6.0 A CONSTRUCTION PROGRAMME & MANAGEMENT

Chapter Alterations

A6.1 The chapter of the ES Addendum updates the ES with respect to the following:

- **Update of timescales for each phase of the Proposed Development to match Chapter 4A Project Description;**
- **Update of traffic movements for each phase of the Proposed Development to match the parameters in Table 4.1 of Chapter 4A Project Description;**
- **Clarification of working hours for Phase 4a Restoration and that there would be no personnel living on site during this phase; and**
- **Clarification of arrangements for storage and removal of refuse and sewage.**

6.1 This Chapter describes the Construction Programme for the Proposed Development and management measures to be implemented throughout the project to mitigate environmental effects. A full project description is provided in Chapter 4**A**.

Programme

6.2 The anticipated programme for the phases of the Proposed Development is set out in **Table 6.1** below.

Table 6.1: Phasing

Vertical Exploration Well			
Phase of Activity		**Best Case Scenario**	**Worst Case Scenario**
Phase 1	Construction	6 weeks	10 weeks
Phase 2	Mobilisation and drilling	6 weeks	~~10 weeks~~ **15 weeks**
Phase 3~~a~~	Testing ~~(gas)~~	~~1 week~~ **2 weeks**	2 weeks
~~**Phase 3b**~~	~~Testing (oil)~~	~~1 weeks~~	~~2 weeks~~
Contingent Horizontal Exploration Well (if applicable then move to Phasing below)			
Phase 4a	Restoration	6 weeks	~~10~~ **2** weeks

Contingent Horizontal Exploration Well ~~(up to 12 months after vertical Phase 3)~~			
Phase of Activity		**Best Case Scenario**	**Worst Case Scenario**
Phase 2	Mobilisation and drilling	6 weeks	~~12~~ **3** weeks
~~**Phase 3a**~~	~~Testing (gas)~~	~~1 weeks~~	~~2 weeks~~
Phase 3~~b~~	Testing ~~(oil)~~	2 weeks	~~26~~ **8** weeks
Phase 4a	Restoration	6 weeks	~~10~~ **2** weeks
Phase 4b	Retention	Prior to Appraisal or Production (subject to planning)	

6.3 The worst case scenario (i.e. longest duration) has been assessed within the technical chapters of the ES. **Refer to Chapter 4A Project Description for full details of the worst case parameters assessed.**

Working Hours and Site Establishment

6.4 The location and layout of utilities would be confirmed prior to start of work on site.

6.5 A separate parking area will be provided for the contractor's cars, which will be used later by the drilling crews for their cars. Welfare facilities for the workforce would also be constructed in this area. Electrical supplies would be taken from the rig's power generators. The construction of this area will be the same as for the access track, using compacted stone on a geotextile membrane. The parking area will be 'at grade' with no specific excavations or levelling of the area.

6.6 The main site would be fenced off from the rest of the fields using a ~~2m~~ **4m** high wire mesh security fence. The access road will remain unfenced except where it passes to the south of a screen of trees, where a 1.2m high post and wire fence will be erected on the north side of the track to maintain 15m clearance of the track from the trees. The fences would incorporate gates where agreed with the landowner. At the point where the 1.2m fence meets the ~~2m~~ **4m** high security fence, there will be a ~~security gate~~ **gated airlock consisting of two 4m high gates,** installed between the access road and car parking area to prevent unauthorised access into the well site compound or flaring area (**Figure 4.2A**).

6.7 Working hours during Phase 1 **and Phase 4a Restoration** would follow standard construction industry practice, with a part day on Saturday and no construction work on Sunday. Night time working would not be carried out in the construction phase. During the first part of Phase 2 (mobilisation) 12-hour days are likely to be necessary with working hours of 8am - 8pm.

6.8 As set out in Chapter 4**A** Project Description, drilling and well testing activities would be undertaken 24 hours a day. Mitigation measures to be implemented to minimise disturbance to the community are set out later in this chapter.

6.9 ~~The Applicant's drilling supervisor would live on site during drilling operations and coordinate activities with the rig contractor.~~ **There would be four key personnel and seven security personnel living on site during operations. No personnel would live on site during the restoration phase.**

6.10 Approximately 12 personnel will be required during the construction of the well site and access road and normally, 22 personnel will be on-site during drilling operations.

Health, Safety & Environmental Management & Permitting

6.11 The applicant has developed and applies its integrated health, safety and environmental management system (HSE MS) to all of its operational activities. This approach is fully consistent with the requirements of the UK safety and environmental regulators (Health

& Safety Executive, DECC) and conforms to the principles of international standards such as ISO 14001 and OHSAS 18001.

6.12 The health and safety risks of all construction, drilling, testing and site restoration activities will be managed as required by the Borehole Sites & Regulations 1995 (Ref. 6.1), the Management of Health & Safety at Work Regulations 1992 (Ref. 6.2), the Construction (Design & Management) Regulations 2007 (Ref. 6.3), the Offshore Installations & Wells (Design & Construction etc.) Regulations 1996 (Ref. 6.4) and the Applicant's HSE Management System.

6.13 Site specific Emergency Response Procedures will be put in place in consultation with the emergency services and tested prior to the commencement of any work. Drilling and any subsequent testing operations will be conducted in accordance with good oilfield practice and all relevant controlling bodies, British and International Standards. Should any emergency situation occur the well would be instantaneously "shut in" by means of the fitted Blowout Preventer (BOP) during drilling operations or the Emergency Shut Down (ESD) during production. The adoption of normal emergency procedures applicable to oilfield operations would ensure compliance with the UK onshore environmental and safety control regimes.

6.14 The HSE aspects of all site operations will be managed through both a Safety Management Plan and an Environmental Management Plan. A Construction Environmental Management Plan (CEMP) would be submitted to WSCC for approval prior to commencement of works on site. This would describe the mitigation measures to be put in place by the Applicant and contractors throughout the works to minimise impacts on the environment. The CEMP would also define who would be responsible for implementing each mitigation measure and contain a monitoring programme. A framework CEMP is set out below. These principles would be expanded upon during detailed construction planning.

6.15 The proposed development will also be regulated by the Environmental Agency (EA) as required by the Environmental Permitting Regulations (England and Wales) Regulations

2010 (EPR 2010). two permits are being applied for:

- Mining Waste Permit: This permit submission will be supported by the information contained in this ES report, specifically with regard to: ground and groundwater protection, waste management planning and air quality;

- Radioactive Waste Permit: In the event that the well is tested, the flow from the well ~~is likely to~~ **may** include some normally occurring radioactive material (NORM) from the ~~sub-surface geological formations~~ **formation waters**. This material is likely to be assessed as radioactive under schedule 23 of EPR 2010. The permit submission will include a Best Available Technology (BAT) submission demonstrating the effectiveness of the waste management arrangements put in place by the Applicant.

Highways & Access

6.16 Traffic would be generated by workers travelling to and from their shifts, deliveries of stone for construction of the road and site during Phase 1, deliveries of water, cement, drilling materials and other supplies and removal of fluids generated during well testing and waste for disposal during the remaining phases of the Proposed Development. These deliveries would be made during the working day with all but essential deliveries being made during daylight hours. Only in exceptional circumstances which were operation or health and safety led, would deliveries be made at night.

6.17 There are no abnormal loads anticipated to be delivered to the Application Site however there may be some loads which need police escort during the mobilisation or demobilisation of the rig. Abnormal loads would require pre-authorisation with WSCC.

6.18 Traffic warning signs conforming to Chapter 8 of the Road Signs Manual (Ref 6.5) would be erected along Kirdford Road either side of the entrance and sight lines will be cleared as necessary.

6.19 It is proposed to make modifications to the existing field access for the duration of the construction period for which a Road Safety Audit has been undertaken (**Appendix 10.7**) and the access would safely accommodate all vehicles anticipated.

6.20 Having regard to WSCC's approach to freight management which requires lorries to be kept on main routes for as long as possible and the independent safety audit, it is proposed that all construction traffic will route to the Application Site via the A272 and then Durbans Road / Kirdford Road.

6.21 The predicted volumes of traffic generated during each phase of the Proposed Development are set out in **Table 6.2A** **and within the parameters in Table 4.1 of Chapter 4A Project Description.**

~~**Table 6.2**: Two-way Daily Vehicle Movements~~

~~**Phase**~~	~~**Light Vehicle (LV) Movements**~~	~~**Heavy Vehicle (HV) Movements**~~	~~**Total 2-way Daily Movements**~~
~~1 Construction of access road and well site~~	~~13~~	~~22~~	~~35~~
~~2 Mobilisation and drilling~~	~~40~~	~~28~~	~~68~~
~~3a/3b Testing of gas/oil~~	~~4~~	~~2~~	~~6~~
~~4a/4b Retention or restoration~~	~~13~~	~~22~~	~~35~~

Table 6.2A Two-way Daily Vehicle Movements by Phase

Phase	**Activity**	**Light Vehicles**	**Heavy Vehicles**	**Total Vehicles**
1	**Construction**	**9 (max 10)**	**20 (max 40)**	**29 (max 50)**
2	**Main rig mobilisation**	**38**	**24**	**62**
	Drilling	**38**	**6**	**44**

Phase	Activity	Light Vehicles	Heavy Vehicles	Total Vehicles
3	Testing (vertical)	38	6	44
2	Drilling (lateral)	38	6	44
	Main rig demobilisation	38	24	62
3	Workover rig mobilisation (may occur twice during testing)	16	20	36
	Testing (lateral)	8	4	12
	Workover rig demobilisation (occurs twice during testing)	16	20	36
4a	Main rig or workover rig mobilisation	16	20	36
	Restoration	9 (max 10)	20 (max 40)	29 (max 50)
	Main rig or workover rig demobilisation	16	20	36
4b	Retention	1 per week	0	1 per week

6.22 The largest equipment to be moved to the Application Site would be the drilling rig during Phase 2. The haulage contractor has responsibility for traffic control and escort duties for the rig whilst it is under his command and would prepare for the rig movement well beforehand to ensure all traffic movement orders and holding areas have been organised.

6.23 The rig components would be delivered to site in a strict sequence over the mobilisation period, preceded by one or two 100 tonne cranes. The mobilisation would proceed at a controlled rate to ensure that the deliveries are made to suit the construction of the rig. This would ensure that there would not be a build-up of stationary lorries on the public highway.

6.24 The effect of HGV movements on the highway network is assessed within Chapter 10**A** – Transport and Access.

6.25 A Traffic Management Plan (TMP) would be prepared with the focus of minimising disturbance which could potentially arise from construction traffic. The key elements of the TMP would include:

- Where identified as necessary for unconventional HV traffic, police presence and assistance with traffic control will be arranged;
- Routing traffic to the Application Site in order to maintain HV traffic on WSCC's advisory lorry route network for as long as possible and thereby minimise the impact of construction traffic on local communities;
- Provision of a hardstanding area within the Application Site in order to stagger vehicle arrivals and departures and therefore prevent queuing on the highway at the site entrance;
- Scheduling of construction traffic movements (equipment and materials), when possible, to avoid the peak traffic periods at the beginning and end of each day and other sensitive periods, in order to minimise any potential disturbance to local traffic or safety impacts at junctions;
- Provision of information to parish councils relating to the construction period, including any unconventional HV traffic which may be scheduled;
- Signage to identify access routes and to inform motorists that the local roads are accommodating construction traffic; and
- Wheel washing on site and road sweeping carried out to keep the local highway clear of mud and debris.

6.26 It is proposed that the preparation of the TMP would be a planning condition and that the TMP would be prepared and agreed with the Highway Authority prior to commencing activities on site.

Noise

6.27 The adoption of standard working hours during Phase 1 Construction would avoid the community being disturbed at night. It would be usual practice to allow potentially noisy activities only during the normal working week and on Saturday mornings.

6.28 Surrounding residents would be kept informed of the progress of works via regular correspondence from Celtique issued to coincide with key project and operational milestones. A notice would also be erected next to the entrance to the Application Site. On both materials a Freephone contact number would be available for any residents who wished to contact Celtique during works.

6.29 Quiet working methods would be adopted where feasible including the use of the most suitable plant and reasonable hours of working for noisy operations. Noise would be controlled at source using best practice means, such as the following:

- Unnecessary revving of engines would be avoided;
- Equipment would be switched off when it is not required;
- The drop height of materials would be minimised; and
- Where practicable, plant and vehicles would be started up sequentially rather than all together.

6.30 On-site noise levels would be monitored regularly.

6.31 During Phase 2 Mobilisation and Drilling, best practice means would be used to limit noise from the rig. This would include the use of diesel exhaust silencers and attenuators allowing cooling air into and out of acoustically-enclosed machinery. All equipment would be kept in good repair to ensure the highest noise attenuation. Access doors to all noisy equipment would be kept closed unless being used for access.

6.32 No additional mitigation measures would be required for noise during Phase 3 Testing or 4b Retention of the Proposed Development.

6.33 During Phase 4a Restoration, similar mitigation measures would be implemented as for construction to ensure limited noise disturbance.

Soils and Ground Conditions

6.34 All excavated soils would be retained on site for future reinstatement during the restoration phase. The topsoil would be removed and stockpiled to avoid compaction that could lead to permanent loss of the soil structure. In order to suppress dust and particles, procedures for the dampening down of stockpiles will be put in place.

6.35 The topsoil would be stripped off using an excavator and placed in a stockpile as close as possible to the point of excavation. This limits the disturbance of the soil structure and the amount of tracking over both the topsoil and the exposed site formation. Topsoil and existing bunds removed from the line of the access road would be taken by dumper to a stockpile on the main site to avoid stockpiling soil on the RPA of the trees. The topsoil and subsoil bunds would be located outside the canopies of the trees (**Figure 4.2A**).

6.36 If testing shows that extracting hydrocarbons is either not possible or not commercially viable, Phase 4a Restoration would be progressed. Following removal of the equipment, the stone surface would be stripped, the geomembrane and concrete removed and the subsoil pulled back from the stockpiles to re-form the original contours of the Application Site. No soil would be imported. The topsoil would then be spread over the Application Site in a uniform layer.

Ecology

6.37 The trees and hedgerows in the vicinity of the Application Site would be protected from possible damage arising from compaction by equipment or stockpiled soil.

6.38 Prior to any earthworks taking place a fence will be erected at a distance of 15m from the field boundaries or individual trees to protect the root systems of the trees.

6.39 The access track would be aligned to create a 15m wide buffer zone between its nearest point and the adjacent screen of trees to avoid the root protection area (RPA).

6.40 However, there would be one location where the access from the highway would pass over a tree RPA and protective measures would be taken to protect the roots of the adjacent trees. It is proposed to place a protective plate on top of the existing tarmac secured in position by railway sleepers positioned on the west side of the entrance with steel road pins driven into the ground to prevent the plates from slipping. Tarmac would then be laid on top of the plates to provide a slip-resistant surface and hold the plates in position.

6.41 The RPA for the trees adjacent to the access road and well site would be safeguarded by erecting a fence as shown on **Figures~~ 4.6A**.

6.42 During Phase 4a Restoration, removed hedgerows would be replaced with young whips of native hedgerow plants protected by wooden post and rail fences with rabbit netting. Any dead plants would be replaced. The post and wire fences would be left up to protect the freshly laid soil from livestock for the landowner to remove at his own convenience.

Landscape & Visual Impact

6.43 The topsoil stripped away to facilitate the works would be formed into soil bunds of circa 3m in height. They would screen the temporary site cabins and lower parts of the drilling infrastructure. The location of the bunds is shown on **Figure 4.7A**.

6.44 A screening bund would be constructed from topsoil around the flare area to limit radiated heat during Phase 3 and also reduce visual impact.

6.45 The Application Site would be lit by free standing lighting towers during hours of darkness. The assessment of light spillage effects is provided in Chapter 12**A** Lighting. The following mitigation measures would be implemented throughout all phases of the Proposed Development:

- Lighting on the rig would be inward and downward pointing;
- The target lighting levels for the site to be set according to the relevant standards, Health and Safety and security requirements, but would be kept to a minimum to limit the effects of reflected upward light creating an aura above the site;
- If areas of the site are not used operationally throughout the night, the opportunity to dim fittings or switch some off would be taken, again subject to safety and security needs;
- Lighting would be angled away, and where possible positioned away, from the woodland edges; and
- The power of the lights would be the minimum necessary for purpose.

Water Resources

6.46 Septic tanks would collect shower and wastewater from the contractors' compound to avoid runoff to the ground and water pollution. Water supplied to the rig and cabins would be made by road tanker.

6.47 As the site is levelled during Phase 1 an impermeable Bentomat geomembrane (or similar) would be laid on the exposed and rolled surface, protected by a layer of geotextile. Ditches and bunds would surround the main part of the site (**Figure 4.2A**) and the membrane would continue into the ditches to form a continuous lining (**Figure 4.9A**). These structures would prevent runoff from going into the ground or off site into water courses.

6.48 The well head would be located within a concrete chamber (well cellar) with a sealed floor to contain any fluid arising from the drilling operations. The well cellar would comprise concrete manhole rings set into a concrete base with a concrete apron around the top to facilitate site cleanliness.

6.49 Liquids produced from the well during Phase 3 Testing would be stored in tanks contained within a bunded area with a perimeter bund to create sufficient storage

capacity to equal 110% of one of the tanks as a precaution against leakage.

6.50 During Phase 4a Restoration, any land drains that were disturbed would be reinstated or a new system installed by agreement with the landowner. There are no watercourses adjacent to the Application Site but any ditches around the perimeter would be cleaned as necessary.

Waste Management

6.51 Drilling mud and rock cuttings would be collected in tanks which would be located on a concrete pad and transported from the Application Site by road for disposal at an authorised waste disposal facility. Concrete would be broken up and taken off site for recycling.

6.52 As discussed in 6.15, any NORM materials produced during the well test will be managed, under permit arrangements, through approved procedures and the use of authorised waste management contractors

6.53 **The contents of the portable toilets would be stored in septic tanks and/or removed periodically as necessary, to an approved waste disposal facility. The refuse skip would also be emptied periodically and the contents taken to an approved waste disposal facility.** ~~The contents of the portable toilets and refuse skip would also be removed periodically to an approved waste disposal facility.~~ The contents of the surface water collection ditch and compound sump would be used to build the drilling mud or emptied as necessary and transported by road tanker for disposal at an approved waste disposal facility.

6.54 During Phase 4a Restoration all loose debris and material would be taken off site for salvage or disposal at a licensed waste disposal facility in accordance with all relevant legislation. The stone surface would be scraped clean of any mud or rock cuttings. An contaminated stone would be dug out and disposed off at a licensed site in accordance with relevant legislation. All containment ditches and the concrete cellar around the well would be pumped out and the water taken off site by tanker to an approved waste water treatment facility. The geotextile membrane would also be disposed of at an approved waste disposal facility.

References (Ref)

6.1 Borehole Sites & Regulations (1995)

6.2 Management of Health & Safety at Work Regulations (1992)

6.3 Construction (Design & Management) Regulations (2007)

6.4 Offshore Installations & Wells (Design & Construction etc.) Regulations (1996)

6.5 Traffic Signs Manual 2009 Chapter 8, London, The Stationery Office.