Planning and Passive Solar Design (PSD)
The following elements are all considerations of Planning and PSD:

- Siting and site layout
- Built form
- Landscaping
- Conservatories
- Window design
- Internal Layout (When it effects external appearance)
- Opaque Elements

Passive Solar Design PSD involves designing buildings so they make use of the energy from the sun, in the form of light, heat and air movement. By making efficient use of this free energy, the need to artificially light, heat and ventilate a building is reduced, therefore reducing the building's energy consumption. The additional benefits associated with these principles include the creation of a high quality internal environment that is highly attractive to people.

PSD is nothing new, and is a design consideration that is prevalent in architecture throughout the ages. Assessment of many of our vernacular buildings shows an understanding of PSD and demonstrates how simple it is to incorporate in modern building design. Listed below are some key rules of thumb that should be applied to any design to maximise the potential of solar gain. For more detailed guidance the Borough Council would recommend investigating the vast array of literature available on this subject, such as "Planning for Passive Solar Design" published by the DTI, which provide in-depth guidance on every aspect of development and PSD.

Passive Solar Design – Rules of thumb

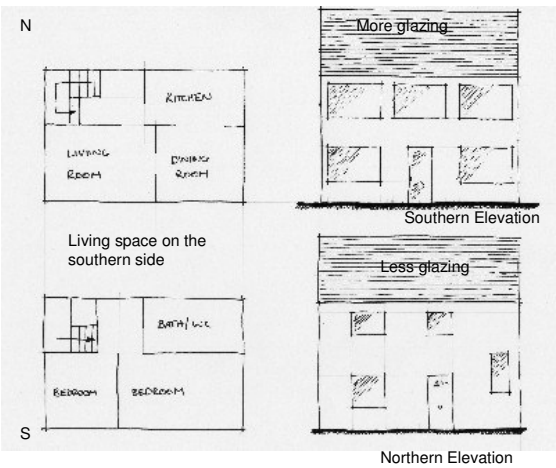
- The building should be elongated along the east-west axis within 30° of due south.
- The buildings south face should receive sunlight between the hours of 9.00am and 3.00pm during the heating season.
- Interior spaces requiring the most light and heat should be located on the southern side, and spaces that require less should be located on the north side.
- Large areas of glazing should be located on the southern side and reduced areas of glazing located on the northern side.
- An open floor plan optimises passive solar energy use.
- Cellular spaces can be used to differentially control temperatures to meet the occupant's wishes.
- Use shading to prevent summer sun entering the interior.

In theory

Energy Efficiency and Material Choice

Material selection is an important part of considering a planning application.

In practice: Brocks Hill Elevations



Southern Elevation

Northern Elevation

The Borough Council often condition planning approvals to consider material choice at a later date. It is recommended, however, that the decision on which materials are to be used is considered early in the design process and that choice should be made in terms of the quality, durability, appropriateness to the context and also the amount of embodied energy within that material.

Embodied energy refers to the amount of energy that was used in the extraction, manufacture, transportation and on-site assembly of that material. Ideally materials used should have a low embodied energy, and are normally sourced locally, are naturally occurring and/or are by products of another local activity. They can also be materials that are produced through the use of renewable resources and environmentally benign processes.

Timber and plant products should be from sustainably managed sources and ideally from UK plantations as imported timber products will have considerable energy costs relating to the transportation of material from overseas, which results in no considerable reduction in energy costs that would come from traditional masonry construction[8]. The Council is aware of procurement issues and regulations, and would wish to emphasise that reference to the above 'best practice' does not completely exclude the importation of materials. The guidance simply identifies the most energy efficient approach to the selection of materials e.g. timber should be from sustainably managed sources that are as close to the site of construction as possible to reduce the energy costs related to transportation. Therefore, in the case of development in Oadby & Wigston materials sourced from inside the UK are likely to have a low-embodied energy in comparison to material sourced from overseas.

Recycling can play an important part in reducing the energy consumption of materials, by removing the issues of extraction and manufacture, and therefore reducing our drain of environmental resources. Increased labour costs and quality control can be offset against increasing landfill charges, an improved infrastructure for demolition, salvage and reclamation and of course the need to comply with planning conditions ensuring new build blends effectively with the old.

It is recommended that developers refer to the most recent literature on green building materials to ascertain the best solution available. The Department for Environment, Food and Rural Affairs Sustainable Construction Team are an important contact, which can also provide further information on sustainable material choice.

Energy Conservation and Renewable Energy in the Historic Environment

As with any intervention in the Historic Environment whether it is an application for renewable energy technology or the implementation of measures to improve the energy efficiency of a building, these must be carefully considered in-line with Government Guidance in PPG15: Planning and the Historic Environment and PPG16: Archaeology and Planning. In considering an application for a renewable energy installation that involves a listed building, scheduled monument or is in a conservation area the Council will consider the proposals potential impact on the setting of listed buildings (Grades I, II* and II) and scheduled monuments, and the potential impact on the character of the conservation area. Applications involving buildings from the Local List of Significant buildings will be dealt with in a similar way to a Listed Building.

Renewable Energy

The need for planning permission.

In terms of renewable energy technology the need for planning permission must be considered on a case by case basis. Certain technologies such as wind turbines will obviously require planning permission but some small implementations are not considered in law as “development”, which is mainly due their size. For example small Combined Heat and Power (CHP) systems can be simply placed inside existing ‘non-listed’ buildings.

Small scale roof installations such as photovoltaic or solar water heating systems may not always constitute development. However, the size, location and projection above the roofline would need to be considered to ascertain whether or not there would be a material change in the form of the building.

Due to the lack of examples on which to draw some clear guidance from, each case will be judged on its own merits and it is recommended that any proposal for renewable energy technology is discussed with planning officers at an early stage, so the scheme can be considered and the appropriate course of action is prescribed.

Proposals for renewable energy installations will be considered against the criteria set out in Conservation Proposal 8 in the adopted Local Plan. These considerations revolve on preventing any detrimental impact on buildings and areas of environmental sensitivity, areas of important character, and protecting the amenities of neighbouring residents[9]. It will also be important to pro-actively engage with the local community at the initial stages of an application for Renewable Energy. A key principle of Planning Policy Statement 22: Renewable Energy is that: “Local planning authorities, regional stakeholders and Local Strategic Partnerships should foster community involvement in renewable energy projects and seek to promote knowledge of and greater acceptance by the public of prospective renewable energy developments that are appropriately located. Developers of renewable energy projects should engage in active consultation and discussion with local communities at an early stage in the planning process.”

In considering the potential of the Borough and its environmental constraints the Borough Council consider the following technologies to be appropriate to this area:

- Solar Photovoltaic
- Solar Thermal
- Wind Power
- Biomass
- Combined Heat and Power (CHP)

Note: Combined Heat and Power is not a renewable energy source but has been included in this section to demonstrate an alternative technology that has low energy consumption and reduced carbon emissions. It can include an element of renewable energy if it chooses a renewable energy power source.

The Technology and Planning Considerations

Solar Photovoltaic

Photovoltaic cells (PV) convert sun's light into electricity. They do not require direct sunlight but its intensity is proportional to the electrical energy generated by the cell. To maximise the cells efficiency they should be sited south facing and angled between 30-40° to the horizontal plane. Shading should be avoided and the effects of the winter sun angle considered when siting the technology. Solar tracking PV panels are available, they are more efficient than fixed panels because they follow the sun, but are also more expensive, and have higher maintenance costs[10].

These PV panels can have a detrimental impact on the visual character of the built environment, especially on the roofscape of developments if they are not sensitively located. This is of particular importance in a number of the Borough's Conservation Areas, where the quality of the roofscape is an intrinsic part of its character. They can also have detrimental side effects such as reflections that can affect the living conditions of neighbouring residents. Ideally the panel material should be no more reflective than the existing building materials.

Ideally PV panels should be located on non-public elevations; they should not protrude significantly from the roof and should be located so that they do not create an unbalanced elevation. Where there is a double pitched roof panels should be located on the inside channel. Panels on listed buildings should blend well with the existing traditional materials. In the case of a listed building, standard panels are likely to be unacceptable and more innovative solutions such as PV roof tiles that look like traditional roofing materials may be a potential solution.

Roof mounted photovoltaic cells

In terms of special views and townscapes within the Borough, the effect of PV panels will be considered against the potential harm it could have on these views from a distance. For example, an important view from the north will be protected by PV panel location on the south facing roof pitch. Large stand alone PV panels are also considered to be inappropriate in the open countryside as this would be contrary to Proposal L16 of the adopted Local Plan and would have a detrimental effect on the open and unspoilt beauty of the Countryside. Despite the concerns raised each case is dealt with on its merits and Borough Planning Officers will advise on the potential for including this technology, and the best solution for each proposal.

Industrial sites and Renewable Energy

Industrial sites offer great potential to incorporate PV panels in their existing environments. Large warehouse and office units tend to have large areas of roof ideal for the installation of a number of stand alone panels, known as photovoltaic arrays that can contribute to the energy consumption of the building and even contribute electrical energy to the national grid on non-working days. The environmental impact of PV arrays on the visual character of the environment is likely to be less harmful in these industrial areas and therefore easier to implement. However the effect on neighbours and long distance views will be considered in an application.

In considering applications for photovoltaic developments regard will be given to the technical guidance in PPG22: Annex on Photovoltaics.

Solar Water Heating

As well as the benefits to be gained from passive solar design, the sun can also be used to heat water in domestic hot water systems. The main types of commercial systems, the flat-plate and the evacuated tube collectors both function in a similar way to PV panels and are usually roof mounted on the southern pitch.

Flat-plate

Flat-plate systems in general consist of copper pipes painted black, connected to an absorbing surface. Heating fluid is pumped through the pipes to a heat exchange coil in the hot water tank. This system is normally backed up by a conventional gas or electric system. During the summer months the system can provide sufficient hot water without the need for gas or electric heating; and during the winter months the system helps raise the temperature of the water to a degree and therefore reduce the amount of energy required to heat the water to an appropriate level[11].

Evacuated Tube

These take the form of an array of modular tubes with metal strips down the centre of each tube to act as the absorber plate. These tubes are linked at the top by a header pipe containing the water. The absorber strip uses a heat pipe to carry the collected energy to the water circulating along the header pipe. This system is less conventional than the flat-plate but is more efficient as convective heat loss is reduced by there being a vacuum in the tube.

In planning terms the same criteria is applied to these systems as to the PV panels; and as with PV panels, industrial sites offer great opportunities for the inclusion of these systems without causing detrimental visual impact.

Small Scale Wind Power

Wind Power is far more difficult to harness without some degree of visual intrusion taking place. Wind turbines, used to harness the power of the wind, tend to be very large structures that must be located in exposed areas to benefit from uninterrupted wind speeds[12]. Given the amount of countryside within the Borough, and its importance to the Borough's population in terms of access to countryside, open space and leisure, large-scale wind farms are not considered acceptable within the Borough. However, there is the opportunity for small scale developments of one or a small number of turbines being constructed where it is considered that there will be no detrimental impact on the visual quality of the environment, through the use of natural cover and local topography.

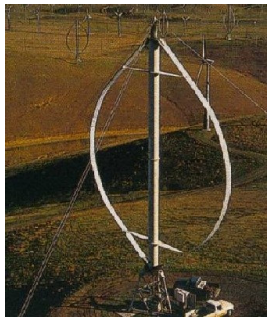
The recent study by Land Use Consultants and IT Power "Viewpoints on Sustainable Energy in the East Midlands" highlights Oadby and Wigston Borough as having low potential for the exploitation of wind energy. Despite this assessment, the Borough Council has taken a proactive approach to encouraging renewable energy use and the use of wind turbines by demonstrating how the technology can be used at the Brocks Hill Environment Centre and Country Park in Oadby. A wind turbine is to be erected at the Centre in early 2004 with the aim to make the centre self sufficient in terms of energy requirements.

Turbines are available in various sizes with a range of electrical outputs. The amount of electrical energy generated by the turbine relates not only to the strength and consistency of the wind and the size of the rotors, but it is also related to the efficiency of the rotor and associated generator[13]. There are two types of wind turbine available; a horizontal axis turbine or a vertical axis turbine.

Horizontal Axis Wind Turbines (HAWTS)

These are the most common form of turbine, consisting of a horizontal shaft on which a generator is located with 2 or 3 rotor blades rotating horizontally. To improve efficiency they are rotated into the wind via a control system (large turbines) or a tail fin (small turbines). They can generate electricity at very low wind speeds and do have issues over the generation of noise during operation.

Vertical Axis Wind Turbines (VAWTS)



These turbines are far less common as they are less efficient and require higher wind speeds to rotate. They do offer some advantages over the horizontal type in that they are very quiet in operation and they do not need to orientate themselves.

The location and construction of wind turbines depends greatly on the local geography. In terms of capturing wind energy, exposed sites offer the greatest potential, however, these are often the most visible locations and it is considered that turbines, which are highly visible and isolated on the landscape, would be inappropriate and would have detrimental impacts on the visual character of the countryside in the Borough. In dealing with an application the Borough Council will also consider the proposals impacts on the sensitivity of natural, cultural and heritage assets such as archaeological remains and the ecology of the environment.

In order to consider a proposal for a new wind turbine development the Borough Council would require a full “Landscape and Visual Impact Assessment” to be submitted as part of the application. This appraisal should follow the guidelines as set out in the publication by the Landscape Institute – “Guidelines for Landscape and Visual Impact Assessment, 2nd Edition”. The focus of the assessment will be on the likely impact of the proposal on localised views and medium to long distance views into the area. Proposals should have considered opportunities to camouflage the equipment against background scenery and should avoid standing out on the skyline.

The Borough Council will also require the submission of a Landscape Character Assessment which will establish the areas capacity and sensitivity to accommodate development. Further information is included in **Appendix B**.

Industrial sites offer opportunities for wind turbine development without increasing the overall visual impact. However, a full visual assessment will be required.

Regard should be given to the potential for an increase in ambient noise levels. Wind turbines should be located and designed to minimise this increase and the Borough Council will consider appropriate separation distances between wind turbines and residential development on a case by case basis. The DTI study by ETSU on the

assessment and rating of noise from wind farms will be used to determine appropriate separation.

Roof-mounted Wind Turbines

Recent advances in technology have brought wind power generation into the domestic market and within the budget of the householder. These small wind power systems are relatively compact in size and can be attached to almost any roof. They offer a great opportunity for the householder to provide up to 15% of their average electricity needs[14]. However, it is likely that the installation of the turbine will require Planning Permission, and the Borough Council will consider the application in terms of the siting and appearance of the unit, in the same way we would deal with the photo-voltaic cells and solar water heating.

In considering applications for wind turbine developments regard will be given to the technical guidance in PPG22: Annex on Wind Energy.

Biomass

Biomass is the term used to describe all organic matter living on the earth. This organic matter is an energy store that is usually recycled through chemical and physical processes. The process involves the biomass being used as fuel rather than the carbon stored in fossil fuels. The process involves using waste products from animals (slurry and chicken droppings), plants (straw) and humans (municipal and industrial wastes). Biomass fuel was the primary fuel source before the industrial revolution and can still offer a sustainable energy solution; the key to biomass use is to carefully manage consumption of the energy so that it does not exceed the rate of recycling[15].

There are a number of different methods of producing fuel from biomass. A growing example is the use of methane gas from landfill sites, which is captured and burned in the same way as natural gas, and is used to produce electrical power. The generated electricity can be used locally or put back into the national grid. “Viewpoints on Sustainable Energy in the East Midlands” highlights Oadby and Wigston Borough as having low potential for the use of wet agricultural waste as a source of energy. The process by which energy is extracted from wet agricultural waste is Anaerobic Digestion. This is the decomposition of material caused by bacterial action in the absence of air resulting in methane gas production, which can be used as fuel and decomposed matter that can be used as fertilizer.

This process can be undertaken as part of a large farm or group of farms that put all their waste into a large custom built digester, which is typically a large cylindrical container made of various materials, in various sizes depending on the volume of available waste input.

Planning considerations on such developments include the visual impact of the structures and associated infrastructure; and the potential of increased traffic movements and transport related emissions. With a proposal for a centralised digester being fed by a number of local farms, the plant should be located as close to the sources of fuel as is practicable. Measures should be put in place to prevent unpleasant odours escaping from the facilities and having a detrimental impact on residential amenity, and normally such plant will not be located in close proximity to residential areas.

Biomass benefits

- Production of biogas to produce heat and power.
- Methane is more potent than carbon dioxide as a green house gas, this process eliminates methane escaping uncontrolled into the atmosphere.
- The process is contained and therefore reduces odours associated with normal waste storage.
- The nutrients in digested manure are more stable and useable than raw manure, and can replace fossil fuel based fertilizers.
- Reduced land and water pollution.

Combined Heat and Power (CHP)

Conventional power generation is a highly inefficient process, which results in under half the input energy in burning fuel being converted to useful electrical energy. The rest of the energy is lost through waste heat. CHP has far greater efficiency in that the heat produced during power generation is captured and used in local heating applications[16].

CHP has both economic benefits and environmental benefits being a more efficient process and so minimising energy loss and reducing costs. CHP can use steam or gas turbines or combustion engines. There is a wide range of fuel sources available from biomass and fossil fuels to renewable sources.

CHP can be used effectively in centralised power generation and to even greater effect in small-scale local generation such as district heating systems in mixed use developments and large buildings such as industrial units, leisure centres and hospitals. Prospective developers should consider the benefits of CHP in their proposals for new residential, commercial and industrial developments.

Appendix A – Energy Efficiency – Beyond Land Use Planning

Building Design

Parts L1 and L2 of the Building Regulations require developers to meet a minimum standard of energy efficiency in new developments. The Borough Council wish to encourage developers to reach standards above the minimum requirements, and consider the benefits that can be gained from a highly energy efficient building in the current market.

A number of energy rating schemes are available to prospective developers. New domestic properties must be given a SAP rating (the Government's Standard Assessment Procedure for home energy rating), but may also be rated using the NHER (National Home Energy Rating) scheme.

The Building Research Establishment (BRE) also has an environmental rating scheme called BREEAM (BRE Environmental Assessment Method) that can be used to assess the environmental performance of buildings. This scheme can be used for both non-domestic and domestic buildings, with the latter being rated under the 'EcoHomes' version where assessment is against a series of criteria: energy; water; pollution; materials; transport; ecology and land use; health and well-being.

The performance of non-domestic buildings, such as offices, industrial units and retail units, using the BREEAM scheme is assessed against the following criteria:
• *management*: overall management policy, commissioning site management and procedural issues,
• *energy use*: operational energy and carbon dioxide (CO2) issues,
• *health and well-being*: indoor and external issues affecting health and well-being,
• *pollution*: air and water pollution issues,
• *transport:* transport-related CO2 and location-related factors,
• *land use*: greenfield and brownfield sites,
• *ecology*: ecological value conservation and enhancement of the site,
• *materials*: environmental implication of building materials, including life-cycle impacts,
• *water*: consumption and water efficiency.

Source: EcoHomes: The environmental rating for homes, Building Research Establishment
BREEAM, Building Research Establishment

The Borough Council would encourage developers bringing forward large scale developments to make use of the BREEAM rating scheme and to consider the environmental issues at an early stage in the design process, in order to maximise the opportunity of achieving a higher rating.

In considering the implications of Part L on the Historic Environment please refer to the English Heritage publication 'Guidance on the application of new Building Regulations (Part L)' 2002.

For further advice on the application and requirements of Part L1 and L2 of the Building Regulations 2000 contact: The Building Control Section, Oadby & Wigston Borough Council, Station Road, Wigston, Leicestershire, LE18 2DR, or telephone (0116) 257 2657.

For further information on BREEAM contact: The Building Research Establishment, Garston, Watford, WD25 9XX, or visit the website at www.bre.co.uk

Home Energy Conservation Act – Adopting an energy efficient lifestyle

Through the Home Energy Conservation Act 1995, Oadby and Wigston Borough Council are committed to promoting the improvement of the energy efficiency of the existing homes in its area.

In fact, the law sets a target of achieving a 30% reduction in carbon dioxide from domestic homes.

A plan to carry this out was published in November 1996. It is called The Home Energy Conservation Act Strategy for Oadby and Wigston. This strategy sets out the means by which the target of 30% reduction will be achieved. It highlights a variety of ways, e.g:-

- Preventing the wastage of energy.
- Improving the efficiency of heating systems.
- Reducing heat loss through the fabric of a home.
- Promoting sources of energy that have fewer unwanted bi-products.
- Raising residents' awareness of the advantages of an energy efficient home

In addition to the Home Energy Conservation Act Strategy, a subsequent strategy called the Fuel Poverty Strategy was published in 2001. This sets out how the Council proposes to tackle the health problems faced by low income households that are unable to afford to keep their homes warm.

Each year the Council is required to produce a report to the Government to show how much progress has been made towards the overall target.

The Council acknowledges that significant progress can only be achieved by working in partnership, and therefore we work closely with partner organisations such as the Energy Savings Trust, the local Energy Efficiency Advice Centre and also private contractors. Some of our domestic energy efficiency work is carried out as part of a consortium of seven other local authorities, and this partnership enables us to offer better advice and low cost heating and insulation work to local residents. This partnership is called EnergySense.

Through our EnergySense partnership we are also able to access details of renewable energy sources that would be suitable for existing domestic homes, for example solar power. Future plans include raising awareness of renewable energy systems that can be installed to existing dwellings, and also to direct residents to organisations that may be able to assist with financial help towards installation costs.

As the majority of homes in the Borough were built before the current high standards of insulation work were in place, much has to be done to existing homes if we are to achieve significant progress towards our overall target. Our Home Energy Conservation Act Strategy, our Fuel Poverty Strategy and our EnergySense partnership each have a vital role to play in the achievement of our aims over the next few years.

How can we contribute to these strategies?

Below are some simple measures that every household can take to save energy in the home and reduce their running costs:

- Lights should be turned off when they are not in use.

- (Lighting constitutes 5 -10 % of all energy used. Turning off lights when not in use could prevent a significant waste of energy that will ultimately cost you money.)

- Electrical items such as the Television should be turned off and not left on standby.
- (A television left on standby overnight uses as much energy as your whole evenings viewing)

- Only boil as much water in the kettle as you require.
- (Kettles are notorious for energy consumption. By only boiling the amount of water you need, no energy is wasted on unwanted hot water)

- Turn down your thermostat to the minimum level of comfort.
- (By reducing your thermostat by 1°C you can reduce your annual heating bill by up to 10%)

- If possible, take a shower rather than a bath.
- (On average a shower uses only two/fifths of the hot water that a bath would use)

- Draught proof doors and windows and when heating the house make sure all windows are closed.
- (Up to 25 % of heat can be lost through draughty doors and windows)

- Only use your washing machine/dishwasher when it is full.
- (These appliances use a great deal of energy in their operation, ideally the appliance should be energy efficient and its maximum capacity exploited)

- Use energy efficient light bulbs.
- (Although costing more than a traditional tungsten bulb, they last 10 times longer and with comparative wattage the running costs can be less than a fifth of a standard bulb)

Sources: EnergySense Publication, Oadby & Wigston Borough Council
Save Energy Website, The Energy Saving Trust www.saveenergy.co.uk

For further information on energy efficiency in the home, you can contact the Borough Council's Environmental Health Department. Contact details appended.

Appendix B: Landscape Character Assessment

The Council would advocate the approach as set out by The Countryside Agency in the use of Landscape Character Assessments to inform an evaluation of the capacity of an area for wind energy. The following information is taken from the Countryside Agency Letter of Representation to the consultation dated January 2004. Author: Karen Devonport, Countryside Officer – Positive Planning

The relevant character area extracts from the Countryside Agency's Countryside Character, Volume 4 East Midlands, Landscape Assessment of the English Countryside and the Leicester, Leicestershire and Rutland Landscape and Woodland Strategy should be used as a starting point on which to base a more detailed landscape character assessment of the Borough.

In considering proposals for wind energy supporting evidence needs to cover the following areas:-

1. Providing baseline information on the capacity of the landscape for renewable energy schemes; criteria to identify areas of search; the opportunities and constraints indicated by the character of the landscape; design factors; and the conditions necessary to ensure a satisfactory development.

2. Evaluating landscape sensitivity, to include factors such as acknowledged areas of landscape, historical or ecological value; the extent of current development; historic and cultural associations, the degree to which the public cherish the landscape; and its tranquillity and wildness.

3. Evaluating visual influence, which should include criteria that cover the zone of visual influence of renewable energy schemes; landscape character; the scale of development; its siting, design and colour; the cumulative impact; weather and prevailing light conditions; the effect of distance; and the perceptions of the public.

The Countryside Agency and Scottish Natural Heritage have published joint advice, Landscape Character Assessment: Guidance for England and Scotland (2002). The accompanying Topic Paper 6 Techniques and Criteria for Judging Capacity and Sensitivity' will be of particular assistance when considering the siting of schemes.

Coupled with a landscape character approach the Agency advocates a preferential siting approach for identifying the potential for wind energy schemes:-

- First priority: brownfield sites - for example, present and former industrial and port-related sites. There may be scope for large-scale schemes in these locations where the environment is already degraded. Where such sites are proposed in the countryside, care must be taken to ensure that continued development on such sites remains appropriate to its locality.

- Second priority: less sensitive countryside sites which embrace few features and characteristics of valued countryside character. For example, the edge of towns, and in open farmland where many countryside features have been removed.

- Third priority: sensitive countryside sites with features and characteristics which are sensitive to renewable energy development. Limits on numbers and the size of turbines, and distances between developments, could enable some proposed developments to occur.

- Fourth priority: very sensitive sites with fundamental difficulties in accommodating many forms of renewable energy scheme because their main features and characteristics are likely to be highly sensitive to this form of development. These areas will tend to include the more upland and wilder tracts of land. These areas are valued for their environmental and amenity values, and are vital economic assets to the nation. They are our non-renewable landscapes.

Further information and copies of the documentation are available from www.countryside.gov.uk

Appendix C: Consultation Process

This guidance was placed on deposit for 7 weeks public consultation beginning on the 19th December 2003 and concluding on the 6th February 2004. The guidance was adopted by Full Council on the 26th February 2004, with an effective start date of 22nd March 2004.

As well as the statutory consultees, active house builders, interest groups and community groups were consulted. Energy interest groups and institutions were also consulted in order to gain effective and accurate technical commentary on the content of the guidance. These additional consultees are listed below.

List of additional consultations:

Planning Agents

House Builders — active in the Borough over the last 3 years

Commercial developers

Energy Institutions and Groups

Institute of Energy and Sustainable Development
De Montfort University

Director of the Institute of Building Technology
School of the Built Environment, Nottingham University

Centre for Renewable Energy Systems Technology
Loughborough University

Association for Environment Conscious Building

Energy 21

NEF Renewables
The National Energy Foundation

Details of the consultation process, a list of consultees, and the Council's responses to representations are contained in Annex 1 to this report: **Statement of Consultation**, available from the Forward Plans section on request.

Glossary of Terms

Renewable Energy Installations – the development and/or installation of technologies that capture/convert or process the specific energy source for use as heat, light and electricity

Sustainable Development – development which meets the needs of the present generation, without compromising the needs of future generations.

Combined heat and power – power plants that use waste heat from power generation to heat nearby buildings.

Fossil fuels – carbon-based fuels such as coal, oil and natural gas.

Passive solar design (PSD) – through carefully considered siting, layout, planting, orientation and shelter of development, optimal use of the heat and light from the sun can be made. This will then reduce the need to heat, light and ventilate buildings via artificial means.

Renewable energy – A term used to describe energy sources that occur naturally and repeatedly in the environment, this includes energy from the sun, the wind and the oceans and the fall of water.

Bio-mass energy – energy gained via the combustion and digestion of waste materials.

Photo-voltaic cells and arrays – a photo-voltaic cell can convert solar radiation to electricity by the effect of photons (tiny packets of light) on the electrons in the cell. An array is a series of linked cells.

Wind farm – a site on which a number of wind turbines are located.

Embodied energy – refers to the amount of energy that was used in the extraction, manufacture, transportation and on-site assembly of that material.

Contacts for further information and advice

Additional copies of the guidance are available free of charge from the website:
www.oadby-wigston.gov.uk/localplans

For information on planning and additional paper copies of this document contact:

Frazer Hickling
Forward Planning Officer
Tel. 0116 2572 652
E-mail. planning@oadby-wigston.gov.uk

For information on building regulations contact:

Rob Harbour
Head of Building Control
Tel. 0116 2572 656
E-mail. buildingcontrol@oadby-wigston.gov.uk

For information on energy efficiency in the home contact:

Stephen Bruce
Head of Environmental Health
Tel. 0116 2572 665
E-mail. envhealth@oadby-wigston.gov.uk

For information on Brocks Hill Environment Centre and Country Park contact:

Margaret Smith
Environment Centre Manager
Brocks Hill Environment Centre
Washbrook Lane
Oadby
Leicester
LE2 5JJ
Tel 0116 2714514
Fax 0116 2717356
E-mail. envteam@oadby-wigston.gov.uk

Open Monday - Friday 10.00am - 5.00pm
Weekends & Bank Holidays 10.00am - 4.00pm

Or alternatively you can write to these contacts at the following address:

Oadby & Wigston Borough Council
Council Offices
Station Road
Wigston
Leicester
LE18 2DR
Tel. 0116 2888 961 (switchboard)
Fax. 0116 2887 828

Or log onto the website: www.oadby-wigston.gov.uk

Bibliography and References

Bibliography

Energy Issues and a Review of the of RPG for the East Midlands, January 2003, Land Use Consultants, National Energy Foundation and IT Power on behalf of East Midlands Regional Assembly

Guidelines for Landscape and Visual Impact Assessment, 2002, The Landscape Institute

Leicestershire Structure Plan 1991 – 2006, 1994, Leicestershire County Council

Oadby & Wigston Local Plan, 1999

Planning for Passive Solar Design, 1999, BRECSU, DTI/DETR

Planning Policy Guidance Note 1 (Revised): General Policy and Principles, 1997, DoE

Draft Planning Policy Statement: Creating Sustainable Communities, 2004, ODPM

Planning Policy Guidance Note 3 (Revised): Housing, 2000, DETR

Planning Policy Guidance Note 13: Transport, 2000, DETR

Planning Policy Guidance Note 22: Planning and Renewable Energy, 1993, DoE (Note: Consultation Draft of Revised PPG22 published November 2003)

PPG22: Annex on Wind Energy
PPG22: Annex on Photovoltaics

Draft Planning Policy Statement 22: Renewable Energy

Planning for Sustainable Development: Towards Better Practice, 1998, DETR

Regional Planning Guidance 8: Regional Planning Guidance for the East Midlands to 2021, 2002, GOEM

Renewable Energy – Planning for the Future, ETSU, DTI

Sustainable Communities: Building for the future, 2003,ODPM

Sustainable Residential Quality: new approaches to urban living, 1998, Llewelyn-Davis, LPAC/GOL/DETR

Sustainable Settlements – A guide for planners, designers and developers, 1995, Barton H, Davis G and Guise R, LGMB/UWE

The New Autonomous House, 2000, Brenda and Robert Vale, Thames & Hudson

The Energy White Paper – Our Energy Future – Creating a low carbon economy, 2003, DTI

Towards a Regional Energy Strategy – A Sustainable Approach to Energy in the East Midlands – Consultation Docment, June2003, Land Use Consultants, National Energy Foundation and IT Power on behalf of East Midlands Regional Assembly

Viewpoints on Sustainable Energy in the East Midlands – A Study of Current Energy Projects & Future Prospects, 2000, IT Power & Land Use Consultants, East Midlands Regional Assembly

ZED Units: A Market Analogy, 2003, FDPSavills for BioRegional Consultants

References

[1] *The Bruntland Report –Our Common Future,* 1987, World Commission on Environment and Development, OUP

[1] *ZED Units: A Market Analogy*, 2003, FDPSavills for BioRegional Consultants

[1] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

[1] *Planning Policy Guidance Note 3 (Revised): Housing*, 2000, DETR

[1] *Planning for Passive Solar Design*, 1999, BRECSU, DTI/DETR

[1] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

[1] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

[1] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

[1] *Oadby & Wigston Local Plan*, 1999

[1] *Renewable Energy – Planning for the Future*, ETSU, DTI

[1] *The New Autonomous House,* 2000, Brenda and Robert Vale, Thames & Hudson

[1] *PPG22: Annex on Wind Energy*

[1] *Renewable Energy – Planning for the Future*, ETSU, DTI

[1] *Energy21 Regeneration Newsletter,* January 2004 (www.windsave.com)

[1] *Renewable Energy – Planning for the Future*, ETSU, DTI

[1] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

Websites

BREEAM Website: www.products.bre.co.uk/breeam/index.html

Save Energy Website: www.saveenergy.co.uk

[8] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

[9] *Oadby & Wigston Local Plan*, 1999

[10] *Renewable Energy – Planning for the Future*, ETSU, DTI

[11] *The New Autonomous House,* 2000, Brenda and Robert Vale, Thames & Hudson

[12] *PPG22: Annex on Wind Energy*

[13] *Renewable Energy – Planning for the Future*, ETSU, DTI

[14] *Energy21 Regeneration Newsletter,* January 2004 (www.windsave.com)

[15] *Renewable Energy – Planning for the Future*, ETSU, DTI

[16] *Sustainable Settlements – A guide for planners, designers and developers*, 1995, Barton H, Davis G and Guise R, LGMB/UWE

Websites

BREEAM Website: www.products.bre.co.uk/breeam/index.html

Save Energy Website: www.saveenergy.co.uk