Drilling – Site Specific Method Statement Loch Oich	JOB No:	6702	NICOL OF SKENE LTD
Customer: Scottish and Southern Energy	Doc Rev:		

Notes:
- Any changes in working methods, conditions or additional risks identified whilst work is in Progress shall be brought to the attention of the Drilling Manager.
- The Drilling Manager shall discuss the new conditions with the Customer.
- This Job Specific Method Statement shall be amended as necessary, reissued and the new conditions and instructions communicated to the Drilling Team through a Tool Box Talk.

1.0	Location:	Aberchalder Swing Bridge, Invergarry, Highland, PH35 4HN
2.0	Start Date:	To be confirmed by SSE.
2.0	Drilling Team:	DRILLING MANAGER: Gordon Ellis DRILLING SUPERVISOR: TBC DRILLING RIG OPERATOR: TBC
3.0	Client Contacts:	TBC
4.0	Description of Work:	There are 2 number drills to be carried out; 1 drill under the A82 road and the other under Loch Oich. Each drill will consist of 1no 160mm Ø black HPPE SDR11 pipe. The drill under the A82 road will be approximately 75 metres long and the drill under Loch Oich will be approximately 100 metres long.
5.0	Plant & Equipment:	Ditchwitch 60AT Drilling Rig 6 Wheeled Rigid unit c/w 3 axle trailer Articulated Low Loader 180° Wheeled Excavator 360° Tracked Excavator Tractor and Trailer c/w Sludger Vacuum Tanker
6.0	PPE:	PPE shall be utilised alongside existing or devised control measures to further reduce risks as given in the Risk and COSHH assessments. PPE shall be regularly checked and replaced as necessary. In addition, there is a legal requirement under the New Roads and Street Works Act for all personnel working adjacent to the highway to wear Hi-Viz to BS EN 471 Class 2 as a minimum. NICOL OF SKENE LTD minimum PPE requirements: HARD HAT SAFETY BOOTS HI-VIZ VEST GLOVES SAFETY GLASSES **Life jackets must be worn within a 10m radius of the river and a lifebuoy c/w 30m of floating line to be erected either side of the river.**
7.0	Emergency Procedures:	In event of any emergency, the Emergency Procedures of NICOL OF SKENE LTD shall be followed. All operations shall cease immediately and all plant shall be shut down so as avoid further problems, injury or damage. **SSE's 30 minute reporting procedure states that any accident/emergency situations must be reported to the SSE representative within 30 minutes.** Nearest A&E department: **Belford Hospital Belford Road, Fort William, PH33 6BS 01397 702481** Accident Procedure: **HS-F-12 Serious Accident/Illness** Fire Procedure: **HS-F-15 Outbreak of Fire**

8.0	Environmental:	Mud and Exit Pits to be of sufficient size to hold excess amount of Water/Drilling Fluid to prevent run off. Size of pits will initially be approximately 2x2x1.5 metres; however, NICOL OF SKENE LTD will assess the size of the job and ground conditions which may result in the size of the pits being increased. **No entry is required into these pits and they will be securely fenced off.** Drilling Fluids and Waste shall not be allowed to get into watercourses. Drip Trays and Spill Kits shall be provided to prevent contamination of ground and watercourses. Only routes designated by the CUSTOMER shall be used for site and work access.
9.0	Method of Communication:	Primary source of communication is by mobile phone. Richard Stott 07736615502 Gordon Ellis 07736615516 Allan Grant 07736615523 Gordon Martin 07736615524
10.0	Welfare:	SSE will provide welfare complete with canteen, toilet and drying room facilities.
11.0	Permits:	ALL PERSONNEL TO RECEIVE A SITE INDUCTION PRIOR TO WORKS STARTING A PERMIT TO BREAK GROUND MUST BE OBTAINED FROM THE SITE MANAGER PRIOR TO WORKS STARTING
12.0	Sequence of Works:	1. NICOL OF SKENE LTD will carry out a site survey of the proposed drill and produce a "Bore Plan". The site survey information and "Bore Plan" will be included within the Work Pack and available on site. 2. SSE will provide an area for setting up a secure compound. The ground should be firm and stable, suitable for offloading plant and materials. The size of the compound will be agreed with NICOL OF SKENE LTD. 3. NICOL OF SKENE LTD will unload all plant and materials within the agreed compound. 4. SSE will provide drawings of all existing services within the vicinity of the works. The exact location and depth of all services will be provided to NICOL OF SKENE LTD. 5. The coil of 160mm Ø Black HPPE SDR 11 pipe will be strung out on the ground ready for pulling in. See HS-W 35 HANDLING COILED PIPE 6. The drilling rig will be tracked into position on the west side of the canal as per "Bore Plan / Design" ready for starting the drill. 7. A mud pit will be excavated close to the HDD entry point. The sidewalls of the mud pit are built up with the as dug material to form a bund around the mud pit. The pit will initially be approximately 2x2x1.5 metres. The level of the mud will be monitored during the drill operation and if required, the size of the pit will be increased. NO ENTRY IS REQUIRED & PIT WILL BE SECURELY FENCED OFF See E-MS/RA 01 IDENTIFICATION OF SERVICES and G-MS/RA 17 EXCAVATION WORK ONLY 8. The drilling operation begins by drilling a pilot hole from the Launch Pit/Area using the Drill Head and pressure injection of drilling fluid. The drilling is carried out continuously by the progressive addition of lengths of Drill Pipe. 9. During the drilling of the pilot hole the exact location is monitored by an Electronic Tracker which provides real-time information of location and depth. This information is recorded and used to produce an as-built drawing of the drill, which will include information on cover to/from existing utilities.

		10. The pilot hole drill will be stopped just prior to reaching the exit area. This is to allow the excavation of the exit pit to be carried out. The exit pit will be constructed in a similar fashion to the mud pit as mentioned in section 8 above. Once complete, the pilot hole drill will then be completed into the exit pit and up onto ground level. NO ENTRY IS REQUIRED & PIT WILL BE SECURELY FENCED OFF See E-MS/RA 01 IDENTIFICATION OF SERVICES and G-MS/RA 17 EXCAVATION WORK ONLY 11. When the bore is completed the Drill Head is removed, a reamer is attached to the Drill string and reaming of the bore commences, using bigger and bigger reamers, until the bore reaches the required diameter. The hardness of the ground will determine the size of the reamers to be used for successive passes. 12. Drilling Fluid is pumped under pressure through the Drill string to lubricate the reamer and remove cuttings during the enlargement of the bore. 13. When the bore hole has been reamed out to the required diameter, the back reamer is sent back down the bore one or two more times. This is to ensure that the bore hole is clear of any large debris and that the drilling mud in the bore hole is well mixed. The bore hole is now prepared for the Sleeve/Pipe to be pulled. 14. The Pulling Head is connected to the Drill String using a certified shackle and swivel. The swivel prevents the pipe from rotating during the process. The Sleeve/Pipe is connected to the back reamer and is then pulled through the bore hole. See G-MS/RA 18 DIRECTIONAL DRILLING **In the event that any part of the Drilling Operation is unsuccessful the work will be stopped and the problem discussed with SSE. It may be necessary to select an alternative route.**
13.0	Drilling Fluids (General):	1. During drilling of the hole, the drilling fluid lubricates the drill string, removes solids from the bore hole, and cools the drill bit downhole instruments. 2. The drilling fluid system design will be based on expected ground conditions, as determined by the Site Survey and Assessment and adjusted as required throughout the drilling operations. 3. In Horizontal Directional Drilling one of the primary functions of drilling mud is that it provides a very good 'filter cake'. This means that, due to the flat clay platelets and the minute size of the particles, the drilling mud soaks into the permeable and porous drilled bore hole walls, and provides a seal. 4. Mud viscosity will be varied according to the prevailing conditions and monitoring will be an ongoing operation. It is envisaged that a viscosity of 50-70sec will be maintained. Mud pump volumes and pressures will vary according to conditions and the nozzle sizes used in the tools.
14.0	Drilling Fluids (Disposal):	1. During the drilling of the holes, cuttings will be produced. The cuttings will be carried back along the drilled path by the drilling fluids to the mud pit. 2. The level of drilling fluid in the mud pit is monitored at all times during drilling operations. 3. The removal of all waste drilling fluid shall be carried out during the work and on completion of the HDD operation.
15.0	Drilling Fluids (Loss of Circulation) :	**If mud circulation is lost as drilling progresses, operations shall cease immediately.** 1. An inspection of the drilling line will be carried out so as to determine if the fluid loss is to the surface, or being lost downhole into the surrounding formation. 2. If the fluid loss is to the surface, then the drilling rods will be withdrawn from the hole to a position where "mud returns" are regained to the rig site. 3. The running back in of the drill rods not only reconditions the drilled hole but also allows time for the surface fracture to self-seal.

		4. When the hole has been reconditioned, re-running the Drill String can help to seal the fracture. New cuttings will build up and "pack off" the fracture to the surface. 5. Loss of fluid to the surface shall be minimised. Any loss shall be controlled and contained. 6. If there is fluid loss to the surrounding formation, sealing and recovery of circulation as noted above shall be implemented. 7. Maintaining 100% mud returns cannot be guaranteed in longer crossings where formations are predominantly sand and silts. The loss of the drilling fluid to the surrounding formation requires close attention to drilling parameters downhole, such as drill string torque and push/pull characteristics.

Job Specific Safe System of Work Prepared by:					
Name:	Charlie Michie	Signature:	[redacted]	Date:	10/12/2015