

AtkinsRéalis



Ground Investigation Contract: Bill of Quantities

Mayo County Council

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100129275-ATK-XX-XX-BQ-GE-000001

GREAT WESTERN GREENWAY – NEWPORT TOWN

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Document history

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Client signoff

Client	Mayo County Council
Project	GREAT WESTERN GREENWAY – NEWPORT TOWN
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Bill of Quantities for Site Investigation

General

Contract

Where reference in the stated Method of Measurement or item descriptions is made to a specific Clause in the “Public Works Investigation Contract” published by the Department of Finance, the specific Clause should be deleted and replaced with “the Contract”.

Measurement

The measurement of work shall be computed net from the agreed records unless stated otherwise in the Method of Measurement.

Dealing with Flows

The Contractor shall allow in his rates and prices for taking measures to deal with the existing flow of water, sewage and the like if required.

Privately and Publicly Owned Services or Supplies

The contractor shall include in his rates and prices for taking measures for the support and full protection of pipes, cables and other apparatus during the progress of site operations and for keeping the Investigation Supervisor informed of all arrangements he makes with the owners of privately-owned services, statutory undertakers and public authorities as appropriate.

Health and Safety

The contractor shall allow in his rates for monitoring the gas concentration during the drilling of boreholes.



Preamble

1. In the Bill of Quantities, the sub-headings and item descriptions identify the work covered by the respective items. The exact nature and extent of the work to be performed shall be ascertained by reference to the Conditions of Contract, the Specification and the Schedules and Appendices to the Specification, as appropriate. The rates and prices entered in the Bill of Quantities shall be deemed to be the full inclusive value of the work covered by the several items, including the following unless stated otherwise:
 - a) Contract management and superintendence, labour and all costs in connection therewith
 - b) The supply of materials, goods, storage, facilities and services and all costs in connection therewith, including
 - c) wastage and delivery to site
 - d) Plant and all costs in connection therewith
 - e) Fixing, erecting and installing or placing of materials and goods in position
 - f) All temporary works
 - g) All general obligations, requirements, liabilities and risks involved in the execution of the investigation as set
 - h) forth or implied in the documents on which the tender is based
 - i) Establishment charges, overheads and profit
 - j) Brining plant and sampling, in situ testing and monitoring equipment to the site of each exploratory hole, erecting, dismantling and removing on completion
 - k) On completion, removal of all equipment and services from site and disposal of arisings.
2. Unless identified as Not required, all items in section A of the Bill of Quantities (general items, provisional services and additional items), and all items in subsequent sections against which quantities are entered shall be priced.
3. If lump-sum items are not required by the Contractor, this shall be stated against the rate item in the Bill of Quantities and €0.00 entered in the amount. Where rates are not priced they shall have €0.00 placed against them and €0.00 entered in the amount.
4. When full or part-time professional attendance on site is required in accordance with Clause 3.5.2, this shall normally be paid for under Item A7 of the Bill of Quantities. Unless otherwise detailed in Schedule S1.8.2, the onsite professional attendance services provided by the technical staff shall comprise the technical supervision of site activities, site liaison, logistics, logging, in situ testing and sampling, photography and the preparation of daily records and preliminary logs (except where any of the above activities are carried out by site operatives and boring/drilling operatives). When individuals are not carrying out their specific duties or are otherwise away from site, then daily rates will not apply, and these costs will be deemed to be covered under general items.
5. The rate entered under Item A5 shall include for the provision of any additional PPE, ground surface protection measures, additional welfare and hygiene facilities and plant and equipment decontamination facilities required as a direct result of the contamination or hazard(s) detailed on Schedule S1.8.4 and/or S1.8.6.
6. The item for photographs shall allow for the standing time of associated plant and supply of negatives, reprints and bound volume or electronic equivalents.
7. Rates for moving plant and equipment to the site of each exploratory hole shall allow for the formation of access routes and working areas and making good avoidable damage to access routes and working areas on completion as required by the Contract.
8. The rates for moving rotary drilling plant to the site of each hole shall be for setting up over a new location.
9. Payment for forming exploratory holes shall be based on:
 - a) Full thickness of strata investigated and described in accordance with the Specification
 - b) Depths measured from ground level
 - c) Depth measured from original ground level where an inspection pit has been excavated
 - d) That part of a drill hole below the bottom of a borehole where a drill hole has been ordered to continue from
 - e) the bottom of a borehole
 - f) Core recovery of at least 90% in any core run, unless the Investigation Supervisor is satisfied it cannot be
 - g) achieved



- h) Volume calculated as measured length times measured depth times specified width for trial and observation
- i) trenches.

10. Rates for forming exploratory holes shall allow for:

- a) Temporary casing installation, where necessary, and removal
- b) Dealing with surface water
- c) Backfilling with arisings
- d) Taking information and supply of daily record for works carried by site operatives
- e) Additional site supervision of non-qualified operatives.

11. Rates for aquifer protection measures shall allow for the measures detailed in Schedule S1.8.13.

12. Standing time shall be measured as the duration of time for which plant, equipment and personnel are standing on the instruction of the Investigation Supervisor, clients representative or in accordance with the Specification. Standing time shall be paid for interruption of the formation of exploratory holes to record groundwater entry in accordance with Clause 7.7. The rates for standing time shall include for:

- a) Plant equipment and personnel
- b) Consequential costs
- c) Changes in the programme of working
- d) Recording information and preparing daily record.

13. The rates for daily provision of dynamic sampling and probing, hand augering and pitting and trenching crews and equipment at locations as directed by the Investigation Supervisor shall allow for compliance with the requirements of the Contract, including preparation of records (unless the Investigation Supervisor takes responsibility for the logging and preparation of records). The rates for dynamic sampling Items shall include for the provision of liners.

14. The rates for sampling shall allow for the standing time of associated plant. The rates for sampling shall also include for the costs of the sample containers and transport and storage of the samples up to the specified time limits. The rate for taking a UT100 Thin Walled sample does not include for recovery of a sample from the cutting shoe. The rates for each of the Items shall include for all necessary containers and collected samples for an individual determination of the specified contamination or WAC suite.

15. The rates for in situ testing shall allow for the standing time of associated plant and for the interpretation and presentation of the results on preliminary logs/exploratory hole logs or on separate agreed report forms using the same dates of presentation as the exploratory hole to which they refer. In the case of the self-boring pressuremeter, high pressure dilatometer or Menard pressuremeter, the rates shall also allow for the mutual standing of the respective boring/drilling plant and specialist testing equipment and crews during the combined process. Where in situ testing is paid for on an hourly basis, the time measured shall be the actual time taken to carry out the test in accordance with the Investigation Supervisor's instruction and/or the Specification but excluding the time taken to erect and dismantle test equipment where this is itemised separately. The rate for carrying out an SPT (whether using a split spoon or solid cone) does not include for recovery of an associated sample.

16. The rates for cone penetration tests Items shall allow for provision of daily records and for interpretation and presentation of the results on agreed report forms/exploratory hole logs in accordance with BS 1377 and schedules S1.13.3 or S1.13.4. For the seismic cone, the recorded and presented data shall include the specified CPT data recorded between seismic test depths.

The rates for dynamic probing shall allow for undertaking and reporting torque measurements at the prescribed vertical intervals if required by the Investigation Supervisor.

17. The rates for installation of instruments shall allow for:

- a) Clearing and keeping the hole free of unwanted materials
- b) All costs associated with equipment, installation, specified seals, surround and backfill materials excluding
- c) back fill below the instrument
- d) Proving correct functioning



- e) Delays due to installations, including the setting time for grout
- f) Recording information and preparing daily record and additional reports.

18. The rates for monitoring and sampling of installations during the fieldwork period shall allow for:

- a) Purging and dealing with disposal of recovered water
- b) All costs associated with consumables and provision of data recording equipment to site
- c) Proving correct calibration and recalibration
- d) Recording information, preparing, updating and submitting additional reports successively and the completion
- e) of monitoring, including notification of any unexpected readings and/or variation in readings
- f) Delays due to interruptions of other site activities.

The rates for monitoring and sampling of installations during the post-fieldwork period shall allow for:

- a) Items (a) – (d) above
- b) All costs associated with remobilising the appropriate (number and experience) staff to site and all travelling and accommodation expenses. The rates for recording of water level, ground gas or other monitoring measurements shall allow for notices or re entry to the Investigation Supervisor, owners or occupiers affected by the location or access route.

19. The rates for laboratory testing shall include for:

- a) The supply of a copy of the preliminary test results to the Investigation Supervisor
- b) Notification of unavailable test samples, failed tests and/or deviating samples (e.g. samples not correctly preserved)
- c) The cost of determining a parameter (e.g. moisture content or density) where that parameter forms part of the information to be reported for the specified test (e.g. undrained shear strength, consolidation test or unconfined compressive strength)
- d) The disposal of samples in accordance with the relevant regulations.

20. The provisional sum, Item A6, for the off-site disposal of contaminated waste shall include for temporary storage and for organising the transport and disposal by a suitably licenced waste disposal contractor. Payment shall be made only against receipted invoices. The costs of laboratory testing to determine the nature of the waste shall be covered by laboratory testing for tests completed and to an agreed schedule. Those sums shall be offset against the Provisional Sum Item A6.

21. Appendix A to the Bill of Quantities (Rates for Ground Practitioners and other Personnel) shall be priced. The rates given will be used by the Investigation Supervisor to make an initial estimate of costs, where applicable, of employing the Contractor's staff in accordance with Clauses 3.5.2, 3.6.1 and/or 3.6.2 of the Specification.

22. Items for the supply of the master and copies of the Desk Study Report, Site Investigation Report and/or Geotechnical Interpretative Design Report shall include for the printing and supply of the specified number of draft and final copies (Specification Clause 16.12 and Schedule S1.21.12). All other duties in compiling, preparing and checking the draft and final reports shall normally be paid for either under items A18, A19, A20 and A21 of the Bill of Quantities or using the rates given under Appendix A.

23. Units of Measurement

The following abbreviations shall be used for the units of measurements:

Millimetres: mm
 Metre: m
 Kilometre: km
 Square millimetres: mm²
 Square metre: m²
 Cubic metre: m³
 Square metre per day: m²/day
 Linear metre: lin.m
 Kilogram: kg
 Tonne: t



Sum: sum
Number: nr
Hour: h
Week: wk
Vehicle week: v.wk
Item: item
Day: day
Specimen day: sp.day
Person day: p.day

Preamble amendments and additions:

24. The rates for item A15, Traffic safety and management, shall include preparation of traffic management drawings for investigations on roads or pavement areas shall include: In addition to the existing paragraphs and clauses and sub clauses:
- a) Supplying the required documentation prior to the start of the required notice period;
 - b) Awaiting approval and consent of the Employer and/or other relevant authority;
 - c) Payment of fees to the Employer for review of Traffic Management proposals, handling of fees, interest,
 - d) overheads and profits associated with payment of fees;
 - e) Applying and securing road opening licence including supplying the required documentation and payment
 - f) of fees;
 - g) Handling of fees and cost associated with payment for road opening licence, interests, overhead and profits;
 - h) Awaiting road opening licence grant
 - i) Moving all required traffic management equipment at the start and end of each shift and/or each part of the exploratory hole.
 - j) Temporary reinstatement measures if immediate permanent reinstatement is not carried out;
 - k) Returning to the exploratory hole location to carry out permanent reinstatement if not carried out immediately;
 - l) Measures to keep roads and footways free of water, mud, debris at all time;
25. The rate for Item A30, Perform the role of PSCS, shall include the following:
- a) Compliance with Safety, Health and Welfare at Work (and the Construction Regulations 2013) 2005 and any amendment thereof;
 - b) Acting as Project Supervisor for the Construction Stage and carrying out the duties of the Project Supervisor for the Construction Stage in accordance with the Regulations (as referred to in Item 6.3 of Instructions to Tenderers);
 - c) Appointment by the Project Supervisor for the Construction Stage of a Suitably qualified and competent person or persons to act as Health and Safety Co-ordinator(s) in accordance with the Regulations;
 - d) All necessary insurances required to perform the role of Project Supervisor for the Construction Process
 - e) Provide on disk and on paper to the Project Supervisor for the Design Process all relevant information necessary for that project supervisor to complete the safety file before issue of the Defects Certificate.
 - f) Provide on disk and on paper to the Project Supervisor For The Design Process a conversion of survey by a competent draughtsman/technician into AutoCAD drawing format (version 2015) delivered on A1 paper at scale not greater than 1:500 and in 2d and 3d AutoCAD format to allow that project supervisor to complete the safety file before issue of the Defects Certificate;
 - g) Coordinate arrangements among contractors to ensure the provision of relevant information, on disk and on paper, necessary for the project supervisor for the design process to complete the safety file
26. The rate for item A8.1, Establish the location and elevation (X, Y, Z) of the ground at each 'as-built' exploratory hole or point, shall include the following:
- a) Establishment of control;
 - b) Installation of permanent and temporary ground markers;
 - c) Clearance of vegetation with the Investigation Supervisor's approval;



- d) Awaiting Investigation Supervisor's Approval;
- e) Topographical Surveying and Levelling of all Exploratory Hole Locations and GPR & seismic profiles,
- f) geophones and seismic energy source points;
- g) Tying of survey to the Irish Ordnance Survey National Grid, Irish Transverse Mercator (ITM);
- h) Tying of all levels to Ordnance Datum Malin Head.
- i) Obtaining records of OS trigonometric stations and benchmarks from the OS
- j) Providing on disk and on paper to the Investigation Supervisor a conversion of survey by a competent draughtsman/technician into AutoCAD drawing format (version 2015) delivered on A1 paper at scale not greater than 1:500 and in 2d and 3d AutoCAD format.

27. The rate for item A2 to include A27

28. The rate for item A6 shall include for A6.1.

29. The rate for item A7 shall include for A7.1 to A7.5.

30. The rate for A15 and A16 shall include for contractor's profit end margin.

31. The rate for A25 shall be for all samples taken as part of the Ground Investigation.

32. The rate for item D3 shall include for D50.

33. The rate for D36 to be included in A2, A2.4 and D3 to D19.

34. The units of measurement for the following items have been changed:

- Item A4.1: changed from "wk" to "sum"
- Item C14: added unit of measurement of 'm' as there was previously no unit of measurement against this item.
- Item D1: added unit of measurement of 'nr' as there was previously no unit of measurement against this item.
- Item D2: added unit of measurement of 'm3' as there was previously no unit of measurement against this item.
- Item D6: changed from 'm' to 'metre depth'.
- Item D7: changed from 'm' to 'metre depth'.
- Item D15: unit of measurement changed from 'hr' to 'm3'.
- The rate for items D43 and to be included in items D13 to D15.
- Item D50: unit of measurement changed from 'nr' to 'm2'.



APPENDICES

Appendix A. Bill of Quantities



Number	Item description	Unit	Quantity	Rate	Amount
				€	€
A	General items, provisional services and additional items				
A1	Offices and stores for the Contractor	sum	Not Required	N/A	N/A
A2	Establish on site all plant, equipment and services for a Green Category site	sum	Not Required	N/A	N/A
A2.1	Establish on site cable percussion ('shell I 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 Geobor S rotary drilling plant and equipment for a Green Category site	sum	Not Required	N/A	N/A
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	Not Required	N/A	N/A
A2.7	Establish on site dynamic sampling and probing plant and equipment for a Green Category site	sum	1		€
A2.8	Establish on site geophysical survey equipment for a Green Category site	sum	Not Required	N/A	N/A
A2.9	Establish on site instrumentation equipment as required for a Green Category site	sum	1		€
A2.10	Provision of temporary fencing e.g. heras fencing as required	sum	1		€
A3.1	Extra over item A2.1 - A2.9 for a yellow category site	provisional sum	Not Required	N/A	N/A
A3.2	As Item A3.1 but for a Red Category site	provisional sum	Not Required	N/A	N/A
A4.1	Maintain on site all site safety equipment for a Yellow Category site	provisional sum	Included in Item 3.1	N/A	N/A
A4.2	Maintain on site all site safety equipment for a Red Category site	provisional sum	Not Required	N/A	N/A
A5.1	Decontamination of equipment during and at end of intrusive investigation for a Yellow Category site	provisional sum	Included in Item 3.1	N/A	N/A
A5.2	Decontamination of equipment during and at end of intrusive investigation for a Red Category site	provisional sum	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
A6	Appropriate storage, transport and off-site disposal of excess contaminated arising's 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 remeasured with delivery dockets and records maintained by the Contractor.	sum	Not Required	N/A	N/A
A6.1	Contractor's uplift on Item A6	%	Not Required	N/A	N/A
A7	Provide professional attendance to meet the contract requirements	sum	1		€
A7.1	Provide Technician	per day	Included in A7	N/A	N/A
A7.2	Provide Engineer / Geologist (as per item 2.3 of Specification)	per day	Included in A7	N/A	N/A
A7.3	Provide Chartered Engineer / Professional Geologist (as item 2.3 of Specification)	per day	Included in A7	N/A	N/A
A7.4	Provide Chartered Engineer / Professional Geologist (+10 years experience post charter)	per day	Included in A7	N/A	N/A
A7.5	Provide Chartered Engineer / Professional Geologist (+20 years experience post charter)	per day	Included in A7	N/A	N/A
A8	Set out the location at each exploratory hole or point	Nr	13		€
A8.1	Establish the location and elevation (X, Y, Z) of the ground at each 'as-built' exploratory hole or point	nr	13		€
A9	Preparation of Health and Safety documentation and Safety Risk Assessment	sum	1		€
A10	Facilities for the Investigation Supervisor	per week	Not Required	N/A	N/A
A11	Vehicle(s) for the Investigation Supervisor	vehicle wk	Not Required	N/A	N/A
A11.1	Provision of fuel and tolls for A11 (to be reimbursed under the contract)	provisional sum	Not Required	N/A	N/A
A11.2	Contractors uplift on item A11 and A11.1	% uplift	Not Required	N/A	N/A
A12	Provision of phone and internet for the Investigation Supervisor (to be reimbursed under the contract)	provisional sum	Not Required	N/A	N/A
A12.1	Contractors Uplift on item A12	% uplift	Not Required	N/A	N/A
A13	Deliver selected cores and samples specified Client address (address to be advised)	provisional sum	Not Required	N/A	N/A
A14	Special additional testing and sampling required by Investigation Supervisor	provisional sum	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
A15	Traffic safety and management to include preparation of traffic management drawings for investigations on roads or pavement areas	provisional sum	1		€
A16	Provision of road opening licences and road damage bonds	provisional sum	Not Required	N/A	N/A
A17	Contractors uplift on items A15 and A16	% uplift	Not Required	N/A	N/A
A18	One master copy of Desk Study Report	sum	Not Required	N/A	N/A
A18.1	Additional hard copy of Desk Study Report	nr	Not Required	N/A	N/A
A18.2	Electronic copy of Desk Study Report (PDF)	sum	Not Required	N/A	N/A
A19	One master copy of the Ground Investigation Report (Factual)	sum	1		€
A19.1	Additional copy of the Ground Investigation Report (Factual)	nr	Not Required	N/A	N/A
A19.2	Electronic copy of Ground Investigation Report	sum	1		€
A20	One master copy of Geophysical Report	sum	Not Required	N/A	N/A
A20.1	Additional hard copy of Geophysical Report	nr	Not Required	N/A	N/A
A20.2	Electronic copy of Geophysical Report (PDF)	sum	Not Required	N/A	N/A
A21	One master copy of Geotechnical Interpretive Report	sum	Not Required	N/A	N/A
A21.1	Additional copy of Geotechnical Interpretive Report	nr	Not Required	N/A	N/A
A21.2	Electronic copy of Geotechnical Interpretive Report	sum	Not Required	N/A	N/A
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 as per Specification	sum	1		€
A25	Storage of all samples following completion of fieldworks	wk	4		€
A26	Storage of core boxes following completion of fieldworks	wk	4		€
A27	Provision of water supply for the fieldworks	sum	included in A2	N/A	N/A
A28	Provision of Insurances	sum	1		€
A29	Provision of Performance Bond	sum	Not Required	N/A	N/A
A30	Perform the role of PSCS	sum	1		€
A31	Contractor liaison with external bodies to obtain road opening licence, foreshore licence for marine investigations etc. (specify)	provisional sum	1		€
Total Section A carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
B	Cable Percussion Boring (cable tool or percussive boring using minimum of 200mm diameter casing)				
B1	Move boring plant and equipment to the site of each exploratory hole and set up (cable percussive only)	Refer to items B1.1 and B1.2	Refer to items B1.1 and B1.2	N/A	N/A
B1.1.1	Move boring plant and equipment to the site of each exploratory hole, set up, dismantle on completion and reinstate (cable percussive only)	nr	Not required	N/A	N/A
B1.1.2	Move boring plant and equipment to the site of each exploratory hole over safety barrier or other fence or wall, set up, dismantle on completion and reinstate (cable percussive only)	nr	Not required	N/A	N/A
B1.2.1	Move boring plant and equipment to the site of each exploratory hole, set up, dismantle on completion and reinstate (where borehole is to be followed on with rotary drilling)	nr	4		€
B1.2.2	Move boring plant and equipment to the site of each exploratory hole over safety barrier or other fence or wall, set up, dismantle on completion and reinstate (where borehole is to be followed on with rotary drilling)	nr	Not required	N/A	N/A
B2	Extra over Item B1 for setting up on a slope of gradient greater than 20%	Refer to items B2.1 and B2.2	Refer to items B2.1 and B2.2	N/A	N/A
B2.1	Extra over Item B1.1 for setting up on a slope of gradient greater than 20%	nr	Not required	N/A	N/A
B2.2	Extra over Item B1.2 for setting up on a slope of gradient greater than 20%	nr	Not required	N/A	N/A
B3	Hand digging and CAT scan at borehole location to confirm absence of utility ducts (maximum depth of 1.2m or lesser if ground is assessed as potentially unstable)	nr	4		€
B3.1	Break out obstructions where present when hand digging at exploratory hole location for Item B3.	m ³	1		€
B4	Advance borehole between existing ground level and 10 m depth	m	31		€
B5	As Item B4 but between 10 m and 20 m depth	m	Not required	N/A	N/A
B6	As Item B4 but between 20 m and 30 m depth	m	Not Required	N/A	N/A
B7	As Item B4 but between 30 m and 40 m depth	m	Not Required	N/A	N/A
B8	As Item B4 but between 40 m and 50 m depth	m	Not Required	N/A	N/A
B9	Advance borehole through hard stratum or obstruction	h	4		€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
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	Included in B1 to B1.2.2	N/A	N/A
B11	Backfill borehole with cement/bentonite grout or bentonite pellets (where standpipe piezometer is not installed)	m ³	Included in B1 to B1.2.2	N/A	N/A
B12	Standing time for borehole plant, equipment and crew	h	4		€
	<u>Dynamic sampling (Window and Windowless Sampling)</u>				€ -
B13	Move dynamic sampling equipment to the site of each exploratory hole and set up	nr	2		€
B14	Extra over Item B13 for setting up on a slope of gradient greater than 20%	nr	Not required	N/A	N/A
B15	Hand digging and CAT scan at dynamic sampling location to confirm absence of utility ducts (maximum depth of 1.2m or lesser if ground is assessed as potentially unstable)	nr	2		€
B16	Break out surface obstruction where present	h	2		€
B17	Advance dynamic sample hole between existing ground level and 5 m depth	m	10		€
B18	As Item B15 but between 5 and 10 m depth	m	4		€
B19	Dynamic sampling >10m as instructed by the Investigation Supervisor	m	Not Required	N/A	N/A
B20	Standing time for dynamic sampling equipment and crew	hr	1		€
B21	Backfill dynamic sample borehole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m ³	Included in B13	N/A	N/A
	<u>Reinstatement of Cable Percussive Borehole and Dynamic Sample Borehole</u>				
B22	Reinstatement of gravel hardstanding	m ²	Included in B1.1 & B1.2	N/A	N/A
B23	Reinstatement of asphalt / bituminous pavement	m ²	Included in D53	N/A	N/A
B24	Reinstatement of grass areas	m ²	Included in B1.1, B1.2 & B13	N/A	N/A
B25	Provision of stock proof fencing to borehole or dynamic sample work area	nr	Not Required	N/A	N/A
B26	Disposal of excess or surplus inert arisings from cable percussion boring or dynamic sampling (where standpipe or piezometer is not installed)	m ³	Included in B1 to B1.2.2	N/A	N/A
Total Section B carried to summary:					€

Number	Item description	Unit	Quantity	Rate €	Amount €
C	Rotary drilling				
	Hand augering				
C1	Bring hand auger equipment to the position of each exploratory hole	nr	Not Required	N/A	N/A
C2	Bore with hand auger from existing ground level to 2m depth	m	Not Required	N/A	N/A
C3	As Item C2 but between 2 and 4m depth	m	Not Required	N/A	N/A
C4	Standing time for hand auger equipment and crew	h	Not Required	N/A	N/A
C5	Provision of hand augering equipment and crew for augering as directed by the Investigation Supervisor maximum depth 4m	day	Not Required	N/A	N/A
C6	Backfill hand auger hole with cement/bentonite grout or bentonite pellets	m	Not Required	N/A	N/A
	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	Not Required	N/A	N/A
C7.1	Hand digging and CAT scan at rotary drillhole location to confirm absence of utility ducts (maximum depth of 1.2m or lesser if ground is assessed as potentially unstable).	nr	Not Required	N/A	N/A
C8	Extra over Item C7 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
C9	Break out obstructions where present when hand digging at auger hole location for Item C7.1.	m³	Not Required	N/A	N/A
C10	Standing time for rotary auger equipment and crew.	h	Not Required	N/A	N/A
C11	Auger in materials other than hard strata at the specified diameter between existing ground level and 10m depth.	m	Not Required	N/A	N/A
C12	As Item C11 but between 10 and 20m depth.	m	Not Required	N/A	N/A
C13	As Item C11 but between 20 and 30m depth.	m	Not Required	N/A	N/A
C14	Backfill auger hole with cement/bentonite grout or bentonite pellets	m	Not Required	N/A	N/A
	Rotary drilling with and without core recovery				
C15	Move rotary drilling plant and equipment to the site of each exploratory drillhole and set up.	nr	Refer to C15.1.1 to C15.2.2 & C15.3	N/A	N/A
C15.1.1	Move rotary drilling plant and equipment to the site of each exploratory drillhole, set up, dismantle on completion and reinstate (rotary follow-on).	nr	4		€
C15.1.2	Move rotary drilling plant and equipment to the site of each exploratory drillhole over safety barrier or other fence or wall, set up, dismantle on completion and reinstate (rotary follow-on).	nr	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate €	Amount €
C15.2.1	Move rotary drilling plant and equipment to the site of each exploratory drillhole, set up, dismantle on completion and reinstate (rotary only).	nr	Not Required	N/A	N/A
C15.2.2	Move rotary drilling plant and equipment to the site of each exploratory drillhole, over safety barrier or other fence or wall, set up, dismantle on completion and reinstate (rotary only).	nr	Not Required	N/A	N/A
C15.3	Hand digging and CAT scan at rotary drillhole location to confirm absence of utility ducts (maximum depth of 1.2m or lesser if ground is assessed as potentially unstable) for rotary only borehole	nr	Not Required	N/A	N/A
C16	Extra over Item C15 for setting up on a slope of gradient greater than 20%.	nr	Not Required	N/A	N/A
C17	Extra over Item C15 for setting up drilling plant for inclined drillhole	nr	Not Required	N/A	N/A
C18	Break out obstructions where present when hand digging at exploratory hole location for C15.3.	m ³	Not Required	N/A	N/A
C19	Standing time for rotary drilling plant, equipment and crew	h	4		€
C20	Provide aquifer protection measures at a single aquiclude/aquifer boundary in a drillhole	nr	Not Required	N/A	N/A
	Drilling without cores				
C21	Rotary drill in materials other than hard strata at the specified diameter, from which cores are not required, between existing ground level and 10m depth	m	4		€
C22	As Item C21 but between 10 and 20m depth	m	Not Required	N/A	N/A
C23	As Item C21 but between 20 and 30m depth	m	Not Required	N/A	N/A
C24	As Item C21 but between 30 and 40m depth	m	Not Required	N/A	N/A
C25	As Item C21 but between 40 and 50m depth	m	Not Required	N/A	N/A
C26	Extra over Items C21 to C25 for inclined rotary drillhole	m	Not Required	N/A	N/A
C27	Rotary drill in hard strata at the specified diameter, from which cores are not required, between existing ground level and 10m depth.	m	Not Required	N/A	N/A
C28	As Item C27 but between 10 and 20m depth	m	Not Required	N/A	N/A
C29	As Item C27 but between 20 and 30m depth	m	Not Required	N/A	N/A
C30	As Item C27 but between 30 and 40m depth	m	Not Required	N/A	N/A
C31	As Item C27 but between 40 and 50m depth	m	Not Required	N/A	N/A
C32	Extra over Items C27 to C31 for inclined drillhole	m	Not Required	N/A	N/A
C33	Backfill rotary drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed).	m ³	Included in C15 to C15.2	N/A	N/A

Number	Item description	Unit	Quantity	Rate €	Amount €
	<u>Drilling to obtain cores</u>				
C34	Rotary drill in materials other than hard strata to obtain cores of the specified diameter between existing ground level and 10m depth	m	4		€
C35	As Item C34 but between 10 and 20m depth(Provisional).	m	Not Required	N/A	N/A
C36	As Item C34 but between 20 and 30m depth	m	Not Required	N/A	N/A
C37	As Item C34 but between 30 and 40m depth	m	Not Required	N/A	N/A
C38	As Item C34 but between 40 and 50m depth	m	Not Required	N/A	N/A
C39	Extra over Items C34 to C38 for use of semi-rigid core liner	m	Not Required	N/A	N/A
C40	Extra over Items C34 to C38 for coring inclined rotary drillhole	m	Not Required	N/A	N/A
C41	Rotary drill in hard strata to obtain cores of the specified diameter between existing ground level and 10m depth	m	9		€
C42	As Item C41 but between 10 and 20m depth	m	Not Required	N/A	N/A
C43	As Item C41 but between 20 and 30m depth	m	Not Required	N/A	N/A
C44	As Item C41 but between 30 and 40m depth	m	Not Required	N/A	N/A
C45	As Item C41 but between 40 and 50m depth	m	Not Required	N/A	N/A
C46	Extra over Items C41 to C45 for use of semi-rigid liner	m	Not Required	N/A	N/A
C47	Extra over Items C41 to C45 for coring inclined rotary drillhole	m	Not Required	N/A	N/A
C48	Backfill rotary drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m ³	Included in C15 to C15.2	N/A	N/A
C49	Core box to be retained by the client	nr	Not Required	N/A	N/A
	<u>Rotary percussive drilling (Odex / Symmetrix)</u>				
C50	Move rotary percussive drilling plant and equipment to the site of each drill hole and set up	nr	Not Required	N/A	N/A
C51	Extra over Item C50 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
C52	Rotary percussive drill at the specified diameter in any material between existing ground level and 10m depth	m	Not Required	N/A	N/A
C53	As Item C52 but between 10 and 20m depth	m	Not Required	N/A	N/A
C54	As Item C52 but between 20 and 30m depth	m	Not Required	N/A	N/A
C55	As Item C52 but between 30 and 40m depth	m	Not Required	N/A	N/A
C56	As Item C52 but between 40 and 50m depth	m	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate €	Amount €
C57	Standing time for rotary percussive drilling plant, equipment and crew	h	Not Required	N/A	N/A
C58	Backfill rotary percussive drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m	Not Required	N/A	N/A
	<u>Geobor S Rotary Drilling</u>				
C59	Move drilling plant and equipment to the site of each exploratory drillhole and set up equipment (including recirculation tanks), dismantle on completion and reinstate	nr	Not Required	N/A	N/A
C59.1	Move drilling plant and equipment to the site of each exploratory drillhole and set up equipment (including recirculation tanks) over safety barrier or other fence or wall, set up, dismantle on completion and reinstate	nr	Not Required	N/A	N/A
C60	Hand digging and CAT scan at rotary drillhole location to confirm absence of utility ducts (maximum depth of 1.2m or lesser if ground is assessed as potentially unstable)	nr	Not Required	N/A	N/A
C61	Provision of biodegradable polymer gel (drilling fluid) for Geobor S coring	sum	Not Required	N/A	N/A
C62	Break out surface obstructions where present at exploratory drillhole	m ³	Not Required	N/A	N/A
C63	Standing time for Geobor S drilling plant, equipment and crew	h	Not Required	N/A	N/A
	<u>Geobor S Rotary Coring (to produce 102mm diameter cores)</u>				
C64	Rotary openhole drilling without core recover to install casing prior to Geobor coring (nominally 1.5m)	m	Not Required	N/A	N/A
C65	Rotary drilling with Geobor S equipment to recover cores of overburden material using polymer gel/mud drilling fluid in depth range 0 to 10m	m	Not Required	N/A	N/A
C66	As Item C65 but between 10 and 20m depth	m	Not Required	N/A	N/A
C67	As Item C65 but between 20 and 30m depth	m	Not Required	N/A	N/A
C68	As Item C65 but between 30 and 40m depth	m	Not Required	N/A	N/A
C69	As Item C65 but between 40 and 50m depth	m	Not Required	N/A	N/A
C70	Rotary drilling using Geobor S equipment to recover cores in bedrock formation(s) using polymer gel/mud drilling fluid in depth range 0 to 10m	m	Not Required	N/A	N/A
C71	As Item C65 but between 10 and 20m depth	m	Not Required	N/A	N/A
C72	As Item C65 but between 20 and 30m depth	m	Not Required	N/A	N/A
C73	As Item C65 but between 30 and 40m depth	m	Not Required	N/A	N/A
C74	As Item C65 but between 40 and 50m depth	m	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate €	Amount €
C75	Extra over items C64 to C74 for inclined Geobor S drillhole (maximum of 20 degrees from the vertical)	m	Not Required	N/A	N/A
	<u>Geobor S Rotary Drilling - Additional Items</u>				
C76	Backfill Geobor S drillhole with cement/bentonite grout or bentonite pellets (where standpipe or piezometer is not installed)	m ³	Not Required	N/A	N/A
C77	Provision of semi rigid core liner for items C64 - C75	m	Not Required	N/A	N/A
C78	Provision of core boxes (2m of Geobor S per core box)	nr	Not Required	N/A	N/A
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	Not Required	N/A	N/A
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	Not Required	N/A	N/A
	<u>Reinstatement of Rotary Boreholes</u>				
C81	Reinstatement of gravel hardstanding	m ²	Included in C15 to C15.2	N/A	N/A
C82	Reinstatement of asphalt / bituminous pavement	m ²	Included in D53	N/A	N/A
C83	Reinstatement of grass areas	m ²	Included in C15 to C15.2	N/A	N/A
C84	Provision of stock proof fencing to rotary drilling works area	m	Included in C15 to C15.3	N/A	N/A
C85	Disposal of excess or surplus inert arisings from rotary drilling operations (where standpipe or piezometer is not installed)	m ³	Included in C15 to C15.2	N/A	N/A
Total section C carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
D	Pitting and trenching				
	<u>Inspection pits</u> <u>Included for each exploratory hole: refer</u> <u>hand digging and CAT scan items at</u> <u>exploratory hole locations</u>				
D1	Excavate inspection pit by hand to 1.2m depth.	nr	Not Required	N/A	N/A
D2	Extra over Item D1 for breaking out surface obstructions.	m³	Not Required	N/A	N/A
	<u>Trial pits and trenches (non paved areas)</u>				
D3	Move equipment to the site of each trial pit or trench dismantle on completion and reinstate.	nr	3		€
D3.1	Extra over item D3 for setting to the site of exploratory hole over safety barrier or other fence or wall, set up, dismantle on completion and reinstate.	nr	Not Required	N/A	N/A
D4	Extra over Item D3 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
D5	Extra over Item D3 for trial pit or trench between 4.5 and 6m depth	nr	Not Required	N/A	N/A
D6	Excavate trial pit between existing ground level and 3m depth	m	9		€
D7	As Item D6 but between 3.0 and 4.5m depth	m	Not Required	N/A	N/A
D8	As Item D6 but between 4.5 and 6m depth	m	Not Required	N/A	N/A
D9	Excavate trial trench between existing ground level and 3.0m depth	m³	Not Required	N/A	N/A
D10	As Item D9 between 3.0 and 4.5m in depth	m³	Not Required	N/A	N/A
D11	As Item D9 between 4.5 and 6m depth	m³	Not Required	N/A	N/A
D12	Standing time for excavation equipment and crew for machine dug trial pit or trench	h	3		€
	<u>Trial pits and trenches (paved areas)</u>				
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	4		€
D13	Set up 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	Not Required	N/A	N/A
D14	Saw cut paved areas in advance of the works	ln m	4		€
D15	Breaking out hard material or surface obstructions	m³	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)	m	4.8		€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
D17	As D16 but depth in range 1.2m to 3.0m	m	7.2		€
D18	Excavate slit trench in paved areas between ground level and 1.2m depth (works by either hand excavation or hand assisted machine excavation)	m ³	Not Required	N/A	N/A
D19	Excavate slit trench in paved areas between 1.2m to 3.0m depth (works by either hand excavation or hand assisted machine excavation)	m ³	Not Required	N/A	N/A
D20	Standing time for excavation plant, equipment and crew for machine dug trial pit or trench	h	2.5		€
	<u>Observation pits and trenches</u>				
D21	Move equipment to the site of each observation pit or trench of not greater than 4.5m depth	nr	Not Required	N/A	N/A
D22	Extra over Item D21 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
D23	Extra over Item D21 for trial pit or trench between 4.5 and 6m depth	nr	Not Required	N/A	N/A
D24	Excavate observation pit between existing ground level and 3.0m depth	m	Not Required	N/A	N/A
D25	As Item D24 but between 3.0 and 4.5m depth	m	Not Required	N/A	N/A
D26	As Item D24 but between 4.5 and 6m depth	m	Not Required	N/A	N/A
D27	Extra over Item D24 for hand excavation	m	Not Required	N/A	N/A
D28	Excavate observation trench between existing ground level and 3.0m depth	m ³	Not Required	N/A	N/A
D29	As Item D28 but between 3.0 and 4.5m depth	m ³	Not Required	N/A	N/A
D30	As Item D28 but between 4.5 and 6m depth	m ³	Not Required	N/A	N/A
D31	Extra over Item D28 for hand excavation	m ³	Not Required	N/A	N/A
D32	Extra over Items D24 to D26 for breaking out hard strata or obstructions	h	Not Required	N/A	N/A
D33	Extra over Items D28 to D30 for breaking out hard strata or obstructions	h	Not Required	N/A	N/A
D34	Standing time for excavation plant, equipment and crew for machine dug observation pit or trench	h	Not Required	N/A	N/A
D35	Standing time for excavation plant, equipment and crew for hand dug observation pit or trench	h	Not Required	N/A	N/A
	<u>Daily provision of pitting crew and equipment</u>				
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	Included in A2, A2.4, D3 to D19	N/A	N/A
D37	As Item D36 but between 3.0 and 4.5m depth	day	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
D38	As Item D36 but between 4.5 and 6.0m depth	day	Not Required	N/A	N/A
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	Not Required	N/A	N/A
D40	As Item D39 but between 3.0 and 4.5m depth	day	Not Required	N/A	N/A
D41	As Item D39 but between 4.5 and 6.0m depth	day	Not Required	N/A	N/A
D42	As Item D39 but for hand excavation	day	Not Required	N/A	N/A
D43	Extra over Items D36 to D38 and D39 to D41 for breaking out hard strata or obstructions	day	To be included in item D13 to D15	N/A	N/A
	General				
D44	Bring pump to the position of each exploratory pit or trench	nr	Not Required	N/A	N/A
D45	Pump water from pit or trench	h	Not Required	N/A	N/A
D46	Extra over Item D38 for temporary storage, treatment and disposal of contaminated groundwater from trial pit or trench	Provisional Sum	Not Required	N/A	N/A
D47	Leave open observation pit or trench	day	Not Required	N/A	N/A
D48	Leave open trial pit or trench	day	Not Required	N/A	N/A
	Trial pit / slit trench backfill & reinstatement works				
D49	Backfill trial pit or trench excavation with arisings/excavated materials	nr	7		€
D50	Reinstate grassed surface to include replacing of sod	m ²	Included in Item D3 & D3.1	N/A	N/A
D50.2	Laying Turf Along Access Routes to Exploratory Holes	m ²	Included in Item D3 & D3.1	N/A	N/A
D51	Backfill trenches, trial pits and inspection pits at exploratory hole locations in paved areas with imported granular fill (CL 804 sub-base)	Provisional Sum(m ³)	1		€
D52	Backfill trenches, trial pits and inspection pits at exploratory hole locations in paved areas with CBGMB as Fig.A4.0 Method A of TII's CC-PAV-04007	Provisional Sum(m ³)	Not Required		N/A
D53	Reinstatement of asphalt/bituminous pavement in accordance with TII's CC-PAV-04007.	m ²	12		€
D54	Repair of road markings	ln m	10		€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
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	To be included in item D51 and D52	N/A	N/A
Total Section D carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
E	Sampling and monitoring during intrusive investigation				
	<u>Samples for geotechnical purposes</u>				
E1	Jar sample	nr	Not Required	N/A	N/A
E2	Tub sample	nr	53		€
E3	Bulk sample	nr	53		€
E4	Large bulk disturbed sample	nr	Not Required	N/A	N/A
E5	Open tube- thick walled sample (0 to 10m depth)	nr	4		€
E6	Open tube- thin walled sample (0 to 10m depth)	nr	4		€
E7	Piston sample (0 to 10m depth)	nr	1		€
E8.1	Extra over rate for item E5 in depth range 10m to 20m	nr	Not Required	N/A	N/A
E8.2	Extra over rate for item E6 in depth range 10m to 20m	nr	Not Required	N/A	N/A
E8.3	Extra over rate for item E7 in depth range 10m to 20m	nr	Not Required	N/A	N/A
E9	Groundwater sample	nr	Not Required	N/A	N/A
E10	Ground Gas sample	nr	Not Required	N/A	N/A
E11	Cut, prepare and protect core sub-sample	nr	Not Required	N/A	N/A
	<u>Samples for environmental / contamination analysis</u>				
E12	Environmental / contamination sample for Suite E	nr	4		€
E13	Environmental / contamination sample for Suite F	nr	Not Required	N/A	N/A
E14	Ground gas sample for Suite G	nr	Not Required	N/A	N/A
E15	Environmental / contamination sample for Suite H	nr	Not required	N/A	N/A
E16	Environmental / contamination sample for Suite I	nr	4		€
E17	Other specialist environmental / contamination sampling as specified by Investigation Supervisor (Suite J)	nr	Not required	N/A	N/A
	(Note sample rate includes provision of specialist containers)				
Total Section E carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
F	Probing and cone penetration testing				
	Dynamic probing (DPH)				
F1	Bring dynamic probe (DPH) equipment to the site of each test location	nr	Not Required	N/A	N/A
F2	Extra over Item F1 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
F3	Carry out dynamic probe test from existing ground level to 5m depth	m	Not Required	N/A	N/A
F4	As Item F3 but between 5 and 10m depth	m	Not Required	N/A	N/A
F5	As Item F3 but between 10 and 15m depth	m	Not Required	N/A	N/A
F6	Standing time for dynamic probe test equipment and crew	h	Not Required	N/A	N/A
F7	Provision of dynamic probing equipment and crew for probing as directed by the Investigation Supervisor; maximum depth 15m	day	Not Required	N/A	N/A
	Cone penetration testing				
F8	Bring static cone penetration test equipment to the site of each test location	nr	Not Required	N/A	N/A
F9	Extra over Item F8 for setting up on a slope of gradient greater than 20%	nr	Not Required	N/A	N/A
F10	Carry out static cone penetration test measuring both cone and sleeve resistance from existing ground level to 10m depth	m	Not Required	N/A	N/A
F11	As Item F10 but between 10 and 20m depth	m	Not Required	N/A	N/A
F12	As Item F10 but between 20 and 30m depth	m	Not Required	N/A	N/A
F13	As Item F10 but between 30 and 40m depth	m	Not Required	N/A	N/A
F14	Extra over Items F10 to F13 for use of piezocone	m	Not Required	N/A	N/A
F15	Extra over Items F10 to F13 for interpretation of CPT/CPTU data	m	Not Required	N/A	N/A
F16	Carry out dissipation test up to 1 hour duration	nr	Not Required	N/A	N/A
F17	Extra over Item F16 for test duration exceeding 1 hour	h	Not Required	N/A	N/A
F18	Standing time for static cone penetration test equipment and crew	h	Not Required	N/A	N/A
F19	Extra over Items F10 to F13 for use of seismic cone	m	Not Required	N/A	N/A
F20	Carry out seismic cone test	nr	Not Required	N/A	N/A
F21	Extra over Item F20 for interpretation of seismic cone data	nr	Not Required	N/A	N/A
F22	Standing time for seismic cone test equipment and crew	h	Not Required	N/A	N/A
Total Section F carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
G	Geophysical testing				
	Land-based mapping techniques				
G1	Conduct and process Ground Penetrating Radar (GPR) profiles to PAS 128 QL B1P as per the specification	m ²	Not Required	N/A	N/A
G2	Conduct and process electro magnetic conductivity (EMC) profiles	ln m	Not Required	N/A	N/A
G3	Conduct and process electrical resistivity tomography (ERT) profiles	ln m	Not Required	N/A	N/A
G4	Conduct and process seismic refraction spreads (P or S wave)	ln m	Not Required	N/A	N/A
G5	Conduct and process surface wave spreads (1D or 2D MASW)	ln m	Not Required	N/A	N/A
	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	Not Required	N/A	N/A
G7	Conduct and process down the hole calliper, natural gamma, resistivity, sonic, fluid, temperature, conductivity, and fluid flow logging	m	Not Required	N/A	N/A
G8	Conduct and process cross-hole seismic readings at specified intervals	nr	Not Required	N/A	N/A
	Marine (overwater) geophysical surveying				
G9	Establish geophysical personnel and field equipment and demobilisation on completion	sum	Not Required	N/A	N/A
G10	conduct and process echo sounding, side scan sonar, magnetic, sub-bottom profile surveying	day	Not Required	N/A	N/A
	Contract specific additional bill items				
	Total Section G carried to summary:				€

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	31		€
H1.2	Standard penetration test in percussive borehole, depth range 10 to 20m	nr	Not Required	N/A	N/A
H1.3	Standard penetration test in percussive borehole, depth range 20 to 30m	nr	Not Required	N/A	N/A
H1.4	Standard penetration test in percussive borehole, depth range 30 to 40m	nr	Not Required	N/A	N/A
H2.1	Standard penetration test in rotary drillhole, depth range 0 to 10m	nr	4		€
H2.2	Standard penetration test in rotary drillhole, depth range 10 to 20m	nr	Not Required	N/A	N/A
H2.3	Standard penetration test in rotary drillhole, depth range 20 to 30m	nr	Not Required	N/A	N/A
H2.4	Standard penetration test in rotary drillhole, depth range 30 to 40m	nr	Not Required	N/A	N/A
H3.1	Standard penetration test in dynamic sampling boreholes, depth range 0 to 10m	nr	14		€
H4	In-situ density testing	nr	Not Required	N/A	N/A
H4.1	Small pouring cylinder method	nr	Not Required	N/A	N/A
H4.2	Large pouring cylinder method	nr	Not Required	N/A	N/A
H4.3	Water replacement method	nr	Not Required	N/A	N/A
H4.4	Core cutter method	nr	Not Required	N/A	N/A
H4.5	Nuclear gauge method	day	Not Required	N/A	N/A
H5	California Bearing Ratio by plate bearing test by plunger method	nr	Not Required	N/A	N/A
H6	California Bearing Ratio by TRL DCP method	nr	7		€
H7	Vane shear strength test in borehole / trial pit / trench	nr	Not Required	N/A	N/A
H8	Hand penetrometer test (set of 3 readings)	nr	Not Required	N/A	N/A
H9	Hand vane test (set of 3 readings)	nr	7		€
	Other tests				
H10	In situ geophysical techniques (resistivity and redox potential) for earthing analysis	nr	Not Required	N/A	N/A
	Permeability testing				
H11	Set up, execute and dismantle variable head permeability test in cable percussive borehole	hr	Not Required	N/A	N/A
H12	Set up, execute and dismantle constant head permeability test in cable percussive borehole	hr	Not Required	N/A	N/A
H13	Set up, execute and dismantle variable head permeability test in rotary drillhole	hr	Not Required	N/A	N/A
H14	Set up, execute and dismantle constant head permeability test in rotary drillhole	hr	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
H15	Set up, execute and dismantle variable head permeability test in standpipe or standpipe piezometer (rising or falling head test)	hr	Not Required	N/A	N/A
H16	Set up and execute constant head permeability test in standpipe or standpipe piezometer	hr	Not Required	N/A	N/A
H17	Set up and execute packer permeability test in rotary borehole (0 to 10m)	hr	Not Required	N/A	N/A
H18	Set up and execute packer permeability test in rotary borehole (10 to 20m)	hr	Not Required	N/A	N/A
	Note: rates for permeability test in boreholes or rotary holes to include standing time rate for plant and equipment			N/A	N/A
	Soil infiltration test (BRE Digest 365)				
H19	Set up at each test location, excavate trial hole and prepare test area	nr	Not Required	N/A	N/A
H20	Backfill test hole with clean imported gravel where excavation side walls are unstable	m ³	Not Required	N/A	N/A
H21	Install 50mm standpipe in H18 to allow for monitoring of water levels	nr	Not Required	N/A	N/A
H22	Carry out pre-soaking of test areas	nr	Not Required	N/A	N/A
H23	Carry out soakaway tests in accordance with BRE Digest 365 (3 cycles)	nr	Not Required	N/A	N/A
H24	Provision of water supply for infiltration testing	sum	Included in H23	N/A	N/A
H25	Protection and temporary fencing of works area as instructed by Investigation Supervisor	nr	Not Required	N/A	N/A
H26	Calculation of infiltration rate for each test location	nr	Not Required	N/A	N/A
	Soil infiltration test (EPA Percolation test)				
H27	Set up at each test location, excavate trial hole and prepare test area	nr	Not Required	N/A	N/A
H28	Carry out infiltration tests in accordance with EPA Guidelines (test to be carried out by an approved Engineer / Geologist in accordance with EPA requirements)	nr	Not Required	N/A	N/A
H29	Provide report on percolation test (by Chartered Engineer or Professional Geologist)	sum	Not Required	N/A	N/A
	Plate Bearing Test				
H30	Set up at each plate test location to include kentledge / reaction weight and carry out plate test using a 300mm diameter plate. Test in accordance with NRA SRW CL642	nr	Not Required	N/A	N/A
H31	Set up at each plate test location to include kentledge / reaction weight and carry out plate test using a 450mm diameter plate. Test in accordance with NRA SRW CL642	nr	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
H32	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	Not Required	N/A	N/A
H33	Extra over Items H29-H31 for test durations in excess of 2 hours per location	hr	Not Required	N/A	N/A
H34	Provide plate test report with load stelement plot and calculation of Ks and CBR valu to HD 25-26/10	nr	Not Required	N/A	N/A
	Other specialist tests				
H35	Reading of free product level in borehole using an interface probe	nr	Not Required	N/A	N/A
H36	Provide contamination screening test kits (per sample)	nr	Not Required	N/A	N/A
H37	Carry out headspace testing on sample by FID or PID methods	nr	Not Required	N/A	N/A
H38	Self boring pressuremeter	day	Not Required	N/A	N/A
H39	high pressure dilatometer	day	Not Required	N/A	N/A
H40	Menard Presuremeter	day	Not Required	N/A	N/A
Total H carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
I	Instrumentation				
	Standpipes and piezometers				
I1	Backfill exploratory hole with cement/bentonite grout or bentonite pellets	m	Not Required	N/A	N/A
I2	Provide and install 19mm casagrande piezometer tip	nr	Not Required	N/A	N/A
I3	Provide and install sand cell to I2	m	Not Required	N/A	N/A
I4	Provide and install 19mm casing/piezometer plain pipe	m	Not Required	N/A	N/A
I5	Provide and install bentonite seals to I4	m	Not Required	N/A	N/A
I6	Provide and install proprietary slotted standpipe (50mm internal diameter)	m	Not Required	N/A	N/A
I7	Provide and install gravel pack to I6	m	Not Required	N/A	N/A
I8	Provide and install proprietary casing / plain standpipe (50mm internal diameter)	m	Not Required	N/A	N/A
I9	Provide and install bentonite seals to I8	m	Not Required	N/A	N/A
I10	Provide and install slotted proprietary standpipe (100mm internal diameter)	m	Not Required	N/A	N/A
I11	Provide and install gravel pack to I10	m	Not Required	N/A	N/A
I12	Provide and install casing/plain standpipe (100mm internal diameter)	m	Not Required	N/A	N/A
I13	Provide and install bentonite seals to I12	m	Not Required	N/A	N/A
I14	Provide and install end caps to I6 or I10	nr	Not Required	N/A	N/A
I15	Provide and install quick release gas valve to I6 or I10	nr	Not Required	N/A	N/A
I16	Provide and install protective cover (flush)	nr	Not Required	N/A	N/A
I17	Provide and install protective cover (raised)	nr		N/A	N/A
I18	Extra over item I16 for heavy duty cover in pavements or highways	nr	Not Required	N/A	N/A
I19	Supply and erect protective stock proof fencing around standpipe or piezometer installation	nr	Not Required	N/A	N/A
I20	Supply and erect 1.5m high marker posts (3 x 1.5m)	nr	Not Required	N/A	N/A
	Standpipe and piezometer development / purging				
I21	Supply equipment and personnel to carry out purging	sum	Not Required	N/A	N/A
I22	Develop standpipe or piezometer by purging (3 well volumes)	h	Not Required	N/A	N/A
I23	As item I22 but by airlift pumping	nr	Not Required	N/A	N/A
I24	As item I22 but by over pumping	nr	Not Required	N/A	N/A
I25	As item I22 but by jetting	nr	Not Required	N/A	N/A
I26	Disposal of purged water	litre	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
	Inclinometer				
I27	Supply and install inclinometer tubing in exploratory hole (not including forming/drilling of borehole)	m	Not Required	N/A	N/A
I28	Grout in place inclinometer in cable percussive or rotary borehole	m ³	Not Required	N/A	N/A
I29	Provision of calibrated inclinometer read out unit for monitoring during investigation	per week	Not Required	N/A	N/A
I30	Carry out base set of inclinometer readings in inclinometer and process	hr	Not Required	N/A	N/A
I31	Provide and install protective cover (flush)	nr	Not Required	N/A	N/A
	Slip Indicator				
I32	Provide and install protective cover (raised) slip indicators	nr	Not Required	N/A	N/A
I33	Supply and install slip indicator in exploratory borehole, including brass probe (not including forming/drilling of borehole)	m	Not Required	N/A	N/A
I34	Provide and install protective cover (flush)	nr	Not Required	N/A	N/A
I35	Provide and install protective headwork cover (upright)	nr	Not Required	N/A	N/A
Total Section I carried to summary:					€

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 during fieldwork period	nr	Input As Required	N/A	N/A
J2	Ground gas measurement in gas monitoring standpipe during fieldwork period	nr	Input As Required	N/A	N/A
J3	Provide Engineer or Geologist to take inclinometer readings as directed by Investigation Supervisor (per installation)	nr	Not Required	N/A	N/A
J4	Provide Engineer or Geologist to take measurement of slip indicator (per installation)	nr	Not Required	N/A	N/A
J5	Provide Engineer/Geologist to take water sample from standpipe or standpipe piezometer (rate not including purging or micro purging)	nr	Not Required	N/A	N/A
J6	Extra over Item J5 for purging or micro-purging in excess of 3 well volumes	h	Not Required	N/A	N/A
J7	Provide Engineer / Geologist to recover ground gas sample from gas monitoring standpipe	nr	Not Required	N/A	N/A
J8	Provide Engineer / Geologist to read free product level in standpipe using an interface probe	nr	Not Required	N/A	N/A
	Installation monitoring and sampling (post Fieldwork Period)				
J9	Return visit to site following completion of fieldwork for field instrumentation	nr	Input As Required	N/A	N/A
J10	Extra over Item J9 for groundwater measurements in standpipe or standpipe piezometer during return visit	nr	Input As Required	N/A	N/A
J11	Extra over Item J9 for ground gas measurements in standpipe during return visit	nr	Input As Required	N/A	N/A
J12	Extra over Item J9 for set of inclinometer readings per installation during return visit and report results	nr	Not Required	N/A	N/A
J13	Extra over Item J9 to check for ground slippage in slip indicator installation during	nr	Not Required	N/A	N/A
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	Not Required	N/A	N/A
J15	Extra over Item J14 for purging or micro-purging in excess of 3.0 hours	h	Included in Item J15	N/A	N/A
J16	Extra over Item J9 for ground gas sample from gas monitoring standpipe during return visit to site	nr	Not Required	N/A	N/A
J17	Extra over Item J9 for reading of free product level in standpipe using an interface probe during return visit to site	nr	Not Required	N/A	N/A
J18	Provision of equipment to facilitate measuring of free product in Item J17	sum	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
J19	Provide and install data logger to measure groundwater levels in standpipes	nr	Not Required	N/A	N/A
J20	Provide baro logger to monitor air pressure for item J19	nr	Not Required	N/A	N/A
J21	Provide Engineer / Geologist to visit site to download and process data logger and baro logger	day	Not Required	N/A	N/A
	<u>Surface water body sampling and testing</u>				
J22	Surface water body sample taken during fieldwork period	nr	Not Required	N/A	N/A
J23	Surface water body sample taken during return visit to site	nr	Not Required	N/A	N/A
J24	Determination of dissolved oxygen, conductivity, pH and temperature of surface water body during fieldwork period	nr	Not Required	N/A	N/A
J25	Determination of dissolved oxygen, conductivity, pH and temperature of surface water body during return visit to site	nr	Not Required	N/A	N/A
Total Section J carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
K	Geotechnical laboratory testing				
K1	Classification				
K1.1	Moisture content	nr	53		€
K1.2	Liquid limit, plastic limit and plasticity index	nr	26		€
K1.3	Volumetric shrinkage	nr	Not Required	N/A	N/A
K1.4	Linear shrinkage	nr	Not Required	N/A	N/A
K1.5	Density by linear measurement	nr	8		€
K1.6	Density by immersion in water or water displacement	nr	Not Required	N/A	N/A
K1.7	Dry density and saturation moisture content for chalk	nr	Not Required	N/A	N/A
K1.8	Particle density by gas jar or pycnometer	nr	Not Required	N/A	N/A
K1.9	Particle size distribution by wet sieving	nr	26		€
K1.10	Particle size distribution by dry sieving	nr	26		€
K1.11	Sedimentation by pipette	nr	Not Required	N/A	N/A
K1.12	Sedimentation by hydrometer	nr	26		€
K2	Chemical and electrochemical				
K2.1	Organic matter content	nr	5		€
K2.2	Mass loss on ignition	nr	Not Required	N/A	N/A
K2.3	Sulphate content of acid extract from soil	nr	Not Required	N/A	N/A
K2.4	Sulphate content of water extract from soil	nr	5		€
K2.5	Sulphate content of groundwater	nr	Not Required	N/A	N/A
K2.6	Carbonate content by rapid titration	nr	Not Required	N/A	N/A
K2.7	Carbonate content by gravimetric method	nr	Not Required		N/A
K2.8	Water soluble chloride content	nr	5		€
K2.9	Acid soluble chloride content	nr	Not Required	N/A	N/A
K2.10	Total sulphur content	nr	Not Required	N/A	N/A
K2.11	Total dissolved solids	nr	Not Required	N/A	N/A
K2.12	pH value	nr	5		€
K2.13	Resistivity	nr	Not Required	N/A	N/A
K2.14	Redox potential	nr	Not Required	N/A	N/A
K3	Compaction related				
K3.1	Dry density/moisture content relationship using 2.5 kg rammer	nr	Input as Required	N/A	N/A
K3.2	Dry density/moisture content relationship using 4.5 kg rammer	nr	Not Required	N/A	N/A
K3.3	Dry density/moisture content relationship using vibrating hammer	nr	Input as Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
K3.4	Extra over Items K3.1, K3.2 and K3.3 for use of CBR mould	nr	Not Required	N/A	N/A
K3.6	Moisture Condition Value at natural moisture content	nr	Input as Required	N/A	N/A
K3.7	Moisture Condition Value/moisture content relationship (five points)	nr	Input as Required	N/A	N/A
K3.8	Chalk crushing value	nr	Not Required	N/A	N/A
K3.9	California Bearing Ratio on re-compacted disturbed sample	nr	Not Required	N/A	N/A
K3.9.1	Extra over for recompacting a soil sample to a specified moisture content	nr	Not Required	N/A	N/A
K3.10	Extra over Item K3.9 for soaking	day	Not Required	N/A	N/A
K4	<u>Compressibility, permeability and durability</u>				
K4.1	One-dimensional consolidation properties, test period 5 days	nr	Input as Required	N/A	N/A
K4.2	Extra over Item K4.1 for test period in excess of 5 days	day	Not Required	N/A	N/A
K4.3	Measurements of swelling pressure, test period 2 days	nr	Not Required	N/A	N/A
K4.4	Measurement of swelling, test period 2 days	nr	Not Required	N/A	N/A
K4.5	Measurement of settlement on saturation, test period 1 day	nr	Not Required	N/A	N/A
K4.6	Extra over Items K4.3 to K4.5 for test period in excess of 2 or 1 day (s)	day	Not Required	N/A	N/A
K4.7	Permeability by constant head method	nr	Not Required	N/A	N/A
K4.8	Dispersibility by pinhole method	nr	Not Required	N/A	N/A
K4.9	Dispersibility by crumb method	nr	Not Required	N/A	N/A
K4.10	Dispersibility by dispersion method	nr	Not Required	N/A	N/A
K4.11	Frost heave of soil	nr	Not Required	N/A	N/A
K5	Consolidation and permeability in hydraulic cells	nr	Not Required	N/A	N/A
K5.1	Consolidation properties of a 76mm diameter specimen using a hydraulic cell, test period 4 days	nr	Not Required	N/A	N/A
K5.2	As Item K5.1 but using a 100mm diameter specimen	nr	Not Required	N/A	N/A
K5.3	As Item K5.1 but using a 150mm diameter specimen	nr	Not Required	N/A	N/A
K5.4	As Item K5.1 but using a 250mm diameter specimen	nr	Not Required	N/A	N/A
K5.5	Extra over Items K5. 1 to K5.4 for test period in excess of 4 days	day	Not Required	N/A	N/A
K5.6	Permeability of a 76mm diameter specimen in hydraulic consolidation cell, test period 4 days	nr	Not Required	N/A	N/A
K5.7	As Item K5.6 but using a 100mm diameter specimen	nr	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
K5.8	As Item K5.6 but using a 150mm diameter specimen	nr	Not Required	N/A	N/A
K5.9	As Item K5.6 but using a 250mm diameter specimen	nr	Not Required	N/A	N/A
K5.10	Extra over Items K5.6 to K5.9 for test period in excess of 4 days	day	Not Required	N/A	N/A
K5.11	Isotropic consolidation properties in a triaxial cell, test period 4 days	nr	Not Required	N/A	N/A
K5.12	Extra over Item K5.11 for test periods in excess of 4 days	day	Not Required	N/A	N/A
K5.13	Permeability in a triaxial cell, test period 4 days	nr	Not Required	N/A	N/A
K5.14	Extra over Item K5.13 for test period in excess of 4 days	day	Not Required	N/A	N/A
K6	Shear strength (total stress)				
K6.1	Shear strength by the laboratory vane method (set of 3)	nr	Not Required	N/A	N/A
K6.2	Shear strength by hand vane (set of 3)	nr	Not Required	N/A	N/A
K6.3	Shear strength by hand penetrometer (set of 3)	nr	Not Required	N/A	N/A
K6.4	Shear strength of a set of three 60mm × 60mm square specimens by direct shear, test duration not exceeding 1 day per specimen	nr	4		€
K6.5	Extra over Item K6.4 for test durations in excess of 1 day per specimen	sp.day	Not Required	N/A	N/A
K6.6	Shear strength of a single 300mm × 300mm square specimen by direct shear, test duration not exceeding 1 day	nr	Input as Required	N/A	N/A
K6.7	Extra over Item K6.6 for test durations in excess of 1 day	day	Not Required	N/A	N/A
K6.8	Residual shear strength of a set of three 60mm × 60mm square specimens by direct shear, test duration not exceeding 4 days per specimen	nr	Not Required	N/A	N/A
K6.9	Extra over Item K6.8 for test durations in excess of 4 days per specimen	sp.day	Not Required	N/A	N/A
K6.10	Residual shear strength of a 300mm square specimen by direct shear, test duration not exceeding 4 days	nr	Not Required	N/A	N/A
K6.11	Extra over Item K6. 10 for test duration in excess day of 4 days	day	Not Required	N/A	N/A
K6.12	Residual shear strength using the small ring shear apparatus at three normal pressures, test duration not exceeding 4 days	nr	Not Required	N/A	N/A
K6.13	Extra over Item K6.12 for test duration in excess of 4 days	day	Not Required	N/A	N/A
K6.14	Unconfined compressive strength of 38mm diameter specimen	nr	4		€
K6.15	Undrained shear strength of a set of three 38mm diameter specimens in triaxial compression without the measurement of pore pressure	nr	Input as Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
K6.16	Undrained strength of a single 100mm diameter specimen in triaxial compression without the measurement of pore pressure	nr	Not Required	N/A	N/A
K6.17	Undrained shear strength of a single 100mm diameter specimen in triaxial compression with multi-stage loading and without measurement of pore pressure	nr	4		€
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	Input as Required	N/A	N/A
K7.2	As K7.1 but single-stage or multi-stage test using 100mm diameter specimen	nr	Not Required	N/A	N/A
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	Input as Required	N/A	N/A
K7.4	As Item K7.3 but single-stage or multi-stage test using 100mm diameter specimen, test duration not exceeding 4 days	nr	Not Required	N/A	N/A
K7.5	Extra over Items K7.1 and K7.3 for test duration in excess of 4 days per specimen	sp.day	Not Required	N/A	N/A
K7.6	Extra over Items K7.2 and K7.4 for test duration in excess of 4 days	day	Not Required	N/A	N/A
K8	Rock testing				
K8.1	Natural water content of rock sample	nr	4		€
K8.2	Porosity/density using saturation and calliper techniques	nr	Not Required	N/A	N/A
K8.3	Porosity/density using saturation and buoyancy	nr	Not Required	N/A	N/A
K8.4	Slake durability index	nr	Not Required	N/A	N/A
K8.5	Soundness by magnesium sulphate	nr	Not Required	N/A	N/A
K8.6	Magnesium sulphate test	nr	Not Required	N/A	N/A
K8.7	Shore scleroscope	nr	Not Required	N/A	N/A
K8.8	Schmidt rebound hardness	nr	Not Required	N/A	N/A
K8.9	Resistance to fragmentation	nr	Not Required	N/A	N/A
K8.10	Aggregate abrasion value	nr	Not Required	N/A	N/A
K8.11	Polished stone value	nr	Not Required	N/A	N/A
K8.12	Aggregate frost heave	nr	Not Required	N/A	N/A
K8.13	Resistance to freezing and thawing	nr	Not Required	N/A	N/A

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
K8.14	Uniaxial compressive strength	nr	8		€
K8.15	Deformability in uniaxial compression	nr	Not Required	N/A	N/A
K8.16	Indirect tensile strength by Brazilian test	nr	Not Required	N/A	N/A
K8.17	Triaxial compression without measurements of porewater pressure	nr	Not Required	N/A	N/A
K8.18	Point Load Strength Index on rock core (axial or diametral)	nr	16		€
K8.19	Point load strength index on irregular lump sample (set of ten individual determinations)	nr	Not Required	N/A	N/A
K8.20	Swelling pressure test	nr	Not Required	N/A	N/A
K8.21	Direct shear strength of single specimen	nr	Not Required	N/A	N/A
K.9	<u>Special tests on rock core or trial pit samples to assess potential for pyrite induced expansion or swelling</u>				
K9.1	Geological classification / simplified petrography on rock core or bulk samples to IS EN 933 (by Professional Geologist)	nr	4		€
K9.2	Chemical analysis on rock core or bulk sample (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	Not Required	N/A	N/A
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	Not Required	N/A	N/A
Total Section K carried to summary:					€

Number	Item description	Unit	Quantity	Rate	Amount
				€	€
L	Geoenvironmental laboratory testing				
	Contamination testing of soil, groundwater, gas and fill material)				
L.1	Tests Suite E	nr	4		€
L.2	Tests Suite F	nr	Not Required	N/A	N/A
L.3	Tests Suite G	nr	Not Required	N/A	N/A
L.4	Tests Suite H	nr	Not Required	N/A	N/A
L.5	Tests Suite I	nr	4		€
L.6	Tests Suite J	nr	Not Required	N/A	N/A
Total Section L carried to summary:					€

Summary of Bill of Quantities

A.	General items, provisional services and additional items	€
B.	Percussion boring	€
C.	Rotary drilling	€
D.	Pitting and trenching	€
E.	Sampling and monitoring during intrusive investigation	€
F.	Probing and cone penetration testing	€
G.	Geophysical testing	€
H.	In situ testing	€
I.	Instrumentation	€
J.	Installation monitoring and sampling	€
K.	Geotechnical laboratory testing	€
L.	Geoenvironmental laboratory testing	€
	Total Tender	€

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