East Lothian Council

REPORT TO: Special East Lothian Council

MEETING DATE: 23 January 2024

1

BY: Executive Director for Place

SUBJECT: Update on Dynamic Coast Assessment

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1 PURPOSE

1.1 To present an update on the Musselburgh Coastal Change Assessment (2024) report prepared by Dynamic Coast and the University of Glasgow, to allow Members to read, debate and note the contents.

2 RECOMMENDATIONS

2.1 It is recommended that Council:

a) Notes the content of the Executive Summary report by Dynamic Coast and the University of Glasgow (Dynamic Coast), which is provided in Appendix A.

b) Notes the risk of coastal erosion to Musselburgh outlined by Dynamic Coast deriving from the future impacts of climate change, and that East Lothian Council (Council) updates this risk within the Council's Corporate Risk Register.

c) Agrees that further investigation is undertaken into the risk of coastal erosion to Musselburgh due to the impact of rising sea levels / climate change. This further investigation should continue the partnership working between the Musselburgh Flood Protection Scheme (the Scheme) and Dynamic Coast such that this risk, to both the town of Musselburgh and the proposed Scheme, and appropriate mitigations are fully understood.

d) Agrees that a report will be brought back to Council to fully update on the coastal erosion risk to Musselburgh and that this will include developed proposals on how this risk might be mitigated. It is currently assumed that such mitigation may be through the proposed Scheme or the proposed Coastal Change Adaptation Plan, or a combination of the two.

3 BACKGROUND

3.1 General

3.1.1 The town of Musselburgh has a very significant flood risk due to its geographic location: i.e. it has been built on the natural flood plains of the River Esk and the Firth of Forth. The level of flood risk to the town is projected to become much larger due to the impacts of climate change. The primary reason for this flood risk along the coastal foreshore is currently due to wave overtopping, but this is expected to be superseded by water flowing over the foreshore due to rising sea levels at some point between now and 2100. The Musselburgh Flood Protection Scheme (the Scheme) is being advanced by Council to develop an understanding of the flood risk to Musselburgh, and to design an approach to its mitigation. Coastal erosion had not been considered a substantial mechanism of flood risk to Musselburgh before the work undertaken by Dynamic Coast.

3.1.2 It is understood that the Musselburgh foreshore has been generally accreting (i.e. accumulating a build-up of additional sand) since the end of the last glaciation c.15,000 years ago. This is due to its location on the Firth of Forth and at the mouth of the River Esk. The town of Musselburgh has developed over time at this location, and it is understood that human interventions over recent centuries have continued to push the line of the foreshore into the Firth of Forth. In Musselburgh this line is the change point between a heavily built-up urban landscape and the natural beach / intertidal environment. In this location the natural environment is designated as the Firth of Forth Special Protection Area (SPA).

3.1.3 The Scheme is being promoted by Council under the Flood Risk Management (Scotland) Act 2009 (the Act). The scope of the project is to provide formal protection to the town of Musselburgh from a major flood event, and to consider natural, sustainable and catchment wide flood risk management options alongside traditional engineered forms of flood risk reduction. The Scheme has been undertaking its Outline Design over recent years and is presenting an update on the Outline Design to a meeting of Council in January 2024. The Scheme was not established to protect against the risk of coastal erosion in Musselburgh as the extent of this was not fully known.

3.1.4 There is now growing international recognition that some of the early obvious effects of climate change will be through increased erosion and flood impacts on the coastline. Governments and organisations around the world are undertaking risk assessments to inform new, flexible adaptive approaches to better manage these growing risks. Coastal erosion is a cross-cutting issue affecting many interests and a coordinated approach to align effort across sectors is essential.

3.1.5 The Dynamic Coast project is funded by the Scottish Government, Centre of Expertise for Waters, NatureScot, and the St Andrews Links Trust. Its aim is to provide a strategic evidence base on the extent of coastal erosion in Scotland by:

a) Improving the evidence on coastal change;

b) Improving the awareness of coastal change; and

c) Supporting decision-makers to ensure Scotland's coast and assets can adapt to our future climate.

3.1.6 In summer 2021 Dynamic Coast published the results of their National Coastal Change Assessment. At the same time the Scheme's project team were undertaking a series of community consultations with local area groups (known as Local Area Consultations or LAC). During one of these consultations, with the Mountjoy Area LAC, the project team were challenged on whether Council were aware of and working with Dynamic Coast such that their knowledge was properly considered within the Scheme. The project team immediately established contact with the Scottish Government's Flood Risk Management Team and the Dynamic Coast project. This partnership working arrangement has developed from there and is considered by the project team as another example of how the Scheme's consultation with the people of Musselburgh has allowed the Scheme's design to continue to evolve.

3.1.7 Dynamic Coast were formally commissioned by Council in 2023 to undertake a detailed analysis of coastal change in Musselburgh, and to consider the risk of future changes in shoreline due to projected sea level rise associated with climate change. The partnership between Council / the Scheme and Dynamic Coast has allowed data to be shared between organisations and this is considered to be a multiple benefit for both projects and their separate objectives. For Dynamic Coast it allows them to develop their 'national scale' level of understanding of coastal change at Musselburgh into a much more detailed local level of understanding. For Council it allows for detailed understanding of coastal change in Musselburgh to feed into both the Scheme and their proposed Coastal Change Adaptation Plan.

3.1.8 The Scheme's project team provided detailed topographic survey data commissioned for the Scheme to Dynamic Coast. Further topographic data was collected by Dynamic Coast using drone technology before and after Storm Babet in October 2023. These additional sources of topographic data enabled the Dynamic Coast project team to undertake a more accurate analysis of coastal change in Musselburgh than had been possible for the Scotland-wide analysis carried out previously. Dynamic Coast also obtained other national datasets to undertake multiple parallel coastal assessments.

3.1.9 The analysis and assessment by Dynamic Coast was undertaken by specialist staff from the University of Glasgow and Dynamic Coast, independently of the flood protection scheme and its consultants.

3.2 Conclusions of the Assessment:

3.2.1 The assessment concluded that erosion has dominated much of the upper beach since 2018. Future projections, based on the newly calibrated rates determined by the assessment, support earlier research from Dynamic Coast, which concluded that erosion is a current and growing concern with implications for flood risk management in Musselburgh.

3.2.2 The assessment concluded that Storm Babet, in October 2023, caused erosion of beach sediment and the vegetation edge at the upper beach, with redistribution of this sediment to the west. Some parts of Musselburgh's coast now exhibit little residual resilience within the existing natural systems.

3.2.3 As sea levels rise due to the effects of climate change, more consistent erosion of Musselburgh's coast would be expected.

3.3 Summary of Risks associated with this Assessment:

3.3.1 If no further action is taken it is likely that erosion of Musselburgh's coast in the medium to long term would have a negative impact on the built environment, the local economy, and equality for the residents affected.

3.3.2 Dynamic Coast have concluded that, specifically for Musselburgh, in the absence of any new coastal management works, that future erosion may threaten the Scheme and other assets along the town's coastal frontage.

3.3.3 It is considered by the Scheme's project team that this may have implications for the design of the coastal defences proposed as part of Scheme above and beyond the project's initial assessment.

4 POLICY IMPLICATIONS

4.1 Changes in Musselburgh's coast could have implications for Council's Local Development Plan. It could also have implications for the Forth Estuary Local Flood Risk Management Plan.

4.2 Coastal erosion could, if no further action is taken, result in loss of land and / or damage any existing infrastructure located there. It could also result in damage to infrastructure such as: the Fisherrow Harbour, existing coastal walls / defences, property, roads, parking, street lighting, public utilities, and amenity spaces. In relation to Musselburgh this report is specifically focused along the area of coast between the Brunstane Burn and the mouth of the River Esk. It is proposed that a report will be brought back to a meeting of Council at the earliest opportunity to fully update on the coastal erosion risk and the specific locations that the study has looked at. This report will include developed proposals on how this risk may be mitigated.

4.3 Coastal erosion could, if no further action is taken, increase the probability of coastal flooding. This is because a reduction in the level of the shoreline

would mean that certain properties would become exposed to smaller return period floods which they are currently protected from.

4.4 The Flood Risk Management (Scotland) Act 209 (FRM) places a statutory responsibility on the Local Authority to exercise their flood risk related functions with a view to reducing overall flood risk. A key responsibility for Council is the implementation of the flood risk management actions in the Forth Estuary Local Flood Risk Management Plan. For Musselburgh this obligation is being advanced by the Scheme.

4.5 The Scheme will contribute towards the East Lothian Plan – 2017-27, focusing on health and wellbeing, safety, transport connectivity, sustainability and protecting our environment.

4.6 The Scheme will support the Council's Climate Change Strategy; however, it is highlighted that the Scheme is an 'adaptation' project due to implications of climate change on Musselburgh.

5 INTEGRATED IMPACT ASSESSMENT

5.1 The Scheme will undergo Integrated Impact Assessments during its development.

5.2 A Preliminary Environmental Appraisal Report (PEA) was undertaken during Project Stage 3 (the Outline Design), and this was included in the Preferred Scheme Report presented to Cabinet in January 2020.

5.3 The Scheme will undertake an Environmental Impact Assessment (EIA) on the Outline Design. This will be completed alongside the Outline Design before an update is presented to Council in January 2024.

6 RESOURCE IMPLICATIONS

6.1 Financial

6.1.1 All costs associated with the ongoing investigation work being undertaken by Dynamic Coast will be absorbed through the Scheme.

6.1.2 The Scheme is authorised under the Scottish Government's flood protection scheme programme. The Project Team and thereby the Council update the Scottish Government every autumn on the updated estimate for the Scheme along with its Spend Profile. From this data, and in line with the authorised programme, the Council receive 80% contribution on an annual basis as part of the capital grant settlement.

6.1.3 As possible responses to coastal change have not yet been identified, potential costs associated with this have not been established. Any response to coastal change, unless fully funded by the Scottish Government, would have financial implications for the Council. If, however, no further action is taken and coastal erosion results in negative impacts

on the built environment, this would still result in financial implications for the Council. It is expected that once the mitigation measures are determined, some of them will be deliverable within the Scheme and that others will need to be delivered through the Council's proposed Coastal Change Adaptation Plan.

6.1.4 A full update on the coastal erosion risk to Musselburgh and the determined appropriate mitigation measures and the associated costs will be reported to Council once it is available.

6.2 Personnel

6.2.1 It is anticipated that development of possible responses to coastal change will be undertaken within the existing teams of the Scheme and Dynamic Coast. Thereafter, the personnel implications for delivering the chosen response would depend upon whether it is incorporated within the Scheme or is part of the longer-term proposed Coastal Change Adaption Plan for Musselburgh's / East Lothian's coast.

6.2.2 It is anticipated that, irrespective of which, if any, response is developed, there will be a need for long-term monitoring of Musselburgh's shoreline. This would involve periodic topographic survey of the shoreline and comparison with previous datasets by external suppliers and would be managed by the Council.

6.3 Other

6.3.1 None

7 BACKGROUND PAPERS

7.1 Report to Cabinet in May 2016 – approval of the Local Flood Risk Management Plan (Forth Estuary) which included a proposed flood protection scheme for Musselburgh.

7.2 Report to Cabinet in January 2020 – approval of the 'Preferred Scheme' concept to be advanced to an Outline Design.

7.3 Report to Council in August 2022 – Musselburgh Flood Protection Scheme: Update on Scheme Development.

7.4 Report to Council in October 2022 Musselburgh Flood Protection Scheme – Update on Scheme Development.

7.5 Motion to Council in August 2023 – Request for report from Dynamic coast on expected changes to the coastline in the future.

7.6 Appendix A – Executive Summary report by Dynamic Coast and University of Glasgow

AUTHOR'S NAME	Alan Stubbs
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DATE	15th January 2024

MUSSELBURGH COASTAL CHANGE ASSESSMENT (2024)

EXECUTIVE SUMMARY OF DRAFT REPORT (JANUARY 2024)

Dynamic Coast analysis to inform ELC Flood Scheme

DynamicCoast@nature.scot

Musselburgh Coastal Change Analysis

Craig MacDonell, Martin Hurst, Alistair Rennie, Jim Hansom & Larissa Naylor

Executive Summary

1. East Lothian Council (ELC) propose a range of flood risk management measures to address coastal change and fluvial flooding in Musselburgh. **Our report supports ELC's work** by providing an updated coastal change analysis (superseding that of Dynamic Coast, 2021) to inform assessment **of coastal erosion and erosion-enhanced flood risks**. Coastal erosion is noted within the Council's Risk Register and thus even if the Council were not proposing flood risk management works, coastal change and erosion-enhanced flooding risks are worthy of careful consideration, in support of the Council's Planning and Climate Change Act duties.
2. Updated beach surveys conducted in 2022 and 2023 show that erosion has dominated much of the upper beach since 2018. Whilst longer-term comparisons note fluctuating change along the coast future projections, based on new calibrated rates, support earlier research from Dynamic Coast (2021) that **coastal erosion is a current and growing concern. This has** implications for ELC's proposed flood risk management structures and parts of the town's coastal frontage. Musselburgh is not unique in this regard: in 2021 Dynamic Coast identified 46% of Scotland's beaches are currently eroding, and erosion enhanced flood risk is a growing risk that needs to be addressed. Recent Environment Agency work anticipates 90% increase in repair costs for coastal assets due to climate change.
3. Further to recent changes at Musselburgh, in October 2023 **Storm Babet** caused beach sediment loss and erosion of the vegetation edge at the upper beach, with longshore redistribution of beach sediment to the west. In places, this storm caused the equivalent of five years' worth of erosion over a couple of days and removed around 4,000 m^3 of sediment from the Musselburgh beaches. Whilst substantive change has occurred, fortunately this storm coincided with a neap tide. However, if such a storm had coincided with spring tides, then the impacts would be far more severe (as was evident elsewhere across Scotland the following week). Whilst Storm Babet has not significantly compromised the existing flood management structures or natural defences (dunes etc), the natural resilience of the beach has been reduced, particularly adjacent to the existing defences in the west, and adjacent to the proposed hybrid defence in the east near Mountjoy Terrace. For this reason, the evidence suggests that Council officers have **little time to waste in planning short-term coastal resilience measures**, including nature-based enhancements.
4. **Our monitoring and future modelling of the coast suggests that a wider and currently unaddressed future erosion risk** remains, and that the Council are justified to have this on their Risk Register. In the absence of any new coastal management works, as sea levels continue to rise, recent fluctuation and erosion of Mean High Water Springs is expected to be replaced by more consistent erosion that may **threaten the Musselburgh Flood Protection Scheme's proposed flood defences and other assets along the town's coastal frontage**. Under a High Emissions Scenario (the trajectory of current global emissions), enhanced coastal impacts are expected within the next ten to twenty years if no coastal management takes place. Under Low and Medium emission scenarios the anticipated impacts are less and will impact later.
5. **We suggest that the Council consider a range of coastal resilience measures be developed and appraised as part of ELC's Coastal Change Adaptation Plan** (CCAP). Whilst this report suggests management options for ELC to consider, a risk-based, dynamic adaptive approach which integrates intergenerational community interests is recommended to enhance the future resilience of the coast and enable the local coastal community to cope with substantial longer-term change (as recommended within Scottish Government Guidance). This may involve planning for the future coast to move inland in the medium to long term and to progressively plan to relocate affected coastal assets to lower risk locations.
6. We suggest that establishing a **monitoring programme for the beaches at Musselburgh is essential to inform the Council officers, so that they know when a range of erosion and flood risk adaptation options should be actioned** in the short to long-term. This would be an integral part of the proposed CCAP.

East Lothian Council

REPORT TO: Special East Lothian Council

MEETING DATE: 23 January 2024

BY: Executive Director for Council Resources

2

SUBJECT: Petition Calling on East Lothian Council to Pause and Review the Musselburgh Flood Protection Scheme

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1 PURPOSE

1.1 To seek determination of a petition calling on the Council to pause and review the Musselburgh Flood Protection Scheme.

2 RECOMMENDATIONS

Council is asked:

2.1 to note that, at its meeting of 20 December 2023, the Petitions and Community Empowerment Review Committee considered a petition submitted by Dr Jeffrey Wright, on behalf of the Musselburgh Flood Protection Action Group, requesting that the Council should pause and review the Musselburgh Flood Protection Scheme, and that the Committee agreed that this matter should be referred to Council for determination; and

2.2 to consider the terms of the petition and make a determination on the proposal contained therein to pause and review the Musselburgh Flood Protection Scheme.

3 BACKGROUND

3.1 A petition was submitted to the Council in December 2023 proposing that the Musselburgh Flood Protection Scheme should be paused and reviewed. The petition (PET0223) was submitted by Dr Jeffrey Wright, on behalf of the Musselburgh Flood Protection Action Group.

3.2 The petition was presented to the Petitions and Community Empowerment Review Committee meeting on 20 December, where Members heard submissions from both Dr Wright and Council officers. Having heard from both parties, the Committee agreed that the petition should be referred to Council for consideration. The report (including the petition) and minute from that meeting is attached at Appendix 1.

3.3 The Council is therefore asked to consider the terms of the petition and determine if the Musselburgh Flood Protection Scheme should be paused and reviewed.

4 POLICY IMPLICATIONS

4.1 None

5 INTEGRATED IMPACT ASSESSMENT

5.1 There is a potential impact on the environment if the Scheme is paused. A full Integrated Impact Assessment would be carried out and reported back to Council in those circumstances.

6 RESOURCE IMPLICATIONS

6.1 Financial – dependent on action taken by Council

6.2 Personnel – dependent on action taken by Council

6.3 Other – dependent on action taken by Council

7 BACKGROUND PAPERS

7.1 Report to Petitions and Community Empowerment Review Committee, 20 December 2023: Petition PET0223 – Calling on East Lothian Council to Pause and Review the Musselburgh Flood Protection Scheme, and minute of that meeting (attached at Appendix 1)

AUTHOR'S NAME	Lel Gillingwater
DESIGNATION	Team Manager – Democratic Services & Licensing
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DATE	8 January 2024

East Lothian Council

REPORT TO: Petitions and Community Empowerment Review Committee

MEETING DATE: 20 December 2023

BY: Executive Director for Council Resources

SUBJECT: Petition PET0223 – Calling on East Lothian Council to pause and review the Musselburgh Flood Protection Scheme

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1 PURPOSE

1.1 To present petition PET0223 to the Petitions and Community Empowerment Review Committee for consideration. The petition is entitled 'Pause and Review the Musselburgh Flood Protection Scheme: The Community Deserves Better'.

1.2 The petition text reads:

> Pause and review the Musselburgh Flood Protection Scheme. We entirely reject the flood protection design presented at the June exhibition. We have lost confidence in the MFPS and the consultants. Musselburgh deserves better. We want co-production of options that reduce the flood risk and preserve the character of the town focussing on nature-based solutions along the Esk River catchment and along the coast.

2 RECOMMENDATIONS

2.1 That the Committee consider the petition and takes action as required.

3 BACKGROUND

3.1 A petition was submitted by Dr Jeffrey Wright, principal petitioner, on behalf of the Musselburgh Flood Protection Action Group on 12 December 2023.

3.2 The petition was deemed to be competent and had 2761 signatories. The principal petitioner advised that a further >500 signatories had been collected from community engagement, but at the time of writing, this document had not yet been submitted.

3.3 Further details of the petition are contained in **Appendix 1**.

3.4 The petition can be viewed by contacting the Clerk to the Petitions and Community Empowerment Review Committee.

4 POLICY IMPLICATIONS

4.1 There are no immediate policy implications arising from this report. Depending on the action required and agreed by the Committee, there may be policy implications relating to particular issues arising from competent petitions. These will be subject to a separate report to the relevant committee, as required.

5 INTEGRATED IMPACT ASSESSMENT

5.1 The subject of this report does not affect the wellbeing of the community or have a significant impact on equality, the environment or economy.

6 RESOURCE IMPLICATIONS

6.1 Financial – dependent on the action agreed by the Committee.

6.2 Personnel – dependent on the action agreed by the Committee.

6.3 Other – dependent on the action agreed by the Committee.

7 BACKGROUND PAPERS

7.1 East Lothian Council Standing Orders – Appendix 1: Scheme of Administration – Petitions and Community Empowerment Review Committee.

Appendix 1: Summary of petition for consideration

AUTHOR'S NAME	Becky Crichton
DESIGNATION	Committees Officer/Clerk to the Petitions and Community Empowerment and Review Committee
CONTACT INFO	rcrichton@eastlothian.gov.uk
DATE	15 December 2023

East Lothian Council

PETITION TO EAST LOTHIAN COUNCIL

Name of Principal Petitioner (and organisation if applicable) **(Block Caps)**	DR JEFFREY WRIGHT MUSSELBURGH FLOOD PROTECTION ACTION GROUP
Address of Principal Petitioner (inc Postcode) **(Block Caps)**	[redacted]
Contact telephone number of Principal Petitioner	[redacted]
Title of Petition	PAUSE AND REVIEW THE MUSSELBURGH FLOOD PROTECTION SCHEME : THE COMMUNITY DESERVES BETTER
Petition text. We the undersigned call on East Lothian Council to..	PAUSE AND REVIEW THE MUSSELBURGH FLOOD PROTECTION SCHEME We entirely reject the the flood protection design presented at the June exhibition We have lost confidence in the MFPS and the consultants. Musselburgh deserves better. We want co-production of options that reduce the flood risk and preserve the character of the town focussing on Nature based Solutions along the Esk river catchment and along the coast.
What action have you taken and who have you contacted before submitting this petition and what was the result of this?	We have 2761 petition signatories online at change.org and a further >500 from our community engagement. We have contact with all political parties and over two years of seeking answers have grown increasingly concerned with the proposed scheme. We met with the First Minister today who asked to be kept informed about our petitions submission.
Please provide more information about your petition	The Community wants to be fully invovled in the co-production of a flood protection scheme that promotes biodiversity, fights the impact of climate change and can be a role model for climate resilience. Our petition is our expression of our democratic rights to protest and participate in local governance. Rejection will further fracture the bond between Community and East Lothian Council.
Signature of Principal Petitioner	[redacted]

Your details will only be held by East Lothian Council and will not be used for any purposes other than in relation to this petition.

For Office Use:	
Date Received:	12 December 2023
Receiving Officer:	Clerk to the Petitions &CER Committee
Petition Reference:	PET0223

All Petitions should be forwarded to: Clerk to the Petitions Committee, Legal & Democratic Services, East Lothian Council, John Muir House, Haddington EH31 3HA or handed in at Main Reception, John Muir House, Haddington

East Lothian Council

MINUTES OF THE MEETING OF THE PETITIONS AND COMMUNITY EMPOWERMENT REVIEW COMMITTEE

WEDNESDAY 20 DECEMBER 2023
ONLINE DIGITAL MEETING FACILITY

Committee Members Present:
Councillor N Hampshire
Councillor G McGuire
Councillor L-A Menzies

Council Officials Present:
Ms M Ferguson, Head of Corporate Support
Ms A Stubbs, Service Manager – Roads

Others Present
Mr J Baxter, Jacobs
Dr J Wright, Principal Petitioner

Clerk:
Ms B Crichton, Committees Officer

Apologies:
Councillor J McMillan
Councillor L Jardine (sub. Councillor L-A Menzies)

Declarations of Interest:
None

1. PET0223: CALLING ON EAST LOTHIAN COUNCIL TO PAUSE AND REVIEW THE MUSSELBURGH FLOOD PROTECTION SCHEME

A report had been submitted by the Executive Director for Council Resources to advise of a petition submitted by Jeff Wright, principal petitioner, on behalf of the Musselburgh Flood Protection Action Group, calling on East Lothian Council to pause and review the Musselburgh Flood Protection Scheme. The petition had 2761 signatures.

The Provost would ordinarily be the Convener of the Petitions and Community Empowerment Review Committee, but as he had submitted apologies, the clerk invited Members to make nominations. Councillor McGuire nominated Councillor Hampshire,

and all Members confirmed they were content for Councillor Hampshire to act as Convener.

Morag Ferguson, Head of Corporate Support, provided an outline of the role of the Petitions and Community Empowerment Review Committee. She advised that if, having heard from the lead petitioner and council officer, the Committee considered that action should be taken, it could refer the matter to the appropriate chief officer or Committee for further consideration. If the decision was to refer to the appropriate committee, she suggested that Members would refer to the special meeting of East Lothian Council on 23 January 2024 where the substantive report on the Musselburgh Flood Protection Scheme would be considered.

Councillor Hampshire explained the procedure for the meeting and invited Dr Wright to speak to the petition.

Dr Wright said that the Musselburgh Flood Protection Scheme had created considerable interest in the community and with visitors, who all enjoyed the amenity of green spaces along the coast and by the river. He said the importance of green spaces for mental health and wellbeing of the community had only recently begun to be appreciated. He reported a rise in public anxiety and consternation about the lack of practical input from the public in the project. He listed doubts in relation to the scheme, including: the council's motivations in bringing three separate projects together, thereby muddying the discussion and scrutiny each should be subject to; the overreliance on paid consultants and lack of independent expert scrutiny; the lengthy negotiation with Scottish Power over liability for £50m of lagoon wall repairs; the lack of independent scrutiny of the scheme's underlying technical evidence and assumptions; and the minimal use of nature-based solutions, which he said were the only flood protection measures which could reduce the effects of climate change.

Dr Wright said the Musselburgh Flood Protection Action Group had been led to question the democratic processes in East Lothian and the community's ability to be involved. He felt the significance of the project meant that there had to be a strong bond of trust and openness between residents and Councillors. He said agreement to pause and review the scheme would go a long way to re-establishing trust which was vital if the project was to go ahead. He said a pause and review would confirm that the project was being conducted with the right intentions of providing the best solution for Musselburgh and helping tackle the climate emergency. He said that a pause would also show that the council's actions were not motivated by a dash for Cycle 1 cash, which he highlighted ultimately came from taxpayers via the Scottish Government. He objected to Cycle 1 cash being described as if it were a lottery win for the council during a cost-of-living crisis, and said Musselburgh deserved better. He said the community wanted to get involved and he said a pause in the scheme would allow them to do so. He described the engagement and consultation processes as having spoken to the community superficially.

Dr Wright continued by saying that building climate change resilience required many skills, new approaches, and creative thinking, and said Musselburgh was ready to engage with the council to co-produce a scheme appropriate to the future levels of flood risk and that would actively contribute to reducing the impact of climate change, promote biodiversity, and that valued green spaces as essential community resources. He felt these were reasonable demands in line with leading bodies who stressed how central nature-based solutions must be in tackling the climate crisis. He said the proposed scheme was an unsuitable 20th century hard engineering approach to a complex 21st century problem. He was unsurprised that technical advisers, who would make profits from the structures, suggested a solution predominantly involving large

concrete walls. He said that a review of the scheme would allow the community to feel confident that key technical assumptions were reasonable and could stand up to independent expert scrutiny. He said the Musselburgh Flood Protection Scheme Action Group were concerned about the scheme's unwillingness to share key technical information from the start of the project; he said the community were being treated as if they were unable to comprehend the information, He also suggested the lack of information sharing could be because the information would not stand up to independent scrutiny. He said citizens were shocked that £100m of public expenditure was not subject to greater independent and expert scrutiny at every stage.

Dr Wright summarised that the community was ready to help the council using the many skills of the members of the Musselburgh Flood Protection Scheme Action Group. He said that it would be possible to co-produce a scheme that preserved Musselburgh's character and amenity. He said the group rejected the design presented in June entirely and had lost confidence in the project manager and the team following two years of interaction. He reiterated his call on the council to accept the petition and pause and review the scheme, and warned that opposition would grow if the opportunity to pause was not taken. He reported that the group had doubled in size following the June exhibition, and said concerns grew as more was learned about the proposals. He advised that other councils had paused their flood protection schemes because of community concerns and asked East Lothian Councillors to serve their community by agreeing to pause and review the scheme.

Councillor Menzies asked what changes the group would wish to make to the democratic processes. Dr Wright responded that the group wished for greater involvement in the decision-making processes. They wished for greater information about the underlying technical data to be shared as the group included flood forecasters and climate scientists. He said that information should be shared with the community, and there should not be barriers, silence, and unreturned emails. He said the group were willing to work with the council to make sure the processes were clear.

Councillor Menzies asked about the addresses of signatories. Dr Wright advised that about half of the 2761 signatories were from within the county, but advised that a further 960 signatures collected on foot in Musselburgh, which had not yet been submitted, were mostly EH21 or EH postcodes. He advised that the total number of signatures was now closer to 4000.

Councillor Menzies asked about the group's reaction should the scheme be paused and go into Cycle 2 if it remained similar to the current design. Dr Wright said that the opportunity to openly review the key technical assumptions was crucial to gaining the confidence of the community. He said the community wanted to have confidence that the scheme offered the right level of protection to the right level of risk, and for this to be communicated well and clearly. He said there was no set opposition to a type of scheme, but said there was opposition to the lack of independent scrutiny to the key assumptions and evidence being used to create the scheme.

Councillor McGuire asked what the group would like to see in place of the current design. Dr Wright said the group wanted a scheme that properly considered green spaces and tackling the climate crisis. He highlighted that concrete walls added to the climate crisis because of greenhouse gases produced. He said that elsewhere, there were climate strategies using nature-based solutions which preserved or enhanced green spaces and biodiversity. He felt it was not his role as a citizen to describe a vision of a new scheme, but said that people in the Musselburgh Flood Protection Action Group had presented different proposals to the community and there had been wide engagement with those proposals. He said it was possible to have nature-based

solutions that properly provided a level of risk protection against future flood events. He added that concrete walls did not necessarily remove flood risk, and highlighted significant flooding in Brechin despite investment in flood defences.

Councillor McGuire asked which key information had not been provided to residents. Dr Wright said the group had requested the modelling assumptions and the input into that model. Dr Wright's own background was in science and engineering and he said that scientists shared data for scrutiny because they were confident that would stand up to scrutiny. He said that the community had not been able to review data and gain confidence despite having requested it many times.

Councillor Hampshire asked whether the group accepted that Musselburgh was at risk of flooding. Dr Wright responded that Musselburgh would always be at some risk of flooding given its geography. He said the effect of climate change would not be uniform across all parts of Scotland. He noted that Musselburgh had not had a substantial flood for a very long time, and there had been very little change in the flood risk and frequency in Musselburgh in the last 30 years; he compared this to other parts of Scotland where the flood risk had gone up by as much as a factor of five. In response to a further point from Councillor Hampshire, Dr Wright said that drains were currently the biggest source of flooding in Musselburgh.

Councillor Hampshire highlighted damage caused by Storm Babet and the potential risk it had posed to Musselburgh. He highlighted Councillors' responsibility to protect the community and asked how they should decide whether to go ahead with a worked-up scheme or an option that was currently unknown. Dr Wright responded that the community were calling to co-produce a scheme with the council and to manage the risk between the council and the community. He said Musselburgh could have been flooded at any point over the last 100 years, but there had been no substantial flood in that time. He said parts of the country with regular flooding had to take immediate action. He said scientists did not yet know how the climate would affect the high winds in the atmosphere above northern Europe, so asked how Councillors could reasonably make a plan based on assumptions that were not known. He said the flood risk in Musselburgh would not be removed no matter how high the wall was built but said there was time to create a system that would help to reduce climate change and would fully involve the community. He said that Councillors to date had risked not building walls, and said this was a reasonable assumption to make based on 60 years of clear data. He said it would take a fraction of the money invested so far in the concrete walls solution to have a better scheme that would fall in line with Scottish and UK Government policy and the directions of organisations such as the United Nations.

Councillor Hampshire said that of the 2761 signatories of the currently submitted petition, 760 were from Musselburgh, and Dr Wright offered to deliver the further 960 signatures. Councillor Hampshire asked whether those living in the 3000 Musselburgh properties at risk from flooding would be happy to wait for a scheme that was hitherto unknown. Dr Wright advised that many people in the group lived directly along the river or along the coast. He said that the 3000 houses to which Councillor Hampshire referred were based on assumptions that had not been independently scrutinised, and contended that there had been some scaremongering. He reiterated that people who were most affected were prominent members of the group. He said that, if challenged, the group could speak to the majority of the 3000 households and they would support a scheme comprising nature-based solutions to reduce the threat of a climate crisis.

There was discussion between Councillor Hampshire and Dr Wright regarding the expectation that Scottish Power would fund the necessary repairs to the sea wall, but Ms Ferguson highlighted that negotiations between the council and Scottish Power

were confidential for the time being. She said there was a legal and contractual basis for the handover of the wall and said the council was using its best attempts in negotiation with Scottish Power to obtain the best value for the taxpayers of East Lothian, but did not have information with regards to a timeline.

Alan Stubbs, Service Manager – Roads, responded to the petition. In response to the petition's request to pause and review the scheme, he that the timeline for advancement of the outline design had been approved at the October 2022 Council meeting. He reported that the project team had been advancing the scheme through an extensive consultation process with regulatory organisations, key stakeholders, community groups, businesses, and the people of Musselburgh. He said that council officers would present the finalised outline design for review at a meeting of East Lothian Council on 23 January 2024, and Councillors would decide how to proceed.

Responding to the petition's request for co-production of options that reduced the flood risk and preserved the character of the town, focusing on nature-based solutions on the River Esk catchment and along the coast, Mr Stubbs advised that the procedure for promoting a flood protection scheme was set out in the Flood Risk Management (Scotland) Act 2009, with which the council was legally bound to comply. He said the Act contained no provision or mandate for co-production, but provided that any person may object to the proposed scheme when it had been published. Mr Stubbs said that prevention of the scheme's publication would therefore prevent individuals from exercising their democratic right to object to the proposed scheme. He advised that the proposed scheme should be published and thereafter the petitioners could object to it, should they wish, through the procedure set out in the Act.

Mr Stubbs further advised that the Scottish Government had instructed that if the proposed scheme was not notified by 31 March 2024, then it would be withdrawn from Cycle 1 of the flood protection programme, and in this circumstance, all funding would be withdrawn. Mr Stubbs advised that there was insufficient time before this deadline to make further changes to the currently proposed scheme and it was therefore not possible to undertake co-production of the scheme per the petition's request. He said the choice for Councillors on 23 January 2024 was to publish the scheme in its current form by 31 March 2024 or to allow the deadline to pass and have funding removed by the Scottish Government.

Mr Stubbs then advised that nature-based solutions and natural flood management had been considered in the development of the scheme. He said the outline design would include maximum nature-based solutions as part of the design, including the modification of Rosebury Reservoir and Edgelaw Reservoir to store large volumes of water during a flood event, and the provision of a large debris catcher by Whitecraig. He further advised that a report had been taken to East Lothian Council in October 2023 on the lessons learned from the Eddleston Water site visit on natural flood management, the conclusion of which was that natural flood management could help to protect land and properties from flooding, but alone it would not eliminate the need for defences such as walls and barriers; he advised that this conclusion was supported by the Scottish Government. He reported that on a recent visit to East Lothian Council, Mairi McAllan, the Cabinet Secretary for Transport, Net Zero and Just Transition, when asked about the project and specifically nature-based solutions, said that she was a significant supporter of nature-based solutions to climate change and to catchment level management as far as possible. He reported that Ms McAllan spoke about the Scottish Government funded Eddleston Water project and said one of the results was that nature-based solutions could play an important part, but it would often be unable to fully mitigate the risk; this was why a combination of engineered and nature-based solutions was often the best approach.

Mr Stubbs said that the council and the project team aspired to deliver a flood protection scheme tailor made to meet the unique needs of each location of the town and the residents, businesses, and visitors of Musselburgh. He said the project team recognised and acknowledged the wider public interest, and as such, had invested significant time and resources into meaningful consultation and engagement with the public, residents, community groups, businesses, and statutory stakeholders including: public meetings; local area meetings; workshops; presentations; drop-in sessions; site visits; bespoke meetings; and presentations with various community groups and stakeholders. He said this had culminated in a public exhibition of the first vision of the outline design in June 2023. He advised that the project team had also visited numerous homes of residents where the scheme might directly impact their property. He said this engagement and consultation had allowed the project team to shape a scheme that worked for local people, including consultation with statutory and regulatory bodies. He said the project team were now working to prepare reports and documentation to be presented to Council at the special meeting on 23 January.

Mr Stubbs responded to questions from Councillor Menzies. He advised that Members would have one week to absorb the papers for the meeting on 23 January, but there would be a further briefing for Elected Members prior to the meeting.

Councillor Menzies asked whether the scheme would be permanently withdrawn if not reported by 31 March 2024, or whether it would fall into Cycle 2. Mr Stubbs said that this question would have to be addressed to the Scottish Government. Jim Baxter, a representative of Jacobs, confirmed that a scheme which failed to meet the deadline of 31 March 2024 would cease to be part of Cycle 1. He said that current understanding was the schemes which left Cycle 1 would have the opportunity to become part of Cycle 2, but advised that there were currently no plans for how Cycle 2 would be funded. He advised that should the scheme drop off Cycle 1, it would effectively cease to exist and no further work would be carried out until such time as the Scottish Government established how Cycle 2 would be funded. He said that the petition's request for co-production of a scheme would assume that work could continue on the scheme as part of Cycle 2, which he said was not correct.

Councillor Menzies asked whether officers accepted the petition's assertion that consultation could have been better. Mr Stubbs said that while there could always be room for improvement and reflection, he had never been involved with any project with such significant engagement and consultation. He said that a real effort had been made to engage with individuals and agencies, but it had not always been easy on this emotive and important issue for the community. He said the project had evolved since 2016 as new information had emerged about climate change, natural flood management, and nature-based solutions. He said officers were aware of both support for and objection to the scheme. He advised that although the Act only required engagement at the outline design stage, the importance of engagement was recognised and begun at a very early stage of the project and well before the outline design stage. He said that consultation had also evolved as officers had taken on board feedback from earlier events.

Councillor McGuire asked about scaremongering, the design, and if the town would be covered in concrete walls. Mr Stubbs asked Mr Baxter to provide information on the design. Mr Baxter said that the accusation with regards to scaremongering could be made on both sides of the debate. He said there was a perception that concrete was a bad product which was responsible for climate change and should be avoided, and said the issue was made to be black and white. In considering Scotland's current and future flood risk, he said it was recognised that climate resilience was needed, but also

climate adaptation, which was about changing communities and towns to live with the effects of climate change because there was not power at county and national level to counteract the powers of climate change. He said climate adaptation meant protecting and altering towns and concrete was one form of technology which could contribute to this. He advised that that the carbon aspect of concrete derived mainly from its cement content; modern technologies replaced as much as 50% of the cement content with lower carbon additives in some of the schemes around Scotland.

Councillor Hampshire asked whether the scheme was able to deal with rainfall, sea level rises, and storm surges. Mr Baxter advised that the scheme was designed to protect against the current risk of rainfall from the catchment and from storm surges, but also took account of climate projections for greater intensity of rainfall and higher flows in rivers over the next 100 years. He said a view had been taken on current sea levels and how much this might rise by towards the end of the century. He said that the exhibition in June had tried to stress to the public that the design did not advocate for the worst-case scenario for climate change, as it had become clear through previous engagement and consultation that this was not what local people wanted. He reported that residents had wanted multiple climate change scenarios to be considered, and as such, four different climate change scenarios had been presented to Council. He advised that one of the intermediate scenarios had been the basis for the exhibition in June. He highlighted that the designers and consultants were not taking this decision, and it was the decision of Council to take a view on their appetite for risk.

Responding to a further question from Councillor Hampshire, Mr Stubbs advised that the first outline design presented in June was a first vision which had taken feedback and input from previous consultations into account, and since then, officers had taken on board feedback and were working to present the finalised outline design on 23 January.

Councillor Hampshire asked about the consequences of not meeting the 31 March deadline. Mr Stubbs advised that the council had been working to this timeline for a number of years, and confirmed to the best of his knowledge that the Scottish Government currently had no budget confirmed for Cycle 2. Mr Baxter added that there was currently no knowledge as to the delay that might be caused should the deadline not be met as there was no clarity on funding for Cycle 2. He stressed that publication of the scheme was not the end of the process, and therefore delaying the scheme to move from Cycle 1 to Cycle 2 did not achieve the objective of having greater community involvement in the scheme as no further work would happen until funding would occur. He said that if the scheme was published in March, then people could object if they wished to, and there was then a statutory process set out whereby the council could take a decision to modify the scheme. Following publication, he said there was opportunity for the community to participate in refining the design of the scheme. He said his experience on numerous flood protection schemes was that the community could still be involved in the refinement of the design and tailor certain aspects, but ultimately recognising that the main building blocks of the scheme were fixed by the publication. He said if the scheme was not published in March, there would be no community involvement and no scheme until such time as funding became available again.

Councillor McGuire asked about Dr Wright's assertion that the council had an overreliance on one group of consultants. Mr Stubbs responded that the consultant had been through a tendering process which complied with the council's governance and had been appointed through a rigorous procurement exercise.

Councillor Menzies said that most people understood that some form of action had to be taken to protect Musselburgh from flooding, but expressed that it was a more nuanced decision than simply being in favour of or against a flood protection scheme. She said the Petitions and Community Empowerment Review Committee was a tool to allow the public access to the democratic process of the council. She compared other decisions made with far fewer responses than the 760 Musselburgh residents who were signatories to this petition. She thought there should be full opportunity for Councillors to discuss objections and all the other evidence. She proposed to refer the petition to the special meeting of East Lothian Council on 23 January 2024 as she felt it would be beneficial for all Councillors to consider the points raised and to allow the public access to the democratic process.

Councillor McGuire agreed with Councillor Menzies' points, and described the flood protection scheme as being a massive issue. He acknowledged that years of work had gone into the plans, but also acknowledged the significant number of Musselburgh residents raising concerns. He thought it was important to show that people would be listened to as part of the democratic process. He agreed that the matter should be referred to the special meeting of East Lothian Council in January for debate and discussion.

Councillor Hampshire agreed with Councillors Menzies and McGuire. He felt the petition should be considered alongside the proposed scheme on 23 January for Councillors to decide how to move forward after hearing hear the evidence provided by council officers as well as the petition.

It was confirmed that Councillor Menzies had formally proposed the petition be referred to the special meeting of East Lothian Council on 23 January 2024, and this had been seconded by Councillor McGuire. Members then confirmed their support for this proposal by roll call vote.

Decision

The Petitions and Community Empowerment Review Committee agreed to refer the petition to the special meeting of East Lothian Council on 23 January 2024 for discussion alongside the proposed scheme.

Signed **.....**

Councillor N Hampshire
Convener of the Petitions and Community Empowerment Review Committee

East Lothian Council

REPORT TO: Special East Lothian Council

MEETING DATE: 23 January 2024

BY: Executive Director for Place

3

SUBJECT: Musselburgh Flood Protection Scheme – Presentation of the Outline Design

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1 PURPOSE

1.1 To present the updated Outline Design of the Musselburgh Flood Protection Scheme (the Scheme) to Council, and to ask Council to approve commencement of Project Stage 5 (which is named 'Statutory Approvals') to allow the Scheme's design to advance.

2 RECOMMENDATIONS

2.1 It is recommended that Council:

a) Notes the considerable work which has been done by the project team to complete the Outline Design and Environmental Impact Assessment (EIA) following the public exhibition in June 2023;

b) Notes the considerable work done to advance the Outline Design through an extensive consultation process with regulatory organisations, key stakeholders, community groups, businesses and the people of Musselburgh since the Preferred Scheme was approved by a meeting of Cabinet in January 2020;

c) Notes that feedback received through the consultation process has been incorporated into the Outline Design, where doing so was considered appropriate for the design and/or compatible with the Council's capacity to operate and maintain the Scheme once constructed;

d) Confirms that the Outline Design of the Scheme is now developed sufficiently to allow the current stage of its development to be concluded so the design can be formally presented to the Scheme's stakeholders and the public through the formal consultation processes of the Flood Risk Management (Scotland) Act 2009 (the FRM);

e) Approves the commencement of the next stage of the project (Project Stage 5, which is named ‘Statutory Approvals’) in accordance with the Scheme’s PRINCE2 Project Management System, including the formal ‘notification’ of the Scheme under the FRM based on the Outline Design as presented through this report;

f) Notes that approval to undertake formal ‘notification’ of the Scheme during Project Stage 5 of the project does not constitute legal confirmation of the Scheme itself, which remains subject to conclusion of the statutory process set out in the FRM and its associated regulations;

g) Notes the revised estimated cost of £53.9 million for the Scheme, which is an updated estimate compared to the £43.5 million reported to Council in October 2022, and that the increase in cost is primarily due to the increased quality of the Scheme further to the consultation process alongside inflation costs in the period. That this remains an estimate and that this estimate is expected to increase before final delivery is confirmed in the future;

h) Notes the revised estimated cost of £52.1 million for the works to the Ash Lagoons Seawall to make it part of the scheme, which is an updated estimate compared to the £52.4 million reported to Council in October 2022. That this remains an estimate and that this estimate is expected to increase before final delivery is confirmed in the future;

i) Notes the revised estimated cost of £26.5 million for investment in active travel in Musselburgh, which is an updated estimate compared to the £122,000 reported to Council in October 2022, and that this huge increase in cost is due to only the first part of the 100% Sustrans funding having been presented in that last report. That this remains an estimate and that this estimate is expected to increase before final delivery is confirmed in the future;

j) Notes that together these three projects achieve the objectives of Council to deliver multiple benefits and that together they comprise a combined capital investment in Musselburgh of £132.5 million. That this remains an estimate and that this estimate is expected to increase before final delivery is confirmed in the future;

k) Notes that for the first time, and primarily for the purposes of Scheme approval under the legislation, that the works to the Ash Lagoons Seawall are now being formally designated as flood protection scheme operations;

l) Notes that these cost estimates are all Net Present Value costs and have been developed in accordance with the appropriate estimation techniques for infrastructural projects under the HM Treasury Greenbook and other appropriate guidance. Further that the use of Optimism Bias continues to be used on the construction works estimates and that a rate of 45% has generally been used within the numbers presented in this report;

m) Notes that there remain significant risks associated with the delivery of the Scheme and its constituent multiple benefit projects; however, it is highlighted that this report does not constitute a final decision to deliver these projects. An update on these risks will continue to be provided within each future report to Council before Council takes a final decision; and

n) Instructs the project team to return to Council at a future date for either a 'Decision' or a 'Preliminary Decision' on the Scheme, as defined in the FRM, following the conclusion of the statutory '28-Day Objections Period' set-out in the FRM and referred to in Section 3.2.

3 BACKGROUND

3.1 General

3.1.1 Musselburgh has a significant flood risk. The town has a history of flooding from the River Esk with the last major flood occurring in August 1948. This risk is projected to become larger due to the impacts of climate change.

3.1.2 The town also has a flood risk from the Firth of Forth. The present-day risk from the Firth of Forth is less extensive than that from the River Esk today, with areas of flooding limited to the mouth of the River Esk by Loretto Newfield / Mountjoy Terrace and the Esksides up the River Esk as far as the Rennie Bridge. The impact of climate change during the lifetime of the Musselburgh Flood Protection Scheme (the Scheme) is projected to make the future flood risk from the coast greater than that from the River Esk.

3.1.3 In May 2016 a meeting of East Lothian Council's Cabinet approved the Local Flood Risk Management Plan for the Forth Estuary Local Plan District which included a proposed flood protection scheme for Musselburgh.

3.1.4 From 2016 until January 2020 the Scheme was established as a project and undertook the early stages of development. This saw the following take place (this list provides an example of key activities and is not an exhaustive list):

a) Project establishment, including processes and governance;

b) Procurement of Turner & Townsend for Project Management Services;

c) Procurement of Jacobs (formerly known as CH2M) as Design Consultant;

d) The initial development of the Catchment Hydrology and Hydraulic Model and then the production of the 'Model A' flood maps deriving from that model;

e) The establishment of contact with relevant Regulatory Authorities, key stakeholders, and the people of Musselburgh;

f) The undertaking of project surveys to collect data that is required for project design, development, and the environmental impact assessment: e.g. ecology; topography; ground investigation, etc.;

g) The identification of possible flood risk reduction options and then a comprehensive Options Appraisal Process (OAP) leading to the identification of the preferred combination of options (which is known as the Preferred Scheme) to deliver the project objectives; and

h) Holding two public exhibitions over a combined five days at The Brunton in 2019. The formal Public Exhibition Number 1 was held in July and was to consult on the flood risk and the flood risk reduction options. The comments collected from the public were considered in the OAP through the process that led to the 'Preferred Scheme' being identified.

3.1.5 In January 2020, a report was presented to East Lothian Council's Cabinet at the end of the Scheme's Project's Stage 3 (which is named 'Options Appraisal Process'). This presented an update on the development of the Scheme and requested approval of the proposed 'Preferred Scheme', the cost of which was then estimated at £42.1M. This was a Net Present Value Cost, based on the concept design, and estimated in Quarter 2 of 2019 (Q2-2019). The recommendations of that report were approved and are paraphrased as:

a) To note progress since 2016;

b) To approve the 'Preferred Scheme';

c) To approve commencement of the next stage of the Scheme development (Stage 4 – which is named 'Outline Design') in accordance with the Scheme's PRINCE2 Project Management System; and

d) To seek multiple benefits with other projects.

3.1.6 This project is primarily intended to provide a high level of flood risk reduction to the town of Musselburgh. The Scheme's Project Objectives report confirmed that the aspiration is to provide protection against a major flood event such as the one that took place in August 1948. Such protection would also provide protection from all smaller flood events up to and including the design event. The Scheme will not remove the risk of flooding: there will always remain a residual risk that a flood larger than the Scheme is designed to protect against could come along. This is unavoidable as Musselburgh has been built on natural flood plains. It is also noted that the project team have identified that the projected increase in flood risk due to climate change is not necessarily easy for the people of Musselburgh to accept, and that this challenge is compounded when it is recognised that the Scheme must choose one possible climate change future scenario out of many possible futures, to protect against. This report provides further detail on flood risk in Section 3.3.

3.1.7 The Scheme was not set up to protect Musselburgh against the scale of coastal erosion now identified. Council is being updated on this risk

through a report in January 2024, and there is further detail on this matter in Section 3.3.6.

3.2 The Flood Risk Management (Scotland) Act 2009 (the FRM)

3.2.1 The Scheme is being advanced in accordance with a statutory procedure as defined in the FRM, its associated regulations, and non-statutory guidance.

3.2.2 For this Scheme, the next step in the procedure, as recommended in this report, is for the Council to 'give notice' of the proposed flood protection scheme in accordance with the requirements of the FRM. For the Scheme to remain eligible for funding under Cycle 1 of the Scottish Government's flood protection programme, 'notification' of the Scheme's must be achieved by 31 March 2024.

3.2.3 Once the Scheme is formally 'notified', the public may inspect the proposals for a defined period in accordance with Paragraph 2 of Schedule 2 of the FRM. For 28 days after the commencement of that period any person may submit a written objection to the proposals in accordance with the processes defined in the FRM. This period, when objections may be submitted, is known as the '28-Day Objections Period'. These processes, and details of where and / or how the Scheme Documents may be viewed by the public will be confirmed in writing to the public through the formal notice when the Scheme is formally notified by the Council.

3.2.4 The FRM sets out the procedure for determining the validity of any objections received, and the steps to be taken if any are received. This process of consideration and next steps will only commence after the conclusion of the 28-Day Objections Period.

3.2.5 If no 'valid' objections are received by the conclusion of the 28-Day Objections Period, then Council must take a decision to either confirm the proposed Scheme or reject it in accordance with Paragraph 4 of Schedule 2 of the FRM.

3.2.6 If 'valid' objections are received the Council must instead take a 'Preliminary Decision' in accordance with Paragraph 5 of Schedule 2 of the FRM. This decision is to either: (1) 'confirm' the proposed Scheme without modification; (2) 'confirm' the proposed Scheme with modification; or (3) 'reject' the proposed Scheme.

3.2.7 If Council is required to take a 'Preliminary Decision' as detailed in Section 3.2.6, a further report will be submitted to Council with details of the various options open to the Council in respect of the Scheme's approval under the FRM, and any relevant update on the Scheme's Programme and / or Cost Estimate, and / or other deliverability matters.

3.2.8 Members should note that:

a) Council may be required to provide notice of any 'Preliminary Decision' to the Scottish Ministers;

b) Scottish Ministers may determine that a Public Local Inquiry (PLI) is held; and

c) East Lothian Council may require to hold a hearing.

3.2.9 In terms of the FRM, following one or more of these processes, the proposed Scheme must ultimately be either 'confirmed' or 'rejected' by either Council or the Scottish Ministers. A 'confirmed' scheme may be with or without 'modifications'. If the Scheme is 'confirmed' then the process requires that further steps are undertaken which include but are not limited to: (i) notice of the final decision; (ii) an Appeals Process; and (iii) the granting of Deemed Planning Permission.

3.2.10 There are many different approvals that are required for a major infrastructure project like this Scheme. More detail on this is provided in Section 3.6; however, this point highlights that the Scheme's Deemed Planning Permission (DPP) is not intended to be used to provide approval of the Musselburgh Active Travel (MAT). When the Scheme 'notified' the Scheme Documents will clearly detail exactly which parts of the design / Scheme are seeking approval under the FRM and thus its DPP. The approach to how the MAT will seek its planning approval has not yet been confirmed by that project.

3.3 Design Philosophy

3.3.1 The Scheme's standard of protection will be to protect against a flood event with a 0.5% Annual Exceedance Probability (AEP) originating from either the River Esk catchment, or the Pinkie Burn catchment, or the Firth of Forth. The standard of protection does not include for flood events of this scale from more than one of these origins occurring simultaneously, as this is a different, and much more improbable, statistical probability. A 0.5% AEP Flood Event is also known as a '1 in 200 Year Flood Event'.

3.3.2 The Scheme's allowance for climate change will allow for protection against:

a) A 28% increase in peak fluvial flow in the River Esk;

b) A 25% increase in peak rainfall on the Pinkie Burn catchment; and

c) A 0.86m rise in sea level on the Firth of Forth.

3.3.3 The flood maps associated with the design flood events that will be protected against by the proposed Scheme, via the standard of protection detailed in Section 3.3.1 are provided in Appendix A (available in the Members' Library at the following link: Agendas, reports and minutes | East Lothian Council. The following maps are provided:

a) The flood map of the design event from the River Esk (Appendix A1) – this is a 0.5% AEP Flood Event from the river with an allowance for levels in the sea and includes for a 28% increase in river peak flow as a climate change allowance;

b) The flood map of the design event from the Pinkie Burn (Appendix A2) – this is a 0.5% AEP Flood Event from the burn with an allowance for levels in the sea and includes for a 25% increase in peak rainfall as a climate change allowance;

c) The flood map of the design event from the Firth of Forth (Appendix A3) – this is a 0.5% AEP Flood Event from the sea with an allowance for flow in the river and includes for a 0.86m rise in sea level as a climate change allowance;

d) A blended flood map (Appendix A4) that overlays these three individual flood maps / different flooding scenarios to create one overall area of flood inundation which will be protected against by the proposed Scheme.

e) A map of the Scheme's Limit of Flooding (Appendix A5) that has the property identification points illustrated to allow the properties that will be protected by the proposed Scheme be identified;

f) A colour graded collage map (Appendix A6) that allow for differentiation of each individual design flood event within the blended overall area of flood inundation and identification of which areas are at risk of more than one separate flood events. The colour grading also provides a depth index to allow for an understanding of the scale / depth of flooding by area associated with each flood event; and

g) A map of Musselburgh with the blended flood map and critical infrastructure identified (Appendix A7). This map is useful to allow for an understanding of impact on the critical / essential public infrastructure of the town as opposed to the individual / private property impact which can be determined from the map provided through Section 3.3.3(e).

3.3.4 The standard of protection defined in paragraph 3.3.1 plus the climate change allowance defined in paragraph 3.3.2 will reduce the risk of flooding to approximately 3,200 properties in Musselburgh. At this point in time the 'Land Referencing' activity remains ongoing. This is the project work package through which all-individual properties within the areas of interest are identified such that the requirements of the Scheme 'notification' as detailed in Section 3.2 may be achieved. As such the exact number of properties that will be protected is not yet finalised, however it is considered that any numbers stated in this report and/or in any production during the Scheme to date may be considered to be in the order of and simultaneously a probable small underestimate. It is confirmed that these properties are comprised of the following non exhaustive list:

a) In the order of 2,600 residential properties;

b) In the order of 350 businesses including the whole of the Eskmills Business Park and the High Street;

c) Pinkie Primary School, Loretto Junior School, Loretto Senior School, a number of nurseries and immediate proximity to both the Burgh Primary School and Loretto RC Primary School;

d) A number of residential care homes including the Morar Care Home, St. Ann's Care Home, Lothian Villas Children's Home, and the Eskgreen Care Home building;

e) The Bus Depot, Police Station, and Council Depot at Goosegreen;

f) Musselburgh Racecourse; the Old Golf Course; and Musselburgh Golf Course;

g) Fisherrow Harbour;

h) The Scottish Water (SW) regional wastewater pumping stations (WwPS) at 'Eastfield', 'Esk', and immediate proximity to 'Levenhall' WwPS which is understood to be primarily a below ground facility. This is as well as the entirety of the SW wastewater piped network which would sit under the area of flood water inundation;

i) The critical SGN regional Gas Governor at Stoneybank;

j) Various Scottish Power network distribution assets; and

k) The A199 which connects Edinburgh to East Lothian including ability to use the Rennie Bridge. Furthermore, all road and footbridges in Musselburgh would be affected and incapable of being used. Whether or not they would sustain damage during this event and whether or not they would be capable of being used after the event cannot be stated; however, it is highlighted that the proposed Scheme will replace four of these bridges to ensure that their replacements cannot become blocked by water flow and / or timber debris for flood events protected by the proposed Scheme such that this risk is minimised post-Scheme delivery.

3.3.5 The Scheme has invested significant time and resource into the development of the Scheme's Hydrology and Hydraulic Model. One reason for this was the publication of the UKCP18 (United Kingdom Climate Projections, 2018) which identified a step-change in the projected severity of the potential impacts of climate change on future flood risk. It also allowed the project team, under instruction from Council, to undertaken consultation with the Scheme's stakeholders and the people of Musselburgh on which standard of protection / resultant Scheme design was most appropriate for the town of Musselburgh. Reports that updated on these matters were previously brought to Council in August and October 2022.

3.3.6 The Scheme's design facilitates a 'Managed Adaptive Approach' to flood risk throughout its design life. Where practicable, physical defences along the River Esk, Pinkie Burn, and Firth of Forth will be designed with 'future flexibility' such that they could be raised if necessary. The height by which they could be raised will be determined through further analysis during the detailed design phase of the project. Physical defences on the Firth of Forth will incorporate 'trigger points' to identify when further action should be taken in response to coastal change induced by sea level rise. The approach to advancing natural flood management (NFM) in the River Esk Catchment which was approved by a meeting of Council in October 2023 is also part of this 'Managed Adaptive Approach'. The ongoing project work being advanced in partnership with Dynamic Coast, as reported on to Council through a separate report in January 2024, is considered to be contained within the logic of this section of this report;

3.3.7 The Scheme is designed to allow it to deliver multiple benefits associated with the Musselburgh Active Toun (MAT) project. The footbridges that are being replaced by the Scheme to reduce flood risk have simultaneously been designed to be wide enough to accommodate shared-use routes for pedestrians and wheeled users. The position and form of the Scheme's physical defences facilitates space for the MAT project's shared-use routes which overlap with the footprint of the Scheme.

3.3.8 The Scheme is designed to deliver multiple benefits associated with Musselburgh River Restoration. This will create a more natural river corridor through the town, and specifically it will deliver 'Positive Effects for Biodiversity' in terms of removing in-stream structures, removing redundant riverside structures, increasing riparian planting, and improving fish passage etc.

3.4 The Outline Design

3.4.1 The Scheme will comprise several components which, in combination with each other, will reduce flood risk to Musselburgh. This will be achieved by use of the following flood risk reduction techniques:

a) Reduction in peak flow through attenuation within the catchment;

b) Reduction in the risk of bridge blockage from debris;

c) Improvements in the conveyance capacity of the River Esk;

d) Physical defences to contain floodwater; and

e) Surface water management to address the risk of secondary flooding.

An Overview Schematic Drawing is provided in Appendix B (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council) that captures the essence of these interventions on a plan.

3.4.2 The Scheme components detailed in Section 3.4.1 come together to form the Scheme. In accordance with the FRM and its regulations, and specifically Regulation 11 of The Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Regulations 2010 (named 'the 2010 Regulations') this proposed Scheme is defined / detailed through appropriate 'Scheme Documents'. For the purposes and benefit of understanding the proposed Scheme that the report is intending to advance to the Statutory Approvals process these documents have been produced in draft and are appended to this report for your consideration. The specific Scheme Documents provided are:

a) The draft Schedule of Operations – provided in Appendix C (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council); and

b) The proposed Scheme Drawings – provided in Appendix D (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council).

3.4.3 During the design process it was determined that this proposed Scheme would require an EIA to be undertaken. More detail on the processes associated with this determination and its Policy Implications are provided in Section 5. The EIA is a very large and specialist document and is not provided in full with this report to Council. The project team have instead provided a Non-Technical Summary of the EIA with is provided in Appendix E (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council). In due course and in accordance with the FRM and specifically Regulation 7 of the 2010 Regulations the EIA will be made available for public viewing in full once the 'notification' of the proposed Scheme is undertaken and as per the processes detailed in Section 3.2.

3.4.4 This report does not summarise the EIA or highlight any part of it as it is considered essential for Members to read in full the entire Non-Technical Summary of the EIA.

3.4.5 Attenuation

a) Rosebery Reservoir and Edgelaw Reservoir will be utilised and be adapted to provide attenuation of floodwater within the catchment. Doing so will reduce the extent and height of physical defences required in Musselburgh.

3.4.6 Debris Management

a) A coarse debris trap will be constructed on the River Esk upstream of the A1 bridge, near Whitecraig. This will intercept large woody debris, and in doing so will reduce the risk of bridge blockage at Roman Bridge and Rennie Bridge in Musselburgh. Reducing the risk of bridge blockage at these two structures will reduce the extent and height of physical defences required in Musselburgh.

3.4.7 Conveyance Improvement

a) The Ivanhoe Footbridge, Shorthope Street Footbridge, Electric Bridge, and Goosegreen Footbridge will be replaced with four new single-span bridges, whose decks will be above the design flood level, and which will have no in-stream piers. Doing so will reduce the risk of bridge blockage from debris at these locations and reduce the constriction of flow beneath the structures during a flood event. The replacement of these four bridges will reduce the extent and height of physical defences required in Musselburgh.

3.4.8 Containment

a) Notwithstanding the Scheme components described in Sections 3.4.5 to 3.4.7, physical defences will still be necessary to contain the design flood event. Physical defences will be constructed on the west bank of the River Esk from Olive Bank Bridge to the mouth of the river, and on the east bank from the field known as 'the Valley' to the Ash Lagoons Seawall. Physical defences will be constructed around the Pinkie Burn within the playing fields at Pinkie St. Peters Primary School. Physical defences will be constructed in the Firth of Forth from the mouth of the

River Esk to Fisherrow Harbour, and from the harbour to the Brunstane Burn. Physical defences will be constructed around the Inveresk Estate alongside the river and tying back into the higher ground.

3.4.9 Repair of Existing Assets

a) Repair works will be carried out to Fisherrow Harbour walls and the Ash Lagoon Seawall to extend the life of these existing assets to make them part of the scheme.

3.4.10 Surface Water Management

a) Surface water pumping stations will be constructed in the lowest-lying areas around Musselburgh. These below-ground structures will intercept surface water ponding during a flood event, both directly and through associated drainage networks, and will pump this water into the nearest watercourse. They will be designed such that any residual ponding will be no deeper than would occur without the Scheme being in place.

3.5 Consultation

3.5.1 The Scheme has been advanced through an extensive consultation process with regulatory organisations, key stakeholders, community groups, businesses and the people of Musselburgh. An extensive number of discrete consultation events and meetings have taken place since October 2018. These have included working groups, town hall meetings, presentations, exhibitions, drop-in sessions, and site visits, culminating in a public exhibition which presented the first vision of the Outline Design in June 2023, and which was attended by almost 897 people. In addition to these events, the project team has also visited numerous individual residents at their homes, where the Scheme might directly impact their property.

3.5.2 The purpose of the Scheme's consultation has been to seek people's views about Musselburgh's flood risk and the proposed Scheme to reduce that risk. The project team has then used their professional judgement to determine where it is appropriate and achievable to incorporate those views within the design, while recognising that it will not always be practicable to do so.

3.5.1 Following the consultation process and informed by the project team's recommendations, Council has the responsibility and authority to act on behalf of those consulted. In doing so it must decide the next steps to achieve Council's obligation of reducing Musselburgh's flood risk as part of the Forth Estuary Local Flood Risk Management Plan.

3.6 Consenting

3.6.1 In accordance with the FRM, when the Scheme is confirmed then planning consent will be deemed to be provided by the Scottish Ministers. Alongside the FRM approval, the consultation with Statutory Organisations has determined that the following additional consents and licences will also need to be obtained in due course. The following list is illustrative and not considered to be exhaustive:

a) Conservation area consent;

b) Listed building consent;

c) Scheduled monument consent;

d) Marine licencing; and

e) Appropriate licencing under the Water Environment (Controlled Activities) (Scotland) Regulations and known as a 'CAR Licence'.

3.6.2 The process and timing for obtaining these consents and licences will be determined by the Project Board under its delegated authority from Council but will not commence before notification of the Scheme under the FRM.

4 POLICY IMPLICATIONS

4.1 The FRM places a statutory responsibility on the Local Authority to exercise their flood risk related functions with a view to reducing overall flood risk. A key responsibility for East Lothian Council is the implementation of the flood risk management actions in the Forth Estuary Local Flood Risk Management Plan.

4.2 The Scheme will contribute towards The East Lothian Plan – 2017-27 focusing on health and wellbeing, safety, transport connectivity, sustainability and protecting our environment.

4.3 The Scheme will support the Council's Climate Change Strategy; however, it is highlighted that this project is an 'adaptation' project due to implications of climate change on Musselburgh.

5 INTEGRATED IMPACT ASSESSMENT

5.1 A Preliminary Environmental Appraisal Report (PEA) was undertaken during Stage 3 of the project (the Options Appraisal Process), and this was included in the Preferred Scheme Report presented to Cabinet in January 2020.

5.2 During Stage 4 of the project (which is named 'Outline Design') a screening exercise was led by the Council's Planning Service and, in consultation with the Statutory Organisations, they determined that an Environmental Impact Assessment (EIA) of the Scheme was necessary. Following this, a scoping exercise was conducted by the same parties to determine what aspects of the environment should be assessed.

5.3 The EIA considers the effect of the Scheme's design on the following aspects of the natural and built environment:

a) Population and human health;

b) Biodiversity;

c) Noise and vibration;

d) Townscape and visual impact;

e) Water environment;

f) Soils, geology, and contamination;

g) Aire quality and climate change;

h) Cultural heritage; and

i) Traffic and transportation.

5.4 A draft Non-Technical Summary of the EIA is appended to this report for information (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council). In accordance with the FRM, as part of the Statutory Approvals processes, and specifically within the processes of 'notification' as detailed in Section 3.2, the EIA report will be published alongside the Scheme Documents which will include: maps and plans - through the Scheme Drawings; and a description of the operations - through the Schedule of Operations.

6 RESOURCE IMPLICATIONS

6.1 Financial - Background

6.1.1 An estimated cost of £42.1 million was reported to Cabinet in January 2020 for the 'Preferred Scheme'. This cost was defined in Quarter 2 of 2019 (Q2-2019). The estimate was based on 'Preferred Scheme' concept which was the outcome of the Options Appraisal Process (OAP) that had been undertaken during Stage 3 of the project.

6.1.2 The scope of the Preferred Scheme included the following major conceptual components:

a) Modification of Edgelaw Reservoir and Rosebery Reservoir;

b) Provision of a large-debris trap above the A1 road bridge in Dalkeith Country Park;

c) Like-for-like replacement of three existing bridges, namely: Shorthope Street Footbridge, Goosegreen Footbridge; and the Electric (road) Bridge;

d) 6.4km of flood defence structures; and

e) Eight surface water pumping stations and an associated drainage network.

6.1.3 In January 2020 the Scheme was only one project – i.e. the flood protection scheme. Council then instructed the project team to seek to achieve multiple benefits as it advanced the design.

6.1.4 In October 2022 a report was presented to Council that updated on the Scheme and the multiple benefits that had been identified and considered by the project team. Within that report three separate estimates were presented to Council which together constituted a £96 million investment in Musselburgh.

6.1.5 In October 2022 a revised estimated cost of £43.5 million was reported for the Scheme and which had the same scope as detailed in Section 6.1.2. This cost estimate was defined in Q2-2022 and accounted for an increase in programme duration due to delays associated with the COVID-19 pandemic. At that time a complete update of the Scheme's cost estimate not undertaken as the Outline Design had not been completed.

6.1.6 In October 2022, an estimated cost of £52.4 million was reported for the preferred option to repair the multiple benefit project to repair the Ash Lagoons Seawall. This cost estimate was defined in Q2-2022.

6.1.7 In October 2022, an estimated cost of £122,000 was reported for the component parts of the Musselburgh Active Toun (MAT) project that had been identified as being best placed to be delivered by the Scheme due to the footprint of those parts of the MAT occupying the same ground as the intended Scheme design. Since then the MAT project has updated the Active Travel 'Places for Everyone' Fund Infrastructural Panel and obtained approval to advance the MAT design in Musselburgh, and which includes the parts of the MAT that are proposed to be delivered within the Scheme. The £122k was only ever the component part of the MAT estimates that covered the parts within the Scheme and had full funding confirmation at that time. It was understood that construction estimates would always need to be added onto the design funding at a later time, however those construction estimates were not available for that update to Council.

6.2 <u>Financial – Update on Cost Estimates</u>

6.2.1 Following completion of the Outline Design of the Scheme and its EIA, a more detailed assessment of the estimated construction cost has been carried out.

6.2.2 The scope of the Outline Design includes the following major conceptual components:

a) Modification of Edgelaw Reservoir and Rosebery Reservoir;

b) Provision of a large-debris trap by Whitecraig in Dalkeith Country Park;

c) Replacement of: Ivanhoe Footbridge, Shorthope Street Footbridge, and Goosegreen Footbridge with new footbridges which are simultaneously designed to deliver the flood risk reduction objectives of the Scheme and the Active Travel objectives of the MAT project;

d) Replacement of the Electric (road) Bridge with a new footbridge which is simultaneously designed to deliver the flood risk reduction objectives of the Scheme and the Active Travel objectives of the MAT project;

e) 1.7km of flood defence structure formed by flood embankments and hybrid structures;

f) 4.7km of flood defence structure formed of either replaced or new flood walls. This includes 600m of flood defence structures to protect Inveresk Estate which was not included in the Preferred Scheme;

g) 2.7km of repair works to the Ash Lagoons Seawall and consisting of additional rock revetment to the seaward side and a replacement of the existing concrete wall along the top;

h) Seven surface water pumping stations and an associated drainage network;

i) Repairs to Fisherrow Harbour walls;

j) Repairs to both the Eskmills Weir and the Goosegreen Weir;

k) Culverting and flood control on the Musselburgh Mill Lade;

l) Delivery of river restoration objectives along the River Esk corridor;

m) Enhanced landscaping works at key locations including the Fisherrow Harbour area, along the coast from Links View to the mouth of the River Esk, and around the Roman Bridge; and

n) Environmental mitigation measures associated with National Planning Framework 4 (NPF4), which include Positive Effects for Biodiversity.

6.2.3 The updated estimate for the Scheme is £53.9 million which is based on Q3-2023 cost estimates. This is a Net Present Value estimate.

6.2.4 The updated estimate for work to the Ash Lagoons Seawall is £52.1 million which is based on Q3-2023 cost estimates.

6.2.5 The updated estimates for the component parts of the Musselburgh Active Toun (MAT) project, that have been identified as being best placed to be delivered by the Scheme, is £26.5 million. This is a significant increase in the estimated cost compared with that reported in October 2022 and as detailed in Section 6.1.7. This cost estimate is now considered equivalent in its level of detail to the other costs estimates provided in this report.

6.2.6 The updated combined total proposed investment in Musselburgh from these three projects is £132.5 million.

6.3 Financial - Funding

6.3.1 The Scottish Government will contribute 80% of the cost of the Scheme. In accordance with the Scottish Government's criteria the Scheme's cost will be confirmed when the Construction Works Contract is signed. Within the PRINCE2 Project Management System being applied by this project this is at the end of project Stage 7 (Construction Procurement). An updated Schematic Overview Programme is provided in Appendix F (available in the Members' Library at: Agendas, reports and minutes | East Lothian Council).

6.3.2 As the Scheme is already authorised under the Scottish Government's flood protection scheme programme the Council are ongoing in receiving the 80% contribution on an annual basis. The project team and thereby the Council update the Scottish Government every autumn on the updated estimate for the Scheme and its Spend Profile.

6.3.3 The Scheme now contains elements of three separate projects, namely: (i) the flood protection scheme; (ii) the Ash Lagoons Seawall repair; and (iii) parts of the Musselburgh Active Toun project. The funding required to deliver this combined project is now expected to derive from the following five separate funding sources:

a) The Scottish Government's Flood Protection Scheme programme;

b) East Lothian Council's Capital Budget;

c) Deriving from the Musselburgh Agreement associated with the Ash Lagoons Seawall;

d) The Places for Everyone Fund currently being managed by Sustrans; and

e) The National Strategic Fund currently being managed by Sustrans.

6.3.4 The financial provision for the Scheme will be allocated from past, current and future year Flooding and Coastal Protection budgets.

6.3.5 Provision for the Council's contribution towards the Scheme will be allocated in future capital budget estimates for Coastal Protection / Flooding.

6.3.6 In January 2020 when the Scheme was estimated at £42.1 million it was expected that Council would require to fund 20% which was in the order of £8.4 million.

6.3.7 In January 2024 the Scheme is estimated at £53.9M and it is expected that Council will continue to have costs in the order of £8 million to fund its component part of the overall investment. It is highlighted that the estimated cost to Council has not increased, and that this is due to be financial benefit of bringing multiple projects together and thus achieving financial efficiencies. Further detail on this concept is provided in Section 6.4.2.

6.3.8 It is highlighted that there remains a confidential negotiation ongoing in relation to the Ash Lagoons Seawall, under the Musselburgh Agreement, and that this process must be concluded before the outcome can be fully mapped into the financial model associated with these projects as updated on in this report.

6.3.9 It is highlighted that the MAT project remains ongoing in its design, and that its works will be subject to separate approvals processes. Until these are concluded the outcomes cannot be fully mapped into the financial model associated with these projects as updated on in this report.

6.3.10 It is highlighted that in accordance with the Scheme's PRINCE2 Project Management System that at any point in the delivery of the project the Council is only liable for the costs authorised within the stage that is open.

6.3.11 The Scheme now requires to commence its Project State 5 to advance the Scheme Approvals Processes detailed in Section 3.2 of this report. This process will be managed by the Scheme's Project Board on behalf of Council, and further to authority to commence this stage being provided by Council this will require a Project Stage Plan for Stage 5 to be reviewed and approved by the Project Board.

6.4 Financial - General

6.4.1 The Scheme forms part of Cycle 1 of the Scottish Government Flood Protection Programme, and thus the Scheme achieves a contribution of 80% of eligible costs for the Scheme's scope of works as per the funding eligibility criteria associated with this flood protection scheme programme. The local authority are required to provide the remaining 20% of funding.

6.4.2 Further to the logic of Section 6.4.1 it is highlighted that due to this project bringing together three projects to achieve multiple benefits there are now additional funding organisations and greater complexity to the financial management required. It is however essential that full compliance with the funding eligibility requirements of each funding stream is achieved. The flood protection scheme programme remains the primary project; however, its funding cannot be used outwith of its eligibility criteria.

6.4.3 A national review of the flood protection scheme programme was undertaken during 2022 and 2023. One specific outcome of this review is that Council must be able to provide evidence that the Scheme has been notified no later than 31 March 2024 to remain eligible for funding under Cycle 1 of the programme. The Scottish Government has confirmed that there will be no exception to this requirement.

6.4.4 It is highlighted that the scope of the Scheme in January 2020 is not comparable with the scope of the Scheme in January 2024. The scope of this project has expanded substantially for several reasons and in particular: due to the major consultation that took place with key stakeholders and the people of Musselburgh over the period; due to the implications of NPF4 and therefore the projects obligations to deliver new biodiversity requirements (amongst others); and the inclusion of flood protection defences for the Inveresk Estate. It is not considered that the scope of the project will increase again.

6.4.5 All cost estimates associated with the Scheme and the other infrastructural projects detailed in this report are developed as Net Present Value cost estimates. This is in accordance with the appropriate processes and in particular with the details specified in the HM Treasury Green Book. It is highlighted that as these projects are not yet approved. Further neither a robust delivery programme nor a tender price for construction are yet available. The estimated cost of the projects can be expected to continue to increase in line with inflation until a final delivery programme and cost estimate is confirmed.

6.4.6 The construction estimates have been produced by Jacobs as part of the development of the Outline Design. The Economic Appraisal that was undertaken developed both the updated construction works estimates and the future operational estimates associated with the Outline Design. Costs were estimated using the EA Long-Term Costing Tool and cross-checked against actual costs incurred from a number of equivalent recent projects. Where appropriate, cost estimates have been uplifted for inflation using EA Guidance on "Allowing for inflation on FCERM projects". Key information associated with the Economic Assessment will be published as part of the Scheme Documents when the Scheme is notified as detailed in Section 6.2.

6.4.7 Once construction of the proposed Scheme is completed Council will have future obligations to operate and maintain (O&M) the new assets that have been delivered through this project. This will include negotiating with SW on the use, operation and ongoing maintenance of the reservoirs and full responsibility for the operation and maintenance of the debris trap in the catchment as per the previous Council decision. It will also include both the new flood defence structures in the town but also the new landscape, and the assets of the other multiple benefit projects. As with the finances of this project the future operational and maintenance obligations is also complex due to the bringing together of three projects, and as the MAT design and approval and delivery are not yet confirmed it is not currently possible to fully detail the scale and / or split of future responsibilities. The following key points are highlighted:

a) The Ash Lagoons Seawall already exists and already has a O&M obligation. The proposed Scheme is not considered to have a greater future burden. If the asset is not repaired as proposed by the Scheme, then this do-nothing option is considered to have a greater O&M burden that the proposed Scheme;

b) Many other existing assets in the town already have an existing O&M burden. Fisherrow Harbour, the river weirs, and the historical training walls on the River Esk are highlighted. If these assets are not repaired as proposed by the Scheme, then this do-nothing option is considered to have a greater O&M burden that the proposed Scheme;

c) The four new footbridges will have a design life of 100 years and are not expected to have any significant maintenance obligations during their first 25 years of life. During this period their O&M burden is considered to be lesser.

d) The new flood defence structures in the proposed Scheme will have a design life of 100 years and are not expected to have any significant maintenance obligations during their first 25 years of life. The flood gates and any other operational assets including the Scheme Pumping Stations will however have a continual future O&M requirement. An update on this will be provided when the Scheme is notified, as detailed in Section 6.4.6.

e) The enhanced landscape across the town will have an O&B burden, however it is highlighted that most of these areas are already Council

managed landscapes / amenity areas that are heavily managed. The Scheme's design has sought to ensure that the designs are sustainable and also deliver maximum biodiversity and river restoration benefits. As such much of these landscapes are designed to be managed less intrusively that at present. It is not expected that overall the proposed Scheme will increase the landscape burden on the Council.

6.4.8 Within these construction estimates the use of Optimism Bias continues to be applied. In January 2020 this was generally at a rate of 60% which was in line with the approach for a concept stage of a flood protection scheme. This value is recommended to be reduced to 30% when a detailed design is achieved; however, a rate of 45% has generally been applied against the construction estimates presented in this report.

6.4.9 Financial inflation is a constant; however, the rate of inflation is subject to change over time. The last few years have seen very high rates of inflation. This has impacted across all inflation indices and has been particularly severe on construction inflation. An analysis of inflation related to the project costs stated in this report has been undertaken and it is highlighted that the £42.1 million cost estimates from Q2-2019 is equivalent to a value of £54.8 million in Q3-2023. The updated cost estimate for the £42.1 million, as detailed in Section 6.2.3, is £53.9 million which should be noted as less than the £54.8 million equivalent, notwithstanding the increase in the scope of works as detailed in Section 6.2.2.

6.5 Personnel

6.5.1 If, following publication of the Scheme, objections to the proposals are received, then Council must consider the nature of the objections and should work with objectors to try and resolve the concerns raised. Depending upon the number of objections received, this could have implications for the number of Council personnel and its consultants required to engage with the objectors, and the duration over which this activity would take place. The personnel requirement will not be known until at least 30 days after notification of the Scheme.

6.6 Other

6.6.1 None

7 BACKGROUND PAPERS

7.1 Report to Cabinet in May 2016 – approval of the Local Flood Risk Management Plan (Forth Estuary) which included a proposed flood protection scheme for Musselburgh.

7.2 Report to Cabinet in January 2020 – approval of the 'Preferred Scheme' concept to be advanced to an Outline Design.

7.3 Report to Full Council in August 2022 – approval of inclusion of the Ash Lagoons Seawall within the Scheme, and update to hydraulic model C

7.4 Report to Full Council in October 2022 – approval of the project's assessment of Musselburgh's flood risk, and timeline for advancing the outline design.

7.5 Motion to Full Council in August 2023 – Note of Progress and Request for Information.

7.6 Report to Full Council in October 2023 – approval to advance Natural Flood Management (NFM) in the River Esk catchment independently of the Scheme and as part of the future Local Flood Risk Management Plan (LFRMP).

7.7 Appendices A-F, available in the Members' Library, January 2024 Bulletin, Ref: 08/24 - Agendas, reports and minutes | East Lothian Council

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