess for possible contaminates / chemically aggressive ground
Section 1 EW04	CUT	3+100	3+900	Ballard	800	3.61	0.06	-6.97	-3.86	Peat over granite derived glacial gravels overlying granite bedrock	0.50	33.94	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace peat Assess for possible contaminates / chemically aggressive ground

[1] In addition to the design requirements and construction mythologies presented in the Construction Environmental Management Plan (CEMP) shall be adhered.

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
Section 1 EW05	FILL	3+900	4+430	Aille	530	6.47	2.41	-2.20	-0.17	Peat over granite derived glacial gravels with isolated instances of made ground and alluvial deposits near stream	0.80	26.08	1V:2H side slopes Excavate and replace peat / made ground Flood starter layer required within extents of stream
Section 1 EW06	FILL	4+430	5+250	Cappagh	820	4.31	1.53	-2.45	-0.27	Peat over granite derived glacial gravels	1.40	45.18	1V:2H side slopes Excavate and replace peat Assess for possible contaminates / chemically aggressive ground
Section 1 EW07	CUT	5+250	5+600	Ballyburke	350	2.66	0.28	-8.91	-2.18	Granite derived glacial gravels	1.00	58.82	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible
Section 1 EW08	FILL	5+600	7+150	Ballymoneen to Letteragh	1550	11.78	3.40	-6.79	-0.25	Peat over granite derived glacial gravels with areas of made ground	1.30	57.15	1V:2H side slopes Excavate and replace peat / made ground Assess for possible contaminates / chemically aggressive ground
Section 1 EW09	FILL	7+150	7+450	Knocknafroska / Knocknabrona	300	10.12	7.54	0.00	0.00	Peat over granite derived glacial gravels	2.70	60.04	1V:2H side slopes Excavate and replace peat / made ground
Section 1 EW10	FILL	7+450	7+750	Knocknafroska / Knocknabrona	300	6.98	2.73	-4.28	-0.84	Peat over granite derived glacial gravels	4.50	65.09	1V:2H side slopes Excavate and replace peat

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
Section 1 EW11	CUT	7+750	8+150	Knocknafroska / Knocknabrona	400	0.00	0.00	-14.89	-8.49	Peat over granite derived glacial gravels	2.60	62.06	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace peat
Section 1 EW12	CUT	8+150	8+300	Upper Dangan	150	1.62	0.17	-6.89	-3.05	Granite derived glacial gravels	2.20	43.30	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible
Section 1 and 2 EW13	FILL	8+300	8+850	Dangan	550	9.70	5.03	-1.35	-0.04	Granite derived glacial gravels with areas of made ground	3.00	25.08	1V:2H side slopes Excavate and replace made ground
Section 2 EW14	FILL	8+850	9+300	Dangan to River Corrib	450	16.60	10.65	0.00	0.00	Deposits of limestone derived cohesive glacial till over glacial gravels with areas of made ground	5.50	14.95	1V:2H side slopes Excavate and replace soft areas / made ground Possible karst mitigations measures required
Section 2 EW15	RIVER CORRIB STRUCTURE	9+300	9+500	River Corrib	200	No Cut / Fill due to Structure				Deposits of limestone derived cohesive glacial till over glacial gravels with some isolated alluvial deposits present along the River Corrib	n/a[2]	14.12	1V:2H side slopes (approach embankments) Excavate and replace soft material Flood starter layer required (extents to account for all historic flooding) Possible karst mitigations measures required

[2] Depth to rockhead is unavailable over the extent of the River Corrib as no intrusive investigation was conducted.

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
Section 3 EW16	FILL	9+500	10+100	Menlough	600	19.37	10.01	0.00	0.00	Peat over limestone derived cohesive glacial till with isolated instances of made ground and alluvial deposits present. Identified location of palaeokarst valleys.	2.30	10.03	1V:2H side slopes Excavate and replace peat / soft areas / made ground Flood starter layer required (extents to account for all historic flooding) Possible karst mitigations measures required
Section 3 EW17	MENLOUGH VIADUCT	10+100	10+430	Menlough	330	No Cut / Fill due to Structure				Deposits of limestone derived cohesive glacial till over glacial gravels with some alluvial deposits likely present	0.00[3]	7.85	1V:2H side slopes (approach embankments) Excavate and replace soft material Possible karst mitigations measures required, particularly for foundations
Section 3 EW18	FILL	10+430	10+810	Menlough	380	10.01	3.73	-4.09	-0.12	Deposits of limestone derived cohesive glacial till over glacial gravels mixed with limestone pavement. Identified location of palaeokarst valleys.	1.80	12.34	1V:2H side slopes Possible karst mitigations measures required
Section 3 EW19	CUT	10+810	11+140	Coolagh	330	4.76	0.34	-15.46	-6.45	Deposits of limestone derived cohesive glacial till over glacial gravels.	55.00[4]	21.28	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Retaining structures required in cut

[3] Some overburden including topsoil exists along the extents of the structure. However, the majority of the area consists of outcropping limestone pavement. Therefore, the average depth has been provided as 0m to reflect the typically shallow rock.

[4] The change in rockhead, based on intrusive and geophysical ground investigation, is quite significant in this area, with the maximum depth recorded of 109m below ground level. However, this maximum depth is quite isolated with the rockhead typically quite shallow.

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
										Identified location of palaeokarst valleys.			sections approaching tunnel Possible karst mitigations measures required
Section 3 EW20	LACKAGH TUNNEL	11+140	11+420	Coolagh	280	No Cut / Fill due to Structure				Shallow deposits of limestone cohesive glacial till mixed with limestone pavement. Identified location of palaeokast valleys.	0.00[5]	24.00	Possible karst mitigations measures required
Section 3 EW21	FILL	11+420	11+720	Coolagh	300	10.67	4.98	-7.49	-0.55	Deposits of limestone derived cohesive glacial till with areas of made ground.	0.00[6]	16.64	1V:2H side slopes Excavate and replace made ground
Section 3 EW22	CUT	11+720	11+920	Ballindooley	200	11.82	4.06	-24.64	-8.60	Deposits of limestone derived cohesive glacial till over glacial gravels.	3.50	14.00	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible
Section 3 EW23	FILL	11+920	12+190	Ballindooley	270	9.47	3.72	-7.97	-0.75	Limestone derived cohesive glacial till / glacial gravels with areas of made ground. Identified location of palaeokarst valleys.	10.50	12.24	1V:2H side slopes Excavate and replace made ground Possible karst mitigations measures required

[5] While topsoil exists in some of the extent of this earthwork area, the majority consists of outcropping limestone pavement. This gave rise to the construction of a tunnel through the rock. Therefore, the average depth to rockhead has been indicated as 0m in order to reflect this environment.
[6] This earthworks area extends along the floor of the disused Lackagh Quarry. Therefore, the depth to rockhead has been provided as zero.

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
Section 3 EW24	FILL	12+190	12+500	Ballindooley	310	16.28	10.94	0.00	0.00	Peat over limestone derived cohesive glacial till / glacial gravels. Identified location of palaeokarst valleys.	7.00	10.78	1V:2H side slopes Excavate and replace peat Possible karst mitigations measures required
EW25	CUT	12+500	12+920	Section 3 Castlegar	420	9.49	0.70	-7.61	-4.03	Deposits of limestone derived cohesive glacial till. Identified location of palaeokarst valleys.	2.80	15.06	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Possible karst mitigations measures required
EW26	FILL	12+920	13+050	Section 3 Castlegar	130	8.17	2.79	-4.35	-0.70	Deposits of limestone derived cohesive glacial till with areas of made ground. Identified location of palaeokarst valleys.	14.30	17.32	1V:2H side slopes Excavate and replace made ground Possible karst mitigations measures required
EW27	CUT	13+050	13+650	Section 3 Castlegar	600	7.85	0.26	-12.65	-7.58	Deposits of limestone derived cohesive glacial till with areas of made ground. Identified location of palaeokarst valleys.	5.90	18.06	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace made ground Possible karst mitigations measures required
EW28	FILL	13+650	14+150	Section 3 and 4 N17 Tuam Road	500	12.65	7.52	-3.70	-0.12	Deposits of limestone derived cohesive glacial till with areas of made ground. Identified location of palaeokarst valleys.	17.80	25.89	1V:2H side slopes Excavate and replace soft areas / made ground Possible karst mitigations measures required

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
EW29	CUT	14+150	14+450	Ballybrit	300	5.66	0.32	-12.84	-8.85	Deposits of limestone derived cohesive glacial till	2.70	28.01	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace soft areas Possible karst mitigations measures required
EW30	CUT	14+450	14+950	Ballybrit	500	0.00	0.00	-11.20	-8.85	Deposits of limestone derived cohesive glacial till with areas of made ground.	7.50	44.61	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace soft areas / made ground Possible karst mitigations measures required
EW31	RACECOURSE TUNNEL	14+950	15+190	Galway Racecourse	240	0.00	0.00	-9.52	-8.63	Deposits of limestone derived cohesive glacial till with areas of made ground.	6.30	21.99	1V:2H slopes in overburden 1V:1.5H in rock if possible Excavate and disposal made ground Possible karst mitigations measures required
EW32	CUT	15+190	15+500	Ballybrit	310	1.73	0.11	-9.52	-4.64	Deposits of limestone derived cohesive glacial till.	4.60	31.42	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Possible karst mitigations measures required
EW33	FILL	15+500	16+200	Briarhill	700	8.43	5.08	-0.98	-0.03	Deposits of limestone derived cohesive glacial till with areas of made ground.	2.40	40.38	1V:2H side slopes Excavate and replace soft areas / made ground Assess for possible contaminates / chemically aggressive ground Possible karst mitigations measures required

Earthwork Area	Type	Chainage From	Chainage To	Townland	Distance (m)	Maximum Fill	Average Fill	Maximum Cut	Average Cut	Ground Conditions	Average Depth to Rock (mBGL)	Groundwater Conditions (mOD)	Earthwork Recommendations[1]
EW34	CUT	16+200	16+900	Briarhill	700	2.82	0.22	-7.44	-2.46	Deposits of limestone derived cohesive glacial till.	1.90	30.87	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Possible karst mitigations measures required
EW35	CUT	16+900	17+540	Ardaun, Coolagh	640	1.34	0.11	-9.48	-2.35	Deposits of limestone derived cohesive glacial till with areas of made ground. Bedrock: Limestone	2.00	23.32	1V:2H side slopes Excavate and replace made ground
N59 LINK	CUT / FILL	0+000	2+170	Letteragh	2170	8.77	0.91	-12.99	-2.25	Peat over granite derived glacial gravels with areas of made ground	2.10	48.61	1V:2H slopes in overburden 1V:1.5H slopes in rock if possible Excavate and replace peat / made ground Assess for possible contaminates / chemically aggressive ground