



Leicester
City Council

OVERVIEW AND SCRUTINY MANAGEMENT BOARD

7th December 2010

**Environment and Sustainability Scrutiny Task Group Report on Leicester's
Flood Management and Alleviation Arrangements.**

Report of the Environment and Sustainability Task Group.

1. Summary.

- 1.1 This report provides Overview & Scrutiny Management Board with the findings of the Environment and Sustainability Task Group review into Leicester's flood management and alleviation arrangements. It seeks to identify the future managerial, structural, financial and networking arrangements required to maintain and improve flood risk management and alleviation arrangements.
- 1.2 Flood Risk Management is a vital corporate and cross agency issue that has major implications for Leicester. It has gained in importance and recognition in recent years as a result of incidents across the country and the anticipated affects of climate change. The Environment Agency (EA) has now published the Draft Catchment Flood Management Plan for the region. In the plan, the Leicester Principal Urban Area has been identified as being at significant risk of flooding from surface water (pluvial flooding) – that is flooding from heavy rainfall events and ordinary watercourses and not main river events. Leicester City is in the top ten "at risk" authorities with 15,200 properties at risk of surface water flooding. This report focuses on pluvial flooding rather than fluvial flooding as this is the type of flooding most likely to affect the city.
- 1.3 One of the most constructive aspects of the review was the very positive collaborative approach adopted by all those involved especially staff from external agencies who attended the meetings. As a consequence the partners from all the agencies involved have committed to strengthening and developing their networks.

2. Key Recommendations

- 2.1 It is recommended that the OSMB endorses the report and that the following recommendations are forwarded to Cabinet. In addition, Cabinet should be asked to consider this report in relation to the One Leicester Priorities.

2.2 Coordination

- 2.2.1 As a Lead Local Flood Authority (LLFA), Leicester City must continue to support and develop internal coordination and external joint working with partner agencies to mitigate against the risk of flooding, by continuing to be an active member of multi-agency groups. In the past the Council has tended to have an inward focus but it should now turn its attention to outward facing relationships, some of which is already happening. The key joint working groups necessary for the development of Surface Water Management Plans (SWMP) are the SWMP Partnership, the Local Resilience Forum, the Flood Risk Management Board and internal working groups.

2.3 Staffing and Expertise

- 2.3.1 Arrangements must be put in place to ensure the Council has sufficient staff with appropriate technical expertise to deal with the challenges ahead.

2.4 Funding

- 2.4.1 Appropriate levels of funding must be allocated to flood alleviation and management to fulfil the role of a LLFA and avoid a situation where funding is allocated reactively.

2.5 Communications

- 2.5.1 The Council should continue to build upon the work already completed by the Emergency Management Team in developing the Flood Plan for Leicester.
- 2.5.2 The Council needs to liaise with member and residents concerning their flooding issues without overly raising their concerns or expectations.

2.6 Leadership

- 2.6.1 The Council should ensure it carries out its responsibilities and duties as LLFA under the new Flood and Water Management Act and the Flood Risk Regulations.
- 2.6.2 An internal corporate working group should be set up to take forward the various implications of the above Acts and Regulations.

2.7 Planning

- 2.7.1 The Council's planning and highway services should ensure surface water drainage is embedded within their working practices by developing appropriate surface water flood risk management policies, steering development to areas at least risk of flooding and requiring developments to incorporate Sustainable Urban Drainage Systems (SUDS) within their working practices. The planning services' Information Services team should integrate surface water flood risk into existing Geographical Information Systems to ensure that a Preliminary Flood Risk Assessment (PFRA) is in place by 22nd June 2011 as required by the Flood Risk Regulations.

3. **Background**

- 3.1.1 A significant flood in Leicester could have considerable impact. As well as loss of life, there could be damage to homes and workplaces, loss of power, an inability to

access food and clean water and the need to evacuate people. It is also likely there would be disruption of Council services.

- 3.1.2 The last time that the Council was able to make significant investment in flood management work was in the 1970's when flood prevention reservoirs were created. These had been established to manage fluvial flooding i.e. flooding from rivers and watercourses and have continued to be maintained ever since. However it is anticipated that as a result of changing weather patterns, flooding in Leicester in the future would be increasingly pluvial i.e. arising from rainfall as surface water run off rather than river discharge.
- 3.1.3 It is anticipated that rainfall will increase significantly in the future, with increasing amounts of rainfall over the winter and more short intense rainfall events occurring in summer. These downpours could result in pluvial flooding with little advance notice, whereas fluvial flooding is easier to anticipate.
- 3.1.4 As the city is increasingly built on its drainage pattern changes. When rain falls on an undeveloped area it is absorbed into the ground, where it passes slowly to a water course and drains away naturally. As it discharges to watercourse relatively slowly it is less likely to lead to flooding. When open areas are built upon, rain water cannot be absorbed so flows to the nearest drain. Drains move the water quickly to watercourse without any of it been absorbed naturally by the ground, which can lead to flooding in that area as there is a larger volume of water arriving more quickly. This is exacerbated by the changing weather patterns, the city's essentially Victorian sewer system which is designed to deal with steady rainfall, sewers becoming blocked, problems with highways drainage, and private sewers not being built or maintained to a sufficient standard.
- 3.1.5 The Council's current flood management and alleviation work is fragmented across the authority. For example, flooding is a key risk identified in both the Climate Change Adaptation Plan, managed by the Environmental Sustainability Service, and within the emergency planning processes, managed by the Emergency Management Service. However, when floods happen they are managed by the Highway Maintenance service who also deal with day to day drainage issues and maintain existing highway drains. They are also currently carrying out the Surface Water Management Plan Study including the Strategic Flood Risk Assessment Level 2 and the PFRA.
- 3.1.6 Under the Flood Risk Regulations 2009 and the Flood and Water Management Act 2010 the Council has now become a LLFA. The burdens and duties placed upon LLFA's include:
 - Developing appropriate local flood risk management strategies and undertaking a leadership role
 - Undertaking Surface Water Management Plans (SWMP) and Flood Risk Assessments (FRA)
 - Delivering early action and priority actions
 - Mapping and registering significant flood defence assets and features including 3rd Party assets

- Coordinating partnership activity with key partners and stakeholder
- Coordinating and running oversight and scrutiny involvement
- Administering consents regarding private changes to watercourses
- Regulating Sustainable Drainage Systems in planning applications and developments etc.
- Managing local Resilience Forum and emergency responses during times of flood
- Communicating with the public

3.1.7 In addition the Council as LLFA has to deal with the EU Floods Directive requirements (covered by the Flood Risk Regulations 2009 and the Flood and Water Management Act 2010) which are:

- Preparing a Preliminary Flood Risk Assessment (PFRA), maps and plans for surface water flooding, flooding from ordinary watercourses and other causes of flooding not the responsibility of the EA, and excluding sewer flooding which is not caused by precipitation
- Submitting the PFRA to the EA by **22nd June 2011** after scrutiny by Members
- Identifying areas of significant flood risk through the PFRA's
- Preparing flood hazard maps and flood risk maps by **22nd December 2013** for identified areas of significant flood risk
- Preparing Flood Risk Management Plans (FRMP) by **22nd December 2015** for identified areas of significant flood risk
- Engaging with public and relevant authorities in the production of Directive deliverables

3.1.8 The Council has established a formal project to manage the production of a SWMP and a Strategic Flood Risk Assessment (SFRA) Level 2, which will enable the Council to identify to identify areas of significant flood risk, prepare appropriate FRMP's and put forward schemes for construction of flood relief works. In addition the SWMP will comply with the requirement of Planning Policy Statement 25.

4. Membership of the Task Group.

4.1 The members of the Task Group were Councillors Joshi (Chair), Desai (Vice Chair), Bajaj, Byrne, Grant, Mugglestone, Shah and Manish Sood. The Task Group met 8 times between September 2009 and May 2010.

4.2 The officers involved in the review are listed in appendix 1.

5. Terms of Reference.

5.1 The Task Groups Terms of reference were:

- To examine the Council's responses and functions relating to strategic flood risk management arrangements
- To recommend responses and functions to enable the Council to provide a clear and robust structure to deal with, and alleviate, flood risk within the city. For example project management arrangements, the prioritisation of flood management and alleviation within the Council's priorities and whether the establishment of a corporate Flood Risk Manager post would be an appropriate response
- To recommend to Cabinet, if appropriate, strengthened and closer relationships with neighbouring authorities, including the County and District councils, the EA and Severn Trent Water
- To identify the long term funding and other resources needed to implement the findings of the review

6. Method of Investigation.

6.1 The Task Group gathered its evidence and reached its conclusions through the following methods:

- Presentations from Council staff as well as those from Leicestershire County Council, Doncaster Metropolitan Borough Council, Severn Trent Water Ltd and the EA
- In depth questioning of those that had presented information
- A site visit to the Hamilton SUDS scheme.
- Examination of technical reports, emerging legislation and other documentation e.g. "Flooding is a Common Enemy" and EA and Department for Environment, Food and Rural Affairs (DEFRA) guidance.
- Case studies from other local authorities, in particular the experience of Doncaster in the aftermath of the recent flooding there

6.2 The Task Group developed a project plan (appendix 2) in order to identify and programme the various topics which were investigated.

7. Findings

Role of the Environment Agency in Flood Management.

7.1 A presentation was received from the EA's (Midlands East Area) Area Flood Risk Manager on the role of the EA in dealing with flooding and its current work programme.

7.2 The EA has a key role in relation to flood defence, flood risk analysis and mapping, flood risk management activities and in helping to coordinate arrangements with key partners. A key element influencing the work of the EA are Catchment Flood Management Plans, whereby partners work with agency to identify and agree policies to enable sustainable flood risk management to be delivered. The River Soar is covered by the Catchment Flood Management Plan for the River Trent and its tributaries. This is significant in terms of flood risk management as the River Trent carries one-eighth of the country's surface water run off to sea.

The EA has proposed actions to implement the preferred policy in the Leicester area as follows:

- Provide a more accurate and community focussed flood warning service
- Investigate upstream storage for "at risk" urban centres, including the six small watercourses running through Leicester
- Support the production and implementation of an integrated drainage strategy for urban areas, to reduce the incidence of surface water and foul water flooding by involving Severn Trent Water Ltd more in flood risk management
- Investigate opportunities for creating green corridors along watercourses through urban centres. Identify mechanisms for achieving this and implement by working with planners and by building partnerships with local authorities
- Investigate flood risk resilience for infrastructure such as roads e.g. the A47 and A50 and several "B" roads round Leicester

7.3 The flood risk management policy specifically identified for the River Soar, and therefore Leicester, aims to hold the level of risk at present levels. The policy acknowledges that more investment /works will be required to maintain risk at its current levels. This is a response to potentially increased risk from urban development, land use change and climate change and acknowledges the high number of properties at risk from flooding.

7.4 Local Area Agreements are an important element of flood management work, with the EA being a named partner in certain national LAA indicators. In particular the Environment Agency is encouraging all local authorities to consider adopting LAA indicators 188 and 189. In addition the EA is a statutory consultee on planning applications affecting flood zones or large planning applications.

SUDS and Biodiversity Issues.

7.5 A presentation was received from the Council's Planning Policy and Design Landscape Planner on SUDS and their application to flood alleviation and management.

7.6 Built up areas need to be drained to remove surface water. Traditionally this has been done using underground pipe systems to prevent local flooding by conveying the water away as quickly as possible. However the alteration of natural flow patterns can lead to problems further down the catchment area. In addition conventional systems largely ignore amenity issues such as community facilities, landscaping potential and

the provision of varied wildlife habitats and can in fact cause flooding, pollution and environmental damage. The SUDS approach addresses these issues.

7.8 SUDS aim to mimic natural drainage systems by managing water as close as possible to its source. It is different to conventional piped systems in combining a range of techniques that can be employed depending on the actual site and its context. Essentially there are 4 types of control:

- Prevention – minimise areas of hard impermeable surfaces, good site design to reduce/manage run off and pollution
- Source control- manage run off as close to source as possible
- Site/local control – managing surface water run off for several properties
- Regional control – managing run off from a whole site/catchment

There are a range of techniques for delivering SUDS:

- *Control of rainwater at source:* This approach utilises techniques such as green roofs and permeable pavements. Green roofs reduce peak flow and the total volume of water discharged and in addition can enable the reuse of water as a substitute for mains water e.g. for watering gardens. Permeable pavements allow water to drain straight into the ground and can eliminate the need for surface water drains and off site sewers.
- *Infiltration techniques:* These are either infiltration trenches or filter drains. An infiltration trench is a shallow trench filled with stones which holds on to storm water and release it slowly. Filter drains are commonly used on highways and pollutants are removed by absorption, filtering and microbial decomposition in the surrounding soil.
- *Swales and Basins:* Swales are grassed depressions which lead surface water overland from the drained surface to storage or discharge system, typically using the green space of a roadside margin. They may be used to replace conventional roadside kerbs, saving construction and maintenance costs. Compared to a conventional ditch, a swale is shallow and relatively wide, providing temporary storage, conveyance, treatment and the possibility of infiltration under suitable conditions. A basin is designed to hold back storm runoff for a few hours and to allow the settlement of solids. They are dry outside of storm periods. They provide temporary storage for storm water, reduce peak flows to receiving waters, facilitate the filtration of pollutants (deposited and incorporated into the substrate) and encourage microbial decomposition, as well as allowing water infiltration directly into the ground.
- *Ponds and wetlands:* Ponds or wetlands can be designed to accommodate considerable variations in water levels during storms, thereby enhancing flood-storage capacity. Although these can be designed as wet or dry ponds, or wetlands, they are most likely to contribute to visual amenity and biodiversity where they include a permanent water body. By allowing adequate detention time, the level of solids removal can be significant. The algae and plants of wetlands provide a particularly good level of filtering and nutrient removal.

- 7.9 The Task Group visited the SUDS Scheme in North Hamilton in Leicester which is one of the oldest SUDS on this scale in the country. Details of the scheme are contained in appendix 3. This is a residential development on former agricultural grassland that uses a combination of swales and ponds. The aim of the scheme was to mimic natural drainage patterns removing the need for traditional sewers. There is a network of channels and rills that allow for natural soak away and controlled flow first to the ponds and then finally the nearby Melton Brook. The main driver for the use of SUDS was the existing flooding problem with the brook. The SUDS prevents too much water from entering the brook at times of heavy rain and so reduces flood risk problems in the Belgrave and Rushey Mead areas of the city. The development provides a pleasing visual amenity and although only in its infancy already looks well established and mature with a combination of open water, marginal vegetation and reed beds which all enhance the biodiversity value of the site. Wildlife which has been attracted to the area included the rare Gadwall duck.
- 7.10 When constructed the Hamilton scheme was fairly groundbreaking. However there are a number of limitations with the scheme. There is no source control which would have limited the amount of water entering the swale system and improved the quality of the water through filtration and microbial decomposition. In addition the scheme. The steepness of the slope generally throughout the site has caused some scouring of the channel beds because of the speed of flow. In addition the longitudinal slope makes it difficult for the establishment of vegetation which in turn means that gabion mesh has had to be installed to consolidate some of the banks. Grass cutting is also difficult because of the steepness. In addition some of the headwalls surrounding the streams as they pass under roads and pavements do present a health and safety issue.
- 7.11 The Hamilton scheme, in common with many SUDS, provides an environment where young people are in close and regular contact with water and there are clearly associated hazards. However in order for flooding to be reduced and mitigated these sorts of schemes are essential. Communities must relearn how to live around water and a balance must be struck between the risk to human life from SUDS and the likely increased risks presented by serious flooding episodes.
- 7.12 A presentation was received from the Council's Planning Policy and Design Nature Conservation Officer on further biodiversity aspects of flood management and alleviation.
- 7.13 There are a number of key initiatives and policies which are driving biodiversity and its relationship to flood risk.
- 7.14 New developments offer many opportunities to support and improve biodiversity e.g. the proposed Ashton Green site.
- 7.15 Rivers provide natural corridors along which both wildlife and plants can move. Existing brooks running through concrete culverts can be naturalised back to their original state thereby improving their flood capacity as water can drain into the adjoining land. Braunstone Brook, Evington Brook, Knighton Brook, and willow Brook could all benefit from this approach. The Abbey Meadows Regeneration area has benefitted from the development of wetlands which will serve to hold back water in the event of flooding. The area has benefitted from reed bed planting and the development of ponds and scrapes in the John Ellis playing fields. Similar features have been developed adjacent to the River Biam at Aylestone Meadows.

- 7.16 SUDS can be established quickly and can if implemented well provide good wildlife habitats. In addition SUDS can also be retro fitted which is the case with the John Ellis and Aylestone Meadows features. The Council is a large land owner and its parks and schools grounds in particular provide opportunities to increase biodiversity through the creation of wetlands. Where safety is an issue SUDS can be created which are merely shallow basins that only become wet at certain times.
- 7.17 Previously the EA has been very willing to support schemes such as the naturalising of brooks but it is not yet known what level of funding the government will allocate for this type of work. At present funding is generally geared to outcomes, which in this context is the protection of people and buildings, although part of the scoring of outcomes is for biodiversity.
- 7.18 Many developers are not aware of the biodiversity issues and the amenity value which can be added by developing SUDS and wetland environments. The Council should do more to make developers aware of the need to create multi functional areas in developments and rectifying should be a role for the Council's planning service. Severn Trent Water Ltd already encourages SUDS as part of repair and maintenance work.
- 7.19 However there is a concern that some of these biodiversity issues would not be well received by all developers, as they are already asked to finance a wide range of other things, such as Section 106 payments, parking schemes and community facilities etc. It could be that developers would find it more acceptable if robust financial information could be provided which demonstrated positive impact on costs e.g. savings from a green roof.
- 7.20 The role of land management companies in maintaining and developing biodiversity is not yet fully established and is an area which needs further investigation.

Riparian ownership

- 7.21 A presentation was received from the Council's Highways Maintenance Acting Group Manager on the issues of riparian ownership and the implications for the Council.
- 7.22 A Riparian Owner (RO) is the owner of land adjacent to a river or watercourse. In most cases the RO owns the bank and bed up to the centre line. The Council has certain rights and responsibilities relating to riparian ownership.
- 7.23 The Council is a significant land owner of the city's water course network and has responsibilities to maintain brook banks. This is a significant liability which requires appropriate levels of funding to be established in order to properly maintain watercourse banks and infrastructure in the future. There is presently a small allocation of £35,000 from the highways revenue maintenance budget for watercourse maintenance. This primarily is spent at times of heavy rainfall on cleaning and clearance activities. The current funding is insufficient and means we have to rely on a reactive approach i.e. we only act when we have to. As a consequence the infrastructure is not maintained as well as it could and potentially problems are being stored up for the future. In addition there is currently a £50,000 allocation in the Capital Maintenance Programme for water course maintenance.

- 7.24 The Council also has powers (but not a duty) to do works and take action where others have failed in their duty. The EA undertakes maintenance works on Main Rivers and Critical Water Courses for the purpose of maintaining the free flow of water only. This means that unless it is for the free flow of water they will not maintain brook banks belonging to other RO's or remove fly tipped material, litter or debris.
- 7.25 The Council owns considerable areas of land in the form of housing estates, footpaths and roads, parks and other green spaces etc. These areas usually contain a considerable number of drainage features such as gullies and drains, surface channels, ditches, land drains, catch pits etc. The full extent of these features is unknown and as a consequence many receive little or no maintenance. In some cases they pose a potential flood risk but the extent of the risk is not known. The mapping of all these features and inclusion on an asset list is now required under the Flood and Water Management Act and as such appropriate levels of funding will have to be made available to complete the task.

Current and proposed regional joint arrangements for dealing with flooding

- 7.26 A presentation was received from Ian Smith, the Flood Project Manager with Leicester, Leicestershire and Rutland Local Resilience Forum (LL&RLRF).
- 7.27 The aim of the LL&RLRF is to ensure the duties set out in the Civil Contingencies Act 2004 are achieved within a multi agency environment. These are to:
- Cooperate and share information with local responders
 - Assess the risk of emergencies in the area
 - Put in place business continuity management arrangements
 - Put in place arrangements to warn, inform and advise the public in the event of an emergency
 - Provide advice and assistance to businesses and voluntary organisations about business continuity
- 7.28 Under the Civil Contingencies Act the Council is a Category One Responder and as such is at the core of planning and responding. Flooding is one of the major threats that the LL&RLRF has to deal with.
- 7.29 The structural links between the key flooding agencies within the LL&RLRF are set out in appendix 4. The key groups are the Flood Risk Management Board and the Flood Working Group. The Flood Risk Management Board operates at the strategic level across the whole of the LL&RLRF area managing all aspects of flood relief management. Its members operate at senior officer/director level and it oversees Surface Water Management Planning projects.
- 7.30 The Flood Risk Management Board is developing Community Flood Plans for each of the 9 areas within the LL&RLRF area. The Leicester City Community Flood Plan is probably the most advanced of these plans at the current time. In order to make it more manageable the city's plan is broken down into the areas considered to be at most risk. These comprise of:

- Aylestone
- Aylestone Lock
- Belgrave
- Braunstone
- Frog Island
- Blackfriars
- Knighton
- North Evington
- Rushey Mead
- Spinney Hills
- Stocking Farm

7.31 A new post of Community Volunteer Coordinator has been established by the LRF. The Community Volunteer Coordinator is responsible for managing the team of over one hundred Community Flood Wardens. The Community Flood Wardens work with community groups and organisations in areas of high flood risk to make them aware of flooding and what can be done to alleviate it. The Wardens also report on developing situations but are not part of any emergency response and as such are not required to take action in any emergency situations. There are over 40 Wardens operating in the city.

Community Awareness of Flooding

7.32 A presentation was received from the Council's Resilience Manager on the role of the Council in developing community awareness and involvement and in managing public expectations. Details are shown in appendix 5.

7.33 The management of water flow is taken from the "common enemy" doctrine which is itself taken from English Common Law. It states that everyone has the right to defend their property against flooding and can for example divert a watercourse, but they cannot do anything that exacerbates anything for a neighbour. Often the public expect other agencies to take action but this is not a realistic position.

7.34 However the Council can:

- Encourage owners to manage their drainage assets properly
- Ensure we have adequate emergency response plans in place
- Provide guidance, help and assistance during and after a major flood

7.35 The Council cannot and should not:

- Guarantee that a property will never be flooded
- Take on responsibility for defending individual private properties against flooding

7.36 Public expectation can be managed by:

- Raising public awareness of flooding and what individuals can do to deal with it

- Encouraging the public to exercise their right to defend their properties
- Highlighting the benefits of early action e.g. reduced insurance premiums, available grants and peace of mind

How flooding can be responded to - the Doncaster experience.

- 7.37 A presentation was received from the Neighbourhood Manager of Doncaster Metropolitan Borough Council on how Doncaster had responded to the floods of June 2007 and the outcomes and lessons learned.
- 7.38 Doncaster is at the lower end of the Don catchment area and lies in a low lying area at the confluence of several rivers. Furthermore the River Don is tidal in parts.
- 7.39 On one weekend in June 2007 Doncaster received 11 flood warnings and 6 severe flood warnings. Over 3,200 homes were evacuated and 2,275 were severely damaged and over 280 businesses were affected.
- 7.40 Almost immediately members of the public started looking for someone to blame. The Council's immediate priority was the residents and a 'needs-based' response was developed. It was found that those complaining the most were not always those in greatest need. The floods appeared to disable many people's coping mechanisms as their normal daily routines were completely disrupted. Members of the public showed a great desire for information of all kinds and the Council responded by developing a comprehensive communications campaign. However the Council was surprised by the level of media interest in the flooding, some of which was intrusive. The high level of interest sometimes made it more difficult to work in what was already a high pressure situation.
- 7.41 During the immediate response to the flooding the Council suspended much of its normal non essential business. A small team was created to lead on the responses, based on neighbourhood teams, which then drew in "thematic" services as needed. However within the teams there was no demarcation so that the best possible responses could be provided. A team of this nature was able to respond effectively as the members had local knowledge of the areas and were known to the community.
- 7.42 Initially residents were offered practical help but as the need for this reduced it was apparent that they and Council staff needed emotional support. Many did not want formal structured counselling but simply needed someone to tell their story to. Many residents went to temporary Council offices simply to talk to staff. As a result some of these offices became a focal point and have since developed as drop in centres offering coffee mornings and computer classes. Many of the staff concerned have now moved on to new jobs in the authority and a lot of them have discovered latent talents in their new roles. Some have gone on to formal training to become counsellors.
- 7.43 Of particular interest is the experience around Toll Bar, a particularly badly hit area on the outskirts of Doncaster which already had high level of deprivation. Toll Bar has a very strong core community which traditionally has mistrusted the Council. Immediately after the flooding there was suspicion amongst some residents that they would be permanently dispersed to other localities. The Council worked hard to quell these fears and ensured that all the evacuated families were temporarily rehomed together in mobile homes specially set up.

- 7.44 Three years on the communities relationship with the Council has improved and there are now new improved facilities in Toll Bar e.g. youth clubs and adult education courses. The police are now reporting reduced levels of crime and anti social behaviour.
- 7.45 The cost associated with flooding were high and many costs are unquantifiable e.g. pressure on staff. The estimated cost of the flooding is £13.9 million with government assistance amounting to £7.5million. After settling an insurance claim Doncaster still has a cash shortfall. There had previously been a perception, particularly among council house tenants, that the Council would sort out any problems that arose, even though it had always been made clear.
- 7.46 Tenants were responsible for insuring the Council owned buildings they occupied. Since the flooding there has been a marked increase in the number of people opting to pay to use the Council's insurance policy.
- 7.47 In order to be better prepared for future emergencies, officers at Doncaster are considering the possible effects of climate change and the likely reaction of communities to these. They have reviewed their maintenance of gullies, drains and other defences, and now feel better prepared for future emergencies, having terminated the gulley cleaning contract and brought it in house. In addition they have increased their neighbourhood equipment stores where boats, sandbags, barrier and signs etc are stored. On the strategic front Doncaster is now fairly advanced in it's mapping of key infrastructure, its Strategic Flood Risk Assessment and in providing technical training for its staff e.g. planners. In addition Doncaster has strengthened its networks and has set up an operational drainage group. Doncaster has found that there has been increased interest in flooding by those communities which were directly affected.
- 7.48 Unfortunately the converse is also the case as Doncaster has found it difficult to generate interest and engagement from those who live in areas not affected by the floods.
- 7.49 As a consequence of the flooding in 2007 Doncaster has achieved a number of things, some of which were unplanned and unexpected:
- Successful response and recovery
 - Improved community engagement
 - Initiatives in employment, training and volunteering
 - Enhanced community well being
 - Higher customer satisfaction ratings
 - Post disaster good practice in housing
 - Stronger statutory and voluntary sector links
 - Shared experience and knowledge
 - Establishment of a National Flood Conference
 - Improved knowledge of risk and impact
 - Improved guidance for residents
 - Improved resilience
 - Investment in flood defences
 - New community facilities

7.50 As a result of its experience Doncaster is now able to offer other local authorities help and advice across arrange of topics associated with dealing with flooding and emergency management in general. Appendix 6 sets out the range of advice which is available.

SWMP's and SFRA's

7.51 A presentation was received from the Council's Highway Maintenance Acting Group Manager on SWMP requirements and the work that the Council has started towards meeting these requirements.

7.52 The national floods of 2007 highlighted the need for greater planning of how surface water should be managed and as a result the Pitt Review was initiated. As a consequence the Flood and Water Management Act has been passed into law in April 2010 and it is this that requires the production of SWMPs.

7.53 A SWMP is a plan which outlines the preferred surface water management strategy in a given location. In this context surface water flooding is flooding from sewers, drains, groundwater and run off from land, -small water courses and ditches that occurs as a result of heavy rainfall.

7.54 The Council's SWMP should establish a long term action plan to manage surface water in an area and should influence future capital investment, drainage maintenance, public engagement, land use planning, emergency planning and future developments. The plan should enable the Council to undertake its role as a LLFA and enable it to produce a comprehensive flood risk map for the Leicester Principal Urban Area as well as a PFRA and a SFRA.

7.55 In order for the Council to complete its SWMP the following tasks are required:

- Establish what flood risk data already exists (maps, asset registers, historical records) etc.
- Undertake fluvial and pluvial flood risk mapping
- Identify hot spots through a risk assessment
- Integrate existing sewer and drainage system data to better understand their role and impact in the hot spot areas
- Produce a comprehensive flood risk map for the whole of the Leicester PUA

The SWMP will allow the Council to identify the key actions which can be taken to reduce flood risk. They are likely to be:

- Creation of planning policies to direct development away from flood risk areas and manage surface water created by new developments e.g. SUDS
- Restore open water course wherever possible e.g. through regeneration
- Appropriate maintenance of watercourses, culverts and highways drainage assets

- Introduction of new flood storage areas wherever possible
- Installation of new flood defence walls where cost effective
- Action plan for resolving surface water flooding issues, based on the benefit and cost of schemes

Highway and Land Drainage Asset Management Initiatives

- 7.56 A presentation was received from the Council's Head of Highways Maintenance on the city's highways and land drainage asset management initiatives.
- 7.57 Leicester, Nottingham and Derby have complementary circumstances and problems in relation to their highway drainage infrastructure and the relevant data which they hold. For this reason the three authorities have bid for funding to undertake a Drainage Asset Management Project (DAMP) and were awarded £700,000.
- 7.58 Nottingham City Council leads on the DAMP and information is regularly exchanged across all three partners through regular meetings.

The Effects of the Flood and Water Management Act on Planning, Policy and Building Regulations

- 7.59 A presentation was received from the Council's Head of Planning Policy and Design on planning and flood risk. Details are contained in appendix 7 (a and b). In summary the planning service complies with Planning Policy Statement 25 by ensuring that flood risk is lessened where possible and not made worse by:
- Steering development to areas of suitable risk
 - Making sure developments are safe from flooding by being resistant or resilient to flooding, safe to leave in an emergency and covered by flood evacuation plans where necessary
 - Ensuring developments do not increase the risk of flooding elsewhere. This can involve where necessary making sure that the water storage capacity of flood zones is not reduced and that surface water remains on site by providing SUDS
- 7.60 The planning service is required to produce a "Local Development Framework" under the 2004 Planning and Compulsory Purchase Act. This framework lays out what development is necessary in the city until 2026, what infrastructure is required to support it, where it could be located and what policies it will be judged against. The first document, the "Core Strategy", lays out strategic priorities and objectives. It includes specific policies on climate change, locating development away from flood risk areas and not increasing flood risk.
- 7.61 The next document, the Site Allocations Document, will show where the major strategic developments in the city are likely to be and what uses would be acceptable in certain areas of the city. As this document states what sites will be suitable for various forms of development it needs to be supported by up to date evidence – including the evidence relating to flood risk provided by the SFRA.

- 7.62 The Council's existing SFRA was based on relatively crude modelling of the River Soar and did not cover all areas of the city but focused on the city centre and four of the city's water courses. The SFRA now needs to be updated to "Level 2" standards set out in "Planning Policy Statement 25: Development and Flood Risk". It will need to assess all forms of flood risk, including surface water flooding. As this requirement ties in very closely to the need to operate a SWMP, the two are being run as one project. Once the SFRA is revised it will be an invaluable tool for developers as well as planning professionals, as they will no longer have to undertake costly flood modelling for each site to identify whether it is safe and appropriate for development.
- 7.63 All applicants, including those applying for "backland" development, are required to provide a FRA as part of a planning application if the site is in a flood risk zone. In order to steer development away from flood risk areas, some developments also require a "Sequential Test", which establishes whether there are any other sites less at risk of flooding which could be developed first. The new Site Allocations Document will mean that this is not required for development in accordance with plan, as it will already have been done.
- 7.64 The Council is in the process of developing Supplementary Planning Guidance on climate change and this will cover a range of issues, such as what land should and should not be developed to how front gardens should be surfaced. The guidance will be an aid for developers and will have several technical appendices (one of which will be more detailed guidance on SUDS) as well as references to other information such as relevant legislation. It is expected that the guidance will be available in the spring of 2011.
- 7.65 The Council is required to consult the EA on any applications in fluvial flood risk zones and all applications over 1 hectare. The EA considers a variety of factors, such as the impact on developments downstream, and whether access and egress from buildings could be under water in a flood and to ensure that all floor levels would be at least 30 centimetres above flood level. The EA's considerations could also include mitigation measures such as SUDS. The EA's comments on applications are not binding, but if the Council wished to go against its advice in relation to major schemes then it would have to be referred to the Secretary of State.
- 7.66 The Flood and Water Management Act will mean that the planning service will need to secure SUDS in more developments – all developments will be required to investigate if SUDS are practical and the Council will be required to adopt SUDS serving more than one property. Thus, as well as having a proactive role in approving SUDS designs, the Council will also have a reactive role through its duties as SUDS adopting body. As the EA deals primarily with fluvial flood risk, they will not always be available to comment if SUDS are required due to pluvial flood risk only. Therefore, the council's planning service will need to build its skills and expertise so as to be able to assess SUDS schemes in these circumstances itself.
- 7.67 SUDS schemes are built to a certain standard – to deal with a certain volume of water. If the volume of water entering a system increased due to development upstream, the system could potentially not cope. The Flood and Water Management Act gives the City Council the power to designate areas as having an impact upon surface water drainage, so such development could potentially be resisted. To exercise this power is likely to involve significant resources and technical knowledge. Another aspect which needs to be considered when dealing with SUDS schemes is their adoption and future maintenance. The Act states that the local authority will be

responsible for this, leading to an increased maintenance costs, and reinforcing the need to make sure that SUDS schemes are well designed as the City Council may have to bear the cost of resolving any issues at a later date. The issue of adoption will require further investigation.

- 7.68 The use of block paving and other bound surfaces e.g. concrete and tarmac, is an increasing problem as it presents an impermeable surface thereby causing more water to reach the drainage system. There has been an amendment to the Town and Country Planning Act (General Permitted Development) to allow local authorities to control the use of domestic hard standing in some circumstances. In some circumstances the new regulations require planning permission for paving over 5m², unless permeable paving is used or the water drains to a flower bed or purpose built soak away. However there are limitations on how effectively this can be enforced, as it is resource intensive. Also, until the SFRA has been published, it is difficult to prove that a particular block paving scheme could cause harm to properties or by increasing run off going to gulleys or overloading storm sewers.
- 7.69 The Code for Sustainable Homes is the national standard for design and construction of new homes. It measures suitability against 9 criteria and produces a 1 – 6 star rating representing sustainability performance. The management of surface water run off from development criteria is aligned to Planning Policy Statement 25 (PPS25): Development and Flood Risk. The criteria aim to encourage new developments to avoid run off, or at least to delay run off to manage impact on local flooding. The Council's Building Control Services section potentially has a significant role to play in ensuring that new buildings are flood resilient and the Code for Sustainable Homes is partly delivered through building regulations. Changes this year to the Building Regulations have made it mandatory that repairs to buildings incorporate flood resilience in certain circumstances. However, since not all new developments use the Council's Building Regulation Service, there are limitations in the extent to which the Council can use building regulations to drive flood resilience in all new constructions in the city.

8. Detailed Recommendations

The detailed recommendations of the Task Group are as follows:

Coordination

- 8.1 Flood risk management applies to the whole authority e.g. parks, housing, highways, schools and the Council as a RO etc. It is therefore essential that the various services within the Council recognise their responsibilities and work together across services.
- 8.2 The review has given the participants the opportunity to improve the way in which they work together. The Council officers who participated in the task group should form the core of a permanent working group and links should be developed from this group to the Reducing Carbon Footprint Board. The group should be led by a relevant Head of Service supported by the Flood Risk Manager (a temporary secondee is currently covering the post) which should be positioned in the Highway Maintenance Section. Further links should be made with the proposed Surface Water Management and Drainage Group which will be a sub group of the LL&RLRF Flood Working Group. Council staff with technical expertise in areas such as drainage, planning and environmental services should be involved.

- 8.3 There is a need for a new approach to managing flooding e.g. the development of SUDS and green corridors which increase bio diversity and act as storage for water in times of flooding. The Council should do more to make developers more aware of the need to develop multi functional areas in developments where these things can be included. Delivering a quality SUDS scheme requires expertise in planning, engineering/hydrology, the local drainage situation and biodiversity and landscaping - greater coordination between partners will create the opportunity to provide developers with consistent and unified advice and could encourage developers to consider approaches which they might otherwise ignore.
- 8.4 The Council should lead by example and ensure that all its developments are exemplar schemes and they fully integrate surface water management into the design of buildings and spaces, including consideration of their future maintenance.

Staffing and Expertise

- 8.5 Although the Council is making good progress with its SWMP, there are key challenges set down for the authority as LLFA within the Flood and Water Management Act. This is a large and emerging area of work where many aspects are still uncertain. Consequently the need to have sufficient staff capacity with the appropriate technical expertise is crucial. In this respect succession planning is essential to ensure that work can carry on uninterrupted.
- 8.6 A new permanent post of Flood Risk Manager should be created based within the Highway Maintenance Section. This post should provide overall coordination of the Council's flood management effort and should manage the strategic links with external and internal partners e.g. Climate Change Board, Resilience Manager, Highway Maintenance, Planning, Environment Agency and Severn Trent Water etc.
- 8.7 The Council's Resilience Management Team should be responsible for delivering publicity campaigns as regards flood risk management.
- 8.8 There is a need to recruit new staff and to train existing staff to meet future requirements and embed new thinking e.g. drainage technicians and planners. Joint training in flood defence techniques should be provided across Council service areas e.g. schools, housing and property services. Many staff are currently unaware at present that there areas of work have a link to flooding.
- 8.9 Flood risk can best be represented in an emergency situation by making efficient use of Geographical Information Systems, as opposed to paper documents. A further investigation of the integration of corporate GIS structures, such as City Streetz (the Council's corporate mapping system), and flood risk management should be conducted and that adequate staff and equipment are available.
- 8.10 It is essential that the Council ensures that sufficient funding is available to fulfil its obligations. To date £250,000 of external funding has already been received from DEFRA to assist the development of the SWMP and £80,000 from New Growth Point Funding to assist the production of the SFRA, as was a further £10,000 to produce a PFRA (subject to DEFRA funding settlements). The SWMP will ensure the behaviour of surface water is fully understood and will form the basis for all future

work associated with mitigating the effects of flooding and reducing of the risk of flooding to the city's infrastructure and residents.

- 8.11 In the past there has been systematic neglect of assets due to competing pressures on resources. Because it is often more expensive to reinstate faulty infrastructure than to maintain it on a regular basis there are now considerable financial pressures facing the Council. In addition there is now an opportunity to alter some of the schemes implemented in the past. For example it is now known that the use of canal like concrete channels to remove flood water can be counter productive. Current thinking is that many watercourses should be left in a more natural state so that any overspill can enter the surrounding ground. The cost of reinstating some of these projects would be considerable. Sufficient investment should now be given to ensuring that all infrastructure is adequately maintained in the future.
- 8.12 In addition sufficient funding needs to be available to ensure that staffing resources referred to in 8.5 to 8.9 above are adequate to meet future challenges. Consideration should be given to providing financial support for the LL&RLRF Community Flood Wardens' scheme.
- 8.13 An analysis of all potential funding streams should be carried out. This would entail internal as well as external funding that is available. Such an analysis should be coordinated by the Flood Risk Manager.
- 8.14 Current indications are that the Council will receive around £200,000 p.a. in either formula or area based grants in order to fulfil its statutory flood risk management requirements. Although this money will not be ring fenced it is vital that it is retained and spent on flood risk management i.e. staff not works.

Communications

- 8.15 Effective communication is vital in raising the awareness of flooding amongst the general public. The post of Community Volunteer Coordinator, which is funded by the Flood Resilience Forum, is key in delivering the message to the community. It is recommended that the Community Volunteer Coordinator in conjunction with the Forum should develop a community engagement strategy that identifies venues and events where the message could be conveyed to the public. Many of the Council's facilities are appropriate venues e.g. leisure centres, community centres, housing offices etc. In addition the Council's ward meetings and the Link magazine are other important points of contact with the local community which the Community Volunteer Coordinator could access. In addition the Council's website should be fully utilised for getting the message about flooding out to the public.
- 8.16 Consideration should be given to whether there would be any benefit in using the Council's City Warden's Service as well as parks services staff to communicate the flood message to the general public.
- 8.17 Flood risk management is a national issue and part of the wider field of asset management. For the Council it is a key risk and is highlighted in the Climate Change Adaptation Plan. It is most important that the elected members as well as key officers understand this and their responsibilities within the Flood and Water Management Act.

- 8.18 Consideration should be given to which are the key services which play a part in flood management and the appropriate key posts identified. This report suggests that the strategic key post of Flood Risk Manager should sit in the Highways portfolio but there will be other key posts which need to be identified within other service areas.
- 8.19 We need to manage public expectations and concerns about flooding i.e. Flood Defence Begins at Home.

Planning

- 8.20 The planning function should work more closely with partners to increase the awareness of sustainable development around the “Principles of Making Space for Water” and through the application of PPS25. In particular closer links with EA should be developed.
- 8.21 Fully embed surface water flood risk management in the planning service by increasing skills and knowledge of the area, so that all development contributes to a reduction in surface water flood risk.
- 8.22 Develop a structure for consulting partners on applications with significant surface water flood risk issues, similar to the current system of consulting the EA on fluvial flood risk.
- 8.23 Once the SWMP and SFRA have been produced, provide clear advice to developers as to what SUDS approaches and what level of attenuation will be required in different areas of the City, and develop policies to support this.
- 8.24 Although the Council’s highways service should have the main responsibility for producing an asset register, the planning service should work closely with them as they will have a role in such matters as registering land.
- 8.25 The duty to be a SUDS adopting body is significant, as is the new consent regime for altering designated structures. It would be useful to have representatives for the Council’s planning service at local, regional and national networking events with DEFRA and the EA.

Other Recommendations

- 9.1 OSMB and the Climate Change Priority Board should review at regular intervals the progress made with the recommendations set out in this report.
- 9.2 OSMB should commission a separate report on the implications of, and the technical expertise required, to comply with proposed legislation on SUDS and 3RD Party Assets.
- 9.3 OSMB should request the scrutiny Task Group which is currently looking into the role and function of land management companies to consider the bio diversity issues referred to in paragraph 7.20.
- 9.4 Flood risk management and climate change/biodiversity reporting indicators (NI 188 and N1 I89) are top priorities for the Council. Next year will be the completing year therefore we need to be alert to any changes to the indicators.

- 9.5 Consideration should be given to providing information on flooding to Council tenants and also to building flood resilience into the Council's housing stock. In this respect lesson learned in Doncaster could be useful.
- 9.6 Consideration should be given to the opportunity of establishing formal links with authorities who have suffered recent flooding in order to learn from their experience. As already mentioned Doncaster Metropolitan Borough Council offers tactical and strategic information and support across a range of topics.
- 9.7 Future SUDS within the city should have safety built in from the start. There should also be renewed education and information aimed at the public on the potential danger of standing water. This is especially important as, when dry, some of the SUDS facilities could be available for recreation.
- 9.8 Consider more retro fitting of SUDS where appropriate.

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Appendices

Appendix 1 - List of officers involved in the review.
Appendix 2 - Project Plan
Appendix 3 - North Hamilton SUDS – case study
Appendix 4 - Partnership Arrangements – the Local Resilience Forum
Appendix 5 - Public awareness of flooding
Appendix 6 - List of Advice Services available from Doncaster M. B. Council
Appendix 7 - Report on the Consideration of Flood Risks in Planning Work
(parts a and b)