HYDRO ELECTRICITY POWER (HEP). 2

A briefing paper by Chris. Hawkesworth. August 2011.

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Introduction:-

1. In 2010 there were 100 applications for Hydro Power installations.
2. In 2011 there are already over 200.
3. The Environment Agency expects 4,000 “Win-Win” applications by 2015.
4. There are 25,935 potential hydro sites in England and Wales.
5. All these sites will abstract water from above a weir and return it below.
6. This has vast adverse potential for our sport.
7. We are not statutory consultees.
8. There are too many Hydro Power applications coming through the system, we hear about them too late and we do not have the resources at Canoe England to make objections or observations on more than a few.

9. **PADDLERS AND CANOE ORGANISATIONS MUST BE VIGILANT AND MUST BE PREPARED TO TAKE ACTION THEMSELVES TO SAFEGUARD THEIR SPORT.**

10. **THE FOLLOWING NOTES ARE PROVIDED TO HELP YOU.**

HYDRO ELECTRICAL APPLICATIONS. – COMING TO A WEIR NEAR YOU.

1. This paper is prepared as a briefing note for canoeists and other users in order for a considered response to be made to proposals for the installation of Hydro Electric Power, (HEP), projects on our rivers.

2. These HEP installation proposals are coming up as part of the government’s drive to green energy and other renewable forms of energy in order to minimise CO_2 and climate change.

3. Over 90% of canoeists state that they take the environment into consideration when deciding to paddle. It follows on that most if not all paddlers are favourably disposed towards the principle of HEP. But, at the same time do not want HEP to adversely affect their sport and recreation more than a token amount and in the main will be looking for enhancement.

4. What does an HEP do?
   It is an installation large or small that generates electricity by passing water down from an upper level to a lower level via a turbine which turns a generator.

5. In essence an HEP in order to operate, diverts water from a watercourse for a short or long distance. The volume of water that passes through the turbine is abstracted from the main river channel above the HEP and is returned to the water course below.

6. To operate efficiently HEP needs the maximum possible volume of water dropping from as high as possible above the turbine (called the “Head”), and volume, measured in cumecs (Cubic metres of water per second).

7. There are two types of HEP, “High Head” (above 4m) and “Low Head” (below 4m).

8. “High head” in the main are big dams. i.e. Hoover Dam, or Pitlochry in Scotland. Often, to get the “High Head”, the entire normal flow of a river will be diverted into a tunnel or pipes, often re—appearing in another river catchment or lake miles away.

9. “Low Head” are the weirs that we are familiar with across the rivers in England.

10. How much Electrical capacity have they?
    Any size, from a one house capacity in a small stream, to, the Hoover Dam in the Grand Canyon which supplies several cities. Most “Low Head” installations provide enough power for a handful of houses.

11. How much water capacity have they?
    Anything from 0.25 cumec in a small stream to 1000’s of cumecs in a large dam.

12. It is “LOW HEAD” HEP, largely English installations that this paper advises on. Though these comments are applicable to all HEP.
    a) These are weirs up to 4m high.
    b) These are installations of 3 to 12 cumecs in volume.
    c) For comparison, The Washburn runs at 5-7 cumecs,
       The Tryweryn 7-11cumecs.
    d) Holme Pierrepont WW Course, 19 cumecs, and The Lee Valley Olympic course at 16 cumecs.

13. Why should we be concerned?
    Because almost all our best canoeing sites depend on the same criteria as an HEP thus putting many Slalom, Wild Water Racing and Play sites at risk of having reduced attractiveness for canoeing, and, many will be affected either a little or a lot depending on the site specific properties of each particular HEP scheme.

14. How do we assess how much a scheme will affect us?
    A number of factors come into this. For example:-
    a) Is the site in use for canoeing now? How often? How long?
    b) How important is your site to you?
    c) Why do paddlers use the site now?
    d) Are you canoeing on a weir or below it? i.e. Do you use the jets of water coming off a weir or is there a more general moving water site below the weir. The former will be affected adversely by abstraction for HEP the latter could be enhanced by the HEP outfall and by the strategic placing of groins and rock piles.

15. The depleted reach.
    When water is abstracted from a river for HEP it is returned to the river as near as physically possible to the abstraction point. Quite often these are many yards, if not 100's of yards apart.
    This results in there being less water than normal over a weir and down the natural river channel. The EA call this stretch of river "the depleted reach".

16. How many sites are we talking about?
    The number of HEP schemes submitted to the EA has increased significantly over the last few years from
    a) Less than 20 per year to more than 100 per year.
    b) Around 200 are expected in 2011.
    c) 4,000 are considered by the Environment Agency (EA) to be "Win-Win" sites by 2015 and there are 25,935 potential sites to be looked at by 2025.

17. Are all our existing weirs at risk?
    a) Yes. They are all being or have been assessed for HEP potential.
    b) In practice about half are likely to be seriously considered.

18. Will HEP promoters build new weirs?
    a) No. They are too expensive. But there could be one or two exceptions.
    b) There will be extensive re-building of old weirs.

19. Can an HEP promoter raise the level of old weirs?
    a) Yes, providing he gets EA "Impoundment" Consent.
    b) This raising will take the form of either a wooden rail bolted across the weir lip or a rim of concrete similar to a large highway kerb. Either way it will produce a small or large step. Up to about 0.5m in height.
    c) We canoeists could benefit from this. If the HEP promoter left a 1.5m gap in the raised rim in an appropriate location then we could shoot the weir at that point.

20. We paddlers are mainly concerned about rivers that are more than 3m in width and more than 30cm in depth. In practice these are our larger rivers which in EA jargon are classified as "Main or Mained rivers". "Main rivers" are rivers for which the EA have statutory maintenance duties and other powers.

21. But there is plenty of water in our rivers isn't there?
    a) No there isn't.
    b) Many of our rivers fall in level to only a few cumecs in dry times and it is when the river is below 50% of its normal volume that we are mainly concerned (Q50).
    c) We are particularly concerned when the river drops to or below 10% of normal volume (Q90).

22. All our rivers have EA level measuring gauges located at strategic points.
    a) Many of these level gauges are also calibrated for the water volume of the river at any point in time at that point.
    b) Over time, at each measuring point a series of volume measurements are taken and are plotted onto a graph known as a "flow duration curve" for each river, at each gauge point on that river.
    c) These measurements are known as Qxx. For example, Q50, is the volume of water in a river which is exceeded for 50% of the year. Q95 is the volume of water in a river which is exceeded for 95% of the year. Drought would be Q98. Spate would be Q20.

23. Hands Off Flow.
    a) This is the flow of water over the weir and down the depleted reach. i.e. It is compensation water that does not pass through the turbine.

    b) At any potential HEP site, the "Hands Off Flow" is calculated and makes allowances for example for leakage, to keep the weir face wetted, fish pass/canoe pass needs, navigational (lock(s))requirements and the environment. But not currently for recreation.

    c) The "Hands Off Flow" is the amount of water that must continue past the HEP and if there is not enough water in the river to supply both the HEP and the depleted reach then the HEP must stop and cease power generation. This HEP stoppage point is generally accepted by the EA to be when the river drops to Q95.

    d) The ideal for canoeing at many sites would be a "Hands Off Flow" of Q90.

24. Combined Fish Pass and Canoe shoots.
    a) There is no reason at all why these two interests cannot be compatible. In this we have common cause with Angling interests who generally have more influence with the EA than us Canoeists.

    b) There are several examples around the country whereby the fish pass and canoe shoot are both the same channel or are located side by side.

    c) The rivers Medway, the Cleddau at Haverford West, the Irwell at Ramsbottom, the Yorkshire Derwent at Howsham, and the Tees Barrage all have combined installations.

d) Combined canoe shoots and fish passes in the same channel need to be 1.5m wide with 300mm of water above the fish pass baffles. This fish pass will have a water capacity of around 0.6 cumecs.

e) The canoe side of side by side passes needs a width of 1.5m and 300mm but the fish pass can be narrower. A water capacity of around 1.0 cumec is needed for the two.

f) These flows can be calculated and included in the "Hands off flow" and in reality are very small water volumes.

25. The attitude of HEP promoters.
    a) They want as much water as possible for as long as possible through their turbine in order to make money.
    b) They will tell you a variety of stories as to why we canoeists very reasonable requests cannot be included in their scheme.
    c) Too costly.
    d) Too much water in the "Hands Off Flow" makes the whole scheme unviable.
    e) Their bluff and bluster must be countered with reasonable argument based on science.
    f) None of this is rocket science.
    g) Canoe England can provide advice.

26. Regulatory and consent approvals.
    a) Any HEP proposal needs both EA Consent/approval AND Local Authority planning permission consent prior to commencement on site.

    b) EA Consent includes as relevant:-

    (i) an "Abstraction Licence":
        Permission to consent the taking of water out of a watercourse, and, to put it back.

    (ii) an "Impoundment Licence" which would require a detailed Environmental Impact Assessment.
        Permission to consent the raising of a weir if required.

    (iii) a "Work in rivers" licence:
        Permission to consent any works in or near rivers that have the potential to increase flood risk – Land Drainage Act 1991/Water resources Act 1991.

    (iv) Fish Passage.
        For many schemes the EA will require a fish pass to allow fish to pass safely up and down the river – Salmon and Freshwater Fisheries Act 1975.

    (v) Water Framework Directive (WFD).

Under the WFD EU Member States should aim for each watercourse to achieve good ecological status and to ensure that no deterioration of ecological status takes place.

(vi) Recommendation.
It is recommended that canoe clubs etc. refer to the EA good practice guidelines in the EA HEP handbook – The environmental assessment of proposed low head hydropower developments – August 2009 (Under review August 2011).

c) The EA consents must all be sought for and approved by the EA before the HEP is allowed to operate. Protection of existing, especially long standing canoeing recreation can be grounds for refusal though the EA is more likely to wish to see compromise solution.

d) Local Authority Consent is in effect zoning consent.
i.e. Can this be built here? and includes any above ground buildings or works.

e) The HEP applicant will prepare a draft application and will probably ask the EA and the Local Authority what their thoughts are about his ideas prior to the full formal statutory approvals being sought. This is known as "Pre-application advice", it is "In confidence" and ergo private.

f) The application will include a "Management/operation plan" for implementation once the HEP has been built, plus an "Environmental Impact Assessment", and an "Impact Assessment" on any navigational and recreational interests. (The scope of which, HEP applicants usually either don't know, don't care, or ignore).

g) The EA have published "Good practice guidelines" (currently under review) to which all HEP applicants are recommended to adhere to. These only include recreation in passing.

h) Once the pre-application phase is over and the formal application is lodged with either/both the EA and the Local Authority. They are advertised and published for a period of public consultation. Both the EA and the Local Authority will appoint a named case officer delegated to prepare a case file for the formal approval processes.

i) The Local Authority HEP planning application will be given a case number, and outline details will be published on the authority's web site AND usually, additionally via an ad in the local news paper.

j) An A4 sized planning notice is usually affixed in a prominent or not so prominent place on the actual site.

k) There is a public comment window, usually a 3 week period during which comments can be made direct to the Local Authority Planning Case Officer.

l) The site is then listed for hearing by the Local Authority Planning Committee and a period of up to 3 minutes is allowed within which all objectors must speak and a further period of 3 minutes for the applicant to speak. The committee will then make a decision.

NOTE: Some Authorities require prior notice of a request of a wish/intention to speak, often a minimum of one working day. This request is usually made via the case officer who in turn notifies the chairman of the meeting.

m) Once we at CE know of an HEP EA or Local Authority planning application, what next?

(i) Passing formal comment on each HEP planning application is in general beyond the resources of Canoe England but you can assess it yourself by using these notes and common sense. We are of course here to advise.

n) Is the water abstraction of the HEP likely to cause loss of canoeing amenity?

(i) If the answer is NO then do nothing, or even better contact the HEP developer and see if you can get canoeing enhanced.

(ii) If the answer is YES.

(iii) Then write or Email the Case Officer in the planning department of the local authority concerned.

a. When doing so you MUST quote the "Case" number.
b. You MUST use the word "object".
c. Then put your objection(s) to the scheme in your own words as briefly and as simply as possible.

(iv) A planning case officer will only take into account and notify the planning committee of "Objections". Every other communication is taken only as a comment. Ergo, weight is attached to "Objections" but not to "comments".

(v) An "Objection" can always be withdrawn at a later date if the reason for the "Objection" is satisfied.

(vi) The applicants name and contact details are also published at this stage and it is advisable for individual canoeists, canoe clubs and your region to get in touch with the HEP applicant direct and express their views and to offer to help them facilitate canoeing. Most are receptive once they know about us, but in general they just do not think about us.

(vii) Both the EA and Local Authority planning committee have the power to impose conditions upon the HEP applicant. These

could include the provision of a fish pass, a canoe shoot, or indeed they could insist that canoeing is facilitated and included in the ongoing HEP management plan.

(viii) It is worth contacting and personally visiting the planning officer. This is a free service.

(ix) It is also worth contacting your local councillor and any councillors that serve on the planning committee. Your local County Sport Partnership and Sport England office can also help.

(x) Where your local council is also the owner or driver of the HEP proposal, then, whilst the council has to go through the EA consent system, on the planning side it is effectively giving planning permission to itself. You will in this instance have to lobby more widely including the council's political members and the officers. Ultimately you might need to rely upon the protection of the EA through the Abstraction Licence procedure if you are seeking to protect existing canoeing activities.

End cjh 10/08/11

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Appendix 1.

SAMPLE LETTER TO THE EA or TO A PLANNING AUTHORITY.

Please alter or amend as appropriate. The word "Object" must be kept in the text.

[Insert Address of authority.]
Xxxxxxxxxxxxxxxxxxxxx
Xxxxxxxxxxxxxxxxxxxxx
Xxxxxxxxxxxxxxxxxxxxx

FAO :- *[Insert case officers name]*

[Insert Date] xxxxxxx

Dear Sirs,
Planning Case Number :- xxxxxxxxxx
Name of site in the application :- xxxxxxxxxx
Name of Applicant :- xxxxxxxxxx

I write to "**object"** to the proposal to install a Hydro Electricity Power plant at this address.

I/we am a canoeist(s) and I/we use the weir and/or weir pool at this location for white water canoeing, slalom training and play boating several times a week. In addition to ourselves there are several other organisations also use this point *[State number of others and how many. Also state type of organisation e.g. Youth Groups, Scouts, etc].* This use amounts to *[insert approximate number of individual paddlers + the total number of site attendances e.g. 100 paddlers a week for 6 months = 2,600].*
We also use the river for competition and coaching *[give details].*
The river is a navigation and is navigable for canoes at this point *[Give brief details].*

We note that there is no reference to our use made in this application and we ask that this application be refused or deferred pending discussions by which our existing use can be facilitated.

We also ask that any proposed fish pass be a minimum 1.5m wide so that it can be combined as a canoe shoot.

We ask that a signed landing point both above and below the weir and a portage path between the two be provided such that paddlers can carry their craft around the weir in both directions at all water levels.

We also ask that the HEP ceases generation at river volume Q90 and also that it is turned off during our canoeing activities. These can be diarised and times agreed, though it should be remembered that the river will take a while to react.

We ask that our interest be robustly recognised in your planning conditions and in the proposed HEP management plan.

Yours sincerely,

Xxxxxxxx

Please sign and state you your name in Block Capitals.

If writing on behalf of an organisation, please state your Status as appropriate. E.g. Chairman, Sec, Treasurer, Coach.

NOTE.

Your letter will be placed on public file and open to all to view.
Your letter will be passed to the applicant.
You should be succinct and robust with your comments.

GOOD LUCK.

Appendix 2.

1. Good Practice Examples.

    a) Howsham Weir, East of York, Yorkshire Derwent.
    Hydro company facilitates Slalom, including lighting and site electricity.
    Slalom poles on the intake channel.
    Slalom on the river below the weir.
    Management of Hydro water intake volume is varied when canoeists are around.
    Current Status. Operational.
    Contact:- Dave Mann. info@mannpower-hydro.co.uk

    b) Bedford City Centre, Boat Slide Weir, Great Ouse.
    Hydro has the potential to badly affect canoe slalom and White Water Play boating at the adjoining Duck Mill sluices by denying the sluices water.
    EA have included conditions in the Abstraction Consent to the effect that the HEP must be turned off for 600 hours per year.
    Current status. Planned.
    Contact:- Rob Bates. rob.bates2@ntlworld.com

    c) Sprotbrough Weir, River Don.
    British Waterways and the Small Hydro Company are inserting a combined fish pass and canoe shoot into an otherwise unshootable weir for canoeing.
    Current Status. Planned.
    Contact:- Chris. Hawkesworth.
    chris.hawkesworth@canoe-england.org.uk

2. Examples of Weirs Under threat.

    a) Hurley Weir and Boulters Weir on the Thames.
    b) Colwick Sluices at the Holme Pierrepont WW Course.
    c) Linton Weir, Yorkshire Ouse.

3. Examples of Weirs where we have no canoeing interest other than we need to be able get over the weir and around which in all these cases both are easy.

    a) Settle Weir, River Ribble.
    Current Status. Operational.

    b) Mickley Weir, River Ure.
    Current status. Operational.

    c) Grassington weir, River Wharfe.
    Current Status. Planned

End. cjh 9.8.2011.