

Report of Director of City Development

Report to Executive Board

Date: 13 December 2017

Subject: Phase 2 Leeds (River Aire) Flood Alleviation Scheme

Are specific electoral Wards affected?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If relevant, name(s) of Ward(s): City & Hunslet, Kirkstall, Armley, Bramley & Stanningley, Horsforth, Calverley& Farsley		
Are there implications for equality and diversity and cohesion and integration?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the decision eligible for Call-In?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Does the report contain confidential or exempt information?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Summary of main issues

1. In order to maintain the momentum of this fast paced accelerated scheme, this report aims to set the principles of the proposal to be included in an outline business case for funding from the Department for Environment, Food and Rural Affairs (DEFRA) and seeks to delegate authority for its submission to the Director of City Development subject to agreement with the Executive Member for Regeneration, Transport and Planning.
2. During the last two months of 2015 northern Britain received some of the highest recorded rainfall on record, culminating with storm Eva which during the Christmas period led to significant urban and rural flooding across Yorkshire, Cumbria and southern Scotland. Evidence gathered from sites in Kirkstall indicate the flood event that began in Leeds on Boxing Day saw flood water levels rise higher than those in 1866 when a number of lives were lost to flooding in the city.
3. The impact caused by flooding was wide reaching, damaging 2,683 residential buildings, and significantly affecting all scales and sectors of commercial operations, from sole traders through to extensive factory and engineering firms together with the first class professional rugby league facility of the Leeds Rhinos adjacent to Kirkstall fields, all of which provide significant employment opportunities to the region.
4. To ensure this doesn't happen again the Council continues to take a comprehensive approach to defending the wider city from flooding from the River Aire. This will build on Phase One of the Leeds Flood Alleviation Scheme and see consideration of the whole

Aire catchment by engineers, offering a number of complementary proposals along the reaches of the river that will provide a comprehensive solution to the city.

5. Phase Two of the scheme will be made up of four distinct elements. Beginning with an ambitious package of Natural Flood Management (NFM) measures which extends beyond the Leeds boundary and will involve partnership working and extensive community involvement, this includes working with, restoring or emulating the natural regulating function of the river catchment to reduce flood risk. Land management and widespread tree planting over significant areas of upstream land will be promoted to reduce flood risk, with an anticipated planting programme of tree saplings into the many hundreds of thousands in number across different stretches of the catchment. This scale of NFM will place the River Aire catchment not just on the national map, but the European one.
6. Secondly, areas of land along the river corridor suitable for water to be actively stored in high river flow events have been assessed. Currently two large areas have been identified which would be mechanically controlled and operated by the use of managed gate structures within the adjacent river channel to both fill and subsequently empty in a flood event. Further information analysing the environmental impact of each will be reviewed and an agreement reached as delegated prior to the submission of the business case.
7. Thirdly, existing obstructions throughout the lower catchment have been investigated and a business cases submitted demonstrating how their removal (or in some instances a raise in level above the river channel) would have significant benefits in reducing in water level in a high flow event.
8. The residual outcome of the various components outlined above is that some raised defences would need to be constructed in the form of landscaping, terracing, embankments and walls. By advocating a scheme where NFM, Flood Water Storage Areas and Removal of Obstructions in the river is promoted rather than solely a scheme of defence terracing and walls, a reduction in the height of any hard engineered defences will be achieved.
9. Crucially, this approach will provide benefits to the Phase One scheme, with an expectation of an uplift to a 1 in 200 standard of protection, effectively delivering the third stage of the phased approach of the whole programme early. By 2021 it is anticipated the city council will have delivered a comprehensive change to flood defence in a decade.

Recommendations

The Executive Board is requested to:

- i) Delegate Authority to submit an outline business case for funding from DEFRA to the Director of City Development subject to agreement with the Executive Member for Regeneration, Transport and Planning and the Leader of the Council.

- ii) Delegate Authority to submit associated planning applications to the Director of City Development subject to agreement with the Executive Member for Regeneration, Transport and Planning for the emerging proposals relating to flood defence structures and their associated defence initiatives.
- iii) Note a further report will be brought to the Executive Board in April 2018 to update on progress and to advise on the status of Operation and Maintenance of each element within the proposed scheme.

1.0 Purpose of this report

- 1.1 This report provides further information on the emerging proposals for the Phase Two River Aire Leeds Flood Alleviation whilst seeking approval for the submission of an outline business case and subsequent associated planning applications.

2.0 Background information

- 2.1 The flooding events of December 2015 in Leeds were of significant scale and impact, and required a coordinated recovery effort that was reported to Executive Board throughout 2016. A Strategic Recovery Plan was implemented and work has continued into 2017 to close out remaining actions, including the continued financial support and advice to businesses and residents, repairs to infrastructure including Linton Bridge, completion of the statutory Section 19 report and updates to the council's emergency plans and alert systems.

The Strategic Recovery Plan also committed the Council to undertake a lessons learned review, which was reported to executive board in July 2016. Progress on implementing the sixteen recommendations of that review has also continued throughout 2017, with the Leeds Flood Resilience Programme Board taking the ongoing responsibility to ensure actions have or are being delivered by the relevant owners. Completed recommendations have included: revising the emergency handbook, reviewing the out of hours arrangements of the council and those for Christmas close down, establishing alternative community channels for during an emergency and improving cooperation between multiagency partners. Further work is taking place to map key infrastructure in the city, produce a new sandbag policy and establish a strategic coordination approach to volunteering during an incident.

A city region flood review was also published in December 2016, which contains many similar recommendations to our own recovery and lessons learned work, and colleagues from Leeds City Council are contributing to joint work on implementing the recommended actions of that report.

- 2.2 Following storm Eva, an initial Scoping Report was developed by the Environment Agency (EA) and approved by the DEFRA Secretary of State. This formed the basis of the report approved by the Executive Board in April 2016 which set out the following key areas to be investigated as part of the feasibility study and business case stage:

- A review of all relevant prior studies and information relating to the former study area and its extents - providing the project with the ability to utilise previous work

and information to offer both efficiencies and to highlight where additional studies and any fundamental broadening of catchment extent investigations are needed.

- A review and update of the development of hydraulic/hydrological models alongside data collected since Boxing Day to inform an options appraisal, and fully assess the extent of a proposed scheme area.
- Investigate opportunities for the utilisation of informal and formal flood storage within the city boundaries, linking in to the master planning of HS2, south bank regeneration, A65 corridor development sites and existing flood plain, and further tie this to integrating planned and potential interventions in the built environment (including both green and blue infrastructure).
- Investigation of storage options and natural flood risk measures (run-off reduction, sediment control and landscape management) in the upper reaches of the catchment outside of the Leeds boundary.
- Ensure any future work to reduce flood risk upstream is compatible with the ongoing scheme and downstream communities, and any other related water infrastructure, such as highway drainage, canal system and sewer networks.
- Taking into account an integrated catchment approach, develop and implement a funding strategy for both the capital investment and long term maintenance of new assets. This will include levy based funding and engagement of the third sector.
- Develop the initial strategy for operation and maintenance of the scheme and integration with warning and informing options for the area affected.
- Develop a catchment partnership approach to reducing flood risk in Leeds and the River Aire Catchment. Early engagement with communities and stakeholders shall be essential.
- Investigate any potential “quick win” mitigation measures in advance of the main programme of project deliverables.
- Consider where possible suitable community and public/youth engagement work can assist in providing part solutions and initiatives within communities.
- Investigate with particular regard to upper Aire catchment the viability and benefit of land management and natural upstream water storage attenuation initiatives.

2.3 Much of the same team from Phase One is working on Phase Two and again strong project governance mechanisms have been established and are operating efficiently. Since the contract commenced in October 2016, a comprehensive process of gathering up to date survey information of the River Aire catchment and building a stable hydraulic model has been in motion alongside a heightened series of engagement activities with stakeholders. The ambitious programme for Phase Two aims for a business case to be submitted to the Government for review this coming January, for design work to continue whilst a decision is made, and then tendering during summer 2018 for a detailed Design and Build construction

contract. In addition, advanced works are being pursued ahead of the main proposals currently estimated to commence on site early in 2019.

3 Main Issues Overview

3.1 Exciting proposals are now emerging for Phase Two which has looked beyond the Leeds boundary. This includes Natural Flood Management, floodwater storage areas, removal of existing obstructions to high flow levels within the river channel and the residual defence heights required along with a package of advanced works.

3.2 Natural Flood Management

3.2.1 Natural Flood Management (NFM) involves working with, restoring or emulating the natural regulating function of river catchments to reduce flood risk. This approach is also referred to as Working with Natural Processes (WwNP). Ostensibly they are the same thing, and are terms used to describe to land management, planting and using natural materials to offer reductions in flood risk.

3.2.2 Information has been gathered from over forty specialists including representatives of fisheries, biodiversity & geomorphology, national environmental assessment service (NEAS), catchment coordinators, ecologists, geomorphologists, hydrologists, environmental scientists, Leeds University, NSRI, West Yorkshire Joint Services Ecology, North & East Yorkshire Ecological Data Centre and Natural England.

3.2.3 As well as bringing a range of multi-disciplinary benefits, the flood risk reduction to Leeds most likely to be achieved is for an enhanced level of climate change allowance and future proofing of works. Fundamental to this will be the delivery of three elements of NFM: Woodland Creation (increasing canopy coverage in the catchment from 7% to 15%, above the national average of 12%); Land Management (run off reduction via various means); and River Channel and Floodplain Restoration (river bank, morphology, and floodplain restoration, large woody debris, and storage ponds). Appendix A illustrates areas of existing tree coverage and potential areas to increase this.

3.3 Active Floodwater Storage Areas

3.3.1 A catchment wide study into storage has been undertaken, with over 40 sites through and upstream of Leeds being assessed as part of this investigation.

This has identified that the largest opportunities for floodwater storage are generally located higher up in the catchment such as Connonley Washlands (near Skipton) or Holden Park (Keighley). However, the efficiency of a floodwater storage scheme diminishes with distance away from the site for which mitigation is required. Furthermore, the further upstream the storage area is situated, the greater the potential for a storm producing the flood event to Leeds to 'miss' the storage area, with the most significant flows arriving in the system between the storage location and the receptor site. Decisively the area of benefit in Leeds has a high threshold of flooding when compared to other existing development along the River Aire between Leeds and other potential storage sites. This means that should remote

upstream storage areas be upgraded and optimised, with a view to maximising benefit to Leeds, then it is likely that intervening areas of development would be given over to flooding more frequently as a result of this process, which is very clearly not acceptable.

- 3.3.2 Consequently from the list of potential storage sites at an appropriate distance from Leeds centre and of the scale required, Rodley Nature Reserve has the largest capacity for an area to provide flood water storage, estimated at some 2.2million m³. A second area, situated at Apperley Bridge within the Leeds boundary, is capable of storing approximately 1million m³. Each of these sites would be most effective through the use of an active control river gate system. These storage areas used in times of flood would achieve reductions in downstream defence heights whilst providing residual benefits to the Phase One scheme. Appendix B shows the two largest areas identified.

Moving closer to the city centre opportunity becomes somewhat constrained in terms of topography. Proposals include woodland planting at Kirkstall Valley Nature Reserve and access improvements.

3.4 Removal of obstructions within the river channel.

- 3.4.1 The existing obstructions throughout the lower catchment have been investigated to determine if their removal (or a raise in level) would have a significant beneficial reduction in water levels, and as a consequence the structure which may yield the greatest benefit is the raising of a footbridge at Milford Place.
- 3.4.2 The potential to reduce flood defences by the use of additional flood corridors to the main river has been investigated along with lowering a 10 - 30metre strip of the north bank of the river channel adjacent to the A65 corridor between Viaduct Road and Wellington Bridge.

The analysis has shown that allowing flow through Kirkstall Goit (running between Kirkstall Abbey Weir and Kirkstall Valley Nature Reserve) does lower flood levels by typically 0.2m although flood levels along the Goit would be raised by up to 1.7m and would therefore require flood defences.

The extent of lowering has been assessed for a range of widths of 10m, 20m, and 30m respectively. Modelling indicates that a 20m set back (intermittent to take account of existing river side buildings and bridges) would lower water levels upstream of Viaduct Road by approximately 0.3m; an effect which reduces to 0.15m by the Home Office Buildings upstream. Future development change could create opportunities to make this modification into a continuous feature which would facilitate a further 0.1m reduction in water levels. The intention is that such a set-back would increase the capacity of the river channel, as well as providing the potential for amenity access along the river corridor. Consultation on this work continues.

3.5 Defence Heights

3.5.1 The residual outcome of the various components outlined above is that some raised defences would need to be constructed in the form of landscaping, terracing, embankments and walls. By advocating a scheme where NFM, Flood Water Storage Areas and Removal of Obstructions in the river is promoted rather than solely a scheme of defence terracing and walls, a reduction in the scale of any hard engineered defences will be achieved. The table below illustrates the impact on defence heights of various options:

	Walls Only	Walls only	Defences plus Rodley attenuation	Defences plus Apperley attenuation	Defences plus Rodley and Apperley
Standard of Protection	1:75 cc 2080	1:200cc 2039	1:200cc 2039	1:200cc 2039	1:200cc 2039
Leeds Station to Whitehall Rd	0 – 0.57m	0 – 0.82	0 – 0.66	0 – 0.72	0 – 0.64
Whitehall Road – Wellington Br	0 – 1.43	0 – 1.74	0 – 1.53	0 – 1.60	0 – 1.50
Wellington Br - Viaduct Rd	0.0 – 1.5	0.39 – 1.53	0.15 – 1.25	0.23 – 1.37	0.12 – 1.25
Viaduct Rd - Cardigan Fields	0.64 – 2.14	0.77 – 2.27	0.5 – 2.0	0.59 – 2.09	0.46 – 1.96
Cardigan Fields - Armley Weir	0.0 – 0.91	0.0 – 1.13	0.0 – 0.83	0.0 – 0.94	0.0 – 0.79
Armley Weir - Home Office	0.0 – 1.15	0.0 – 1.42	0.0 – 1.17	0.0 – 1.26	0.0 – 1.14
KVNR - Kirkstall Bridge (Aire)	0.15 – 1.76	0.52 – 2.01	0.38 - 1.84	0.43 - 1.9	0.36 - 1.82
Kirkstall Br - Kirkstall Abbey weir (Aire)	0.0 – 1.11	0.0 – 1.12	0.0 – 1.12	0.0 – 1.12	0.0 – 1.12

3.5.2 These heights are compatible with maximum desirable wall heights under environmental, planning and landscaping constraints, typically averaging 1.2m to 1.5m in height at the 1 in 200 standard of protection with climate change allowance to 2039. Although in some isolated sections a flood defence level of up to 2.5m may be required, these are at non-sensitive locations. Furthermore, through the design refinement process, it is likely that a number of ways to achieve this level will

be identified with reduced impact on surroundings. The attached plans (Appendix C) show more detail of instances where the height of defences exceeds 1.5m and 1.8m.

- 3.5.3 With attenuation, wall heights are typically 240mm lower but vary locally and can be as much as 500mm. The average reduction is only 30mm greater than undertaking Rodley alone or 100mm than undertaking Apperley alone, however progressing flood storage facilities at both sites and having them working together would provide additional assurances for climate change allowance.
- 3.5.4 In conclusion, the above table shows the interdependency of walls and various options for attenuation, demonstrating the requirement for the attenuation at one of the locations to be progressed as a minimum but with the maximum benefit coming from implementing both.

3.6 Operation & Maintenance

- 3.6.1 The council is responsible for all aspects of operation and maintenance of the finished Phase One scheme. The Environment Agency is assisting with inspections of the static defence walls and terraces being incorporated into their annual programme of River Aire surveys.
- 3.6.2 The current working assumption is that the council will similarly take a leading role in the ownership, operation and maintenance of any new assets constructed as part of Phase Two. A further and more detailed update on operation and maintenance will be provided to the Executive Board in April 2018.

4 **Corporate Considerations**

4.1 **Consultation and Engagement**

- 4.1.1 As part of the progression of the feasibility and business case appraisal, briefings have been provided to Members of Wards directly affected by the current corridor of interest in Leeds on the 14th March 2016, 29th November 2016 and 2nd August 2017 and a dedicated team of officers, working on behalf of the partnership, is now leading on a programme of detailed communication and consultation activities. Engagement with key stakeholders including revisiting councillors, statutory consultees, landowners and tenants started in September 2017 ahead of a series of public consultation drop-in events during October. This has included a several briefings to Leaders and senior officers from Pendle, Craven, Bradford and North Yorkshire which have been positively received. Engagement will continue throughout the scheme, targeted to areas for delivery to ensure suitable prioritisation and autonomy with decisions at the district level.
- 4.1.2 Recognising the scale of the challenge of developing a catchment approach to reducing flood risk to Leeds, not least the need to bring together a wide range of pre-existing partnerships, their different aspirations and capabilities the EA has worked with the existing partnerships to create an "Upper Aire Catchment Network".
- 4.1.3 The Network creates a positive ambitious environment, which complements existing governance arrangements. The concept of all parties becoming a network of

people with a common purpose in relation to flood risk across the catchment has given confidence to key partners to build new and important relationships. This is being reflected in a range of initiatives from sharing learning and best practise to improve community engagement and resilience, and developing river stewardship across the catchment focussed in flood affected communities. Crucially, the concept of working as a Network has also enabled the Leeds FAS project team to traverse partnership politics to gather evidence, at pace, to support the development of the integrated catchment approach.

- 4.1.4 As the optimum locations for works are now becoming clearer, detailed engagement and consultation began in September 2017 following the presentation of information to the Executive Board earlier in the month. The consultation was designed to update all interested parties on potential options being considered and allow people the opportunity to provide feedback.
- 4.1.5 The events were used to not only gauge peoples' reactions to the options, but to also manage expectations and gather valuable information. A leaflet was produced to support the consultation with a tear-off questionnaire to allow people to provide their thoughts if not attending an event in person.
- 4.1.6 Relationships have been strengthened through attendance at a variety of meetings and engagement events, including community business resilience networks and door knocking with affected residents and businesses to ensure all stakeholders are well sighted.
- 4.1.7 Due to the catchment-wide approach being adopted by Phase Two, with benefits to neighbouring areas, the engagement strategy looks to inform those within the study area, whilst also flagging a process for keeping those in neighbouring areas and in central government updated as plans for the scheme progress. Common themes arising include the use of the Rodley Nature Reserve, Natural Flood Management, and time taken to develop a scheme.
- 4.1.8 The flood attenuation at Rodley is a measure that could be used as a means of preventing residential properties and businesses flooding on the Kirkstall Road corridor. The Reserve is currently designated as functional flood plain which means it is land:
 - where water flows or has to be stored in terms of flood;
 - that it is subject to flooding with a 1 in 20 year (5%) probability (or more frequently); and
 - that is reserved by for this purpose.
- 4.1.9 However in excess of 150 consultation questionnaires, emails, and letters expressing dissatisfaction at the proposal have been received. Concerns are around destruction of biodiversity, wildlife and habitat which volunteers have worked hard to achieve over many years, along with educational benefits and health and wellbeing aspects the Reserve brings to the local community. The potential visual intrusion from an engineered structure and disruption during construction have also been raised as concerns.

- 4.1.10 The trustees of the Reserve are not supportive of the proposals although they continue to work with the project team to understand and shape how the Reserve could be used should this element of the scheme be progressed.
- 4.1.11 The current proposal would not increase the frequency of flooding to the Reserve, however it would increase the depth of flooding and extend the time taken for floodwater to pass by approximately one day. Officers and specialist partners continue to work with the Reserve to understand the impact on habitats and wildlife. One concern expressed by the trustees is whether the storage would be activated as soon as the river peaked and flood the Reserve on relatively small scale floods/storms. An explanation has been provided that the storage area would be activated in more extreme floods of 1 in 100 year plus. In the context of a 1 in 100 year plus event this measure would help to prevent flooding to residences and businesses in the Kirkstall Road corridor.
- 4.1.12 In recognising the duration a scheme can take to come to fruition, proactive communications around the programme of advanced works have been undertaken in order to provide confidence that measures are being put in place to mitigate flood risk. This has included direct engagement with landowners and business owners in the Stourton area. Regular contact has been kept with these stakeholders to ensure we keep positive working relationships.

4.2 Equality and Diversity / Cohesion and Integration

- 4.2.1 Future proposals to mitigate the risk and effects of flooding across the city will be subject to detailed Equality Impact Assessments to ensure that the most disadvantaged are not adversely impacted and that individual needs and the requirement to make reasonable adjustments where necessary are recognised.

4.3 Council policies and Best Council Plan

- 4.3.1 This scheme embodies many of the priorities and outcomes sought in the Best Council Plan (BCP) as outlined below:
- (i) Good Growth – the scheme will seek to support the sustainable growth of the Leeds economy through safeguarding jobs in the area protected by flood defences. The investigation of measures to reduce flood risk with regard to opportunities presented by the South Bank Master Plan (Europe’s largest regeneration area with the potential to create 35,000 new jobs and 4000 new homes), HS2, the A65 Kirkstall corridor and its interface with wider existing Network Rail infrastructure. This will directly support the BCP ambition for a strong economy.
 - (ii) Resilient Communities – adopting a Catchment Based approach to flood defence would offer a high level of community confidence against future flood events, enhance public citizen and stewardship involvement, moving toward a more holistic solution to a flood defence initiative and to vanguard community ownership and their association to local flood protection measures. This will support the BCP outcome for people to be safe and feel safe. It will also directly support the BCP ambition for a more engaged public.

- (iii) Transport and Infrastructure; Low Carbon – the scheme will seek to enable the growth of the city whilst protecting its distinctive green character; it will investigate the enhancement of the waterfront areas through new or improved and accessible public spaces to support leisure and amenity uses, in keeping with the urban context, sense of place and identity. This will support the BCP outcome for people to live in clean and well cared for places and for people to enjoy greater access to green spaces, leisure and the arts.
- (iv) The scheme would protect road, rail and ped/cycle accessibility to the city centre from the west, safeguarding local multi-modal commuting routes and city regional transport links and through the protection afforded to the South Bank and Leeds Station area, helping the city become ready for HS2, Northern Powerhouse Rail and the interchange facilities to be provided at the remodelled 'Yorkshire Hub'. This will support the BCP outcome of moving around a well-planned city easily.

4.4 Resources and value for money

4.4.1 Funding - The government initially made £3M available through the Environment Agency Flood Defence Grant in Aid for initial scoping development, business case, feasibility design and planning application of a potential scheme. A funding application to the European Structural and Investment Fund (ESIF) for £750,000 which amounts to 50% of the estimated cost of the advanced works at Stourton has been submitted. An application for the remaining amount at Stourton and to cover any difference if the ESIF application is unsuccessful has been submitted to the Defra Booster Fund. A separate application for all of the other remaining identified advanced works has also been submitted to the Defra Booster Fund.

4.4.3 Revenue Implications – None at this stage.

4.5 Legal Implications, Access to Information and Call In

4.5.1 Under Section 165 of the Water Resources Act 1991, powers have been devolved from the Environment Agency to enter private land for the purpose of undertaking flood defence and drainage works as part of the scheme.

4.6 Risk Management

4.6.1 Until flood risk is reduced, the risk to life, property and businesses remains. If progression of the study is delayed, difficulties may be encountered in achieving the deadlines set and funding could be withdrawn.

5 Conclusions

5.1 Members will be aware that historically Leeds has had no flood defence from the River Aire. Through the success of Phase One and the use of innovative movable weir technology for the first time in the United Kingdom, the city is now protected from the river around the railway station downstream to Knostrop for a 1:100 year storm event, with an additional and considerable allowance for climate change to 2069.

- 5.2 Building on this success, Phase Two of the scheme is taking a whole catchment approach, and will again promote an exciting and innovative range of both civil engineering and land use and management measures, to provide a comprehensive flood defence scheme. Crucially, by progressing a Phase Two scheme consisting of Natural Flood Management, Flood Water Storage Areas and Removal of Obstructions, it's expected that the standard of protection of the Phase One area will be uplifted to a 1 in 200 standard of protection, effectively delivering the third stage of the phased approach of the whole programme early.
- 5.3 Subject to the outcomes of engagement and success of the subsequent outline business case, the emerging scheme proposals will deliver an exemplar of good practice in flood defence initiatives on a European scale.
- 5.4 Information contained within this report illustrating the impact on defence heights demonstrates the requirement for the attenuation at one of the locations to be progressed as a minimum but with the maximum benefit coming from implementing both. However two significant factors need to be considered. Firstly the responses received in relation to the environmental impact at Rodley Nature Reserve, and secondly the cost difference from an estimated total of £109M for a scheme encompassing a single attenuation area to £123M for both. These amounts are higher than the allocation already provided by Government for the current spending period, although the outline business case being prepared provides justification for the required funding. In order to finalise the content of the business case, it is proposed that the Director of City Development, in consultation with the Executive Member for Regeneration, Transport and Planning, undertake further detailed consideration of the available information over the coming weeks before the business case is submitted at the end of January.
- 5.5 The progression of a second flood alleviation scheme to protect areas further west and south of the city centre is crucial to underpin the aspiration of a Northern Powerhouse, its foundation of secure and rapid transport and the ambitions of a Best City together with the objectives of the Local Enterprise Partnership Strategic Economic Plan.
- 5.6 Protecting communities, the well-being of people and sustaining inclusive economic growth is the basis of the BCP. Recent weather and flood events have visibly demonstrated the necessity to develop a scheme or programme of works to safeguard the local population from flooding.
- 5.7 The existing project delivery team has developed a strong multi-organisational 'one team' approach, and has considerable specific skills and expertise. The progress made to date on the accelerated programme of work to develop Phase Two alongside delivery of Phase One has meant the city has already capitalised on this, and it is of significant value to continue at pace. By 2021 it is anticipated that the city council will have delivered comprehensive change to flood defence in a decade.

6. Recommendations

6.1 Executive Board is recommended to:

- i) Delegate Authority for the submission of an outline business case for funding from DEFRA to the Director of City Development subject to agreement with the Executive Member for Regeneration, Transport and Planning and the Leader of the Council.
- ii) Delegate Authority for the submission of associated planning applications to the Director of City Development subject to agreement with the Executive Member for Regeneration, Transport and Planning for the emerging proposals relating to flood defence structures and their associated defence initiatives.
- iii) Note a further report will be brought to Executive Board in April 2018 to update on progress and to advise on the status of Operation and Maintenance of each element within the proposed scheme.

7.0 Background documents¹

7.1 None

8.0 Appendices

8.1 Appendix A - Woodland planting

8.2 Appendix B - Storage areas

8.3 Appendix C – Defence locations where heights are greater than 1.5m

¹ The background documents listed in this section are available to download from the Council's website, unless they contain confidential or exempt information. The list of background documents does not include published works.