

**CUADRILLA RESOURCES  
LIMITED**



**SECTION – 2**

**SUPPORTING STATEMENT  
TO THE APPLICATION**

**Cuadrilla Resources Limited  
July 2010**

## 1. Introduction

Bowland Resources Limited, is a wholly owned subsidiary of Cuadrilla Resources Corporation Limited, with its Head Office at BBD House, Stowe Court, Stowe Street, Lichfield, Staffordshire, WS13 6AQ. Bowland Resources Ltd conducts all United Kingdom exploration and production operations from their Lichfield office.

Cuadrilla Resources Corporation Limited is engaged in the exploration for and production of hydrocarbons. It holds exploration and development licences granted by the Department of Energy and Climate Change (DECC) covering large areas of onshore United Kingdom. These Licences give the Company the right to search for subsurface hydrocarbons by physical means within the licence boundaries.

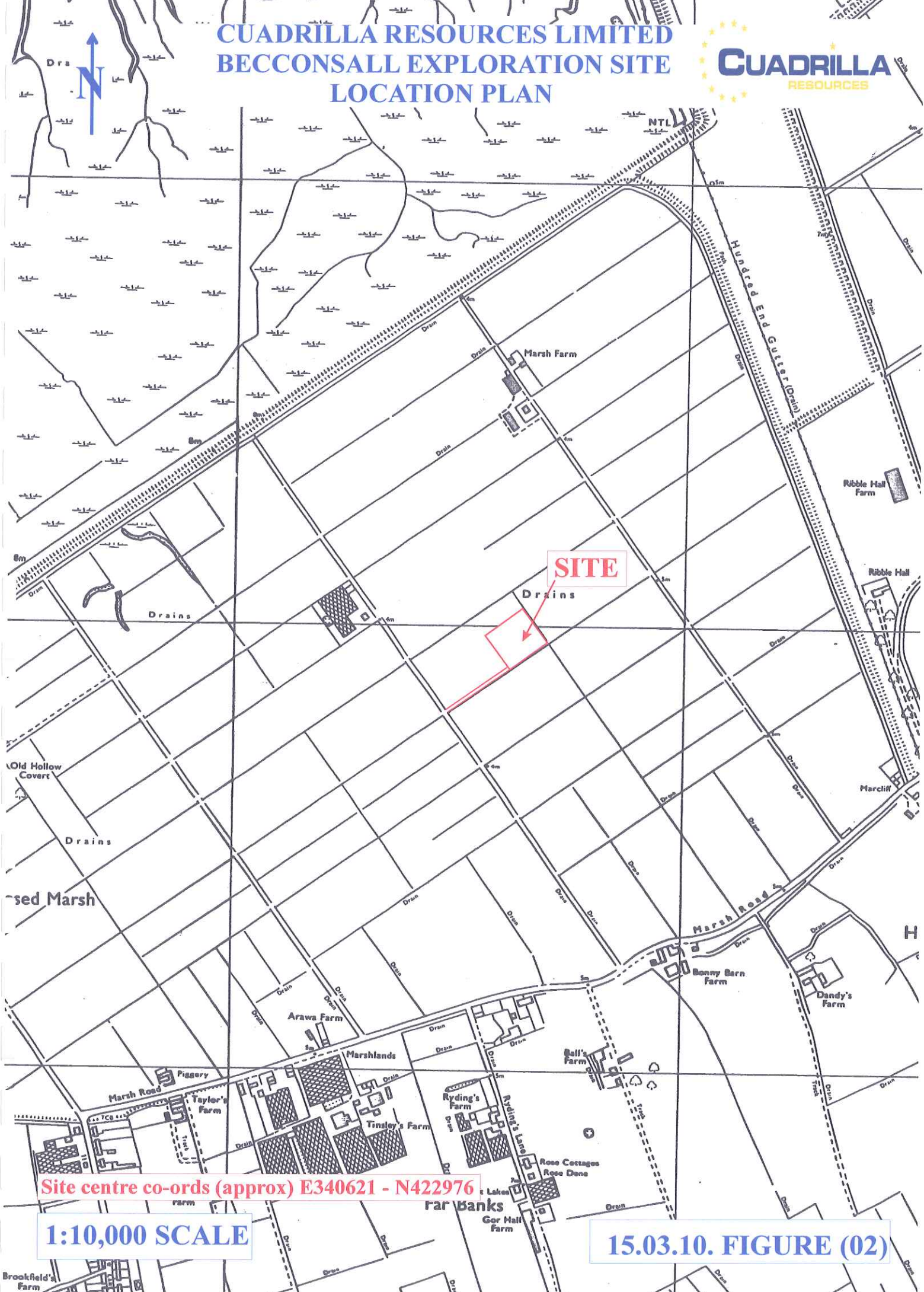
In accordance with best practice, it is the Company's policy to assess the environmental impact of all its major developments, to review those developments when in operation and to ensure that final site restoration is satisfactorily completed when these developments are finally abandoned.

The proposed drilling rig and equipment will be selected to ensure that the development can progress in an environmentally acceptable manner.

### 1.1 General Statement

The Licensees of Petroleum Licence PEDL 165 (see Appendix A) wish to carry out an exploratory drilling project into the Becconsall structure on farmland off Bonny Barn Lane, Banks, Southport, Lancs (see figures 2 and 3 overleaf). It would be a relatively short duration construction project involving the initial civil works of an access track (upgrading only), a passing place and a drilling platform followed by the drilling of an exploratory well, and possibly a short flow test of any discovered hydrocarbon bearing horizons. **To allow sufficient time to complete the operation, analyse any test results and restore the site, the operator would require the following time consents:- that the operation must start within three years of the permission and the operation must be completed including restoration within 3years from the start of site operations.** Lack of exploratory success would lead to the safe plugging of the borehole and restoration of the site. Exploration success would be followed by the safe shutting-in of the borehole and its suspension pending a further planning application and consent for further testing/appraisal and possibly a production operation. In any event the drilling rig would be removed from the site after a matter of only a few weeks.

# CUADRILLA RESOURCES LIMITED BECCONSALL EXPLORATION SITE LOCATION PLAN



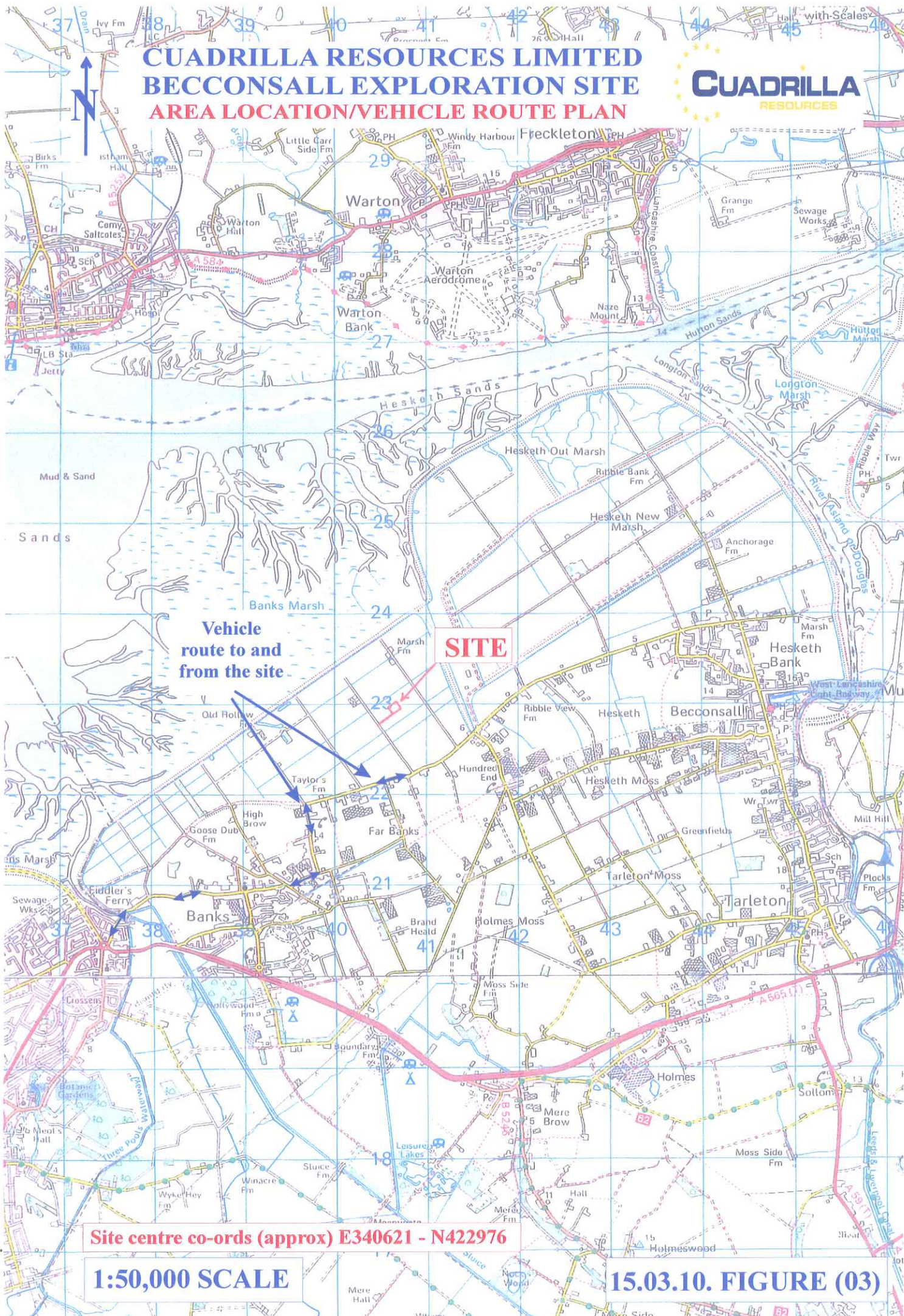
Site centre co-ords (approx) E340621 - N422976

1:10,000 SCALE

15.03.10. FIGURE (02)



# CUADRILLA RESOURCES LIMITED BECCONSALL EXPLORATION SITE AREA LOCATION/VEHICLE ROUTE PLAN



Vehicle route to and from the site

**SITE**

Site centre co-ords (approx) E340621 - N422976

1:50,000 SCALE

15.03.10. FIGURE (03)



## **1.2 Petroleum Licensees**

Cuadrilla Resources Corporation Limited are the licensees of PEDL 165 and as operators will manage all exploration, appraisal and any development.

## **1.3 The Petroleum Licence/Government Policy & Local Minerals Plan**

The proposals to which this planning application relates fall within the Licence Area PEDL 165 and the terms applicable thereto. Cuadrilla's Licence Holding covers an approximate area of 1130skm of Lancashire between Blackpool and Preston. The Petroleum Licence, PEDL 165, allows for petroleum development and production to take place (see Appendix A on licensing system).

The stated government policy is that it is in the national interest to "ensure the recovery of all economic hydrocarbon resources" and this is a requirement for all licensees with petroleum developments.

Following a discovery and before approving any operators development plan, the Minister will have to be assured that the maximum amount of hydrocarbon is recovered within reasonable economic constraints. The Guidance Notes on Procedures for Regulating Oil and Gas Field Developments state that the Department will work with licensees to ensure the Development option agreed is that which is most likely to secure the full recovery of economic reserves. In most cases there will be no divergence between the outcome of the pursuit of commercial objectives and the objective that all reserves whose value exceeds their cost of production are made available to the market.

## **1.4 Exploration Objectives**

The Company now proposes to investigate the Beconsall Structure by the drilling of an exploratory well and, if justified, the short-term flow testing of the well. The well would establish if hydrocarbons are present in the currently mapped structure, and if economic reserves are present in any reservoir(s) encountered. The drilling operation/well will be known as Beconsall No.1.

**The subject of this planning application is for the initial drilling of the Beconsall exploration well from the site with a short testing programme, which will be approved by the HSE and DECC.**

If the Becconsall No. 1 well is successful and if encouraged by the short term well testing and reservoir performance, the well would be suspended with the installation of cement grouted steel casing and a well head control valve assembly (see figure D02 under Appendix C). If unsuccessful the well will be plugged and abandoned in a manner approved by the HSE and DECC, and the site restored to its former usage (see restoration plan Appendix G).

Any plans to develop a hydrocarbon discovery at the Becconsall site would be the subject of a further planning application(s). The licensees would be pressed to develop any commercial discovery by DECC, the licensing authority whose duty it is to encourage oil and gas exploration and production activities in the UK. Such a possible future development could involve the drilling of an additional well(s).

An application to the Health and Safety Executive (Offshore Safety Division) and DECC for Consent to the Drilling and Completion of a Well will be made subject to the Planning Consent sought herein. The Project Plan would then be put into operation with the drilling of the Becconsall well, its short term testing, and if successful the well shut-in and suspended with a wellhead valve assembly installed at surface, and the drilling rig moved off-site.

## **1.5 GEOLOGICAL SUMMARY BECCONSALL PROSPECT**

Becconsall-A is located on the southern side of the Ribble Estuary, within PEDL 165, western Bowland Basin, Lancashire, Northern England (see Figure 1 under Appendix B). The well is located approximately 1.5 kms east of Becconsall and 3.6km to the SW of the BP/BG well-site at Hesketh Bank and about 3km NE of the Banks-1 well location drilled by Clyde Petroleum in 1992. A geological map based on the BGS Preston and Southport Sheets (Figure 1) shows the relative location of these sites.

Becconsall-A is to be drilled as part of a shale gas exploration program, one of the first of its kind in Europe. Structurally the well is located in the Formby sub-basin which lies to the west of the Preston-Leyland Ridge and is bounded to the west by N-S trending fault system including the Woodsfold Fault and the Western Coalfield Boundary Fault. These faults form the western boundary fault of the Preston-Leyland Ridge which is a tilted fault block of Carboniferous rocks overlain by Triassic Sherwood Sandstone Group.

The target formation for Becconsall-A, as with the other Cuadrilla wells, is the Carboniferous Bowland Shale Formation. Here the target formation is somewhat deeper and the top Carboniferous is predicted to occur at a depth of about 6,200ft and the top of the Lower Bowland Shale at about 8,000ft. The total depth of the well is estimated to be 10,200 ft.

Structurally the well location lies in the Formby sub-basin west of the Preston-Leyland Ridge and bounded to the west by a complex N-S fault system (Figure 2 – regional seismic section). Previous wells in the area, like the Hesketh-1 drilled by a Joint Venture between the Gas Council (British Gas) and BP in 1990, show strong gas shows within the Bowland Shale Formation. The well was drilled to a total depth of 4,250ft and encountered significant bituminous hydrocarbon shows at a number of levels and very significant gas shows in the Bowland Shale Formation.

The depth structure shows that the depth of the top Bowland Shales increases down dip eastwards away from the Western Boundary Fault and we expect the whole target formation to be about 3,000 ft thick. Thus the final total depth of the well will be about 10,200ft.

Hesketh-1 was drilled on the crest of the Preston-Leyland Fault block. A summary of the well section and gas shows is shown in Figure 3. The well penetrated the Sherwood Sandstone Group and terminated in Carboniferous rocks of probable late Dinantian age. The Collyhurst Sandstone is absent in the Hesketh-1 well but is well developed in the Formby sub-basin and is expected to have a thick development in the Becconsall well. It was the results from the Hesketh well (and Thistleton-1) which attracted Bowland Resources to the shale gas potential in this area.

The Becconsall-A well is located immediately NE of Banks-1 and we are expecting to encounter very similar conditions to those encountered in the Banks-1 well. In particular a relatively thick Permo-Triassic section overlying thick Carboniferous section. The Bowland Shale gas reservoirs in these wells are described as 'unconventional' reservoirs. In such reservoirs the source, reservoir and seal rocks are all in the same formation and methane gas is widely distributed as adsorbed and free gas throughout the formation in relatively low concentrations. Subsurface stimulation is needed to help flow the gas to surface. Unconventional reservoirs of this type are making huge contribution to the natural gas reserves in the USA and elsewhere and could supply a significant proportion of the UK's energy needs.

The proposed well, Becconsall-A, is designed to be drilled as a vertical well with 13 3/8" casing being set to depth of 2200ft in order to prevent any damage to the aquifers in the Sherwood Sandstone Group and is planned as an integral component of the Cuadrilla exploration programme in PEDL 165.

## **1.6 Benefits of the Development**

In that the proposed project involves the investigation by drilling of the hydrocarbon potential of the subsurface geological succession of the Becconsall Structure, the main benefit would be on a national scale. Such investigation whether successful or not provides an evaluation of the nation's mineral wealth. At present or in the future such mineral wealth may be further developed in the public interest. Hydrocarbon exploration activity has always been strongly favoured by central governments of whatever political persuasion.

Locally, the benefits of such a hydrocarbon exploration project are small, although additional money is brought into the area thereby for such purposes as land leasing, onsite building works, use of local contractors, suppliers and services, and the accommodation of the personnel involved in the onsite operations. Should such exploration be successful, then as currently structured the rates payable on petroleum production amount in various ways to a significant percent of the value of that production. In addition, the employment of a small number of local people, depending upon the size of the production operation, may result.

## **2     The Environment**

### **2.1     The Location and Access**

The choice of the proposed location for an exploration well site in this case has been governed by an extensive site location search and also governed by the crestal area of the Becconsall Structure, based on the current geological and seismic data mapping. The exploratory well to be drilled is located at National Grid Reference E340621 – N422976 (site centre), which is approximately 350m east of Marsh Nurseries, 500m south of Marsh Farm, 800m west of Ribble Hall, and 800m north from the nearest property along Marsh Road, Marsh Nurseries is the nearest residential property to the site. (see local area plans Figures 2 & 3 following page 01).

The site has also been chosen for a whole variety of other reasons such as level ground, good highway access off Marsh Road via the (A565T) and utilising the existing access track (Bonny barn Lane) to Marsh Farm Nurseries; distance from residential properties regarding noise and visual intrusion and most importantly the site does not affect sites of special interest, special conservation area or known archaeology.

The chosen site situation will enable the operators to drill a vertical well using one of the smallest drilling rigs available in overall height and general size available in Europe. This will lessen any visual impact whilst the rig is on site for a short period.

The proposed site is situated on farmland which is used for arable farming and is currently farmed by the owner. The land is currently growing a crop of turnips.

### **2.2     Site Access Assessment & Description**

#### **Highway Access Point**

The access is off Bonny Barn Lane utilising and upgrading the existing field access point. The proposed site access and visibility splays are detailed in the transport assessment under Appendix F. It is proposed that all heavy goods vehicles will access the site via the A565T approaching from the west via the Fiddlers Ferry roundabout.

#### **Short Access Track**

The short access track from the upgraded field gateway will require full construction consisting of removing 300mm of topsoil and replacing with stone to form a track between the access and the site. The first section will be constructed at double width to act as a passing place for vehicles arriving and leaving the site. The material (stone) will be imported to site by 20 tonne lorries and the amount of stone is included in the overall estimated 160 loads (see construction & restoration transport loads under Appendix C & G).



The Stage (1) Safety Audit raises some issues, with the main one being the use of temporary signs warning other road users. The company will adhere to any advise/signage recommended by the County Highways Department.

### **Site Area.**

The site is the main feature of the development which lies 350m from the nearest residential properties and 8km north of the properties along Marsh Road. Hundred End. As mentioned previously the site has been chosen for a number of reasons and as hydrocarbons can only be extracted from where they lie. The visual aspect of the site was carefully considered in addition, consideration has been given on the nearby community in relation to a site that meets all of the issues that need addressing when finding a site such as noise, highway access etc. Nearby properties will have some far distance views of the site which will only become apparent when the rig mast is elevated.

### **2.3 Environmental Impact Assessment (EIA)**

The site selected does not, to the applicant's knowledge, form part of a Site of Special Scientific Interest or other Statutory Designation, nor is it a Historic Site or have any Historic Buildings upon it.

A EIA screening opinion was requested from Lancashire County Council and their decision is likely to confirm that based on information submitted it would not be a EIA development.

The company have carried the following studies and the results of these studies can be found in the Appendices.

- 1 Noise Study
- 2 Ecological Study
- 3 Highway Stage 1 Safety Audit & Transport Assessment.
- 4 Flood Risk Assessment.

As the development falls within a flood risk zone (3) a flood risk assessment has been carried out and the results can be found under Appendix K.

There are no hedges or trees affected by the proposal. The nearest pond to the site is 50m away (see Appendix E ecology survey).

### **2.4 Public Rights of Way**

There are no public rights of way such as footpaths or bridleways affected by the development.

## **2.5 Existing Utility Services**

There are no utility services such as gas, water or electric affected by the site but there are two main water pipes that traverse through the adjacent land.

## **3. Site Occupation**

An agreement for a licence/lease is being negotiated with the landowner for occupation of the site. Occupation would be for the duration of the exploration operations and site restoration thereafter in the event of lack of success. In the event of a hydrocarbon discovery of some kind the occupation would be extended following discussions with the Landowner and pending further County Planning Consent. The latter would also be in accordance with a Field Development Plan to be approved by the Department of Energy and Climate Change (DECC).

Planning permission is being sought for exploratory drilling only at this stage. Progress into production operations would be dependent upon the nature and extent of any hydrocarbons that may be encountered.

The time periods for the exploration operations are expected to be as follows:-

After receiving planning consent for the exploratory well the site construction and preparation would take four to five weeks to complete.

The drilling rig would then be mobilised to the site over an approximate two to three day period. Once rigged up the 24-hour drilling would take place over an approximate five to six week period.

Following the drilling and casing of the well, and if justified, by the results of initial well test of up to 7 days (which would take place with the rig in situ), this would be followed by an approved well suspension or “Plugging and Abandonment” procedures, and then, finally, a two to three day rig demobilisation period. This may be followed by a short well testing period of approximately 14 to 28 days. This would involve the removal of produced fluids if encountered from the site (see example well test programme under Appendix C). However the main aim of the operation would be to test any gas zones encountered in the shale layers which may involve an extended test beyond the 28days which may require further planning consents.

## **4. Access Track and Site Preparation**

The access, short access track and site preparation consist of a relatively simple low noise construction operation which consist of a small number of machines (3 or 4) and operatives 2 or 3. The construction involves the stripping off of the topsoil, storing and the grading of the underlying subsoil to form a base to build an impermeable stoned site as detailed fully below. The track and site will be constructed over a 4 - 5week period (5 or 5.5day weeks). Stone is the main delivery to site estimated at 160 x 20 tonne loads, an average of (6) per day (see construction loads under Appendix C).

The existing highway entrance has good visibility splays in both directions see the Stage (1) Safety Audit under Appendix F. The highway entrance does not require upgrading to accommodate the temporary exploration operational traffic (see stage 1 safety audit and transport assessment under Appendix F). The existing field access and new section of short track needs widening to allow for the large vehicles to pass when coming or leaving the site.

Drawing CRL – 001 (at the rear of the application) shows the access, site and the results from a contour level survey. The nature of the proposed site means that a suitably graded surface can be achieved with relatively little soil moving. The plans show a (.99)hectare exploration well site with a 75m x 75m (approx) stoned platform. The position and size of the platform may alter slightly within the (.99)hectare exploration well site.

The site area required for the construction of a drilling platform will be stripped of topsoil, which will be stored and maintained in a bund outside the northern and western perimeters of the site operations. This will form a screen from the nearest properties and act as an additional noise/visual barrier. Any subsoil will also be stoned separately on the western boundary which will also act as an additional screen, although it is expected that most of the subsoil will be used in the cut and fill. The site has been off set from the field boundaries to protect the field edges and drainage ditches. The subsoil will be used to level the site (cut and fill) although this is expected to be very little due to the existing levels of the land. The bunds will be seeded with an appropriate slow growing grass mixture (general pasture) to stabilise and prevent soil erosion and will be maintained free of weeds and vermin throughout the life of the site. The maintenance will consist of regular strimming and periodic weed spraying.

Once re-grading of the site area and the excavation of the small wellhead drilling cellar and outer ditches have been accomplished, any excess sub-soil will be stored in a separate bund to the topsoil. An impermeable membrane (see photographs 5 and 6 under Appendix I) will then be laid on felt over the drilling platform area to seal the underlying sub-soils including any aquifers from anything above. This membrane is then overlain with a further layer of felt and a further geotextile (Terram) membrane, finally to be overlaid with approximately 160 x 20 tonne loads of hardcore material to a depth of 300mm sufficient to withstand the weight of the drilling rig substructure and derrick, mud tanks and associated wellsite equipment . (see photographs 7 and 8 under Appendix I)

The impermeable membrane that totally seals the drilling platform and ditches, prevents any accidental spillage and rainwater from entering the underlying soils, groundwater, and local watercourses.



In the event of the well being a commercial hydrocarbon discovery an interceptor with inlet and outlet control could then be easily installed, allowing rainwater falling and collecting on the site to be released in a controlled manner, into either an adjoining watercourses (if distance permits), French drain and/or land drainage system. Any water discharge would have the prior approval from the Environment Agency.

The drilling cellar to accommodate the wellhead equipment, would be concreted and a conductor pipe/casing would be installed by drilling and running with the drilling rig (see casing and drilling programme under Appendix C).

The main site is fenced for the exploration operation with sheep netting with two strands of barbed wire and gated at the entrance (padlocked). The cellar is fenced with Heras security fencing (padlocked). If the site was developed in to a production site following planning approval then permanent security fencing gates would replace the temporary fencing used for the exploratory stage.

Construction work for the site will be undertaken during the daylight-working period 07.30 to 18.30 hours Monday to Friday, 07.30 to 1300 Saturdays. These hours of working also meets with Lancashire County Council Guidelines for Noise Control. **No construction work would be undertaken on Sundays or Public Holidays.**

## **5. Drilling Operations**

### **5.1 Drilling and Casing Programme**

The drilling and casing programme for the Becconsall well is shown under Appendix C.

### **5.2 Drilling Rig Layout and Footprint**

The type of drilling rig to be used for the drilling of the well at the Becconsall site will be similar to/or Rig 28 shown under Appendix C figure C03 and would have a mast of approximately 36metres. A footprint and the site layout for the exploratory drilling at Becconsall site is also shown see photograph No.01 under Appendix I.

### **5.3 Drilling Rig Mobilisation**

The number of loads for a rig mobilisation and demobilisation depends on the actual rig used. Transport loads required for a medium sized rig are shown on the chart Drill Rig Vehicle Movement Loads under Appendix C and F.

In brief the drilling rig is brought to site over 4 day period and consists of 34 loads of the following types:-

27 x 40ft loads with varied tonnage  
4 x lowloader loads  
1 x drilling rig.

To assemble the rig the following cranes would probably be required:

45 ton crane	1
25 ton crane	1

Additional vehicle movements will be required during mobilisation and demobilisation for a varied number of ancillary services, such as:

Mud logging cabin and equipment	c.1 loads
Wireline logging	c.2 loads
Materials and chemicals	c.4 loads
Casing and tubulars	c.6 loads
Operational Staff modules	c.3 loads

Other tankers and trucks will be required as necessary, for drilling materials/consumables, water, waste removal, fuel etc.

Additional light vehicle movements will also be required for staff and rig crew changes, plus support services personnel. These movements are at their highest during the drilling at 15 – 25 visits per day and detailed more fully in the movement charts (appendix C and F).

#### **5.4 Water Requirements During Drilling**

Water will be required to make up the drilling fluids used while drilling the well and for any emergency contingencies.

Due to the distances involved, piping water to the site and the size of the pipe required would not be practicable for a temporary short duration drilling operation.

Estimated quantities of water are:

- (a) Initial requirement - c. 20,000 gallons
- (b) Daily operations - c. None or 5,000 gallons (see note):-

Note: once drilling has started the mud system is design to circulate and retain the same water and as a result drilling water is only required as a top up.

- (c) Potable water - c. 1,000 gallons per week

### **6. Flow Testing and Suspension**

#### **6.1 Well Testing and Short Term Production Testing**

A well test, using the drilling rig, would normally only take place during daylight hours and would give an indication of the existence of producible hydrocarbons or shows of gas which may need a longer period of testing. The rig, cabins and associated equipment would then be moved off site to allow for the longer period of testing to take place. Short term production testing may take place

immediately after installing and cementing the production casing and over a period of some 14 – 28 days. Such testing should confirm the type of fluid contained in the reservoir, and some reservoir data. Any produced gas would be burned in a screened ground flare (see figure C05 under Appendix C) depending upon the nature, content and flow-rates encountered. Only small volumes of gas would be allowed to be produced in this initial testing operation. A more detailed description of the range of testing can be found under Appendix C.

Any other fluids recovered during testing such as water or light oils would be removed from site by road tanker and disposed of at an authorised establishment.

Tankers will be required to transport any produced oil/water to suitable a processing facility. The frequency of the road tankers will be dependent upon the production rate, but numbers anticipated are a maximum of two/three round trips per day. Clearly we would try to limit tanker movements to coincide with the hours of daylight/working day. In addition there would be one or two car/light van visits per day.

The company may require a longer test following the above mentioned short duration test. Any additional testing will be discussed with the County Planners and planning permission applied for.

## **6.2 Suspension**

On suspension or completion of the well the drilling rig and associated equipment would be removed from the site and the site made secure.

If the test results were encouraging and the well suspended, a wellhead valve assembly would be installed. Such equipment is illustrated diagrammatically by Figure (CO2) under Appendix C. Its actual size would be c. 1.83m – 2.44m above ground level, and it would be isolated behind security fencing for safety purposes. The purpose of such equipment, together with other down-hole equipment, would be to leave the well in a safe “suspended” status prior to further drilling, evaluation and a possible further planning application.

## **7. Restoration or Further Development**

### **7.1 Plugging, Abandonment and Restoration**

**Note: that at the time of occupation of the field section will still be arable land and therefore the arable section of the restoration plan will apply.**

If it is decided to abandon the bore-hole and not to suspend the well, pending further planning and development consent, it would be plugged and abandoned in accordance with procedures agreed with the Health & Safety Executive and



the Department of Energy and Climate Change (DECC).

All drilling equipment, mud and water tanks would be removed from the site. The steel casings would be cut c. 1.5 metres below ground level and a steel plate welded to the remaining casing stub.

Any remaining drilling mud and drill cuttings and wastes would be removed to an approved disposal site.

The hardcore and underlying membrane used to construct the site would be removed and the site restored as close as possible to its former condition in accordance with best agricultural practice. Any damaged land-drains would be replaced and re-connected. The sub-soil and topsoil from the storage embankments would be spread over the ground. The general reinstatement will follow the plan as described in Appendix G (unless such plan is amended in the light of new knowledge and technology).

The transport loads for the restoration will largely be a reverse of the construction. The loads are detailed in site preparation/restoration transport loads under Appendix C (Drilling) and G (Restoration).

## **7.2 Further Drilling and Development**

**The drilling of additional wells beyond the initial permitted well or other development of the site would be subject to a new planning application.**

Following a successful exploration well, discovering commercial productivity and reserves of hydrocarbons, the Company may wish to develop the site further. This could involve the drilling of further well(s) to access further reserves in the Beconsall structure and the production of those reserves.

## **8. Environmental Effects of the Development**

### **8.1 General and Visual Impact**

The location of the site is several hundred metres from the nearest residential properties with those associated with nearby farms. The closest being the at 350m which is screened by the topsoil mound. At this location because of the distances involved it is not expected to be seen as a visual intrusion and will not be generally noticed apart from when the drilling mast is elevated and in place for a number of weeks. The top soil mound to the north and west will also act an additional noise/highway barrier.

Ecological information obtained from Lancashire County Council's Biodiversity information centre confirms that the site area and surrounding land is not a site of special interest (see Appendix E).

## **8.2 Environmental Impact Assessment**

Given the general environmental information included in this application; and information sent to Lancashire County Council's for a screening opinion it is considered unnecessary to provide a further assessment at this time for the proposed exploratory well.

## **8.3 Landscaping Scheme**

As the application is for an exploratory well only then landscaping is not required at this stage however, if a discovery was made and the Company wished to exploit the discovery then landscaping would be included as part of a production application.

## **8.4 Access**

The access will be by way of the upgrading of the existing field access where some minor alterations to the field access point are required. Temporary highway signage is recommended (see highway Stage 1 Safety Audit and a transport assessment under Appendix F).

## **8.5 Noise**

The nearest residential property to the site are those associated with nearby farms which at 350metres away are not expected to experience any nuisance noise as a result of an independent noise study.

A background noise survey has been undertaken and the results are included as Appendix (D) with predicted noise calculations.

Three different types of noise are to be anticipated and these are as follows:

### **8.5.1 Site Preparation**

During the **four to five week** site preparation, noise will be of the levels to be expected from a typical civil construction project where earth-moving equipment is in operation (generally 2 –3 machines only). Such works will be conducted only between the hours of 07.30 to 18.30 hours, Monday to Friday, 07.30 to 1300 on Saturdays, with no operations being carried out on Sundays or Public Holidays.

### **8.5.2 Drilling**

During the **five to six weeks** of 24 hour drilling operations the noise emitted from the drilling location will be minimal at the nearest occupied residence and will only be for a short period of time. For safety and hole stability reasons the drilling operation is a continuous 24-hour operation, with the added advantage of shortening the total duration of the drilling operation.

### **8.5.3 Testing and Flaring**

During the final part of the exploratory operation a short **14 - 28 day** period may be required for flow testing to establish if economic reserves and productivity are available. Each reservoir so tested may require flaring or venting if gas is produced. Flaring is a low noise activity and is not audible beyond the site boundary. Due to the fairly remote location of the site any noise associated with the flare would be minimal. Actual noise disturbance testing an oil or gas discovery is a fraction of that generated by the drilling operation and for shorter periods of time with flaring operations normally carried out during daylight hours. If a longer period of testing is needed beyond the 28 days it would be the subject of a further planning application.

### **8.5.4 Vehicle Movements**

Noise from vehicle movements will be minimal and are not expected to be a nuisance to nearby residents at this location. Night time movements during the 24hour drilling operation are rare, not planned and would only become a necessity in the case of an emergency.

## **9. Waste Disposal**

Five sources of waste require disposal from the site:-

- 1) drilling mud is located in the mud tanks, and drill cuttings;
- 2) sanitary waste is collected in a sealed cess tank.
- 3) site drainage is collected in the ditches and a water suction sump (see drawing CRL - 001);
- 4) general waste-paper, timber, scrap-metal is collected in skips;
- 5) waste fluids processed out of the petroleum stream during testing operations are collected in storage tanks.

All waste materials, including wastewater and fluids (subject to prior analysis if required), from the drilling operations will be removed by licensed operators and disposed of at authorised locations. Foul sewage will be collected in a cess tank and this will be emptied periodically with disposal to an approved location. Any contaminated surface water collected in the lined ditching during drilling will not be released into the local watercourses or local drainage system, but will be disposed of at an approved location.

## **10. Lighting**

During drilling the rig must be illuminated at night for safety reasons and to permit safe operations. All rig lighting will be of low-level, facing inward and downward on the site. Such lighting will not be intrusive to local residents nor be distracting to the drivers of vehicles on any nearby roads. Drilling rig lights are designed to operate safely during 24hour drilling and at the same time not to affect areas outside of the site. The main working lights are attached to the sub-structure section of the drilling rig and are all positioned facing downwards (see figure H01 under appendix H lights numbered 1 - 4). The working lights are position specific and are not intended to light the whole site. Figure H02 under Appendix H shows the drilling rig lights at night.



The lights are completely sealed for safety resistant to a naked flame and are spark proof. In the case of the Beconsall site the working lights will also be screened by the soil mounds (see photograph No's. 09 & 10 under Appendix I) The mast lights have been limited in number and are low level strip lighting facing inward and downward (see figure HO1 under appendix H). The photograph titled Drilling Rig Lighting under Appendix H shows the rig lights at night and that they are site/equipment specific and have little impact outside the site.

In addition to Figure HO1, appendix H includes full details of the lighting and the positions which includes a top strobe light for warning aircraft.

## **11. Drainage and Pollution Control**

The proposed site is located where there have been no drainage or flooding problems. However, the provision of any header drains, if required, would ensure that the natural drainage of the land would not be impeded (see appendix K).

Pollution control is afforded by the impermeable membrane of the sealed site design, preventing liquids from penetrating into the soils and groundwater beneath the site or flowing from the site onto adjoining land and ditches. In addition, spill kits, designed for all materials and substances used on site will be held on site to deal with any emergencies that could arise from the drilling and any flow testing or any possible later production operations. This site design has been in use for a number of years and has been endorsed by the Environment Agency on all occasions and has now become the industry standard when building a site where oil may be encountered. The company will take any additional advice from the Environment Agency and adhere to any conditions they may attach to the planning permission.

The drilling mud system is important and is specifically designed to protect drilling mud losses to natural formation fluids and to confine formation pressure so as to prevent formation fluid flow into the well bore. The drilling mud system will be monitored constantly and maintained to specifications. In addition the drilling rig is fitted with blow-out preventers to close-in the well in the unlikely event of an unexpected pressure build-up.

## **12 Odour & Dust**

Odour and Dust from this type of limited development is minimal. The three phases of the development that might cause dust are:-

- a. **Construction** – This operation involves the removal of the upper soils and storing it in a mounds followed by the grading (cut and fill) of the subsoil to level the site area of the development. Due to the natural moisture in the ground coupled with the short duration involved (1/2 days) the soil is moved and stored before coming sufficiently dry to create any dust. Photographs 07 and 08 under Appendix I clearing shows the moisture still in the soil once moved and mounded. The access and short section of access track that requires construction involves minimal earth moving. This along with a 15 – 20mph speed limit ensures that any dust will be minimal.

- a. **Drilling** - As the drilling is all below the surface and involves water to lift drill-bit cuttings to the surface there is little chance of any dust from the drilling operation.
- b. **Restoration** – Like the construction the restoration will cause limited dust due to the soils being moved over a short period of time thus not allowed to dry sufficiently to cause any dust. There may be the potential for some dust during the final restoration phase of the site area when the topsoil is cultivated to bring it back to a suitable seed growing texture however this will not be dissimilar to general farm activities and the dust that is generally created from such activities.

13. **Ecology**

On the advice of the County Ecologist the company commissioned a full ecological survey (see Appendix E). A full biodiversity search was carried out from Lancashire County Council records and scoping was carried out as part of the full ecology survey.

Before work starts the company will comply with any recommendations of the study and engage an Ecologist if required to assist with any other works.

14. **Archaeology**

A County Archaeologist (Douglas Moir) was sent plans and details of the site and following a search he recommended that as there was no known archaeological interest, nor considered to be an area likely to encounter any previously unknown sites. Consequently he does not consider there to be a need for any archaeological investigation of the site.

15. **Landscaping**

As the application is for an exploratory well only then landscaping is not required at this stage, however, if a discovery was made and the Company wished to exploit the discovery then landscaping would be included as part of a production application.

16 **Air Quality**

Due to the remote location of this development and as the application is for temporary permission at this stage an air quality study is considered not necessary. However, if successful, and the development leads to any further permissions for either long term testing or hydrocarbon production then a full air quality survey may be required.

**17. Open Space**

Due to the remote location of this development and as the application is for temporary permission at this stage an open space study is considered not necessary. However, if successful, and the development leads to any further permissions for either long term testing or hydrocarbon production then a full air quality survey may be required.

**18. Relevant Planning Policies**

There are a number of relevant national, regional, county and local/Borough policies documents that are material to this application such as The Joint Lancashire Structure Plan 2001 - 2016, Lancashire Minerals & Waste Plan 2006 and Fylde Borough Local Plan 2005.

The main policies are covered within the Lancashire Minerals & Waste Plan 2006:-

POLICY 1: BALANCING THE POLICIES OF THE LANCASHIRE MINERALS AND WASTE LOCAL PLAN

POLICY 2: QUALITY OF LIFE

POLICY 3: BUFFER ZONES

POLICY 4: CUMULATIVE IMPACTS

POLICY 5: ENVIRONMENTAL AND OTHER BENEFITS

POLICY 6: PLANNING GAIN

POLICY 7: OPEN COUNTRYSIDE AND LANDSCAPE

POLICY 8: TREES, WOODLAND AND HEDGEROWS

POLICY 9: AGRICULTURAL LAND

POLICY 10: AREAS OF OUTSTANDING NATURAL BEAUTY - MINERALS DEVELOPMENT

POLICY 13: GREEN BELTS AND MINERALS DEVELOPMENT

POLICY 15: INTERNATIONALLY IMPORTANT NATURE CONSERVATION SITES

POLICY 16: NATIONALLY IMPORTANT NATURE CONSERVATION SITES - MINERALS DEVELOPMENT

POLICY 18: LOCALLY IMPORTANT NATURE CONSERVATION SITES

POLICY 19: MITIGATING ADVERSE IMPACTS

POLICY 20: WILD FLORA AND FAUNA

POLICY 21: WILDLIFE CORRIDORS

POLICY 22: WATER RESOURCE AVAILABILITY

POLICY 23: WATER RESOURCE PROTECTION

POLICY 24: FLOOD RISK

POLICY 25: COASTAL PROTECTION/OPEN COASTLINE

POLICY 26: NATIONALLY IMPORTANT ARCHAEOLOGICAL SITES

POLICY 27: OTHER ARCHAEOLOGICAL SITES

POLICY 28: ARCHAEOLOGICAL ASSESSMENT

POLICY 29: ARCHAEOLOGICAL INVESTIGATIONS

POLICY 30: HERITAGE

POLICY 31: PUBLIC RIGHTS OF WAY

POLICY 34: TRAVEL MINIMISATION

POLICY 37: STRATEGIC ROAD NETWORK

POLICY 66: OIL AND NATURAL GAS PRODUCTION

POLICY 67: ONSHORE FACILITIES

A full description of the above policies can be found under Appendix A.

**19. Other considerations**

**19.1 Health and Safety**

Measures to ensure the health and safety of all borehole operations will be undertaken as required by “The Borehole Sites and Operations Regulations 1995”, also “The Management of Health and Safety at Work Regulations 1992”, and the Company’s own “Health and Safety Manual”.

**CUADRILLA RESOURCES  
LIMITED**



**SECTION – 3**

**APPENDICES**

**TO THE APPLICATION**

**Cuadrilla Resources Limited**  
**July 2010**

Beaconsall Hydrocarbon Exploration Site  
Planning Application [July 2010].  
Prepared by Phil Mason

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