Planning for Hydropower: Planning Advice

Prepared for Climate East Midlands by AMEC Environment & Infrastructure UK Limited
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1 Introduction

About this advice
Planning for Hydropower: Planning Advice has been produced by AMEC on behalf of Climate East Midlands, as part of the East Midlands Skills Programme, and is jointly funded by the Environment Agency. It is intended to help local planning authorities, the Environment Agency, developers and other stakeholders better understand the complex planning issues associated with hydropower schemes in the East Midlands Region (and elsewhere in England) and to encourage a more joined-up approach to determining applications for their deployment. The advice applies to England only, as there are differences in planning legislation and guidance in the devolved administrations.

What is hydropower?
Hydropower harnesses the energy from water flowing from a higher to a lower level using a turbine, waterwheel, stream wheel or Archimedes screw (referred to as “turbines” in the remainder of this Advice) to generate electricity. Most hydropower schemes abstract water from a river behind a weir (sometimes a reservoir dam) and then return the water to the same river. The amount of electricity produced depends on the volume of water and the distance it falls. Most schemes have a generating capacity of less than 500 kilowatts (kW), although a few sites have the potential to generate up to 1 megawatt (MW) or even more in the case of some large reservoir schemes. Schemes with an output below 100kW are generally regarded as ‘micro-hydropower’ schemes, while those up to 5MW are regarded by the Department of Energy and Climate Change as ‘small’ schemes.

What are the advantages and disadvantages of hydropower?
The UK Climate Change Act 2008 set a target of at least an 80% reduction in greenhouse gas emissions by 2050 with an interim target of a 34% reduction by 2020 (from 1990 levels). The Coalition Government’s UK Renewable Energy Roadmap reaffirms these targets.

To achieve greenhouse gas emission reduction targets, the 2009 Renewable Energy Strategy suggested that by 2020 about 30% or more of electricity could come from renewable sources, compared to around 6.7% today. Hydropower is highlighted as being expected to make a limited but important contribution to renewable electricity generation.

In 2010, the installed capacity of small-scale hydropower schemes in the UK stood at 195MW. This constitutes only a small proportion (2%) of total installed renewable electricity capacity. A much larger proportion of installed hydropower capacity relates to larger schemes, mainly in Scotland and Wales, with a total installed capacity in 2010 of 1453MW. That being said, the amount of electricity generated each year from small-scale hydropower schemes has increased significantly since 2004 from 283GWh to 511GWh (see Figure 1).

Figure 1 Electricity generated from small-scale hydropower schemes – 1990 to 2010

Research published by the Environment Agency identified over 25000 barriers on rivers in England and Wales with a theoretical capacity to generate up to 1,178MW or approximately 1% of the UK’s total energy needs.

References:
1 Department of Energy and Climate Change (2011) UK Renewable Energy Roadmap
projected electricity demand by 2020. Realistically, this potential will be much lower due to practical constraints, such as access to the local electricity distribution network and environmental impacts, and a further study by the British Hydropower Association and IT Power for the Department of Energy and Climate Change (DECC)\(^5\), with a greater focus on characteristics of individual sites, concluded that the potential was between 146MW and 248MW (or around 0.2% of the UK’s projected electricity demand).

While satisfying only a relatively small proportion of total projected electricity demand, hydropower remains a reliable, clean and proven technology and is attractive to local communities. However, hydropower development can give rise to a wide range of socio-economic and environmental impacts ranging from flood risk to fisheries, landscape to navigation. Hydropower developments will inevitably affect the river environment and thus may assist or impede achievement of Water Framework Directive objectives in River Basin Management Plans (see Appendix B). In some locations hydropower development may affect habitats and species protected by legislation under the Habitats Directive (see Appendix C) as well as other habitats and species of conservation importance that do not fall under this legislation including, for example, UK and local Biodiversity Action Plan (BAP) habitats and species.

### Advantages of Hydropower

The British Hydropower Association identifies the following advantages over other forms of renewable technologies:

- high efficiency (70 - 90%), by far the best of all energy technologies;
- a high capacity factor (typically >50%), compared with 10% for solar and 30% for wind;
- high levels of predictability, varying with annual rainfall patterns, which will become more variable with climate change;
- slow rate of change; the output power varies only gradually from day to day (not from minute to minute);
- good correlation with demand i.e. output is maximum in winter;
- uses long-lasting and robust technology; systems can readily be engineered to last for 50 years or more

### Disadvantages of Hydropower

Environmental impacts associated with hydropower schemes, which may be adverse, can be wide ranging and may include:

- landscape and visual effects, particularly where schemes are sited in sensitive locations;
- changes in flood risk associated with construction and/or operation of a scheme;
- watercourse flow depletion and alteration of flow patterns, which may affect biological water quality and habitat and the ability to achieve Water Framework Directive objectives;
- alteration to land drainage patterns and operation of flood risk management assets;
- disturbance to aquatic and terrestrial ecology including protected habitats and species;
- delay or obstruction to fish passage or damage to fish;
- effects on cultural heritage assets including Listed Buildings and archaeological remains;
- effects on river- or reservoir-based recreational activities.
1 Introduction

What is the planning context?

National planning policy on renewables (in England) is currently set out in Planning Policy Statement 22: Renewable Energy (PPS22). This encourages positive planning for renewable energy development and states that small-scale projects can provide a limited but valuable contribution to overall outputs of renewable energy and to meeting energy needs both locally and nationally. PPS22 states that renewable energy developments should be delivered in locations where the technology is viable and environmental, economic, and social impacts can be addressed satisfactorily. In this respect, PPS22 sets out that development proposals should demonstrate any environmental, economic and social benefits, as well as how any environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures.

Existing national planning policy including PPS22 is due to be replaced by the National Planning Policy Framework (NPPF) as part of major changes to the planning system under the Localism Act 2011. The draft NPPF sets out that the Government’s objective is for planning to fully support the transition to a low carbon economy. It states that planning should:

“secure, consistent with the Government’s published objectives, radical reductions in greenhouse gas emissions, through the appropriate location and layout of new development, and active support for energy efficiency improvements to existing buildings and the delivery of renewable and low-carbon energy infrastructure.”

In support of this objective, the draft NPPF states that local planning authorities should apply a presumption in favour of renewable energy development but importantly only where associated impacts are (or can be made) acceptable.

Further information relating to the planning policy context is provided at Appendix A.

What is the Water Framework Directive and why is it important?

The Water Framework Directive aims to protect and enhance the quality of surface water and groundwater bodies by setting objectives for their ecological status and monitoring improvement. Although the Environment Agency is the designated competent authority for implementation of the Water Framework Directive, local planning authorities also have responsibilities for implementation of some of the actions defined in River Basin Management Plans, which set out the environmental objectives for each water body and measures to protect and enhance its ecological status, and have a statutory duty to have
1 Introduction

regard to River Basin Management Plans in exercising their planning powers. For hydropower schemes, this means ensuring that the development will not compromise the ability to achieve:

- the environmental objectives of the River Basin Management Plan;
- good ecological status or potential of the water body; and
- no deterioration in water body status.

Thus potential effects on implementation of the relevant plan need to be taken into account in the determination of applications for hydropower schemes. The Environment Agency can provide advice on this and the River Basin Management Plans are all available on their website (see www.environment-agency.gov.uk/wfd). The application should include a preliminary assessment, with a detailed assessment where there would be significant consequences for Water Framework Directive compliance.

Why is there a need for this Planning Advice?

There were two principal drivers for developing this Advice:

- Understanding and managing impacts - While there is a need to support the installation of new schemes to help achieve national renewable energy targets, it is necessary to effectively manage and mitigate impacts associated with the construction and operation of hydropower schemes through the planning process. This is particularly important in ensuring that proposals do not adversely affect designated habitats and species or compromise achievement of Water Framework Directive targets.

- Creating a more joined-up approach to permitting - Planning permission is not the only consent that needs to be obtained before the development of a hydropower scheme can proceed - a number of Environment Agency permits are also likely to be required (possibly alongside other permissions including, for example, protected species licences issued by Natural England). Many of the issues important to the determination of both planning and Environment Agency applications are similar and there is also an established requirement for local planning authorities to consult the Environment Agency on planning applications for hydropower schemes. Consequently, there is a need for a high degree of co-operation between both regulators to ensure that duplication is avoided, a consistent approach to determining applications is adopted and that decisions are well-informed.

What is the scope and purpose of this Advice?

This Advice has been developed to:

- improve the skills and confidence of local authority planners in managing hydropower planning issues and balancing socio-economic and environmental impacts;
- inform developers of the potential socio-economic and environmental effects that could arise from hydropower development, so that they can be considered early in the siting and design of proposals;
- encourage greater co-operation between local authority planners, Environment Agency staff, developers and other stakeholders in planning for hydropower;
- clarify information requirements and reduce the potential overlap between planning and other permitting processes; and
- raise awareness of the Water Framework Directive, fisheries and flood risk and its relevance to planning decisions on hydropower schemes.

Whilst the advice references the whole of the former East Midlands Regional Government Area it is intended to be transferable and relevant to hydropower schemes on non-tidal rivers across England.
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Relationship with other advice

This advice should be read in conjunction with existing national planning policy guidance on renewable energy as well as other issues that may be relevant to hydropower applications (e.g. flood risk, nature conservation and biodiversity). There may also be local planning policies and other non-planning strategies that should be considered in the design and determination of hydropower proposals. These may include, for example, River Basin Management Plans.

This advice is intended to complement the Environment Agency’s Good Practice Guidance for hydropower. This provides advice and technical guidance for designers and developers of hydropower schemes in the context of the permits and consents required by the Environment Agency and is available from their website at www.environment-agency.gov.uk/hydropower. The Environment Agency also publishes Hydropower: A Guide for You and Your Community, which provides advice on the issues associated with developing hydropower schemes in England and Wales.

A list of useful sources of further information is provided in Chapter 5 of this Advice.

Structure of this Advice

Chapter 2: Provides an overview of the consenting process (both in terms of planning and Environment Agency permitting). It describes the information that is likely to be required in support of applications and identifies who should be consulted during the application process.

Chapter 3: Introduces and provides examples of different types of hydropower schemes using case studies.

Chapter 4: Highlights the key planning issues associated with hydropower schemes and provides recommendations as to which regulator (i.e. the local planning authority or Environment Agency) should take the lead on specific issues in order to avoid duplication.

Chapter 5: Provides a signpost to other relevant sources of information and guidance.
This chapter describes the planning process and highlights the Environment Agency consents that may also be required before development of a hydropower scheme can proceed. The chapter also identifies supporting information that is likely to be required to be submitted alongside an application and provides guidance relating to whom should be consulted on hydropower proposals.

What consents are needed for hydropower development?

There are two principal types of consent that will be required for hydropower development - planning permission and Environment Agency permits. Planning permission establishes whether a hydropower scheme is an acceptable use of land (which includes the riverbed), taking into account socio-economic and environmental considerations. Environment Agency permits control the design (e.g. fish pass design) and operation (e.g. the amount of water) of a hydropower scheme to ensure environmental protection.

Whilst each type of consent has a different emphasis, there are a number of potential overlaps in terms of the issues that need to be considered in the determination of applications. Consequently, developers should be encouraged to apply for planning permission and Environment Agency permits at the same time (this is known as ‘parallel tracking’). Although this is not a legal requirement, it will help applications to be dealt with more efficiently and consistently by reducing overlap in the consideration of important environmental issues. Each type of consent is discussed in more detail below.

When is planning permission required?

The Town and Country Planning Act 1990 states that planning permission is required to carry out ‘development’. Development is defined by Section 55 of the Town and Country Planning Act 1990 as: “... the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any building or other land.”

Hydropower schemes do not benefit from permitted development rights and planning permission will therefore be required from the relevant local planning authority including for installation of the turbine itself, any associated buildings and for any works required to facilitate the scheme (such as a new channel or pipeline).

What is the Environment Agency’s role in the determination of planning applications?

Local planning authorities have a statutory obligation to consult the Environment Agency on hydropower planning applications and the Environment Agency is also a statutory consultee on Environmental Impact Assessments (where these are required). It is also recommended that discussions are held between the local planning authority and the Environment Agency at the pre-application stage, including a site visit where appropriate.
Hydropower scheme components

The main elements of hydropower schemes that are likely to be of particular importance in the determination of planning applications are:

Intake

The intake typically comprises a weir or dam across the watercourse. A spillway or discharge pipe ensures that the downstream watercourse is never totally deprived of flow and a screen may be provided to prevent floating debris or fish from entering the pipeline. The Environment Agency’s Good Practice Guidance for hydropower provides guidance with respect to fish screen design including recommended bar spacing of screens for different types of turbines in order to ensure the protection of fish.

Pipeline or headrace

The pipeline (sometimes called the penstock) connects the intake with the turbine. High head schemes typically have smaller diameter pipes of longer length (sometimes over a kilometre), whereas low head schemes are typified by short, larger diameter pipes. Pipes are often buried for environmental or technical reasons.

Open headrace channels are now rare on new schemes but may occur if the project involves the rehabilitation of an existing scheme, particularly on old watermill sites.

For a turbine placed directly in a weir or dam, there will usually be no headrace.

Turbine house

The building houses the turbine, generator and ancillary equipment and is typically a single storey building of between 3 metres by 4 metres for a small domestic scheme, to 10 metres by 10 metres for a large grid connected scheme. Occasionally, particularly on old watermill sites, the machinery may be located in an existing building. Vehicular access to the turbine house is required for construction and maintenance purposes.

Tailrace

After use, the water is returned to the natural watercourse. To avoid flooding the turbine, this channel should have a gradient sufficient to allow free discharge of water. A screen to prevent the ingress of fish is often incorporated and occasionally the tailrace is an underground structure. Again, further guidance relating to tailrace screens is contained in the Environment Agency’s Good Practice Guidance for hydropower.

Grid connection or cabling to end user

The connection between the turbine house and the local electricity network is typically overhead wires supported on single wooden poles. In some sensitive areas (e.g. national parks), underground cabling may be stipulated, which may add considerably to the costs of grid connection.

Fish pass

In most cases hydropower schemes are associated with impounding structures that impede the movement of fish. New hydropower schemes therefore often need to address the issue of fish passage and, where a fish pass is required, the presumption is that it will allow the passage of multiple species (a ‘multi-species pass’) unless local circumstances dictate otherwise. Further information relating to fish passage, including fish pass design considerations, is contained within the Environment Agency’s Good Practice Guidance for hydropower.

Depleted reach

A depleted reach is the section of watercourse between the point where water is abstracted from the river and the point where it is returned. There are two types of depleted reach:

- The generating equipment is next to, or incorporated into, a weir. In this situation, the depleted reach runs from the upstream water level to the downstream water level over the face of the weir. A weir pool could be within the stretch of this type of depleted reach.
- The generating plant is away from the river and water is diverted through an open channel or pipeline. In this situation, the depleted reach could stretch for many hundreds of metres from the offtake to the point where the diversion channel or pipeline rejoins the main channel.

Weir pool

A weir pool is an area of water below a weir. It is influenced by the flow of water over the weir (or similar impounding structure). Weir pools can be important habitats for plants, invertebrates and fish and, consequently, any change in flow regime which alters the nature of a weir pool may need to be considered as part of the planning and Environment Agency permitting processes.
2 Hydropower and the Consenting Process

These discussions could usefully establish:

- the suitability of the proposed site for hydropower in the context of the catchment as a whole;
- likely information required to support an application including the scope of the Environmental Statement (if required) or supporting environmental information;
- potential issues (material planning considerations) and agreement as to which regulator will take the lead on specific issues (this is discussed in more detail in Chapter 4 of this Advice);
- the likely potential significant environmental effects; and
- design elements that might be required (e.g. fish passes and screens) and the potential planning impacts of these (e.g. visual appearance).

What Environment Agency permits/consents are likely to be required?

Permission will be required from the Environment Agency before development of a hydropower scheme can proceed. The Environment Agency will consider the following.

- **Abstraction**: the Environment Agency’s agreement is needed for the amount of water a scheme can take from the river to flow through a hydropower turbine.
- **Impoundment**: any new or raised weir will change the water levels and flows in the river by impounding more water above it. The Environment Agency will need to agree these changes with the developer.
- **Flood risk/land drainage**: the Environment Agency’s agreement is required for any works in or near rivers. This will include both temporary construction works and the finished scheme.
- **Fish passage**: for many schemes, the Environment Agency will require a fish pass to allow fish to pass safely up and down the river.

The Environment Agency plans to introduce a single permit, under the Environmental Permitting Regulations, for hydropower schemes, sometime within the next few years.

The Environment Agency provides a pre-application form for hydropower schemes, which initiates pre-application consultation, and an overall hydropower application form, which is submitted as part of a single application pack including application forms for all the above permissions. Click on the names of the forms to download.

What is the planning and permitting application process?

Figure 2 shows the typical planning application and Environment Agency permitting processes.

Consents other than planning permission that may be required, including Environment Agency permits, are summarised in the box following the flow chart.

What information and supporting documents should be submitted with a hydropower application?

Documentation required in support of a planning application for a hydropower scheme will include plans and a Design and Access Statement, similar to other applications. However, a range of other supporting information/documentation is also likely to be necessary and in a number of instances similar environmental information is likely to be required for the Environment Agency permitting processes. This information may include details relating to hydrology, river geomorphology, fisheries, ecology, landscape and visual impact, navigation and cultural heritage.

Development on or adjacent to a river may have an impact on flood risk and applications for hydropower schemes will therefore usually need to be accompanied by a Flood Risk Assessment. Further guidance on Flood Risk Assessments is contained within Planning Policy Statement 25: Development and Flood Risk. The application should include a preliminary assessment of any impacts on water bodies, with a detailed assessment where there would be significant impacts.

Where there is potential for a hydropower proposal to have a significant effect on European designated sites, the developer may be required to provide additional information to support a Habitats Regulations Assessment. Further information on this process is provided at Appendix C.

In some cases the developer may be required to undertake an Environmental Impact Assessment (EIA) and submit, with the planning application, an
2 Hydroelectric Power and the Consenting Process

Figure 2: Summary of the planning application and Environment Agency permitting processes for hydroelectric power schemes
Other development consents and permissions

Other permissions besides planning permission may also be required from hydropower schemes depending on the nature of the scheme and where it is located and applicants will need to ensure that they have met the requirements of the relevant authorities. Other permissions include, but are not limited to:

**Environment Agency permits:** Permissions will be required from the Environment Agency who will consider abstraction, impoundment, flood risk (for watercourses defined as main river) and fish passage.

**Lead Local Flood Authority consent:** For Ordinary Watercourses (i.e. not ‘main river’) consent may be required from the lead local flood authority (often the county council or unitary authority) for any works that may affect flood risk.

Local Planning Authority permissions such as:

- **Listed Building Consent:** often hydropower schemes will involve the reuse of buildings which are listed. Any development which affects Listed Buildings will require Listed Building consent under the Planning (Listed Buildings and Conservation Areas) Act 1990 from the relevant local planning authority.

- **Conservation Area Consent:** Conservation Area Consent under the Planning (Listed Buildings and Conservation Areas) Act 1990 is administered by the relevant local planning authority and is required for the total or substantial demolition of any unlisted building within a Conservation Area.

**Protected Species Licences:** Licences may be required from Natural England for any works affecting statutorily protected species.

**Marine Licence:** A Marine Licence is required under the Marine and Coastal Access Act 2009 from the Marine Management Organisation for any activities involving a deposit or removal of a substance or object below the mean high water springs mark or in any tidal river to the extent of the tidal influence (this may affect schemes on the lowest weir on navigable rivers, such as at Cromwell on the River Trent).

**Electricity Development Consents:** The Department of Energy and Climate Change administers the Electricity Act 1989 for developers seeking Section 36 and Section 37 consents to build and operate electricity generating stations of over 50 MW (onshore) and for overhead lines.

**Local Electricity Network Operator Agreement:** Agreement will be required from the local network operator if the scheme is to be connected to the electricity distribution network.

**Microgeneration Certification:** ROO-FIT accreditation will be required if the hydropower scheme is to be eligible for payment of Feed-in Tariffs (FITs).

Environmental Statement. **Appendix D** provides more detail relating to when the preparation of an Environmental Statement may be required. Developers should be encouraged to commence the scoping process as early as possible.

For schemes that are the subject of an EIA, it may assist both the local planning authority and the Environment Agency if environmental information to support applications both for planning permission and for permits issued by the Environment Agency is included in a single Environmental Statement, with detailed technical information in appendices, to ensure that both regulators have access to all relevant information. Similarly, if an EIA is not required, it may be useful to combine environmental information into a single environmental report. The requirements for environmental information and the way it is to be presented should be agreed between the local planning authority, the Environment Agency and the developer at the pre-application stage.

A more detailed checklist of documents/information that may be required as part of both planning and Environment Agency permitting processes is provided at **Appendix E**. This is intended to provide a useful reference point for local planning authority officers, Environment Agency staff and developers. The checklist
2 Hydropower and the Consenting Process

is not an exhaustive list of all documents that may be required and this will vary depending on site and scheme details as well as the specific requirements of the relevant local planning authority and Environment Agency. It is recommended that developers contact the relevant local planning authority and the Environment Agency at an early stage to discuss information requirements.

Who should be consulted on hydropower schemes and when?

Developers should be encouraged to undertake early and continuous consultation. In the first instance, developers should undertake pre-application discussions and site meetings with both the relevant local planning authority and the Environment Agency. This will help:

- remove, as far as possible, uncertainties as to whether a scheme is likely to be approved or rejected;
- avoids costs and delays associated with failed applications or redesign works;
- ensure that all supporting information requirements are identified;
- clarify and agree application timescales;
- establish responsibilities;
- provide an opportunity to resolve conflicts and improve the quality of the development.

In advance of pre-application discussions, developers should complete the Planning Site Audit Checklist contained at Appendix G of this Advice alongside the Environment Agency Environmental Site Audit Checklist and Pre-application form.

Hydropower schemes can impact upon local communities, river users and the environment and developers should therefore undertake pre-application consultation with other stakeholders. This will help identify and resolve issues prior to the formal planning application process and may also encourage buy-in. Those consultees that could usefully be consulted on hydropower proposals (in England) at the pre-application stage include:

- environmental bodies such as the Environment Agency, Natural England, Wildlife Trusts, Local Rivers Trusts, the RSPB and Area of Outstanding Natural Beauty Management Units (where applicable);

Environment Agency Hydroelectric-Power Scheme Pre-Application Form

The Environment Agency’s Hydroelectric-Power Scheme Pre-Application Form is designed to help developers provide the Environment Agency with information needed to support a formal application. It comprises two parts:

- **Part A** requests contact detail and basic site information including, for example, site name, location details and a description of the proposal.
- **Part B** requests technical information (if available at the pre-application stage) including in relation to water resources, fisheries and flood risk.

The Form should be completed by the developer and submitted to the Environment Agency as early as possible. Following receipt of the form an account manager is allocated and a pre-application response provided.

Further information is available from the Environment Agency’s website.
Key Messages

Developers should:

• undertake pre-application discussions and site meetings with the relevant local planning authority and the Environment Agency as well as other important stakeholders such as river users;

• complete environment and planning site audit checklists;

• apply for planning permission and Environment Agency permits concurrently;

Local planning authorities and the Environment Agency should:

• encourage developers to undertake pre-application consultation;

• direct developers to existing guidance including the Environment Agency’s Good Practice Guidance for hydropower, pre-application form and environment and planning site audit checklists;

• encourage developers to ‘parallel track’ applications to both bodies;

• encourage developers to prepare environmental reports (or Environmental Statements where required) covering all environmental issues relevant to both planning and permitting processes within a single report or statement (as necessary), with detailed technical information in appendices to ensure that both regulators have access to all relevant information.

This list is not exhaustive and the range and type of consultees will vary depending on specific site and scheme details. Developers should also refer to the relevant local planning authority’s Statement of Community Involvement which will include details on consultation arrangements for planning applications.
3 Types of Hydropower Installation

Hydro-electric power installations vary greatly in their layout and design and thus in their potential environmental effects. In upland areas, there may be a significant ‘head’ available (the difference between the water levels at the intake and the outlet), while in lowland areas the head (e.g. across a weir in a river) is often small but large volumes of water may be available. While hydropower schemes are non-consumptive, some installations involve return of the water some distance downstream of the abstraction point, leaving a river reach with reduced flow, referred to as a ‘depleted reach’. The reduction in flow may be of concern in relation to river ecology and fishery interests. As the planning considerations can differ significantly between these different types of scheme, it is convenient to identify a number of different scenarios, separating ‘high head’ and ‘low head’ schemes and those with and without depleted reaches.

There are schemes representing four of these scenarios in place in the East Midlands (and the wider UK), with a potential fifth for which there are, as yet, no UK examples:

- high head scheme - turbine in or adjacent to reservoir dam, no depleted reach;
- high head scheme - turbine supplied by diverted flow (typically via a pipeline), with a depleted reach.
- low head scheme - turbine on or adjacent to weir, no depleted reach
- low head scheme - turbine on mill leat or other diverted flow, with a depleted reach;
- ‘stream wheel’ type scheme - no barrier, relying entirely on kinetic energy of the river flow – may be more relevant in tidal flows.

Appendix F provides more detail on these scenarios and highlights where planning issues are likely to differ between them.

In the rest of this section, case studies are presented with examples to cover each main scenario.
Planning application details and key issues

- Planning application submitted to Teesdale District Council (TDC) (abolished in 2009, now part of Durham County Council) in February 2007 and approved in September 2007. Work commenced on the scheme in spring 2010 and it has been fully operational from the summer of 2011.
- Pre application discussions were held by the developer with TDC, Natural England, Northumbrian Water, Durham Wildlife Trust and the Game Conservancy Trust (black grouse officer).
- Landscape and visual impacts were a key issue – the site lies within the North Pennines AONB – and sensitive design was required. The powerhouse (the only above ground element) was constructed in a vernacular style (sandstone walls and slate roof), as agreed with TDC, to minimise adverse effects.
- Natural England raised concerns over impacts on protected species. Presence of otters was identified and to avoid harm, trenches/excavations were covered overnight. Natural England raised no operational impacts on species.
- Noise was raised as an issue and a survey undertaken. The nearest noise receptors were at least 460m away and the turbine operating equipment was enclosed within a building which limited the increase in noise to only 10-18dB(A) at the nearest receptors.

Key issues / lessons learnt

- In areas identified as being of landscape importance, the incorporation of sensitive design principles when constructing any above ground structures will help ensure the scheme fits seamlessly within its surrounding local environment and will mitigate concerns about landscape and visual impacts. This will apply to many upland reservoir-based hydropower schemes.
- In remote upland areas the effects of the construction phase of the development, including access to the site by plant, may be of most concern and should be considered as part of application process.
### Planning application details and key issues

- Planning permission (7/1990/3019) for the hydroelectric power installation at Rattlebeck Bridge, using an existing intake weir and turbine house, was granted in 1990 subject to conditions. The National Rivers Authority also issued an abstraction licence. Further planning permission and Scheduled Monument consent for improvement of the intake structure performance (7/2011/3039) was granted in 2011.
- The site is located in a sensitive location (in the Lake District National Park) and the dam is close to Greenside Lead Mine (a Scheduled Monument) and the Lake District High Fells Special Area of Conservation and SSSI. Consultation was held with English Nature (now Natural England) and English Heritage at the outset.
- To help minimise adverse landscape and visual effects, Northern Hydro faced the dam with local stone, buried the pipeline and replaced the corrugated steel roof of the turbine house with local slates.
- To mitigate problems of clogging of the abstraction point with stones, sediment and vegetation, alterations were made in 2011 involving installation of a Tyrolean screen to prevent blockages.
- Due to the issues of sensitive ecology and mine archaeology and the need for excavation of contaminated land and gravel, a method statement was drawn up in agreement with Natural England, the Environment Agency and Eden District Council at pre-application stage. A temporary water supply to the local Youth Hostel, which uses the watercourse, was provided while construction works took place.

### Key issues / lessons learnt

- As such schemes involve a flow-depleted reach in a watercourse, it is imperative that pre-application discussions are held with the Environment Agency, as they are best placed to consider this issue.
- Method Statements should be included with applications if significant engineering works are involved and should include details of extraction or movement of river sediments and gravels if required.

### Development description

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<thead>
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<th>Northern Hydro (originally) now owned and operated by United Utilities</th>
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<tbody>
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<td>Catchment:</td>
<td>Ullswater (River Eamont)</td>
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<tr>
<td>Local planning authority:</td>
<td>Lake District National Park</td>
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<tr>
<td>Status:</td>
<td>Planning permission granted 1990 (HEP installation Rattlebeck Bridge) and 2011 (improvements to intake)</td>
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<tr>
<td>Type:</td>
<td>High head - scenario 2 (130m head, 1700m pipeline)</td>
</tr>
<tr>
<td>Turbines:</td>
<td>1 Gilkes Turgo</td>
</tr>
<tr>
<td>Rated electrical output:</td>
<td>500 kW&lt;sub&gt;e&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

- Where periodic management of the intake is required (in this case to address build up of sediment and stones), monitoring conditions should be included with permissions to ensure that delivery is effective.
- Pre-application surveys are likely to be required if the site is located in an environmentally sensitive area (re ecology, flood risk or cultural heritage) or involves contaminated land.

#### Site Plan

![Site Plan](image)

#### Views of Site

![Views of Site](image)
Planning for Hydropower: Planning Advice

3 Types of Hydropower Installation

Beeston Weir, River Trent (Scenario 3)

Planning application details and key issues

- Planning application to Nottingham City Council (NCC) (95/00831/PFUL3). Permission was granted six months from receipt of application to determination.

- 250+ objections received primarily from local residents - mainly on construction traffic, visual intrusion in the Green Belt, impacts on habitat and fishing, flood risk and noise. The Green Belt issue was significant but NCC resolved that the generation of renewable energy constituted an exceptional circumstance to warrant development in the Green Belt. The size and design of the building housing the plant was revised to reduce visual impacts by placing most equipment below weir crest level.

- Barges were used for excavated material to mitigate adverse impacts of construction traffic.

- Fishery mitigation included a fish pass and re-creation of gravel-shoal habitat and a nursery pool.

- Further environmental enhancements were included as planning conditions, including:
  - redesign to reduce the size of the scheme and the volume of excavated material to be moved;
  - fish screening/bubble curtain and improved fish pass for both salmonid and coarse fish; and
  - tail race design to recreate a suitable hydraulic regime for gravel shoal habitat re-creation.

- Since the scheme has been operational there have been issues relating to fluctuations in flow and navigation although these were rapidly resolved.

Key issues / lessons learnt

- Establish links with the Environment Agency Area Account Manager/Planning Liaison Officer at the outset to establish permits required and likely main issues (e.g. flooding, visual impact, fish, ecology, water resources).

- Carefully consider landscape/visual impact, especially in designated areas (e.g. AONB) and the Green Belt, and adopt appropriate mitigation measures/design changes to minimise adverse effects.

Development description

Developer: Norweb Hydro Power Ltd/Hyder Industrial Ltd (now operated by Novera Energy)

Catchment: River Trent

Local planning authorities: Nottingham City Council


Type: Low head - scenario 3

Turbines: Kaplan (2No.)

Rated electrical output: 1,600 kW_e

- Where appropriate, consult local communities early to identify concerns and design mitigation.

- Consider impacts of construction traffic on local roads/residents. Use barge transport where possible.

- Agree whether water related aspects are better addressed through the Environment Agency permits than through the planning process.

- Actively involve the Environment Agency in the design of measures to mitigate adverse impacts upon or to enhance biodiversity, including fisheries.

Site Plan
### Planning application details and key issues

- Planning and Listed Building consent applications submitted to South Oxfordshire District Council in August 2009. Permission subsequently granted in October 2009 and scheme operational by late 2011.

- The scheme involved the replacement of an existing (redundant) turbine and its housing with an Archimedean Screw. The most significant issue associated with the development related to impacts on the existing Grade II* listed watermill. These issues were considered as part of a detailed Conservation Statement and effects mitigated including through:
  - restricting demolition of the turbine house constructed in the 1920s in order to retain the historic fabric of the watermill;
  - retaining the remains of an original timber sluice gate and beams;
  - retaining old machinery on-site for educational purposes;
  - using traditional materials where possible in the design of the new housing, walkways and pedestrian link; and
  - recreating (as far as possible) a former building on the site using paintings and photographs dating back to the 19th century.

- Extensive pre-application consultation was undertaken with historic conservation bodies including English Heritage to resolve objections to the scheme and agree in principal its design.

- Detailed surveys in 3D CAD were undertaken to record existing structures.

### Key issues / lessons learnt

- Carefully consider the impact of hydropower schemes on cultural heritage assets.

### Development description

<table>
<thead>
<tr>
<th>Developer</th>
<th>The Mapledurham 1997 Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment</td>
<td>River Thames</td>
</tr>
<tr>
<td>Local planning</td>
<td>South Oxfordshire District Council</td>
</tr>
<tr>
<td>Type</td>
<td>Low head - scenario 4</td>
</tr>
<tr>
<td>Turbines</td>
<td>Archimedes Screw</td>
</tr>
<tr>
<td>Rated electrical output</td>
<td>99 kW_e</td>
</tr>
</tbody>
</table>

- Where necessary, actively involve English Heritage and other historic conservation bodies as appropriate in the design of schemes to identify heritage concerns early and incorporate mitigation measures.
4 Key Planning Issues

This chapter identifies the key planning issues associated with hydropower schemes and suggests the body (i.e. the local planning authority or Environment Agency) that should take the lead in each case. The issues identified are based on consultation with local planning authority officers, Environment Agency staff and other stakeholders as well as national planning policy and case studies. The chapter also introduces planning site audit checklists that are designed to support the planning application process.

What are the key planning issues and how can they be resolved?

All planning applications for hydropower schemes must be determined in accordance with the policies of the development plan (i.e. Local Development Documents prepared by local planning authorities)\(^9\). The development plan will be available on local planning authority websites.

National planning policy (a summary of national planning policy that is likely to be relevant to hydropower schemes is provided at Appendix A) as well as other planning policy documents prepared by local planning authorities such as Supplementary Planning Documents may also be ‘material’ to the consideration of a planning application.

Peak District National Park Core Strategy – An Example of Renewable Energy Development Plan Policy

The Peak District National Park Local Development Framework Core Strategy was adopted in October 2011. It forms part of the Development Plan for the National Park and sets out desired spatial outcomes to 2026.

Policy CC2 of the Core Strategy specifically concerns low carbon and renewable development. It stipulates that:

- proposals for low carbon and renewable energy development will be encouraged provided they can be accommodated without adversely affecting landscape character, cultural heritage assets, other valued characteristics or other established uses of the area;
- cumulative impacts of low carbon and renewable energy development within the National Park, and visible beyond its boundary must be taken into account;
- where proposals do not compromise the valued characteristics of the National Park, the Authority will also take into account the economic, social and wider environmental benefits of renewable and low carbon development.

The plan highlights that hydropower generation can be well suited to the Peak District landscape provided it does not deplete river flows and points to a study published by Friends of the Peak District\(^{10}\) which identifies potential sites for micro hydropower.

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\(^9\) See Section 38(6) of the Planning and Compulsory Purchase Act 2004.

4 Key Planning Issues

Any other issues that relate to the use and development of land are capable of being a material planning consideration.

Key planning issues that may be associated with hydropower schemes are listed and described in the table at the end of the chapter. For each issue the table identifies:

- **mitigation and compensatory measures**: these comprise actions (e.g. pre-application consultation), potential design and locational considerations and operational restrictions that may need to be considered by developers to help resolve/address issues where they arise;

- **whether the local planning authority or Environment Agency (in their role as statutory consultee) should take the lead**: many of the identified planning issues are also important considerations in the determination of other consents issued by the Environment Agency (e.g. flood risk) and it is therefore important that the duplication of effort is minimised. This can be achieved by assigning technical areas among local planning authority (LPA) officers and the Environment Agency (EA) staff;

- **planning conditions**: these conditions could be attached to permissions for hydropower schemes to help enhance the quality of the development and also mitigate adverse effects.
<table>
<thead>
<tr>
<th>Key Planning Issue</th>
<th>Lead</th>
<th>Description</th>
<th>How the issue can be resolved</th>
<th>Potential planning conditions</th>
</tr>
</thead>
</table>
| Landscape/Visual                | ✔    | Turbines and associated buildings can have an adverse visual impact, particularly as they are located on rivers, which are often popular amenity locations. The visual appearance of reduced water in waterfalls and weirs can also be an issue associated with the operation of hydropower schemes. Hydropower schemes may affect local or wider landscape character and are often located in the open countryside and locations that are of high landscape value/sensitivity (e.g. National Parks and Areas of Outstanding Natural Beauty). | Design hydropower schemes to ensure that they complement the existing built environment including by using materials traditional to the area.  
Undertake early consultation with English Heritage and the relevant local planning authority to identify any potential cultural heritage issues. | Plans of turbine house and contractors compound to be agreed.  
Building design to be approved.  
Pipeline route and restoration procedures to be agreed and approved. |
| Cultural Heritage               | ✔    | Hydropower schemes will often be located adjacent to, or will utilise, old mills and weirs. These sites often contain Listed Buildings or other heritage assets and therefore there is potential for proposals to either directly affect such assets (e.g. through alteration or demolition) or impact on their setting. Hydropower schemes also involve excavation (e.g. for the laying of cables) and consequently there is the potential for works to affect archaeological remains. | Design hydropower schemes to ensure that they complement the existing built environment including by using materials traditional to the area.  
Undertake early consultation with English Heritage and the relevant local planning authority to identify any potential cultural heritage issues. | Plans of turbine house and contractors compound to be agreed.  
Building design to be approved.  
Pipeline route and restoration procedures to be agreed and approved. |

- Consider locations where hydropower development may be more in-keeping with surrounding landscape character and uses (e.g. on farms).  
- Locate schemes or elements thereof (e.g. turbine houses) away from main focal points.  
- Consider reduced operation during low flows (e.g. during summer months).  
- Where possible, integrate schemes into the landscape for example, by using existing woodland cover and new planting.  
- Reduce the scale of built elements or adopt design that is in-keeping with local landscape and architectural features including by using materials traditional to the area.  
- Consider burying of pipelines and undergrounding the grid connection.  
- Explore the potential to use existing buildings to house machinery.  
- Plans of turbine house and contractors compound to be agreed.  
- Building design and materials to be approved.  
- Time limits to be set on use of contractors compound.  
- Time limits to be set on hours of working.  
- Pipeline route and restoration procedures to be agreed and approved on site.  

- Consider burying of pipelines and undergrounding the grid connection.  
- Explore the potential to use existing buildings to house machinery.  
- Plans of turbine house and contractors compound to be agreed.  
- Building design and materials to be approved.  
- Pipeline route and restoration procedures to be agreed and approved.  
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<th>Lead</th>
<th>Description</th>
<th>How the issue can be resolved</th>
<th>Potential planning conditions</th>
</tr>
</thead>
</table>
| Water resources and hydromorphology | | Hydropower schemes do not normally consume water but return it to the channel from which it was abstracted. However, flow depletion may need to be considered if there is a depleted reach (i.e. the section between the intake and tailrace), where reduced flow may reduce habitat diversity and cause siltation, which can significantly impact river ecology and visual appearance. Introduction of new dams or weirs may have significant effects on hydromorphology. Alteration of flow patterns below weirs may lead to localised changes in bank erosion. | - Consider ecological impacts on the depleted reach and upstream and downstream zone of influence (see under ecology/biodiversity).  
- Fully consider the relevant CAMS at the site identification stage.  
- Consider the effects of barriers to fish migration.  
- Fully consider the potential impact of the scheme on the status of the water body and relevant Water Framework Directive targets.  
- Design the intake/outfall to minimise erosion. | - Prevention of pollution procedures to be agreed.  
- Environmental Liaison Officer procedures to be agreed (on very sensitive sites).  
- Monitoring requirements to be agreed and carried out (on very sensitive sites).  
- Work to be carried out in accordance with agreed method statement. |
| Flood risk | | There is potential for hydropower schemes to increase flood risk as a result of a reduction in a river’s flood flow capacity due to impoundment, layout and operational issues. Construction activities may also result in increased flood risk by creating an obstruction in the river channel or floodplain. | - Planning applications should be accompanied by a Flood Risk Assessment.  
- Consent is likely to be required from the Environment Agency or the lead local flood authority under the Water Resources Act 1991 or Land Drainage Act 1991 and associated byelaws. | - Work to be carried out in accordance with agreed method statement. |
<table>
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<tr>
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<th>Description</th>
<th>How the issue can be resolved</th>
<th>Potential planning conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology/biodiversity</td>
<td>✓</td>
<td>The installation and operation of a hydropower scheme can have a number of significant direct and indirect impacts on ecology. These impacts include (but are not limited to):</td>
<td>• Undertake early consultation with the relevant local planning authority, Environment Agency and Natural England to establish potential effects and agree required environmental information to be provided at the planning application stage.</td>
<td>• Scheduling and design of site work to protect migrating and spawning fish present in the water body.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• damage to ecology caused by the turbine;</td>
<td>• Consider early (in liaison with the Environment Agency, Natural England and the relevant local planning authority) design and operational measures to reduce adverse ecological impacts and, where possible, enhance river ecology. Measures may include avoiding dense vegetation and tress used as habitats or corridors, timing of tree and shrub felling to avoid the bird breeding period (March to September) and surveys where vegetation removal is required.</td>
<td>• Work to be carried out in accordance with agreed method statement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• disturbance to marine and terrestrial ecology during construction (e.g. as a result of removal and repairs to existing structures);</td>
<td>• Adopt a Construction Environment Management Plan to minimise adverse impacts associated with the construction phase.</td>
<td>• Prevention of pollution procedures to be agreed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• alteration to river flow regimes which may impact on biological water quality and habitat and affect species along intake channel, depleted reach, tailrace and zone of influence;</td>
<td>• Fully consider the potential impact of the scheme on the status of the water body and relevant Water Framework Directive targets.</td>
<td>• Environmental Liaison Officer procedures to be agreed (on sensitive sites).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• changes to water quality (e.g. as a result of pollutant discharges during the construction and operation of a scheme or reduced oxygen levels during summer months in the depleted reach);</td>
<td>• Consider, where appropriate, seasonal operational restrictions to minimise ecological impacts.</td>
<td>(Note also that licences may be required from Natural England for surveys or works affecting protected species).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• changes to channel and bank geomorphology and ecology as a result of continued maintenance (e.g. continued vegetation removal along intake channel).</td>
<td></td>
<td>• Post-implementation monitoring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>These effects may be more significant in areas designated for their ecological value/biodiversity interest.</td>
<td></td>
<td>• Seasonal restrictions of operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>There may be opportunities to enhance river ecology as part of the development of a hydropower scheme for example, by increasing the movement of fish through the catchment through the provision of fish passes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Planning Issue</td>
<td>Lead</td>
<td>Description</td>
<td>How the issue can be resolved</td>
<td>Potential planning conditions</td>
</tr>
<tr>
<td>--------------------</td>
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</tbody>
</table>
| Noise | LPA | The construction and operation of a hydropower scheme will generate noise that could have an impact on biodiversity and residential receptors. However, in most cases operational noise emissions are unlikely to adversely affect residents unless they are in very close proximity to the scheme. | • Discuss potential noise impacts with relevant local planning authority officers (e.g. the Environmental Health Officer).  
• Explore how noise impacts can be reduced through the siting of the scheme (e.g. by locating elements away from residential properties) and by using natural screening (e.g. vegetation). | • Noise limits from the turbine house to be set by condition.  
• Work to be carried out in accordance with agreed method statement.  
• Time limits to be set on use of contractors compound.  
• Time limits to be set on hours of working. |
| Transport | LPA | Construction of hydropower schemes may involve significant transport requirements for excavated material, fill, ready-mixed concrete and turbine/electrical components (including abnormal indivisible loads (AIL)), which may result in noise and vibration nuisance, increased road safety hazards and damage to local roads. Waterways can perform an important freight transport function. Where this is the case, any disruption to navigation due to construction activities or changes in water levels during operation may disrupt waterborne freight traffic. | • Undertake early consultation with the local highway authority (and the Highways Agency where appropriate) and the local navigation authority regarding transport of materials to the site.  
• Prepare a Transport Assessment or Transport Statement.  
• Define most suitable road access routes.  
• Arrange timing of movements to avoid sensitive periods (e.g. night time, school finish times).  
• Use barge transport to access the site where possible.  
• Undertake early consultation with the local navigation authority and vessel operators if the waterway is used for freight transport. | • Timing of deliveries.  
• Number of HGV movements.  
• Routing requirements.  
• Use of waterway transport for construction materials.  
• Measures for protection of navigation by freight vessels. |
<table>
<thead>
<tr>
<th>Key Planning Issue</th>
<th>Lead LPA</th>
<th>Lead EA</th>
<th>Description</th>
<th>How the issue can be resolved</th>
<th>Potential planning conditions</th>
</tr>
</thead>
</table>
| Recreation (including fisheries) and access | ✔️ | ✔️ | Hydropower schemes can obstruct river-based recreational activities such as canoeing or navigation of larger vessels. This may be as a result of the construction of a weir or reduced/increased river flows and levels. Temporary diversions or closing of footpaths may also be necessary during construction, which could impede access. Fishery interests are also an important consideration. Hydropower schemes can cause delays or obstruction to fish passage or damage to fish which pass through the turbine. Schemes can also restrict access for angling. However, there may be opportunities to increase the movement of fish through the catchment by provision of fish passes. | • Undertake early consultation with river users, including owners of angling rights, to ensure that their needs are fully understood.  
• Early consultation should be undertaken with the local navigation authority, navigation user organisations and operators of commercial vessels (e.g. passenger trip boats).  
• Consider early (and in liaison with the Environment Agency, Natural England and the relevant local planning authority) design and operational measures to minimise impacts to fisheries. These measures can include seasonal operation of the scheme, pulsed flow, provision of fish passes and screens. | • Scheduling of site work to protect spawning salmonids.  
• Work to be carried out in accordance with agreed method statement.  
• Prevention of pollution procedures to be agreed.  
• Restriction on acceptable changes in water levels due to scheme operation on navigable waterways.  
• Environmental Liaison Officer procedures to be agreed (on sensitive sites).  
• Monitoring requirements to be agreed and carried out (on sensitive sites), as well as actions to be undertaken if monitoring identifies a problem. |
<table>
<thead>
<tr>
<th>Key Planning Issue</th>
<th>Lead</th>
<th>Description</th>
<th>How the issue can be resolved</th>
<th>Potential planning conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economics</td>
<td>![checkmark]</td>
<td>Any reduction or increase in water levels upstream or downstream as a result of the operation of a hydropower scheme could impact on commercial incomes from recreational or freight navigation and/or fisheries. Schemes also have the potential to create hazards or barriers to navigation. Hydropower schemes provide benefits in terms of increasing the proportion of electricity generated from renewable sources. Development of a hydropower scheme may generate a number of economic benefits including job creation/investment in local supply chains (associated with the design, installation and operation of a scheme). There will also be economic benefit derived from the electricity generated by the scheme. However, in some instances development could have an adverse impact on businesses in close proximity to the scheme (e.g. those associated with leisure/recreation).</td>
<td>- Early consultation should be undertaken with the local navigation authority. - Undertake early consultation with users of the water body and river corridor.</td>
<td></td>
</tr>
</tbody>
</table>
Planning for Hydropower: Planning Advice

4 Key Planning Issues

Planning site audit checklist

Based on the issues identified, a checklist of key planning issues for consideration during the planning process is provided at Appendix E. The checklist has been designed to:

- help developers identify early the potential impacts of a proposal. This will help to clarify what issues may require further investigation and what design/siting changes could be made to avoid or mitigate impacts;
- support local planning authority officers in assessing the potential adverse impacts of schemes and Environment Agency staff in responding to planning application consultations;
- inform pre-application discussions and provide an early indication as to the suitability of a proposal; and
- inform other stakeholders of the potential impacts of schemes so that they are able to contribute effectively to pre-application and formal consultations.

The Planning Site Audit Checklist has been designed to complement, and be used alongside, the Environmental Site Audit Checklist prepared by the Environment Agency. It is recommended that developers submit both checklists to the local planning authority and Environment Agency. This will help facilitate pre-application discussions between both bodies and ensure that all information requirements are identified early.

Environment Agency Environmental Site Audit Checklist

The Environment Agency’s Environmental Site Audit Checklist has been designed to assist developers in identifying potential environmental issues associated with their respective hydropower proposals and to help them understand the information that is likely to be required by the Environment Agency as part of the permit application process. It also helps Environment Agency staff assess potential environmental problems at the pre-application stage.

The Checklists cover the following areas:

- Water resources and hydromorphology
- Conservation
- Chemical and physical-chemical elements
- Fisheries and biodiversity
- Flood risk
- Navigation

The Checklist should be submitted to the Environment Agency together with the Hydroelectric-Power Scheme Pre-Application Form. Once received, the Environment Agency will assess the checklist and provide advice as to whether or not an application is likely to be successful and the information that would be required to support any application.

Further information is available from the Environment Agency’s website.
4 Key Planning Issues

Key Messages

Developers should:

• complete environment and planning site audit checklists at the pre-application stage and submit both checklists to the local planning authority and Environment Agency
• consider how planning and other environmental issues can be mitigated during the design phase
• take account of the relevant local planning authority’s development plan as well as national planning policy in the location and design of proposals
• seek to identify key planning and other environmental issues as part of pre-application consultations and discussions

Local planning authorities and the Environment Agency should:

• direct developers to the environment and planning site audit checklists
• agree between the local planning authority and the Environment Agency who should take the lead on specific technical areas
• for cross-boundary schemes, agree between local planning authorities as to whether one should take the lead.
5 Other Guidance and Useful Contacts

**Other Guidance**

**British Hydropower Association (2005)**
- A Guide to UK Mini-Hydro Developments

**Department for Communities and Local Government (various)**
- Planning Policy Guidance and Planning Policy Statements

**Department for Communities and Local Government (2000)**
- Environmental Impact Assessment: Guide to Procedures

**Department for Communities and Local Government (2011)**
- Draft National Planning Policy Framework

**Environment Agency (2012)**
- Environment Agency’s Good Practice Guidance for hydropower

**Environment Agency (2010)**
- Hydropower: A Guide for You and Your Community

**Friends of the Peak District (2010)**
- Peak Power: Developing Micro Hydro Power in the Peak District

**Useful Contacts**

**Climate East Midlands**
- www.climate-em.org.uk

**Environment Agency**
- Email: enquiries@environment-agency.gov.uk
- www.environment-agency.gov.uk

**Angling Trust**
- www.anglingtrust.net

**Association of Rivers Trusts**
- www.associationofrivertrusts.org.uk

**British Hydropower Association**
- www.british-hydro.org

**British Waterways** (until June 2012), **Canal and River Trust** (from June 2012)
- www.waterscape.com

**Commercial Boat Operators’ Association**
- www.cboa.org.uk

**Energy Saving Trust**
- www.energysavingtrust.org.uk

**English Heritage**
- www.english-heritage.org.uk

**Friends of the Peak District**
- www.friendsofthepeak.org.uk

**Micro Hydro Association**
- www.microhydroassociation.org

**National Association of Boat Owners**
- www.nabo.org.uk

**Natural England**
- www.naturalengland.org.uk

**Ofgem**
- www.ofgem.gov.uk

**Planning Portal - Local Planning Information Online**
- www.planningportal.gov.uk

**Ramblers Association**
- www.ramblers.org.uk

**RSPB**
- www.rspb.org.uk

**Salmon & Trout Association**
- www.salmon-trout.org

**The Inland Waterways Association**
- www.waterways.org.uk

**The Wildlife Trusts**
- www.wildlifetrusts.org
Appendix A: Planning Policy Context

Existing National Planning Policy

National planning policy (in England) is currently set out in Planning Policy Guidance notes (PPG), and their replacement Planning Policy Statements (PPS). The guidance contained within these documents may be relevant to decisions on planning applications for hydropower development.

PPGs and PPSs cover a wide range of planning issues, many of which may need to be considered as part of hydropower development proposals. Those that are likely to be most relevant to hydropower applications are summarised in the table below although developers and local planning authorities may need to consider other PPGs/PPSs depending on specific scheme details.

<table>
<thead>
<tr>
<th>PPG / PPS</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPS1: Delivery Sustainable Development</td>
<td>Sets out the overarching national planning policy on the delivery of sustainable development through the planning system.</td>
</tr>
</tbody>
</table>
| Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1 | This PPS supplements PPS1 by setting out how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences. It sets out that local planning authorities should prepare, and manage the delivery of, spatial strategies that:  
  • make a full contribution to delivering the Government’s Climate Change Programme and energy policies, and in doing so contribute to global sustainability;  
  • in providing for the homes, jobs, services and infrastructure needed by communities, and in renewing and shaping the places where they live and work, secure the highest viable resource and energy efficiency and reduction in emissions;  
  • deliver patterns of urban growth and sustainable rural developments that help secure the fullest possible use of sustainable transport for moving freight, public transport, cycling and walking and which, overall, reduce the need to travel, especially by car;  
  • secure new development and shape places that minimise vulnerability, and provide resilience, to climate change, in ways that are consistent with social cohesion and inclusion;  
  • conserve and enhance biodiversity, recognising that the distribution of habitats and species will be affected by climate change;  
  • reflect the development needs and interests of communities and enable them to contribute effectively to tackling climate change; and  
  • respond to the concerns of business and encourage competitiveness and technological innovation in mitigating and adapting to climate change.  
Paragraph 11 sets out that local planning authorities should adhere to the following principles in determining planning applications:  
  • controls under the planning, building control and other regulatory regimes should complement and not duplicate each other;  
  • information sought from applicants should be proportionate to the scale of the proposed development, its likely impact on and vulnerability to climate change, and be consistent with that needed to demonstrate conformity with the development plan and the PPS; and  
  • specific and standalone assessments of new development should not be required where the requisite information can be made available to the planning authority through the submitted Design and Access Statement or forms part of any environmental impact assessment or other regulatory requirement. |
### Appendix A: Planning Policy Context

<table>
<thead>
<tr>
<th>PPG / PPS</th>
<th>Summary</th>
</tr>
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<tbody>
<tr>
<td><strong>PPS5: Planning for the Historic Environment</strong></td>
<td>This PPS sets out planning policies on the conservation of the historic environment. Policy HE1 deals specifically with heritage assets and climate change and encourages the reuse of heritage assets to reduce carbon emissions including by allowing greater use of renewable energy. The policy states that, where proposals that are promoted for their contribution to mitigating climate change have a potentially negative effect on heritage assets, local planning authorities should, prior to determination, and ideally during pre-application discussions, help the applicant to identify feasible solutions that deliver similar climate change mitigation but with less or no harm to the significance of the heritage asset and its setting. Where conflict between climate change objectives and the conservation of heritage assets is unavoidable, the public benefit of mitigating the effects of climate change should be weighed against any harm to the significance of heritage assets in accordance with the development management principles in the PPS and national planning policy on climate change. Policies HE6 to HE12 deal with development management issues including information requirements which is supplemented by further detail contained within the Historic Environment Planning Practice Guide.</td>
</tr>
<tr>
<td><strong>PPS7: Sustainable Development in Rural Areas</strong></td>
<td>PPS7 sets out the planning policies for rural areas. Paragraph 16 states that in determining planning applications for development in the countryside, local planning authorities should provide for the sensitive exploitation of renewable energy sources in accordance with the policies set out in PPS22.</td>
</tr>
<tr>
<td><strong>PPS9: Biodiversity and Geological Conservation</strong></td>
<td>This PPS contains planning policies on the protection of biodiversity and geological conservation through the planning system. It stipulates that planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests and that local planning authorities should ensure that appropriate weight is attached to designated sites of international, national and local importance, protected species, and to biodiversity and geological interests within the wider environment. Where granting planning permission would result in significant harm to biodiversity interests, the PPS states that local planning authorities will need to be satisfied that the development cannot reasonably be located elsewhere or the harm mitigated. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then local planning authorities should refuse planning permission. The Good Practice Guide to PPS9 provides further detail with respect to the information that may be required to support planning applications including ecological surveys.</td>
</tr>
</tbody>
</table>
National planning policy on renewables is set out in PPS22. This encourages positive planning for renewable energy development and states that small-scale projects can provide a limited but valuable contribution to overall outputs of renewable energy and to meeting energy needs both locally and nationally. The PPS identifies the following locational considerations for renewable energy development.

- **International designated sites:** renewable energy development such as hydropower schemes can affect sites of international importance for nature and heritage conservation (Special Protection Areas, Special Areas of Conservation, RAMSAR Sites and World Heritage Sites). PPS22 states that permission for schemes that are likely to have an adverse effect on such sites should only be granted once an assessment has shown that the integrity of the site would not be adversely affected. If the scheme would have an adverse effect on the integrity of an internationally designated nature conservation site, planning permission should only be granted where there is no alternative solution and there are imperative reasons of overriding public interest, including those of a social or economic nature.

- **National designations:** PPS2 stipulates that in sites located within nationally recognised designations (Sites of Special Scientific Interest, National Nature Reserves, National Parks, Areas of Outstanding Natural Beauty, Heritage Coasts, Scheduled Monuments, Conservation Areas, Listed Buildings, Registered Historic Battlefields and Registered Parks and Gardens) planning permission for renewable energy projects should only be granted where it can be demonstrated that the objectives of designation of the area will not be compromised by the development and any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits.

- **Green Belts:** as hydropower schemes are often located in the open countryside there is potential for them to be located within the Green Belt where elements (e.g. the turbine house) may affect the openness of the Green belt (national planning policy on Green Belts is set out in PPG2). PPS22 advises that careful consideration will need to be given to the visual impact of projects and developers will need to demonstrate very special circumstances that clearly outweigh any harm by reason of inappropriateness and any other harm if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.

- **Buffer zones:** PPS22 sets out that the potential impact on designated areas of renewable energy projects close to their boundaries will be a material consideration to be taken into account in determining planning applications.

- **Local designations:** hydropower schemes and associated development can have an adverse impact local landscape and nature conservation designations. PPS22 sets out that such designations should not be used in themselves to refuse planning permission for renewable energy developments and that applications should be assessed against criteria based policies set out in local development documents, including any criteria that are specific to the type of area concerned.

<table>
<thead>
<tr>
<th>PPG / PPS</th>
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<tbody>
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The Companion Guide to PPS22 (Planning for Renewable Energy) provides more detailed guidance with respect to development management issues and stipulates that:

- local authorities should be explicit in setting out what information they wish to be included in a planning application for a renewable energy scheme and any supporting documentation. Pre-application discussion is strongly recommended;
- issues of landscape and visual impact should be addressed at the scheme-specific level. Cumulative impacts should also be assessed and mitigated at this level;
- local planning authorities should recognise that the landscape and visual effects will only be one consideration to be taken into account in assessing planning applications and that these must be considered alongside the wider environmental, economic and social benefits that arise from renewable energy projects;
- applications should be determined with reference to criteria-based plan policies and supplementary planning documents where applicable;
- by comparison with most applications, there is likely to be an increased level of public interest in renewables schemes. This makes community involvement essential if the public is to be kept informed about the proposals.

The Companion Guide includes specific advice on hydropower schemes which has been reflected in this Advice where appropriate.

PPS25 seeks to ensure that all forms of flooding are taken into account in the planning process and that flood risk is avoided. It requires the preparation of a Flood Risk Assessment for all proposals located in Flood Zones 2 and 3 which should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed, taking climate change into account.
Appendix A: Planning Policy Context

Draft National Planning Policy Framework

Existing national planning policy is due to be replaced by the National Planning Policy Framework (NPPF) as part of the major changes to the planning system under the Localism Act 2011. Consultation on the draft NPPF ended in October 2011 and it is expected that the final document will be published in 2012. Once the NPPF has been approved, this section of the Advice will be updated.

The draft NPPF sets out that the Government’s objective is for planning to fully support the transition to a low carbon economy. It states that planning should:

“secure, consistent with the Government’s published objectives, radical reductions in greenhouse gas emissions, through the appropriate location and layout of new development, and active support for energy efficiency improvements to existing buildings and the delivery of renewable and low-carbon energy infrastructure.”

In support of this objective, the draft NPPF states that local planning authorities should apply a presumption in favour of renewable energy development but importantly only where associated impacts are (or can be made) acceptable. However, it clarifies that ‘Development likely to have a significant effect on sites protected under the Birds and Habitats Directives would not be sustainable under the terms of the presumption in favour of sustainable development.’

The draft NPPF also includes, inter alia, policies for:

- promotion of economic development;
- design of the built environment;
- protection of the landscape;
- adaptation to the effects of climate change;
- protection of the natural environment; and
- protection of the historic environment.

These policies will also be important considerations in determining applications for hydropower development. The draft also states that ‘Planning policies and decisions should be compatible with and where appropriate further the achievement of relevant EU obligations and statutory requirements set out in domestic legislation. The Framework should be read and interpreted as a whole.’

The Localism Act 2011 also gives increased opportunity for residents to become more actively engaged in planning for new development in their area, principally through the preparation of Neighbourhood Plans by town and parish councils or neighbourhood forums. Neighbourhood plans may provide an opportunity for communities to plan for, and secure, their own small scale renewable energy supply, including hydropower where feasible.
Appendix B: The Water Framework Directive

The Water Framework Directive (WFD\textsuperscript{10} sets objectives for all rivers, lakes, estuaries, groundwater and coastal water bodies to achieve ‘Good Status’ via a series of six year River Basin Planning cycles. The default target for all water bodies is to achieve at least ‘Good Status’ by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status may be delayed until 2021 or 2027. The Directive came into force in 2000 and was transposed into UK law in 2003. Although the Environment Agency is the lead public body charged with implementing the WFD, other public bodies also have a duty to contribute towards compliance.

For surface waters, good status is a statement of ‘overall status’ and has an ecological and a chemical component. Good Ecological Status (GES) is measured on the scale of high, good, moderate, poor and bad. Chemical status is measured as good or fail. Good ecological status applies to natural water bodies and is defined as a slight variation from undisturbed natural conditions. The ecological status of water bodies is determined by examining biological elements (e.g. fish, invertebrates, plants) and a number of supporting elements and conditions, including chemical, hydrological and hydromorphological factors.

Where water bodies have been modified to enable a particular use, such as water supply, flood protection or navigation, and because of this are not able to achieve good ecological status without significant adverse effects on the use, the water body may be designated as a heavily modified water body (HMWB) or artificial water body (AWB) and WFD objectives are then measured against ecological potential, rather than ecological status.

For a HMWB or AWB to achieve Good Ecological Potential (GEP) the following criteria must be satisfied:

- all other modifications must be altered or managed to reduce or remove their adverse impact so that there is the potential for the ecology to be as close as possible to that or a similar natural water body (the mitigation measures required to enable achievement of good ecological status in each water body are listed in the River Basin Management Plan).

For groundwater bodies, good status has a quantitative and a chemical component. Together these provide a single final classification or either good or poor status.

In order to be compliant with the requirements of the Water Framework Directive, the delivery of any scheme must:

- ensure that there would be no deterioration in any of the biology, chemistry or hydromorphology quality elements;

- look for opportunities to deliver any mitigation measures identified in the river Basin Management Plan that are not currently in place;

- ensure that the operation of existing mitigation measures is not compromised or restricted; and

- ensure that the future delivery of any additional mitigation measures is not compromised or restricted.

Environment Agency guidance\textsuperscript{11} describes the process of assessing new developments for compliance with the WFD. In summary, such assessments need to consider the following key questions.

1. At the water body level, on a non-temporary basis, will the option result in deterioration of any of the elements from one status class to the next, e.g. good to moderate?


\textsuperscript{11} Assessing New Modifications for Compliance with WFD: detailed supplementary guidance Document 488_10_SD01. It should be noted that this is a ‘living document’ and it is expected that changes will be made. It is also a document that has been produced for an internal Environment Agency audience, with the intention of providing external guidance in the future.
Appendix B: The Water Framework Directive

2 Will the option prevent the water body from achieving good ecological status?

3 Can the scheme assist in the delivery of any River Basin Management Plan (RBMP) measures as part of compliance, e.g. if the water body is artificial or heavily modified, can it include implementation of any morphological mitigation measures identified in the RBMP as needing to be put in place, but not yet in place, to help the water body achieve good ecological potential?

Where hydropower schemes are fitted to existing weirs, they are less likely to breach Water Framework Directive requirements for physical modification of water bodies, although, where an existing weir is identified in a RBMP as preventing achievement of good ecological status, careful consideration should be given to what is required to achieve compliance with WFD requirements and whether the hydropower scheme can contribute positively – for example by including a fish pass in the scheme design.

Where hydropower schemes require a new impoundment (e.g. new weir) then they are more likely to affect the status of the water body and this must be assessed as part of the permitting process. In these circumstances, any adverse impacts upon the ecological status should be fully mitigated. Where a hydropower scheme leads to deterioration or failure to achieve good ecological status and this cannot be avoided or mitigated, the scheme may be allowed even if it fails to meet WFD requirements, provided that failure to achieve good status is solely due to physical modification of the water body and it can be demonstrated that:

- adverse impacts are mitigated as far as possible;
- the reasons for the modification are reported in the River Basin Management Plan;
- the scheme is justified for reasons of overriding public interest and/or the benefits of good ecological status are outweighed by the benefits of the hydropower scheme to human health, human safety or sustainable development; and
- the benefits cannot be achieved by other means, technically or at disproportionate cost, and there is no significantly better environmental option.

There are eleven River Basin Management Plans prepared for England and Wales, which are available on the Environment Agency’s website at:

www.environment-agency.gov.uk/wfd
Appendix C: The Habitats Directive

Requirements of the Habitats Regulations

The Habitats Regulations only specifically apply to Special Areas of Conservation (SACs), candidate SACs (cSACs), Sites of Community Importance (SCIs) and Special Protection Area (SPAs). However, UK policy extends the requirements for HRA to include Ramsar sites and potential SPAs (pSPAs), including proposed extensions or additions to existing SPAs.

Part 6 of the Conservation of Habitats and Species Regulations 2010 (S.I. No. 490) requires that a competent authority must undertake an appropriate assessment of the implications for European sites designated under the Habitats Directive or classified under the Wild Birds Directive before deciding to undertake or give any consent, permission or other authorisation for a plan or project which is not directly connected with or necessary for the management of the sites, but which is likely to have a significant effect on such sites (either alone or in combination with other plans or projects). Under UK policy, the same requirements apply to Ramsar sites.

Local planning authorities and the Environment Agency are competent authorities in relation to hydropower schemes. Sometimes the developer may also be a competent authority, for example in the case of development at a reservoir by a water company.

First there is a need to screen the project to determine whether there is a ‘Likely Significant Effect’ (LSE) on European or Ramsar sites. Natural England must be consulted at this stage. If a LSE is identified, then an appropriate assessment of the effects of the project of the integrity of the site will be required. If an adverse effect is found, the project may not go ahead unless it can be shown that there are no alternatives and that the project is required for imperative reasons of overriding public interest sufficient to justify potential adverse effects on the European/Ramsar site(s). In such a case, any necessary compensatory measures must be put in place to ensure that the overall coherence of the network of European sites (Natura 2000) is protected. This process (including assessment of LSE and appropriate assessment) is referred to as a Habitats Regulations Assessment (HRA).

Competent authorities may agree to cooperate in undertaking the HRA.

Relevance to hydropower schemes

Hydropower schemes have the potential to affect interest features of riverine European sites due to the physical presence of structures or, more likely, by alterations in flow regime and/or water quality. Effects may occur in a depleted reach, due to reduction in flow, or downstream due to changes in flow regime. In the case of releases from deep reservoirs in particular, operation may also lead to changes in water temperature and chemical quality downstream. Where reservoirs are themselves European sites, installation of hydropower schemes may affect the drawdown regime, with consequent effects on the interest features of the site. Terrestrial European sites may be affected by the presence of scheme structures (including access roads) and by human activity associated with the scheme, particularly during construction. Where any potential for such effects is identified, a Habitats Regulations Assessment must be undertaken. The developer will normally be expected to provide the competent authority will all the necessary information to enable it to undertake the HRA.

12 See Regulation 7 of The Conservation of Habitats and Species Regulations 2010
15 Ramsar Sites are listed by the relevant signatory state under the Convention on Wetlands of International Importance, particularly as Waterfowl Habitat, Ramsar, Iran, 1971.
16 See Regulation 65 of The Conservation of Habitats and Species Regulations 2010
Appendix D: Environmental Impact Assessment

What is Environmental Impact Assessment?

Environmental Impact Assessment (EIA) is required for certain types of proposals before planning permission can be granted. Through an Environmental Statement, the EIA process draws together information and assesses the likely significant environmental effects of a project, enabling issues to be properly understood by the public and the relevant competent authority before it makes its decision.

For developers, EIA encourages environmental considerations to be taken into account during development design, avoiding delay during the application process. For the local planning authority and the Environment Agency, the EIA process provides a better basis for making decisions.

When is EIA required for hydropower schemes?

Hydropower schemes with a capacity of over 500kW may require Environmental Impact Assessment (EIA) although Planning Circular 02/99 on Environmental Impact Assessment explains that an Environmental Statement is more likely to be required for a hydropower development with more than 5MW (5000kW) of generating capacity. However, this is an indicative threshold. Proposals that are located within sensitive areas may require EIA regardless of their capacity.

Each hydropower scheme should therefore be considered on an individual basis to determine whether specific sensitivities may trigger the need for an Environmental Statement. In particular, the characteristics and location of the development and the magnitude, duration and character of any potential impacts need to be considered.

Where there is a possibility that a proposed development will require EIA, developers should consult the relevant planning authority well in advance of a planning application. Developers can decide to submit an Environmental Statement with their application, in which case the development is automatically treated as EIA development, or they may wish to seek a formal ‘screening opinion’ from the local planning authority as to whether an Environmental Statement is required. In support of a request for a screening opinion, developers must provide a site plan, description of the development and an assessment of possible effects on the environment.

What information should be included in an Environmental Statement for a hydropower scheme?

Before making a planning application, the developer may ask the local planning authority to provide, in writing, an opinion as to the information that should be provided in the Environmental Statement. This is known as a ‘screening opinion’ and can be requested at the same time as a screening opinion.

Any formal scoping request will require the local planning authority to consult the Environment Agency. The Environmental Statement must include information on significant effects of the scheme on population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors, as far as each is relevant. The Environment Agency has produced EIA Scoping Guidelines, which include hydropower schemes specifically.

As Environment Agency permits may also require an EIA, pre-application discussions should be held between the local planning authority, Environment Agency staff and the developer, to agree the scope of the assessment required and consider whether a single Environmental Statement would be sufficient for both purposes; this is recommended.

The emphasis of an Environmental Statement is on the ‘significant’ environmental effects to which a hydropower development is likely to give rise. The level of detail the Environment Agency will expect to see in an Environmental Statement will be proportionate to the environmental risks and appropriate to the site-specific conditions. Developers should consider impacts on water bodies and water quality and include relevant RBMP and other water data that are available from the Environment Agency website in their baseline data.

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17 The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (SI No.1824) (the EIA Regulations) include “installations for hydroelectric energy production” within Schedule 2 paragraph (3)(h).
19 An updated version of the Circular was issued for consultation in 2006 but not yet been finalised, which removed all indicative thresholds and strengthened the need for a case-by-case review of the need for an Environmental Statement.
20 As defined in Regulation 2(1) to the EIA Regulations
21 Under Regulation 5 of the EIA Regulations
22 Under Regulation 13 of the EIA Regulations.
## Appendix E: Supporting Information Checklist

This appendix provides a checklist of documents/information that may be required as part of both planning and Environment Agency permitting processes. This is intended to provide a useful reference point for local planning authority officers, Environment Agency staff and developers. It should be noted that the checklist is not an exhaustive list of all documents/information that may be required and this will vary depending on site and scheme details, as well as the specific requirements of the relevant local planning authority and Environment Agency. In some cases, some of the information listed will not be relevant. It is recommended that developers contact the relevant local planning authority and the Environment Agency at an early stage to discuss information requirements.

<table>
<thead>
<tr>
<th>PPG / PPS</th>
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<th>Planning</th>
<th>EA Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme details</td>
<td>This should include a description of the proposal and its location as well as details of grid connection works, including transformer and transmission lines.</td>
<td>✔️</td>
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</table>
| Plans                     | These should include maps and diagrams and should include the following at least:  
• location plan showing the application site (at a scale of 1:1250);  
• site plan showing the location of intake, pipeline, turbine house, tailrace and other elements of the scheme (at a scale of 1:500);  
• existing and proposed elevations (at a scale of 1:50 or 1:100);  
• existing and proposed floor plans (at a scale of 1:50 or 1:100); and  
• roof plans (where required).                                                                                                                                                                                                 | ✔️        | ✔️         |
| Ownership Certificate     | This must be completed as part of a planning application and should state the ownership of the site/property.                                                                                                                                                                                                                              | ✔️        |            |
| Agricultural Holdings Certificate | This is required whether or not the site includes an agricultural holding. All agricultural tenants must be notified prior to the submission of the application.                                                                                                                                                              | ✔️        |            |
| Planning Statement        | This statement may be required for larger schemes including those affecting Listed Buildings and should identify the context and need for the proposed development and include an assessment of how the proposed development accords with relevant national, regional and local planning policies. It should also include details of consultations with the local planning authority and wider community/statutory consultees undertaken prior to submission.                                                                 | ✔️        |            |
| Design and Access Statement | This should provide details of the extent, layout, scale, landscaping and appearance of the proposal together with an assessment of heritage (including any archaeological) assets that may be affected by the scheme prepared in accordance with Planning Policy Statement 5: Planning for the Historic Environment. Where development involves the demolition or conversion of a listed building a structural survey will be required. | ✔️        |            |
## Planning for Hydropower: Planning Advice

### Appendix E: Supporting Information Checklist

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<tr>
<td>Details of vehicular access, parking and movements</td>
<td>This information is likely to include details of means of vehicular access, parking and the number and frequency of vehicle movements during both the construction and operation of a scheme.</td>
<td>✔️</td>
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<tr>
<td>Details of provision for fish passes (where required)</td>
<td>This may be required to highlight what measures have been incorporated to enable fish to pass safely downstream and upstream at the intake structure.</td>
<td>✔️</td>
<td>✔️</td>
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</table>
| Details of fish screening measures     | This may be required to highlight the measures incorporated to prevent fish from entering the turbine. This information should include:  
• the type of fish screen – such as mesh screens, vertical or inclined bar racks, caanda screens (wedge-wire spillway screens);  
• size of the intake screen, in millimetres (mm);  
• dimensions (width x height) of the screen in millimetres (mm);  
• angle of the intake screen (in degrees) in relation to the main flow path. This should be adequate to effectively guide fish to the bypass channel;  
• the approach velocity, for the intake screen only, in metres per second; and  
• the 10-figure National Grid Reference of the intake screen. | ✔️       | ✔️         |
| Details of the bywash channel         | The design of a bywash channel is critical to the performance of any fish screen placed within a channel. The entrance to a bywash should be where the fish have the best chance of finding it. It will be necessary to state whether the bywash is a separate channel, or if the fish pass forms part of the bywash channel, and the dimensions. | ✔️       | ✔️         |
| Alternative screening methods         | Alternative screening methods such as behavioural fish barriers can be used where physical screens are not practical. Behavioural fish barriers include louvre bar, acoustic and strobe lighting.                               | ✔️       |            |
| Land Contamination Study              | Identifying the existing and previous uses of the site will give an indication of the possibility of contamination. A preliminary risk assessment is likely to be required to help determine whether a site investigation and more detailed risk assessment would be needed. Where a proposed site is known or suspected to be affected by land contamination (e.g. has previously been used for industrial purposes or is a landfill site) it will be necessary to undertake a land contamination study. The assessment should examine the likelihood of the presence of land contamination, its nature and potential risk to the proposed development and what further measures are required to ensure the site is suitable for use. Further detail is provided in Planning Policy Statement 23: Planning and Pollution Control (note that this guidance will be superseded by policies that comprise the National Planning Policy Framework in due course). | ✔️       | ✔️         |
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<tr>
<td>Details of site management measures during the construction phase</td>
<td>The construction of a hydropower scheme may result in the siltation of water courses, as well as adverse impacts on sensitive habitats, species and other receptors (e.g. due to disturbance from construction machinery). Cofferdams may affect river flows and ecology. A site management plan can help avoid/minimise these impacts by ensuring that construction is undertaken sensitively.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Photomontages</td>
<td>Photomontages may be required to demonstrate the landscape/visual impact of a hydropower scheme.</td>
<td>✔️</td>
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</tr>
<tr>
<td>Details of the power from the installation (in kW) and anticipated efficiency</td>
<td>Where targets have been set for hydropower in local plans, it may be appropriate to provide details of the power from the installation (in kW or MW) and anticipated efficiency as well as what the energy will be used for.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Flood Risk Assessment</td>
<td>Development on or adjacent to a river may have an impact on flood risk and it is very likely that applications for hydropower schemes will need to be accompanied by a Flood Risk Assessment. Further guidance on Flood Risk Assessments is contained within Planning Policy Statement 25: Development and Flood Risk (note that this guidance will be superseded by policies that comprise the National Planning Policy Framework in due course).</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Landscape and Visual Assessment</td>
<td>Where development of a hydropower scheme could have an adverse effect on landscape character or visual impact it may be necessary to undertake a landscape and visual assessment. An assessment may be particularly important where proposals are located within sensitive areas such as Areas of Outstanding Natural Beauty and will help identify potential effects on landscape and visual amenity as well as mitigation and enhancement measures.</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Transport Statement/Assessment</td>
<td>Whilst in the majority of cases the operation of a hydropower scheme is unlikely to generate a significant increase in road traffic, construction works may cause congestion especially where they involve abnormal loads. This may require the preparation of a Transport Statement and pre-application consultation should be undertaken with the local highway authority to determine supporting information requirements and what, if any, mitigation may be required. Waterway transport may be an alternative in some cases. Where a scheme may generate a significant volume of transport movements it may be necessary to undertake a Transport Assessment. Further guidance on Transport Assessments is available from the Department for Transport.</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Noise Assessment</td>
<td>Where noise/vibration may impact upon sensitive receptors from either the construction or operation of a hydropower scheme noise monitoring/modelling may be required to inform a noise assessment.</td>
<td>✔️</td>
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## Planning for Hydropower: Planning Advice

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<tr>
<td>Tree Survey</td>
<td>A tree survey may be required for applications affecting trees on/off site. It should be noted that where a scheme affects trees protected by a Tree Preservation Order or within a Conservation Area, a report in full accordance with BS5837 Trees in Relation to Construction must be submitted. Where trees are likely to be affected by a proposal it is recommended that developers consult the relevant local planning authority arboricultural officer at the pre-application stage.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ecological Assessment</td>
<td>Development that may affect designated nature conservation sites (e.g. National Nature Reserves, Sites of Special Scientific Interest, Sites of Importance for Nature Conservation and Local Nature Reserves), UK and local BAP habitats and species or other habitats and species of local or other conservation importance (e.g. national scarce/rare species and local wildlife sites) is likely to require an ecological assessment. An ecological assessment will include a records search, field survey (extended Phase 1 habitat survey and detailed (species) surveys as necessary), ecological evaluation and impact assessment and discussion of mitigation, compensation and enhancement measures (including proposals for long term management and monitoring). Field surveys should be completed by suitably qualified ecologists and should follow standard methodologies where these exist. It is strongly recommended that early discussions are held between the developer, local planning authority officers (planning and ecology) and the Environment Agency (as well as other relevant bodies) to discuss and agree the requirement for, and scope of, any ecological assessment.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Navigation Impact Assessment</td>
<td>Where the river supplying the hydropower scheme is navigable, there is potential for effects on navigation due to lowering of water levels (reducing available draught), reduction in water available for lock operation and potential for obstruction to navigation or disruption due to local changes in currents. Early discussion with the navigation authority and users is recommended and it may be helpful to provide a specific Navigation Impact Assessment to assist in consultation.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Air Quality Assessment</td>
<td>Hydropower development is unlikely to have a significant effect on air quality. However, where proposals require a Transport Assessment, EA or affect sensitive areas, such as ecological sites or Air Quality Management Areas an air quality assessment may be required. Where a proposal is likely to have an adverse impact on air quality it is recommended that early discussions are held between the developer and local planning authority air quality officer (or equivalent).</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Hydropower development may affect ecological status/potential and supporting elements assessed in River Basin Management Plans. Schemes will need to be assessed to determine whether they will lead to any change in status or prevent the achievement of targets. Deterioration is not permitted under the Directive unless fully justified under Article 4.7. This could be regarded as a material planning consideration, especially if the LPA has strong policies to protect biodiversity and achieve WFD objectives in its local plan. The Environment Agency can provide guidance on such assessments.

<table>
<thead>
<tr>
<th>PPG / PPS</th>
<th>Description</th>
<th>Planning</th>
<th>EA Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Framework Directive Assessment</td>
<td>Hydropower development may affect ecological status/potential and supporting elements assessed in River Basin Management Plans. Schemes will need to be assessed to determine whether they will lead to any change in status or prevent the achievement of targets. Deterioration is not permitted under the Directive unless fully justified under Article 4.7. This could be regarded as a material planning consideration, especially if the LPA has strong policies to protect biodiversity and achieve WFD objectives in its local plan. The Environment Agency can provide guidance on such assessments.</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
| Assessment of hydrology | This assessment will need to include analysis on how the proposed scheme will affect the volume of water flow, or water level, within all channels present or proposed. This should fully explain the effect the scheme will have on the flow and level of water over any structures in the river, such as weirs or fish passes. The assessment will need to include the following:  
- an overview of the catchment hydrology;  
- hydrometric information (current meter gaugings, gauging station data, model data, rainfall data);  
- a pre-scheme assessment (flow survey) of all channels included within the scheme;  
- assessment of the change in flow within all channels affected;  
- seasonal variation in flows;  
- base flow/run-off comparison;  
- assessment of high-flow events (management of structures, relief channels);  
- reduction in downstream levels;  
- raising of upstream levels; and  
- residual flows downstream of intake needed to protect the river and other interests. | ✓ |
| Flow duration statistics | The flow duration curve (FDC) represents the statistical availability of any given flow, based on best available information. The FDC and associated information can indicate the volume of flow which is available for any percentage of the time. | ✓ |
| Prescribed flow | The prescribed flow is the flow that must be maintained in the depleted reach of a watercourse when the hydropower scheme is operating to protect the river, the environment and the appearance of the site. This can also include the flow needed to maintain the effectiveness and the efficiency of a fish pass. | ✓ |
### Planning for Hydropower: Planning Advice

**Appendix E: Supporting Information Checklist**

<table>
<thead>
<tr>
<th>PPG / PPS</th>
<th>Description</th>
<th>Planning</th>
<th>EA Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitats Regulations Assessment</td>
<td>Hydropower schemes that have the potential to affect interest features of riverine European sites will require a Habitats Regulations Assessment, undertaken by the competent authority (usually the local planning authority and Environment Agency). The developer will normally be expected to provide the competent authority with all the necessary information to enable it to undertake the HRA which can be included within an Environmental Report or Environmental Statement. Further information on Habitats Regulations Assessment is contained at Appendix C to this advice.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Environmental Report</td>
<td>Applications for Environment Agency consent will require the preparation of an Environmental Report (where a scheme is not the subject of Environmental Impact Assessment) assessing the likely significant impacts of a proposed scheme and identifying mitigation measures. This is likely to draw together much of the information outlined in this table and where possible, it may be useful to include environmental information required for both planning and Environment Agency permission in a single report.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Environmental Statement</td>
<td>Where a proposed development is the subject of Environmental Impact Assessment, the developer will be required to prepare an Environmental Statement. This is likely to draw together much of the information outlined in this table in order to assess likely significant environmental effects of a proposal and where possible, it may be useful to include environmental information required for both planning and Environment Agency permission in a single report. Further information on Environmental Impact Assessment and its application in relation to hydropower schemes is contained at Appendix D to this advice.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Appendix F: Indicative Plans for Different Types of Hydropower Installation

Five different scenarios for hydropower schemes are described briefly in Chapter 3 of this Advice. This appendix shows typical layouts for each of the first four scenarios in diagrammatic form, with annotations regarding commonly encountered planning issues.

Scenario 1 – high head scheme with no depleted reach

These are typically upland schemes, often associated with water supply or river regulating reservoirs.
Scenario 2 – high head scheme with depleted reach

These are typically upland schemes.

Scenario 3 – low head scheme with no depleted reach

Such schemes are typically installed in existing weir structures.
Scenario 4 – low head scheme with depleted reach

These schemes typically utilise a mill leat or side channel of a river.
Appendix G: Planning Site Audit Checklist

This appendix provides checklists to aid identification of the main planning issues for consideration during the planning process. It is principally aimed at developers of hydropower schemes. Where a green box is ticked, generally no further action will be required relating to that topic. Where a red box is ticked, the notes below the checklist give guidance on development constraints or on extra work that may be required. It may be helpful to the local planning authority if completed checklists are included with the planning application.

1 Landscape / Visual

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the scheme within and/or likely to have an impact on a World Heritage Site? (See note 1a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a National Park? (See note 1a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on an Area of Outstanding Natural Beauty? (See note 1a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a Conservation Area? (See note 1b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a Special Landscape Area (or equivalent local landscape designation)? (See note 1c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within the Green Belt? (See note 1d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme have any impact on landscape character? (See note 1e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme result in an adverse impact on visual amenity? (See note 1f for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Planning Site Audit Checklist

Notes:

1a World Heritage Sites, National Parks and Areas of Outstanding Natural Beauty have exceptionally high landscape value and are protected at the international or national level. The management objectives of these areas may be to conserve existing character. You can get a map of international and national designations via the MAGIC website (http://magic.defra.gov.uk/).

1b Section 69 of the Planning (Listed Building and Conservation Areas) Act 1990 gives local councils the power to designate as Conservation Areas, “areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance”. Designation gives control over the demolition of buildings and provides the basis for policies designed to preserve or enhance all the aspects of character or appearance that define an area’s special interest. Guidance on development within a Conservation Area should be sought from the local planning authority.

1c Special Landscape Areas provide protection for locally significant landscapes. Development within a Special Landscape Area (or equivalent local landscape designations) will need to accord with relevant development plan policies.

1d Development of a hydropower scheme within the Green Belt is likely to be regarded as inappropriate development and very special circumstances will need to be demonstrated to justify why planning permission should be granted.

Further guidance is contained within Planning Policy Guidance 2: Green Belts24 and you can check the Green Belt status of a site with the relevant local planning authority or via the MAGIC website (http://magic.defra.gov.uk/).

1e In determining impact on landscape character, consideration should be given to the following:

- the sensitivity of the existing landscape in terms of value, condition and capacity;
- the anticipated size and built form of the scheme;
- whether the scheme will be well integrated into the existing landscape;
- whether the scheme will be concealed by existing and/or new vegetation/tree cover.

1f Visual effects may include the following:

- visual obstruction: physical blocking of a view;
- visual intrusion: the visual intrusion of the proposed development into an existing view or loss of particular landscape elements or features already present in the view;
- cumulative visual effects: the cumulative or incremental visibility of similar types or scales of development may combine to have a cumulative visual effect. This may concern ‘intervisibility’, where more than one development may be viewed simultaneously from a viewpoint, or occur sequentially where developments may be viewed from a number of differing locations, most commonly from a road, rail route or long distance path.

24 It should be noted that Planning Policy Guidance 2 will be superseded by policies that comprise the National Planning Policy Framework (once approved).
## Appendix G: Planning Site Audit Checklist

### 2 Cultural Heritage

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a desk-based assessment of cultural heritage assets been undertaken? (See note 2a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has on-site evaluation taken place? (See note 2b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a World Heritage Site? (See note 2c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the proposed site contain, or is development likely to have an impact on, a Scheduled Monument or its setting? (See note 2d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the proposed site contain, or is development likely to have an impact on, a Listed Building? (See note 2e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an on a Registered Park or Garden? (See note 2f for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a Registered Battlefield? (See note 2g for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on a Conservation Area? (See note 2h for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme within and/or likely to have an impact on any other heritage assets including those identified by the local planning authority? (See note 2i for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

2a A desk-based assessment should identify the heritage assets that may be affected by the scheme using existing information (e.g. national and local records, aerial photographs and existing surveys) with the aim being to establish baseline conditions and inform what further investigation may be required (if any). This will also require an assessment of the significance of the asset (as not all cultural heritage features will be of equal “importance”) and the impact on that significance (e.g. the extent to which the scheme changes or damages a feature or affects its setting). This is in accordance with Planning Policy Statement 5: Planning for the Historic Environment (PPS5) which requires all applicants to provide a level of information that is proportionate to the significance of the cultural heritage assets and the potential impact upon that significance of the proposal. This assessment should be included in the Design and Access Statement (and, potentially, any Environmental Report or Environmental Statement produced).

The desk-based assessment may require pre-application consultation with local planning authority officers and the County Archaeologist as well as English Heritage. The Institute for Archaeologists has published standards and guidance for desk-based assessments.

2b In some instances it may be necessary to undertake an on-site evaluation to further assess potential impacts on heritage assets. On-site evaluation may comprise ground-penetrating radar, trial-trenching, test-pitting, field-walking, x-ray and other forms of remote-sensing, geo-archaeological borehole investigation, opening-up and building analysis. The Institute for Archaeologists has published standards and guidance for on site evaluation.

2c World Heritage Sites are inscribed by the UNESCO World Heritage Committee for their Outstanding Universal Value. Where a proposal may affect a World Heritage Site or its setting, including any buffer zone, developers should consult English Heritage as well as...
the local planning authority. It will be necessary for development to accord with the policies of the relevant development plan (so far as they relate to World Heritage Sites) and the respective World Heritage Site Management Plan will also be an important material consideration.

Further guidance is available in CLG Circular 07/09: Protection of World Heritage Sites and accompanying English Heritage guidance. A list of World Heritage Sites is available from the National Heritage List for England (English Heritage) and you can get a map of World Heritage Sites via the MAGIC website. (http://magic.defra.gov.uk/)

2d Scheduled Monuments are designated under the Ancient Monuments and Archaeological Areas Act 1979 by the Secretary of State for their national importance. Works to a Scheduled Monument will require Scheduled Monument consent from the Secretary of State. Where a scheme may either directly affect a Scheduled Monument or its setting pre-application consultation should be undertaken with English Heritage and the relevant local planning authority officer/county archaeologist).

Further guidance is available from the Department for Culture, Media and Sport. A list of Scheduled Monuments is available from the National Heritage List for England (English Heritage) and you can get a map of Scheduled Monuments via the MAGIC website. (http://magic.defra.gov.uk/).

2e Listed Buildings are designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 by the Secretary of State for their special architectural or historic interest. Listed Building Consent will be required for schemes involving the demolition of, or alteration (which would affect its character) to, a Listed Building. For development affecting a Grade I or Grade II* Listed Building or its setting it is recommended that pre-application discussions are held with English Heritage (English Heritage must be notified by a local planning authority for development affecting the setting of a Grade I or Grade II* Listed Buildings outside Greater London).

A database of Listed Buildings is available from the National Heritage List for England (English Heritage).

2f Registered Parks and Gardens are designated by English Heritage under the Historic Buildings and Ancient Monuments Act 1953 for their special historic interest. Separate consent is not required but local planning authorities must consult English Heritage on applications affecting Grade I or II* Registered Parks and Gardens. Pre-application consultation with English Heritage and the relevant local planning authority officer/county archaeologist is encouraged for schemes within, or which may affect the setting of, a Registered Park and Garden. It will also be necessary for development in these instances to accord with the relevant policies of the respective development plan.

A list of Registered Parks and Gardens is available from the National Heritage List for England (English Heritage) and you can get a map of Registered Parks and Gardens via the MAGIC website. (http://magic.defra.gov.uk/).

2g Registered Battlefields are designated by English Heritage on a non-statutory basis. There is no requirement to consult English Heritage over planning applications which affect Registered Battlefields however, developers may wish to undertake pre-application consultation with English Heritage and the relevant local planning authority officers/county archaeologist in these instances. It will also be necessary for development which may affect a Registered Battlefield to accord with the relevant policies of the respective development plan.

A list of Registered Battlefields is available from the National Heritage List for England (English Heritage) and you can get a map of Registered Battlefields via the MAGIC website (http://magic.defra.gov.uk/).

2h Section 69 of the Planning (Listed Building and Conservation Areas) Act 1990 gives local councils the power to designate as Conservation Areas, “areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance”. Designation gives control over the demolition of buildings and provides the basis for policies designed to preserve or enhance all the aspects of character or appearance that define an area’s special interest. Guidance on development within a Conservation Area should be sought from the local planning authority.

2i Heritage assets may include, for example, Ancient Woodland and also non-designated sites and in this respect Planning Policy Statement 5: Planning for the Historic Environment sets out that the absence of designation for such heritage assets does not indicate lower significance and that they should also be considered. Developers should seek advice about the presence and significance of these assets via the relevant local planning authority officer/county archaeologist and consult the local Historic Environment Record and local lists.

25 Department for Culture, Media and Sport (2010) Scheduled Monuments: Identifying, protecting, conserving and investigating nationally important archaeological sites under the Ancient Monuments and Archaeological Areas Act 1979

26 It should be noted that Planning Policy Statement 5 will be superseded by policies that comprise the National Planning Policy Framework (once approved).
### Appendix G: Planning Site Audit Checklist

#### 3 Water

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could the scheme alter drainage systems in such a way as to increase the risk of water pollution? (see note 3a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme involve any works where contaminated land will be disturbed, leading to pollution risk? (see note 3b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have adequate procedures been developed to ensure that water pollution is avoided during the construction phase? (see note 3c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme lead to increased bank erosion? (see note 3d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will any new impoundment lead to submergence of any valued features of the local environment? (see note 3e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme involve a depleted river reach? (see note 3f for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

3a This is mainly likely to apply where new access routes have to be established across previously unpaved areas.

3b The local authority should be consulted for information on the contaminated land register. If further investigation is warranted, historic mapping should be consulted regarding past uses and site investigation undertaken as appropriate.

3c Developers should show that their scheme is in accordance with relevant Environment Agency Pollution Prevention Guidance notes and that dewatering arrangements are satisfactory. Particular risks arise from work in the water. The Environment Agency will be able to advise on this issue.

3d Increased bank erosion, potentially leading to loss of useable land, loss of footpaths etc could arise in the immediate locality of the scheme if flow from the turbine or tailrace is directed towards the bank. Bank protection may be required in such cases.

3e As well as direct loss of property, land and access routes, which will be the main concerns in the case of a major new reservoir, small changes in impoundment levels may lead to changes in character that represent loss of amenity of the river corridor, as well as changes to riparian habitats.

3f Creation of a flow-depleted river reach may lead to changes in flora and fauna and/or loss of amenity.
### Appendix G: Planning Site Audit Checklist

#### 4 Flood Risk

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will the scheme increase the risk of flooding, either by reducing the cross section or by slowing flows? (See note 4a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme propose any alterations to structures, or building new structures in the river (such as weirs, dams, culverts or outfalls), or affect existing flood defences (such as embankments or walls)? (See note 4a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme create new channels or change the flow path in any way? (See note 4a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme propose to deepen any existing channels? (See note 4a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme in the floodplain as shown on the Environment Agency’s flood map? (See note 4a and 4b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme change the available access to the river or neighbouring flood defences for maintenance (for example, by building fences or walls around new structures, or installing overhead cables)? (See note 4c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme reduce the available floodplain area or block potential routes of floods over land? (See note 4c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme create a new raised reservoir with the capacity of 25,000 cubic metres or more? (See note 4d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the cumulative effect of the proposal along with other proposals increase the risk of flooding or have a negative effect on land drainage? (See note 4a for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**4a** Flood defence consent is likely to be required for these activities and pre-application consultation should be undertaken with the Environment Agency. A Flood Risk Assessment will also be required in support of the planning application, in accordance with the requirements of Planning Policy Statement 25: Development and Flood Risk.  

**4b** Flood maps are available from the Environment Agency’s website.

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27 It should be noted that Planning Policy Statement 25 will be superseded by policies that comprise the National Planning Policy Framework (once approved)

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**4c** Operating authorities (including the Environment Agency) on main rivers have responsibilities to maintain watercourses to reduce the risk of flood. Internal drainage boards and lead local flood authorities (usually county or unitary authorities) have similar responsibilities to maintain ordinary watercourses (i.e. those not designated as ‘main river’) to reduce the risk of flood. This is particularly important at river-control structures, which may need to be maintained and cleared of debris. For this reason, vehicles need to be able to get access to these structures, and people need to be able to work safely around them.

**4d** Structures of this size will qualify as statutory reservoirs, and need to be designed and inspected as such. See the Environment Agency’s website for further information.
## 5 Biodiversity

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the scheme (including any new access route) within, or likely to affect, a Site of Special Scientific Interest (SSSI)? (See note 5a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme (including any new access route) within, or likely to affect, a Special Area of Conservation (SAC)? (See note 5b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme (including any new access route) within, or likely to affect, a Special Protected Area (SPA)? (See note 5c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme (including any new access route) within, or likely to affect, a national nature reserve? (See note 5d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme (including any new access route) within, or likely to affect, a local nature reserve? (See note 5d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have formal ecological surveys been carried out on the site? (See note 5e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the scheme take account of protected species that may live at the site or nearby? (See note 5f for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme (including any new access route) likely to have a significant effect on non-designated habitats or species? (See note 5g for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**5a** You can get a map of the English Sites of Special Scientific Interest from Natural England’s website ([www.natureonthemap.org.uk](http://www.natureonthemap.org.uk)) or via the MAGIC website ([http://magic.defra.gov.uk/](http://magic.defra.gov.uk/)). A scheme is likely to affect a site of special scientific interest if parts of it are in the site, the scheme alters the river flow through the site or creates an obstacle to fish migration. If a scheme is likely to affect a Site of Special Scientific Interest you will need to assess whether the proposal is likely to damage the site, considering why it was designated as a Site of Special Scientific Interest. Natural England (NE) must be formally told about any work that may damage a Site of Special Scientific Interest.

**5b** You can get a map of English Special Areas of Conservation from Natural England’s website ([www.natureonthemap.org.uk/map.aspx?m=int_sites](http://www.natureonthemap.org.uk/map.aspx?m=int_sites)) or via the MAGIC website ([http://magic.defra.gov.uk/](http://magic.defra.gov.uk/)). There is more information on all Special Areas of Conservation in the UK on the website at [www.jncc.gov.uk/page-1458](http://www.jncc.gov.uk/page-1458). A scheme is likely to affect a Special Area of Conservation if it would remove or change the vulnerable natural habitats the site was designated for. If a scheme is likely to affect a Special Area of Conservation, a Habitats Regulations Assessment will be required (see Appendix C).
Appendix G: Planning Site Audit Checklist

5c There is a list of all Special Protected Areas in the UK on the JNCC Full UK SPA site list (www.jncc.defra.gov.uk/page-1400) and a map via the MAGIC website (http://magic.defra.gov.uk/) A scheme is likely to affect a Special Protection Area if it removes or changes natural habitats that are important to the rare and vulnerable birds the site was classified for or affects the use of the site by birds. If your scheme is likely to affect a Special Protection Area, a Habitats Regulations Assessment will be required (see Appendix C).

5d You can get a map of all national and local nature reserves from the Natural England website (www.natureonthemap.org.uk/map.aspx?map=nreserves) or via the MAGIC website (http://magic.defra.gov.uk/). The reserves are managed by different authorities, including local government. A scheme might affect a reserve if it is within one or it alters the river flow through one.

5e Ecological surveys are likely to be required on schemes in designated rivers or affecting designated terrestrial areas or where designated/protected aquatic or terrestrial species or habitats may be affected. The potential risks to those species and habitats will need to be considered. The exact requirements of any survey will depend on the specific site and the proposed scheme, the amount of existing information, and whether any vital information is missing.

5f You can get information on protected species in England by visiting the website at www.naturalengland.org.uk/ourwork/regulation/wildlife/species/europeanprotectedspecies.aspx. If a European protected species is likely to be affected by a scheme, a protected species licence from Natural England may be required.

5g For aquatic habitats and terrestrial habitats within the zone of influence, both the local planning authority ecologists and the Environment Agency ecologists should be consulted. Reports and plans may be necessary, detailing survey and impact assessments, significance of effects and mitigation/compensation on non designated habitats and species such as those identified in UK and local Biodiversity Action Plans (see www.jncc.defra.gov.uk/page-5155 for further information), or other habitats or species of local or other conservation importance e.g. nationally scarce/rare species, birds of conservation concern, local wildlife sites etc.
Appendix G: Planning Site Audit Checklist

6 Noise and Vibration

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any residential properties in close proximity to the site and which could be affected by noise and vibration from construction activities? (See note 6a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any other noise sensitive uses or receptors in close proximity to the site and which could be affected by noise and vibration from construction activities? (See note 6a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any residential properties in close proximity to the site which could be affected by emissions of noise from the operation of the scheme? (See note 6a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any other noise sensitive uses or receptors in close proximity to the site and which could be affected by emissions of noise from the operation of the scheme? (See note 6a for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

6a Planning Policy Guidance 24: Planning and Noise identifies residential properties as being particularly noise sensitive although it does cite developments such as offices, hospitals and schools as containing buildings and activities that are potentially noise sensitive. It may also be important to consider whether the construction or operation of the scheme could affect the enjoyment of designated and non-designated areas of landscape, wildlife and historic value.

The magnitude of noise impacts is determined by two key factors: the amount of increase in noise levels attributable to the development (a change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to doubling the loudness of a sound) and the total amount of noise that will occur. Pre-application consultation should be undertaken with the local planning authority Environmental Health Officer where noise/vibration may impact upon sensitive receptors from either the construction or operation of the scheme. Noise monitoring at agreed locations/modelling may be required to inform a noise assessment.

28 It should be noted that Planning Policy Guidance 24 will be superseded by policies that comprise the National Planning Policy Framework (once approved)
### 7 Transport

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the site accessible from a main highway?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(See note 7a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the construction or operation of the scheme increase delays and congestion at nearby junctions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(See note 7b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can waterway transport by barge be used in the construction of the scheme, especially for abnormal indivisible loads (AIL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are infrastructure improvements (e.g. junction enhancements) required to accommodate construction traffic? (See note 7c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are infrastructure improvements (e.g. junction enhancements) required to accommodate traffic related to the operation of the scheme? (See note 7c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the construction or operation of the scheme impact upon the strategic road network? (See note 7d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme generate 30 or more two-way vehicle movements in any hour or 100 or more two-way vehicle movements per day? (See note 7e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme generate significant HGV or abnormal load movements? (See note 7e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme located within an Air Quality Management Area? (See note 7e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme affect movement of freight or passenger vessels on a navigable waterway? (See note 7f for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect navigation through changes in water levels upstream or downstream of the structure? (See note 7g for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme reduce how much water is available for boats passing through locks during low flows? (See note 7h for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect a water body used for navigation in any other way? (See note 7i for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Planning Site Audit Checklist

Notes:

7a Creation of a new access or enhancement to an existing access may be required to support the construction and/or operation of the scheme. In these instances works (either temporary or permanent) may be required to the existing road network and where this is the case, pre-application consultation should be undertaken with the local highway authority.

Where land that is not in the ownership of the scheme’s developer is required to accommodate site access it will be important that any land ownership issues have been resolved. In this respect, it should be noted that Environment Agency abstraction licenses will only be granted if access rights have been secured for land directly adjoining the river.

7b Whilst in the majority of cases the operation of a small-scale hydropower scheme is unlikely to generate a significant increase in traffic, construction works may cause congestion especially where they involve abnormal loads. This may require the preparation of a Transport Statement and pre-application consultation should be undertaken with the local highway authority to determine supporting information requirements and what, if any, mitigation may be required.

7c Accommodation of operational traffic and (more likely) construction traffic may require enhancement to the existing road network (e.g. to accommodate abnormal loads). Where this is the case, pre-application consultation should be undertaken with the local highway authority.

7d The Highways Agency should be informed by the local planning authority of any proposals that are likely to impact on the strategic road network. In these instances, developers should undertake pre-application consultation with the Highways Agency.

7e In these instances the preparation of a Transport Assessment may be required and should be discussed with the local planning authority. Further guidance on Transport Assessments is available from the Department for Transport.

7f Inland waterways are navigable channels, rivers and lakes and all associated land (for example towpaths). There is a list of the main inland waterways in England and their navigation authorities on the Inland Waterways Association website at www.waterways.org.uk/waterways/canals_rivers/a_z_waterways. Where a waterway is used for transport of freight or passengers, contact should be made with operators or their representative bodies.

7g Some waterways have water levels that are set in law or by service levels. The navigation authority and vessel operators should be consulted, as early as possible, if your scheme could affect water levels.

7h Some waterways have a public right of navigation, set by law. Maintenance of navigation through locks requires an adequate supply of water for lock operation. The navigation authority should be consulted, as early as possible, to see if your scheme could affect this.

7i Permission may be needed from the navigation authority if a scheme affects navigation on a waterway. For example, the location of the turbine could cause unacceptable cross-flow in the navigation channel. The navigation authority should be consulted, as early as possible. Contact should also be made with operators of freight and passenger vessels and/or their representative organisations (e.g. the Commercial Boat Operators’ Association www.cboa.org.uk).
### Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will the scheme affect any Public Rights of Way? (See note 8a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme affect access for any recreational users of the river or reservoir banks (e.g. walkers, cyclists, picnickers)? (See note 8b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme affect access to the river or reservoir for angling? (See note 8c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the scheme affect fish populations of importance to anglers? (See note 8c for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the scheme on an inland waterway that is open to navigation by motorised pleasure craft and managed by a navigation authority? (See note 8d for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect navigation through changes in water levels upstream or downstream of the structure? (See note 8e for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme reduce how much water is available for boats passing through locks during low flows? (See note 8f for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect access to and use of the river or reservoir by canoeists? (See note 8g for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect a water body used for navigation in any other way? (See note 8h for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**8a** Public Rights of Way are recorded on the Definitive Map of Public Rights of Way, available from the relevant local authority. Development that results in the diversion or stopping up of Public Rights of Way will require a Public Path Order under Section 257 of the Town and Country Planning Act 1990. Temporary Public Path Orders may be made for the purposes of temporarily closing or diverting Public Rights of Way.

**8b** Information will be available from local authorities, navigation authorities (where applicable) and voluntary groups such as the Ramblers Association.

**8c** Information on use of the river for angling will be available from the local Environment Agency Fisheries Officer and from the Angling Trust/local angling clubs. The effect of the scheme on fish populations will need to be assessed to support the application for permits from the Environment Agency.

**8d** Inland waterways are navigable channels, rivers and lakes and all associated land (for example towpaths). There is a list of the main inland waterways in England and their navigation authorities (where present) on the Inland Waterways Association website at [www.waterways.org.uk/waterways/canals_rivers/a_z_waterways](http://www.waterways.org.uk/waterways/canals_rivers/a_z_waterways).

**8e** Some waterways have water levels that are set in law or by service levels. The navigation authority should be consulted, as early as possible, if your scheme could affect water levels.

**8f** Some waterways have a public right of navigation, set by law. Maintenance of navigation through locks requires an adequate supply of water for lock operation. The navigation authority should be consulted, as early as possible, to see if your scheme could affect this.

**8g** Information should be sought from the British Canoe Union.

**8h** Permission may be needed from the navigation authority if a scheme affects navigation on a waterway. For example, the location of the turbine could cause unacceptable cross flow in the navigation channel. The navigation authority should be consulted, as early as possible. Contact should also be made with any local rowing clubs, sailing clubs or craft hire bases, to see if the scheme will affect their interests.
### Appendix G: Planning Site Audit Checklist

#### 9 Socio-economics

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could the scheme affect commercial aquaculture operations dependent on the river or reservoir (e.g. fish farms)? (see note 9a for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect commercial navigation operators (e.g. barges carrying freight or passenger vessels)? (see note 9b for more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could the scheme affect any other commercial operations (e.g. riverside cafes, commercial recreational facilities)? (see note 9c for more information)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:

9a The Environment Agency will be able to advise on the presence of aquaculture businesses.

9b The navigation authority should be consulted at an early stage to obtain contact details for operators.

9c Local site investigation will be required to identify relevant commercial operations associated with the water body. These may include businesses whose waterside premises could be affected (e.g. by construction access, visual impact, water level changes) and businesses, possibly based outside the immediate vicinity, making use of waterspace affected by the scheme (e.g. boat or canoe hire businesses).
Appendix H: Glossary

**Area of Outstanding Natural Beauty (AONB)**
An area with statutory national landscape designation, the primary purpose of which is to conserve and enhance natural beauty.

**Archimedean Screw**
Archimedean screws have traditionally been used to raise materials, including water, working as a pump. In this configuration a prime mover is required to drive the screw to pump water or convey other materials. In recent years, a different application of the Archimedean screw is becoming popular, where the screw is run in reverse, by allowing water at a higher level to flow to a lower level through it. This produces power which can be used to drive an electric generator to produce electricity. There are now several installations of Archimedean screw in the UK.

**Biodiversity Action Plan (BAP)**
Plans established by local authorities and other bodies in response to the Convention on Biological Diversity (the Rio Convention) to identify, conserve and protect existing biological diversity and to enhance it wherever possible. Specific action plans set out measures to conserve defined vulnerable species and habitats.

**Catchment Abstraction Management Strategy (CAMS)**
CAMS are six-year plans detailing how the Environment Agency plans to manage water resources in each river catchment.

**Conservation Area**
Areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.

**Depleted reach**
The section of watercourse between an intake and re-entry of water via the tailrace.

**Development Plan**
A document setting out the local planning authority’s policies and proposals for the development and use of land and buildings in the authority’s area.

**Environmental Impact Assessment (EIA)**
Environmental Impact Assessment (EIA) is required for certain types of proposals before planning permission can be granted. Hydropower schemes with a capacity of over 500kW may require Environmental Impact Assessment.

**Flood Risk Assessment**
An assessment of the likelihood of flooding in a particular area so that development needs and mitigation measures can be carefully considered.

**Gigawatt (GW)**
Unit of electrical power equalling 1000 megawatts (= 1000 megajoules per second)

**Gigawatt hour (GWh)**
A measure of quantity of electricity produced or used equivalent to a gigawatt of power expended over an hour, equal to 1,000 megawatt hours.

**Green Belt**
Land designated around built-up areas to be kept permanently open or largely undeveloped. Green Belts are defined in a local planning authority’s development plan.
### Appendix H: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Directive created a network of protected areas around the European Union of national and international importance. They are called Natura 2000 sites and include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).</td>
</tr>
<tr>
<td>Kaplan turbine</td>
<td>Kaplan Turbines are ‘reaction’ turbines, with propellers similar in appearance to those on boats and ships (although they turn much more slowly), which run submerged and create pressure differences across their blades to extract energy from the available head. They have adjustable blades which can be used to configure the turbine to suit the varying flow available in the river without significant loss of efficiency.</td>
</tr>
<tr>
<td>Kilowatt (kW)</td>
<td>Unit of electrical power equalling 1000 watts (= 1000 Joules per second)</td>
</tr>
<tr>
<td>Kilowatt hour (kWh)</td>
<td>A measure of quantity of electricity produced or used equivalent to a kilowatt of power expended over an hour.</td>
</tr>
<tr>
<td>Listed Building</td>
<td>A building of special architectural or historic interest. Listed Buildings are graded I, II* or II with grade I being the highest.</td>
</tr>
<tr>
<td>Local Planning Authority (LPA)</td>
<td>The local authority or council that is empowered by law to exercise planning functions. Often the local borough or district council. National Parks and the Broads Authority are also local planning authorities.</td>
</tr>
<tr>
<td>Material planning consideration</td>
<td>Any consideration that relates to the use and development of land is capable of being a ‘material planning consideration’ and may include, for example, matters relating to height, mass, design, external appearance, access, landscaping, residential amenity, ecology and traffic.</td>
</tr>
<tr>
<td>Megawatt (MW)</td>
<td>Unit of electrical power equalling 1000 kilowatts (= 1000 kilojoules per second)</td>
</tr>
<tr>
<td>Megawatt hour (MWh)</td>
<td>A measure of quantity of electricity produced or used equivalent to a megawatt of power expended over an hour, equal to 1,000 kilowatt hours.</td>
</tr>
<tr>
<td>National Park</td>
<td>The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for public understanding and enjoyment of their special qualities. National Parks are designated by Natural England, subject to confirmation by the Secretary of State under the National Parks and Access to the Countryside Act 1949.</td>
</tr>
<tr>
<td>National Planning Policy Framework (NPPF)</td>
<td>The NPPF will, once approved, set out central government national planning policies, replacing policies contained within Planning Policy Guidance and Planning Policy Statements.</td>
</tr>
</tbody>
</table>
## Appendix H: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation Authority</strong></td>
<td>A company or statutory body which is concerned with the management of a navigable canal or river.</td>
</tr>
<tr>
<td><strong>Parallel tracking</strong></td>
<td>Simultaneously submitting applications for planning permission and Environment Agency permits.</td>
</tr>
<tr>
<td><strong>Planning Policy Guidance (PPG)</strong></td>
<td>Issued by central government setting out its national land use policies for England on different areas of planning.</td>
</tr>
<tr>
<td><strong>Planning Policy Statement (PPS)</strong></td>
<td>Issued by central government to replace the existing Planning Policy Guidance notes in order to provide greater clarity and to remove from national policy advice on practical implementation, which is better expressed as guidance rather than policy. PPSs will be replaced by the National Planning Policy Framework.</td>
</tr>
<tr>
<td><strong>Public Right of Way</strong></td>
<td>A public right of way is a highway over which the public have a right of access along the route.</td>
</tr>
<tr>
<td><strong>River Basin Management Plan (RBMP)</strong></td>
<td>Plans, prepared by the Environment Agency, for protecting and improving the water environment in accordance with the requirements of the Water Framework Directive.</td>
</tr>
<tr>
<td><strong>Scheduled Monument</strong></td>
<td>A nationally important site or monument given legal protection by being placed on a list, or ‘schedule’. English Heritage takes the lead in identifying sites in England which should be placed on the schedule by the Secretary of State for Culture, Media and Sport.</td>
</tr>
<tr>
<td><strong>Terawatt hour (TWh)</strong></td>
<td>A measure of quantity of electricity produced or used equivalent to a terawatt of power expended over an hour, equal to 1,000 gigawatt hours.</td>
</tr>
<tr>
<td><strong>Water Framework Directive (WFD)</strong></td>
<td>This Directive aims to protect and enhance the quality of surface water and groundwater bodies by classifying the ecological status of water bodies and planning and monitoring improvement.</td>
</tr>
</tbody>
</table>
Notes