

Series - A General Items					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
A	General Items				
A1	Offices and stores for the Contractor	sum	1		
A2.1	Establish on site cable percussion ('shell/auger') boring plant and equipment for a Green Category site	sum	1		
A2.2	Establish on site rotary drilling plant and equipment for a Green Category site	sum	1		
A2.3	Establish on site Geobar S rotary drilling plant and equipment for a Green Category site	sum	1		
A2.4	Establish on site trial pitting and trenching plant and equipment for a Green Category site	sum	1		
A2.5	Establish on site in situ test and sampling equipment for a Green Category site	sum	1		
A2.6	Establish on site cone penetration testing (CPT) plant and equipment for a Green Category site	sum	-		
A2.7	Establish on site dynamic sampling and probing plant and equipment for a Green Category site	sum	-		
A2.8	Establish on site geophysical survey equipment for a Green Category site	sum	-		
A2.9	Establish instrumentation equipment on site as required for a Green Category site	sum	-		
A3.1	Extra over item A2.1 – A2.9 for a Yellow Category site	Sum (rate only)	-		
A3.2	As item A3.1 but for a Red Category site	sum	-		
A4.1	Maintain on site all safety equipment for a Yellow Category site	per week	-		
A4.2	As item A4.1 but for a Red Category site	per week	-		
A5	Decontamination of equipment during and at the end of fieldworks for a Yellow Category site	sum	-		
A5.1	As item A5 but for Red Category site	sum	-		
A6	Appropriate storage, transport and off-site disposal of excess contaminated arisings from borehole, trial pit or slit trench to EPA regulated landfill site (includes any PPE equipment but excludes laboratory testing on suspected contaminated materials). Note Item to be re-measured with delivery dockets and records maintained by the Contractor	provisional sum	-		
A6.1	Contractor's uplift on item A6	%			
A7	Professional attendance to meet the contract requirements	sum	1		
A7.1	Provide technician	per day (rate only)	1		
A7.2	Provide Engineer/Geologist (as per Item 2.3 of Specification)	per day (rate only)	1		
A7.3	Provide Chartered Engineer/Professional Geologist (as per Item 2.3 of Specification)	per day (rate only)	1		
A7.4	Provide Chartered Engineer/Professional Geologist (+10 yr experience post charter)	per day (rate only)	1		
A7.5	Provide Chartered Engineer/Professional Geologist (+20 yr experience post charter)	per day (rate only)	-		
A8	Set out the location at each exploratory hole or in situ investigation point	nr	88		
A8.1	Establish the location and elevation (X, Y, Z) of the ground at each 'as-built' exploratory hole or point	nr	88		
A9	Preparation of Health and Safety documentation and Safety Risk Assessment	sum	1		
A10	Facilities for the Investigation Supervisor	Per week	-		
A11	Vehicle(s) for the Investigation Supervisor	Vehicle week	-		
A11.1	Provision of fuel and tolls for A11 (to be reimbursed under the contract)	Provisional sum	-		
A11.2	Contractors uplift on Item A11 and 11.1	% Uplift	-		
A12	Provision of phone and Internet for the Investigation Supervisor (to be reimbursed under the contract)	Provisional sum	-		
A12.1	Contractors Uplift on Item A12	% Uplift	-		
A13	Deliver selected cores and samples to specified Client address	Provisional sum	-		
A14	Special additional testing and sampling required by Investigation Supervisor	Provisional sum	-		
A15	Traffic safety and management to include preparation of traffic management (TM) drawings for investigations on roads or pavement areas	Provisional sum	1		
A16	Provision of road opening licences and road damages bond	Provisional sum	1		
A17	Contractors uplift on Items A15 and A16	% Uplift	-		
A18	One master copy of Desk Study Report	Sum	-		
A18.1	Additional hard copy of Desk Study Report	Nr	-		
A18.2	Electronic copy of Desk Study Report (PDF)	Sum	-		
A19	One master copy of Ground Investigation Report (Factual)	Sum	1		
A19.1	Additional hard copy of Ground Investigation Report (Factual)	Nr	-		
A19.2	Electronic Copy of Ground Investigation Report	Sum	1		
A20	One master copy of Geophysical Report	Sum	-		
A20.1	Additional hard copy of Geophysical Report	Nr	-		

Series - A General Items					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
A20.2	Electronic copy of Geophysical Report (PDF)	Sum	-		
A21	One master copy of Geotechnical Interpretative Report	Sum	1		
A21.1	Additional hard copy of Geotechnical Interpretative Report	Nr	-		
A21.2	Electronic copy of Geotechnical Interpretative Report	Sum	1		
A22	Digital field/engineering logs in AGS transfer format	Sum	1		
A23	Digital laboratory test data in AGS transfer files	Sum	1		
A24	Digital copy of trial pit, slit trench or core photographs	Nr	1		
A25	Storage of samples (geotechnical or environmental) following completion of fieldworks	Wk	8		
A26	Storage of core boxes following completion of fieldworks	Wk	8		
A27	Provision of water supply for the fieldworks	Sum	1		
A28	Provision of Insurances	Sum	1		
A29	Provision of Performance Bond; the amount of the performance bond shall be 10% of the initial contract sum up to certification of substantial completion and 5% of initial contract sum for 8 weeks after the substantial completion date.	Sum	-		
A30	Perform the role PSCS	Sum	1		
A31	Contractor liaison with external bodies to obtain road opening licence, access to private lands, etc	Sum	1		
A32	One master copy of Waste Classification Report	Sum	1		
A32.1	Additional hard copy of Waste Classification Report	Nr	-		
A32.2	Electronic Copy of Waste Classification Report	Sum	1		

Series - B Boreholes					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
B	Cable Percussion Boring (cable tool; or percussive boring using minimum of 150mm diameter casing)				
B1	Move boring plant and equipment to the site of each exploratory hole and set up	nr	10		
B2	Extra over Item B1 for setting up on a slope of gradient greater than 20%	nr	-		
B3	Hand digging and CAT scan at borehole location to confirm absence of utility ducts (minimum depth of 1.5m)	nr	10		
B4	Advance borehole between existing ground level and 10m depth	m	61		
B5	As Item B4 but between 10 and 20m depth	m	-		
B6	As Item B4 but between 20 and 30m depth	m	-		
B7	As Item B4 but between 30 and 40m depth	m	-		
B8	As Item B4 but between 40 and 50m depth	m	-		
B9	Advance borehole through hard stratum or obstruction	h	5		
B10	Provide aquifer protection measures at a single aquiclude/aquifer boundary or cross-contamination control measures at a single soil boundary in a borehole	nr	-		
B11	Backfill borehole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m3	5		
B12	Standing time for borehole plant, equipment and crew	h	-		
	Dynamic Sampling (Window and Windowless Sampling)				
B13	Move dynamic sampling plant and equipment to the site of each exploratory hole and set up	nr	-		
B14	Extra over Item B1 for setting up on a slope of gradient greater than 20%	nr	-		
B15	Hand digging and CAT scan at dynamic sampling location to confirm absence of utility ducts (maximum depth of 1.20m or lesser if ground is assessed as potentially unstable)	nr	-		
B16	Break out surface obstruction where present	h	-		
B17	Dynamic sampling between 0 and 5m depth	m	-		
B18	Dynamic sampling between 5 and 10m depth	m	-		
B19	Dynamic sampling >10m as instructed by Investigation Supervisor	m	-		
B20	Standing time for dynamic sampling plant, equipment and crew	h	-		
B21	Backfill dynamic sample borehole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m3	-		
	Reinstatement of Cable Percussive Borehole and Dynamic Sampling Borehole				
B22	Reinstatement of gravel hardstanding	m2	1		
B23	Reinstatement of asphalt/bituminous pavement	m2	-		
B24	Reinstatement of grass areas	m2	9		
B25	Provision of stock proof fencing to borehole or dynamic sample work area	nr	-		
B26	Disposal of excess or surplus inert or contaminated arisings from cable percussion boring or dynamic sampling (where standpipe or piezometer is not installed)	m3	-		

Series - C Rotary Drilling					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
C	Rotary Boring				
	Hand augering				
C1	Bring hand auger equipment to the position of each exploratory hole	Nr	-		
C2	Bore with hand auger from existing ground level to 2m depth	m	-		
C3	As Item C2 but between 2m and 4m depth	m	-		
C4	Standing time for hand auger equipment and crew	h	-		
C5	Provision of hand augering equipment and crew for augering as directed by the Investigation Supervisor; maximum depth 4m	day	-		
C6	Backfill hand auger hole with cement/bentonite grout or bentonite pellets.	m	-		
	Continuous flight and hollow-stem flight augering				
C7	Move mechanical augering plant and equipment to the site of each exploratory hole and set up	Nr	-		
C8	Extra over Item C7 for setting up on a slope of gradient greater than 20%	Nr	-		
C9	Break out surface obstructions where present at auger hole	h	-		
C10	Standing time for rotary auger equipment and crew	h	-		
C11	Auger in materials other than hard strata at the specified diameter between existing ground level and 10m depth	m	-		
C12	As Item C11 but between 10m and 20m depth	m	-		
C13	As Item C11 but between 20m and 30m depth	m	-		
C14	Backfill auger hole with cement/bentonite grout or bentonite pellets				
	Rotary drilling with and without core recovery				
C15	Move rotary drilling plant and equipment to the site of each exploratory drillhole and set up on gradient less than 20%	Nr	9		
C16	Extra over Item C15 for setting up drilling plant on gradient greater than 20%	Nr	-		
C17	Hand digging and CAT scan at rotary drillhole location to confirm absence of utility ducts (maximum depth of 1.20m or lesser if ground is assessed as potentially unstable)	Nr	9		
C18	Break out surface obstructions where present at exploratory drillhole	h	2		
C19	Standing time for rotary drilling plant, equipment and crew	h	-		
C20	Provide aquifer protection measures at a single aquiclude/aquifer boundary in a drillhole	Nr	-		
	Drilling without cores				
C21	Rotary drill in materials other than hard strata at the specified diameter, from which cores are not required, between 0 and 10m depth openhole drilling)	m	-		
C22	As Item C21 but between 10m and 20m depth	m	-		
C23	As Item C21 but between 20m and 30m depth	m	-		
C24	As Item C21 but between 30m and 40m depth	m	-		
C25	As Item C21 but between 40m and 50m depth	m	-		
C26	Extra over Items C21 to C25 for inclined rotary drillhole	m	-		
C27	Rotary drill in hard strata at the specified diameter, from which cores are not required, between 0m and 10 m depth	m	-		
C28	As Item C27 but between 10m and 20m depth	m	-		
C29	As Item C27 but between 20m and 30m depth	m	-		
C30	As Item C27 but between 30m and 40m depth	m	-		
C31	As Item C27 but between 40m and 50m depth	m	-		
C32	Extra over Items C27 to C31 for inclined drillhole	m	-		
C33	Backfill rotary drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m ³	-		
	Drilling to obtain cores				
C34	Rotary drill in materials other than hard strata to obtain cores of the specified diameter between 0m and 10 m depth	m	5		
C35	As Item C34 but between 10m and 20m depth	m	-		
C36	As Item C34 but between 20m and 30m depth	m	-		
C37	As Item C34 but between 30m and 40m depth	m	-		
C38	As Item C34 but between 40m and 50m depth	m	-		
C39	Extra over Items C34 to C38 for use of semi-rigid core liner	m	-		
C40	Extra over Items C34 to C38 for coring inclined rotary drillhole	m	-		
C41	Rotary drill in hard strata to obtain cores of the specified diameter between existing ground level and 10m depth	m	40		
C42	As Item C41 but between 10m and 20m depth	m	30		
C43	As Item C41 but between 20m and 30m depth	m	0		
C44	As Item C41 but between 30m and 40m depth	m	-		
C45	As Item C41 but between 40m and 50m depth	m	-		
C46	Extra over Items C41 to C45 for use of semi-rigid liner	m	-		
C47	Extra over Items C41 to C45 for coring inclined rotary drillhole	m	-		
C48	Backfill rotary drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not required)	m ³	5		
C49	Core box to be retained by client	Nr	10		
	Rotary percussive drilling (Odex / Symmetrix)				

Series - C Rotary Drilling					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
C50	Move rotary percussive drilling plant and equipment to the site of each drill hole and set up	Nr	-		
C51	Extra over Item C50 for setting up on a slope of gradient greater than 20%	Nr	-		
C52	Rotary percussive drill at the specified diameter in any material between 0m and 10 m depth	m	-		
C53	As Item C52 but between 10m and 20m depth	m	-		
C54	As Item C52 but between 20m and 30m depth	m	-		
C55	As Item C52 but between 30m and 40m depth	m	-		
C56	As Item C52 but between 40m and 50m depth	m	-		
C57	Standing time for rotary percussive drilling plant, equipment and crew	h	-		
C58	Backfill rotary percussive drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m	-		
	Geobor S Rotary Drilling				
C59	Move drilling plant and equipment to the site of each exploratory location and set up equipment (including recirculation tanks)	Nr	-		
C60	Hand digging and CAT scan at Geobor drillhole location to confirm absence of utility ducts (maximum depth of 1.20m or lesser if ground is assessed as potentially unstable)	Nr	-		
C61	Provision of biodegradable polymer gel (drilling fluid) for Geobor S coring	sum	-		
C62	Break out surface obstructions where present at exploratory drillhole	h	-		
C63	Standing time for Geobor S drilling plant, equipment and crew	h	-		
	Geobor S Rotary Coring (to produce 102mm (diameter cores))				
C64	Rotary openhole drilling without core recovery to install casing prior to Geobor coring (nominally 1.5m)	m	-		
C65	Rotary Drilling with Geobor S equipment to recover cores of overburden material using polymer gel/mud drilling fluid in depth range 0m to 10m	m	-		
C66	As Item C65 but between 10m and 20m depth	m	-		
C67	As Item C65 but between 20m and 30m depth	m	-		
C68	As Item C65 but between 30m and 40m depth	m	-		
C69	As Item C65 but between 40m and 50m depth	m	-		
C70	Rotary Drilling using Geobor S equipment to recover cores in bedrock formation(s) using polymer gel/mud drilling fluid in depth range 0m to 10m	m	-		
C71	As Item C70 but between 10m and 20m depth	m	-		
C72	As Item C70 but between 20m and 30m depth	m	-		
C73	As Item C70 but between 30m and 40m depth	m	-		
C74	As Item C70 but between 40m and 50m depth	m	-		
C75	Extra over Items C64 to C74 for inclined Geobor S drillhole (maximum of 20 degrees from the vertical)	m	-		
	Geobor S Rotary Drilling - Additional Items				
C76	Backfill Geobor S drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m ³	-		
C77	Provision of semi rigid core liner for Items C64 - C75	m	-		
			-		
C78	Provision of core boxes (2m of Geobor S core per box)	Nr	-		
C79	Disposal of Geobor S drilling supernatant flush returns (contained in the recirculation tanks) where permitted on site. Note disposal areas / locations to be recorded and photographed by contractor	m ³	-		
C80	Disposal of Geobor S drilling supernatant flush returns (contained in the recirculation tanks) to landfill by tanker where on site disposal is not permitted. Note tanker delivery dockets to be retained by the Contractor	m ³	-		
	Reinstatement of Rotary Drillholes				
C81	Reinstatement of gravel hardstanding	m ²	-		
C82	Reinstatement of asphalt/bituminous pavement	m ²	-		
C83	Reinstatement of grass areas	m ²	-		
C84	Provision of stock proof fencing to rotary drilling works area	m	-		
C85	Disposal of excess or surplus inert arisings from rotary drilling operations (where standpipe or piezometer is not installed)	m ³	-		

Series - D Pitting and Trenching					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
D	Pitting and trenching				
	Inspection pits				
D1	Excavate inspection pit by hand to 1.2m depth	nr	-		
D2	Extra over Item D1 for breaking out surface obstructions	h	-		
	Trial pits and trenches (non-paved areas)				
D3	Move equipment to the site of each trial pit or slit trench of not greater than 4.5m depth	nr	22		
D4	Extra over Item D3 for setting up on a slope of gradient greater than 20%	nr	-		
D5	Extra over Item D3 for trial pit or trench between 4.5m and 6m depth	nr	-		
D6	Excavate trial pit between existing ground level and 3.0m depth	m (depth)	48		
D7	As Item D6 but between 3.0 and 4.5m depth	m (depth)	-		
D8	As Item D6 but between 4.5 and 6m depth	m (depth)	-		
D9	Excavate slit trench between existing ground level and 3.0m depth	m3	117		
D10	As Item D9 between 3.0 and 4.5m in depth	m3	-		
D11	As Item D9 between 4.5 and 6m depth	m3	-		
	Trial pits and trenches (paved areas)				
D12	Set up trial pit in road area to include erection of traffic management systems (works supervised by Engineer/Geologist with valid CSCS Card for Signing, Lighting and Guarding at Roadworks)	nr	-		
D13	Set up at slit trench in road area to include erection of traffic management systems (works supervised by Engineer/Geologist with valid CSCS Card for Signing, Lighting and Guarding at Roadworks)	nr	12		
D14	Saw cut paved areas in advance of works	lin m	172.4		
D15	Breaking out hard material or surface obstructions	h	3		
D16	Excavate trial pit in paved areas between ground level and 1.20m depth (works by either hand excavation or hand assisted machine excavation)	lin m (depth)	-		
D17	As D16 but depth range 1.2 to 3.0m	lin m (depth)	-		
D18	Excavate slit trench in paved areas between ground level and 1.2m depth (works by either hand excavation or hand assisted machine excavation)	m3	17.28		
D19	As Item D18 but depth range 1.2 to 3.0m	m3	-		
D20	Standing time for excavation plant, equipment and crew for machine dug trial pit or trench	h	-		
	Observation pits and trenches				
D21	Move equipment to the site of each observation pit or trench of not greater than 4.5m depth	Nr	-		
D22	Extra over Item D21 setting up on a slope of gradient greater than 20%	Nr	-		
D23	Extra over Item D21 for trial pit or trench between 4.5 and 6m depth	nr	-		
D24	Excavate observation pit between existing ground level and 3.0m depth	m	-		
D25	As Item D24 but between 3.0 and 4.5 m depth	m	-		
D26	As Item D24 but between 4.5 and 6m depth	m	-		
D27	Extra over Item D24 for hand excavation	m	-		
D28	Excavate observation trench between existing ground level and 3.0m depth	m3			
D29	As Item D28 but between 3.0 and 4.5m depth	m3	-		
D30	As Item D28 but between 4.5 and 6m depth	m3	-		
D31	Extra over Item D28 for hand excavation	m3	-		
D32	Extra over Items D24 to D26 for breaking out hard strata or obstructions	h	-		
D33	Extra over Items D28 to D30 for breaking out hard strata or obstructions	h	-		
D34	Standing time for excavation plant, equipment and crew for machine dug observation pit or trench	h	-		
D35	Standing time for excavation plant, equipment and crew for hand dug observation pit or slit trench	h	-		
	Daily provision of pitting crew and equipment				
D36	Provision of excavation plant equipment and crew for machine dug trial pits or trenches as directed by the Investigation Supervisor; maximum depth 3.0m	day (rate only)	1		
D37	As Item D36 but between 3.0 and 4.5m depth	day	-		
D38	As Item D36 but between 4.5 and 6.0m depth	day	-		
D39	Provision of excavation plant, equipment and crew for machine dug observation pit or trench as directed by the Investigation Supervisor (maximum depth 3.0m)	Day (rate only)	-		
D40	As Item D39 between 3.0 and 4.5m depth	day	-		
D41	As Item D39 between 4.5 and 6.0 m depth	day	-		
D42	As Item D39 but for hand excavation	day	-		
D43	Extra over Items D36-38 & D39-D41 for breaking out hard strata or obstructions.	day (rate only)	1		
	General				
D44	Bring pump to the position of each exploratory pit or trench	nr	35		
D45	Pump water from pit or trench	h	4.38		
D46	Extra over Item D45 for temporary storage and Provisional disposal of contaminated groundwater from trial pit or trench	Provisional sum	-		
D47	Leave open observation pit or slit trench as instructed by Investigation Supervisor	Day (rate only)	-		

Series - D Pitting and Trenching					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
D48	Leave open trial pit as instructed by Investigation Supervisor	day	-		
	Trial pit / slit trench backfill & reinstatement works				
D49	Backfill trial pit or slit trench excavation with arisings/excavated materials	nr	22		
D50	Reinstate grassed surface to include replacing of sod and reseeding	nr	22		
D51	Backfill trenches and trial pits in paved areas with imported granular fill (CL 804 sub-base) and in accordance with Guidelines For Managing Openings In Public Roads – Guidelines For The Opening, Backfilling And Reinstatement Of Openings In Public Roads Second Edition (Rev 1) (April 2017)	m3	18		
D52	Backfill trenches and trial pits in paved areas with lean mix concrete	m3	66		
D53	Reinstatement of asphalt/bituminous footpath in accordance with Guidelines For Managing Openings In Public Roads – Guidelines For The Opening, Backfilling And Reinstatement Of Openings In Public Roads Second Edition (Rev 1) (April 2017)	m2	-		
D54	Repair of road markings	lin m	-		
D55	Disposal of excess or surplus inert arisings from trial pits or trenches (where imported granular fill or lean mix concrete is used as backfill)	m3	84		
D56	Reinstatement of concrete footpaths in accordance with Guidelines For Managing Openings In Public Roads – Guidelines For The Opening, Backfilling And Reinstatement Of Openings In Public Roads Second Edition (Rev 1) (April 2017)	m2	-		

Series - E Sampling and Monitoring					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
E	Sampling and monitoring during intrusive investigation				
	Samples for geotechnical analysis				
E1	Jar sample	nr	-		
E2	Tub Sample	nr	-		
E3	Bulk sample	nr	88.5		
E4	Large bulk sample	nr	0		
E4.1	Small disturbed sample (as per Cl.7.6.7 Of the Specification)	nr	15		
E5	Open-tube thick-walled sample (0 to 10m depth)	nr	-		
E6	Open-tube thin-walled sample (0 o 10m depth)	nr	4		
E7	Piston sample (0 to 10m)	nr	-		
E8.1	Extra over rate for Item E5 in depth range 10 to sum 20m	sum	-		
E8.2	Extra over for Item E6 in depth range 10 to 20m	sum	-		
E8.3	Extra over for Item E7 in depth range 10 to 20m	sum	-		
E8.4	Extra over rate for Item E5 in depth range 20 to sum 30m	sum	-		
E9	Groundwater sample	nr	-		
E10	Ground gas sample	nr	-		
E11	Cut, prepare and protect core sub-sample	nr	-		
	Samples for environmental / contamination analysis				
E12	Environmental / contamination sample for Suite E	nr	10		
E13	Environmental / contamination sample for Suite F	nr	-		
E14	Ground gas sample for Suite G	nr	-		
E15	Environmental / contamination sample for Suite H	nr	-		
E16	Environmental / contamination sample for Suite I	nr	29.5		
E17	Other specialist environmental / contamination sampling as specified by Investigation Supervisor (Suite J)	nr	-		
	(Note sample rate includes provision of specialist containers)				

Series - F Probing and Cone Penetration Testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
F	Probing and Cone Penetration Testing				
	Dynamic probing (DPH)				
F1	Bring dynamic probe equipment (DPH) to the site of each test location	nr	-		
F2	Extra over Item F1 for setting up on a slope of gradient greater than 20%	nr	-		
F3	Carry out dynamic probe test from 0 to 5m depth	m	-		
F4	As Item F3 but between 5 and 10m depth	m	-		
F5	As Item F3 but between 10 and 15m depth	m	-		
F6	Standing time for dynamic probe test equipment and crew	h	-		
F7	Provision of dynamic probing equipment and crew for probing at locations as specified by the Investigation Supervisor (0 to 15m depth)	Day (rate only)	-		
	Cone penetration testing				
F8	Bring static cone penetration test equipment to the site of each test location	nr	-		
F9	Extra over Item F8 for setting up on a slope of gradient greater than 20%	nr	-		
F10	Carry out static cone penetration test measuring both cone and sleeve resistance from existing ground level to 10m depth	m	-		
F11	As Item F10 but between 10 and 20m depth	m	-		
F12	As Item F10 but between 20 and 30m depth	m	-		
F13	As Item F10 but between 30 and 40m depth	m	-		
F14	Extra over Items F10 to F13 for use of piezocone	m	-		
F15	Extra over Items F10 to F13 for interpretation of CPT/CPTU data	m	-		
F16	Carry out dissipation test up to 1 hour duration	nr	-		
F17	Extra over Item F16 for test duration exceeding 1 hour	h	-		
F18	Standing time for static cone penetration test equipment and crew	h	-		
F19	Extra over Items F10 to F13 for use of seismic cone	m	-		
F20	Carry out seismic cone test	nr	-		
F21	Extra over Item F20 for interpretation of seismic cone data	nr	-		
F22	Standing time for seismic cone test equipment and crew	h	-		

Series - G Geophysical Surveying					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
G	Geophysical Surveying				
G1	Conduct and process Ground Penetrating Radar (GPR) profiles Refer to Tender Drawings for GPR Extents	-	-		
G1.1	Sub-surface GPR surveying and reporting on Alexandra Road	m2	-		
G1.2	Sub-surface GPR surveying and reporting in DSG-operated areas south of Alexandra Road	m2	-		
G1.3	Sub-surface GPR surveying and reporting in DSG-operated areas south of Alexandra Road - rate only in case night time works are mandated by Operator in this zone Night works shall be assumed to be outside the DSG gate opening times listed below: • 05:00-18:15 Monday to Friday; • 08:00-13:00 Saturday; • 12:00-21:00 Sunday.	m2 (rate only)	-		
G2	Conduct and process electromagnetic conductivity (EMC) profiles	lin.m	-		
G3	Conduct and process electrical resistivity tomography (ERT) profiles	lin.m	-		
G4	Conduct and process seismic refraction spreads (P or S wave)	lin.m	-		
G5	Conduct and process surface wave spreads (1D or 2D MASW)	lin.m	-		
	Borehole geophysical surveying				
G6	Establish down – hole geophysical logging equipment and personnel to the site of each exploratory hole and set up at each location.	sum	-		
G7	Conduct and process down the hole calliper, natural gamma, resistivity, sonic, fluid temperature, conductivity and fluid flow logging	m	-		
G8	Conduct and process cross-hole seismic readings at specified intervals.	nr	-		
	Marine (overwater) geophysical surveying				
G9	Establish geophysical personnel and field equipment and demobilisation on completion	sum	-		
G10	Conduct and process echo sounding, side-scan sonar, magnetic, sub-bottom profile surveying	day	-		

Series - H In-Situ Testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
H	In-Situ Testing				
H1.1	Standard penetration test in percussive borehole, depth range 0 to 10m	nr	61		
H1.2	Standard penetration test in percussive borehole, depth range 10 to 20m	nr	-		
H1.3	Standard penetration test in percussive borehole, depth range 20 to 30m	nr			
H1.4	Standard penetration test in percussive borehole, depth range 30 to 40m	nr	-		
H2.1	Standard penetration test in rotary drillhole, depth range 0 to 10m	nr	-		
H2.2	Standard penetration test in rotary drillhole, depth range 10 to 20m	nr	-		
H2.3	Standard penetration test in rotary drillhole, depth range 20 to 30m	nr			
H2.4	Standard penetration test in rotary drillhole, depth range 30 to 40m	nr	-		
H3	In-situ density testing				
H3.1	Small pouring cylinder method	nr	-		
H3.2	Large pouring cylinder method	nr	-		
H3.3	Water replacement method	nr	-		
H3.4	Core cutter method	nr	-		
H3.5	Nuclear gauge method	day	-		
H4	California Bearing Ratio by plate bearing test by plunger method	nr	-		
H4.1	California Bearing Ratio by TRL DCP method	nr	-		
H5	Vane shear strength test in borehole	nr	-		
H6	Penetration vane test, penetration from ground level	nr	-		
H7	Hand penetrometer test (set of 3 readings)	nr	-		
H8	Hand shear vane test (set of 3 readings)	nr	19		
	Other tests				
H9	In situ geophysical techniques (resistivity and redox potential) for earthing analysis	nr	-		
	Permeability testing				
H10	Set up, execute and dismantle variable head	hr	-		
	permeability test in cable percussive borehole				
H11	Set up, execute and dismantle constant head	hr	-		
	permeability test in cable percussive borehole				
H12	Set up, execute and dismantle variable head	hr	-		
	permeability test in rotary drillhole				
H13	Set up, execute and dismantle constant head	hr	-		
	permeability test in rotary drillhole				
H14	Set up, execute and dismantle variable head	hr	-		
	permeability test in standpipe or standpipe				
	piezometer (Rising or Falling Method)				
H15	Set up and execute constant head permeability test in standpipe or piezometer	hr	-		
H16	Set up and execute packer permeability test in	hr	-		
	rotary drillhole (0 to 10m depth)				
H17	Set up and execute packer permeability test in	hr	-		
	rotary drillhole (10 to 20m depth) Note: rates for permeability tests in boreholes or rotary holes to include standing time rate for plant and equipment				
	Soil infiltration test (BRE Digest 365)				
H18	Set up at each test location, excavate trial hole and prepare test area	nr	-		
H19	Backfill test hole with clean imported gravel where excavation sidewalls unstable	m3			
H20	Install 50mm standpipe in 1118 to allow for	nr	-		
	monitoring of water levels				
H21	Carry out pre-soaking of test areas	nr	-		
H22	Carry out soakaway tests in accordance with EPA nr Digest 365 (3 Cycles)	nr	-		
H23	Provision of water supply for infiltration testing	sum	-		
H24	Protection and temporary fencing of works area as instructed by Investigation Supervisor	nr	-		
H25	Calculation of infiltration rate for each test location	nr	-		
	Soil infiltration test (EPA Percolation Test)				
H26	Set up at each test location, excavate trial hole and prepare test area	nr	-		
H27	Carry out infiltration tests in accordance with EPA nr Guidelines (Test to be carried out by an approved Engineer/Geologist in accordance with EPA requirements)	nr	-		
H28	Provide report on percolation test (by Chartered sum Engineer or Professional Geologist)	sum	-		
	Plate bearing test				
H29	Set up at each plate test location to include kentledge/reaction weight for plate test using a	nr	-		
	300mm diameter plate. Test in accordance with				
	NRA SRW CL642				

Series - H In-Situ Testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
H30	Set up at each plate test location to include all kentledge/reaction weight and carry out plate test using a 450mm diameter plate. Test in accordance with NRA SRW CL642	nr	-		
H31	Set up at each plate test location to include kentledge/reaction weight and carry out plate test using a 600mm diameter plate. Test in accordance with NRA SRW CL642	nr	43		
H32	Extra over Items H29-H31 for test durations in excess of 2 hours per location	hr	-		
H33	Provide plate test report with load settlement plot and calculation of Ks and CBR value to HD 25-26/10	nr	-		
	Other specialist in situ tests				
H34	Reading of free product level in borehole using an interface probe	nr	-		
H35	Provide contamination screening test kits (per sample)	nr	-		
H36	Carry out headspace testing on sample by FID or PID methods	nr	-		
H37	Self-boring pressure meter	day	-		
H38	High pressure dilatometer	day	-		
H39	Menard pressure meter	day	-		
H40	FWD Set-Up & Testing in accordance with TII CC-GSW-04008	nr	-		
H41	Provide FWD test report as per S1.5	nr	-		

Series - I Instrumentation					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
I	Instrumentation				
	Standpipes and piezometers				
I1	Backfill exploratory hole with cement / bentonite grout or bentonite pellets	m	-		
I2	Provide and install 19mm casagrande piezometer tip	nr	-		
I3	Provide and install sand cell to I2	m	-		
I4	Provide and install 19mm casing/piezometer plain Pipe	m	-		
I5	Provide and install bentonite seal to I4	m	-		
I6	Provide and install proprietary slotted standpipe m (50mm internal diameter)	m	-		
I7	Provide and install gravel pack to I6	m	-		
I8	Provide and install proprietary casing/plain standpipe (50mm internal diameter)	m	-		
I9	Provide and install bentonite seals to I8	m	-		
I10	Provide and install slotted proprietary standpipe (100mm internal diameter)	m	-		
I11	Provide and install gravel pack to I10	m	-		
I12	Provide and install casing/plain standpipe (100mm internal diameter)	m	-		
I13	Provide and install bentonite seals to I12	m	-		
I14	Provide and install end caps to I6 or I10	nr	-		
I15	Provide and install quick release gas valve to I6 or I10	nr	-		
I16	Provide and install protective cover (flush)	nr	-		
I17	Provide and install protective cover (raised)	nr	-		
I18	Extra over Item I16 for heavy duty cover in pavements or highways	nr	-		
I19	Supply and erect protective stock proof fencing around standpipe or piezometer installation	nr	-		
I20	Supply and erect 1.5 m high marker posts (3 x 1.5m)	nr	-		
	Standpipe and piezometer development / purging		-		
I21	Supply equipment and personnel to carry out purging	sum			
I22	Develop standpipe or piezometer by purging (3 well volumes)	h			
I23	As Item I22 but by airlift pumping	nr	-		
I24	As Item I22 but by over pumping	nr	-		
I25	As Item I22 but by jetting	nr			
I26	Disposal of purged water	litre	-		
	Inclinometer		-		
I27	Supply and install inclinometer tubing in exploratory hole (not including forming/drilling of borehole)	m	-		
I28	Grout in place inclinometer in cable percussive or rotary drillhole	m3	-		
I29	Provision of calibrated inclinometer read out unit for per monitoring during investigation	per week	-		
I30	Carry out base set of inclinometer readings in inclinometer and process	hr	-		
I31	Provide and install protective cover (flush)	nr	-		
	Slip Indicator		-		
I32	Provide and install protective cover (raised) slip indicators	nr	-		
I33	Supply and install slip indicator in exploratory hole, including brass probe (not including forming/drilling of borehole)	m	-		
I34	Provide and install protective cover (flush)	nr	-		
I35	Provide and install protective headwork cover (upright)	nr	-		

Series - J Installation monitoring and sampling					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
J	Installation monitoring and sampling (during fieldwork period)				
J1	Reading of water level in standpipe or standpipe piezometer	nr	-		
J2	Ground gas measurement in standpipe	nr	-		
J3	Provide Engineer or Geologist to take inclinometer readings as directed by Investigation Supervisor (per installation)	nr	-		
J4	Provide Engineer or Geologist to take measurement of slip indicator (per installation)	nr	-		
J5	Provide Engineer/Geologist to take water sample from standpipe or standpipe piezometer (rate not including purging or micro-purging)	nr			
J6	Extra over Item J5 for purging or micro-purging in excess of 3 well volumes	h			
J7	Provide Engineer/Geologist to recover ground gas sample from gas monitoring standpipe	nr			
J8	Provide Engineer/Geologist to read free product level in standpipe using an interface probe	nr	-		
	Installation monitoring and sampling (post fieldwork period)				
J9	Return visit to site following completion of fieldwork for field instrumentation	nr			
J10	Extra over Item J9 for groundwater measurements in standpipe or standpipe piezometer during return visit	nr			
J11	Extra over Item J9 for ground gas measurement in standpipe during return visit	nr	-		
J12	Extra over Item J9 for set of inclinometer readings per installation during return visit and report results	nr	-		
J13	Extra over Item J9 to check for ground slippage in slip indicator installation during return visit	nr	-		
J14	Extra over Item J9 for water sample from standpipe or standpipe piezometer during return visit to site, including purging 3 volumes or micro-purging up to 3.0 hours	nr	-		
J15	Extra over Item J14 for purging or micro-purging in excess of 3.0 hours	h	-		
J16	Extra over Item J9 for ground gas sample from gas monitoring standpipe during return visit	nr	-		
J17	Extra over Item J9 for reading of free product level in standpipe using an interface probe during return visit	nr	-		
J18	Provision of equipment to facilitate measuring free product in Item J17	sum	-		
J19	Provide and install data logger to measure groundwater levels in standpipes	nr	-		
J20	Provide baro logger to monitor air pressure for Item J19	nr	-		
J21	Provide Engineer/Geologist to visit site to download and process data logger and baro logger	day	-		
	Surface water body sampling and testing		-		
J22	Surface water body sample taken during fieldwork period	nr	-		
J23	Surface water body sample taken during return visit	nr	-		
J24	Determination of dissolved oxygen, conductivity, pH and temperature of surface water body during fieldwork period	nr	-		
J25	Determination of dissolved oxygen, conductivity, pH and temperature of surface water body during return visit	nr	-		

Series - L Geoenvironmental Laboratory Testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
L	Geoenvironmental laboratory testing				
	(Contamination testing of soil, groundwater, gas and fill material)				
L1	Test Suite E	nr	10		
L2	Test Suite F	nr	-		
L3	Test Suite G	nr	-		
L4	Test Suite H	nr	-		
L5	Test Suite I	nr	29.5		
L6	Test Suite J	nr	-		

Series - K Geotechnical laboratory testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
K	Geotechnical laboratory testing				
K1	Classification				
K1.1	Moisture content	nr	10		
K1.2	Liquid and plastic limit	nr	10		
K1.3	Volumetric shrinkage	nr	10		
K1.4	Linear shrinkage	nr	-		
K1.5	Density by linear measurement	nr	10		
K1.6	Density by immersion in water or water displacement	nr	-		
K1.7	Dry density and saturation moisture content for chalk	nr	-		
K1.8	Particle density by gas jar or pycnometer	nr	-		
K1.9	Particle size distribution by wet sieving	nr	10		
K1.10	Particle size distribution by dry sieving	nr	-		
K1.11	Sedimentation by pipette	nr	-		
K1.12	Sedimentation by hydrometer	nr	10		
K2	Chemical and electrochemical				
K2.1	Organic matter content	nr	10		
K2.2	Mass loss on ignition	nr	10		
K2.3	Acid soluble sulphate content of soil sample	nr	10		
K2.4	Water soluble sulphate content of soil sample (2;1 water soil extract)	nr	10		
K2.5	Total sulphur content of soil sample	nr	10		
K2.6	Sulphate content of groundwater sample	nr	-		
K2.7	Carbonate content of groundwater sample	nr	-		
K2.8	Chloride content of groundwater sample	nr	-		
K2.9	Water soluble sulphate content of hardcore sample	nr	10		
K2.10	Acid soluble sulphate content of hardcore sample (2:1 extract)	nr	10		
K2.11	Total sulphur content of hardcore sample	nr	10		
K2.12	pH value	nr	-		
K2.13	Resistivity	nr	-		
K2.14	Redox potential	nr	-		
K3	Compaction related				
K3.1	Dry density/moisture content relationship using 2.5 kg rammer (5 pt)	nr	10		
K3.2	Dry density/moisture content relationship using 4.5 kg rammer (5 pt)	nr	-		
K3.3	Dry density/moisture content relationship using vibrating rammer (5 pt)	nr	-		
K3.4	Extra over Items K3.1, K3.2 and K3.3 for use of CBR mould	nr	-		
K3.5	Moisture Condition Value at natural moisture content	nr	10		
K3.6	Moisture Condition Value/moisture content relationship (5 pt)	nr	10		
K3.7	Chalk crushing value	nr	-		
K3.8	California Bearing Ratio on re-compacted disturbed sample	nr	10		
K3.9	Extra over Item K3.8 for soaking	day	1		
K3.10	California Bearing Ratio on push-in mould sample (unsoaked)	nr	-		
K4	Compressibility, permeability and durability				
K4.1	One-dimensional consolidation properties, test period 5 days (time/settlement curves to be provided)	nr	4		
K4.2	Extra over Item K4.1 for test period in excess of 5 days	day	-		
K4.3	Measurements of swelling pressure, test period 2 days	nr	-		
K4.4	Measurement of swelling, test period 2 days	nr	-		
K4.5	Measurement of settlement on saturation, test period 1 day	nr	-		
K4.6	Extra over Items K4.3 to K4.5 for test period in excess of 2 or 1 day (s)	day	-		
K4.7	Permeability by constant head method	nr	-		
K4.8	Dispersibility by pinhole method	nr	-		
K4.9	Dispersibility by crumb method	nr	-		
K4.10	Dispersibility by dispersion method	nr	-		
K4.11	Frost heave of soil	nr	-		
K5	Consolidation and permeability in hydraulic cells				
K5.1	Consolidation properties of a 76mm diameter specimen using a hydraulic cell, test period 4 days	nr	-		
K5.2	As Item K5.1 but using a 100mm diameter specimen	nr	-		
K5.3	As Item K5.1 but using a 150mm diameter specimen	nr	-		
K5.4	As Item K5.1 but using a 250mm diameter specimen	nr	-		
K5.5	Extra over Items K5.1-K5.4 for test period in excess of day 4 days	day	-		
K5.6	Permeability of a 76mm diameter specimen in	nr	-		
	hydraulic consolidation cell, test period 4 days				
K5.7	As Item K5.6 but using a 100mm diameter specimen	nr	-		
K5.8	As Item K5.6 but using a 150mm diameter specimen	nr	-		
K5.9	As Item K5.6 but using a 250mm diameter specimen	nr	-		
K5.10	Extra over Items K5.6-K5.9 for test period in excess of day 4 days	day	-		
K5.11	Isotropic consolidation properties in a triaxial cell, test period 4 days	nr	-		
K5.12	Extra over Item K5.11 for test periods in excess of 4 days	day	-		

Series - K Geotechnical laboratory testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
K5.13	Permeability in a triaxial cell, test period 4 days	nr	-		
K5.14	Extra over Item K5.13 for test period in excess of 4 days	day	-		
K6	Shear strength (total stress)				
K6.1	Shear strength by the laboratory vane method (set of 3)	nr	-		
K6.2	Shear strength by hand vane (set of 3)	nr	-		
K6.3	Shear strength by hand penetrometer (set of 3)	nr	-		
K6.4	Shear strength of a set of three 60mm x 60mm square specimens by direct shear, test duration not exceeding 1 day per specimen	nr	-		
K6.5	Extra over Item K6.4 for test durations in excess of 1 day per specimen	sp.day	-		
K6.6	Shear strength of a single 300mm X 300mm square specimen by direct shear, test duration not exceeding 1 day	nr	-		
K6.7	Extra over Item K6.6 for test durations in excess of 1 day	day	-		
K6.8	Residual shear strength of a set of three 60mm X 60mm square specimens by direct shear, test duration not exceeding 4 days per specimen	nr	-		
K6.9	Extra over Item K6.8 for test durations in excess of 4 days per specimen	sp.day	-		
K6.10	Residual shear strength of a 300mm square specimen by direct shear, test duration not exceeding 4 days	nr	-		
K6.11	Extra over Item K6.10 for test duration in excess day of day 4 days	day	-		
K6.12	Residual shear strength using the small ring shear apparatus at three normal pressures, test duration not exceeding 4 days	nr	-		
K6.13	Extra over Item K6.12 for test duration in excess of 4 days	day	-		
K6.14	Unconfined compressive strength of 38mm diameter specimen	nr	-		
K6.15	Undrained shear strength of a set of three 38mm diameter specimens in triaxial compression without the measurement of pore pressure	nr	-		
K6.16	Undrained strength of a single 100mm diameter specimen in triaxial compression without the measurement of pore pressure	nr	-		
K6.17	Undrained shear strength of single 100mm diameter specimen in triaxial compression with multi-stage loading and without measurement of pore pressure	nr	-		
K7	Shear strength (effective stress)				
K7.1	Consolidated undrained triaxial compression test with measurement of pore pressure (set of three 38mm specimens), test duration not exceeding 4 days per specimen	nr	2		
K7.2	As K7.1 but single-stage or multi-stage test using 100mm diameter specimen	nr	-		
K7.3	Consolidated drained triaxial compression test with measurement of volume change (set of three 38mm specimens), test duration not exceeding 4 days per specimen	nr	2		
K7.4	As Item K7.3 but single-stage or multi-stage test using 100mm diameter specimen, test duration not exceeding 4 days	nr	-		
K7.5	Extra over Items K7.1 and K7.3 for test duration in excess of 4 days per specimen	sp.day	-		
K7.6	Extra over Items K7.2 and K7.4 for test duration in excess of 4 days	day	-		
K8	Rock and aggregate testing				
K8.1	Natural water content of rock sample	nr	-		
K8.2	Porosity/density using saturation and calliper techniques	nr	-		
K8.3	Porosity/density using saturation and buoyancy	nr	-		
K8.4	Slake durability	nr	-		
K8.5	Water absorption	nr	-		
K8.6	Magnesium sulphate soundness	nr	-		
K8.7	Flakiness index	nr	-		
K8.8	Los Angeles abrasion	nr	-		
K8.9	Aggregate impact value	nr	-		
K8.10	Aggregate crushing value	nr	-		
K8.11	Polished stone value	nr	-		
K8.12	Aggregate frost heave	nr	-		
K8.13	Resistance to freezing and thawing	nr	-		
K8.14	Uniaxial compressive strength	nr	5		
K8.15	Deformability in uniaxial compression	nr	-		
K8.16	Indirect tensile strength by Brazilian test	nr	-		
K8.17	Triaxial compression without measurements of pore water pressure	nr	-		
K8.18	Point Load Strength Index on rock core (axial or diametral)	nr	10		
K8.19	Point load strength index on irregular lump sample (set of ten individual determinations)	nr	-		
K8.20	Swelling pressure test	nr	-		
K8.21	Direct shear strength of single specimen	nr	-		
K9	Special tests on rock core or trial pit samples to assess potential for pyrite induced expansion or swelling				
K9.1	Geological classification / simplified petrography on rock core or bulk sample to IS EN 933 (by Professional Geologist)	nr	-		

Series - K Geotechnical laboratory testing					
Item Number	Item Description	Unit	Quantity	Rate	Amount (€)
K9.2	Chemical analysis on rock core or bulk sample nr (test methods to TRL 447 and test suite to include Total Sulphur, Acid Soluble Sulphate & Water-Soluble Sulphate and derivation of Oxidisable Sulphide & Equivalent Pyrite content)	nr	-		
K9.3	Thin section petrography and XRD analysis on rock core or bulk sample. Analysis to be carried out by Professional Geologist or experienced Petrographer competent in evaluating potential for pyrite induced swelling. Note the rate should include for thin section preparation and XRD analysis on one lithology.	nr	-		

Series - General Summary To All Parts					
Item Number	Item Description	Amount			
A	General items, provisional services and additional items	0			
B	Percussion boring and dynamic sampling	0			
C	Rotary drilling	0			
D	Pitting and trenching	0			
E	Sampling and monitoring during intrusive investigation	0			
F	Probing and Cone Penetration Testing	0			
G	Geophysical surveying	0			
H	In situ testing	0			
I	Instrumentation	0			
J	Installation monitoring and sampling	0			
K	Geotechnical laboratory testing	0			
L	Geoenvironmental laboratory testing	0			
	TOTAL EX VAT	0			