METHOD STATEMENT
GROUND INVESTIGATION WORKS IN THE AREA OF THE RIVER DEE SAC

1 Purpose of this Document

This document provides detailed information on the GI works proposed within the vicinity of the River Dee SAC. Additional mitigation measures are provided in Section 3 of this document, which should be implemented in addition to the Schedule of Mitigation Measures (Appendix 4) The Contractor will be issued with this Method Statement and the Schedule of Mitigation Measures in advance of going on site. The Ecological Clerk of Works (ECoW) will monitor all works undertaken in the vicinity of the River Dee SAC.

2 Description of the Works

2.1 Purpose of Works

A detailed Ground Investigation (GI) is to be undertaken within the area of the River Dee SAC in order to provide information on ground conditions pertinent to the proposed Aberdeen Western Peripheral Route (AWPR). The River Dee SAC boundary extends along the River Dee and includes Crynoch Burn, as shown in Appendix 3 of the Environmental Report, therefore all mitigation referred to in this document will apply to these areas.

The following GI activities are to be undertaken:

- trial pit excavations with collection of soil samples;
- cable percussive boreholes with collection of soil samples; and
- rotary drilled boreholes with or without core recovery.

These activities will include the following tasks:

- static cone penetration tests with or without collection of soil samples;
- hand augered boreholes with collection of soil samples;
- pavement cores with core recovery;
- installation of standpipe piezometers;
- downhole geophysics within boreholes; and
- peat probing.

A description of each of the above activities is provided in Section 3 of this Method Statement. Section 4 of this Method Statement describes the likely impacts associated with each of the GI activities.

2.2 Access and Location of Works

The locations of the boreholes and trial pits are indicated on the Contract Drawings. No boreholes will be situated within the SAC boundary. All works carried out within the vicinity of the SAC boundary will be supervised by the ECoW.

Approach routes to access areas of boreholes and trial pits will be agreed in consultation with the ECoW. Measures to mitigate environmental impact will be implemented, refer to Section 4 and Appendix 4 of the Ground Investigation Environmental Report (Jacobs, 2008).

Where land is used for grazing by livestock, the area of the works will either be fenced off or livestock removed, in accordance with the landowners/tenants requirements, prior to commencement of works.

2.3 Proposed Plant

Details of the proposed plant to be used will be confirmed following the tender period. The numbers of rigs that may be used on site may vary depending on access or other site constraints.

2.4 Timetable of Works

This Method Statement covers the GI works undertaken in the Northern leg in September to December 2007 and the GI works to be undertaken in the Southern and Fastlink in Spring and Summer 2008. Works in the vicinity of the River Dee SAC will be take place during daylight hours only, beginning two hours after dawn and finishing two hours before dusk between March and October; and to start no earlier than 1 hour after dawn and finish no earlier than 1 hour before dusk during November to February, and not continue for periods of more than 12 hours. Timing of work and numbers of rigs may vary depending on access or other site constraints.

2.5 Mitigation Measures

Where works are to be undertaken in the vicinity of the River Dee SAC all mitigation methods identified in the GI Environmental Report (Jacobs, 2008) are to be adopted (E1 to E73). A full list of all the mitigation methods is provided in Appendix 4 of the report. In addition to the implementation of these mitigation measures, specific mitigation measures that will reduce/eliminate potential impacts associated with GI activities in close proximity to the River Dee SAC are described in Section 4.

There will be two ECoW, one appointed by Jacobs and the other by the Contractor. One or both of the ECoW will be on site full time during the GI works. All reference in this document to the ECoW will therefore refer to both.

The ECoW or Engineering Site Supervision representative will be present at all times when works are occurring in the vicinity of the River Dee SAC, to supervise GI activities and to ensure that mitigation measures are implemented. The Site Engineer will be instructed by the ECoW on ecological issues of particular importance.

Additionally, it should be noted that the River Dee Salmon Fisheries Board, SNH and SEPA will be notified prior to works within the vicinity of the River Dee SAC.

2.6 Health and Safety Procedures

A brief description of health and safety risks associated with each of the GI activities are provided in Section 3 as the implementation of appropriate safety measures is an important aspect of the overall management and control of the works. However, this document does not fulfil the role of a Health and Safety Plan and reference should be made to the Contractor's Health and Safety policy document for appropriate safety procedures to be carried out while on site.

2.7 Revisions

This Method Statement will be revised if necessary to take account of any amendments to the plant access routes, borehole locations or techniques in use during any GI operations that are required to take place within the River Dee SAC. Any such revisions will be agreed with SNH and SEPA prior to commencement of works. However, it should be noted that no exploratory hole locations are currently proposed within 10m of the SAC boundary.

3 Description of GI Activities

3.1 Trial Pits

Equipment

Mechanical excavator - a standard wheeled, backactor machine such as a JCB 3CX or tracked excavator. Details of the proposed excavation plant are presented in Appendix 8 of the GI Environmental Report (Jacobs 2008).

Operatives

Two man crew.

Supervision

Works will be overseen by ECoW, one provided by Jacobs and the other by the Contractor.

Method of Operation

Trial Pits will be excavated to required depths by a mechanical excavator and will typically be 1.0m wide and approximately 3.0m long.

Existing grassland vegetation will be cut and removed in the form of turves, and topsoil will be removed and kept separate from the general spoil. All turves and soils will be stored on geotextile matting.

Spoil will be stacked at a suitable distance from the pit to ensure that the surface load does not endanger the stability of the pit sides. Material will not be stored within 10m of the boundary of the SAC. During very wet weather conditions this distance may need to be increased, as specified by the ECoW, to 30m.

The pit will be excavated to a depth of approximately 3.0m to 4.5m and inspected. Samples will be taken from the pit only if it is considered safe to do so. Samples for depths in excess of 1.2m

will be taken from the excavator bucket. Unshored pits greater than 1.2m will under no circumstances be entered.

Supervision of the pit during excavation will be from the end of the pit furthest from the excavator. The driver will be made aware when anyone is intending to enter the pit.

Extreme caution will be taken with all aspects of excavation, logging, sampling, testing and photographing the trial pit operations. *In situ* California Bearing Ratio (CBR)*, Sand Replacement Density (SRD), Mexi-Probes and Moisture Content Value (MCV) testing will be undertaken in specified pits according to the specification.

The pit will remain open only for the duration of excavation, to the scheduled depth or shallower and to obtain descriptions of the strata and collect representative samples. Backfilling will be carried out immediately after this exercise.

All sub-soil excavated will be replaced followed by topsoil and the stored turves. The nature of excavation of naturally consolidated material results in bulking and reconsolidation is unlikely to occur immediately. The backfilled pit will have a mounded appearance initially, but this will disappear as the material settles. Care will be taken to replace the turves such that no overlapping occurs and they cover the excavated area as much as possible. Turves will be watered when they have been replaced.

On completion, the pit and surrounding area will be left in a condition that is acceptable to the Engineer and the ECoW. Any remains of consumables, waste and excess materials associated with the excavation (e.g. litter, plastic containers, cement bags) will be bagged, removed from the trial pit location and returned to the site compound for disposal.

Instructions regarding the methods to be used to minimise environmental impacts will be issued in general terms to on-site personnel by the Contractor, via their ECoW, unless there is a specific technical variation on one or more pits.

* CBR = an in situ test that provides an indication of the bearing capacity of materials, the results of which influence the thickness of the road surface. No extra materials are required or wastes produced as a result of this test.
SRD = a test to determine soil density. This test uses a small quantity of sand to replace the material being tested.
Mexi-probe = hand held, spring loaded probe that measures the stiffness of the subgrade (ground). Used for designing road pavement construction. No extra materials are required or wastes produced as a result of this test.
MCV = results of this test determine the reusability of excavated materials, e.g. whether materials from cuttings can be used for construction of embankments. No extra materials are required or wastes produced as a result of this test.

Health and Safety Precautions

Hazards and precautions pertinent to trial pit activities are identified in Table 1.

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Table 1: Health & Safety Precautions for Trial Pits

Hazard/Issue	Precautions
Pit Collapse	Stack material away from the excavation. Supervise excavation from end of pit. No persons to enter a pit deeper than 1.2m, even then only when safe to do so.
Falling into excavation.	Keep away from edges, backfill as soon as finished.
Falling materials.	Wear safety helmet, boots, keep away from excavator, stack materials away from pit edge.
Injury by excavator.	Wear safety helmet, boots, stand where the driver can see you. Keep away from bucket swing.
Sampling	Be aware of contamination, sharp objects.

3.2 Cable Percussive Boring

Equipment

Light cable percussion tripod rig with drill casings and sampling tools. Details of the proposed rigs are presented in Appendix 8). All casing and rod lubricants will be vegetable based.

Support Equipment

Four wheel drive Land Rover or similar.

Operatives

Two man crew - Driller Foreman and Assistant Driller.

Supervision

The GI Contractor will oversee all aspects of a technical and safety nature. Rigs will be operated by a British Drillers Association (BDA) accredited cable percussion driller. The GI Contractor will provide safety instruction as appropriate on a site to site basis.

Works will be overseen by the ECoW.

Method of Operation

Soft ground boring will be undertaken in accordance with BS 5930:1999, the Company Engineer's Manual and the Contract Specifications. Boreholes will be located as agreed with the Engineer's Representative and ECoW, and set out by the GI Contractor. The work will be undertaken by experienced BDA Accredited drillers, who will be permanently supervised by the GI Contractor during these operations.

The rig will be towed to the hole position along the agreed access routes. It will be erected in the manner appropriate to the particular machine and the machine made stable.

Existing grassland vegetation in the form of turves, will be cut, removed and stored on geotextile matting. Boring operations will be carried out until the required depth is achieved. Typically, boreholes will be approximately 30m in depth and 200mm in diameter. Soft ground boring will last for approximately three days.

During boring only the minimum of water will be added to the borehole and where required this will be water obtained from the mains hydrants or similar clean supplies and would be transported to and stored on site by means of a water bowser.

The borehole will be either backfilled or an installation made (such as a piezometer used to measures groundwater levels). When the hole is backfilled, the stored turves will be replaced last, in reverse order. Care will be taken to replace the turves level with the surrounding surface. Turves will be watered when they have been replaced. Should topsoil remain, this will be stored on geotextile, the Engineer's Representative informed and the material will be disposed of away from the site as required. Topsoil disposal will be undertaken in accordance with the Waste Management Licensing Regulations 1994 (as amended 2003). Installations will be secured using a concrete cap and surrounded by a wooden fence of 1m square plan area.

The rig will be lowered in the appropriate manner and moved to the next hole position. The hole and working area will be left in a tidy and workmanlike condition. Any remains of consumables, waste and excess materials associated with the borehole operations will be bagged and returned to the site compound for disposal.

No work will be commenced on any hole until a written instruction from the GI Contractor's Supervisor has been issued to the operative providing details of exploratory hole or any other specific instruction including the minimisation of environmental impacts has otherwise been given. If the site has been identified as sensitive, no work will commence until the ECoW is present.

Health and Safety

The Contractor Group Safety Policy outlines the responsibility for Health and Safety and details specific matters and procedures for the safe operation of all GI work, these are described below.

Safety Equipment: All rig guards, stays and ropes will be in place to comply with manufacturers' specification.

Personal Protective Equipment: Hard hats, steel toe caps, ear protection and protective gloves will be worn at all times when in the vicinity of the rig during boring or other working operations.

Underground Services: All boreholes will be commenced with a hand dug inspection pit to 1.20m before boring commences. Any uncertainty will be reported to the GI Contractor's Supervisor before continuing.

Rig Erection: The rig will be erected in a safe manner in accordance with the operating manual or an approved alternative method. Where there is a risk of toppling or "runaway" appropriate stabilising precautions will be taken. The rig will be set up in a level and stable position. Particular attention will be given prior to erection to the presence of overhead services or structures.

Working Areas: Working areas will be kept as free as practical from borehole arisings and equipment not actually in use. Particular attention will be paid to the reduction of "trip" hazards.

Protection of Others: Protection will be given where there is a risk of injury to the general public, other staff involved with the works or livestock. Protection will be appropriate to the conditions and in compliance with the Specification.

Nuisance: Nuisance to others will be minimised within the constraints of the project requirements.

Fire Risk: Specific attention will be given to ensure the drilling operations do not present a fire hazard. Any observed difficulties with this will be reported to the GI Contractor's Supervisor.

Reinstatement: The borehole area and borehole itself will be left in a tidy and workmanlike condition such that no hazard remains to the general public or livestock (see above).

Unforeseen Circumstances: Rig operatives are responsible for their own health and safety as well as that of others who may be affected by their actions. Any difficulties should be immediately reported to the GI Contractor's Supervisor.

Accidents: Minor accidents will be treated with first aid, accidents of a more serious nature will be referred to the nearest casualty hospital. All accidents will be reported and entered into the Company's Accident Book.

Health and Safety Precautions

Hazards and precautions pertinent to cable percussive borehole activities are identified in Table 2.

Table 2: Health & Safety Precautions for Cable Percussive Boreholes

Hazard/Issue	Precautions
General changes to the equipment	Operations to be undertaken by skilled experienced personnel only. Rig and equipment must be "safe" and operational. See procedures as identified by the manufacturer and BDA publication are followed i.e. GI drillers (Edition 4 1995 pages 10-16).
Falling materials	Be aware of the activities ongoing, wear safety helmet and boots, and never stand under the rig during erection.
Damage to hands/fingers	Keep fingers clear, ensure they cannot become caught, trapped or bumped. Only approach the equipment and hole when necessary to guide the equipment.
Lifting injuries	Adopt good lifting practises, follow manual handling suggestions, seek assistance.
Travelling	Ensure all equipment is well secured to rig, the rig is well secured to the towing vehicle (hitch & chains) and trailer board and lights are attached and working. Ensure rig is well maintained and fit for the road with brakes and do not exceed permitted weight.
Visitors	Visitors should not be permitted into the working areas, discussions should be made well away from the rig when and where it is safe to do so.

3.3 Rotary Drilling

Equipment

Tractor, tracked or trailer mounted rotary drilling unit. Drilling rods, casing, barrels and hand tools. Details of the proposed rigs are presented in Appendix 8 of the GI Environmental Report (Jacobs 2008) (refer to Boart Longyear Deltabase 510 and Dando 250 sheets). All casing and rod lubricants will be vegetable based.

Support Equipment

Four wheel drive vehicle, (Land Rover or similar).
Water bowser, compressor pumps and tanks as required.

Operatives

Two man crew: Driller Foreman and Assistant Driller.

Supervision

Rigs will be operated by experienced BDA accredited driller and will be supervised by a drilling supervisor or on site engineer/geologist.

Works will be overseen by the ECoW.

Method of Operation

Rotary drilling will be undertaken in accordance with BS 5930:1999, the company Engineer's Manual and the Contract Specification.

The rig will be driven or towed to the site of the borehole, made stable by its integral jacking system and the drilling mast erected.

Existing vegetation in the form of grass turves, will be cut, removed and stored on geotextile matting. The borehole, generally extending a cable percussive bore, will be drilled to the required depth using either rotary, open-hole, percussive or cored drilling methods. The drilling flush will be air with water injection that creates a fine mist.

Correspondence with SEPA (D. Ogilvie, pers. comm, September 2006) confirmed that the GI works fall within the category of low risk activities, as stipulated under The Water Environment (Controlled Actvities) (Scotland) Regulations 2005. Based on this advice and with reference to The Water Environment (Controlled Actvities) (Scotland) Regulations 2005 – A Practical Guide (SEPA), it is recommended the GBRs are applied. The GBRs that apply to the GI works fall under the "Pollution control", "Abstraction" and "Engineering" regimes, as listed below:

- Inland abstractions of less than $10m^3$/day (GBR2);
- The drilling and pumping of boreholes for abstracting less than $150m^3$/year for testing purposes (GBR3 and GBR4);
- Minor bridges – no construction in channel (i.e. set-back abutments) and for the purpose of a footpath, cycle route or single-track road (GBR6); and
- discharges of surface water run-off (GBR10 and GBR11).

Refer to the Environment Report, 2008 for further details on the GBRs.

As advised by SEPA, in order to prevent chlorination, water will be obtained from watercourses where possible (including the River Dee). the Contractor shall sample and test potable water supplies in advance of extracting water from them and ensure any potable waters used shall not exceed the following levels: Chlorine – 2ug/L , Ammonia (unionized) – 15ug/L, and shall not be discharged directly to watercourses. Test results shall be provided to the Engineer's Representative for acceptance.

The borehole will be either backfilled or an installation made. When the borehole is backfilled, grout or bentonite cement balls/pellets will be used to replace the removed core. Cement filled balls/pellets are ready made in sacks which are poured into the borehole by hand and on contact with water expand to fill the borehole. Care is taken to ensure spillage is kept to a minimum. A contingency plan will be in place in the event of any spillage. The stored turves will be replaced last, in reverse order. Care will be taken to replace the turves level with the surrounding surface. Turves will be watered when they have been replaced. Should topsoil remain this will be stored on geotextile, the Engineer informed and the material will be disposed of away from the site as required.

The mast will be lowered in the appropriate manner and the rig moved to the next hole position. The borehole and working area will be left in a tidy and workmanlike condition. Any arisings, consumables or waste will be bagged, removed from the borehole location and returned to the site compound for disposal.

No work will be commenced on any hole until a written instruction from the Contractor has been issued to the operative providing details of exploratory hole or any other specific instruction including the minimisation of environmental impacts has otherwise been given.

Health and Safety

Hazards and precautions pertinent to rotary drilling are identified in Table 3.

Table 3: Health & Safety Precautions for Rotary Drilling

Hazard/Issue	Precautions
General changes of the equipment	Operations to be undertaken by skilled experienced personnel only. Rig and equipment must be "safe" and operational. See procedures as identified by the manufacturer and BDA publication are followed i.e. ground investigation drillers (Edition 4 1995 pages 10-16). Maintain a safe distance from the equipment while it is in operation.
Noise	This may be noisy equipment, operators to wear ear defenders. Take account of this on issuing instructions and while working near the rig.
Falling materials	Be aware of the activities wear safety helmet and boots. Never stand under the rig during erection. Keep well clear of drilling operations.
Damage to hands/fingers	This can be dangerous equipment which needs to be handled carefully and with respect. Be aware of this and behave responsibly at all times. Be aware of your own safety, lapses in concentrations are a main cause of incidents. Only approach the equipment and hole when

Hazard/Issue	Precautions
	necessary to guide the equipment.
Compressed air and cuttings	Wear eye protection where a particular problem exists and be wary of pressurised core barrels and / or drill rods.
Lifting injuries	Adopt good lifting practises, follow manual handling suggestions, seek assistance.
Travelling	Ensure all equipment is well secured and trailer board and lights Ensure rig is well maintained and fit for the road and do not exceed permitted weight are attached and working.
Visitors	Visitors should not be permitted into the working areas, discussions should be made well away from the rig when and where it is safe to do so.

4 Potential Impacts and Mitigation Measures

This section describes mitigation measures and practices that shall be applied to the preliminary GI activities in the vicinity of the River Dee. The mitigation measures provided in this method statement are in addition to those provided in the detailed GI Environmental Report.

These specific mitigation measures and site procedures are necessary in order to avoid or minimise the risk from the GI activities on the River Dee SAC, which is designated for its populations of Atlantic salmon (*Salmo salar*), otter (*Lutra lutra*) and freshwater pearl mussel (*Margaritifera magaritifera*).

4.1 General

Prior to any works, all personnel involved with the GI will receive an on-site induction relating to the site operations, the site rules and general and specific health and safety obligations. The site induction will stress the environmentally sensitive nature of the River Dee SAC and re-emphasise the precautions that are required as well as the mitigation to be implemented. Each engineer/supervisor will have a copy of the Environmental Report for reference in the field.

The site agent will ensure that the engineer setting out the works and the drilling supervisor or site geologist/engineer are fully aware of the ecological constraints and mitigation requirements. These team engineers will then ensure the individual drill crews in their area are aware of the specific requirements for each individual hole.

4.2 Lines of Communication

The ECoW will be present during all works carried out within the vicinity of the River Dee SAC. Any amendments to the programme for these works will be passed to Jacobs who will notify the ECoW.

All matters relating to the GI operations within the vicinity of the River Dee SAC will be reported on a regular basis to the site agent and Jacobs for ongoing review.

Any incident or observation of anything that may be considered as causing or likely to cause disturbance or damage to the SAC will be reported to the site agent immediately. The site agent will take immediate action to prevent or limit the impact and will notify the Jacobs contact and the ECoW of the incident and the actions taken.

The site agent will ensure that key site engineers and staff are fully aware of SEPA guidelines when working close to watercourses. Any incident will be reported as soon as possible to the Jacobs contact and also the ECoW for further advice.

Each crew/engineer will have a mobile phone such that incidents of any nature can be reported immediately to the relevant organisation and main site compound/agent.

4.3 Access

A Schedule 7* Access Agreement will be completed for each landowner plot prior to entry onto the land. Access will be in accordance with the landowner/occupier requirements and be executed such that damage is kept to a minimum. Where access routes fall within the SAC boundary, or 10m buffer zone around the SAC boundary, once confirmed by a site visit, they will be discussed and agreed with SNH and SEPA.

Prior to entry on to any land, the area will be walked by Contractor's drilling supervisor, engineer or foreman and only the agreed access routes will be utilised. All environmentally sensitive areas will be marked by tape or pegs after consultation with the ECoW. Access in difficult areas, i.e. very soft ground or on steep slopes, will be reviewed as work proceeds and Method Statements prepared and agreed. The marked out routes will be checked by the ECoW and Jacobs archaeologist prior to works commencing.

Where significant damage is likely, due to soft ground, this will be minimised by the use of 4-wheel drive units, tractors and low ground pressure vehicles. Should the prevailing weather conditions be very wet with no immediate prospect of improvement and it is likely that excessive damage will occur to the access routes and around the exploratory hole location, the Engineer will be contacted prior to entry to discuss the most appropriate measures to be taken to limit the damage.

Clearance of trees or vegetation will be kept to the minimum and, as far as practicable, routes will be selected to minimise any removal of vegetation or trees. In sensitive areas, tree removal will be by prior approval of the ECoW (see Method Statement for identifying trees to be felled). The ECoW will mark any trees identified for removal.

Care will also be taken to minimise any disturbance or damage to overhanging branches, etc. along access routes or in working areas. This will be controlled by moving slowly, holding back branches, or where necessary, varying the route with agreement. If required, cautious trimming will be carried out under the supervision of the ECoW.

Specific measures, as far as is practical, will be taken to avoid any area of particular special interest as indicated by the ECoW. If unavoidable, then the ECoW guidance on access methods will be followed. This may involve the use of sheeting and boarding, placed to protect the access and working areas. In particularly sensitive areas, fencing will be erected to contain the extent of the working area.

The amount of bare ground created by excavation and vegetation removal will be minimised. Turves of intact vegetation (15-20cm deep) from the immediate area to be excavated or drilled should be removed and stored on semi-permeable geotextile matting (to protect the underlying sward). Turves should be kept moist if they are being stored for more than a few hours or if the weather is hot. Topsoil and subsoil should be stored separately, also on geotextile.

* Schedule 7 of the GI contract document that sets out landowner requirements for intended works.

4.4 Crossing Watercourses

It is not envisaged that any major watercourse crossing will be required. Some minor bridging could be necessary for drains and ditches and this will generally be undertaken by timber/steel beams and boarding which will be removed on completion. These should not interfere with any water flow or cause significant disturbance to the banks. Crossings will be placed in areas that will cause least damage. Where possible, existing crossing points will be utilised. All crossing points will be agreed with the ECoW.

4.5 Reinstatement

A photographic condition survey will be undertaken prior to entry and on departure from the area.

On completion of the GI, reinstatement requirements will be discussed with the ECoW for both the working area and access routes. Reinstatement will include replacing the subsoil and then the turf, ensuring that the turf is level with the surroundings and in good contact with the underlying soil. Turves should be watered in when they have been replaced.

4.6 Mitigation Measures

Potential impacts associated with the GI activities and corresponding mitigation measures are provided in Table 4. The mitigation measures identified below are also incorporated into the GI Environmental Report.

Table 4: Potential impacts and mitigation measures associated with GI Activities

Potential Impact on SAC	Mitigation Measures
Pollution of watercourses	Other than for access, the Contractor shall maintain a minimum buffer zone of 10m from any rivers, burns, waterways, drains, lochs or other waterbodies. No site works, plant or vehicles shall be permitted within this distance. The ECoW may specify an extension of this buffer zone depending on the sensitivity of nearby ecological communities.
	The Contractor shall prevent any silting/erosion of waterbodies and pollution of the water that may adversely affect the quality or appearance of water or cause obstruction or interference with the flow.
	The Contractor shall ensure water abstraction from watercourses will not exceed 10 m^3 per day.
	There will be no works adjacent to the watercourses and no water abstraction from the Dee.
	No material will be stockpiled within 10m of any rivers, burns, drains, watercourses, lochs or any other waterbodies.
	Should access to borehole locations require the crossing of watercourses, the Contractor shall be required to agree the crossing method with the Client's ECoW and provide Method Statements if requested. The Method Statements should comply with the General Binding Rules (GBRs), as implemented by the Water Environment (Controlled Activities) (Scotland) Regulations 2005. The Dee District Fisheries Board will need to be contacted regarding salmonid watercourses.
	Runoff from the site must not be discharged directly to

Potential Impact on SAC	Mitigation Measures
	nearby/adjacent waterbodies. Sediment/filter fences, or other method approved by the Engineer's Representative and Client's ECoW, must be used to protect all waters.
	The Contractor shall not disturb the bed or banks of the watercourse during extraction of water from waterbodies.
	Establish site boundary markings to safeguard features of interest/value, as identified by the Client's ECoW.
	The Contractor shall notify the Dee District Salmon Fisheries Board, SNH, and SEPA at least 7 days in advance of any works in the vicinity of the River Dee.
Vegetation and soil protection	Excavation and vegetation removal will be minimised. Topsoil and subsoil should be stored separately at least 10m from water features.
Fuel/Lubricant spillage from equipment	All plant will be well maintained with any fuel or oil drips attended to on an ongoing basis. Sheeting will be placed below any areas of potential contamination. Any persistent problems that cannot be fixed immediately will have added safety of spillage trays placed at critical locations. Oil/fuel soak up granules will be present on site to deal with any incidents. All vehicles should carry spill kits and operators trained in their use. Typical maximum fuel tank capacities of the drilling units are of the order of 18 gallons for the rotary rigs and as little as 1 gallon for the cable tool rigs. No fuel, lubricants or other chemicals will be stored within 10m of the SAC boundary. Fuel will be stored in bunded bowsers or tanks within the site compound. Refuelling in the area closest to the SAC will be from either small easily handled containers or by diesel pump from a small bowser. Any minor spillage during this process will be cleared immediately. Should any incident occur, the situation will be dealt with and co-ordinated by the nearest supervisor or engineer who will be responsible for instructions issued by the site agent. The ECoW and SEPA will be notified about the incident and the actions taken. SEPA Pollution Prevention Guidelines 21 will be adhered to.
Noise and vibration from use of equipment	Vehicles and plant shall be properly maintained and shall not be left idling when not in use. The ECoW will check at least 250 metres upstream and downstream from the proposed works for signs of otter, prior to works commencing. If signs of an otter holt or resting place are detected all work should stop and SNH will be consulted for further advice. During the initial setting out of boreholes and access routes, the ECoW will take note of the general environs with regard to the possible presence of protected species. If protected species are encountered, an exclusion zone will be defined that will minimise disturbance from noise and vibration. GI works within 100m of the

Potential Impact on SAC	Mitigation Measures
	River Dee should make a 'sort-start' to drilling activities to allow salmon and other fish to move away before the full intensity of drilling begins. Work will be undertaken during daylight hours, starting no earlier than two hours after dawn and finishing no later than two hours before dusk, between March and October; and to start no earlier than 1 hour after dawn and finish no earlier than 1 hour before dusk during November to February; and not continue for periods of more than 12 hours, to prevent disturbance to nocturnal species.
Contaminated surface and/or groundwater	No works shall take place within the SAC boundary. Any works likely to have a significant effect on a European site requires an Appropriate Assessment. The Contractor shall maintain a minimum buffer zone of 10m from the SAC boundary. The ECoW may specify an extension of this buffer zone depending on the sensitivity of nearby ecological communities. No site works, plant or vehicles shall be permitted within this distance. The ECoW will monitor the work here to ensure the appropriate mitigation measures are implemented and the Dee SAC is not affected by the GI works. Any runoff of excess clean groundwater from the borehole will be allowed to seep either back down the hole or into the immediately surrounding area. Water will not be permitted to enter the River Dee. Excess surface water runoff will be controlled by bunding, sheeting and sand bags to ensure it does not enter any watercourse or drains. Works are such that no significant surface water flows other than for a very short term will be generated and as such erosion is not considered an issue. Drill water may contain varying amounts of sediment depending on the rock/soil type, but it is envisaged that these will not be of major quantities. These will be controlled by containing the water in bunded areas until settlement has occurred and by ensuring that any flow paths are of sufficient length and gradient to further allow sediment to settle. Sandbags or hay bales will be used to bund off relevant areas. Sediment from the borehole area will be collected and bagged for controlled disposal together with any residual material. SEPA Pollution Prevention Guidelines 1 and 5 shall be adhered to.
Exhaust emissions from equipment	Vehicles and plant shall be properly maintained and shall not be left idling when not in use.
Disturbance of contaminated land	Potential areas of contaminated land have been reviewed prior to determination of trial pit and borehole locations. Where unidentified contaminated or suspected contaminated land is

Potential Impact on SAC	Mitigation Measures
	encountered, work will cease and the GI Contractor's Supervisor and the resident engineer informed. Any noxious smells or gases will be likewise reported. Crews should always beware of the potential for contaminated ground and maintain a high level of vigilance. Should any area of ground contamination be found during the boring operations, a double casing system will be employed to ensure a seal is maintained between the contaminated fill and natural ground below. Bentonite cement or other natural low permeability clayey materials will be used to seal the boreholes.