GeoWater

Environmental Geology

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03 Feb 2016

Dear Richard

PROPOSED POULTRY UNIT, CAE MOR FARM, LLWYNMAWR
Planning ref: P/2015/0810

I write following the request of Julian Morris, applicant for the above, for comment on two specific issues:

- The possible presence of a culverted watercourse running across the site, raised in a query from the Senior Flood Management Officer at Wrexham Council.
- Possible impacts on 'natural springs which are giving drinking water to properties below the site', raised in a query by the Planning Officer for the case.

In order to provide a rapid preliminary response, we have carried out a topographical assessment, historical mapping search and private water supplies search and present our preliminary comments below.

Possible culverted watercourse

The line of possible culvert indicated on the plan provided by the Flood Officer appears to join a 'sinks' at Cae Mor Uchaf farm (fed by a small stream arriving from further uphill) with a 'spring' in the woodland below the field for the proposed poultry unit, suggesting that a continuous watercourse originally followed this route. It is understood this plan originates from an automated process which aims to 'join up' disconnected watercourses shown on mapping, rather than from site survey information. The straight line on the plan suggests this is indeed the case.

The 1:10,000 mapping of this area is dotted with sinks and springs (or 'issues') which may indicate genuine natural features where small surface water courses enter fissure systems in the steeply dipping fractured Silurian mudstones of the area, emerging further downslope as springs. However the 'sinks' may also in fact be man-made features: entries to land drains or culverts installed to improve access of workability of fields.

An inspection of 1:2,500 scale historical mapping for 1873-5, 1899, 1912 and 1975 provides no indication of the existence of a former watercourse following the route shown. The oldest OS map, shown in Fig 1 below, suggests that the stream originally veered westwards in the vicinity of Cae Mor Uchaf, perhaps feeding the stream flowing down the side of the lane descending to Cae Mor farm.

This does not entirely preclude the possibility that a land drain was laid across the field prior to 1873, however. It is therefore recommended that, as a precaution at commencement of construction, a slit trench is excavated across the supposed line of culvert. If an old land drain were encountered, this could then be diverted around the proposed poultry unit.

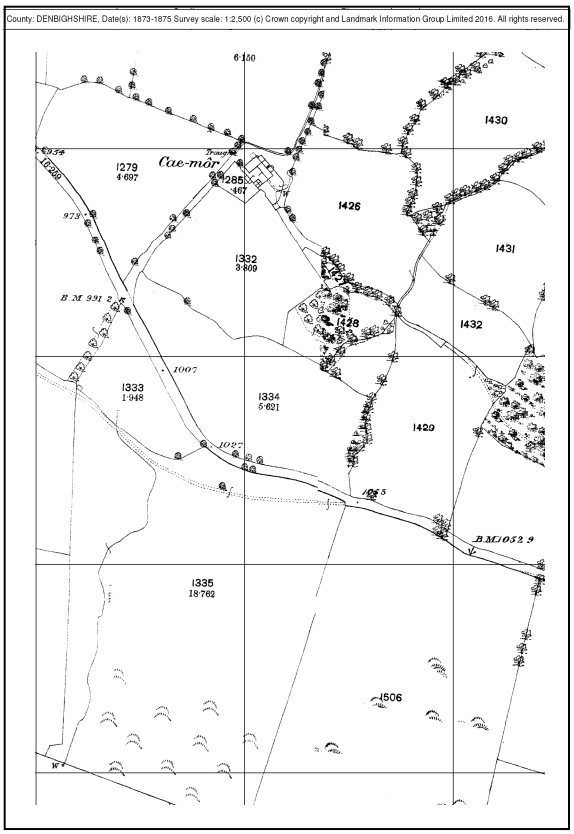


Fig 1: extract from 1873-5 OS map

Possible impacts on springs used for water supply

In order to determine the presence of springs used for private water supply, a search of Wrexham County Borough Council records was carried out and results (excluding Cae Mor Farm itself) are shown in Table 1.

Property	Type	Eastings	Northings	Distance (m)*
Bryniau, Llwynmawr, Llangollen, LL20 7BE	Borehole	322106	335972	698
Brithdir, Llwynmawr, Llangollen, LL20 7BE	Spring	322326	336213	494
Bronallt, Llwynmawr, Llangollen, LL20 7BE	Stream	322272	336465	725
Bryn Siriol, Llwynmawr, Llangollen, LL20 7BE	Stream	322248	336539	755
Bryn-Y-Groes Farm, Glyn Ceiriog, Wrexham, LL20 7NF	Spring	322478	336961	1095
Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD	Spring	323281	336284	554
Graig Wen, Pontfadog, Llangollen, LL20 7BD	Stream	323591	336664	1028
Cilnant, Pontfadog, Llangollen, LL20 7BD	Spring	323843	336408	1093
Briwnant, Pontfadog, Llangollen, LL20 7BD	Spring	323285	335883	473
Plas Onn, Selattyn, Oswestry, LL20 7BD	Spring	323602	335641	869

* approx distance from Cae Mor farm

Table 1: Wrexham Council records of private water supplies within 1km of Cae Mor

Farm

The supply locations may refer to the property or the supply itself and have not been checked on the ground. The recorded locations are plotted on the attached plan, in relation to the proposed unit and the land ownership at Cae Mor farm (it is assumed that the land to the west of the lane at Cae Mor farm would not be used for poultry). The only supplies whose surface-water catchments could conceivably be impacted by contamination at Cae Mor are those at Briwnant and Llangwryd Uchaf and further consideration is given to these.

The supply at Llangwryd Uchaf is described as a spring. A spring at this location, near the foot of a steep westward-facing slope, is likely to draw its water from higher ground immediately to the east, rather than from the Cae Mor area.

The supply at Briwnant is also described as a spring, with a likely catchment area being the slope to the south. It is conceivable that the catchment extends into the easternmost part of the land holding.

Potential contamination sources at the proposed unit are shown in Table 2, along with mitigation measures which, implemented, would reduce the risk of contamination reaching spring supplies via a groundwater pathway.

Source	**Mitigation measures**
Contaminants leached from imported fill materials used in construction	Ensure imported fill materials are inert.
Spillages of fuel, disinfectant, other chemicals or washdown water	Bunded storage for fuel/ chemicals. Ensure safe disposal including washdown.
Poultry manure (ammonia/ oxygen demand/ antibiotics)	Manure from unit: protect from rain ingress during storage and removal. Manure on scratching land: unlikely to exceed risks from other livestock use of this land.

Table 2: Potential contaminant sources from proposed poultry unit (for private water supply spring receptor, assuming groundwater pathway)

If the mitigation measures in Table 2 are implemented, and provided that the eastern field (shown shaded on the plan) is protected from development (apart from low-moderate intensity scratching) then risks to private water supply springs at the given locations are unlikely to be significant.

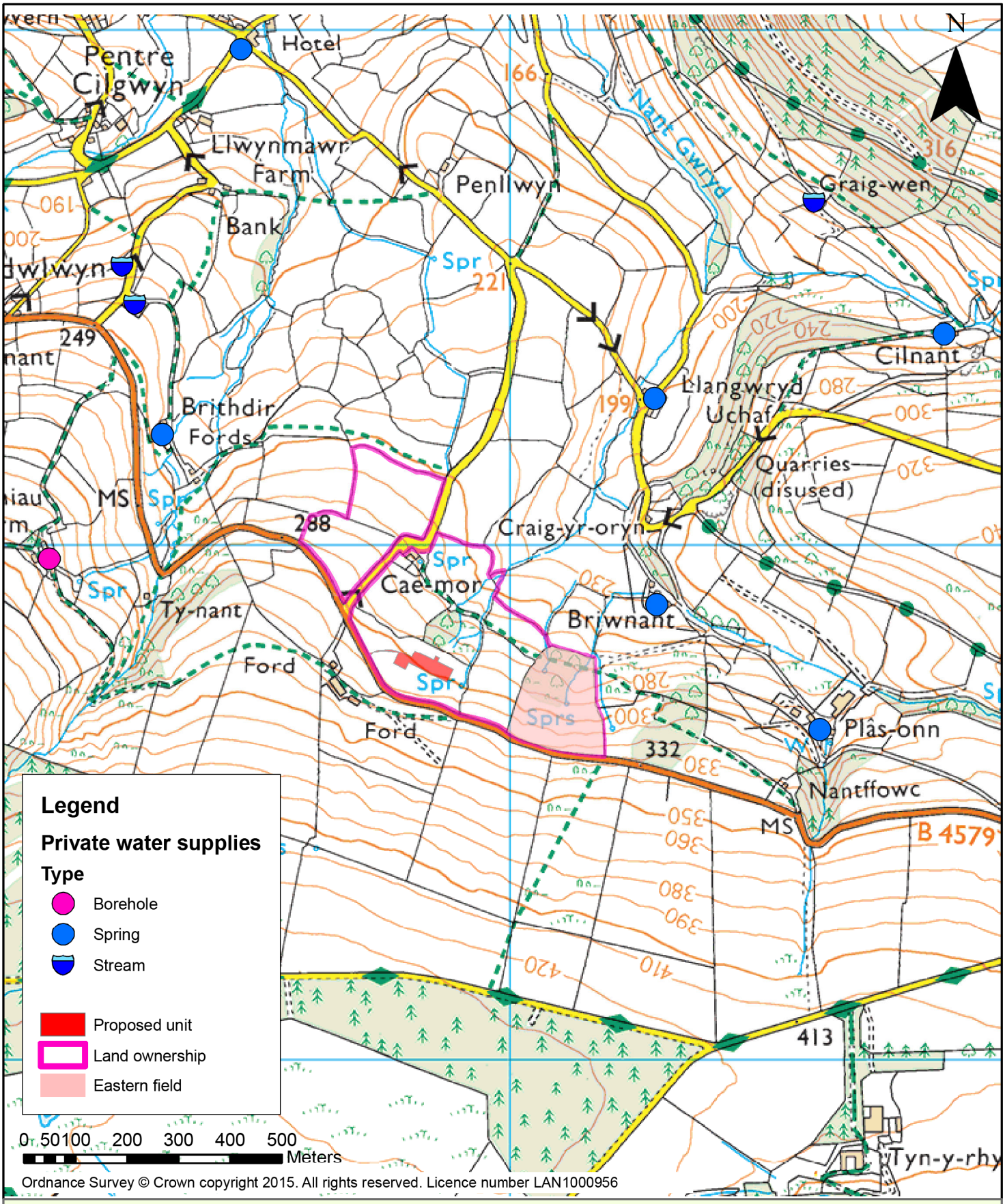
If these conditions cannot be met, it is still possible that risks are insignificant, but further assessment would be needed to prove it.

I trust these comments on the two specific issues raised are helpful at this stage.

Please contact me as required.

Yours sincerely

Charles Ruxton
Environmental Geologist.



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CAE MOR PROPOSED POULTRY UNIT

Map showing proposed unit and nearby recorded private water supplies

Scale 1:10,000 A4

DRAWN: CR
DATE: 22/01/2016
JOB No. 570