



**RWE Innogy UK Limited for a full licence to abstract water from the Afon Conwy near Betws-y-Coed, Conwy at National Grid Reference SH 81139 53409**

**Ref N#** WPCC3508 and WPCC3510

I am writing on behalf of the campaign group Save the Conwy to object to the proposed application. Save the Conwy is a group local to the Conwy Valley but with around 2800 followers both locally and nationally. Save the Conwy was set up in response to the RWE application for a Hydro Power Station on the river Conwy. It has been involved with discussions with the developer along with other concerned parties since 2013.

NB for the purpose of this document

Green text is from NRW documents

Red text is from the EIA submitted by RWE / Dulas

*Text in italics is from Save the Conwy commissioned experts.*

NRW remit is to assess the application for abstraction and impoundment on the following basis.

- the environmental effects of the proposal and its impact on designated sites and habitats
- the likely effect of the proposal on the protected water rights of existing licence holders and other lawful water users
- the reasonable requirements of the applicant for water and its efficient use
- the sustainability of the proposal and any effects on biodiversity

## The environmental effects of the proposal and its impact on designated sites and habitats

Save the Conwy understands that other concerned groups such as the Snowdonia Society will be making representations on the basis of environmental concerns. Therefore, in this area, we will leave the detailed analysis to them. There are however some points on the assessment procedure over which we have grave concerns.

In the consultation meeting it became clear that NRW are relying heavily on the EIA supplied by Dulas for RWE, there seems to be little attempt to verify its contents. Dulas have been commissioned to carry out the EIA but also to work on the design of the scheme and are likely to be a major contractor in its construction. Dulas are therefore set to benefit financially by the schemes approval and an inherent bias in the report must be assumed. It is especially concerning when you hear that the ecologist responsible for the lower plant life survey was removed from the job after concluding that risk to lower plant life could not be avoided and this conclusion was removed from the report. It is crucial that NRW carry out their own investigations into the possible impacts on the SSSI and do not solely rely on evidence from the developer.

The EIA stated (and this was repeated by the NRW ecologist) that the lower plant life and lichens within the SSSI were not flow dependant due to a lack of cascades within the stretch of river affected and the mitigation of side streams. As a kayaker who has spent a large amount of time on this river I wonder how much of the river was effectively surveyed. Sections of both the first and primarily the second gorge have defined cascade rapids but these are extremely difficult to access except by kayak. These cascades would be the prime source of humidity during low-medium flows when side stream run of has dropped off.

The NRW ecologist at the consultation admitted during the meeting that a risk would be taken with the lower plant life, but it was felt this risk was small. Save the Conwy struggles to understand why any risk at all should be acceptable when there are a large number of undeveloped >10% gradient rivers/streams in post-industrial areas of the park. If risk is to be considered it must be balanced against reward, the reward in this case being financial for a foreign power company and a large landowner. Any reward in terms of prevention of climate change is negligible in the extreme.

**'minor contribution towards meeting the government's regional and national targets for renewable energy.'** (EIA Vol 1 - 13.7.2).

Perhaps the major environmental concern with the application is the effect of building a new weir breaking the connectivity of the river. The building of new weirs on major rivers stands against NRW policy on the granting of applications see:

<https://naturalresources.wales/media/2571/hydropower-guidance-note-hgn-2-hydropower-flow-standards.pdf>

This new weir will have profound effects on the geomorphology of the river. Mitigation proposed by the developer is stated in the EIA :

129. The weir is likely to have an adverse effect on bed substrate conveyance in the Afon Conwy, which in turn could negatively impact bed habitats. Additional mitigation will be required to manage these effects. Impacts on substrates are monitored carefully, and if necessary, substrates trapped upstream of the weir should be periodically excavated with machinery and replaced immediately downstream of the weir to help reinstate some continuity of substrate movement. This could be undertaken as part of routine weir and intake maintenance, and may even be necessary to maintain intake efficiency and prevent diversion of coarse gravels down the bypass that could damage the water turbines. (EIA Non-technical summary 129)

This is completely unsuitable. Protected species sensitive to changes in sediment such as Fresh Water Pearl Mussel would be impacted by this. There is also potential for toxins from farm waste or other sources to be stored in sediment above the weir and released en masse into the downstream habitat.

## **The likely effect of the proposal on the protected water rights of existing licence holders and other lawful water users**

### **Loss of recreational activity for kayakers.**

The ever growing number of kayakers are part of the “Outdoor Activity Tourism” group. Worth £213 million pounds a year to North Wales the average spend for outdoor tourism (excluding hill walkers is £106 per visit).

Figures from The Economic Impact of Outdoor Activity Tourism in Wales Final Report Visit Wales March 2014

NRW has shown considerable interest in promoting Outdoor Recreation in its recently published report

<https://naturalresources.wales/media/2686/outdoor-recreation-and-access-enabling-plan.pdf>

aspiring to have :

More people participating in and benefitting from outdoor recreation more often

To achieve the benefits of

- Increase people’s appreciation of and care for the environment
- Improve social equity and cohesion of people and communities
- Increase the economic benefits of recreation to Wales
- Improve people’s health and wellbeing

The report also states:

. We will be an enabling organisation, working with partners and others to facilitate outdoor recreation and access activity both on and off our own land

Ensuring that:

Effective planning for the sustainable recreational use and management of natural resources is embedded in our work

As NRW state

- we are a principal adviser to Welsh Government, and adviser to industry and the wider public and voluntary sector on recreation and access

Save the Conwy was disappointed to see that recreation was not considered at all in its submission to the SNPA. We hope and assume that this is because it will be considered during the abstraction application process.

Two sections of river will be effected; the Middle Conwy from Rhydlanfair bridge to Penmachno bridge and the Fairy Glen from below Conwy Falls to Beaver Pool.

### **Effects on the Middle Conwy**

This section of river is generally grade 3/4 with 2 harder 4/5 rapids. It flows through stunning woodland parts of which are protected as a SSSI and parts classed as ancient woodland. It was rated 4 stars in the original guidebook and is one of the classics of Snowdonian whitewater.

The effect on this section would be limited to a section near the egress. Here a 1m+ high weir will be built across the width of the river along with an access track for construction and maintenance vehicles.

The concerns regarding this are twofold

- The safety context of building a new weir on a river so widely used, especially by kayakers who are often improvers and still developing their skills. Weirs are renowned as one of the most dangerous river features and are responsible for a number of fatalities each year.
- The ruining of the tranquil , natural view at this point with kayakers and canoeist last memory of this stretch of river being that of a built environment. RWE are obviously aware of this , from the planning document:

#### **6.4.73**

Canoeists: There will be significant visual effects on canoeists where they exit the River at the new intake site during construction when access will also be limited. In the longer term, the new wire and its associated structures will introduce a new large manmade feature into the river valley with the potential to significantly affect visual amenity. However due to the limited number of people who will be affected by the change, and that some improvements

are expected in the recreational pursuit due to the new access arrangements, the effect on visual amenity is not considered to be significant.

We personally do not feel that because the number of people accessing a site is limited that beauty is diminished or of less significance. Searching out places of unspoilt natural beauty and true wildness is often the main driving factor for kayakers and canoeists and one of the leading reasons for them visiting the area to paddle the Conwy. The improvements suggested to the recreational activity are both limited and false as shall be discussed later.

### **Effects on the Fairy Glen**

This section of river is generally considered grade 4/5 at the levels which will be affected by the scheme. This river is considered the classic test piece section of whitewater not only in Snowdonia but across the whole of the UK. Due to the large catchment it flows more often than any other river of this grade in Wales and is a leading draw for kayakers travelling to the area. This section was rated 5 stars in the original guidebook not just for the quality of the whitewater but for the stunning unspoilt gorge through which it flows.

The main concern for this section of river is a reduction in days the river will be runnable due to the planned abstraction. An assessment of the effect this would have has been commissioned from Hydrologist Iain Hissett. RWE's original plan was to remove up to  $5.8 \text{ m}^3 \text{ s}^{-1}$  from this stretch this would reduce the number of days the river could be run from an average of 121 (33% of the time ) to 69 days (19% of the time) a reduction in 51 days or 42%. It is important to note that these lost days are at the lower rates of flow when there are often no other rivers of a similar grade available meaning a loss of all similar grade kayaking in the area.

Please see Appendix A attached to this email for calculations for these figures

Note that the just released abstraction document quotes a figure  $6.2 \text{ m}^3 \text{ s}^{-1}$  which will have a greater effect.

RWE attempt to justify this by claiming the river is paddled by a handful of expert kayakers only.

#### **13.5.10**

For those kayakers using the stretch of river below the Conwy Falls and along the Fairy Glen (approximately 1.5kms), the proposed Development has the potential to impact upon the recreational activities of such users through a reduction in water flows along the depleted reach of the river. This user group is very small comparable to the wider canoeing/kayaking community using the Afon Conwy, primarily due to the treacherous nature of accessing this stretch of the river and the very challenging nature of kayaking the gorge. It is understood from consultations that few users at periods of high flows have the capability to kayak this stretch of the river. Whilst limited to a handful of individuals, this stretch does provide some the most challenging conditions for kayaking in the UK, and is of appeal to both national and international specialists of such high grade white water conditions. Such a user group, although very small, would be highly sensitive to potential changes in water levels on the Afon Conwy as a result of operation of the Conwy Falls hydro-electric scheme.

This is no longer the case; improvements in technique and equipment have brought to the Fairy Glen a new generation of improving kayakers eager to hone their skills. This section of river is seeing more descents by a greater variety of paddlers than ever before. For those kayakers not yet able to paddle this grade of whitewater the Fairy Glen is seen as an aspirational run steeped in kayaking history and often the focus of ones goals.

Save the Conwy asked paddlers to log their descents using the Paddlebubble website. In 2014 January and February alone showed a recorded 409 descents and the total number would probably be higher. Figures for the period of monitoring were shared with the National Park Access Officer following a requested to Save the Conwy at the NRW Conwy Catchment meeting in Llanrwst.

The reduction in the number of days kayakers will travel to the area as a result of the scheme is of particular concern to the local economy. An important fact regarding kayakers is that they visit when rivers are high during periods of heavy rain predominately in the winter. This is off-peak tourism when few other visitors are around.

### **Mitigation offered by RWE**

The planning document offers mitigation to the adverse effects on kayaking the scheme will have. These are both redundant and unsatisfactory.

#### **Reduced 13.6.6**

**Generation Days: the Applicant would support the agreement of reduced generation days for water abstraction for the periods 8 hours per day at weekends June to October in order to allow kayakers the opportunity to use the Afon Conwy below the Conwy Falls at high flows. In addition an egress point would be facilitated at the intake point to allow kayakers to exit the river. The Applicant will also make available on-line the river level data for the scheme that will help inform local kayakers.**

-The reduced generation days are only planned for 8 hrs on a Saturday and Sunday during the Summer months. The most recent document suggests this will only be for a selected 6 weekends. The main season for kayaking on the Conwy is through the winter. Contrary to RWE's statement below during the summer this section of river has its' **lowest** amenity value. The number of weekend days in which there is sufficient water to run the Fairy Glen is negligible. The flow rate suggested for this reduced generation period also seems insufficient being propose at  $6.5 \text{ m}^3\text{s}^{-1}$

#### **5.5.45**

**This is based on a hands-off flow of between Q95 or  $0.46\text{m}^3/\text{s}$  during low sensitivity 5.5.45times and  $6.5\text{m}^3/\text{s}$  or Q28 when the river has greatest amenity value, based on kayaking during most daylight hours in summer weekends.**

This requires the flow from the Machno being  $4.78 \text{ m}^3\text{s}^{-1}$  to meet the  $11.28 \text{ m}^3\text{s}^{-1}$  required for an enjoyable paddle on the Fairy Glen when the flow in the river is borderline.

(see Appendix A for calculation of required level.)

No flow data is available for the Machno from NRW and RWE provide none of their own. However RWEs mitigation requires the Machno to provide a flow equal to 74% of the Conwy above the confluence where as it's catchment is only 31% of the size. This obviously shows that RWE proposed hands of flow is not high enough for kayaking to take place.

Catchment above abstraction point: 141.361km<sup>2</sup>

Catchment of Machno: 43.645 km<sup>2</sup>

*Source Lutra consulting 2013*

RWE have been made aware of our doubts regarding their assumed flows of the Machno on several occasions.

-RWE also offer to provide an on-line gauge for river flows in the Fairy Glen to assist kayakers. An on-line gauge is already available at the Conwy Falls fish pass so this offer is completely redundant.

<http://www.gaugemap.co.uk/#!Map/Summary/7932/3265>

-Another mitigating factor listed by RWE is that the reduction in flow will allow the river to be navigable more often when flows are high due to the reduction in volume.

#### 13.5.12

It should be acknowledged that there is considerable uncertainty in relation to impacts predicted on kayakers of this specific stretch of river. During the period of high flows through the winter period, and when the hydro-electric scheme is running at full output, it is possible that the top end of such flows would be abstracted thereby reducing the spate conditions downstream below the Conwy Falls and along the Fairy Glen. However, potential effects are very much dependent on how much water is in the river, because during exceptionally high flow events the slight reduction in water levels may be an advantage, rendering the river navigable to users when otherwise it may be considered too extreme; the effect of the reduced flows may also make the river more navigable to more users under slightly tamer conditions. At other times when flows are at their more typical levels during the winter period, the hydro-electric scheme may well reduce flows down the gorge resulting in lower levels and hence attenuate the experience of the kayakers using the river during such times.

During periods when the flow is too high for safe kayaking in the Fairy Glen the river is well outside of its normal flow pattern and will not stay at this level for long, the flow curve for this period is steep. It will be either be rising very quickly in which case it will be considered extremely dangerous and unsuitable for paddling, fast rising rivers contain many hazards including a trapped paddler being covered by rising waters before rescue can be afforded. Or falling very quickly in which case the advantage of the abstraction will be short lived, perhaps as little as a few hours and difficult to predict. Several other rivers in the local area , namely the Lower Llugwy and Lledr will also be "in condition" during these higher flow periods so the overall net amount of kayaking available in the area will not be increased. RWE have been made aware of this on several occasions.

The offer of an egress point for the Middle Conwy is deemed unnecessary by Save the Conwy and Canoe Wales and the despoiling of the natural surroundings at the egress and the danger of an introduced weir far out-weigh any advantage offered. The danger of the proposed weir location just above a potentially fatal section of river (the scene of numerous emergency service call outs) seems extreme. Any river user trapped in the weir would then have little chance of exiting the river in time. There appears to be no weir risk assessment carried out by RWE so Save the Conwy commissioned their own.

*Matthew McLay*

*Rescue 3 International Swiftwater Rescue Instructor Trainer.*

*My assessment of the weir within the A-H Intake Arrangement from the plans presented within the planning application for Conwy Hydro scheme are that it will present a risk to both water users and other members of the public. This assessment is informed by the Rescue 3 Europe and Environment Agency Weir Risk Assessment.*

*These structures are potentially very dangerous due the recirculation created at the base of the weir / Coanada screen. This recirculation has the potential to retain floating objects indiscriminately, whether this be debris or people. The danger these structure present is the combination of a number of factors including size and shape but also public access and proximity to other hazards.*

*Applying the plans for the A-H Intake Arrangement to the Rescue 3 / EA Weir Risk Assessment produces a weir risk rating of high; requiring immediate action to control the risk. This based on the hazard presented and the likely hood.*

*Hazard assessment.*

*Although it is not possible to assess all the criteria, the outcome is based on details within the plans. Based on these the structure scores a hazard rating of 22 or high*

*The major points that cause it to score as a high hazard are;*

*\* Tow back or size of the recirculation created by the hydraulic jump. The base of the Coanda screen to the chamfer is 2m; this distance will determine the size of the recirculation.*

*\* Height of drop - 1.1m from the dimensions of Coanda screen. The larger the drop the drop the more kinetic energy there will be.*

*\* Slope of face of weir or Coanada screen angle of 45 degrees. This will create an equal vertical and horizontal component. The vertical component creates a deeper more retentive recirculation.*

*\* The inclusion of the Smolt chute may create a weakness with the recirculation although this weakness and therefore possible exit for victims in the centre of the river, away from an egress point and possible rescue.*

*\* The closed ends of the hydraulic stop water exiting at this point but also victims.*

*\* Orientation of 90 deg to flow represents more of a hazard than if it were angled. As, if angled, the water will flow towards the lowest point, which will be towards the bank for possible egress or rescue.*

*\* Major downstream hazard of Conwy falls means that if a victim were able to exit this hydraulic they would be swept downstream into further difficulty.*

*These hazards are not only an issue for water users and members of the public but also any workers on site and Emergency Service personnel that are responding to incidents at this site.*

#### *Likelihood assessment*

*As well as the hazard that this structure will present the likelihood is a key area to assess. Based on assessment tool, likely hood it scores very likely.*

*This is due to;*

*\* The amount of public access to the weir and the river. The plans details the creation of an access track.*

*\* The lack of control measures to reduce access both on the bank and in the water. Although there is signage and egress included in the proposal this is very close to weir. Any misjudgement could result in water users being swept over the weir.*

*Combining these two areas, hazards and likely hood, to a 5x5 risk assessment matrix it scores high and requires immediate attention.*

*Additional consideration will need to be given to creation of new hazard and how this will impact on the emergency services and their response to this, bearing in mind the hazard it presents, remoteness as well as the significant case history of rescues (including rescuer injury) at this site.*

*(Attached as Appendix B)*

Following the RWE application for abstraction more detailed plans of the proposed weir were available. Save the Conwy has now commissioned a second report from a different expert which included reviewing these newly available plans and visiting the site during the flow rates used by kayakers and canoeists on the Middle Conwy. The conclusion of the report is shown below, the full report is attached as Appendix C as is a copy of the assessment criteria used (approved by the EA) as Appendix D

## **Conclusions:**

*The main points that can be drawn from this assessment are as follows; the structure is likely to pose a high risk to the public at the river levels where the section of the Conwy upstream is popular with water users. Various design features will make access problematic and rescue highly technical and time consuming.*

*Urgent action is required to control these risks otherwise there is a significant risk to public safety.*

Another potential safety concern of run of river hydro schemes is the potential of a sudden increase in water level within the depleted reach and the danger that may cause to people swimming, fishing or simply sitting at the waters' edge. There is no information on how this may be prevented or warned of in the developers' plans.

RWE has been made aware of our concerns over the safety of the weir, again on several occasions but no change has been made to its design or more importantly position.

The conclusion is that the EIA on effects to recreation is either inadequate in its investigation or deliberately misleading

During the application process it has become clear that neither the SNPA nor NRW have taken any steps to assess the safety of the weir. Both parties claim it to be the responsibility of the other. However it is clear that only NRW possess the staff and expertise for such an assessment and that it falls squarely within the remit of **"The likely effect of the proposal on the protected water rights of existing licence holders and other lawful water users"**.

### **Damage to fishing for recreation.**

Fishing has been an important part of the tourism industry in Betws y Coed since Victorian times and an important part of local life for hundreds of years before that. The rights to fish can bring in around £1000 per person before any ancillary spending on food or accommodation is considered. The Conwy is a keystone for fishing in the area. A major migratory river for Salmon and Trout it is highly sensitive to any disturbance.

During construction damage to the river system due to the inflow work of the intake weir and powerhouse outlet will cause changes to silt and debris levels along with possible entry of pollutants. Vibration caused by machinery and blasting can have a devastating effect, construction of the A55 tunnel had a severe and lasting effect on Salmon stocks in the Conwy.

During operation the reduced reach caused by the abstraction along with the physical barriers of the outflow and the intake weir will permanently damage fish stocks. Suggested mitigation by restocking is not a long term solution and does not contribute to a resilient and robust ecosystem.

Save the Conwy understands that the Betws y Coed Angling Association and the Gwydir Fisheries (holders of the fishing rights to the affected stretch) will be making their own representation to you. Because of this we will not expand on the effect to fisheries as we feel they will be able make these points far more eloquently than us.

## **The reasonable requirements of the applicant for water and its efficient use**

A stretch of river such as the Fairy Glen holds such importance to the local community, kayakers, walkers, photographers and the habitat it feeds that benefit of abstracting water must be shown to outweigh any negative impacts. It should be considered that the water in such a river holds a higher value than that in a undesignated area with no recreational usage and a higher threshold should be held for its efficient use.

The amount of power produced will be very small. The installed capacity has been limited at 5MW (around 2 off shore wind turbines) the reason for this is to allow RWE to claim under the FIT renewables scheme, which has a maximum of 5MW. Power produced will also be extremely inconsistent and variable. RWEs own figures show the scheme will lie dormant for 35% of the time (128 days) and only manage full capacity for an estimated 54 days. Any impact on reduction in fossil fuel usage will be insignificant with scheme producing around 1/2000<sup>th</sup> of the energy of a traditional power station. This power could be produced in far less damaging ways.

## **Concerns over the proposed variable abstraction**

A large amount of trust seems to be placed in RWE to adhere to any abstraction licence it is granted. In most cases this can be relatively assured through examination of the weir design, in a variable abstraction rate this is not the case. There is little to stop RWE from over abstracting up to the maximum 6.2 cumecs at any time. As RWE is one of the worst polluters in the world (the worst in Europe if judged on carbon emissions) I have little faith in them policing themselves and as a driver of a Volkswagen car with a diesel engine I have little faith in large German companies not lying to cover up environmental harm. Abstraction licences have been shown to be open to abuse with a number of deliberate cases of over abstraction being shown in this FOI document:

<http://snowdonia-society.org.uk/wp-content/uploads/2015/10/FoI-Response-NRW.pdf>

It is vital that in an environment this sensitive NRW can ensure total adherence and I do not believe this is possible with the proposed variable abstraction.

## Conclusion

We urge NRW to take a precautionary stance on this development. Developers must be persuaded away from areas of such environmental sensitivity and of such high importance to recreational users. They should be signposted towards higher gradient upland rivers and those in post-industrial areas. The most effective way to do this is to send a clear signal and refuse this application.

Yours Faithfully

Dan Yates

<http://savetheconwy.com/>

<https://www.facebook.com/savetheconwy>

## Attachments

Appendix A - hydrologist's report on the effect of abstraction on recreation

Appendix B - 1<sup>st</sup> weir safety assessment

Appendix C - 2<sup>nd</sup> weir safety assessment

Appendix B - assessment frame work