ECOLOGICAL LAND CO-OPERATIVE

Water & Waste Water Treatment Statement: Plot A

Date: 2 January 2012

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For a Living, Working Countryside

This report has been prepared by Zoe Wangler of the Ecological Land Co-operative Ltd. It is written to be read in conjunction with the planning application, plans and other documents accompanying this application.

INTRODUCTION

This application seeks consent for one new temporary agricultural worker's dwelling, one new (shared) agricultural barn and one small greenhouse, tied to a new farming enterprise located at Greenham Reach in Holcombe Rogus. It forms part of a proposal for three new low impact smallholdings for new entrants to ecological agriculture developed by the Ecological Land Co-operative, a co-operative society and social enterprise.

This report sets out how the applicant will source drinking water and water for domestic and agricultural use and describes the proposed systems for human waste and grey water treatment.

Drinking and domestic water

If planning permission is granted then the Ecological Land Co-operative (ELC) will have a bore hole installed. Once this has been established the water will be tested to establish any filtration requirements required to provide drinking water quality. The water will be tested periodically to ensure it remains of drinking water standard.

The amount of water extracted from the bore hole will be metered to ensure that, across the site (the 3 proposed smallholdings), less than 2,000 cubic metres of water is extracted in any year. It is extremely unlikely that anywhere near this quantity will be extracted though as Mr. Boyle's projected annual water use – domestic and irrigation - is 75 cubic metres of which at least 20% of this will be met through rainwater collection.

The ELC enquired with Sian Hawkins of the Environment Agency as to whether the creation of a bore hole could be problematic for the catchment area or aquifer. Ms Hawkins said that she does not foresee it posing any problems and advised the ELC to keep updated on developments in the Tone CAM[1] and to review the Water Framework Directive.

Crop irrigation

Water for irrigation will come from a number of sources:

- Rainwater runoff from the proposed communal barn roof stored in a 10,000 litre water tank
- Rainwater runoff from the proposed polytunnel, stored in two 1,000 litre water tanks
- Rainwater from the roof of the proposed temporary dwelling, stored in one or two 1,000 litre

[1] Tone CAM refers to The Tone Catchment Abstraction Management Strategy produced by the Environment Agency

water tanks

- Rainwater from the proposed greenhouse roof, stored in a single 1,000 litre water tank
- The bore hole

Treatment of waste water

Mr. Boyle and his apprentice will make use of a compost (or dry) toilet. A compost toilet does not use any water and does not produce waste water. The compost toilet does however produce compost which can be used on the smallholding. The Soil Association in its report *'A Rock and a Hard Place: Peak Phosphorus and the Threat to Our Food Security'* (2010) advocates for just such use of human excreta "the majority of human excreta will need to be returned to a large proportion of agricultural soils to close the phosphorus loop… We need to start thinking of human excreta as a resource, not a waste".

As the foul discharge will not result in any foul flows a connection to the public sewer is not required. The proposed development is for one agricultural dwelling which will accommodate a single man and his apprentice and a compost toilet is more sustainable for this size of population equivalent than connecting to a sewer. Regardless, the nearest foul sewer is understood to be greater than 250m from the proposed dwellings, would likely require pumping due to site levels and is therefore not considered feasible.

The grey water from domestic washing will be taken in an underground pipe to the proposed Wetland Ecosystem Treatment (W.E.T.) System. This is effectively a series of ponds which harness the innate ability of natural wetland ecosystems to absorb and transform the organic nutrients found in wastewater, converting them into plant biomass and soil. Micro-organisms in the root-zone mineralise the nutrients found in wastewater making them available to the plants.

W.E.T. Systems are a sustainable form of wastewater purification - they are low-entropy systems as they use no fossil fuels or electricity to purify the wastewater. They also have a low embedded energy since, unlike Reedbed Treatment Systems, no gravel or plastic aeration pipes are used in their construction; thus gravel does not need to be quarried and transported to site.

The WET system will be monitored regularly, to ensure the flow rates match the capacity of the ponds and that the water quality leaving the ponds is good. The W.E.T system will be installed by Biologic Design who has installed over 90 such systems so far. A working local example can be found at Sheppeys Cider Farm.