

**REPORT TO: CITY DEVELOPMENT COMMITTEE - 19 AUGUST 2013**

**REPORT ON: DUNDEE COASTAL FLOOD STUDY STAGE 2**

**REPORT BY: DIRECTOR OF CITY DEVELOPMENT**

**REPORT NO: 256-2013**

## **1 PURPOSE OF REPORT**

- 1.1 To advise the Committee of the completion of the Dundee Coastal Study Stage 2.
- 1.2 To seek approval for the City Engineer to progress those physical measures recommended within the study for implementation as funding becomes available.

## **2 RECOMMENDATION**

- 2.1 It is recommended that the Committee:
  - a note the findings of the completed Dundee Coastal Study Stage 2.
  - b authorise the City Engineer to progress prioritised measures for inclusion in the Local Flood Risk Management Plan to such detail as may be required to support an application to Scottish Government for grant funding.

## **3 FINANCIAL IMPLICATIONS**

- 3.1 The Director of Corporate Services advises that an allowance of £1.263 million has been made available within the Council's Capital Budget in order to progress initial designs and funding bids for the required coastal protection measures.

## **4 BACKGROUND**

- 4.1 Dundee City Council as Local Enforcement Authority has powers under the Flood Risk Management (Scotland) Act 2009 and the Coastal Protection Act 1949 to undertake appropriate measures as necessary to mitigate flooding within the City Council boundaries.
- 4.2 Reference is made to Article VIII of the minute of meeting of the Planning and Transportation Committee of 8 September 2008 which advised on the findings of commissioned studies carried out into river and coastal flooding within the Dundee City Council boundaries. Authorisation was also given to proceed with the Stage 2 Coastal Flood Study.
- 4.3 A tender from consultants Mott MacDonald to carry out the study was approved in 2009 (Article XI of the City Development Committee of 8 June 2009 refers). The study was carried out in accordance with the Flood and Coastal Erosion Risk Management Appraisal Guidance 2010 (FCERM-AG 2010), published by the Environment Agency, and the Flood Prevention Scheme Guidance for Local Authorities 2005, published by the Scottish Executive (now Scottish Government).
- 4.4 The opportunity was taken to utilise study work carried out by SEPA in 2011/12 which provided current detailed level information for still water levels within the Tay Estuary at 1:200 year event. By doing so a greater accuracy on design levels has

been achieved when deciding on finalised defence levels for the various management sections.

- 4.5 The study is now complete and the finalised report makes recommendations on three main areas which are sub divided into twelve Management Sections for the 16.5km coastal frontage of Dundee City Council.
- 4.6 The Study has identified that there is a risk of coastal flooding within Dundee, including Central Dundee, Broughty Ferry, Riverside Drive and Dundee Airport.
- 4.7 Coastal erosion risk is primarily a problem at the Riverside Landfill Site, Grassy Beach and Broughty Ferry beach, albeit of varying degrees.
- 4.8 The Study has considered the impact of flooding for a joint probability extreme still water level and wave for return periods of 1, 10, 100 and 200 years. All scenarios are considered with and without 50 years of climate change. In accordance with current Scottish guidance, sea level rise has been derived from the 95th percentile of the medium emissions scenario of UKCP09 (United Kingdom Climate Projections) (Defra, 2009).
- 4.9 As noted in 4.5 above, the coastal frontage of Dundee can broadly be considered as having three main Areas:
- Area 1 – Riverside Landfill Site to Railway Bridge
  - Area 2 – Railway Bridge to Dundee Docks
  - Area 3 – Broughty Ferry
- 4.10 The frontage can be further divided into Management Sections, these being described as the following:
- Management Section 1 – Riverside Landfill Site
  - Management Section 2 – Dundee Airport West
  - Management Section 3 – Dundee Airport East
  - Management Section 4 – Riverside Park
  - Management Section 5 – Riverside Drive West

The following Management Sections are located within Area 2:

- Management Section 6 – Riverside Drive East
- Management Section 7 – City Centre
- Management Section 8 – Industrial Area (Docks)

The following Management Sections are located within Area 3:

- Management Section 9 – Coastal Walk
- Management Section 10 - Grassy Beach
- Management Section 11 – Broughty Ferry Town
- Management Section 12 – Broughty Ferry Beach and Dunes

- 4.11 The twelve Management Sections, all of which have differing characteristics such as the standard of protection required, space for construction, land use and functionality

of existing structures to be upgraded, have been considered including environmental considerations, benefits and costs.

- 4.12 The following table provides a summary of the initial preferred outline scheme for each of the management sections. These costs are based on previous experience of similar schemes and through close liaison with contractors. Sensibility checks were also made through the use of the Environment Agency cost database (EA, 2010).

Management Section	Outline Scheme Description	Estimated Costs
1 Riverside Landfill Site	Monitor	£1,120,000
2 Dundee Airport West	Rock armour revetment extending seaward of existing coastline	£13,585,000
3 Dundee Airport East	Rock armour abutting existing sloped masonry revetment	£2,535,000
4 Riverside Park	Raised earth bund set back from existing coastline	£520,000
5 Riverside Drive West	Rock armour abutting existing sloped masonry revetment	£5,210,000
6 Riverside Drive East	Setback flood defences on landward side of existing car park	£2,575,000
7 Central Waterfront	Raised flood wall	£2,665,000
8 Industrial Area	Continue to liaise with Forth Ports	N/A
9 Coastal Walk	Monitor/maintain	0
10 Grassy Beach/Sailing Club	Monitor and erosion protection for footpath	£210,000
11 Broughty Ferry Town	Raised flood wall with wave recurve and glass panelling	£6,420,000
12 Broughty Ferry Beach & Dunes	Dune recharge/management and rock armour erosion protection where required	£1,146,000

**Total Estimated Cost: £35,986,000**

**Note that the actual measures proposed and subsequent costs may vary as the detailed design and consultation process progresses.**

- 4.13 A prioritised schedule of works has been developed which will mean that, as funding becomes available, the Council will target areas of high risk first thereby spreading the cost of implementation over a number of years. It could be broadly considered that the benefits would be realised sooner if implementation were carried out earlier.
- 4.14 A full Economic Appraisal was carried out in line with current best practice and a summary of the Cost Benefit Ratio is shown for the three areas in the table below.

Area	Option	Benefit Cost Ratio
Area 1- Riverside Landfill Site and Airport	Protect entire frontage with various flood defences	2.2
Area 2 – Central Dundee	Protect Central Waterfront and Riverside Drive	35.8
Area 3 – Broughty Ferry	Protect Broughty Ferry and the dunes	9.8

The Economic Appraisal demonstrates that the upgrading of flood defences along the Dundee frontage is economically justified. The greatest benefits would be achieved in Area 2, Central Dundee, including the Central Waterfront and Riverside Drive. Significant benefits can also be gained in Area 3, Broughty Ferry.

- 4.15 The project planning prioritisation shows that attention should initially be focused on Area 2 – Central Dundee. The modelling demonstrated that whilst upgrading of the defences along the Central Waterfront Development will reduce the risk of overtopping at the Development, the risk of indirect flooding from Riverside Drive and City Quay is not adequately managed. Therefore, in order to defend the assets within the Central Waterfront Development, it is necessary to make provisions for upgrading the defences along Riverside Drive and City Quay. It is recommended that Management Sections 06 and 07 are prioritised for initial progression.
- 4.16 The next prioritised area for coastal protection is Area 3 - Broughty Ferry which has been the subject of historical flood events. It is recommended that proposals for Management Sections 11 and 12 are also progressed for inclusion in the proposed Local Flood Risk Management Plan for the Tay Estuary and Montrose Basin District.

## 5 FUNDING

- 5.1 The Government Spending Review of 2011 changed the distribution methodology for the flooding component (covering flood prevention and coastal protection) of the General Capital Grant. This determined that only large flooding projects costing more than £2 million would be considered for 80% grant funding. At that time projects currently receiving funding had first call on the monies available. This left a balance of £73 million for the period 2012-2015. To date £63 million of this figure has been allocated and Scottish Government are inviting funding applications for the remaining amount from Local Authorities for eligible schemes that have already been granted appropriate statutory consent. As Dundee City Council currently have no such schemes it is unlikely that funding will become available for DCC schemes until after 2015.
- 5.2 The concordat of COSLA and the Scottish Government will not consider either the funding distribution methodology or submissions for funding post 2015 until the funding allocation to 2015 has been determined. It is evident that eligibility criteria post 2015 will be based on:-
- Priority will be given to schemes within an approved Flood Risk Management Plan.
  - Schemes demonstrating a positive benefit/cost ratio and value for money
  - Schemes within a Potentially Vulnerable Area as identified by National Flood Risk Assessment.
- 5.3 Dundee City Council's required Flood/Coastal Protection works do comply with the above eligibility criteria and they will form part of the Tay Estuary and Montrose Basin District Local Flood Risk Management Plan which under the Flood Risk Management (Scotland) Act 2009 is required to be prepared by December 2014 and published by June 2016. The priority of Dundee City Council's proposed coastal protection works against other flood protection measures identified by other member Councils in the Local Flood Risk Management Plan is yet to be determined. Further, the subsequent priority against other schemes on a national basis will not become clear until all 14 Scottish District Local Flood Risk Management Plans are complete in 2016. However, informal discussions have taken place with the relevant Department within Scottish Government to ensure awareness of a future funding bid by Dundee City Council particularly in relation to the timescale for completion of the Waterfront Development and V&A.

- 5.4 It should be noted that details of any major flood/coastal protection works proposed will be considered at future Council committees as appropriate.
- 5.5 The Director of Corporate Services advises that an allowance of £1.263 million has been made available within the Council's Capital Budget in order to progress initial designs and funding bids for the required coastal protection measures.
- 5.6 A Flood Risk Management presentation was given to Councillors on 14 November 2012 detailing the requirements of the Flood Risk Management (Scotland) Act 2009 and the Council's progress towards this. The outcome of the Stage 2 Coastal Flood Study was also discussed. Further updates will be provided as required.

## **6 POLICY IMPLICATIONS**

- 6.1 This Report has been screened for any policy implications in respect of Sustainability, Strategic Environmental Assessment, Anti-Poverty, Equality Impact Assessment and Risk Management. There are no major issues.
- 6.2 In consultation with Scottish Environment Protection Agency, Scottish Natural Heritage and Historic Scotland, it has been determined that the Dundee Coastal Study Stage 2 is likely to have potential significant environmental effects and that a strategic environmental assessment is required. An environmental report has been prepared alongside the Coastal Study Stage 2 identifying, describing and evaluating the likely potential effects on the environment of implementing the Coastal Study Stage 2 and its reasonable alternatives and mitigation measures. The Strategic Environmental Assessment report is included as an Appendix within the Dundee Coastal Study Stage 2 report.

## **7 CONSULTATIONS**

- 7.1 The Chief Executive, the Director of Corporate Services and Head of Democratic and Legal Services have been consulted and are in agreement with the contents of this report.

## **8 BACKGROUND PAPERS**

- 8.1 Dundee Coastal Flood Study Stage 2.

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8 August 2013

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