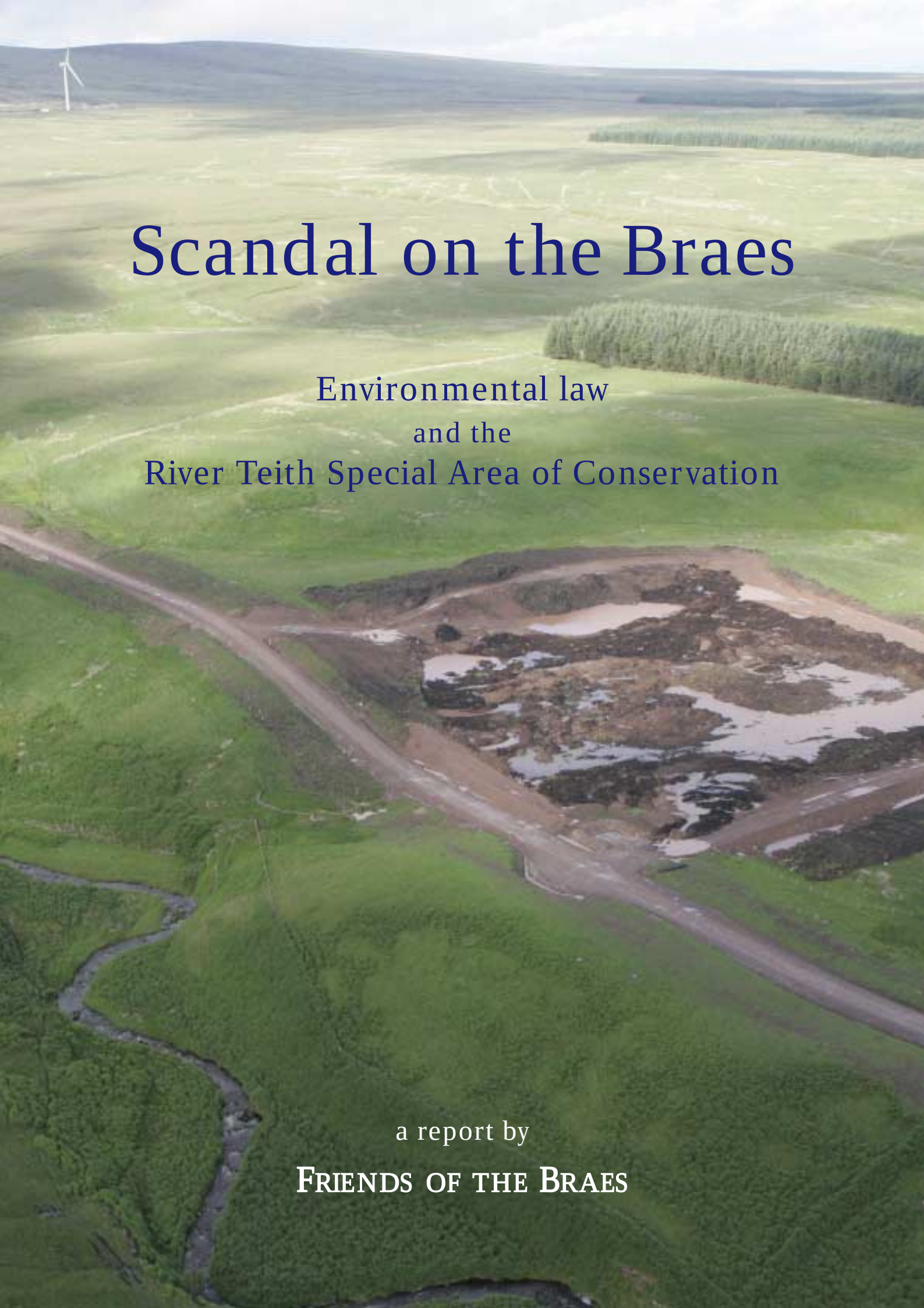

Scandal on the Braes

Environmental law
and the
River Teith Special Area of Conservation

a report by

Friends of the Braes

FRIENDS OF THE BRAES

This report is published by FRIENDS OF THE BRAES, a liaison group set up in the light of the increasingly apparent environmental impact of the Braes of Doune wind farm.

The initiative to establish the group was taken by neighbours, tenants and riparian owners of the River Teith Special Area of Conservation (SAC).

They had, for some time, been individually corresponding with or sending reports to the statutory authorities about problems with the project without satisfactory response.

One of their number, exasperated by what he felt was official complacency, submitted a complaint in April 2006 to the EU's Environment Commissioner. It alleged significant breaches of EU Directives in the Scottish Executive's management of the project's planning cycle and is currently being investigated.

In August, he submitted a report to the statutory bodies called *Environmental issues at the Braes of Doune wind farm*, a largely pictorial account of pollution incidents affecting the River Teith and its tributaries.

Including professionally photographed aerial shots and commentary from freshwater fisheries expert Dr Derek Mills, it was passed to politicians as well as the statutory bodies, the first time the case had been taken into the public domain.

The authorities ignored the evidence it presented and continued to insist (and tell politicians) that there were no significant pollution issues associated with the project. This paper argues this was not the case.

The record presented here shows that, even if they were unable or unwilling to do much about it, staff from SNH, SEPA and Stirling Council were increasingly concerned at what was happening on the site.

It was time to go over official heads and take the case to a wider audience. FRIENDS OF THE BRAES, launched at a meeting of well wishers on 24 September 2006, decided to 'go public' about what was going on and to explain its political context.

It commissioned this report, which describes research conducted by its members into the relationship of the project to the River Teith SAC. (That it does not examine ornithological or other issues does not mean that these are unimportant.)

It also commissioned a study of site waterways by Stirling University's Centre for River Restoration Science. The results are summarised herein.

The group aims to breach what it sees as a wall of silence surrounding the project with the express aim of containing the damage already done.

It also hopes that its work will assist those assessing comparable projects elsewhere, in Scotland or further afield, who are being treated with disdain by the authorities.

Graphic by Ron O'Donnell

Friends of the Braes can be contacted at admin@friendsofthebraes.org or on 01786 842282

Cover: The developer's Environmental Statement noted that 'The access track has also been relocated from a route alongside the Garvald Burn to a route approximately half a kilometre further east, to reduce potential hydrological impacts'. The photograph shows that it comes much closer than 500 metres to the Garvald Burn (bottom left) at the worst possible spot: on top of a steep bank next to a sandstone quarry with a system of culverts and straw-lined settlement ponds connecting the quarry to the burn. The burn is part of the River Teith Special Area of Conservation. 9 July 2006

The decision to use the quarry to store excavated peat appears to have been a late change of use to which neither Scottish Natural Heritage nor the Scottish Environmental Protection Agency objected. (#84, 91) The drainage has reportedly since been modified – see page 20. Efforts to control pollution at another quarry/peat dump equally close to the burn sited to the north have been even less successful – see opposite.

Contents

The report relies on documents in the public domain or provided under FoI rules, on site visits and on interviews, correspondence and meetings with stakeholders, statutory bodies, etc. (The developer did not reply to correspondence, as is its right.)

Appendices, source documents and additional photographs can be found on www.friendsofthebraes.org. Shorter documents are in Annex 12, identified herein as (#999), longer ones individually (annex n). Personal details have been deleted from internal communications.

9 January 2007. Polluted run-off from a borrow pit entering the Garvald Burn (see p 6, p 18 and the ECoW's report for November 2006, annex 9-11.) Site contractor McAlpine's Alfred Method Statement for the quarry noted that:

> The prime purpose of daily monitoring, particularly on an environmentally sensitive and high profile construction project such as Braes of Doune, is the early detection and/or prevention of environmental disturbance or damage. The monitoring regime establishes procedures whereby corrective action generally ensures that the same problems do not re-occur or the likelihood of occurrence is at least substantially reduced . . .

Executive Summary

AIRTRICITY APPLIED to build a 50-turbine wind 'farm' on the Braes of Doune, near Stirling, in 2002.

The site was to prove contentious not only on account of its visual prominence but because of its peatland habitat and its proximity to the River Teith.

This had recently been designated by the European Union as a Special Area of Conservation to protect important populations of salmon and lamprey.

EU Directives breached

The EU's Environmental Impact Assessment Directive stipulates that any significant environmental risk must be thoroughly evaluated as early as possible in a planning cycle and that the public as well as designated bodies such as SNH must be consulted on them well before consent.

Early in 2004, news emerged of a destructive peatslide at a wind farm at Derrybrien, Co Galway, a site also featuring deep peat soils and nearby protected waterways. Probing alleged planning irregularities, the EU's Environment Commissioner called it 'an environmental disaster' and began legal action against the Irish government.

Shortly after, the Scottish Executive called on Airtricity to assess the risk of a similar event on the Braes. Expert advice was that the assessment, which downplayed the risk, was inadequate.

Without consulting either the public or SNH on the issue, the Executive consented the project and explicitly postponed full assessment to a later date. This breaches the EIA Directive.

The Habitats Directive lays down strict rules for developments that might damage areas like the River Teith. In short, a project must not damage a protected area and, if there is any 'reasonable scientific doubt' on that score, planning consent must be refused.

A purportedly new peatslide risk assessment submitted after consent was only a re-hash of the old one and did not rely, as the Directive requires, on the 'best available scientific knowledge'.

The risk has never been properly assessed even though it was known to be serious: at a hitherto undisclosed meeting with the Executive in March 2005, the developer agreed to drop 13 turbines from the scheme, all sited on deep peat.

The peatslide contingency plan is shown to be well below standard and reliant on a technique that failed at Derrybrien.

The authorities made the final or 'implementing' decision on the basis of a political and commercial compromise, not a robust scientific judgement.

This is not permitted under European environmental law.

In April 2006, a local conservationist complained to the EU's Enviromment Commissioner about these planning breaches. He also argued that the EIA Directive has not been properly transposed into Scottish law. The complaint is being investigated.

Inadequate protection

As construction proceeded, competent observers reported widespread pollution of hitherto pristine waterways to SNH and SEPA. The response was at best indifferent and at times dismissive so they circulated a pictorial report and expert commentary (*Environmental Issues at the Braes of Doune*).

Politicians who followed up this report were assured that there were no significant ecological issues

Acronyms used or quoted in the text:

AM	Alfred McAlpine Ltd (site contractor)
CRRS	The Centre for River Restoration Science (A Stirling University research group)
cSAC	Candidate SAC (see text)
ECJ	European Court of Justice
ECoW	The Ecological Clerk of Works
EIA	Environmental Impact Assessment
EU	The European Union
FoI	Freedom of Information regulations
LUC	Land Use Consultants Ltd (provided ECoW services to the project)
SAC	Special Area of Conservation (An EU conservation designation)
SEPA	Scottish Environmental Protection Agency
SNH	Scottish Natural Heritage
WPM	Water Protection Measures

on site and that SEPA's rigorous supervisory regime showed that the acknowledged discolouration of waterways was ('surprisingly') benign.

This is shown to be untrue in that:

- records reveal that enforcement staff, while unwilling to take effective action or tell politicians of their concerns, had complained about several pollution incidents over preceding weeks.
- analysis of SEPA's sampling strategy shows it to have been perfunctory, poorly designed and unlikely to focus reluctant official minds.

The situation later deteriorated to the extent that the project's ecologists walked off site in December 2006.[1] In a damning report detailing continuing problems on the site, they noted that 'it is anticipated that water protection issues will continue to dominate the ECoW concerns over the coming months' and reported pollution levels persistently in excess of advisory limits.

Meanwhile, stakeholders had commissioned Stirling University's respected Centre for River Restoration Science independently to assess the quality of the designated waterways.

The extent of any ecological damage can only be measured by long-term assessment but an eight-week pilot study using both intensive and incident-driven sampling strategies suggested significant pollution arising from construction activity and that its effects could be prolonged.

Although broadly in line with the ECoW's later reports, this runs directly counter to SEPA's data.

It is an indictment of the planning and supervisory regimes that members of the public should have had to invest so much time and spend literally tens of thousands of pounds of their own money to try and get the Scottish Executive to fulfill its international obligations and the environmental authorities to do their job.

SACs like the River Teith are nominally protected by the full force of European law. If official bodies treat them in a cavalier manner, what chance the rest of Scotland in the wind-energy boom?

The site was officially opened in February by Alistair Darling in a well-publicised ceremony.

It is hoped that other politicians will pay heed to the project's very high environmental cost and will seek to ensure that lessons are learned from the *Scandal on the Braes*.

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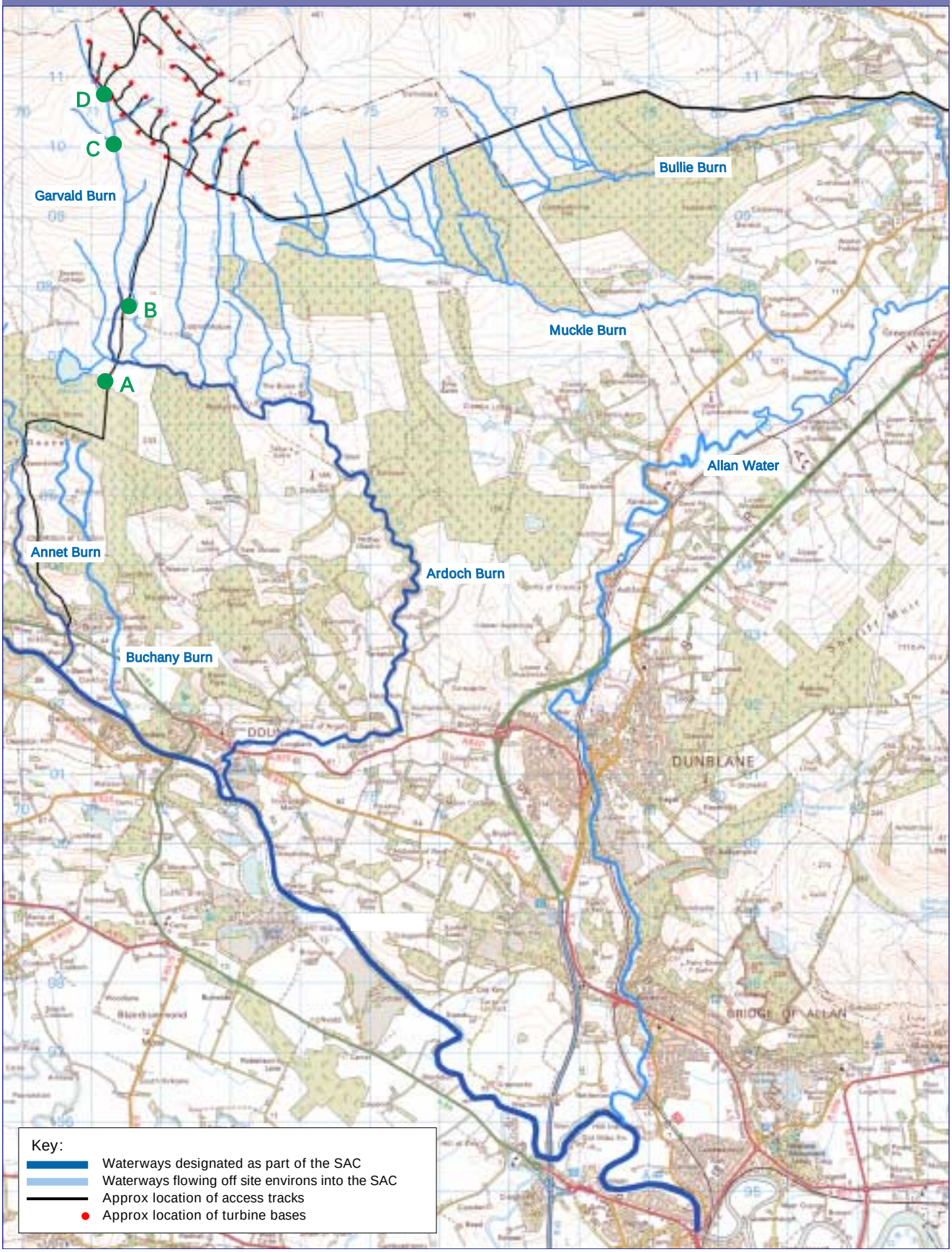
1 ECoW, *Monthly Report*, December 2006. (Annex 9-12) This move seemed at least to focus commercial minds: the report notes that the developer responded promptly.

A 'silt fence' by the northerly quarry. 29 December 2006, NN 712 107 The filtration arrangement, despite official approval, is obviously ineffective and the straw bales are as much pollutant as mitigation. (SEPA was unable to confirm that exhausted bales are being removed from the site.) This water is flowing into the Garvald Burn, part of the River Teith SAC. Other pictures from the same spot dated 1 October and 2 December suggest the problem is chronic. (See pps 3, 10 & 18.)

A July 2005 report noted that 'The ECoW has discussed the need for an ongoing programme to maintain established silt control measures (i.e. clearing of silt build-up from drainage channels, regular replacement of silty straw bales) . . . ' (#14)

The vicinity of the Braes of Doune site



The Braes of Doune wind power site now dominates the skyline to the north-west of Stirling. The map shows its relationship to the waterways of the River Teith SAC, which extends as far as Loch Doine, several miles west of Lochearnhead to the north-west. (The green 'bullets' in the upper left corner are locations discussed in the text. Other features of the site which have affected the River Teith are shown on p 8.)

Introduction

MOST NEIGHBOURS notified in March 2003 that the River Teith was to be designated as a European conservation area already knew that 50 large wind-power turbines had been proposed for the nearby Braes of Doune, those rounded, rolling hills that tell travellers they have reached the Highlands.

For the most part, they were people for whom 'the environment' was not the abstraction of the urban middle class but the place where they lived and worked, often in the footsteps of parents and grandparents.

Some were experienced conservationists, others farmers, anglers and the like but all had a lifetime's wisdom as countrymen and a deep knowledge of the locality.

They were folk who tolerated rather than welcomed the rules and regulations that underpin modern rural life, for whom the river had been a steady part of that life, its special qualities perhaps taken for granted but its wellbeing never hitherto in doubt.

It certainly never crossed their minds that it would fall to them to defend its ecological integrity against the actions of a powerful developer and the confused and supine response of the environmental authorities.

However, despite the strutting assurances of the developer, the bland prose of the 'statutory bodies' and brash politicians' talk of 'targets', 'job opportunities' and so on, they spotted that something was wrong with the project almost the moment it got underway.[1]

In July 2003, when SNH reported that the river and the burns that fed it merited international designation as a breeding ground for salmon and, unusually, for all three species of the elusive lamprey, it added that, 'The high quality of [its] habitat is thanks to careful management of the river and nearby land by farmers and land managers'. (#1)

It was, therefore, ironic that within two years some of these careful managers found themselves being treated with disdain by the same body and thrust into the unfamiliar role of environmental campaigners, learning as they went the importance of EU Directives, the nuances of FoI rules and the intricacies of environmental bureaucracy.

As early as October 2005, they watched almost daily as the River Teith and tributaries such as the Garvald Burn, which had flowed so clear for so long, turned a muddy brown, at times looking more like an abandoned urban canal than one of Europe's prime waterways. One correspondent called it Airtricity's 'liquid road'.

This report describes how they battled with the statutory authorities to elicit a response to this pollution. It explains their case and tells how the Teith came to be endangered by a fiscally pampered electricity generation technology meant to protect the planet rather than destroy protected habitat.

It is a drearily familiar tale of bureaucratic inertia, muddle and complacency whose chief victims stand to be protected fauna. It outlines the sometimes complex background to a complaint submitted to the European Union's Environment Commissioner.

The official bodies charged with protecting the River Teith conservation area have been telling all who ask that there is nothing to worry about, that 'To date it has not been deemed appropriate to take formal action beyond a warning letter for a single isolated incident arising on the site'. (#156)

This is disputed. If there is, at times, a note of frustration in what follows, it is because the stakeholders who compiled it have amassed an impressive body of evidence backed by experts which demonstrates that the risk is real and that 'formal action' is both appropriate and overdue.

They call on decison makers urgently to intervene to prevent further damage and ensure that not only the credibility of an increasingly controversial technology but also public confidence in the competence of the statutory bodies is not undermined.

If they cannot protect a high-profile site like the River Teith, backed as it is by the full armoury of European environmental law, then the outlook for the rest of Scotland is poor.

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1 As construction started on parts of the scheme before they were properly consented, they did not have long to wait.

The southern end of the site, looking north. The compound and peat dump in the foreground is at point A on the map on p 6. Other features include: B, the southerly of the two quarries/peat dumps excavated adjacent to the Garvald Burn and D, the northerly quarry. Not marked on the map are: 1, the confluence of the Ardoch and Garvald Burns; and 2, the point at which samples were taken that purported to come from the Garvald Burn. Viewpoint approx NN 713 064, 9 July 2006.

Annexes and appendices to this report, including the full list of pollution incidents and the text of documents quoted in it, can be found on www.friendsofthebraes.org.

Windfarm developments on blanket bog reports on the site of the Derrybrien peatslide two years after the event.

Environmental Issues at the Braes of Doune wind farm records pollution incidents on the site prior to August 2006. Most of the pictures herein have been taken since.

A cautionary tale from Derrybrien, Co Galway, and pointers for safeguards needed when similar developments are proposed for the United Kingdom

John Phillips, MA, CBiol, MIBiol

September 2005

The Braes go to Brussels

A complaint alleging that the Scottish Executive had breached European Directives in consenting the Braes of Doune wind-power project was submitted to the European Union's Environment Commissioner in April 2006. The Commission has reported that it is currently investigating the complaint.

EUROPEAN UNION environmental policy has developed over the years into a system of Directives defining minimum standards of environmental protection that Member States must, under treaty, transpose into national law.[1]

They underpin many aspects of Scottish planning law and two have particular relevance to the Braes of Doune case.

First, as a development 'likely to have significant effects on the environment', the consent procedures are defined by the Environmental Impact Assessment (EIA) Directive. Crucially, they include the obligation to consult environmental authorities and the general public on certain aspects of the application at the earliest opportunity.

Second, as the site adjoins waterways designated as a Special Area of Conservation (SAC) under the Habitats Directive, the authorities had, in essence, either to ensure that the project would not put the SAC at risk or reject the application.

The Directive defines the procedure and the (remarkably strict) criteria for making that decision.

Any dispute over an alleged breach of a Directive is a matter between the EU and the Member State, (i.e. Westminster). In EU terms, the Scottish Executive is a regional administration although it will obviously play a role in any investigation into this case. Neither the developer nor the complainant are directly involved.

Ardoch Burn riparian owner John Phillips complained to the EU's Environment Commission that the conduct of the Scottish Executive over Airtricity's planning application breached both Directives in the way it consented the project and the Habitats Directive in the substance of the consent.[2]

He argued that it had thereby put the integrity of the River Teith SAC at risk. He further argued that the EIA Directive has not been competently transposed into Scottish law.

The Commissioner formally accepted the complaint in July 2006. As it concerned the probity of the procedure, the Executive cannot argue that the irregularities do not matter if it later turns out that the SAC has escaped damage.

The issues examined in this report in relation to the EIA Directive are:

- Did the Executive comply with the Directive when it considered the application?
- Has the Directive been properly transposed into Scottish law?

The Habitats Directive lays down criteria for consenting developments that might affect a designated site. The questions posed here are:

- Did the Executive comply with the Habitats Directive when it considered the application?
- Have the designated authorities ensured the integrity of the River Teith SAC?

If it turns out that the SAC has been damaged, that is a different matter and might be the subject of a separate complaint. The pertinent question therefore is:

- Has the SAC been damaged?

How the complaint came to be made

In July 2005, SNH officers from Stirling asked Phillips to assist with commenting on Method Statements for the project.[3]

He was disturbed to find senior staff members still unaware of the Derrybrien incident and, after visiting that site on behalf of a client in August, reported to SNH on what he found.[4]

Endorsing an authoritative report challenging the official line on the incident,[5] he noted *inter alia* that:

- Floating roads were sinking into the bog and destroying its acrotelm, creating potential rupture points and a risk of future land slips;
- Check dams erected to halt the peat slide were 'totally ineffective';
- Drainage essential for site operation was increasing the turbidity and silt load of streams;

- Straw-lined silt beds designed to filter run-off were demonstrably failing;
- The intense precipitation incidents that characterise the SW Grampians would render them equally ineffective at the Braes of Doune and put the River Teith SAC at risk.

Despite these proper (and expertly informed) concerns, SNH's response was peremptorily dismissive and the dialogue soon petered out. This was unsurprising since, by the time Stirling Council made its final or 'implementing' decision on 16 December 2005, work had been underway on the site for over five months. There was little prospect of an official rethink on environmental grounds.[6]

The effects on local waterways were already the subject of exchanges between site neighbours and statutory bodies. These did little to assure the former and, by late 2005, some were questioning the propriety of the planning cycle. If outsiders with acknowledged expertise in moorland matters were emphatic about the inadequacy of the proposed mitigation, why were the authorities indifferent to their warnings and why had their input not been sought when it might have been meaningful?

Phillips made it clear to SNH that he was by then convinced that recourse to the EU's Environment Commission might be the only way to pursue the case. This was not a step to be taken lightly and, partly to examine the merit of his argument, he commissioned renowned freshwater ecologist Derek Mills, hithero uninvolved, 'to consider the likely adverse effects of the . . . development on the Ardoch Burn and River Teith'.[7]

Dr Mills has long experience of the relationship between fragile eco-systems and large construction projects. He did not examine peat stability but did stress the near certainty of a more pervasive and, in the context of the Teith, equally serious phenomenon – persistent silt deposition due to construction-related ground disturbance. He wrote:

> It is apparent that the wind farm construction and the after effects of same are going to seriously affect the conservation aims of the Teith / Ardoch Burn SAC which are to protect the salmon and three species of lamprey. As the main effect is that of silting, it is going directly against the purpose of the SAC. This is because the life cycles of the four fish species to be protected depend on silt-free spawning gravel and well-oxygenated water with an abundant food supply and, in the case of the lampreys, fine organic mud in the quieter areas of the river or stream.

The Garvald Burn just south of the spot on pps 5 and 18 but two months earlier (1 October 2006). Although SEPA told MSP Murdo Fraser that 'River samples taken . . . when the stream has been highly coloured indicate that the suspended solids concentration is surprisingly low', an independent study suggested they were ten times control levels after heavy rain.

His view was diametrically opposed to that of SNH, which wrote in November 2005 to say that:

> The question then remains whether the additional sediment which would be liberated as a direct result of the windfarm would have a significant effect on important gravel beds used by Atlantic salmon and lampreys in the River Teith SAC. In SNH's view, the additional silt loadings resulting directly from the Braes of Doune, and taking into account the mitigation measures identified above, would not result in an adverse effect on the integrity of the River Teith SAC. (#32)

SNH may or may not have felt certain 'beyond all reasonable scientific doubt' that 'the mitigation measures identified' (straw bales) would protect the SAC but it was clearly far from a unanimous view among the experts.

It was almost as clear that further dialogue with SNH was not going to be productive.

The complaint was prepared.

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1 If they fail to do so, they can be called before the European Court of Justice. It is debatable how powerful the court is in the environmental context, given the time it takes to consider cases and the modest penalties it tends to impose even after its Maastricht upgrade but the threat of EU prosecution on environmental issues is not a trivial matter. ECJ decisions are respected – most cases are resolved without recourse to the court – and its findings can influence e.g. funding debates. See Appendix 1 for an outline of the Directives.

2 Phillips et al, *A complaint to the Commission of the European Communities about a failure to comply with Community law by the United Kingdom (Scotland) concerning The Braes of Doune wind farm project and the River Teith Special Area of Conservation*, 10 April 2006.

3 Method Statements describe how a construction process will be carried out and, in this context, usually concern compliance with environmental regulation. Typically, they are submitted by developers to the authorities for approval.

4 Derrybrien, Co Galway, was the site of a particularly destructive landslide at a large wind-power project in October 2003. It destroyed protected fish up to 20km downstream. See Phillips, *Windfarm developments on blanket bog, a cautionary tale from Derrybrien, Co Galway*, September 2005.

5 Lindsay and Bragg, University of East London, *Wind Farms and Blanket Peat – The Bog Slide of 16th October 2003 at Derrybrien, Co Galway, Ireland*, 2004.

6 Work started in July 2005, some of it before planning permission had been granted, a situation which Stirling Council discovered by chance and described as 'unfortunate'. Unease on the part of stakeholders began to crystalise around October.

7 Mills, *A consideration of the probable impacts of the Braes of Doune wind farm on the Ardoch Burn, River Teith and elsewhere*, November 2005.

Also 1 October 2006, the Garvald Burn, still heavily polluted, about two kilometres to the south of the picture opposite. Barely outside the SAC's northern boundary, it is joined by an unpolluted tributary flowing off the wind farm site from the east. NN 715 092

Question 1

Did the Scottish Executive comply with the EIA Directive when considering the application?

The EIA Directive stipulates that:

- assessment of main effects must be conducted and mitigation developed at the earliest opportunity before consent; (Articles 2.1, 5.3)
- SNH (responsible for biodiversity in general and for SACs in particular) and the public at large must both be consulted on information gathered. (Articles 6.1, 6.2)

The Executive called for a peatslide risk assessment of the Braes of Doune but:

- consented the project without considering that risk. It deferred it to post-consent evaluation even though it was indubitably a 'main effect' of the project;
- did not consult SNH on it before the 'principal' consent and never consulted the public on it.

ALTHOUGH NOT the only controversial topic associated with the project, the complaint to the EU centered on the issue of 'ground stability'.[1] The Environmental Statement that accompanied Airtricity's October 2002 application did not address the topic – the chances of intensive construction activity on peatlands causing a slide were not seen as a risk by many at the time.[2]

Attitudes appeared to change after the Derrybrien incident. In its aftermath, local residents complained about planning irregularities to the EU's Environment Commission, which instigated proceedings against the Irish government. By early 2004, it was also investigating a complaint relating to peatslide risk from objectors to an AMEC site in the Highland Region.[3] It may have been this that prompted the Executive to ask Airtricity if there was a similar risk at the Braes of Doune:

> In light of the peatslide associated with a windfarm construction at Derrybrien in Co. Galway in the Republic of Ireland, the Scottish Ministers asked you to undertake an analysis of peat depth across the site, from this to complete an assessment of peat slide risk, and to set out your proposals for disposal of excavated peat.[4]

The River Teith, which drains the site, had just been confirmed as a Special Area of Conservation to protect several designated species of fish. Derrybrien had shown how a serious peat slide on the Doune site could poison many of these fish. It was a pertinent request.[5]

Answers were to prove evasive and the Executive less than diligent in pursuing them. Airtricity submitted three documents to the Executive in May and June 2004. The public and the usual bodies were consulted on the first, a supplement to the original ES. This did not assess the risk of a peatslide on the site.[6] The other two were short and dealt exclusively with peatslide risk.[7] It is not known why the topic was treated separately.

Neither the public nor, oddly, SNH was consulted on them although the second was reviewed by a soil scientist at Aberdeen's Macaulay Institute. His response was scrupulously polite but critical of its quality.[8]

Noting that its risk assessment was 'subjective' and hinting at a lack of empirical rigour, he commented that it 'does not set out to assess the stability of peat [on the] site but does offer a list of criteria that should be taken into account when this assessment is made'. He called on the developer to provide data on rainfall, topography (slope angles, drainage patterns), vegetation cover, heather burning and grazing patterns, peat depths, peat characteristics, details of the sub-soil and its parent material, the peat/sub-soil interface and so on.

In short, his expert advice was that a 'thorough' peat slide risk assessment was needed, that the developer had not provided one and that it needed considerably more data to do so.

Consideration of the hazard seems to have been shelved at that point: whatever the risk, it was not to

stop the show. On 5 October 2004, the project was consented subject to conditions, including:

> 7.19 Where peat is excavated from the site, it shall only be used for immediate restoration at the shoulders of roads and tracks, around turbine bases . . . The spreading of peat across the site and storage of peat on peatlands is not permitted.
>
> Reason: to minimise risk of peat slide arising from a combination of inappropriate storage and extreme weather.
>
> 7.20 Prior to the commencement of the development, the company shall submit a peat-slide contingency plan for the approval of the planning authority. Said plan shall include appropriate method statements and mitigation measures. As a minimum, mitigation measures should set out arrangements for the use of check dams to limit flows and prevent contamination of watercourses.
>
> Reason: to ensure correct procedures are in place to minimise the impact should peat slide occur.[9]

The public had not been hitherto even made aware of the risk of a peat slide on the site.

It is argued below that a competent assessment has never been submitted.

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1 'Ground stability' in this context is a environmentalist's euphemism for a peatslide, the term generally used hereinafter.

2 Few locals would get to know this, however. The author has documentary evidence that the Environmental Statement was not, despite Airtricity press claims to the contrary, put into local libraries for public consultation.

3 That the Derrybrien case was raised in the Scottish context by members of the public rather than a designated agency emphasises the importance of the public participation that the EIA Directive seeks to promote.

4 Scottish Executive, *Consent and deemed planning permission by the Scottish Ministers for the construction and operation of a wind powered electricity generating station at Braes of Doune, Stirlingshire*. (Annex 1)

5 The Teith was designated to protect Atlantic salmon (*Salmo salar*) and the three species of lamprey – Brook lamprey (*Lampetra planeri*), River lamprey (*Lampetra fluviatilis*) and Sea lamprey (*Petromyzon marinus*). Ironically, these are the same species that Lough Cutra, badly polluted in the Derrybrien incident, was designated to preserve. They could be in for a tough time.

6 Airtricity, *Braes of Doune Windfarm Environmental Statement Supplementary Information*. This made it into the libraries.

7 Mott MacDonald for Airtricity, *Braes of Doune Windfarm Desk Study and Site Investigation Engineering Geological Assessment*, May 2004. (The author has not had sight of this.) Mott MacDonald for Airtricity, *Braes of Doune Windfarm Peat Stability Issues, Summary Report*, June 2004. Its account of the Derrybrien incident relies on material from the site developer's web site and a press cutting.

8 Macaulay Research and Consultancy Services, *An Assessment of the Mott MacDonald report on peat stability at the proposed Braes of Doune Windfarm and risk of peat slides*, July 2004. (Annex 2)

9 Scottish Executive, *op cit*. One turbine had been dropped on visual impact grounds.

Stirling Observer Friday, May 7, 2004

The Scottish Executive has claimed that the public *was* consulted on the peatslide reports submitted by Airtricity in May and June 2004, telling a consultant to this report that:

> Further information was submitted as part of the Braes of Doune application on May 11 2004, namely a 'Peat Stability Issues Summary Report' and also an 'Engineering Geological Assessment Report', both of which were carried out by Mott MacDonald. These submissions were advertised in the Stirling Observer on May 7 & 12, 2004. (#70)

This is not true. The record shows that the May 2004 'Supplementary Information' to the Environmental Statement did not address ground stability, that neither of the two peatslide risk assessment reports was mentioned in or supplied with that supplement and that they were not advertised in the *Stirling Observer*.

The second report was not even published until June, a month after the advertisments appeared.

Right: the advertisment announcing the application as it appeared on page 37 of the *Stirling Observer* of 7 May 2004.

ELECTRICITY ACT 1989
TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT)(SCOTLAND) REGULATIONS 2000

Notice is hereby given that airtricity Developments LTD has applied to the Scottish Ministers for consent to construct and operate a wind farm at Braes of Doune, Stirling.

In addition to the original application Airtricity would provide for comment further information on ornithological modelling, borrow pit locations, layout alteration and turbine envelope.

A copy of the additional information is available for inspection, free of charge, during normal office hours at:

Doune Library
Main Street
Doune
FK16 8BJ

Stirling Central Library
Corn Exchange Road
Stirling
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The Additional Information can also be viewed at the Scottish Executive Library at Saughton House, Broomhouse Drive, Edinburgh, EH11 3XD.

A copy of the environmental statement may be purchased from Land Use Consultants, 37 Otago Street Glasgow G12 8JJ at a cost of £150 for hard copy and £35 on CD-ROM. A copy of the Non Technical Summary is available free of charge from the same address.

Any representations to the additional information should be made in writing to Lesley Thomson, The Scottish Executive, Consents and Emergency Planning Unit, 2nd Floor, Meridian Court, 5 Cadogan Street, Glasgow, G2 6AT, (lesley.thomson@scotland.gsi.gov.uk) identifying the proposal and specifying the grounds for representation, not later than 9th June 2004. These individual representations to the Scottish Executive will be copied to the planning authority unless the person concerned states explicitly that they do not wish their representations passed on.

Question 2

Did the Scottish Executive comply with the Habitats Directive when considering the application?

The Habitats Directive stipulates that:

- assessment of developments likely to affect a designated area must be 'appropriate', conducted in the light of the best available scientific knowledge, leave no reasonable scientific doubt about its conclusions and show that the area will not be damaged. If not, consent must be refused. A few exceptions apply but only if there are no alternatives and if the EU is informed.

The Executive consented the project:

- without taking appropriate measures in respect of the conservation objectives of the River Teith cSAC; (Article 6.2)
- despite acknowledging a significant peatslide risk and failing to assess that risk in the light of best scientific knowledge or establishing the absence of risk beyond reasonable scientific doubt; (Article 6.3)
- without considering alternatives, identifying 'imperative reasons of overriding public interest' or informing the EU Environment Commissioner. (Article 6.4)

The assessment of peatslide risk and the peatslide contingency plan

SNH'S POSITION on landslide risk at the site was reported by its Director of Strategy and Operations (West) in a letter of January 2006:

> The risk of peat slide, as highlighted by the Derrybrien incident, came to SNH's attention subsequent to the granting of consent for the development in October 2004 and SNH looked again at its advice on the consent and associated conditions in the light of this new information. On this occasion the staff involved, who included Natura, peatland and freshwater experts, concluded that in the light of the new knowledge on peat slide risk, the development was likely to have a significant effect on the River Teith.
>
> However, they also came to the conclusion that, given the modifications to the development since consent (removal of turbines from deep peat areas and re-routing of infrastructure) and the adoption of the measures to address peat slide set out in the Methods Statements, the development would not result in an adverse effect on the integrity of the River Teith SAC. (#58)

- The decision that peatslide risks on the site were acceptable was not informed by a competent risk assessment conducted in the light of best scientific knowledge.
- The developer privately agreed to drop a quarter of the consented turbines on what were manifestly peat stability grounds.
- The requisite peatslide contingency plan relied on a risk assessment that said that no such grounds existed.
- Despite their failure at Derrybrien, the plan also relied on the post-event construction of check dams – but did not examine how that failure might be overcome.

No one knew how serious the risk of a peatslide was when the project was consented but, to comply with the Habitats Directive, the Executive had to be convinced 'beyond reasonable scientific doubt' that the measures it put in place would protect the SAC.[1]

Given criticisms of earlier attempts to assess the risk, the first step was surely to establish its extent in the light of the best available scientific knowledge, the second was to design mitigation to minimise any residual risk and the third was to devise a contingency plan to avert significant damage should a slide occur.

Surveyors spent a day on the Braes in November 2004 (a month after consent) but their findings were not submitted until May, almost a year after the report the Macaulay Institute had criticised.

It was reasonable to expect the new paper to

Scottish Natural Heritage and the Derrybrien case

It is acknowledged that SNH was excluded from the early discussion on peatslide risk but it is disputed that the Derrybrien incident 'came to SNH's attention' after October 2004.

The organisation had already deemed it significant when objecting to RDC's Ben Aketil project in April, six months earlier:

> Recently, attention has been focused on windfarms as potential sites for bog slides, similar to that which occurred at Derrybrien windfarm in Ireland, while the windfarm was being constructed. This type of event has the potential to damage large areas of bog habitat, as well as presenting a threat to both people and property.[2]

Objectors to AMEC's Edinbane scheme, who circulated politicians, councillors and others in February 2004, were the first in Scotland to publicise the case. The Executive raised it with Airtricity early in the year.[3] The EU's Environment Commissioner was writing to Scottish complainants about it in August. An unusually thorough peat stability assessment submitted in June explicitly referred to it,[4] as did a detailed HSE report published in October.[5]

If SNH really was unaware of the incident until October or later, that is a remarkable admission of incompetence. Quite where had its 'Natura, peatland and freshwater experts' been? [6]

If, on the other hand, SNH was referring to local staff considering Airtricity's application, it was management's clear duty to brief them on an issue of signal relevance to their work.

It is disingenuous to blame the Executive's three-card planning tricks for SNH's failure proactively to intervene on the peatslide issue in the Braes of Doune planning cycle before October 2004 – just as it had done in the Ben Aketil case.

As a result of this lapse, the project has been built without ever being subject to a competent peatslide risk assessment and with the SAC protected, if that's the word, by a contingency plan more akin to a flight of literary fancy than a long-term strategy for prime European-designated habitat.

This happened in part because the Executive ignored expert advice, improperly consented the project and, whether by accident or design, postponed discussion on peatslide and other risks until construction was underway and the scheme all but unstoppable.

But it happened also because SNH management, at least as far as the Braes were concerned, left its staff insufficiently informed to confront the potential repeat of an environmental disaster.

After all, if SNH is right, they were among the last people in Scotland to hear about Derrybrien.

address the criticisms. It didn't. Providing little in the way of new data, it claimed baldly that 'No evidence of any large scale active, incipient or relict peat instability was identified at the Site' and that:

> . . . it is important to note that these limited areas of instability are both relatively minor and part of the natural, 'steady state' situation at the Site and cannot be directly attributed to human activities. Whilst it is not possible to categorically say that failure will not occur as a result of Construction, it is believed that, with judicious planning and an appreciation of the risks, suitable working practices and mitigation measures can be established to mitigate a potential increase in risk. Recommendations for further work are also presented.[7]

As the Executive consulted the Macaulay Institute on the first peatslide report, SNH on the second and the public on neither, it was possible that no one spotted that the latter, despite a new title, was only an edited version of the former.[8]

Given that it was submitted in May, it is also baffling that it does not mention a recent decision to cut the number of turbines in the scheme.[9]

It is not yet clear what the formal reasons were for that decision but SNH and site contractor Alfred McAlpine (*vide infra*) both suggest that it was to address issues of peat instability.

Hoping for the best

As a condition of the consent, Stirling Council had to approve a plan for coping with a slide should one occur. In June, McAlpine submitted a draft of its Peat Slide Contingency Plan that in effect combined assessment, mitigation and contingency planning.

A second draft, dated September, provides the first acknowledgement in the record of the cut in turbine numbers: 11 turbines are omitted from the list.

A note to Airtricity from SNH shows frustration with progress as late as October, a year after consent and nearly six months since construction started:

> The plan lacks a sensible logic . . . this plan is fundamental to protection of water courses in the worst case scenario. At present, a range of potential causes of instability are identified but the plan does not go on to identify the risks associated with them and the implications for this site. In my view, the plan should address: causes of instability, risks associated, prevention/minimisation/mitigation for each cause, identification of residual effects and associated risks, *in that order*.

The best available scientific knowledge?

While SNH was right to query the arbitary reassignment of risk for the 36 remaining turbine locations, it did rather miss the point. It was the even more arbitrary basis of the original 'risk factor' predictions that needed to be examined. McAlpine's final draft contingency plan said:

> These factors have also been used to carry out a Risk Assessment on the final layout of each of the turbines and their associated tracks (Appendix 3). Out of the 36 proposed bases, 1 has been assessed as having a negligible risk of a peat slide, 12 highly unlikely, 18 low risk, 3 low/medium risk and 2 as medium risk.[10]

They had been derived following the one-day 'walk-over' in November 2004 by assuming, without explanation, a linear relationship between risk and peat depth and risk and slope and, using map data, adding the two for each turbine location before placing the result on a (non-linear) scale.

To describe, as the plan does, the risk of a slide on peat 1.1 to 1.7 m deep on a 3° to 4° slope as 'highly unlikely' accords neither with experience nor with another document on which the plan explicitly relies.

This notes that, 'Failures have been reported on slopes with gradients as low as 3° and as low as 2° with man-made interference' and 'It should be noted that failure in peat less than 1m thick has been reported and . . . on these grounds alone should be considered possible at the site'. (Annex 4)

More important, slope and depth are not the only factors influencing the stability of peat, an inhomogeneous medium. Highly variable and site specific, shear strength is an even more important parameter. Competent assessment must – and does – examine it.

At around the same time, a site at Farr, near Inverness, was also being assessed for peatslide risk. The contractor (AGEC Ltd) outlined its assessment methodology in its report. In brief, it conducted a ten-day geotechnical study, a seven-day peat stability study and installed piezometers at different depths at each of ten locations for groundwater monitoring. Following BS guidelines, it took samples for laboratory testing.

> Undrained shear strength (C_u) of in situ peat was determined using a Geonor H-10 mechanical vane. This mechanical vane gave direct shear strength readings from undisturbed peat at various depths. The purpose of vane testing peat was to establish the depth versus strength profile in peat.
>
> . . . Stability analysis was carried out to determine the Factor of Safety (FoS) of the existing natural peat slopes. The definition of FoS is the ratio of ground resistance to disturbing forces. Where ground resistance is equal to the disturbing forces then the FoS is unity and the ground would be considered to be on the point of failing. FoS greater than 1.0 indicates a stable slope and FoS less than 1.0 indicates an unstable slope.
>
> Stability was assessed using infinite slope analysis (Skempton and DeLory, 1957). The infinite slope analysis is suited to long downslope lengths where the mode of failure is by translational sliding. The analysis was applied to critical peat slopes within each of the 3 drainage basins that comprise the site.[11]

And so on. In short, there are established empirical techniques for assessing ground stability but these were not used on the Braes of Doune and no explanation for eschewing them was offered.

The authorities were content with a one-day walkover and the developer's numbers game. Neither the risk assessment nor, therefore, the contingency plan relied on anything approaching the best scientific knowledge in the field.

The Habitats Directive requires that they should.

> It is of great concern to me that between the last version of this plan and the current one, in the table identifying risks for each turbine, the risks have significantly diminished *without any explanation of how that decision was made*. This needs to be made very clear. (#20, emphasis in original)

Another note the following week complained that:

> It is not fair to expect consultation authorities to keep reviewing [Method Statements] and repeating the same comments, comments we have in some cases been making since June . . . I would be grateful if Airtricity would take a role in reviewing and approving methods statements before they are issued . . . (#21)

Airtricity promised to do just that but stressed the urgency of its situation:

> Our project is nearing a critical stage in terms of financial close and achieving additional funding from the bank and it is really important that I have the support of all the consultees to achieve method statement approval . . . (#23)

Given that it was poor work by its own contractors, not SNH, that was delaying approval, it is not clear what support the writer felt entitled to.

In any case, the company was boasting of a favourable political climate in which to negotiate with bankers. It had just set up a 'UK Operations

Group' with former energy minister Brian Wilson as non-executive chair. A press release explained that:

> One of the Group's functions will also be to set up [a] strong communications link with the UK Government, the Scottish Parliament, the Scottish Executive and the Northern Ireland Office . . .
>
> Eddie O'Connor, Chief Executive of Airtricity, said: It is a pleasure to operate in the UK where the Government is committed to the growth of the renewable energy sector . . .
>
> Brian Wilson is a keen advocate of renewable energy . . . His industry and political insight will be invaluable to Airtricity as we undergo ambitious expansion in the UK.' (#24)

The next draft of the plan noted that two more turbines (13 in all) had been dropped and that:

> . . . consideration has been taken of the above noted bullet points when reducing the number of turbines from the consented 49 to the current number of 36.

The last draft (12 December) laid down an 'out of hours procedure' to be taken in what had now become the 'highly unlikely' event of a major slide.

The removal of a third of the turbines from the project, all from deep peat areas on the site, showed that the Executive was well aware that the peatslide risk assessment, essentially unchanged since 2003, was inadequate.

In reality, it was anyone's guess whether a major slide was likely, unlikely or even 'highly unlikely'. The document's confident tone was bluster with McAlpine having to promise (yet again) that:

> Prior to commencing site work, all areas will be further assessed against the potential for a peat slide in accordance with the above criteria and given a Risk Factor. The Risk Factor will determine what actions are necessary. Areas allocated a medium risk will, wherever possible, be relocated to try and reduce the Risk of a peat slide. Where micrositing is not possible in order to reduce the risk of a peat slide further options will be discussed with the . . . ECoW. (Annex 3)

But it worked. The designated authorities signed the document off, the planners were satisfied, Stirling Council issued an implementing decision within four days and Airtricity followed up with a press release. (#45)

By that stage, no one seemed even to be bothering to pretend that they were certain 'beyond all reasonable scientific doubt' about protecting the SAC from a peatslide.

The Habitats Directive had been quite forgotten.

Baker's dozen turbines

Airtricity manager Alan Baker replied to a letter in *The Courier* (September 2006) that 'The decision to have 36 turbines was because of turbine availability and had nothing to do with "fears about peat stability . . ." ' (#148)

This is hard to credit: both SNH and Airtricity contractor Alfred McAlpine suggest that the cut from 49 to 36 turbines was a bid to hush envirocrats on landslide risk.

Another communications breakdown perhaps – except that Moray Estates people have reportedly told neighbours that consent for the missing 13 turbines will soon be forthcoming and Airtricity staff have (none too wisely) told locals that a new application for 13 turbines is being prepared.

So, is it 49 turbines when Vestas finds a production slot, 49 when someone twists arms on landslide data or just the 36 – and not a salami slicer in sight?

---

1 Strictly speaking, the River Teith was still a candidate SAC (cSAC) at that stage but the difference is minimal in this context.

2 Letter from SNH to Highland Council, 24 April 2004.

3 Airtricity submitted its assessment in May. AGEC's assessment for Farr was dated June. It too was discussed behind closed doors.

4 AGEC Ltd, *Final Report on Peat Stability with particular reference to Derrybrien Wind Farm failure at proposed Farr Wind Farm, Inverness-Shire, Scotland*, June 2004. (Annex 5)

5 Atkins Geotechnics for HSE, *Edinbane Wind Farm: Ground Assessment Review of Peat Instability*, 2004. (A thorough report, SNH staff might have found it useful when commenting on the peatslide contingency plan.)

6 They did publish a carbon audit for wind-power sites on peat, *Windfarms and Carbon Savings*, March 2004. SNH had still to visit Derrybrien. It fell to volunteer research group SWAP to publish a readily available report on the incident.

7 Mott MacDonald, *Braes of Doune Windfarm Desk Study and Site Reconnaissance Peat Stability Assessment Report*, May 2005. (Annex 4)

8 The two reports were Mott MacDonald, *op cit* and Mott MacDonald, *Braes of Doune Windfarm Peat Stability Issues, Summary Report*, June 2004. (Annexes 4 & 6. Annex 7 is a comparative analysis of the two papers.)

9 '[Stirling] Council were first notified of Airtricity's decision to erect only 36 turbines on the 17th of March 2005 when they confirmed in writing that a meeting had taken place with the Scottish Executive in this regard.' (#186)

10 This is not quite accurate: the data actually assess risk as Highly Unlikely at 11 locations, not 12 and Low/Medium at 4, not 3. As the point of origin of the Derrybrien slide would have been only a Medium Risk on this scale, the error could matter.

11 AGEC, *op cit.*

Protecting designated waterways

A senior official explained SNH's strategy for ensuring that the SAC was not going to be put at risk by the development in a letter of January 2006:

> . . . [its] appraisal of likely effect was based on those impacts on the water course that would result from construction activities at some distance from the river. It was SNH's view at the time that these minor effects could be addressed through the development of detailed methods statements and monitoring by an Ecological Clerk of Works [ECoW], as per our requested conditions . . .
>
> SNH concluded at that time that the development would not have a significant effect on the River Teith cSAC because of (i) its distance from the tributaries of the Teith, (ii) our assessment at that time that any potential significant effects were minor and could easily be avoided by standard working practices specified and required through conditions, and (iii) the methods described in the Environmental Statement. (#58)

The designation status of the River Teith and tributaries was acknowledged early in the planning cycle. The developer reported that:

> The access track has also been relocated from a route alongside Garvald Burn to a route approximately half a kilometre further east, to reduce potential hydrological impacts.[1]

The ES and other documents stressed that quarries, turbine bases and access tracks would not be built close to waterways and that 'borrow pits will be located such that they will not lead to permanent drawdown effects on ecologically sensitive environments'.

Delegated with protecting the SAC, SNH and SEPA looked to filtration beds, distance and monitoring by an Environmental Clerk of Works to protect the waterways from construction-related pollution.

In the event, they permitted quarries ('borrow pits') to lie close to and drain into critical streams even though the pits were to be filled with excavated peat once quarrying was complete.

The procedural errors meant that scientifically-informed doubt about these practices arose late in the planning cycle and were given little credence.

Independent evidence now suggests that the technique has almost certainly failed.

The photographs on the covers and on page 8 show that the main access track not only comes much closer than 500 metres to the Garvald Burn but does so at two of the worst possible spots: on top of steep banks next to large sandstone quarries now filled with excavated peat.

With a system of lagoons and straw-lined filtration beds connecting the two, any distance restriction was a gesture at best.

The result was pretty much as Mills and Phillips predicted a year earlier. (As noted on page 20, the drainage arrangement have since been changed, presumably in an effort to mitigate the damage.)

1 Airtricity, *Braes of Doune Windfarm Environmental Statement*, October 2002, para 7.79.

One pollutant of waterways draining the site has been the Old Red Sandstone used for access tracks and ballast. Phillips circulated a memo to colleagues in December 2005:

> The sandstone bed-rock which is being used to build the road is unsuitable for this purpose as it is far too soft (see analysis attached). The rock material being applied is being ground into a sludge by the passage of vehicles and the road is rutting badly in places which further accentuates the grinding process.
>
> With the continual passage of heavy vehicles, the original pieces of stone (cal 0 to 40 mm) are crumbling into ever smaller particles. The vehicles are also obviously fast-moving as the sludge is being sprayed onto the adjacent vegetation in a band up to three metres wide parallel with the road from whence it will leach in times of heavy rain and gain access to watercourses. (#43)

A spot near the northerly quarry. Note the abandonded straw bale (see also pps 3 & 5). 2 December 2006

Baron Munchausen turns 'plant operative'

Under 'Out of Hours Procedures' for stopping, say, 450,000 tonnes of peat cascading into a burn or burns near the site, the peatslide contingency plan says that:

> Initial contact will be made by security to nominated Alfred McAlpine personnel. The sub-contractor has plant operatives who are residing on Moray Estate. If required they will be able to respond quickly to the incident. (Annex 3)

It is suggested that a security chap (on industry-typical wages) based at a compound over a mile south of the nearest turbine will hear a cascade of slow-moving peat heading for the upper reaches of the Garvald Burn in the dead of night and the middle of a gale.

Miraculously, he does – but he also realises he has not been trained for emergencies like this and phones the duty manager for advice. Eventually, he gets hold of him.

It's 3 am but the manager quickly grasps a detailed and articulate report based on inspired guesswork, gives instructions, promises to leave immediately and hopes to be on site 'at first light'.

The security man takes charge. He bangs on the doors of the dozen or so caravans parked a few metres to the south where the 'plant operatives who are residing on Moray Estate' are to be found. Understandably, the lads are sleeping the sleep of the just and dreaming of home after a twelve hour shift in the pouring rain and a well-earned dram.

But our man gets them to dress and head north in whatever transport is to hand. They locate the bog slide in the freezing rain, assess the engineering problem in minutes and, though they had never even seen peat until last month, find the requisite plant and stop the slide using 5,000 tonnes of specially quarried rock which are, happily, to hand. By sunrise, they have built (in the dark) a watertight check dam 10 metres wide and three high.

Pah! to the lessons of Derrybrien. Check dams may have failed there but, by Gosh! they worked here. With the peat now stable, the manager calls a brief site conference then phones an EPO at SEPA to report 'an isolated incident'.

'No, sorry, you cannot come on site just yet because, er, there may be a bit of a Health and Safety risk'.

Next week, construction complete, the 'plant operatives' are laid off. The second slide (*pace* Derrybrien) occurs a month later.

Who'd be a lamprey?

It is only just to point out that, after writing this *reductio ad absurdum* comment on the contingency plan, the author found that an SNH officer had already made similar, if less flippant, points:

> [The Ardoch Burn] is part of the River Teith SAC. Any peat movement must be stopped long before it reaches this far down the hill. The point is to prevent any material reaching the designated part of the river.[1]
>
> I am not convinced that, if a large amount of peat material is liberated in combination with a significant rain event, you will be able to get machinery and rock to check dam locations quickly enough. There is also the risk that a peat movement might happen at night or at the weekend when nobody is around. Again, this is more likely if there is an extreme weather event. Are there measures which you can take that further reduce the risk of a peat movement if extreme rainfall is forecast? . . . you might not have time to agree the work [with the Clerks of Works] before mobilising plant and materials. (Comment in annex 3, *Mitigation*, para D)

The officer also asked for assessment of the peatslide risk arising from the construction of access tracks. All this was fair comment. Bar occasional security visits, the site was deserted for two weeks over the 2006/07 Christmas break. At the height of winter with construction far from complete, there was no plan in place.

The points were ignored: the plan finally approved was just as the Executive suggested in the principal consent ('As a minimum, mitigation measures should set out arrangements for the use of check dams . . .'):

> Prior to commencing work, quantities of as-dug rock will be available in borrow pits, at any time a minimum quantity of 2000 m^3 will be available. Should signs of instability be observed, or if a peat slide does occur, work will cease immediately and assessment of the likelihood of the slide reaching a watercourse taken, in the unlikely event that this assessment is positive then the stockpiled rock will be transferred to the affected areas immediately. Any stabilisation of peat slides will be agreed in conjunction with the GCoW and ECoW.

The only time that check dams have been tested as a means of protecting European-designated waterways from a peatslide (Derrybrien), they were a dispiriting, if dramatic, failure.[2] There is, to put it mildy, 'reasonable scientific doubt' about their effectiveness.

---

1 A significant event in the upper reaches of the Burn will obviously soon affect the (protected) lower reaches but it is accepted that the point was hastily made in comment and is essentially correct.

2 See the DVD accompanying *The Politics of Peat, Lessons from the Derrybrien landslide*, Scottish Wind Assessment Project, 2006.

The original drainage scheme at the southerly quarry (point B on pps 6 & 8). After the sandstone had been won, the pit was filled with excavated peat. Drainage from the quarry was via culverts into settlement ponds on the west side of the road. Here, they are filled with turbid water following six mm of rainfall earlier in the day. The straw bales were intended to stop sediment entering the burn. Run-off has reportedly since been diverted to flow south in a roadside ditch before being discharged over open land. The quarry's role as a peat dump appears to have been a last minute change in plan. (#84,91)

Similar problems were encountered at the northerly quarry. In September 2006, the ECoW expressed fears that it now self-drains into the Garvald Burn. (Annex 9-09) Reporting to SNH, SEPA and Stirling Council on 27 September 2006, LUC noted that 'diffuse and point pollution from borrow pit 4 into the Garvald Burn' was a 'main area of concern', adding that, 'We have been providing advice in these areas for some time . . . but do not consider the action taken to date is sufficient to ameliorate the potential impacts on the River Teith SAC'. (#169) NN 714 078, 9 July 2006

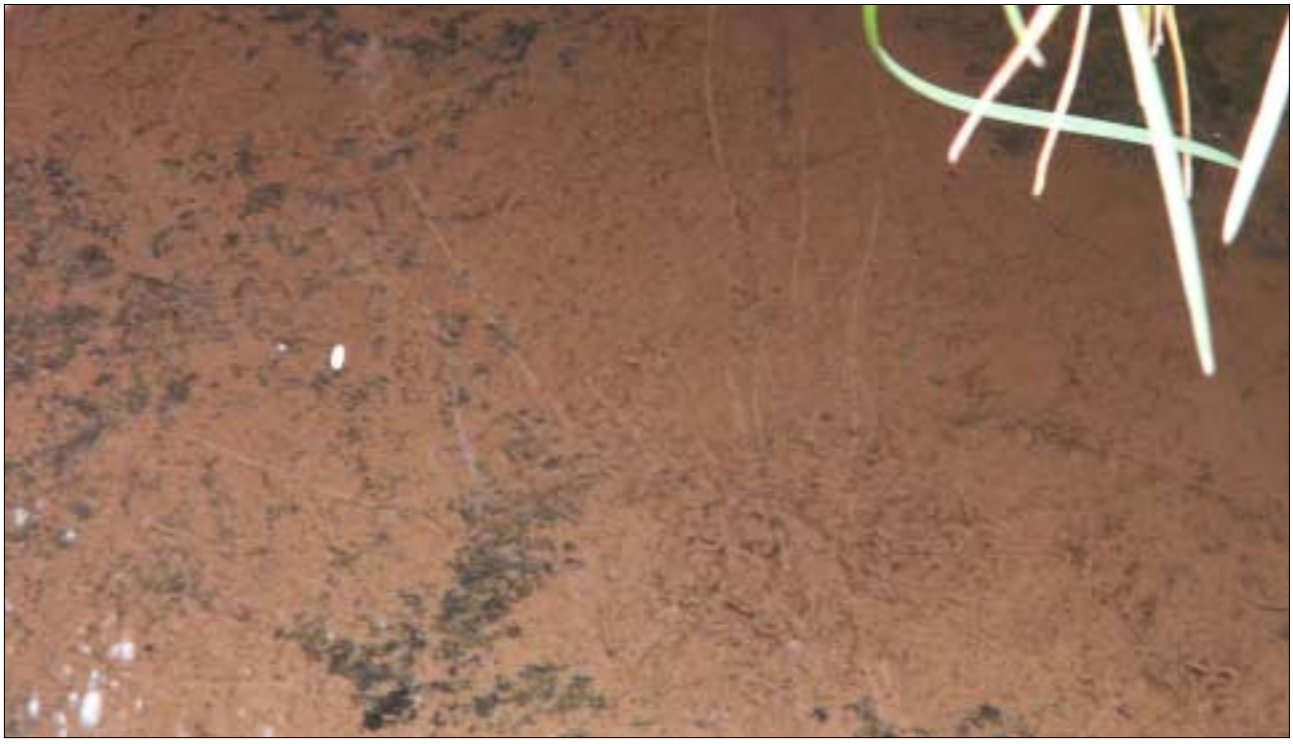
The stream is a salmonid spawning ground. The upper picture opposite is of nearby access track and the lower one, the bed of the stream, was taken in the spot circled above.

One of June's several 'single isolated incidents' was described with commendable clarity in a letter from the landowner:

> My understanding is that, following intense rainfall on 29th and 30th June 2006, one of the borrow pits on the Braes of Doune filled with water which, despite efforts to pump it to a safe location by the contractors on site, unfortunately managed to enter the Garvald Burn without progressing through the various settlement lagoon areas and environmental mitigation systems. In addition, the heavily trafficked roads around the borrow pit, because of the nature of the sandstone being extracted, had a good deal of fine material on their surface. (#126)

It is almost certainly this sandstone that causes the cocoa-coloured pollution reported by several observers and illustrated here. The developer reportedly began to use imported fines to top roads but the above photograph is one of several suggesting that the move was ineffective. Below: the bed of the Garvald Burn due west of the above spot seen here covered in a thick layer of Old Red Sandstone, 12 August 2006. (Much, but by no means all, has since been washed away.)

SEPA told the author that, as it was not equipped to measure the effect and had, in any case, no baseline data with which to make comparisons, it was unable to comment on the problem.



Question 3

Have the designated authorities ensured the integrity of the River Teith SAC?

Bodies charged with protecting the River Teith SAC (SNH, SEPA and Stirling Council) continue publicly to maintain that there are no significant environmental issues at the Braes of Doune wind farm. However, the record shows that dozens of pollution incidents were reported to the authorities by members of the public and by the project's ecologists. These have elicited a perfunctory response.

SEPA's claim that it has rigorously monitored the quality of the area's waterways is shown to be specious.

WHEN *Environmental Issues at the Braes of Doune wind farm* was submitted to the Scottish Executive, SNH, SEPA, Stirling Council and to local parliamentarians in August 2006, the former quickly assured the latter that nothing was amiss.[1] SNH, for example, told MEP Struan Stevenson that:

> There have been recent incidents of heavy discolouration of the tributaries flowing from the wind farm . . . In general, the sampling from SEPA indicates that these events, while causing significant discolouration, are not carrying a significant sediment load and are not, therefore, likely to be causing significant damage to fish populations in the River Teith SAC. (#174)

Meanwhile, Stirling Council reported that the applicant's Method Statements had been:

> thoroughly assessed by all parties in order to ensure, amongst other things, that the interests of protected sites and habitats had been adequately addressed . . . should an issue arise on site which breaches the planning permission or method statements and which has potential consequences for the likes of the watercourses, [this] should be reported to the planning authority immediately. To date there has been one such incident reported to the Council which was acted upon. (#168)

A solitary lapse?

It is true that that only one incident had been reported *by the developer* but it is misleading to suggest that that was the end of the story.

June 2006 had seen contractors in considerable difficulty when trying to control pollution following heavy rainfall. As the ECoW explained:

> On 21 June, rain overnight and throughout the morning caused water to pond in several places, notably near T36, in BP-4 and by T33. The latter was overflowing onto the road and running down the steep slope past BP-4 until a culvert was installed in order to carry clean water under the road to be released over non peatland vegetation. No heavy traffic ran on this day but surface runoff carried silt to the Garvald Burn . . .
>
> The site experienced several torrential rain storms during the afternoon of 30 June 2006. This led to uncontrolled runoff from road and hardstanding surfaces, notably at T32. By 3 pm, the Garvald and Ardoch Burns were significantly discoloured along their lengths within the windfarm site. The ECoW advised [contractors] at this time that the T32 base excavation could be used as an emergency sump to prevent water entering the Garvald Burn directly but this was not carried out.[2]

Of Clerks in Katmandu

Behind the scenes, things continued to be much less rosy than official accounts suggested. Just before the ECoW left the project in September to travel in the Himalayas, he submitted a report detailing intense pollution incidents that had affected designated waterways the previous week.[3] SNH heard that the developer was reluctant to replace him:

> I'm not happy to see this reduction in the role of the ECoW at this stage of the development. The history [*sic*] of siltation events and the increasing public concern regarding the ecological impact of the development on the River Teith SAC means that we should maintain the daily ECoW presence on site until construction is complete . . . (#161)

Stirling's planning officer agreed (' . . . the Council would also be unwilling to see the presence of the ECoW on site reduced at this stage for precisely the reasons outlined . . .' #164) even if she did tell a stakeholder the following week that:

> . . . contrary to the comments made in your letter and supporting document, I am unaware to date of any ongoing pollution problem relating to the River Teith or its tributaries. (#168)

Happily, her memory had recovered when she wrote the next day to Airtricity boss Brian Macfarlane that:

> . . . should this evidence show further [*sic*] non-compliance with the approved method statements, the Council will seriously consider formal enforcement action at the site. (#171)

To be fair, the robust response was understandable, following as it did a no-holds-barred note from SNH:

> . . . the ECoW has raised concerns repeatedly about the water management on site, with three specific recommendations, but these have not been addressed. It appears that mud/peat is being dumped on site without any impoundment or treatment and is entering the watercourses. Furthermore, it appears that the water quality evidence supplied by McAlpine's is inconsistent with independent water samples undertaken by the ECoW.
>
> These are serious breaches of the methods statement and thereby the agreement with the planning authority and the consent for the windfarm. SNH has requested evidence of the breach from the ECoW and will be seeking enforcement action through discussion with SEPA and Stirling Council. (#170)

A key mitigation strategy – the appointment of a Ecological Clerk of Works to control developer zeal and ensure (beyond, as it were, reasonable scientific doubt) that the SAC would not be put at risk – looked to be in tatters amid mounting evidence of pollution and veiled hints of cooked books and broken agreements.[4]

Despite assurances to parliamentarians, it was surely now less a question of denying pollution incidents than of determining whether they had impacted on the conservation aims of the SAC.

The weight of evidence

It is idle to speculate if this was a Road to Damascus moment or just the cat getting out the bag. What is striking that it had taken so long for the situation even to be acknowledged.

The authorities had had ample evidence of pollution for months in the form of regular reports from competent and reliable sources.[5]

The records to hand show that 30 siltation or pollution reports of varying intensity were passed to SEPA, SNH or Stirling Council in little over a year and that 23 of these originated from or were acknowledged by these bodies.[6]

The other eight were submitted by people outwith the official milieu, all of them qualified conservationists or experienced countrymen.

Nineteen incidents were logged in a photographic

Throughout Europe both salmon and lamprey have declined due to a range of factors including pollution, land-use change, river engineering and problems in the marine environment.

The proposal to extend the site will help fulfil the UK Government's commitment to look after internationally important populations of salmon and lamprey.

SNH press release, 9 July 2003

[A] warning letter sent to Alfred McAlpine . . . dealt with the ongoing issue of the Annet Burn discharge downstream from the AM Annet Bridge.

SEPA report, 1 May 2006

. . . the Ardoch Burn was silty due to a spill at Borrow Pit 4 (overtopping). [McAlpine] said that they were working on the problem but were dealing with large quantities of water . . . I also visited the Buchany Burn and it too was running very silty.

SEPA report, 21 June 2006

I am particularly concerned by the effect the very high sedimentary run-off from the Ardoch is having on fishing conditions downstream . . . It may well affect the successful spawning of salmon and sea-trout in that burn . . .

ex-chair, Forth Fisheries Foundation, 2 July 2006

1 We have been contacted by two riparian owners on the River Teith who have reported significant levels of sediment in the Ardoch Burn . . . It sounds as though they have thoroughly assessed the source of the sediment and I have no reason to think that either of them would make false claims . . .

2 I followed up these concerns by calling . . . the ECoW . . . I can only describe him as very frustrated. It sounds like McAlpine and Airtricity have not been following his advice, e.g. on stopping traffic movements during heavy rain periods and on fully utilising the silt treatment options identified in the method statements. I think this would be contrary to the consent conditions.

3 It sounds to me like McAlpine have been overly confident with the dry weather . . . [they] may not be fully implementing the surface and ground water protection plan.

SNH memo, 3 July 2006

I have concern that there is a more diffuse pollution problem at the Braes rather than the individual incidents . . . If the Garvald was silty on Monday . . . the problem is more than just during significant rain events or resulting from individual activities.

SNH to Airtricity, 13 July 2006

[The ECoW] has observed a number of aspects of the development which are causing concern, including:

1 slow response to oil leaks;
2 poor management of de-watering operations – including not monitoring the operation, operations not adequately supervised, not responding to requests from the ECOW;
3 not completing jobs before moving on, leaving unprotected soft surfaces, e.g. hard standings;
4 not sufficient knowledge by sub-contractors of emergency procedures, e.g. spill kits;
5 pumping to sumps that are already full to capacity.

SNH to SEPA, Stirling Council, 4 July 2006

I have instigated a full investigation into the pollution incident in the Ardoch Burn last week . . . I will report back to you on my findings and what actions are being taken by Alfred McAlpine, LUC and Airtricity to avoid a reoccurrence of last week's events. Please be assured that Airtricity take these matters very seriously and will take swift action to deal with the matter.

Brian McFarlane is on holiday until next Tuesday.

Airtricity to Stirling Council, SNH, 5 July 2006

[An EPO] noted that the Ardoch Burn (at Doune Castle) especially had a very high suspended solids count. We all agreed that a review of the Method Statements might be a good idea at this time.

SEPA minute of an all-party meeting, 7 July 2006

I write . . . to express our concerns over the silt load in the Ardoch Burn due to the work on the Braes of Doune, establishing the windfarm.

Our members are noticing heavy discolouration after rainfall, lasting much longer than is normal and carrying far down the Teith before dissipating.

While this condition is very detrimental to angling, our main concern is the effect this will have on the salmon and sea trout ova and fry in the redds at spawning time and insect life year long.

Doune Angling Club to SEPA, 16 July 2007

archive which the authorities could have accessed had they asked. Many others were reported by telephone.

No incident report has later been shown by an official from the designated bodies to be without foundation.[7]

Despite the weight of this evidence and the importance of the affected waterways, the authorities had still to take the problem seriously. Little was to change over the coming weeks.

It is'nae me . . .

It was clearly essential that conditions on the site and their potential to affect the SAC were carefully monitored. SNH noted that:

> Now that windfarm construction is well underway, the main responsibility for ensuring compliance with planning conditions and monitoring of surface water discharges lies with Stirling Council and SEPA respectively . . . SEPA is undertaking regular sampling of some of the tributaries of the River Teith SAC . . . (#166)

In turn, SEPA reported little cause for concern over the SAC when it told MSP Murdo Fraser in September 2006 that:

> River samples taken in response to complaints when the stream has been highly coloured indicate that the suspended solids concentration is surprisingly low.
>
> Alfred McAlpine has established a weekly water sampling programme with their samples being sent to an external laboratory for analysis. Airtricity have employed an Ecological Clerk of Works (Land Use Consultants) to monitor the general ecology and produce monthly reports. SEPA have received all these results to date. SEPA has also undertaken both chemical and ecological sampling of a number of key watercourses on and off site for 'before and after' comparison. (#156)

It was equally content with its monitoring regime when telling Struan Stevenson that:

> We do not carry out regular inspections of the site but the methods statement specifies the employment of an Ecological Clerk of Works who monitors the impact of the site and reports regularly on water quality in the watercourses that flow from the site and compliance with the methods statement. SEPA is undertaking regular sampling of some of the tributaries of the River Teith SAC that could be affected by the development. (#174)

Writing a little later to a River Teith riparian owner, an area manager reported that:

> I was very surprised to see these results because they show remarkably low levels of suspended solids considering the degree of discolouration.

Left: This picture appeared in the ECoW's report for June 2006, captioned 'Silty water entering the Garvald Burn'. The spot is near the northerly quarry.

> Observations of the water within the sample bottles indicated no discernable settlement of solids. It would appear from this that there is likely to be very limited settlement in the watercourses, and this is backed up by ecological surveys that SEPA has carried out. (#176)

Formally speaking, the Scottish Executive, on behalf of the UK, is responsible for protecting the SAC. The demarcation of that responsibility on the ground has, rather late in the day, become clearer:

- SNH reported that '. . . responsibility for ensuring compliance with planning conditions and monitoring of surface water discharges lies with Stirling Council and SEPA';
- SEPA relied primarily on the developer and the ECoW to report regularly on 'water quality in the watercourses that flow from the site and compliance with the methods statement';
- Amid allegations that 'water quality evidence supplied by McAlpine's is inconsistent with independent water samples . . .', a report from the outgoing ECoW showed that the situation was more serious than hitherto believed;
- An inter-agency site meeting on 29 September suggested 'appropriate [WPMs] for dealing with the water quality issues at several key points around the site';
- Despite a limited basis in fact for making the claim, SEPA assured parliamentarians that these issues were 'not likely to be causing significant damage to fish populations in the River Teith';
- Photographic evidence and sundry reports had demonstrated serious pollution caused by the friable rock used for access tracks and ballast but SEPA reported that it lacked appropriate baseline data and was thus unable to investigate the problem or pursue the developer.

The sampling regime

The one independent check on which SEPA, SNH and Stirling Council all explicitly relied was SEPA's own sampling of the impacted waterways.

Stakeholders, convinced that this was inadequate, had collected samples on their own account and passed them to SEPA. These were 'visually inspected' but were not otherwise assessed.

It is reasonable, therefore, to scrutinise SEPA's sampling regime. An analysis of the dates on which SEPA and the ECoW/AM sampled the SAC's waterways, the dates of reported pollution incidents and rainfall levels[8] for December 2005 to September 2006 is presented in appendix 2. It shows that:

- Of 37 samples taken by SEPA (on 24 different days), all but four were taken during dry weather;[9]
- Over half the reported pollution incidents (19 of 34) followed rainfall, lasting at times for days;

2.6 Water remained contained in the southern end of [Borrow Pit 4] and was pumped to the lagoons described above on the morning of 6 September 2006. This is due at least in part to drainage of the borrow pit through rock strata to the east Garvald Burn. Since the quantity of back-filled peat in BP-4 reached a certain level, BP-4 appears to have become self-draining towards the East Garvald Burn. The quantity of this self-draining water is increasing as back-filling continues.

3.1 Significant rainfall, particularly on 5 September 2006, caused discolouration of all watercourses on the site. For the most part preparation and action taken . . . helped to limit this effect in previously established sensitive areas.

3.2 However, [Water Protection Measures] are lacking in new areas of construction and both the Garvald and Allt a Bhiethe Burns have been affected by runoff resulting from the layout of the road and lack of WPMs.

3.3 Dewatering of Turbine 9 caused a brief but intense increase in the suspended solid content of the Allt a Bheithe. This situation must be avoided at other similar locations . . .

3.4 Leakage from BP-4 has been ongoing for several weeks. This has resulted in high turbidity in the upper reaches of the Garvald Burn and the ECoW has made a number of recommendations regarding this issue.

ECoW interim report, 15 September 2006

[The ECoW] is leaving . . . at the end of this week. [This] ties in with several milestones for the project and hence I request your approval to reduce the ECoW presence on site from 4 to 5 days per week to one day per week plus half a day in the office.

Airtricity to SNH, 19 September 2006

I am unaware to date of any ongoing pollution problem relating to the River Teith or its tributaries.

Stirling Council to J Phillips, 26 September 2006

. . . should this evidence show further non-compliance with the approved method statements, the Council will seriously consider formal enforcement action at the site.

Stirling Council to Airtricity, 27 September 2006

We have been providing advice in these areas for some time, as detailed in the recent interim report but do not consider the action taken to date is sufficient to ameliorate the potential impacts on the River Teith SAC, on the otter holts in the Garvald Burn, or drainage to the north of the site. Water protection measures are well-detailed in the method statements for the site.

ECoW to SEPA, SNH, Stirling, 27 September 2006

It appears that mud/peat is being dumped on site without any impoundment or treatment and is entering the watercourses. Furthermore, it appears that the water quality evidence supplied by McAlpine's is inconsistent with independent water samples undertaken by the ECoW.

SNH to Airtricity, 27 September 2006

. . . on 26 September, silty water was observed seeping downhill from the BP4 area at several points along its base and into tributaries of the Garvald Burn . . . leading to marked discoloration

, , , SEPA identified a further source of siltation upstream of BP4 . . . [where] a burn runs through the road rather than solely through the culvert provided and has been carrying silty water from the road material downhill and into the Garvald Burn.

ECoW's report for September 2006

If you would like proof of the sediment . . . go and study the bank side vegetation of the Ardoch: there are great deposits of Airtricity muck adhering to the ferns and long grasses.

Your staff go down after a complaint has been made and the main loading of sediment/liquid road has all washed down. Denying there is problem is like standing by a motorway and saying there are no fatalities on the roads.

Stakeholder to SEPA, 12 October 2006

- No samples were taken during, immediately after or in the vicinity of reported incidents;
- Almost half were taken upstream of the confluence of the Teith and the most impacted burns – the Garvald and Ardoch;
- None were taken of the Garvald Burn despite the intensive impact of the project on it. (This error was corrected after a complaint late in 2006.)[10]
- Water quality data submitted by McAlpine suggest that less than five per cent of samples exceeded the 25mg/l 'advisory limit' prior to the outgoing ECoW's 'interim' report. This rose to over 14 per cent after the report. No comparable increase can be observed in SEPA's data.

Sedimentation data have proved controversial in part perhaps because SEPA looked to 'observations of the water within the sample bottles'. The ECoW noted in July that:

> Total suspended solid content has remained below the advisory limit of 25 mg/l for all samples taken during June 2006 apart from those from the Garvald and Ardoch Burns on 21 June 2006. (Annex 9-06)

However, independent analysis of samples taken by stakeholders on June 30 showed levels of 228 mg/l – nearly ten times the advisory limit.

Although the ecology team had wound down to an

Left: stakeholders took water quality samples where the East Garvald joins the West Garvald Burn, just south of the northerly quarry, at 8.30pm on June 30 2006. (NN 713 101, see p 6, spot C.) Airtricity told SEPA and SNH that, '[We] can make no comment on the samples taken at the Garvald Burn on the 30th. We have taken our standard weekly samples and these results have not been as high as the two taken by [an observer].' (Annex 11)
Above: a photograph in the ECoW's report for September, close to the same spot (the precuise location is unclear).

almost nominal presence by December, its reports for the months since September make grim reading. The quotations opposite give a glimpse of the problems encountered as 2006 drew to a close but the reports merit reading in full.

Given that they present a very different picture to official accounts, it is unacceptable that SEPA 'was not aware of the content of the ECoW Report for the month of September until [it] reached us on the 8th December 2006' and that it first learned of the September 'interim' report from the author late in February 2007.[11]

Phillips' warning that 'intense precipitation incidents . . . would render [WPM] ineffective at the Braes of Doune' was clearly right.

SEPA, however, continued to argue that the pronounced discolouration reflects 'surprisingly' low levels of sedimentation, that it is an aesthetic issue only and basically harmless. (#176)

Experienced observers were unconvinced. Their next step was to obtain authoritative independent data. If SEPA was right, qualified fluvial scientists would readily confirm the results and the threat of damage to the SAC could safely be dismissed

But if SEPA was wrong and there was a possibility of long- or short-term damage to the waterways, this needed to be convincingly demonstrated if there were to be any chance of prompt remedial action.

As it was, it was looking very much as if the system for consenting and mitigating projects that might impact Natura 2000 sites was, in the argot, 'unfit for purpose'.

October 2006 was wet with a number of particularly high rainfall events when construction work could not proceed due to the persistent rain and poor visibility. Some of the resulting runoff was contained by existing water protection measures but generally the amount of rainfall (e.g. that of 24 - 25 October) exhausted the installed measures.

ECoW's report for October 2006

. . . a number of watercourses persistently exceeded the advisory limit of 25 mg/l for suspended solids. This reflects a large amount of rainfall experienced on site in combination with insufficient measures to control the runoff of fine particles from the road surfaces. The levels of suspended solids in the samples in the second half of the month were significantly lower, suggesting that upgrading of the existing WPMs improved silt control to certain extent.

3.2. More generally, the difficulties with water protection measures experienced in November 2006 are most likely to be attributable to one or more of the following . . .

- lack of manpower committed to water protection;
- lack of strategic spatial understanding of the hydrology of the site;
- lack of proactive maintenance and installation of WPM (measures are reactive);
- continued working, especially trafficking of roads, during and immediately following periods of high rainfall;
- in places, less than competent rock which breaks down easily into fines [and] forms road surface slurry . . .

3.3. It is recognised that discolouration and siltation of watercourses are two types of pollution. However, the physical appearance of water, resulting issues and the potential long-term impacts should not be neglected.

ECoW's report for November 2006

. . . due to ongoing concerns on the site, LUC ecologists withdrew their services at Braes of Doune during part of December. Airtricity took these concerns seriously and, following a meeting on 20 December 2006 between Airtricity and LUC, the ECoW agreed to return to site.

2.28 Throughout November and in December 2006, these lagoons were repeatedly reported to be leaking silty water into the Ardoch Burn, due to age of the straw bales and terram lining. Despite the ECoW recommendations, no improvement to the lagoons was undertaken.

ECoW's report for December 2006

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1 John Phillips, *Environmental Issues at the Braes of Doune wind farm*, August 2004. (Annex 8).

2 LUC, *Braes of Doune Windfarm, Ecological Clerk of Works Monthly Report for June 2006*, section 2. (Annex 9-06)

3 LUC, *Braes of Doune Windfarm, Ecological Clerk of Works Interim Report*, September 2006. (Annex 9-09)

4 '. . . Scottish Natural Heritage [indicated] that it is content that, if a detailed construction method statement, habitat management plan *and the appointment of a suitably qualified Ecological Clerk of Works* is [*sic*]secured by condition, this will avoid impact upon tributaries of the River Teith cSAC.' (Scottish Executive decision letter, annex 1, emphasis added)

5 See e.g. #79, #132-4 and annex 10.

6 Incident reports rely on documents provided by stakeholdersors or by SNH under Freedom of Information (FoI) rules. Key extracts are provided in appendix 2, table 2.

7 Two incident reports followed up by SEPA were unconfirmed but there was a (probably unavoidable) delay before inspection. See e.g. 24/25 May 2006.

8 Sampling data were provided by SEPA under FoI rules.

9 Seven mm of rain fell on 11 Jan 2006 and two on 31 July 2006. Samples taken on wet days in September 2006 post-dated the reports to politicians

10 The burn was sampled on 29 September, 5 October 2006 and 5 January 2007.

11 It is not clear why or if it was also true of the October and November reports. It is reasonable to assume it was. (#187)

Question 4

Has the SAC been damaged?

Friends of the Braes commissioned the Centre for River Restoration Science (CRRS) at Stirling University's School of Biological and Environmental Sciences to make an independent assessment of the quality of the waterways draining the site. The centre is a leading interdisciplinary group in the field of applied river science and ecological quality assessment.

Fluvial geomorphologist Dr David Gilvear and hydrochemist Dr Ian Grieve designed a two-month pilot study (the limit of Friends of the Braes' resource) to test the notion that the effects of construction activity on proximate waterways were insignificant. Analysis is ongoing and the study was too short to permit conclusions about long-term damage but the CRRS team found pollution levels in impacted streams, particularly the Garvald Burn, significantly higher than those in unimpacted streams, a result that seems to conflict with reports from SEPA and elsewhere.

The CRRS report, which is summarised below, also outlined recommendations for further monitoring.

THE TWO MOST significant likely impacts of the development which might affect the ecological quality of the River Teith SAC are increased concentrations of dissolved constituents (principally dissolved organic carbon, DOC) and increased concentrations and deposition of sediment in streams and rivers at and downstream of the site.

Dissolved organic carbon is the major contributor to the peaty colour of streams draining peaty catchments. Any disturbance of such soils leads to greater rates of decomposition of the organic matter from which they are constituted and thus greater concentrations of DOC.

The disturbance of either organic or mineral soils due to construction activity also increases the potential supply of sediment to streams and increased concentrations of suspended sediment following heavy rainfall and high stream flow.

The major ecological impacts are likely to be a reduction in the amount of light reaching the stream bed and the increased deposition of fine sediment in downstream reaches of the river bed. This can block the pore spaces within gravels used as spawning grounds by salmonid fish.

Siltation of bed sediments can affect the ability of some macronivertebrates to survive (e.g. Stoneflies) and directly reduce salmonid egg survival, thus reducing juvenile salmonid population numbers.

The assessment of DOC and sediment transport over the long term is difficult because a high percentage of both is known to be transported in a matter of a few days during the highest flood events of the year. Routine sampling at weekly or monthly intervals frequently misses these events.

The analysis of trends through time can be complicated by natural climate variability and its effect on loadings. These vary greatly from place to place making it difficult to determine 'background' levels. Factors such as catchment afforestation may also have an effect on sediment and DOC in streams.

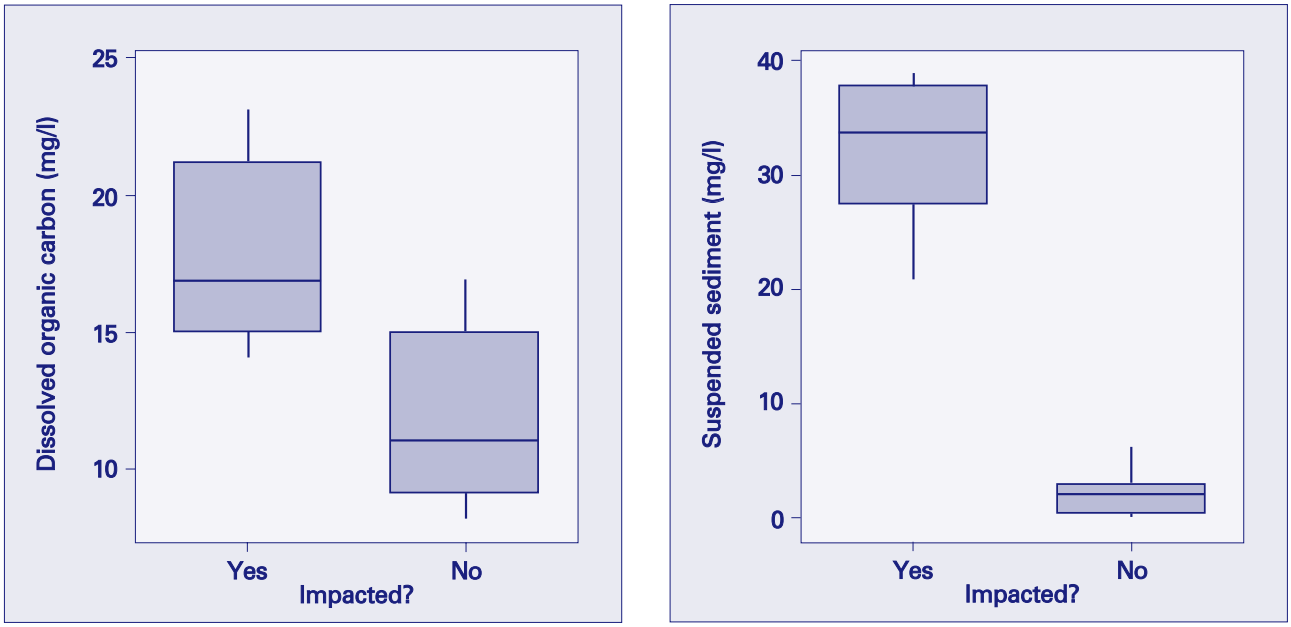
Pilot study

A CRRS-supervised student project collected samples at two- or four-hour intervals on the Ardoch Burn and the unimpacted Findu Glen over a number of weeks in October/November 2006. These data are still being analysed.

During three high flow events in November, CRRS also sampled ten headwater tributaries draining the general area of the site and, on the same days, six unimpacted streams on both sides of the ridge on which the wind farm is sited.

These samples were analysed for the concentrations of DOC and suspended sediment. The charts opposite compare the results for the impacted and unimpacted tributaries for two of the three sample days. They show that:

- There is considerable variability within each group, particularly of DOC, but there are significantly greater concentrations of DOC and suspended sediment in the impacted tributaries compared to the unimpacted ones.



The CRRS pilot study measured Dissolved Organic Carbon (left) and Suspended Sediment (right) in ten headwater tributaries draining the general area of the site during three high flow events in November 2006. On the same days, it sampled six unimpacted streams draining to the north and to the south of the site. Although variablity within groups was marked, an analysis of two of the events shows that the differences between impacted and unimpacted streams are statistically significant. The Garvald Burn, unsurprisingly, had the highest concentrations – about twice the DOC and more than ten times the sediment level of the unimpacted streams.

- The Garvald Burn has the highest concentrations of both DOC and sediment – around twice the DOC and more than ten times the sediment compared to the unimpacted streams.

Any changes observed over the next decade are likely to be greatest during the first few years after cessation of wind farm construction activity and during high-flow events.

An appropriate programme of research would include intensive sampling of one impacted and one control stream during high-flow events coupled with less frequent sampling of a larger number of streams. The effort should also be more intensive over the first three to five years, when impacts are likely to be greatest, and reduced later when impacts are less. Nevertheless, given the natural fluctuations in climate and the occurrence of storm events, any long-term trends and recovery from any impact back towards the natural state will only be clearly seen over an eight- to ten-year period.

An access track on the north-eastern periphery of the site, October 2006. This area drains to the north, not the SAC, but the picture illustrates the friable or 'less than competent' nature of the sandstone used for access tracks.

Question 5

Has the EIA Directive been properly transposed into Scottish law?

THE COMPLAINT to the EU's Environment Commission about the Braes of Doune project argued that the Executive has failed properly to transpose article 2.1 of the EIA Directive into Scottish law.[1]

The Directive, which takes precedence over Scottish law, stipulates that planning applications must be subject to prior assessment, public consultation and mitigation but there is, effectively, no absolute obligation in Scottish law to do so.

The complaint addressed only applications submitted under the 1989 Electricity Act though it quite possibly applies to other UK planning regimes.

Section 36 of the act explicitly empowers the Executive to consent projects under what are known as 'multi-stage procedures' whereby a project is granted a principal consent subject to 'suspensive' conditions to be resolved later.[2]

Where these concern minor construction points, this is uncontroversial but they can – and, in the case of wind-power applications, frequently do – concern 'main effects' which are, by definition, critical in deciding whether a project should proceed.

This leads to situations in which projects are consented in circumvention of the Directive when it is environmentally inappropriate to do so.

After a planning application has been submitted and the public and appropriate bodies have nominally been consulted, there is nothing in the law as it stands to stop hitherto undisclosed information on main effects being discussed between the applicant and the Executive behind closed doors with the public denied its right to participate.

This can happen before or after the principal consent or, as in the Braes of Doune case, both. While a Supplementary Environmental Statement was out for consultation early in 2004, Airtricity submitted two peatslide risk assessments to the Executive. Both were kept from public view.

Although expert advice was that they were inadequate, the application was consented on condition that a risk assessment and contingency plan were produced later.

The EIA Directive outlaws this practice. It stipulates that main effects must be assessed as soon as possible and generally before the principal consent. Ruling on a case in England, the ECJ said:

> . . . where national law provides that the consent procedure is to be carried out in several stages . . . the effects which the project may have on the environment must be identified and assessed *at the time of the procedure relating to the principal decision*. It is only if those effects are not identifiable until the time of the procedure relating to the implementing decision that the assessment should be carried out in the course of that procedure.[3] [Emphasis added]

Even if a project requires the assessment of effects that were not identified at the start (such as peatslide risk at the Braes), it is still impermissible to bypass consultation. 'Suspensive conditions' effectively downgrade main effects to an incidental status.

If, for example, it is established that a development could damage a Natura 2000 site, the Habitats Directive stipulates that it must be refused, regardless of any precedent consents.

Realistically, however, this is unlikely to happen if a project has already been consented by a branch of the Executive to which the bodies dealing with post consent conditions are answerable. They are effectively faced with a *fait accompli*, whatever the consequences for protected species and the like.

The deal is even more done when, as with the Braes of Doune, construction gets underway well before conditions, however critical, are even discussed, let alone settled.

Serious examination of the peatslide contingency plan did not begin until June 2005. Site construction started in July. The plan was still being debated only days before late December's 'implementing' decision (three years after the application was submitted) and it was still inadequate.

Competent transposition of the EIA Directive into Scottish law would outlaw such nonsense.

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1 Article 2.1 says: 'Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects . . .'

2 'A consent under this section (a) may include such conditions . . . as appear to the Secretary of State to be appropriate.'

3 C-201/02: The Queen, on the application of Delena Wells v Secretary of State for Transport, Local Government and the Regions, ECR 2004, p I-00723, para 52.

- The above account does not allow for the scope cases have offered for lengthy debate on what constitutes 'consent' etc.

Conclusions

REVIEWING THIS report before publication, a respected conservationist wrote to the author that 'One is left with a clear impression of inertia, bungling, duplicity, poor communication, procrastination, obfuscation and, quite frankly, shoddy and incorrect decision-taking both in temporal and technical terms'.

This is a harsh judgement but a reasonable one. The report asks if the Scottish Executive complied with the European Union's Environmental Impact Assessment and Habitats Directives when it consented the project and shows that it didn't.

It queries whether the EIA Directive has even been properly transposed into Scottish law and explains why, in all probability, it hasn't.

It examines the role of the designated authorities – Scottish Natural Heritage, the Scottish Environmental Protection Agency and Stirling Council – in ensuring the integrity of the River Teith Special Area of Conservation and argues that the stringent requirements of the Habitats Directive have not been met.

It contrasts the assurances that these agencies gave politicians and others that all was well with the project (that the pollution of the site's waterways was 'surprisingly' benign) with the almost militant stance eventually taken by the project's own ecological team and describes some of the problems they encountered.

It outlines an independent pilot study conducted by Stirling University's respected Centre for River Restoration Science. Using a different methodology from SEPA's, it produced a much less reassuring analysis of the effects of construction activity on the integrity of the River Teith SAC.

It explains how it fell to the public at large to fund, organise and conduct the photographic, political and scientific research without which this scandal – for such it is – would never have been uncovered.

Finally, it reveals a series of breaches of environmental law and of good ecological practice. Their gravity is outwith the author's purview – it remains to be seen what response, if any, decision-makers in Scotland can be persuaded to make.

However, as a first step, Friends of the Braes has undertaken to pass the report to the EU's Environment Commissioner as supplementary information to the complaint submitted in 2006.

The Braes of Doune wind farm and CO_2 savings

Airtricity's web site claims that the project will save 173,000 tonnes of CO_2 per year. This is a gross exaggeration. A displacement of 173,000 tonnes CO_2/year from 72 MW of generation capacity, even assuming an above average 32 per cent yield, equates to 860 gms CO_2 per unit of electricity generated. This figure, often quoted by the British Wind Energy Association, has been branded as misleading by the Advertising Standards Authority unless qualified. Electricity generation overall does not emit as much CO_2 as that although coal-fired plant does.

The DTI's widely accepted 430 gms/kWh figure predicts a rather more reasonable 81,000 tonnes/year but even then the calculation assumes (absurdly) that fuel displacement is 100 per cent efficient. It isn't.

Back cover: the northerly of two quarries ('borrow pits') lies only metres east of the Garvald Burn (bottom left of picture) about three kilometres north of the SAC boundary. Pollution emanating from this spot (BP4) has proved particularly troublesome. The photographs on pages 3 and elsewhere were taken close by, albeit several months later. 9 July 2006

A report by

FRIENDS OF THE BRAES