Module 1: LDF / plan making evidence base and implementation of the Yorkshire and Humber Renewable and Low Carbon Energy Study 2011. Tuesday 6th March, Leeds.

Group Activity – Using Evidence to Inform Policy Development

Local Authority District: YORK

Background

The City of York Council commissioned AEA with Savilles to undertake a renewable Energy Strategic Viability Study. The study was finalised in December 2010, in advance of the AECOM 2011 study, Low Carbon and Renewable Energy Capacity in Yorkshire and Humber.

The study considers the potential resource and constraints for renewable energy developments. In particular it sets out the issues relating to the landscape and historic environment setting of York, and its significance in relation to the York Green Belt, which will be adopted along with the Core Strategy.

The study also considered the potential for increasing levels of on-site renewables for new development, including relevant viability issues, and opportunities presented by large strategic sites.

Evidence

Section 1: Extract from AECOM 2011 Low Carbon and Renewable Energy Capacity in Yorkshire and Humber Study

Section 2: Extract from AEA December 2010, Renewable Energy Strategic Viability Study for York

Section 1: Extract from AECOM 2011 Low Carbon and Renewable Energy Capacity in Yorkshire and Humber Study

Appendix B.21. Renewable Energy Resource for York

Climate Change Skills for Planners
Module 1: LDF / plan making evidence base and implementation of the Yorkshire and Humber Renewable and Low Carbon Energy Study 2011

Activity 1: York Case Study

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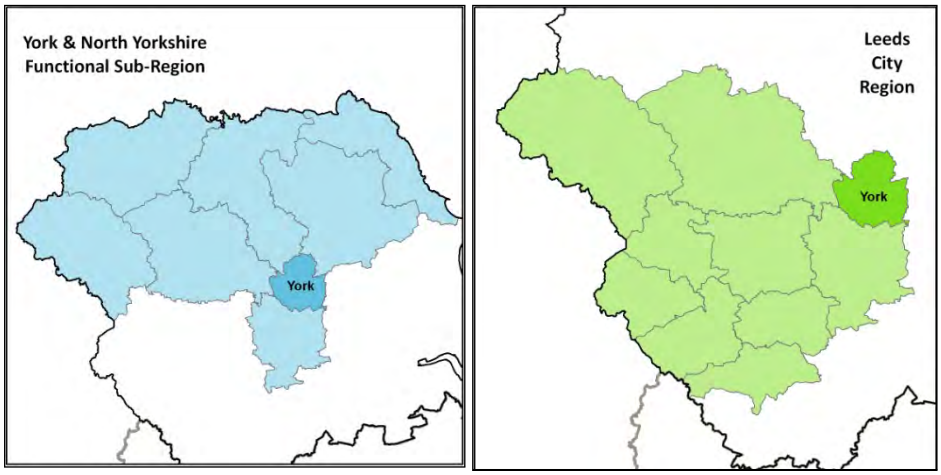
Capabilities on project:
Building Engineering - Sustainability

B.21 York

Population: 195,400

Land area (km^2): 272



Situated in both Leeds City Region and the York and North Yorkshire Sub-region. The majority of the population resides within the urban area surrounding the historic city centre but there are many small rural and semi rural settlements across the district.

There is significant potential for district heating networks in the city centre. The University of York has a CHP plant and a small biomass boiler with planning consent, which could take advantage of biomass from the nearby energy crop scheme at Earswick. This study has also found that York has significant resource for commercial scale wind energy, although local issues such as the historic setting of Yorkshire Minster may limit the resource.

York has quite a lot of smaller scale renewable energy generation already installed. The urban nature of the city centre presents opportunities for further microgeneration deployment, although this must be balanced with the need to protect the city's heritage environment.

Capabilities on project:
Building Engineering - Sustainability

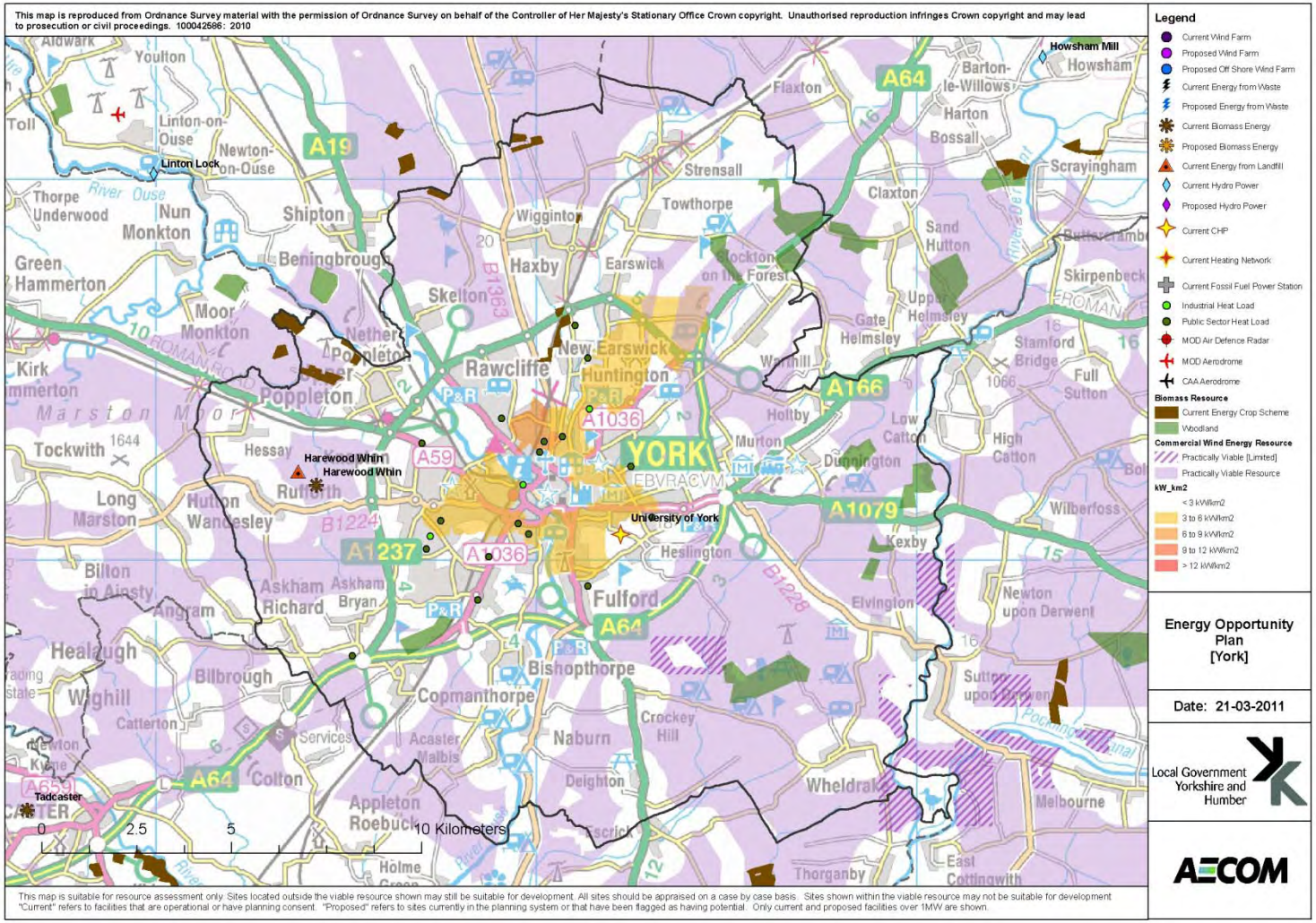


Figure 101 Energy opportunities plan for York. “Current” refers to facilities that are operational or have planning consent. “Proposed” refers to facilities currently in the planning system or sites that have been flagged as having potential. For all technologies except hydro, only current and proposed facilities over 1MW are shown. The areas with purple hatched shading described as “Practically viable [Limited]” represent areas where commercial scale wind energy development should be viable but the number of turbines may be restricted due to environmental constraints. Please refer to section 5.14 and appendix A for more details.

Capabilities on project:
Building Engineering - Sustainability

York	Installed capacity (MW)	Installed capacity (GWh)	Potential resource - heat (MW)	Potential resource - electricity (MW)	Potential resource (GWh)	Potential resource (No of existing homes equivalent energy demand)	Potential resource (Proportion of regional resource)
Commercial wind	0	0	0	35	92	0	0%
Small scale wind	0	0	0	1	1	0	4%
Hydro	0	0	0	0	0	0	0%
Solar PV	0	0	0	10	7	0	0%
Solar thermal	0	0	13	0	8	861	4%
Air source heat pumps	0	0	9	0	14	600	4%
Ground source heat pumps	0	0	9	0	16	573	5%
Biomass energy crops	0	0	5	3	45	363	1%
Biomass woodfuel	3	8	7	0	19	483	2%
Biomass agricultural arisings (straw)	3	18	5	2	36	308	2%
Biomass waste wood	0	0	1	1	10	85	3%
Energy from waste wet	0	0	0	0	4	28	0%
Energy from waste poultry litter	0	0	0	0	0	0	0%
Energy from waste MSW	0	0	2	1	19	163	3%
Energy from waste C&I	0	0	4	2	32	274	3%
Energy from waste landfill gas	7	35	0	0	0	0	0%
Energy from waste sewage gas	1	2	0	1	4	0	0%
Total	13	63	70	56	369	4,651	

Table 72 Current capacity and renewable energy resource in York. Current" refers to facilities that are operational or have planning consent

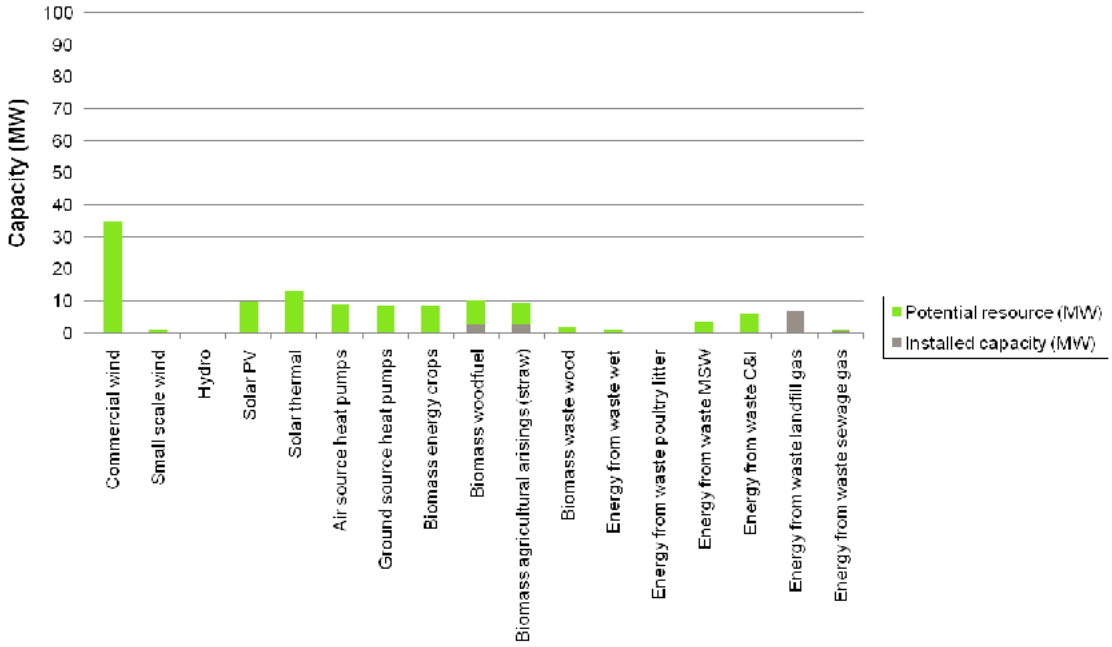


Figure 100 Current capacity and renewable energy resource in York. Current" refers to facilities that are operational or have planning consent

Section 2: Extract from AEA December 2010, Renewable Energy Strategic Viability Study for York

Executive Summary

Figures 4.1 to 4.4 on designations and constraints

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Executive summary

The City of York Council is developing an evidence base for the Yorks' Local Development Framework, which will shape the future development of the City for the period to 2031. AEA and Savills were appointed by The City of York Council to prepare the portion of the evidence base that will address renewable energy potential.

Context

This report sets out the methodology and outputs from a renewable energy strategic viability study for York. The aim of this study is to inform City of York Council about the potential, viability and deliverability of renewable energy options within York.

This report examines national and regional policy, looks at energy demand and the status of renewable energy in York. This provides a robust understanding of the key drivers and priorities for the development of renewable energy, as well as the demand for energy within the study area.

In assembling a reliable evidence base for the renewable energy content of the York Development Framework, a wide range of legal, policy and guidance is potentially of relevance. Relevant provisions have thus been reviewed in order to provide a clear context for the York study.

Throughout the production of this report, there have been developments in the technology arena. Guidance on the assessment of renewable energy potential across an area has only recently emerged and economic incentives for renewables are changing with the introduction of Feed in Tariffs and the advent of the Renewable Heat Incentive. The changing backdrop has been incorporated into the current study as far as is practicable.

Assessment of demand

The report establishes a baseline of current electricity and heat demand for the study area, then explores the potential energy demand from new developments. This review shows that future demand in **York is expected to reach 759,842 MWh of electricity and 1,678,599 MWh of heat per year by 2020.** This equates to an increase of approximately 3% in electricity and heat demand. Existing, planned and potential energy production sites within York are identified, along with their installed capacity.

In order to achieve the aspirations of the UK Renewable Energy Strategy lead scenario for 30% electricity and 12% of heat to be supplied from renewable energy, York would need to produce **227,953 MWh/yr of electricity and 201,432 MWh/yr of heat from renewable sources by 2020**.

Current operation, planned and prospective renewable energy in York accounts for 4.05% of future electricity and 0.36% of future heat demand**.**

Assessment of potential

Much of the potential comes from anticipated new residential developments planned for in the Core Strategy. There are inherent limitations in predicting the future, as above, and so the approach has limitations in predicting actual future dwellings and our assessment recognises this.

The report assesses the potential of employing various renewable energy sources in new developments, using the current most authoritative methodology for assessing renewables potential across an area, namely the Department of Energy and Climate Change's report entitled, " Renewable and Low Carbon Energy Capacity Methodology", (January 2010). Where appropriate the methodology has been adapted for York's local conditions, constraints and situation.

Based upon the assessment set out in this report, the estimated potential for low and zero carbon energy in York is summarised in table S1.

Table S1: Technical potential by technology for renewable energy in York to 2031

Technology	MWh/year pre 2020		MWh/year total (up to 2031)	
	Electricity	Heat	Electricity	Heat
Large wind	78,840	-	78,840	
Medium wind	78,840	-	78,840	
Hydro (0-10 kW)	49	-	49	
Hydro (10-20 kW)	194	-	194	
Hydro (100-500 kW)	1,314	-	1,314	
Hydro (500-1500 kW)	4,380	-	4,380	
CHP (district - electricity and heat)	17,520	35,040	17,520	35,040
Biomass (district heating)	-	19,710	-	19,710
Small and micro wind	294	-	480	-
Biomass for single building heating	-	7,623	-	16,451
Solar PV domestic	1,564	-	2,551	-
Solar thermal domestic	-	489	-	540
Ground/air source heat pumps domestic	-	6,534	-	6,693
Total	**182,995**	**69,396**	**184,168**	**78,434**
Energy demand (current)	**737,020**	**1,627,599**	**737,020**	**1,627,599**
% met by RE generation	**24.83%**	**4.26%**	**24.99%**	**4.82%**
Energy demand (future)	**759,842**	**1,678,599**	**759,824**	**1,678,599**
% met by RE generation	**24.08%**	**4.13%**	**24.24%**	**4.67%**

The above table shows that generation capacity identified up to 2020 falls short of the UK Renewable Energy Strategy lead scenario for both electricity and heat. However, it is noted that further potential could be identified through the following means:

- Additional heat mapping at the lower level super output area to identify sites with potential for CHP or district heating networks.
- Identification of existing and future commercial and industrial sites with roof space suitable for solar technologies.
- The retrofitting of existing housing stock with renewable and low carbon technologies to reduce overall energy demand within the study area.

It should be noted that there are limitations to the results of the study. These include:

- Site-specific technologies are not pursued to their definitive conclusion – the study gives insights on areas of potential and can indicate that a given area of York may have more potential than another, but no hard conclusion can be reached.
- The sources of information upon which the report's insights and conclusions are based are from standard, UK recognised sources, which are by their nature inexact as they have a 'broad brush' area approach.
- The study looks into the future on issues such as efforts needed to reach defined future targets or renewable energy potential from various sources not yet established. By its very nature this will be inexact and imprecise. When considering the scope for renewable energy technologies, the level of development already undertaken has an impact on the ability to provide accurate figures of MW potential.

Viability and feasibility

Viability and feasibility were assessed in consideration of quantitative and qualitative analysis. An economic analysis was firstly undertaken producing a Potential Curve. This shows relative potential against capital cost of the technologies. The results were incorporated into a multi-criteria analysis to reflect the City of York's Council's current policy priorities, with technologies assessed as high, medium or low against a range of criteria derived from a policy review and internal meetings. This methodology combined the above to produce a prioritised table of the technologies. Table S2 below shows the prioritised technologies in York.

Table S2: Technology options in York prioritised by cost analysis and by multi criteria analysis

Renewable energy potential curve [cost effectiveness, with significant potential with York]	Multi-criteria analysis [benefit in terms of meeting local strategic objectives]
Highest preference Large/medium wind	**Highest preference** Heat pumps[1]
Higher preference Biomass (district heating) Biomass for single building Heat pumps	**Higher preference** Large wind Hydropower
Mid preference Solar thermal Solar PV Biomass CHP	**Mid preference** Biomass for single building heating Medium wind Solar thermal Solar PV
Lowest preference Hydropower Small and micro wind	**Lowest preference** Biomass for district heating Biomass CHP Small and micro wind

In addition, the green job creation potential of each technology is estimated.

The purpose of these analyses is not to exclude particular technologies as unsuitable for development, but is to show which technologies are likely to have most economic benefit and be most favourably received within York in that they reflect current policy objectives. These analyses show that preference should mainly be for onshore wind which could provide benefits to York in all areas, as a relatively cost effective option.

Sustainable Design and Construction

The viability and feasibility of introducing high sustainable buildings standards on construction projects in York are also assessed in an additional annex. This sets out the main applicable nationally recognised standards for the domestic sector and the non-domestic sectors, and provides a briefing on each.

The annex recommends that higher building standards should not be set for new housing funded by the HCA or for non-domestic buildings, but notes that City of York Council might wish to consider setting standards for new private sector housing in line with those for public sector buildings. Advice is set out on the guidance that could be published

[1] Both air source and ground source

Planning Policy

We set out our findings in a planning policy context in the following section. The recommendations are stated in a way that is conducive to ease of transcription into policies for York's Core Strategy.

Recommendations

The main findings of the report are as follows:

- Based on existing capacity, capacity from schemes with planning consent but not yet in place and the identified potential from the relevant technologies, it is recommended that the City of York Council's LDF Core Strategy includes targets to secure 39MW of installed renewable electricity capacity and 15MW of installed renewable heat capacity by 2020 and 40MW of installed renewable electricity and 18MW of installed renewable by 2031.
- Based on identified potential and its estimated contribution to City of York's total energy demand, and if the City of York Council determines that it is reasonable to assume a medium level of renewable energy development in York, a carbon dioxide reduction target of around 10% from renewable energy should be achievable.
- Based on the identified potential from the relevant technologies, and having regard to the support now available from Feed-in Tariffs, an on-site target requiring 9-10% reduction of CO_2 emissions would be possible. However, York may want to consider setting a more ambitious target of 15% to encourage higher levels of renewables in new development.
- Rather than (or as well as) setting a Merton-style target for renewable energy in new development, as discussed in the bullet point above, City of York Council could consider adjusting their policy focus towards promoting and encouraging the development and physical integration of on and off-site renewable energy generation capacity
- These target commitments could be incorporated into draft policy CS14, expressed as a discrete policy, or otherwise incorporated into the supporting text for policy CS14.
- Other planning policies that York City Council could adopt to encourage low and zero carbon energy installations are:

  - Passive solar design should be considered at the planning application stage for all new developments across the city.
  - The City of York's LDF Core Strategy include a criteria-based policy addressing the potential for wind energy. The policy should embrace wind energy development at a variety of scales, so as to acknowledge the potential for medium-sized turbines.
  - The City of York's LDF Core Strategy includes a policy acknowledging the potential for biomass CHP
  - the City of York's LDF Core Strategy includes a policy acknowledging addressing the potential for small scale hydro power projects

Further findings are:

- The City Council should seek to facilitate the transition to zero-carbon construction through the publication of a supplementary planning document on sustainable design and construction.
- Guidance and a programme on the retrofit of existing properties should be established
- The City Council should monitor developments in the knowledge/understanding of renewables technology, such as reports on any of the main technologies or developments in renewables applications in the residential sector.
- The City of York Council should enhance the evidence base with improved levels of detail and new information, where appropriate. For example, mapping energy demands at the lower level super output area (LLSOA), when these data become available, would provide a more detailed assessment of sites and identify LLSOA areas that have the greatest potential for renewable energy technologies.
- Having regard to national planning guidance and the renewable energy resource estimates identified in the study, the report recommends a planning policy approach for the future development of York's low and zero-carbon energy resources.
- Arising from this are opportunities for York to develop as a centre of expertise for sustainable construction, assisting the city's economic transformation
- The Eco Community at the British Sugar part of the York Northwest site is a specific development presents an opportunity to promote low-carbon development and energy planning.
- City of York Council itself can help to stimulate demand and lead by example through incorporating renewable and low carbon energy considerations into its own agenda and procedures.
- Working through partnerships and the development of an engagement strategy will help to promote and deliver lasting change within York.

Figure 4-1: International and national designations

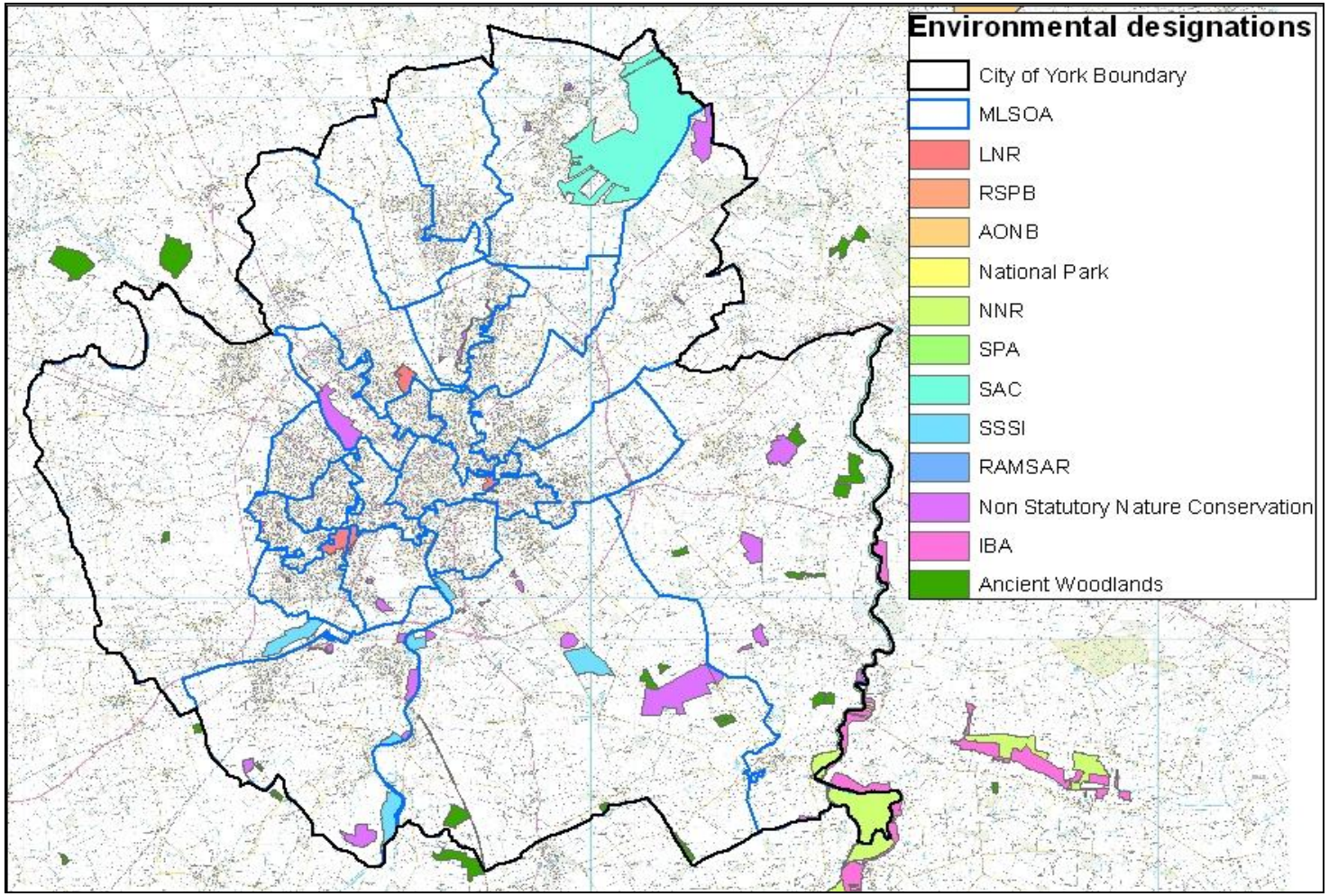


Figure 4-2: Local designations

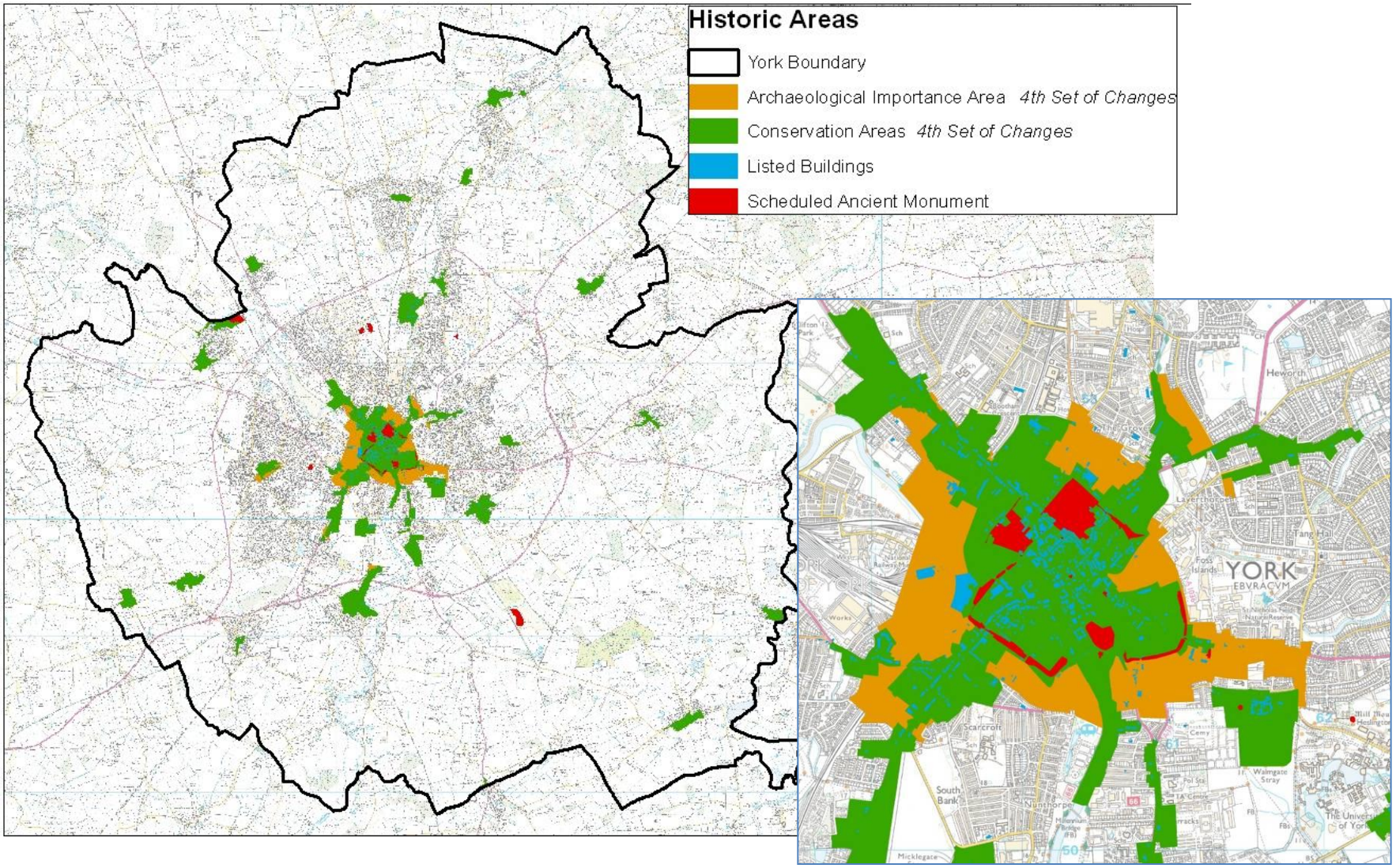
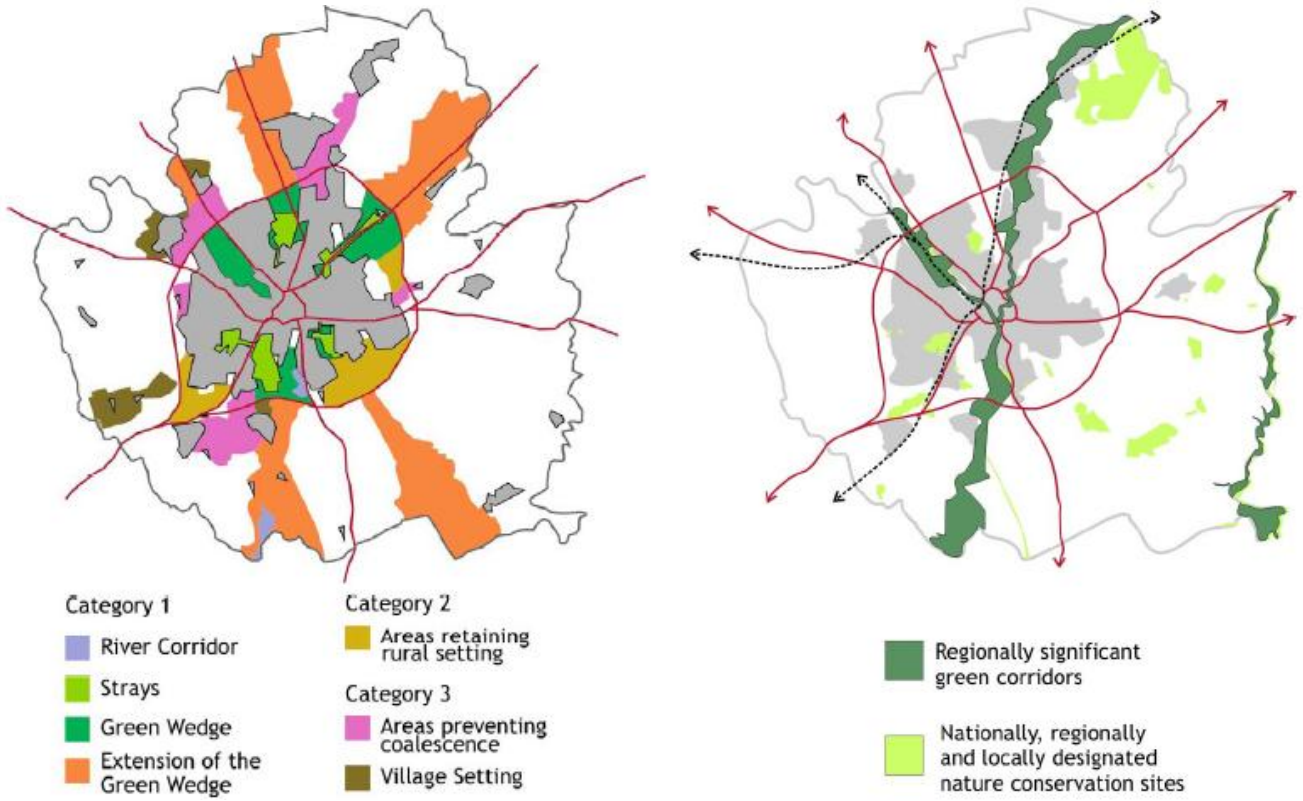


Figure 4-3: York historic character and setting areas and green infrastructure, including Nature Conservation Sites



Source: June 2009 City of York Core Strategy