Dudley
Metropolitan Borough Council

Agenda Item No. 9

Select Committee on the Environment - 21st March 2011

Report Of The Director Of The Urban Environment

Flood Risk Management

Note – Report will be supplemented by a presentation on the evening

Purpose of Report

1 To inform the Committee of the increased roles and responsibilities of the Council, in respect of flood risk management for surface water flooding.

2 To advise on the Council's responsibility to develop and produce a Preliminary Flood Risk Assessment Report (PFRA) and a Surface Water Management Plan. (SWMP)

3 For Committee to scrutinise and approve the methodology used in the preparation of the PFRA.

Background

4 In September 2008 the Select Committee on the Environment received a detailed report from the Director of the Urban Environment on flooding and drainage responsibilities. Although the majority of the report still stands there are specific new roles and responsibilities for the Council following the introduction of the Flood Risk Regulations and the Flood and Water Management Act.

5 In accordance with the Flood Risk Regulations, Local Authorities are required to produce a Preliminary Flood Risk Assessment (PFRA) report. There is a formal requirement in the Flood Risk Regulations for each Lead Local Flood Authority to undertake a formal review/ scrutiny and approval process for the PFRA before submitting to the Environment Agency by the 22 June 2011.

6 In accordance with the Flood and Water Management Act, Local Authorities are also required to produce a Surface Water Management Plan (SWMP)

7 Of particular interest is that all Local Authorities (designated as Lead Local Flood Authorities (LLFA's) now have a lead role to manage flooding at a local level.

Flood Risk Regulations

8 The Flood Risk Regulations 2009 implement the requirements of the European Floods Directive. The aim of the Directive is to provide a consistent approach to managing flood risk across Europe

9 Under the Flood Risk Regulations Lead Local Flooding Authorities (LLFA's) are required to produce a Preliminary Flood Risk Assessment (PFRA). LLFA's are only required to undertake a PFRA for local sources of flooding, but they should consider any interaction between local sources and flooding from main rivers or reservoirs.

10 In order to help LLFA's with their determinations, the Environment Agency has provided a set of 'indicative' significant Flood Risk Areas based on national data-sets.

11 The PFRA is a high level exercise based on existing and available information. It should bring together information from a number of available sources such as the Environment Agency's national information (such as the Flood Map for Surface Water) and existing local information including historical flood event data held by LLFA's, Water Companies and other organisations including British Waterways.

The PFRA involves:

- Setting up governance & developing partnerships
- Determining appropriate data systems
- Collating information on past & future floods and their consequences
- Determining locally agreed surface water information
- Completing preliminary assessment report documents
- Recording information on past & future floods with significant consequences in DEFRA spreadsheets
- Illustrating information on past and future floods
- Reviewing indicative Flood Risk Areas
- Identifying Flood Risk Areas
- Recording information including rationale

Flood and Water Management Act

12 Following the comprehensive review and subsequent recommendations of the 'Pitt Review' of flooding across England, the Government has now introduced the Flood and Water Management Act 2010. The Act aims to improve both flood risk management and the way we manage our water resources. It assigns specific responsibilities to 'risk management authorities' for different sources of flooding. This includes a new lead role for local authorities (LLFA's) in managing local flood risk and a strategic overview/oversight role for all flood risk in England and Wales for the Environment Agency.

13 A key task for LLFA's is the production of a Surface Water Management Plan (SWMP) considering flood risk from surface runoff, groundwater and ordinary watercourses and the interaction with flooding from main rivers, reservoirs and sewers.

14 The aim of a SWMP is to provide a greater understanding of local flood risk and to develop action plans in order to manage associated risks.

15 Key phases in the development of the SWMP are:

- Establishment of a Strategic and Operational Management structure and responsibilities
- Flood data collection and collation along similar lines to that required for PFRA
- Flood risk assessment along similar lines to that required for PFRA
- Development of options for flood mitigation including defence works, property resilience, flood warning schemes and emergency contingency planning
- Borough wide flood hazard and risk maps
- Implementation plan setting out maintenance and improvement regimes for watercourses, culverts, bridge and highway drainage. This should include a formalised process on how particular actions or works have been prioritised
- Establishment of a drainage asset register including all relevant information associated with watercourses, culverts, outfalls, reservoirs, defence structures and sustainable drainage (Sud's) schemes
- Potential revisions to both strategic and local planning procedures in particular alignment with the Black Country Core Strategy and Local Development Plans and enhanced statutory consultations resulting from the outcomes of the PFRA and the SWMP
- Potential changes to emergency and contingency planning procedures resulting from the outcomes of the PFRA and the SWMP

16 In the near future, additional responsibilities will be given to Authorities to act as the Sustainable Drainage Approvals Board (SAB) for all new and in some cases retrospective, sustainable systems. This includes sustainable drainage systems for both council and private development. The Council will be, via the planning development process, responsible for design approval and adoption of all sustainable drainage systems. Adoption will have future additional funding issues associated with maintenance and where appropriate system replacement responsibilities.

Actions to date

Establishment of a Strategic and Operational Board

17 During early 2010, a combined Strategic and Operational Board was established consisting of all identified key partners and stakeholders. Terms of Reference for the Board were agreed with aims and objectives being subsequently set.

18 To date, three board meetings have been held which have proved to be very beneficial in overall management improvements and in particular partnership working.

Data Capture and Collation

Historical Floods

19 Historical flood data was and continues to be captured from several sources including the Council's highways symology database including records of all highway related incidents reported to the Council, Environmental Agency, British Waterways and Severn Trent.

20 More recently, the local community has been invited to submit past flood event records and details via the Council web site and the local press.

21 From the outset and in accordance with DEFRA and EA guidance it was clear that in order to effectively and efficiently capture, handle and collate flood data, the adoption of a GIS based system was critical. Fortunately, the Council have a very comprehensive and well developed GIS system known as GISMO.

22 Dudley MBC has a strong, long-standing corporate outlook in terms of its Geographic Information System (GIS). Conceived in the late 1970's in recognition of the fact that at least 80% of the Council's information holdings are geographic, there are currently over 350 individual 'creators' of data and over 4,500 staff (92% of all networked PC's) who have accessed the intranet version of the GIS (branded as "GISMO" – Getting Information Simply – Mapping Online). The depth of information available corporately is substantial.

23 Over 400 data sources including most of the Council's key business applications are currently accessible through GISMO, resulting in a holding of over 2 million spatial records. This data ranges from an archive of historic mapping and aerial imagery

through planning, electoral, educational, environmental and demographic information.

24 GISMO has proven to change business processes at Dudley, resulting in it being seen as a business-critical application and as such features in the Council's Business Continuity Plan.

25 Several separate layers have been created within GISMO to record, display and facilitate comparison of data sets. GISMO also allows for the creation of flood areas and the facility to extract flood consequence information including people, property and land use data for each specific flood area.

26 The value of GISMO to the Council has been recognised both locally and regionally with Officers of the Council giving presentations at best practice forums organised by DEFRA and the EA.

27 Data was initially interrogated to establish the extent of previous flooding across the Borough and to identify individual flood hot spots. An Initial interrogation of over 1,600 records related to past flooding incidents was undertaken. For this initial interrogation an assumption was made that local flood hot spots would only be established on the basis of at least two separate internal flood incidents at the same location.

28 Filtering of data records suggested 49 hot spot areas within the Borough where properties have flooded (internally more than twice) and 75 locations on highways, again where flooding has occurred more than twice. 20 of the highway floods are associated with Class A roads.

Predictive Floods

29 Over the last several months, the EA, in order to assist LLFA's, has produced a series of predictive significant flood area maps, based on a range of rainfall intensity and storm duration profiles. Initially, the EA produced maps showing areas susceptible to surface water flooding. More recently however, the EA has produced revised maps called 'Flood Maps', adopting modified storm profiles.

30 Both sets of maps indicate areas across the borough where surface water flooding could occur. Interrogation of the maps indicates that areas where surface water flooding could exceed 300mm represent 3% of the Borough area.

31 All EA maps have been incorporated into GISMO creating a specific layer for each data set. (seven in total)

Historical and Predictive flood map areas

32 A comparison between historical flood event hot spots and the EA map predicting where flooding could occur at a depth of over 300mm generally indicates good correlation, with approximately 75% of property hot spots falling within the EA areas (over 300mm deep) compared with 85% of highway related hot spots.

National and Local flood risk

33 Although DEFRA, is establishing a national flood risk strategy incorporating and setting national consequence thresholds, it is LLFA's responsibility to establish what should be classified as significant and important at a local level.

National Significance

34 The generally accepted model for risk assessments is Source –pathway-receptor-consequence. In other words flood surface water – flow paths/low ground areas – people/property – impact/damage. Using this approach, the EA has produced maps for England indicating indicative one kilometre square areas (BLUE squares) where significant flooding could occur. Significant flooding is measured against flood risk (consequence) for human health, economic activity and the environment including cultural heritage thresholds.

35 Three consequence criteria thresholds have been set. Identified BLUE squares contain at least one flood area where one or more of the following is estimated to be above the threshold:

1 Number of People > 200
2 Critical Services > 1
3 Number of Non-Residential Properties > 20

36 Using the above criteria DEFRA/EA produced a series of maps indicating 10 locations in England where surface water flooding is considered to be of national significance. The West Midlands Cluster, made up of the 9 Local authorities, has been identified as nationally significant. Cluster areas have a significant number of touching, close proximity and clustered Blue squares.

37 The overall significance of the establishment of the West Midlands Cluster is at present unknown. However, it is likely that there will be a need for close and collaborative working between the authorities to consider implications.

Local Significant and Importance Criteria

38 As stated above it is the LLFA's responsibility to consider what is a significant or an important flood risk at a local level.

39 There appears to be general consensus that there should be two local risk or risk consequence levels.

40 Locally Significant – For areas that exceed the Blue square thresholds:

1. Number of People > 200
2. Critical Services > 1
3. Number of Non-Residential Properties > 20
4. Closure of Strategic/Regional road links >2 hours

41 Locally Important – For areas that exceed the locally developed thresholds and modifications to the Blue square thresholds.

1. Number of People > 15
2. Critical Services > 1
3. Number of Non-Residential Properties > 2
4. Closure of Local link and residential roads >2 hours

42 A detailed interrogation of all relevant flood data has revealed the following:

43 There are 57 individual BLUE squares (1 Km^2) within the Borough. Although the 57 squares represent approximately 60% of the area of the Borough, the actual area at risk of flooding (flood areas within each BLUE square) is only 3% of the Borough.

44 The 3% is the area of the borough that could be exposed to flooding at a depth of over 300mm. The total flood area is made up of over 6,600 separate flood area locations

45 There are at least 57 individual areas of the borough which exceed the EA Blue square thresholds

46 The number of individual areas of the borough that exceed the local importance threshold is currently being established

47 75% of the 49 historical property flood hot spots fall within the EA flood map indicating flooding of over 300mm.

48 85% of the historical highway flood hot spots fall within the EA flood map areas indicating flooding over 300mm.

49 None of the historical flood events exceed the local significant thresholds

50 7 of the historical flood events exceed the local importance thresholds

51 It is proposed to rank flood events for importance and prioritisation using a locally developed risk scoring process incorporating people groups, area vulnerability, critical structures, environmental and heritage issues. This will assist with prioritisation for future actions including flood mitigation and maintenance works.

Planning

52 Flooding poses a costly risk to property and can also pose a risk to life and livelihoods. It is essential that future development is planned carefully so that areas most at risk from flooding are avoided where possible, ensuring that known flooding issues are not exacerbated.

53 With the additional roles and responsibilities of the Council there is a need to consider how the outcomes of the PFRA and the SWMP can be incorporated into

the Black Country Joint Core Strategy, the Council's Local Development Framework and Local Area Action Plans.

54 The Core Strategy states that the Black Country Authorities will seek to minimize the probability and consequences of flood risk by adopting a strong risk-based approach in line with PPS25. Development will be steered to areas with a low probability of flooding. However, the Black Country strategic flood risk assessment (SFRA) and the Dudley flood map contained in the Core Strategy generally relates to river flooding with little reference to other forms of flood risk and as such will require revision. Other Local Authorities within the Black Country will also be looking to revise the Core Strategy.

55 The Black Country Joint Core Strategy Strategic Flood Risk Assessment (SFRA) was prepared in accordance with PPS 25 'Development and Flood Risk'. PPS 25 states that all forms of flooding should be considered, however PPS 25 refers mainly to river flood risk areas and as such DEFRA is currently considering revisions to PPS 25 to more reflect surface water flooding.

56 At a local level (Planning process for development within the Borough) the only current formal flood risk consultation is with the EA. EA guidance 'Using surface water flood risk information' states that the locally agreed surface water flood risk map information (held by LLFA's) should be taken into account by local planning authorities in the preparation of Local Development Plans and may be material to decisions on individual planning applications. It is therefore necessary that consultation be extended to include officers within the Environmental Management who now have specific responsibilities for local flood management.

57 Officer discussions are ongoing in terms of how the outcomes of the PFRA and the SWMP can be incorporated into regional and local planning strategies and guidelines.

Contingency and Disaster Management Planning

58 Work is currently taking place to determine how the outcomes of the PFRA and the SWMP can be incorporated into emergency and contingency planning which will continue to be developed.

59 How the Council will respond to future flood incidents and what advice we provide to the local community on actions to take to mitigate flooding is also being considered across key partners and identified representative groups.

Ongoing Work

60 GISMO is continuing to be enhanced to facilitate the creation of flood areas and the interrogation of them to provide data on people, property and infrastructure, identifying demographics, critical services and non residential information. This information is critical to the flood risk assessment process and will provide essential support information for external funding opportunities.

61 Statistics obtained will also facilitate the prioritisation of flood risk areas for maintenance, resilience, defence works and emergency planning.

62 Essential work is taking place to populate GISMO with drainage and flood related information to expand GISMO's asset register function and capabilities. Equally, flood risk maps are being produced indicating flood areas of local significance and local importance level.

63 The production of a first draft edition of the Borough's SWMP is due to be complete by March 31st 2011.

64 The production of a PFRA report is to be completed and signed off for submission to the EA by 22nd June 2011.

Finance

65 The Government has recognised that the Flood and Water Management Act and new flood regulations will place significant new burdens on authorities. As such the Government has made various grants available to Council's over the last 18 months.

66 In early 2010, the Council were successful in securing £83k grant funding from DEFRA to assist with the development of its SWMP by March 2011.

67 In September 2010, DEFRA announced an additional grant of £20,000 to Dudley to assist with the implementation of the Flood and Water Management Act and preparation of a PFRA.

68 More recently, the Government announced additional funding for Local Authorities to help with the management of surface water flooding. The Council was awarded £123k and £168k for 2011/2012 and 2012/2013 respectively. Final confirmation of how the grant will be paid has still not been received from DEFRA. This funding can be used for fees and/or works associated with flood management or mitigation.

69 The current land drainage budget is £58,300 for professional fees and £82,100 for works.

Law

70 The Flood and Water Management Act places specific responsibilities on the Council to manage surface water flooding at a local level. Additional responsibilities are expected which will result in the Council becoming the Sustainable Drainage Approval and Adoption Board.

71 The Flood Regulations require Local Authorities to produce a Preliminary Flood Risk Assessment report.

72 The Council by powers vested in them under section 34 of the Land Drainage Act 1976 and as applied by s 98, have issued the "Dudley Land Drainage By Laws 1981" for the purpose of preventing flooding or remedying or mitigating any damage caused by flooding in their area.

73 The Council has powers to undertake work on non ‘Main River’ under provisions within the Land Drainage Act 1991. These generally relate to flood prevention, maintaining flows in watercourses and making bylaws.

74 The EA has powers to undertake work on Main River under provisions within the Land Drainage Act 1991.

75 The Council has duties as riparian owners, being the owner of any land adjacent to a watercourse.

76 Section III of the Local Government Act 1972 enables the Council to do anything that is calculated to facilitate or is conductive or incidental to the discharge of any of its functions.

77 The provisions relating to works on the highway and highway drainage are contained in the Highways Act 1980.

Equality Impact

78 This report takes into account and acknowledges the Council’s Policy in respect of Equality and Diversity in the delivery and maintenance of drainage systems in the Borough.

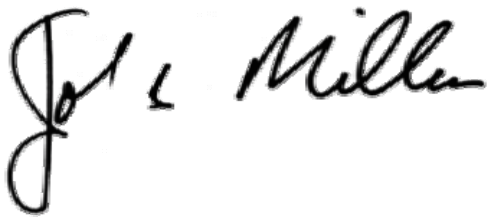
Recommendations

79 That the committee note and support:

80 The contents of this report.

81 The responsibilities of the Council resulting from both the introduction of the Flood Regulations and the Flood and Water Management Act.

82 The approach taken in assessing the risks of flooding in the Borough and the approach of Council Officers in the development of a PFRA.



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List of Background Papers:

The Flood and Water Management Act 2010
The Flood Regulations 2009
Selecting and Reviewing Flood Risk Areas for flooding DEFRA 2010
Surface Water Management Plan Technical Guidance DEFRA 2010
Preliminary Flood Risk Assessment final guidance DEFRA 2010
EA indicative flood risk National area maps 2010
EA indicative flood risk local area maps 2010
EA flood maps for Surface Water (>300mm deep for 1 in 200 annual probability rainfall)