GLEN ETIVE

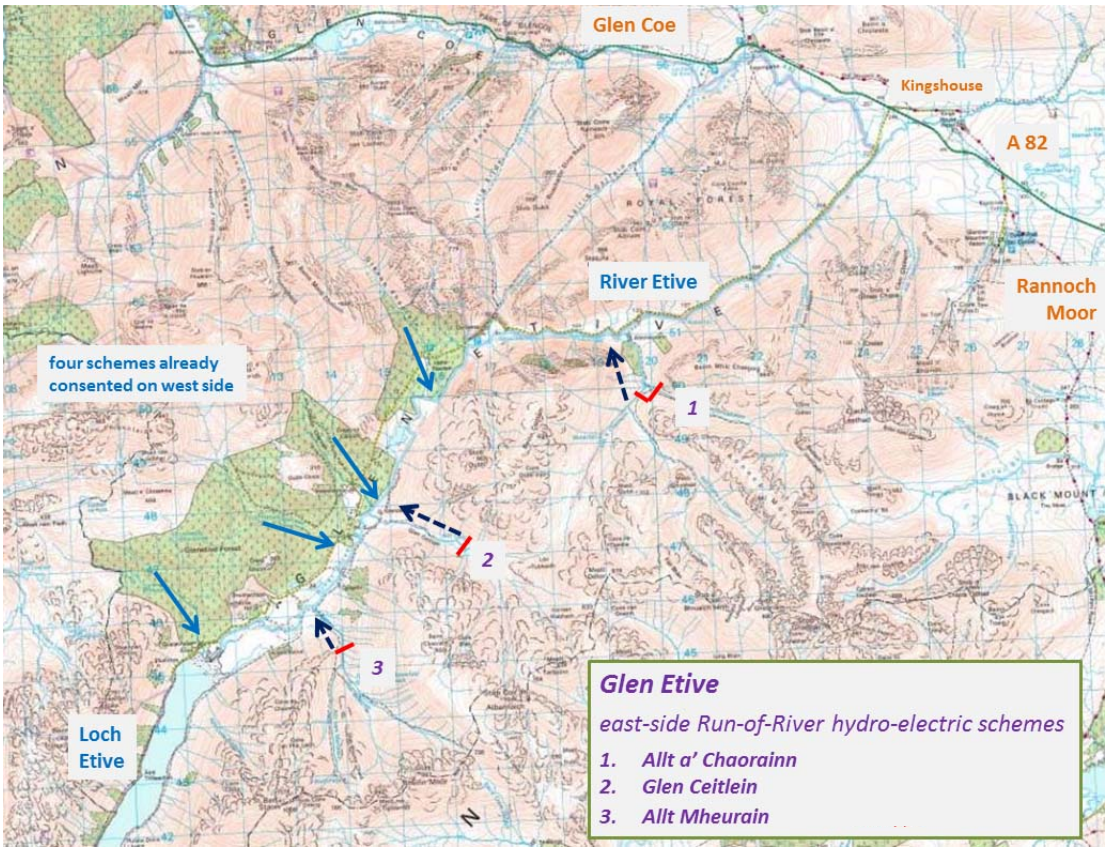
RUN-OF-RIVER HYDRO-ELECTRIC PROPOSALS - EAST SIDE

Environmental implications for National Scenic Area

David Jarman March 2019

I have been invited to examine these three schemes, at very short notice, from the perspective of a geomorphologist specialising in Highland landscape evolution*, and as a long-term Scottish and Highland resident and hillgoers. I have previous experience as a land-use and environmental planner**. As a former member of Scottish Wild Land Group Co-ordinating Team, I gave policy evidence against the Beauly-Denny transmission line for an NGO consortium with landscape protection interests. That evidence included an overview of the drastic shrinkage of essentially undeveloped mountain landscapes in recent decades. The rate of shrinkage has accelerated since that Inquiry. However, the extent of this attrition is hardly understood by the wider public, media, elected representatives, or even the relevant government bodies.

My report on Glen Etive (east side) is therefore in the context of over 300 Run-of-River schemes (RoR) having been approved, many in the Highlands, with varying consequences for scenery, recreation, nature and 'wild land'. This last term can be contentious and is used here not in any strict ecological sense, but in its widely understood meaning – how somewhere feels to visitors and hillgoers.



Glen Etive is in the heart of a large National Scenic Area which includes internationally renowned landscapes and landmarks – Ben Nevis, Glen Coe, Rannoch Moor. There can be no doubt as to Glen

Etive being of national scenic importance, with ramifying deeply cut troughs, gorges, corries, and bealachs surrounded by a dozen Munros including the Buachailles, the Blackmount and Ben Starav.

There can also be no doubt that the affected three side-valleys fully demonstrate 'wild land' attributes – they are uninhabited beyond single houses in their entrances; their rivers are untamed; ground vegetation is as 'natural' as any Highland deer forest can be. There are remnants of native woodland along riversides and in gorges, notably Scots pine in Allt Mheuran, with more regenerating within exclosures. Some small, patchy conifer plantations at the entrance to Allt a' Chaorainn and in Glen Ceitlein are unproductive and are relatively minor detractions. Access up all three valleys for the public is on foot from the Glen Etive road across private bridges, following traditional hand-built stalkers' paths which are characteristic of the 'wild Highland' experience. Estate access is no more than quad-bike standard, with only minor local 'improvement' by mechanical excavation.

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Illustrations - space only permits a few from comparable schemes. I have prepared and provided to the Save Glen Etive website comprehensive visual appraisals of

- 12 completed RoR sites in Highland (rated for severity of impact)
- Allt a' Chaorainn and Allt Mheuran

ADVERSE IMPACTS OF RoR SCHEMES ON WILD LAND AND SCENIC QUALITY

Applying experience from elsewhere to Glen Etive, these comprise :

- **weirs** – as effectively permanent concrete structures, these are unavoidably artificial intrusions. Experience across the Highlands shows that they are often conspicuous from routes up the valley and from mountain ridges above. They typically entail linear dams, small artificially-shaped pools in unnatural positions, and railed platforms with control gear and access steps. They can be partially concealed within gorges or by existing woodland, or potentially by exclosure-fenced regeneration (no known examples). However, it is unlikely that visitors to the Glen Etive side valleys and ridges could avoid seeing them or being aware of their existence, regardless of best-practice design and screening. At Allt Mheuran, placing the weir within the gorge near its exit (as proposed) would help hide it, but would be destructive of the integrity of the gorge, as many visitors enjoy seeing from the path along its rim. It would also entail irreparable damage to the natural character of the steep bedrock slope flanking the gorge entrance.

  These weirs may be small objects, but their visual impact is disproportionately large, as with the 'grit in one's shoe'. In particular the white concrete and reflective pool are eye-catching:

a Mullardoch side valley, seen from a summit ridge

- **pipe tracks** – these linear excavations can generally be restored so that after a few years they are hardly noticeable. Experience shows that most contractors do this reasonably skilfully, and it seems to be the main focus of attention in design and enforcement. Track routes should avoid delicate small-scale landscape features such as moraine knolls. In Glen Etive, the necessary pipe routes are broadly uncontentious, mostly across open slopes with coverings of superficial deposits. At Allt Mheuran, the route should be moved SW to avoid a swathe of paleochannels (former river beds).

  However, problems arise where pipe routes cross bedrock. In Glen Etive, massive slabby granite is often close to the surface. One option is to run the pipe above ground, over distances short enough not to obstruct deer or walkers, and with exclosure woodland regeneration around it. At Allt Mheuran, the initial section from the weir would have to traverse a steep cross-slope. Reinstating this to its smooth natural profile is effectively impracticable, without elaborate bespoke gabion works and rock bolting, which will tend to slump or fail at some future point.

  The reinstated Gleann Cia-aig (Arkaig, by Gairlochy) pipetrack leaves a scar across a steep side slope, similar to that accessing the proposed Allt Mheuran weir site (access track lower left) :

- **access tracks** – construction access to weirs and pipe routes is commonly achieved via tracks of 'forest road' standard, as proposed here. These are vastly out-of-scale with the landscape, often thoughtlessly computer-drawn to standard widths and curvatures, suggestive of 40 mph+ travel. Although often stated to be 'temporary' as here, they are almost invariably retained, in whole or part, as convenient to estates and for maintenance access, whether by retrospective planning consent, or by simple lack of enforcement by overstretched authorities.

  There is evidently no need for such elaborate tracks for construction access, as Coulags RoR (Strath Carron) demonstrates, with an existing stalkers' path modestly widened as if for quadbike use. Maintenance can be achieved by walking in, with very occasional off-road vehicle access.

  At Allt a' Chaorainn, a cat's cradle of access and pipe tracks is proposed around the two adjacent weirs, which will indelibly mar a beautiful, secluded, wild-feeling confluence, where stalkers' paths head on up into the long corries past wooded gorges. In the short stretches between the gorges and their confluence, the two burns have coarse bouldery and stony debris beds across which they migrate, an unusual channel form which would be largely destroyed. At Allt Mheuran, the access track presents the same problem of crossing bedrock as the pipe track. Both sites would be less damaging if the weirs were relocated downstream in more open reaches.

proliferating access tracks and weirs - Ceannacroc, Glen Quoich - seen from mountain paths

- **power houses and accesses** – all three sites would have more or less conspicuous isolated 'modern sheds' close to the glen road or to stalkers' paths, incongruous in this landscape however well-designed. No examples have been seen of these being screened by planting, although Coulags is partially screen-bunded.

  Clearly permanent access roads are required, and these are typically of too high a standard and remain incongruous, even at Coulags. Where they follow former stalkers' paths, as in some parts of these schemes, the loss of history, amenity and comfort in walking is severe.

  All three schemes here propose elaborate new bridges across the River Etive. These must inevitably disturb or destroy important stretches of natural riverside, with the loss of more traditional bridges adequately serving single estate cottages. It would surely be feasible and preferable to utilise temporary bridges, with routine maintenance access by small vehicles via existing bridges. If heavy vehicle access is ever required in the future, it can be by temporary bridge (or ford).

- **borrow pits and surplus dumps** – these are commonly necessary, and very difficult to blend convincingly into intricately glaciated landscapes.

- **trees and woodland** – in a glen where commercial afforestation has done much damage to the landscape on the west side below Dalness, surviving fragments of natural woodland on the east side are all the more precious. The access and pipe tracks into Glen Ceitlein appear highly destructive of riverside birch-alder woodland. Allt Mheuran has a rare and remarkable remnant of native Scots pine woodland : although not directly affected, its prominent and characteristic setting around the gorge would be sadly diminished by the weir and the aftermath of excavations.

- **the rivers** – abstraction of the large majority of the normal flow means that the steeply-cascading rivers would effectively fall silent for most of the time, and lose the white froth and foam which is the hallmark of their visible expressiveness. Because this is granite country, these rivers course down expanses of bare slabs and rocksteps, intricately carved into smooth curves and hollows. They are thus some of the most striking and photogenic in the Highlands, and also ideal for strenuous whitewater kayaking.

  Depriving such rivers of their natural energy means they cease to evolve their channel forms, erode their beds, deposit debris spreads, or change the landscape. They become

geomorphologically dead. Yet Glen Etive is one of the most dynamic physical landscapes in the Highlands, and should continue to be so.

left - a burn in spate, dangerous to cross, is easily forded below the intake weir (Achnasheen-Kyle road)

right - Gleann Cia-aig power house tailrace - the natural river behind is starved, in a wet spell

Run-of-River or Exploitation-of-River ?

The RoR concept as originally conceived is environmentally sound - the idea was that large rivers could easily lose 10% or even 20% of their flow without being noticed. But applying it to small and spaty mountain streams is very different. In these Etive schemes, abstraction rates will vary markedly between low and high flows, but in normal conditions, it appears that around three-quarters of the flow will be lost. The illustrative material demonstrates that while technically the streams (they are hardly 'rivers') will still flow, and will support aquatic and littoral life, they will cease to be seen or heard as a vital part of the wild mountain landscape experience.

This last is the chief and fundamental reason why I am persuaded, after visiting two of the valleys (Glen Ceitlein became impractical in blizzards), that these schemes would have devastating consequences for natural scenic beauty and wildness. The experience of exploring or simply walking beside effectively stifled rivers, compounded by arriving at the weirs depriving them of natural flows, would forever be a loss to ourselves and future generations. Any gains in renewable energy (net of carbon costs of concrete weirs and bridges, steel pipes, and fuel for access and construction) are trivial, and cannot possibly justify such further erosion of the unspoiled Highlands.

I therefore find that these schemes are wholly inconsistent with established policies protecting National Scenic Areas and wild land values. Even the highest standards of restoration must leave enduring traces of mechanical intrusion. There is nothing that could be done by way of redesign, further reduction in extent, restoration undertakings, or mitigation measures to make any or all of them remotely acceptable.

National policy

It is a matter of great regret to have to suggest that in not objecting to these schemes, SNH has abdicated its responsibilities here; possibly by misdirecting itself as to what constitutes 'impact' by physically small intrusions into highly sensitive and confined localities. As a consequence, the National Trust for Scotland as neighbouring owner in upper Glen Etive, other NGOs, the local community, and above all Highland Council planning officers appear to have been discouraged from opposing the schemes.

Especially given that four schemes have already just been approved in the less-sensitive afforested lower west side of Glen Etive, it is now appropriate to refuse these three much more objectionable schemes. Only if and when national energy policy makes it paramount to do so, and only once all other feasible sources of RoR have been tapped, should these exceptional valleys ever be sacrificed.

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