Our ref: PCS/144361
Your ref: 2015/0305/DET

If telephoning ask for:
Simon Watt

14 January 2016

Craig Jardine
Loch Lomond & the Trossachs NPA
Carrochan
20 Carrochan Road
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Alexandria
G83 8EG

By email only to: planning@lochlomond-trossachs.org

Dear Sir

Town and Country Planning (Scotland) Acts
Planning application: 2015/0305/DET
Erection of office accommodation
Sawmill Balliemeanoch Strachur Argyll and Bute PA27 8DW

Thank you for your consultation which SEPA received on 21 December 2015.

Following a review of the submitted information we **maintain our objection** to the proposed development on the grounds that it may place buildings and persons at flood risk contrary to Scottish Planning Policy. We will review this objection if modified proposals and the additional information outlined in Section 1 below are provided.

In the event that the planning authority proposes to grant planning permission contrary to this advice on flood risk, the Town and Country Planning (Notification of Applications) (Scotland) Direction 2009 provides criteria for the referral to the Scottish Ministers of such cases. You may therefore wish to consider if this proposal falls within the scope of this Direction.

Please refer to our previous response dated 29 October 2015, under PCS/143317, for further comment pertinent to this proposal.

Advice for the planning authority

1. Flood Risk

1.1 In summary we wish to receive further information to address the following points before we would consider removing our **objection** to the proposed development:

- The modification of the development to locate the proposed building outwith the functional floodplain;
- Provision of appropriate site emergency access and egress measures; and
- In the event suitable mitigation measures are agreed upon we will also require the provision of additional modelling information including cross section results, velocity results and sensitivity analysis of the downstream boundary.

1.2 We have previously commented on this proposal, raised flooding concerns and requested further information to assess the flood risk to the site. Further information has now been submitted in the form of a Flood Risk Assessment (FRA) titled "Strachur Sawmill, Strachur: Flood Risk Assessment Report" (Terrenus Land and Water, December 2015) and we would make the following comments.

1.3 The FRA identifies the main source of fluvial flood risk to the site as being from the River Cur, which forms the generally northern extent of the site boundary. The main report finding is that a large portion of the site is located within the 1 in 200 year (i.e. functional) floodplain of the River Cur and is therefore at medium to high risk of fluvial flooding. The location of the proposed office building is fully within this flood extent and we therefore have significant concerns that the development is at risk of flooding. In addition we note the current site use is defined as "Vacant ground (overgrown woodland)" in the FRA. We therefore received confirmation from the local Flood Prevention Authority (FPA) that the land use designation at the site is considered to be developed.

1.4 Various mitigation measures have been proposed in Section 4.2, however we do not agree that these represent the most sustainable and appropriate measures. For example, we would highlight we do not operate a formal flood warning target area in this location. We believe flood warning may generally form part of an appropriate solution in some instances however this is not in the absence of other more direct flood mitigation measures.

1.5 The other recommendations include elevation of the building on block-work to allow passage of floodwaters through the area beneath the building or elevation of the building via the use of stilts. Scottish Planning Policy (SPP) paragraph 263 states that "elevated buildings on structures such as stilts are unlikely to be acceptable". In Scotland, there is no issue in regards to land availability for development and as such we do not believe there is an overriding requirement for stilts to be used to allow development within the functional floodplain.

1.6 We would also highlight that, based on the red line boundary within the submitted Location & Block Plan, we believe that there is land available on site which is located outwith the functional floodplain (i.e. on higher ground to the east of the site) and as such there is no overriding requirement for measures such as stilts. Therefore, in the first instance we would advocate the avoidance principle and request that the modification of the layout of the site be considered. Please note this may require mapped output from the FRA to be revised to show indicative flood extents reflective of the revised site layout. If avoidance is not possible, there may be a requirement for compensatory storage if the building is ultimately proposed within the functional floodplain.

1.7 It is recommended the building be elevated with Finished Floor Levels (FFLs) set to a minimum of 600mm above the peak 1 in 200 year plus climate change water level. While we do not currently support the location of the building within the site and the flood mitigation measures proposed, we would highlight Argyll and Bute Council, as the FPA, should always be consulted regarding the acceptability of proposed levels of freeboard for flood control purposes.

1.8 We note the proposals include re-profiling the access road to a level that would ensure flood water depth does not exceed 300mm across the access point. However, we would have concerns that this does not enable emergency access and egress, for people or vehicles from the site. We would require access road levels to be raised above the 1 in 200 year level, including an appropriate allowance for freeboard.

1.9 Notwithstanding our comments above, we have provided a technical review of the submitted FRA within the sections below.

Technical Report

1.10 The 1 in 200 year design flow for the watercourse has been estimated via a number of methods, including FEH Rainfall Runoff Method (RRM), the FEH QMED calculations (2007 and 2008) and IH124. We agree this is a suitable approach for catchments of this size, and our own estimates, while generally lower than those in the FRA, are approximately in line with those calculated. We would generally prefer, in the absence of further appropriate justification, for the most conservative estimate of design flow to be used (i.e. in this instance the FEH Qmed 2008 method). However, we note our own estimates for flow using this method are slightly lower than those calculated in the FRA, and are within an acceptable tolerance of the flow which is ultimately used in the modelling (101.7m^3/s).

1.11 It is acknowledged that climate change has been considered in line with latest technical guidance.

1.12 A 1D hydraulic model of the River Cur has been constructed using the Mike 11 modelling package which is generally suitable for such a study. A topographic survey was undertaken to derive cross sections of the channel. While we cannot comment on the construction of the model, the number and location of modelled cross-sections (Drawing No. 1623-200-001) along with the long section (Figure 2) appear reasonable.

1.13 The Manning's values used in the hydraulic modelling of the channel beds and banks appear to be reasonable based on the site photographs provided.

1.14 The upstream model boundary has used the inflow hydrograph approach which is an appropriate methodology. The downstream model boundary condition has been set based on a flow-head relationship at the downstream extent of the model, which we agree is suitable.

1.15 Existing hydraulic structures have been included in the model, particularly the A815 bridge which may represent a hydraulic constraint. We note this has been modelled in Mike 11 as a culvert, which we agree can be a suitable approach to modelling such structures.

1.16 No model calibration or validation has been undertaken but this is attributed to no flood data (gauged or historical) being available in proximity to the site.

1.17 Cross-section results are provided in Figure 2. However, we note these do not display the predicted 1 in 200 year water level at each section, which we would request in order to determine if there is any "glass-walling" apparent within the hydraulic model.

1.18 No velocity information has been provided and we would request this should be submitted.

1.19 Sensitivity analysis has been undertaken on roughness, design flows and blockage of the bridge in line with technical requirements. The model is most sensitive to an increase in flow (by 20% to allow for the effects of climate change), which can increase water levels by up to 290m compared with the baseline case. The model is not overly sensitive to changes in Manning's n roughness, with an increase in roughness from 0.035 to 0.05 resulting in a corresponding increase in water level of approximately 310mm. Blockage of the road bridge at the A815 has no impact on predicted top water levels at the site, although we would note only reasonably low levels of blockage have been modelled (between 10 and

20%). We note no sensitivity analysis has been done on the downstream boundary condition, which we would also request should be undertaken.

1.20 The risk of pluvial flooding has been assessed in section 3.2. The updated SEPA / Planning Authority Protocol on Planning and Flooding specifies that water quantity aspects of surface water drainage are a matter for the FPA to consider. It is therefore for Argyll and Bute Council to satisfy themselves that all SUDs and drainage arrangements will be appropriate and in accordance with any internal guidance.

1.21 In the event that parts of the site are affected by elevated groundwater levels it will be for the local FPA, in conjunction with colleagues from building standards, to ensure that mitigation measures are agreed prior to the development on site.

1.22 The advice contained in this letter is supplied to you by SEPA in terms of Section 72 (1) of the Flood Risk Management (Scotland) Act 2009 on the basis of information held by SEPA as at the date hereof. It is intended as advice solely to Argyll & Bute Council as Planning Authority in terms of the said Section 72 (1). Our briefing note entitled: "Flood Risk Management (Scotland) Act 2009: Flood risk advice to planning authorities" outlines the transitional changes to the basis of our advice in line with the phases of this legislation and can be downloaded from http://www.sepa.org.uk/environment/land/planning/guidance-and-advice-notes/.

Detailed advice for the applicant

You will note that we have maintained our objection to this planning application and request that you take account of the comments made in the sections above.

2. Flood Risk

2.1 The SEPA Flood Maps have 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 corridors and low-lying coastal land. The maps are indicative and designed to be used as a strategic tool to assess, flood risk at the community level and to support planning policy and flood risk management in Scotland. For further information please visit http://www.sepa.org.uk/environment/water/flooding/flood-maps/.

2.2 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 http://www.sepa.org.uk/media/162602/ss-nfr-p-002-technical-flood-risk-guidance-for-stakeholders.pdf. Please note that this document should be read in conjunction with Policy 41 (Part 2).

2.3 Our Flood Risk Assessment checklist should be completed and attached within the front cover of any flood risk assessments issued in support of a development proposal which may be at risk of flooding. The document will take only a few minutes to complete and will assist our review process. It can be downloaded from http://www.sepa.org.uk/media/159170/flood-risk-assessment-checklist.xls.

2.4 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.

Regulatory advice for the applicant

3. Regulatory requirements

3.1 Details of regulatory requirements and good practice advice for the applicant can be found on the Regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the operations team in your local SEPA office at:

Kilbrandon House
Manse Brae
Lochgilphead
PA31 8QX

Tel: 01546 602 876

If you have any queries relating to this letter, please contact me by telephone on 01698 839 000 or e-mail at planning.sw@sepa.org.uk.

Yours faithfully

Simon Watt
Senior Planning Officer
Planning Service

Disclaimer

This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at the planning stage. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. If you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found in How and when to consult SEPA, and on flood risk specifically in the SEPA-Planning Authority Protocol.