

Hugh Campbell

From: Milne, Alasdair <alasdair.milne@SEPA.org.uk>
Sent: 06 March 2013 14:50
To: hugh@campbellofdoune.co.uk
Subject: Bridge of Beich - SEPA flood risk comments

Hugh

I refer to your email to Malcolm MacConnachie of 20 February 2013 regarding Bridge of Beich. We can offer the following comments:

Executive Summary Outlining Policy Context

If formally consulted through the planning process on the proposed development we would **object** on the grounds that it may place buildings and persons at flood risk contrary to Scottish Planning Policy and PAN 69 based on the information supplied with this consultation.

Technical Report

1. We have been asked to provide pre-application comments on the Flood Risk Assessment (FRA) undertaken by MNV Consulting (January 2013) in support of the planning application for the addition of 5 plots at the existing Bridge of Beich Caravan Park on the north shore of Loch Earn. We have previously objected to the application on flood risk grounds based on a lack of information.
2. We have reviewed the information supplied within this pre-planning consultation and it is noted that the application site lies entirely within the 0.5% AEP (1:200) flood boundary of the Indicative River & Coastal Flood Map (Scotland) and as a result is at medium to high risk of flooding from the Beich Burn and Loch Earn.
3. A number of flow estimation methods have been utilised in order to approximate the 0.5% AEP (1:200) flow of the Beich Burn. Whilst we are in agreement that the FEH Rainfall-Runoff method is the most appropriate based on the catchment characteristics, we are of the view that the flow is underestimated. We have conducted our own FEH Rainfall-Runoff calculation and estimate the 0.5% AEP (1:200) flow as 83.14 m³/s compared to 73 m³/s within the FRA. We would recommend that the model is re-run using the higher flow estimate. The 0.5% AEP (1:200) for Loch Earn has been provided by Scottish and Southern Energy (SSE) and is estimated to be 98.9 mAOD.
4. We note that informal embankments are located to the south and east of the site. A preliminary condition assessment suggests that these are degraded and do not offer any protection from loch levels. We also note that the A85 is raised on an embankment which runs adjacent to the north of the site.
5. Review of Figure 15 indicates that flood waters are prevented from overtopping the bank and entering the site directly downstream of the bridge adjacent to where the existing caravan stances are located. Although a topographic survey has been conducted, this has not been provided within the FRA. We strongly recommend that this is provided to ensure that no flow path exists adjacent to the existing stances.
6. The Risk Framework in Scottish Planning Policy (SPP) states that new caravanning and camping sites should not be located in undeveloped and sparsely developed areas at medium to high risk of flooding. People residing in holiday accommodation are arguably at greater risk than those in permanent accommodation because they are likely to be unfamiliar with the behaviour of the nearby watercourses and the immediate surroundings.
7. It has been proposed within the FRA that landraising would be acceptable at this site as it is deemed brownfield on the basis that the site has been landscaped previously. We cannot confirm the status of the land as this is a matter for the planning authority. We are of the view that the site is sparsely developed and is therefore not brownfield however we strongly recommend that contact is made with the planning authority regarding this matter. We would require evidence confirming the status of the site should a full planning application be submitted in the future. For information, we would be unable to support landraising within the functional floodplain should the land be deemed as undeveloped or sparsely developed in accordance with the principles of SPP.
8. We note that the applicant has enquired as to whether the installation of storm cells would be deemed acceptable to negate the need for compensatory storage. Storm cells are primarily designed to be a sustainable urban drainage solution rather than a flood mitigation method. The storage cells can become clogged with debris and silt and therefore the efficiency of such cells can decrease over time. The 0.5% AEP (1:200) flood level within the site is approximately 0.92 mAOD (based on Scenario 3, Cross Section 2) therefore there may be access issues should the cells be installed. In addition, landraising should not create an island of development in accordance with SPP.
9. At this stage, we would be unable to support the use of storm cells as in the first instance it may be possible to revise the site layout to relocate the proposed stances outwith the functional floodplain. There appears to be an area of high ground to the east of the existing caravan stances therefore we strongly recommend that the applicant investigate whether relocation could be possible.
10. In summary, the FRA has demonstrated that the proposed caravan stances are located entirely within the functional floodplain and are therefore at medium to high risk of flooding. SEPA would be unable to support the application in its current format should full planning permission be sought in the future. We may be able to support the application should the proposed stances be moved and demonstrated to be located outwith the functional floodplain. At this stage, we would be unable to support the use of storm cells as there may be other options such as a revised site layout which would negate the need for such measures.

Summary of Technical Points

11. In summary we would wish to receive clarification on the following points before we would consider removing our objection to the proposed development:
 - The model should be re-run using the higher flow estimate of 83.14 m³/s;
 - The provision of the topographical site survey in mAOD;
 - Clarification should be sought from the planning authority and evidence submitted regarding the land status of the site;
 - The applicant should consider revising the site layout to relocate the proposed stances outwith the functional floodplain.

Caveats & Additional Information for Applicant

12. The Indicative River & Coastal Flood Map (Scotland) has been produced following a consistent, nationally-applied methodology for catchment areas equal to or greater than 3km² using a Digital Terrain Model (DTM) to define river cross-sections and low-lying coastal land. The outlines do not account for flooding arising from sources such as surface water runoff, surcharged culverts or drainage systems. The methodology was not designed to quantify the impacts of factors such as flood alleviation measures, buildings and transport infrastructure on flood conveyance & storage. The Indicative River & Coastal Flood Map (Scotland) is designed to be used as a national strategic assessment of flood risk to support planning policy in Scotland. For further information please visit www.sepa.org.uk/flooding/flood_extent_maps.aspx.
13. We refer the applicant to the document entitled: "Technical Flood Risk Guidance for Stakeholders". This document provides generic requirements for undertaking Flood Risk Assessments and can be downloaded from www.sepa.org.uk/flooding/planning_flooding.aspx. Please note that this document should be read in conjunction with Annex B in SEPA Policy 41: "Development at Risk of Flooding, Advice and Consultation – a SEPA Planning Authority Protocol", available from www.sepa.org.uk/planning/flood_risk.aspx.
14. Please note that we are reliant on the accuracy and completeness of any information supplied by the applicant in undertaking our review, and can take no

responsibility for incorrect data or interpretation made by the authors.

Please do not hesitate to contact me if you require any further information.

Regards
Alasdair

Alasdair Milne
Senior Planning Officer
Scottish Environment Protection Agency
5 Redwood Crescent, Peel Park, East Kilbride, G74 5PP
t: 01355 575665
m: 07827 978405
web: www.sepa.org.uk

From: Hugh Campbell [mailto:hugh@campbellofdoune.co.uk]
Sent: 20 February 2013 09:31
To: MacConnachie, Malcolm
Subject: FW: Report

Malcolm,

Here is the flood risk assessment which we discussed earlier.

The attached drawing is the James Denholm planning drawing. The flood line on this drawing predates the MNV survey. We would appreciate your comments on the proposal to land raise locally south of the existing pitches, for the proposed extension, using load bearing storm cells thereby negating any requirement for compensatory storage.

The site is use seasonally between Easter and October.

Thank you.

Regards,

Hugh Campbell

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell

Chartered Civil and Structural Engineer

Director

Campbell of Doune Ltd

Tel: 01764 655459

Fax: 01764 655689

E-mail: hugh@campbellofdoune.co.uk

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From: Mark Westwood [mailto:mark@campbellofdoune.co.uk]
Sent: 23 January 2013 09:06
To: 'Hugh Campbell'
Subject: FW: Report

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Mark Westwood

Graduate Engineer

Campbell of Doune Ltd

Tel: 01764 655459

Fax: 01764 655689

E-mail: mark@campbellofdoune.co.uk

Web: www.campbellofdoune.co.uk

From: Rita Day [mailto:Rita.Day@mnvconsulting.eu]
Sent: 23 January 2013 09:01
To: 'Mark Westwood'
Subject: Report

Bridge of Beich flood risk assessment attached, please let me know if you require a hard copy.

Regards

Rita Day

Operations Assistant

MNV Consulting Ltd
Spinningdale, Stirling Road
Callander, FK17 8LE
T: 01877 331080
E-mail: rita.day@MNVconsulting.eu

Web: www.MNVconsulting.eu

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<http://www.eset.com>

Mark Westwood

From: Hugh Campbell [hugh@campbellofdoune.co.uk]
Sent: 17 September 2012 09:20
To: karin.moore@sepa.org.uk
Cc: mark@campbellofdoune.co.uk
Subject: Bridge of Beich Lochearnhead

Karin,

Good morning.

We had a meeting with the factor for Drummond Estate and the owner Lady Jane Willoughby on Friday afternoon regarding Bridge of Beich and the caravan site extension.

We have been asked to point out that the season for the caravan site is April to October only and that the Loch level to be used for the Beich Burn flooding should logically be the maximum level during this period.

We are going to ask MNV to run the flood study for the burn with the loch at this level which they say they can do from previous work on the loch.

The Bridge of Beich is situated just upstream of the caravan site. We intend having MNV model the flood with the bridge with up to 20% blockage which we consider reasonable.

Before we start this work would you please let us know if you are satisfied with this %.

Thank you.

Regards,

Hugh Campbell

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell
Chartered Civil and Structural Engineer
Director
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3120-11

8th April 2012

James Denholm Partnership,
11 Dunira Street,
Comrie,
Perthshire,
PH6 2LJ.

COPY

For the attention of Mr. Phillip Hapka,

Dear Sirs,

**Extension to Seasonal Caravan Pitches.
Bridge of Beich,
Loch Earn for Drummond Estates.
Loch Flood Level.**

We have been commissioned by Drummond Estates to advise on flood levels on the above site and to comment on the impact of the proposed development in relation to flood levels.

We have obtained the estimated 1:200 year return period flood level from the hydrologists of Scottish and Southern Energy who have a long period of experience, since the nineteen-fifties, of Loch Earn water levels, which are controlled by it at St. Fillans. This flood estimated was procured on a commercial basis.

The 1:200 year water level has been estimated by SSE at 98.9m Above Ordnance Datum.

There is minimal ground below this level which requires made up to this level on the site to allow the creation of the extremely small additional area for the proposed four additional pitches. The maximum up filling required is 0.76m and the total amount of infilling will be 912m³ in volume. This small volume will be site won from land below the 1:200 year flood level thereby providing compensatory storage at or about the same level.

The site is protected from wave action by a bank around the site which would attenuate waves.

Do not hesitate to contact us should you require further information.

Yours faithfully,

Hugh Campbell
Chartered Civil Engineer
For Campbell of Doune Ltd

Hugh Campbell

From: Mark Westood <mark@campbellofdoune.co.uk>
Sent: 05 March 2012 09:23
To: 'Hugh Campbell'
Subject: FW: Bridge of Beich

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Mark Westwood
Graduate Engineer
Campbell of Doune Ltd

Tel: 01764 655459
Fax: 01764 655689
E-mail: mark@campbellofdoune.co.uk
Web: www.campbellofdoune.co.uk

From: Meikle, Bruce [mailto:Bruce.Meikle@SEPA.org.uk]
Sent: 05 March 2012 09:20
To: 'Mark Westood'
Subject: RE: Bridge of Beich

Hello Mark

I have looked over details again and would ask for the following details in order that i can give you a full response:

1. What is the current foul drainage situation?
2. What is the square metrage that you intend to extend the area of land by?

As regards the flood risk I would recommend that you contact one of our flood risk hydrologists directly at our Whitefriars Office (01738 627989) for their comments.

Regards

Bruce Meikle
Environment Protection Officer
Scottish Environment Protection Agency, Strathearn House, Broxden Business Park, Perth, PH1 1RX
Tel: 01738 627989
e-mail: bruce.meikle@sepa.org.uk
web: www.sepa.org.uk

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From: Mark Westwood [<mailto:mark@campbellofdoune.co.uk>]
Sent: 02 March 2012 13:42
To: Meikle, Bruce
Subject: FW: Bridge of Beich

Bruce,

As discussed on the phone, please find all the relevant information and correspondence attached to this email.

Regards,

Mark

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Mark Westwood
Graduate Engineer
Campbell of Doune Ltd

Tel: 01764 655459
Fax: 01764 655689
E-mail: mark@campbellofdoune.co.uk
Web: www.campbellofdoune.co.uk

From: Hugh Campbell [<mailto:hugh@campbellofdoune.co.uk>]
Sent: 02 March 2012 10:58
To: mark@campbellofdoune.co.uk
Subject: FW: Bridge of Beich

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell
Chartered Civil and Structural Engineer
Director
Campbell of Doune Ltd

Tel: 01764 655459
Fax: 01764 655689
E-mail: hugh@campbellofdoune.co.uk
Web: www.campbellofdoune.co.uk

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From: Meikle, Bruce [<mailto:Bruce.Meikle@SEPA.org.uk>]
Sent: 20 December 2011 14:02
To: 'hugh@campbellofdoune.co.uk'
Subject: FW: Bridge of Beich

Hugh
I have been copied into your e-mail re possible drainage implications.
If you arrange a date with Hydrology let me know and I can arrange to be present so that we can discuss drainage.
Hope this sounds sensible.
Regards

Bruce Meikle
Environment Protection Officer
Scottish Environment Protection Agency, Strathearn House, Broxden Business Park, Perth, PH1 1RX
Tel: 01738 627989
e-mail: bruce.meikle@sepa.org.uk:
web: www.sepa.org.uk

From: McFarlane, Nicola
Sent: 20 December 2011 12:43
To: Roxburgh, Brian
Subject: FW: Bridge of Beich

Hi Brian

Think this may be one for your team. I have forwarded it to flood risk also.

cheers

Nicola McFarlane
Water Resource Hydrologist
Scottish Environment Protection Agency, Clearwater House, Avenue North, Riccarton, Edinburgh. EH14 4AP

t: 0131 449 7296 ext 8583

e: nicola.mcfarlane@sepa.org.uk

web: www.sepa.org.uk

From: Hugh Campbell [<mailto:hugh@campbellofdoune.co.uk>]
Sent: 19 December 2011 18:05
To: McFarlane, Nicola
Subject: Bridge of Beich

Nicola,

Good afternoon.

We are involved in preliminary discussions with Drummond Estates and its Architect, James Denholm Partnership, about a minor extension to a very small, established, seasonal caravan site at Bridge of Beich on the North shore of Loch Earn. It is the Estate's intention to submit a planning application, for the proposed extension, to the National Park in the New Year with a view to establishing the additional pitches thereafter.

The site operates from early March until early October each year. It is proposed to augment the existing pitches numbered 1 to 6 on the enclosed plan with the additional pitches 7 to 10. A very small amount of land raising is required to elevate the additional pitches on the site to the 1:200 year flood level. The material would be won locally within 70 metres of the site thereby providing any compensatory storage required, if any, on site. The volume of fill required is very small indeed and would amount to about 275m³.

I would appreciate the opportunity to come in to Perth to discuss this proposal in person with a SEPA hydrologist.

Could this be arranged please?

Many thanks.

Regards,

Hugh Campbell

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell

Chartered Civil and Structural Engineer

Director

Campbell of Doune Ltd

Tel: 01764 655459

Fax: 01764 655689

E-mail: hugh@campbellofdoune.co.uk

Web: www.campbellofdoune.co.uk

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Hugh Campbell

From: McFarlane, Nicola <nicola.mcfarlane@SEPA.org.uk>
Sent: 20 December 2011 13:19
To: Hugh Campbell
Subject: RE: Bridge of Beich

Hi Hugh

This is not really my area, so I have forwarded it to the local operations team and flood risk team in perth.


Many thanks

Nicola McFarlane
Water Resource Hydrologist
Scottish Environment Protection Agency, Clearwater House, Avenue North, Riccarton, Edinburgh. EH14 4AP

t: 0131 449 7296 ext 8583

e: nicola.mcfarlane@sepa.org.uk

web: www.sepa.org.uk

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Sent: 19 December 2011 18:05
To: McFarlane, Nicola
Subject: Bridge of Beich

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I would appreciate the opportunity to come in to Perth to discuss this proposal in person with a SEPA hydrologist.

Could this be arranged please?

Many thanks.

Regards,

Hugh Campbell

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell

Chartered Civil and Structural Engineer

Director

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Hugh Campbell

From: Michael Aldridge <michael_aldrige@drummondstates.org.uk>
Sent: 08 December 2011 11:08
To: 'Hugh Campbell'
Subject: RE: Hydro and loch Earn

Hugh,

Thank you.

On the Ari, I don't suppose there is any rush nor advantage to do anything at the Ari given SEPA's current position. I suggest we wait until we are in a position to make one application for everything unless you think otherwise.

Do we have enough information with regard to flow monitoring to estimate the output for the grid connection?

Regards

Michael

From: Hugh Campbell [mailto:hugh@campbellofdoune.co.uk]
Sent: 07 December 2011 09:07
To: 'Michael Aldridge'
Cc: 'Mark Westood'
Subject: RE: Hydro and loch Earn

Michael,

Thank you for the record of yesterday's meeting which correctly summarises the actions agreed.

On Ari for the Keltie Hydro our current proposal is to build a hydro intake on the rear face of the dam, basically a reinforced concrete u shaped box on plan, with the flat of the u facing upstream and the legs of the u tied into the upstream face of the dam. A Coanda screen or bar screen would be fixed over the box as an intake. We would propose to lead the intake pipe along the upstream face of the dam at a lower level to a point where it could be lead through the dam and down to the powerhouse.

We intend to correspond with the panel engineer on this proposal over the next month.

SEPA has not changed its position on sediment removal, however, I will speak to Carolyn Anderson to refresh the exact position and get back to you. SEPA's position was that it required a variation to the Impoundment licence to allow sediment removal at the upstream end. It also requires an abstraction licence for the Breanney water supply which we will apply for if you are minded for us to do so.

Regards,

Hugh Campbell

Campbell of Doune Ltd

Consulting Civil and Structural Engineers

Hugh Campbell
Chartered Civil and Structural Engineer
Director
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From: Michael Aldridge [mailto:michael_aldridge@drummondstates.org.uk]
Sent: 06 December 2011 17:23
To: 'Hugh Campbell'
Subject: RE: Hydro and loch Earn

Hugh,

Thank you and Mark for seeing me this afternoon, which was constructive.

Could you copy and send or scan the sketch on the caravan site? I forgot to take one with me.

Just for the record, I noted:

Glentarken – Planning application to go in before Christmas. Car licence application and Grid connection application to be made.

Glenartney – Flow monitoring continues. Fish survey critical - Jon Watt in the spring. Suggest grid feasibility study if fish issues are resolved.

Keltie - Flow monitoring continues. Apply for grid connection due to possible long lead in.

Please let me know if I have missed or misinterpreted anything.

We did not discuss Ari dam and SEPA issues. I take it there is no movement there.

Regards

Michael

From: Hugh Campbell [mailto:hugh@campbellofdoune.co.uk]
Sent: 06 December 2011 14:35
To: 'Michael Aldridge'
Subject: RE: Hydro and loch Earn

Michael,

Please call in when convenient as we have an update on several fronts including a settled view on Bridge of Beich.

Regards,

Hugh Campbell

Campbell of Doune Ltd
Consulting Civil and Structural Engineers

Hugh Campbell
Chartered Civil and Structural Engineer
Director
Campbell of Doune Ltd

Tel: 01764 655459
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From: Michael Aldridge [mailto:michael_aldridge@drummondstates.org.uk]
Sent: 06 December 2011 12:34
To: 'Hugh Campbell'
Subject: Hydro and loch Earn

Hugh,

Could I have an update so that I can brief Lady Jane on recent developments? I could call in if that would be more helpful.

Whilst looking for something else, I found an old file on Loch Earn which included 1963 correspondence from NOSHEB stating that the limits of the fluctuations of the level are between 317.5' and 312.5'. No doubt this has all been superceded.

Regards

Michael

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SSE
Grampian House
200 Dunkeld Road
Perth
PH1 3AQ

18 November 2011

FAO Hugh Campbell
Campbell of Doune Ltd
Consulting Civil and Structural Engineers
78 King Street
Crieff
PH7 3HB

Dear Mr Hugh Campbell,

Loch Earn Water Levels

Thank you for your acceptance of our proposal by email dated 16 Nov 2011 by your Mark Westood. Please find below the data you requested:

1. A summary of the minimum and maximum raw water level observed at Loch Earn during the record length of our gauge.

Record length:	1985 -2010
Minimum raw water level:	96.876 mAOD (2003)
Maximum raw water level:	98.300 mAOD (1990)
Data gaps:	No maximum water level in year 2009.

2. The estimated 200-year water level of Loch Earn by statistical means based on our recorded level data.

estimated Loch Earn 200year water level: between 98.9mAOD

Methodology:

Determine the return period of the annual maximum water level data using Gringorten plotting positions

Fit curve to the data and extrapolate

A check using the 1000-year stillwater level from internal reservoir report

Note:

The analysis follows a standard approach and for instance does not take into account the purpose for which this data was requested, data uncertainty issues or effects from waves.

Yours sincerely,

Manuela Toth
Hydrologist, Civil O&M Team

3120-11

10th September 2011

Scottish and Southern Energy,
Hydrology Department,
Inveralmond House,
200 Dunkeld Road,
Perth,
PH1 3AQ

Dear Sirs,

Loch Earn Water Levels and Historical Flows

We have been appointed by Drummond Estates to comment on predicted water levels in Loch Earn.

We understand that SSE exercise some control over the outflow from the Loch. Is it possible for you to give us historical information on Loch water levels and your policy on the control of these?

We are also interested in determining real flow data for the exit weir at St. Fillans, preferably the maximum recorded flow, its return period and the associated Loch water level.

We would appreciate any information which you are able to share with us to help us inform our client.

Yours faithfully,

Hugh Campbell
Chartered Civil Engineer
For Campbell of Doune Ltd