

Energy and Water Sub Group

Meetings held on Tuesday 8th December and Tuesday 15th December

1st meeting. Present: Peter Sheardown, Alan Gough and Colin Love (Bob Bayman joined for the first half of the first meeting)

2nd meeting Present: Peter Sheardown, Alan Gough and Colin Love

It was agreed that these topics are best examined at the **Macro and Micro levels.**

The macro level is the infrastructure level

The micro level is the level at the points of use – ie housing and industry

It had been agreed prior to the first meeting that Alan would look principally at the macro issues – making contact with Western Power and Seven Trent.

Peter was being invited to contribute his knowledge principally related to local issues of flooding and water supply and sewerage.

Colin would be exploring some of the issues related to the 'points of use'.

Summary

At the Macro level:

- detailed examination needs undertaking to confirm the flood areas in Bottesford
- there appears to be no problem with the supply of domestic water – but attention must be paid to all forms of waste and foul water disposal
- wind turbines are assessed as having high landscape sensitivity in Vale
- electric power supply to larger scale developments would entail additional sub-stations being provided
- There is no legal obligation for gas to be connected to new builds – responsibility of developer or owner

At the Micro level

- decisions have to be taken as to what standard of energy and water savings we would wish to see incorporated in to any 'new build' – maybe expecting standards above the present minimum Building Regulations
- the question remains as to whether potential occupants of enhanced building design, although appreciating the benefits, would be prepared

to pay the 'add-on' costs of those provisions in the open market. One Oxford case study shows that a new £700,000 house failed to benefit from £30,000 Code 4 Sustainability upgrade in the build ((5%-approx).

First meeting

Macro Issues

Power generation

Alan reported that he had had contact with Western Power. They confirmed that any new development of substantial size would require: That for most of these new development sites new substations would have to be installed to facilitate the supply capacity the developers are after.

Obviously to install new substations would mean we would have to excavate in the area to lay HV cables to power up the proposed substation and hence from there lay the LV cables for the new services on the building site. Depending on the site and location possible traffic management/ road closures may be required depending on where the HV cable will be feeding from, but this is something that could only be looked into if a formal application was to be made.

For the smaller sites we might be able to provide an LV connection however to do this we would have to reinforce the existing network in order for the network to withstand the additional draw in the load, this in turn would mean excavating in the area would be a necessity.

Unfortunately we would not be able to provide anything more in depth at this stage without a formal application being submitted however in order to do this we would require specific site plans, loading requirements, what heating types will be used in the properties, motor usage and information etc

The overall conclusion is that development south of the railway line would present fewer problems for adequate supply of electricity but that **no potential site for development would present insurmountable problems to a developer in conjunction with Western Power.**

Colin reported on the *Planning Evidence Base – Melton and Rushcliffe Landscape Sensitivity Study – Wind Energy Development (2014)* that concludes that **turbine heights over 50 metres would have a medium**

to high landscape sensitivity in the Vale and over 76 metres a high sensitivity. These conclusions would be taken in to account in any planning applications for wind turbines within the Vale.

Alan had had contacted with Seven Trent Water. He produced the following data on the sewer records for the sites listed below and has found the following details.

Site 1 Devon Lane X 480354 Y 339425

Four references to sewer flooding 2 foul 2 surface water, all within 500M.
2 combined pressurised sewers across this site a 150mm and a 250mm.

Site 2 X the Elms 480728 Y 338438

One reference to sewer flooding 1 foul within 500M.
No sewers across the site.

Site 3 Grantham Road. X 481547 Y 338790

One reference to sewer flooding 1 foul within 500M.
No sewers across the site.

Site 4 Normanton Airfield. X 481954 Y 341541

No sewer flooding on our records.
No sewers across the site.
Sewer capacity near this site would not be able to accommodate a large development, and sewer modelling would be needed for such a development.

Peter said that, from his knowledge and understanding, because of the flood risks, only the land to the north of Bottesford was suitable for major development. He said that **the land along Belvoir Road to the bypass was subject to flooding – although it was not so marked on the Seven Trent mapping. This requires re-mapping.**

Peter also raised the issues of drainage, mentioning particularly the historic problems in Normanton. His concerns were focused on **the need to ensure that all future development separated sewerage from grey water and run-off. There should be provision for all run-off to be directed in to soakaways, storm drains and domestic water retaining systems – ie water butts.** However, soak-aways are more difficult when there is clay close to the surface – such as in Normanton.

Peter confirmed that he would contact The Environment Agency to get detailed knowledge of **the planned management of water on the**

proposed Barratt estate in Belvoir Road to see if it conforms to best practice of water management at the macro and micro levels.

Micro issues

For detailed best practice see *Code for Sustainable Homes* Department for Communities and Local Government (2006)

Described as '**a tool for developers to differentiate themselves**'. (p2)
Minimum standards for Code compliance are set ABOVE Building Regulations. It is starred 1 (entry level) to 6 (exemplar in sustainability standards).

The main *focii* of our investigation were in to the issues of

- domestic heating alternatives,
- water saving
- insulation.

Domestic Heating alternatives include

- Solar panels – direct heat from the sun on to direct heating of water
- Domestic Photovoltaic cells - converting sunlight in to electricity
- Air source heat pumps
- Ground source heat pumps
- Domestic wind turbines

Issues include

- **Solar and photovoltaic pumps** – The visual impact disliked by many. Their economic value depends on the extent of changing (decreasing?) government subsidy and the changing (decreasing?) cost of supply and installation. Further, the efficiency is dependent on the ability to install according to the sun's aspect – to be taken in to account with new developments
- **Heat pumps** deliver lower temperatures than oil or gas boilers and require larger radiators – best suited for under-floor heating.
Ground source heat pumps usually require laying over a considerable surface – more than the usual small gardens of modern developments
- **Domestic wind turbines** (in gardens or on roof tops) do not seem to be viable in this area. Predicted wind speeds come up as only 4.6 metres a second – and then it is all dependent on immediate local topography and obstructions surrounding a property

Water Saving

Issues include

- Efficient use of domestic water – use of flow restrictors installed at build stage, showers rather than baths. Objective - use less **than 90 litres per day (.09 cubic metre)**
- **Saving of run-off rain water – use of water butts installed at build stage**

Energy saving

Issues include

1. Basic design and construction quality

- Tight mortaring joints
- Dormer roof construction more difficult to insulate

2. Double and Triple Glazing

- The 'big debate' about the economic value of triple glazing compared with double glazing
- - Traditional single pane glass windows U factor 5+
 - Older double glazing U factor 3+
 - Present double glazing U factor 1.6
 - Triple glazing Down to possible U factor 0.8
 - But payback period for triple glazing can be high
 - One study concludes that purely on energy efficiency, double glazing does not pay for itself and triple glazing is no exception
 - **Major benefit is in terms of physical rather than financial comfort**

3. External and internal drying spaces – to save use of tumble driers

Interesting case studies on 'sustainable' housing can be found at (and related pages)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/230271/Code_Case_Studies_Volume_4_-_final.pdf