

Main Issues Report 2013

Flooding and erosion Position Paper

1. What are the predictions of climate change and climate chaos?

1.1 Dramatic changes to our climate have been linked to the global rise in greenhouse gas (GHG) emissions. Although measures are ongoing to reduce levels of GHG emissions, bad weather events have recently caused significant damage and flooding to a number of areas within Aberdeenshire. Aberdeenshire Council’s Local Climate Change Impact Profile recorded severe weather events that were reported in the local media between 2001 and 2009 (see Figures 1 and 2). The Impact Profile shows how these events have affected the local community as well as the Council’s assets and capacity to deliver services. Further information on climate change is provided in the Climate Change Position Paper.

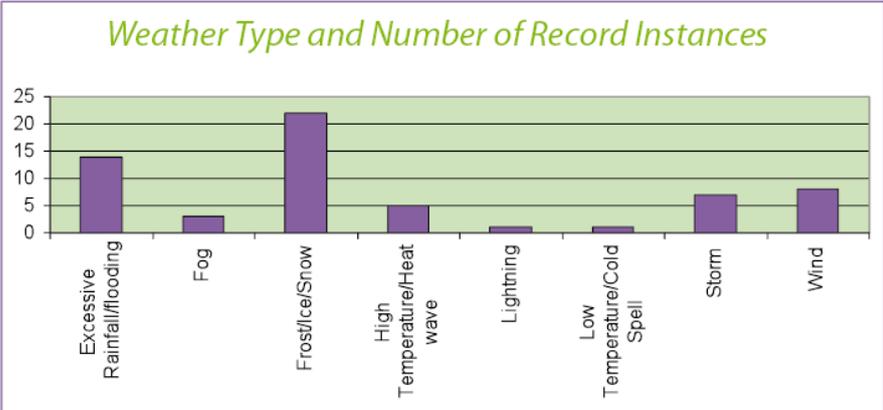


Figure 1 Frequency of weather types

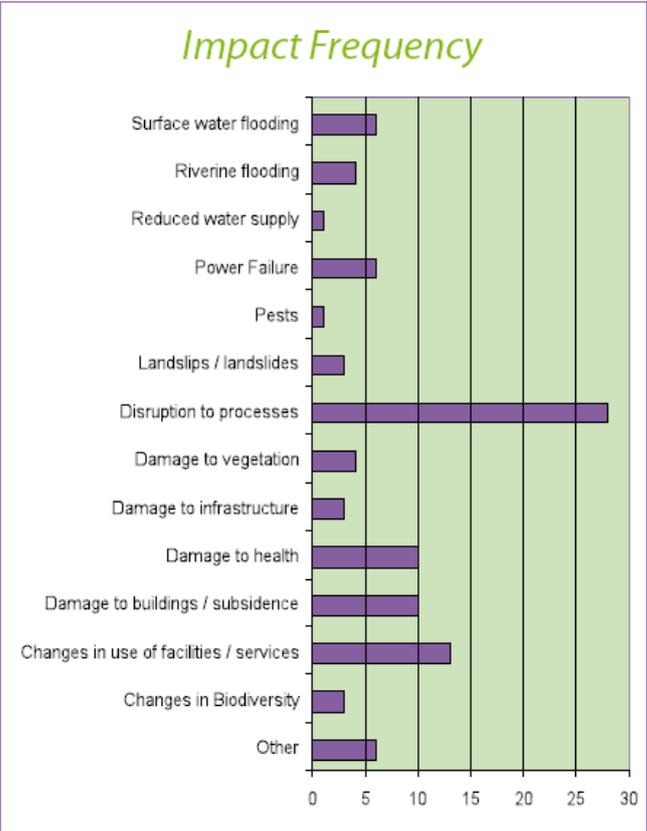


Figure 2 Frequency of weather impacts

Source: Aberdeenshire Council Local Climate Change Impact Profile, 2009

1.2 The UK Climate Projections 2009 (UKCP09) shows the changes that can be expected during the rest of this century. However, there is an element of uncertainty when predicting future events; as such these projections are based on three scenarios: high, medium and low greenhouse gas emissions over three 30 year periods (2020, 2050 and 2080). In this case, the projections for 2050 have been used as there is greater uncertainty with the accuracy of the 2080 calculations in light of current (and future) government action to reduce greenhouse gas emissions. The UKCP09 predicts that Scotland will need to adapt to warmer, wetter winters and hotter, drier summers. Its projections on precipitation are set out in Table 1, which outlines the changes expected in Eastern Scotland by 2050 under medium and high emissions scenarios. The bold figure shows mid point and figures in brackets show range.

Table 1 Projected change in precipitation by 2050

EASTERN SCOTLAND	2050 MEDIUM EMISSIONS	2050 HIGH EMISSIONS
Summer average precipitation	-13% (-27% to +1%)	-13% (-28% to +2%)
Winter average precipitation	+10% (+1% to +20%)	+10% (+1% to +20%)

Source: UK Climate Projections 2009 (online source)

1.3 Current predictions forecast a rise in the number of flood events due to increased storms, precipitation and sea level rise, which will also result in more landslips, coastal erosion and subsidence. While projections do not currently exist for future storminess at a Scottish level, the UKCP09 suggests there will be a general tendency for less storms, but the strongest will be even more intense. Precipitation is expected to rise in Scotland as the climate changes, and more extreme weather events are projected, with the wettest days of the year (in winter) likely to be considerably wetter than at present.

2. National Policy Context

2.1 Scottish Planning Policy (SPP) outlines the overarching policy aims of Flooding and Erosion for Scotland. It is supported by the Flood Risk Management (Scotland) Act 2009 which sets out a statutory framework for delivering a sustainable and risk-based approach to managing flooding.

2.2 One of the themes raised by the SPP is *'development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere should not be permitted.'* (Para 197). One of the ways in which this is implemented is by using the risk framework which helps to provide a basis for decision making relating to flooding.

Table 2: SPP Risk Framework

RISK FRAMEWORK
<p>Little or No Risk – annual probability of watercourse, tidal or coastal flooding is less than 0.1% (1:1000)</p> <ul style="list-style-type: none"> • No constraints due to watercourse, tidal or coastal flooding.
<p>Low to Medium Risk Area – annual probability of watercourse, tidal or coastal flooding in the range 0.1% - 0.5% (1:1000 – 1:200)</p> <ul style="list-style-type: none"> • These areas will be suitable for most development. A flood risk assessment may be required at the upper end of the probability range (i.e. close to 0.5%) or where the nature of the development or local circumstances indicates heightened risk. Water resistant materials and construction may be required depending on the flood risk assessment. Subject to operational requirements, including response times, these areas are generally not suitable for essential civil infrastructure such as hospitals, fire stations, emergency depots etc. Where such infrastructure must be located in these areas or is being substantially extended it should be capable of remaining operational and accessible during extreme flooding events.
<p>Medium to High Risk – annual probability of watercourse, tidal or coastal flooding greater than 0.5% (1:200)</p> <ul style="list-style-type: none"> • Generally not suitable for essential civil infrastructure such as hospitals, fire stations, emergency depots etc., schools, care homes, ground-based electrical and telecommunications equipment unless subject to an appropriate long term flood risk management strategy. The policy for development on functional flood plains applies. Land raising may be acceptable. • If built development is permitted, appropriate measures to manage flood risk will be required and the loss of flood storage capacity mitigated to produce a neutral or better outcome. • Within built up areas, medium to high risk areas may be suitable for residential, institutional, commercial and industrial development provided flood prevention measures to the appropriate standard already exist, are under construction or are planned as part of a long term development strategy. In allocating sites, preference should be given to those areas already defended to required standards. Water resistant materials and construction should be used where appropriate. • In undeveloped and sparsely developed areas, medium to high risk areas are generally not suitable for additional development. Exceptions may arise if a location is essential for operational reasons, e.g. for navigation and water based recreation uses, agriculture, transport or some utilities infrastructure and an alternative lower risk location is not achievable. Such infrastructure should be designed and constructed to remain operational during floods. These areas may also be suitable for some recreation, sport, amenity and nature conservation uses provided adequate evacuation procedures are in place. Job-related accommodation (e.g. caretakers and operational staff) may be acceptable. New caravan and camping sites should not be located in these areas. If built development is permitted, measures to manage flood risk are likely to be required and the loss of flood storage capacity minimised. Water resistant materials and construction should be used where appropriate.

2.3 It is also worth noting the consultative draft SPP (2013), which proposes a number of adaptation measures. Those of relevance to flooding are listed below:

- ensuring new development is adapted to withstand more extreme weather, including prolonged wet or dry periods;
- working with natural environmental processes, for example through the development of green infrastructure and sustainable urban drainage systems to reduce flood risk; and ensuring local development plans recognise that rising sea levels and more extreme weather events resulting from climate change will have a significant impact on coastal areas, and that a precautionary approach to flood risk will need to be taken.

3. What are the issues arising?

- 3.1 Whilst mitigation measures seek to reduce GHG emissions, adaptation accepts that climate change will have an impact on our environment and identifies the means to reduce costly disruptions and safeguard the environment, economy and communities. Across Aberdeenshire, there has been an increase in the number of extreme weather events – including high seas; heavy rain; high winds; land slip and flooding, and these events are projected to intensify. More frequent and extreme weather events may mean those development proposals in areas at risk from fluvial (watercourses) or coastal flooding, as well as some that are not, will require more rigorous assessment, and ultimately may be refused planning permission even if site adaptations can defend against predicted impacts.
- 3.2 The policy review paper of supplementary guidance SG LSD8 *Flooding and erosion* applies the 'precautionary principle' (applying caution in decision making) when flooding has been identified as a risk. SEPA currently provides indicative flood risk maps as a basis for identifying some areas at flood risk from fluvial and tidal sources. However, it does not include flooding from ground water, surface water and drainage systems (pluvial flooding). Although these are difficult to predict they can be mitigated through larger systems that can cope with heavier rainfall, and is more appropriately considered in the Flood Risk Management (FRM) Plan associated with developments. Nonetheless, taking into account the flooding events that have been experienced within the region, it suggests the precautionary principle should be more rigorously applied and needs to be at the forefront of the policy.
- 3.3 In addition, as part of the delivery of the Flood Risk Management (Scotland) Act 2009, SG LSD8 will be required to adhere to and promote compliance with the FRM Plan for the Aberdeen City and Shire area once it is formally adopted, which is anticipated to be in 2015.
- 3.4 The creation of SEPA's new strategic flood hazard maps will provide a potentially more up-to-date and accurate means of identifying areas at risk from flooding and the policy's supporting text should be updated to refer to these.
- 3.5 There are settlements within Aberdeenshire Council which require to build resilience to flooding which have been identified within the settlement analysis. The settlements which are at more of a risk are:
- Banff
 - Fraserburgh
 - Portsoy
 - Peterhead
 - Turrif
 - Ellon
 - Balmedie
 - Inverurie
 - Huntly
 - Stonehaven and
 - Portlethen
- 3.6 Finally, due to the correlation between climate change and flooding, the policy review paper recommends considering flooding within the overarching climate change policy which is being proposed.

4. Response of the Planning system

- 4.1 It is important that the implications of severe weather events and sea level rise are taken into account in the long term, as buildings are built to be occupied for a long time to come. It could be deemed sufficient to rely on existing information (e.g. SEPA's indicative flood maps) and flood risk assessments when determining planning applications. However, given the severity of previous localised flooding and landslip events and the climate change projections, a more precautionary approach to the future risk of flooding should be applied, by setting out the circumstances when development would or would not be allowed on flood risk areas.
- 4.2 In light of this, it is proposed that proposals for new and existing buildings are required to conform to a precautionary hierarchy approach, which supports development, depending on the nature of the proposal and its location. This approach would sustain the FRM Plan message that avoidance is the best solution, be based on vulnerability, and reflect Scottish Planning Policy. How precautionary this policy could be is a matter of debate and depends on the nature of the flood risk likely to be encountered.
- 4.3 Further restrictions could be applied to existing buildings through Article 4 directions, which removes permitted development rights for certain works (e.g. house extensions). These directions are commonly applied within conservation areas, but can be applied in any area. In this circumstance, an Article 4 direction would only be appropriate where there would be an increased risk to human life from a rise in occupancy, especially in areas at risk from coastal flooding, given the projected sea level rise. Such an approach is not recommended as there is scope for misuse or for it to be unduly unfair which do not justify the enormous administrative task of issuing an article 4 direction for all areas at risk from flooding. It would be difficult to enforce future occupancy levels of existing buildings and the use of an Article 4 direction is not supported.

5. The approach of other planning policies

- 5.1 The approaches that other planning authorities have taken in their Local Development Plans and Proposed Plans are outlined below in table 3. The sample has deliberately chosen two extremes of location, a rural and city authority.

Table 3: Approaches of other planning authorities.

Local Authority	Planning Approach
Proposed Dundee Local Development Plan 2012	<p>There is a general presumption against development on previously undeveloped land and development of essential civil infrastructure on high risk areas. A flood risk assessment will be required for any development within the medium to high risk category.</p> <p>Within low to medium risk areas the probability of flooding will be suitable for most development. A flood risk assessment may be required at the upper end of the probability range or where the nature of development or local circumstances indicates heightened risk.</p>
Orkney Local Development Plan – Modified Proposed Plan 2012	Development on land identified on the Proposals Map as being at risk from either coastal erosion or from flooding, or where other available information suggests there may be a risk, will not be

	<p>permitted.</p> <p>There are some exceptions to this where a there is a site flood risk assessment carried out, development is for flood or erosion prevention measures, development is for essential infrastructure or it is within a built up area and complies with the flood prevention or management measures.</p>
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5.2 There is a fairly standardised position between the local authorities that development in areas which are classified as medium to high risk should not be permitted. Dundee City Council also states that development within low to medium areas may require a flood risk assessment depending upon the nature and the probability of flooding.

6. What are the policy options?

- 6.1. There is a general consensus that climate change will have an impact on sea levels and increase the severity of weather events, as shown by the UKCP09. Given the ongoing need to maintain flood defences, it is impossible to rely on them therefore development on the periphery of flood risk sites should be avoided. In light of this, one option is to apply greater aversion to flood risk for new developments by adopting a more precautionary approach, which sets out when new proposals would or would not be supported in principle in flood risk areas. In light of this a number of approaches could be considered.
- 6.2 Developers could be required to prepare flood risk assessments for all development proposals in flood risk areas taking into account the worst case projections for sea-level rise and all forms of flooding. This is the ultimate expression of the precautionary approach. Subsequently new developments should not be supported where there is a significant forecast flood risk (1 in 200 years or less), except in exceptional circumstances and where flood resilience measures are incorporated into the build. Even where flood prevention measures are in place, or are proposed to reduce risk to a smaller probability, flood mitigation measures should be adopted to safeguard against flood defence failure.
- 6.3 The weight given to the “exceptional circumstances” in this context will depend on the level of flood risk, the duration of occupancy, and ultimately the number of lives that could be at risk.
- 6.4 This approach is likely to shift the level of risk that is currently acceptable to a new, higher, level, as we can expect risks to increase with time and today’s 1 in 400 year risk may become a 1 in 200 year risk by the end of the buildings life. It therefore becomes appropriate to treat the proposal as if it were already in such a position. Climate change is inevitable and this would be an appropriate response to that inevitability.
- 6.5 An even more precautionary approach could be adopted where all development is refused on land at risk from flooding (particularly coastal), in a process known as “programmed” or “partial” retreat. However, although the UKCP09 projects that climate change will have a particular impact on sea levels there is currently insufficient evidence on the likely impact to coastal areas to support this approach. It is no longer likely that properties in at-risk areas will be able to be insured, leading to these areas becoming, effectively, un-mortgageable. This would, in turn, bring about a drop in property values leading to an unmanaged retreat from these areas as the risk to the developer’s investment would result in no renewal or regeneration.
- 6.6 An alternative approach would be to retain the policy as it is and delay update until the content of the FRM Plans, scheduled for 2015, and the strategic flood hazard maps is known. This approach is based on current information to flood avoidance but it does not set the context on when the precautionary principle should be applied. At present, SEPA’s flood

maps generally indicate when a flood risk assessment would be required. As such, it does not take a long term view of avoiding sites that in the future could be at risk from flooding from fluvial or tidal sources.

7. Conclusion

- 7.1 In the light of new thinking about the resilience of the existing flood defences and due to the inevitable increase in flood severity there is a need for an amended flooding and erosion policy.
- 7.2 There is an existing policy in place but the information above highlights there is a clear need to amend the policy. Given the climate change projections and severity of recent flooding and landslip events in Aberdeenshire both on the coast and inland a more precautionary approach to the future risk of flooding should be applied.
- 7.3 Other approaches have been considered and dismissed and the preferred alternative for Aberdeenshire Council is to increase the application of the precautionary approach by using worst case scenarios for the calculation of flood risk through requiring the addition of a 10% margin on all calculations, and requiring flood resilience in all areas so affected.