

**CUADRILLA RESOURCES
LIMITED**



APPENDIX - K

FLOOD RISK ASSESSMENT

Cuadrilla Resources Limited
July 2010

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

Cuadrilla Resources Limited
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Stowe Court
Stowe Street
Lichfield
WS13 6AQ

FLOOD RISK ASSESSMENT

Proposed Development Location:

AT BECCONSALL EXPLORATION SITE

BONNY BARN LANE,

BANKS

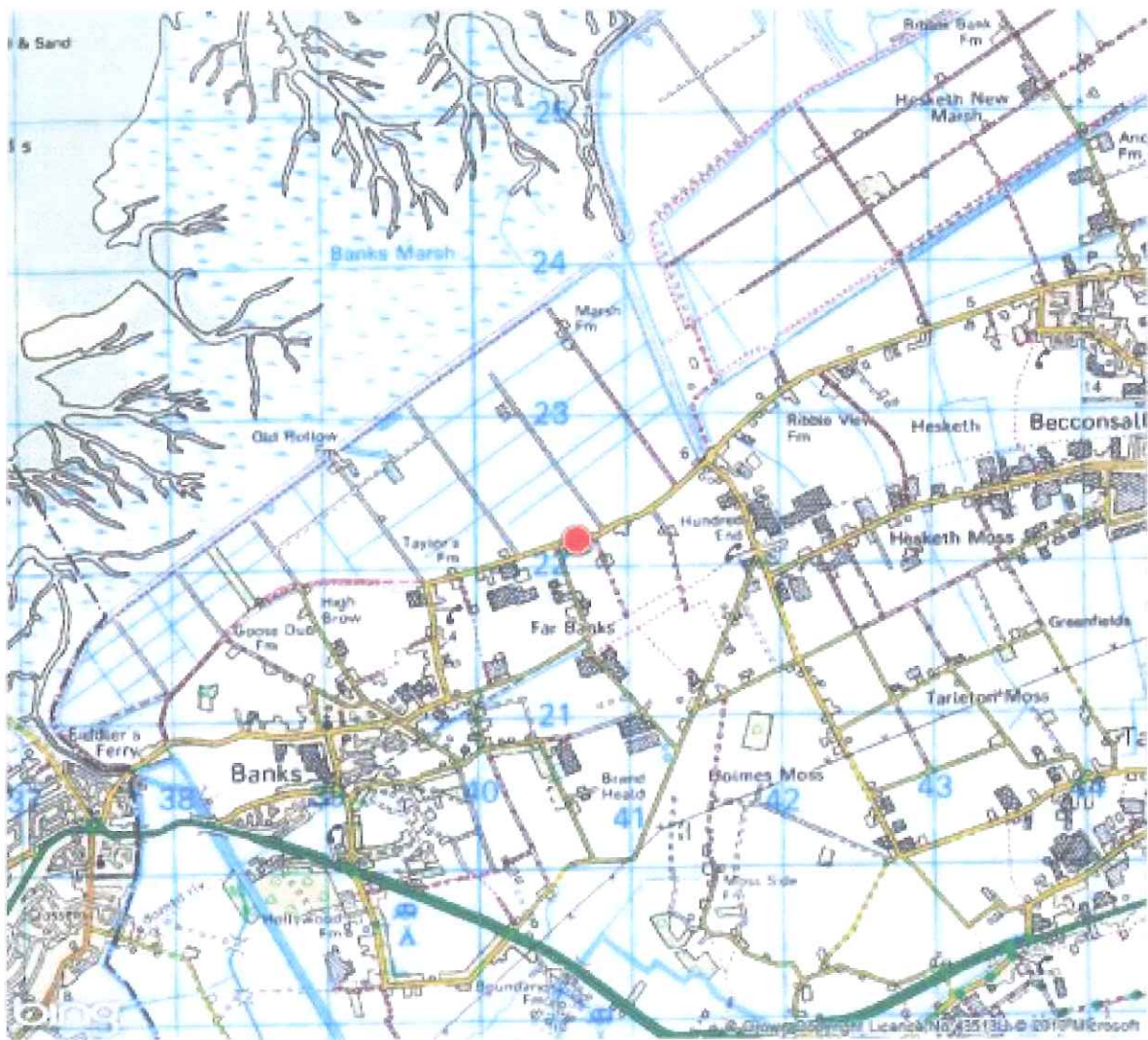
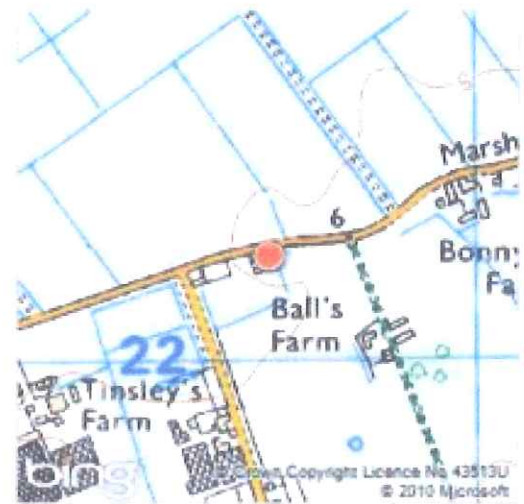
SOUTHPORT

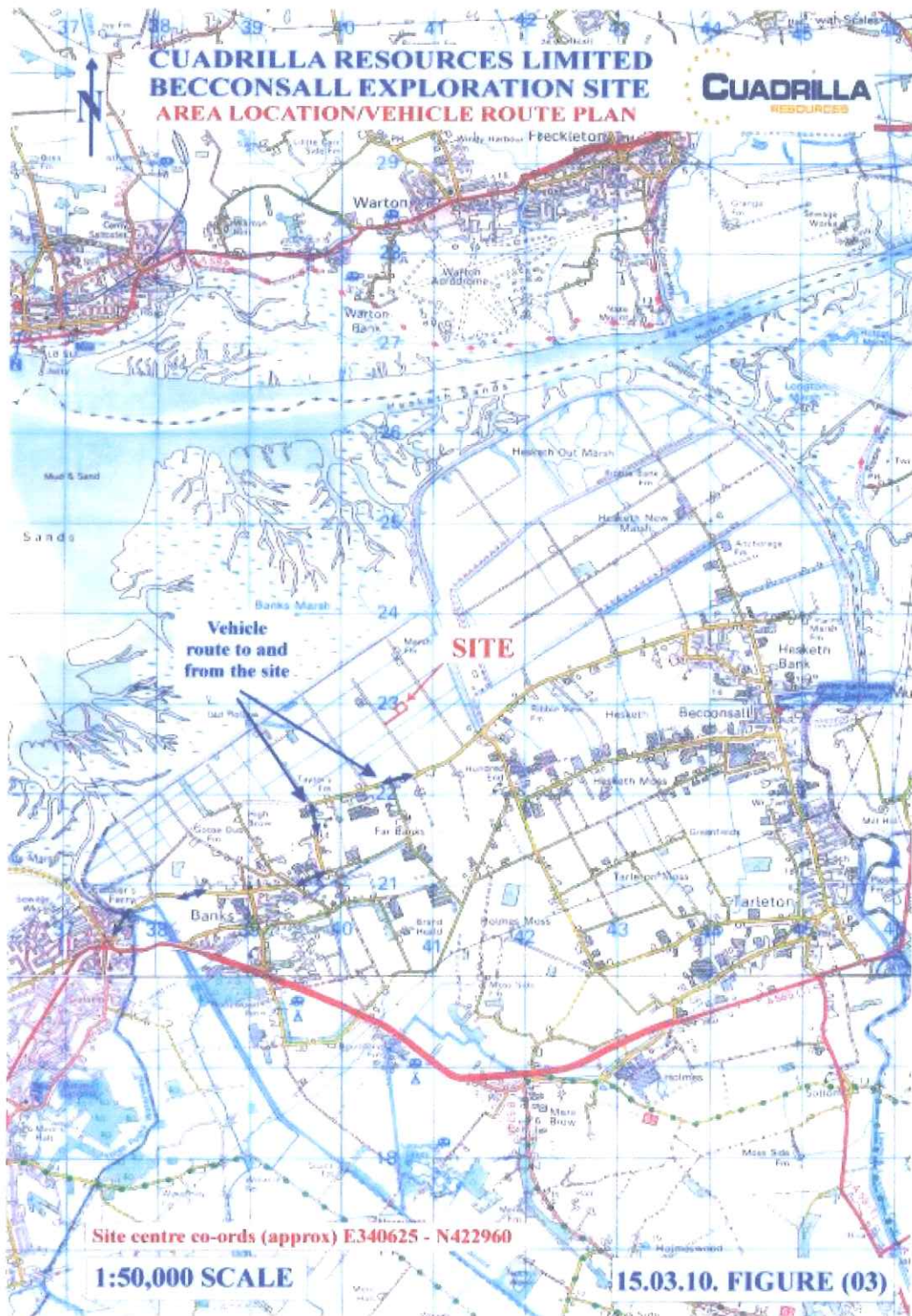
LANCASHIRE, PR9 8DY.

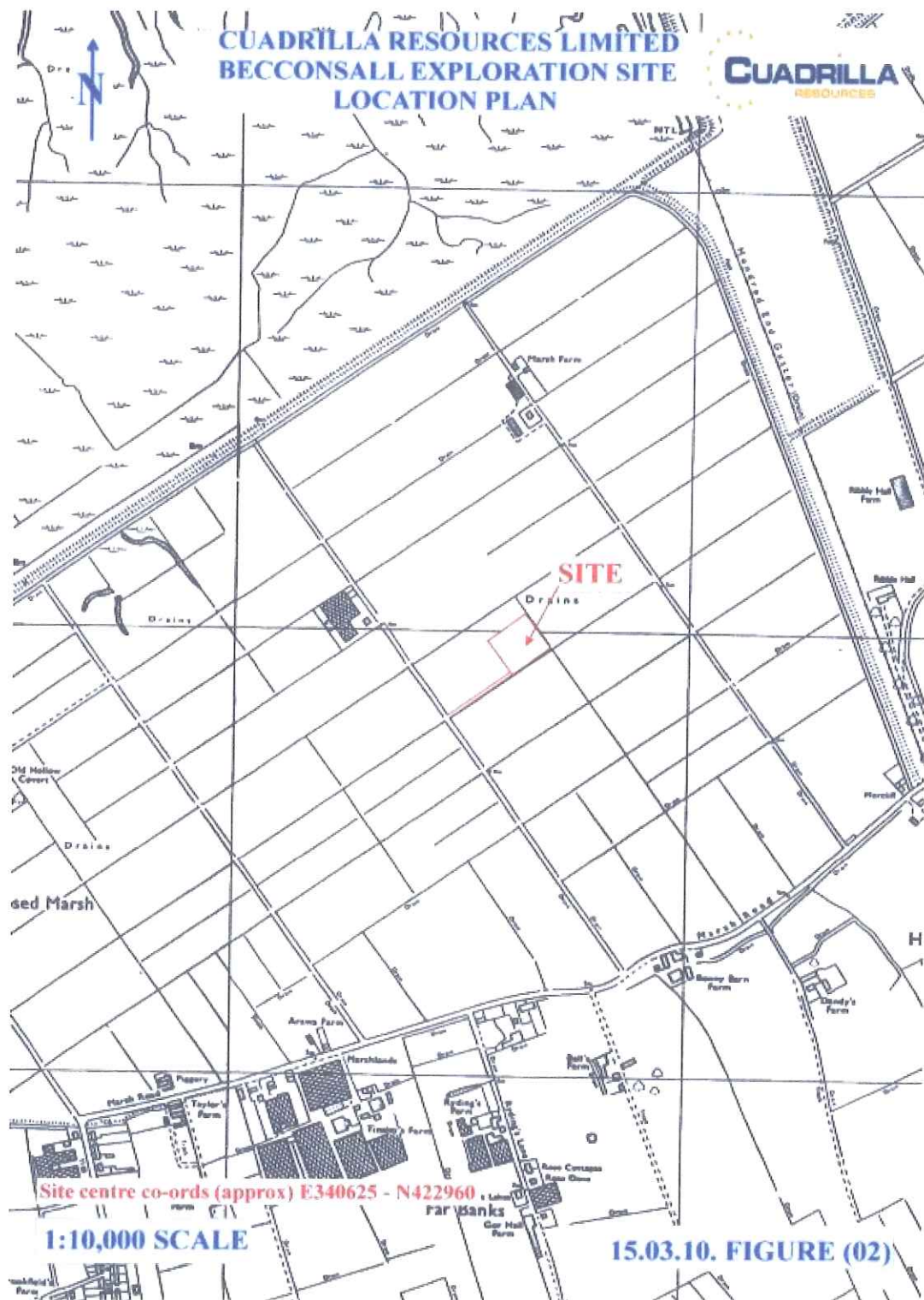
Dated: 17th July 2010

Bing Maps
PR9 8DY, Lancs

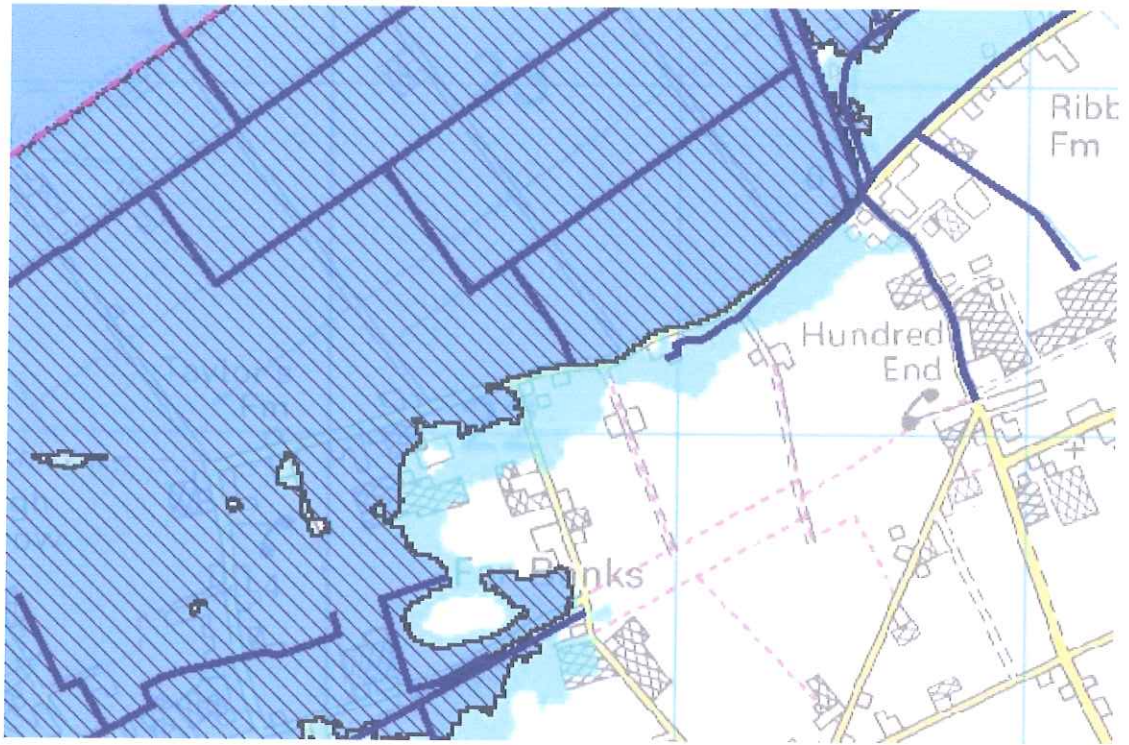
Geographical location











EA FLOOD MAP

**PROPOSED TEMPORARY CONSENT TO CONSTRUCT A
HYDROCARBON EXPLORATION SITE, TOGETHER WITH OTHER
ANCILLARY WORKS ON LAND AT BECCONSALL EXPLORATION SITE,
BONNY BARN LANE, BANKS, SOUTHPORT, LANCASHIRE, PR9 8DY.**

DESK TOP STUDY ON FLOOD RISK ASSESSMENT

General Note

This desk top study sets out the relevant points for consideration under PPS 25 for the general intended proposed use.

The proposal the subject of this assessment is to construct an exploratory drill site to include plant, buildings and equipment; the use of the drill site for the drilling of an exploratory borehole and the subsequent short term testing for hydrocarbons; the erection of security fencing and the carrying out of associated works to an existing access and track all on land of some 0.99 ha area, for a temporary period of up to 3 years, with subsequent restoration to agriculture.

Flood Zoning

The development site lies within Flood Zone 3 (defended), as defined for mapping purposes in the Environment Agency's (EA) Flood Zones. The Agency considers the application site is land assessed as having a less than 1 in 100 (>1%) annual probability of river flooding in any year and is classified as (**High Probability**). Water compatible and less vulnerable uses for the land are appropriate in this zone. The application land is however not known to have been affected by any potential flooding influence.

Flooding History

There is no record of any flooding of the application site. The land additionally was not the subject of any specific inundation on account of any abnormal run-off, such as was experienced in July 2007.

At this stage the modelled flood level, if available, has not been sought from the EA as the site should it be subject to inundation will not be in operation.

Also local anecdotal evidence was sought as part of this study and it has been confirmed that the site has not flooded in the last ninety years.

It should also be noted that the Environment Agency accepts that their flood map is not to be relied upon and for guidance only.

Proposed Layout

The layout of the proposed drilling rig arrangement is as shown on the enclosed drawings with access onto Bonnybarn Lane and thence onto Marsh Road.

Levels

The site, which has an area of approximately 0.99 Ha, has contour levels ranging at 5.00 AOD, with the land being of flat configuration, with the rig compound level to be set at an agreed datum. It will be bunded and sealed off. The access to the application land is level and enters Bonny Barn Lane at a general level of 5.00 AOD.

The configuration and level of the rig site will require the consent of the local authority as a condition to be part of any planning consent issued.

Off-site Implications

The surface water run-off from the site is to be recycled with the facility of a separator and used in conjunction with the drilling operations process. Where this may not always be practical on account of site processes, or when the rig is not in use, then the method of disposal of such run-off will be agreed with the local authority. This will generally be via the onsite separator, and if deemed suitable after analysis, through french drains into the existing adjacent land drainage system.

The runoff from the profiled access road will be achieved by filtration using permeable surfacing material. This aspect will need to be confirmed by sub-soil testing for porosity characteristics. If this cannot be maintained in its entirety then attenuation arrangements will be put in place to drain at greenfield run-off into the adjacent watercourse. This aspect will again be part of any planning consent condition and be agreed with the local authority.

The disposal of foul water will be into sealed cess tanks, as is usual for an operation of this kind, with the disposal to be arranged to the satisfaction of the local authority.

Compensation

The nature of this proposed temporary development within Flood Zone 3 does not create a permanent footprint within the flood plain, and therefore a compensation facility is not relevant here.

Access

The access to the site will be directly off the western end of the application site onto Bonny Barn Lane.

Residual Risks

In view of the circumstances as regards a slight flood risk to the access road as set out in this study, the temporary works will be a subscriber to the EA Flood Watch initiative, and also to relevant evacuation procedures, if deemed necessary by the local authority.

It should also be noted that in the event of the access road to the application site or the site being inundated, then the exploration facility would not be used, and therefore the flood risk would not practically occur.

Groundwater Evaluation

No information is available from site investigations.

However reports from the British Geological Society indicate that the sub strata is made up mudstone, siltstone and sandstone above Triassic Rock. This would suggest a high level of porosity but this would be the subject of detailed ground investigations, this to be a subject of condition within the planning permission.

Sequential/Exception Test

In normal circumstances this should be the subject of consultation between the applicant and the planning authority as specified in PPS25. Due to the fact that this site is the subject of scientific exploration in an area where the geology suggests there is "hope value" for a specific drilling exercise there obviously cannot be anywhere else to go. In light of this it is considered, with the measures as outlined in this study, that the site qualifies under the exception test owing to the specialist nature of the exploration.

Other matters

In respect of other relevant matters these will be dealt with as generally indicated below:

Potential contaminant impact on groundwater.

This aspect is addressed by others.

Pollution Prevention:

This will be complied with according to best practice and as agreed.

Decommissioning of Borehole:

A statement will be supplied by others.

Surface pollution prevention measures:

The entire application site will be sealed and all standing water from whatever source will be contained and disposed of subject to detail arrangements to the satisfaction of the local authority'

Waste disposal;

This will be agreed by the applicant with the local authority

No Flood Risk:

This element has been referred to in this study and demonstrates that there will be no increase in flood risk resulting from the proposed development, and that it is in accordance with the relevant parts of PPS 25.

I am of the opinion therefore that the temporary proposal for the site can be considered wholly suitable for the development envisaged and coupled with the measures as outlined can be safely accommodated within the advices contained in **PPS 25** for the proposed use.

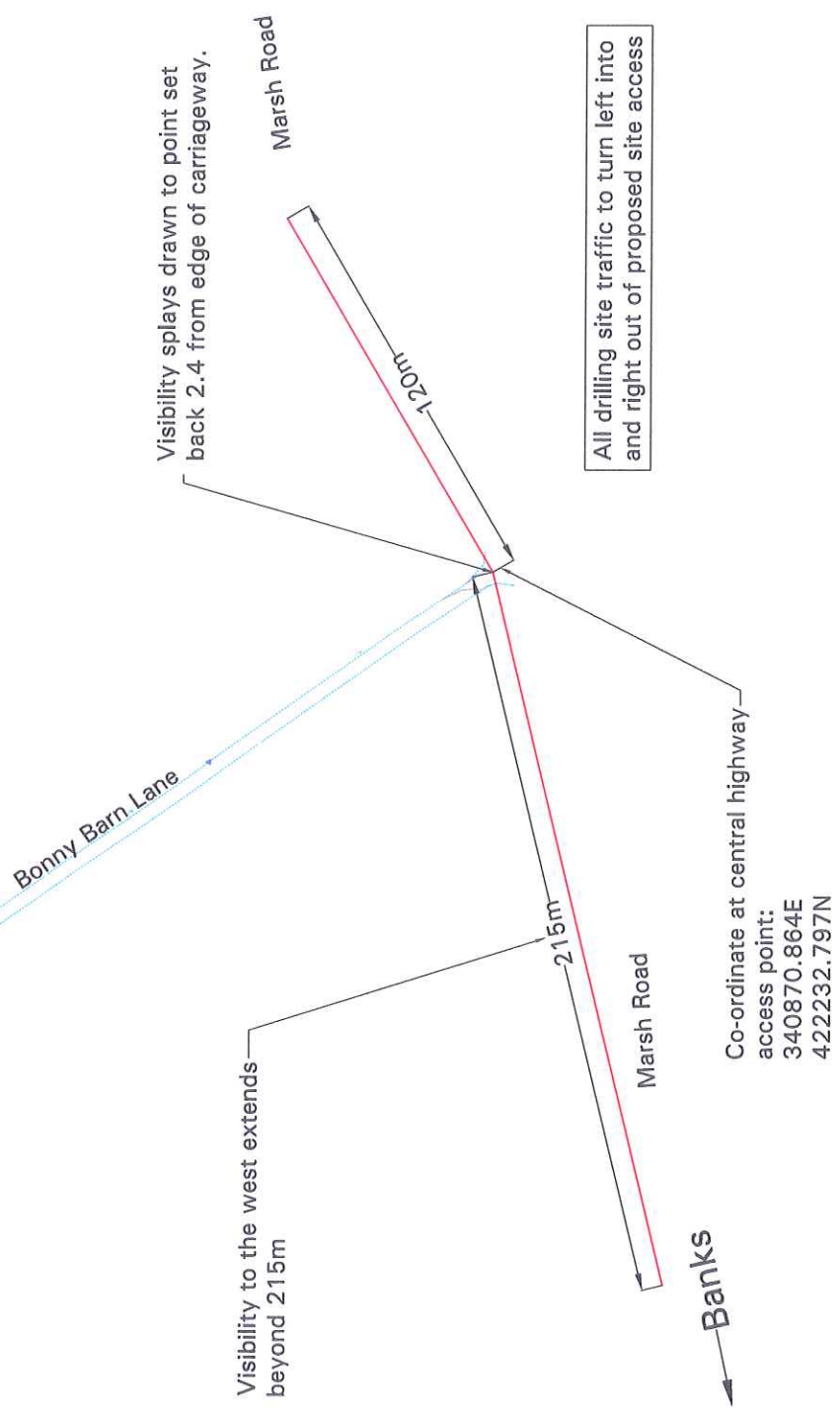
CONCLUSION

The site will be afforded protection to a level in accordance with the provisions of **PPS 25**, particularly in respect of the requirements of Annex E which have been taken into account in this desk top study as appropriate, and it is unlikely that any meaningful inundation will occur to prejudice this temporary development. Should that happen the site will be closed and operations cease until the flooding has abated.

In view of all the factors considered in this appraisal I consider they are wholly reasonable and are in line with those contained in **PPS 25** as relevant.

P P FEARNSIDE FICE

17 July 2010



Visibility splays drawn to point set back 2.4 from edge of carriageway.

Visibility to the west extends beyond 215m

Marsh Road

120m

215m

Marsh Road

Banks

All drilling site traffic to turn left into and right out of proposed site access

Co-ordinate at central highway access point:
340870.864E
422232.797N

Notes:

Drawn	Date	Issue
Issued for Approval	01/07/10	1st
Issued for Construction		1st

Rev	Date	Amendment
A	04/03/10	Site Constraints

Schemes
Beaconsall Drilling Site
Client
Cuadrilla

Drawing title
Highway Access Point
Detail Showing
Visibility Splays

Scale	Drawing Number	Rev.
1:1000	CRL-002	A

Drawn	SB	Checked	LDS	Approved	LDS
25/04/10		25/04/10		25/04/10	

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